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DISTRIBUTION AND ABUNDANCE OF GRAY WHALES OF THE OKHOTSK-KOREAN POPULATION OFF NORTHEASTERN SAKHALIN, JUNE-NOVEMBER 2005 (based on data from onshore, aerial and vessel-based surveys)

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Director, VNIRO

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_____ 2006

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REPORT ON STUDIES UNDER THE "PROGRAM FOR STUDY AND MONITORING OF THE OKHOTSK-KOREAN GRAY WHALE POPULATION OFF THE NORTHEAST COAST OF SAKHALIN ISLAND IN 2005"

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Prepared for
Exxon Neftegas Limited
and
Sakhalin Energy Investment Company Limited

Moscow
March 2006

Russian Federal Research Institute of Fisheries and Oceanography (VNIRO)

Pacific Research Fisheries Center (TINRO-Center)

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"PROGRAM FOR STUDY AND MONITORING OF THE OKHOTSK-KOREAN GRAY WHALE POPULATION OFF THE NORTHEAST COAST OF SAKHALIN ISLAND IN 2005"

Study group members:

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ABSTRACT

This report presents the results of aerial visual, vessel-based and onshore vehicle surveys of the gray whales of the Okhotsk-Korean (western) population performed in the summer and fall of 2005 under the auspices of the Program for Study and Monitoring of Gray Whales off the Northeast Coast of Sakhalin Island. The studies demonstrated that the majority of whales, as was the case in 2004, were concentrated in the near-shore Piltun feeding area (approximately 120 animals were sighted there in shore-based surveys). The number of animals in the Offshore feeding area was low, as in the previous year, but was still higher than in 2004 (a maximum of 25 individuals). The decline in the number of whales in the Offshore area over the last two years in comparison to 2001-2003 may be attributed to the appearance in the near-shore area of more abundant and easily available prey concentrations. Our results indicate that there is no notable deterioration in prey availability in the Offshore area.

Most of the gray whales (up to 70-75%) were observed in the northern part of the Piltun area in 2005 for most of the feeding season, as was the case in the previous year. Most (up to 80-85%) were sighted as observed in previous years, in a 4-km shallow near-shore zone with depths less than 15 m. A large number of animals (up to 15-20%) in the northern part of the area in August and September were also observed up to 5-7 or more kilometers from shore in waters 20 to 30 m deep. This distribution in the Piltun area may be attributed to quality of prey availability in the northern part of the area (including spawning concentrations of Pacific sand lances in the deeper part of the feeding area).

The number of calves with their mothers sighted in the Piltun area in 2005 was five, which suggests that the birth rate of the Okhotsk-Korean gray whale population has been stable in recent years.

Increased whale counts from shore-based observations suggested the arrival of a new pod of whales in the Piltun area in late September. This is consistent with previous years and these sighting strongly support the hypothesis that other as yet unknown feeding areas for the Okhotsk-Korean gray whale population might exist in the Sea of Okhotsk. This also suggests that the actual size of this population may be greater than currently thought. In this regard, the fact that two gray whales were sighted feeding in Severnyy Bay west of the northern tip of Sakhalin in 2005 is noteworthy (even though it is still premature to characterize it as a new gray whale feeding area).

In summary, the results of the 2005 combined distribution surveys indicates that the grouping of gray whales that concentrate in the near-shore waters of northeastern Sakhalin to feed during the summer and fall are in a stable condition consistent with previous years and show no apparent signs of the direct or indirect impact of Sakhalin-1 and Sakhalin-2 operations.

Key words: gray whale, Sakhalin, Piltun, survey, distribution, feeding, abundance trends, anthropogenic impact.

Tables 18, Figures 36, References 56, Appendices 4, Pages v + 189.

1. INTRODUCTION

The gray whale surveys summarized in this report were conducted during the summer and fall period of 2005 in accordance with the "Program for Study and Monitoring of the Okhotsk-Korean Gray Whale Population off the Northeast Coast of Sakhalin Island" recommended by the 57th session of the International Whaling Commission (Ulsan, 2005). The program was approved by the appropriate Russian authorities and departments: the RF Ministry of Natural Resources, the Russian Federal Natural Resource Management Inspection Service (ROSPRIRODNADZOR), the Federal Veterinary and Phytosanitary Inspection Service (ROSSELKHOZNADZOR), the Federal Fisheries Agency of Russia, and the Sakhalin territorial offices of ROSPRIRODNADZOR AND ROSSELKHOZNADZOR. The survey methods included dedicated aerial, vessel-based and onshore surveys in known feeding habitats of the Okhotsk-Korean (Western) gray whale population to monitor whale distribution and abundance off northeastern Sakhalin Island.

The program objective, which complies with the basic principles of the Russian-American "Joint Declaration on Ensuring Biodiversity Conservation in the Sakhalin Island Area" (1997), is to monitor the marine mammals present in the region in the presence of ongoing oil and gas field developments on the northeast shelf of the island. This objective has particular importance given that the Western gray whale *(Eschrichtius robustus)* population resides in this area during the summer-fall season and numbers only about 100-120 (Blokhin, 1996; Yakovlev and Tyurneva, 2005; Cooke et al., 2005; Weller et al., 2001, 2004, 2005) is listed as critically endangered by the International Union for Conservation of Nature (IUCN) (Hilton-Taylor 2000) and as Category 1 population ("threatened with extinction") in the Red Book of the Russian Federation (Anonymous 2001). The feeding areas of this population are close to several offshore license areas, including the Piltun-Astokh, of the Sakhalin II project and the Odoptu and Chayvo blocks of the Sakhalin-1 projects (Fig. 1). It is therefore important to monitor key components of the ecology of the western gray whale population including the distribution and abundance surveys outlined in this report.

The 2005 studies continued and further developed the survey program carried out under the framework of the Russian "Program for Study and Monitoring of the Okhotsk-Korean Gray Whale Population off the Northeast Coast of Sakhalin Island" in 2002-2004. All funding for the whale surveys was provided by the Sakhalin-1 project (operated by Exxon Neftegas Limited) and Sakhalin II project (operated by Sakhalin Energy Investment Company Limited).

The 2005 surveys were led by specialists from the Russian Federal Research Institute of Fisheries and Oceanography (VNIRO) and the Pacific Research Fisheries Center (TINRO-Center). Students from Far East State University (DVGU) and Far East State Technical Fisheries University (DVGTRU), as well as other recruited specialists, participated in field data collection.

This consolidated report on gray whale distribution studies performed in 2005 is based on the respective report materials prepared from aerial (S. A. Blokhin), shore-based (A. V. Vladimirov) and vessel-based survey data (M. K. Maminov and E. P. Shvetsov). Collation and scientific editing of the materials was performed by V. A. Vladimirov.

1.1. Need for Monitoring

The Okhotsk-Korean or Western gray whale population is one of the smallest of all the world's populations of large whales. The total population has been reported over the last decade as approximately 100 animals (Blokhin, 1996; Sobolevskiy, 1998, 2000, 2001; Wade et al., 2003; Weller et al., 1999, 2000, 2001, 2004, 2005; Würsig et al., 1999, 2000; Cooke et al., 2005). However, some recent data suggests that the number of whales in the population may reach approximately 120 (Vladimirov et al., 2005; Yakovlev and Tyurneva, 2005).

According to the data currently available, gray whales of the Okhotsk-Korean population are concentrated in the Sea of Okhotsk off the northeast coast of Sakhalin during the summer and fall months, i.e., during the feeding season (Blokhin, 1996; Sobolevsky, 2000, 2001; Blokhin et al., 1985; Würsig et al., 1999, 2000; Weller et al., 2000, 2001, 2002), although feeding gray whales are observed periodically in other coastal areas of the Sea of Okhotsk and Southeastern Kamchatka. The shallow bays on the southern coast of the Korean Peninsula were long thought to be the wintering grounds for whales of the Okhotsk-Korean population (Rice and Wolman, 1971) (hence its name). In recent years, however, it has been suggested that gray whales are sighted off the Korean coast only during migrations, and the whales more likely winter and breed somewhere in the South China Sea, most probably off the coast of Guangdong Province and around Hainan Island (Rice, 1998; Hilton-Taylor, 2000). These wintering grounds and seasonal migration paths have yet to be positively identified.

The coastal areas of northeastern Sakhalin near Piltun, Chayvo and Nyyskiy bays are currently the only known feeding areas of the Okhotsk-Korean gray whale population. Gray whales, in contrast to all other cetaceans, are benthophages feeding primarily (but not exclusively) on benthic (bottom) and epibenthic (near-bottom) invertebrates. The exceptionally high biomass of preferred prey in much of the area (up to 1 kg/m^2 or more – Koblikov, 1986, Fadeev, 2003, 2004, 2005) is apparently the reason for the formation of gray whale feeding aggregations in specific areas near the shores of northeastern Sakhalin. In recent years, whales have been feeding mainly in two limited areas located in close proximity to each other – the Piltun and Offshore areas (Fig. 1 and 2-a**).** Several feeding gray whales have also been observed off Lunskoye Bay in 2003 (Ashchepkov, *pers. comm.*)

Gray whales appear off the northeast coast of Sakhalin in late May to early June, when the area is ice free, and generally remain there until fall. They then begin their fall migration to their wintering grounds in the south. The gray whales leave the Sakhalin area entirely by late November or early December, when the sea starts to freeze again.

The annual feeding routine has evolved in such a way that the gray whales actively feed only during the summer-fall season when they arrive offshore Sakhalin. During the rest of the year, including the breeding season, they survive almost entirely on accumulated energy reserves stored in a layer of subcutaneous blubber. As a result, it is important that normal feeding conditions be maintained in order to preserve the Okhotsk-Korean gray whale population. Recent survey data on Okhotsk-Korean gray whales (Weller et al., 1999, 2000, 2001, 2002, 2003; SC IWC Report, 2002)

indicate that the current reproductive potential of the population is low. To date, 23 breeeding females were identified, and the total number of calves observed in 1997-2004, when regular, active observations were established, was only 47 (Weller et al., 2005), i.e., an average of 5.9 calves per year.

The natural annual mortality rate for the Okhotsk-Korean population has been estimated at 30% for gray whale calves and 5% for whales over 1-year-old (Bradford et al., 2002, 2003). It is possible, however, that many of the calves spend the entire year in regions farther south and may not enter the regular feeding area until they reach sexual maturity. As a result, the mortality estimate may be overstated.

Symptoms of suboptimal physical health have been detected in the whale population in recent years. In 1999, 16 gray whales that appeared to be emaciated were observed in the Piltun Bay area (or 23.2% of the total number of animals 1-year or older that were identified that year). In 2000, this group had increased to 30 individuals (51.7%). However, the number of emaciated whales dropped to 21 (29.2%) in 2001 and to nine and three (11.8 and 4.0%) in 2002 and 2003, respectively. In 2004, the number again rose slightly to five animals (5.4%). Observations showed that some of the whales remained emaciated for several consecutive years. As a result, the actual number of individually identified whales with symptoms of emaciation for the years in question was somewhat lower: 54 (Weller et al., 2005). All of the numbers cited above were obtained through photographic identification of whales in the Piltun area (primarily its central part), and as such, may not be fully representative, especially for the period from 2001 to 2003, when the whales began to concentrate in two feeding areas – Piltun and Offshore – in numbers. As part of our joint program, the more comprehensive Russian Photo-ID studies performed in recent years within the Piltun and Offshore gray whale feeding areas off the Sakhalin coast have identified seven (9.8%) emaciated whales in 2003 and nine (9.6%) in 2004 of all animals over 1-year-old identified during those years (Yakovlev and Tyurneva, 2004, 2005). The two study teams also recorded cows nursing calves among the emaciated animals; however, they were not included in the figures given above, because it was recognized that emaciation is a result of a natural decrease in fat due to increased energy expenditure during the period of intense lactation (Weller et al., 2005). The reasons for the appearance of emaciated whales among the Okhotsk-Korean population remain undetermined, however, the physical condition of quite a number of whales was restored in subsequent years in the Sakhalin area. The California-Bering Sea (Eastern) gray whale population also experienced higher than normal rates of emaciation and mortality in 1999-2000, suggesting that that there may have been a common North Pacific-wide cause for the skinny whale observations (Brownell and Weller 2001).

The elevated sensitivity of the western gray whale population highlights the usefulness of annual monitoring, one of the most important components of which is detailed monitoring of whale distribution and abundance during the key summer-fall feeding period.

1.2. Survey Goals and Objectives

The main objectives of the 2005 distribution surveys were to study and monitor spatial and seasonal distribution of gray whales in the coastal waters of northeastern Sakhalin, which not only serve as practical indicators of the status of the Okhotsk-Korean population itself, but also reflect the condition of its summer-fall feeding habitats.

The area covered by the 2005 surveys included the coastal area of the island's northeast shelf and the offshore license areas for the Sakhalin-1 (Odoptu, Chayvo and Arkutun-Dagi fields) and Sakhalin II projects (Piltun-Astokh field).

Three types of surveys were carried out within the scope of the program in 2005:

- aerial surveys performed from an An-28 aircraft over the Piltun and Offshore feeding areas, as well as in neighboring locations, from mid-September to early November;
- vessel-based surveys from aboard the research vessel *Akademik Lavrentyev*, and later the *Akademik Oparin*, in the Piltun and Offshore areas from mid-July to early October;
- onshore vehicle-based surveys of coastal waters in the Piltun feeding area from the end of June to mid-October.

The primary purpose of the aerial surveys was to obtain data on overall patterns in gray whale distribution in the key feeding areas and environs and the most noticeable changes during the summer-fall season, especially at the end of the season, when other survey methods were not practical for safety and other reasons.

The most important objective of the vessel-based surveys was to perform a more detailed assessment of the relative abundance and distribution of gray whales in the feeding areas during their peak seasonal concentration offshore northeast Sakhalin, which included gathering data on groups composition and whale activity, and a more thorough investigation of the island's coastal waters to identify possible new gray whale feeding areas.

The purpose of onshore vehicle-based surveys was to study patterns and seasonal variations in gray whale distribution in the near-shore Piltun feeding area. The specific goals of these surveys, as during the previous year, were as follows:

- determining the distribution of gray whales in the coastal waters from Ekhabi Bay in the north to Chayvo Bay in the south, and the seasonal dynamics of this distribution;
- identifying spatial-temporal patterns in gray whale distribution during the feeding season and tracking whale movement within the study area (and measuring the impact of new offshore and onshore facilities construction in 2005);
- estimating the number of cows with current-year calves arriving at the Piltun feeding area during the summer, and determining the dates on which the "mother-calf" pairs split and current-year's calves make the transition to independent feeding; and
- estimating the total number of whales in the Piltun area based on the data collected.

Data were also collected during aerial, vessel-based and shore-based surveys on the distribution and abundance of other marine mammal species. These results are also presented in this report.

Only proven, reliable survey methods that are appropriate for the stated objectives and that yield representative results with minimal disturbance to the whales were used in the surveys.

2. METHODS AND MATERIALS

2.1. Study Area and Survey Design

In recent years, gray whales of the Okhotsk-Korean population have concentrated during the feeding season in the shelf waters off northeastern Sakhalin near Piltun, Chayvo and Nyyskiy bays (between 52°20'N and 53°30'N) in two feeding areas located in close proximity to each other. The first of these areas, the traditional area (usually referred to as the "Piltun" or "near-shore" feeding area), is about 50 miles long and is located opposite Piltun Bay, where the whales normally remain in shallow water with depths up to 20-25 m, primarily within 4-5 km from shore (Blokhin et al., 1985; Berzin et al., 1988, 1990, 1991; Vladimirov, 1994; Blokhin, 1996; Sobolevsky, 2000, 2001; Würsig et al., 2000; Weller et al., 2000, 2001; Yazvenko et al., 2002; Blokhin et al., 2002, 2003, 2004; Vladimirov et al., 2005; Meier et al., 2002). The second feeding area, which was discovered in 2001 and is called the "Offshore" feeding area (Blokhin et al., 2002; Maminov and Yakovlev, 2002; Yazvenko et al., 2002; Meier et al., 2002), is located 40-50 km south-southeast of the Piltun area opposite Chayvo and Nyyskiy bays, 25-40 km offshore in waters 35-60 m deep (Fig. 1 and 2-a).

The Piltun feeding area has special importance for the gray whales of the Okhotsk-Korean population, since this is the only known location where cows are observed weaning their young-of-the-year calves and teaching them foraging skills before the transition to independent life. The important role of this area coupled with the nearby location of the planned and existing onshore and offshore facilities of the Sakhalin-1 and Sakhalin II oil production complexes (Fig. 1) highlight the need for regular monitoring. The gray whales in the Piltun area remain close to the shore, making it possible in good weather to observe the majority of the individual whales from coastal observation vantage points. The use of vehicles to transport the observers along the coastline allows repeated surveys of the same area, facilitating the collection of detailed information on gray whale distribution patterns for subsequent analysis.

Gray whales feed in the Offshore area at greater water depths and distance farther from shore than in the Piltun area, and no cows with calves have been observed there. This is probably attributable to the fact that the calves are not yet able to dive to such depths and learn to forage there. It might also be due to the fact that young gray whales have less protection from killer whale attacks than in the shallower Piltun area. Benthos studies performed under the program in 2002-2004 (Fadeev, 2003, 2004, 2005) showed that prey supplies available to the whales in the Offshore area

are sufficient to support normal feeding of gray whales, and that the number of gray whales feeding in the Offshore area in 2002-2003 was similar to the Piltun area (Blokhin et al., 2003, 2004). However, the distance of the Offshore area from shore (over 25 km) makes it impossible to perform surveys from shore, consequently aircraft (airplanes or helicopters) or vessels must be used for surveys in this area.

Therefore, all whale survey methods were used to some degree during the 2005 surveys in order to acquire more comprehensive and detailed information on the distribution of the gray whales in their feeding range off the Sakhalin coast. Aerial surveys were performed in intervals of about two weeks from mid-September to early November in order to obtain an overall picture of gray whale distribution throughout their feeding area during the fall months; vessel-based surveys were conducted from mid-July to the first few days in October to gather more detailed data on the abundance and distribution of the animals in the Piltun area (once a month) and, in particular, the Offshore area (twice a month) during the period of the highest concentration of gray whales in Sakhalin waters; and onshore surveys were performed regularly from late June to mid-October to obtain detailed information on whale distribution in the Piltun area throughout the summer-fall season. This approach yielded comprehensive and reliable information on the nature and features of the distribution of the gray whales in their known summer-fall feeding range.

Issues concerning the methods and organization of the surveys are covered in greater detail in the following sections.

2.1.1. Aerial Surveys

2.1.1.1. Study Area

Aerial surveys were performed in 2005 in both known gray whale feeding areas of northeastern Sakhalin – the Piltun area and the Offshore area – based on an intensive grid of spatially fixed transects used to obtain more detailed information on whale distribution patterns in their summer-fall habitats. The grid of primary aerial survey transects in both areas has been developed in 2001 (Yazvenko et al. 2002).

The survey transect grid in the Piltun feeding area covered the near-shore adjacent to Piltun Bay (Fig. 2-a). Flights were conducted over four survey transects, each 88 km long, located 2 km apart along the shoreline (the nearest to shore was 1 km from the shoreline, and the farthest was 7 km from the shoreline). In addition to the scheduled surveys, which included all four transects, additional surveys were conducted over transects 1 and 2 in flights back and forth between the aircraft refueling station at Okha and the Offshore feeding area. Each transect was divided into five large sectors, numbered from south to north. For more detailed analysis of the spatial distribution of whales in the Piltun area, the area was further divided into 44 latitudinal mini-sections (Fig. 2-b). The total area covered by the Piltun aerial surveys was about 700 km^2.

The survey transect grid in the Offshore area developed in 2001 (Yazvenko et al. 2002) covered the entire gray whale feeding area. The 11 aerial survey transects, each 70 km long, were

laid out at intervals of 3 km in this area (Fig. 2-a). The total area covered by overflights, using the maximum transect grid (beginning in September), was approximately 2300 km^2 in the Offshore area.

2.1.1.2. Organization of Surveys and Survey Records

Since 2001, a twin-engine turbo Antonov-28 (An-28) from Vostok Aviation (Khabarovsk) was used for the aerial surveys. This year, the aircraft was unavailable until September due to the initial failure of the aircraft to meet ENL safety criteria. This aircraft is best suited for performing marine mammal surveys in the shelf areas of northeastern Sakhalin because of its speed (180-200 km/h) and range on a single fueling (up to 800 km) and safe operation. During the first overflight (17-19 September), the aircraft was based at the Nogliki airport. All other flights originated from the Okha airport. The plane was equipped with a radar altimeter and a Garmin III GPS satellite navigation system, into which coordinates of the survey transects in both study areas were programmed to allow the crew to obtain bearings independently and fly over the designated route at the specified altitude.

The scientific team also had a Garmin 12XL personal GPS navigator, which automatically recorded aircraft position and exact time every 30 seconds and stored up to 500 geographic positions in memory. All survey personnel were also equipped with digital watches that were accurate to the second and synchronized with the chronometer of the GPS navigation system before each flight. Suunto PM 5/360 PC clinometers were used to determine the perpendicular vertical angles between the aircraft and the whales and other sighted targets, which is necessary for subsequent calculation of the distances between the aircraft and the targets. They were also used to monitor positioning accuracy for the outer boundary of the survey zone. All observers carried portable voice recorders to record information during the surveys.

One of the key requirements for effective aerial surveys is that they have to be conducted in good weather. This is primarily because the presence of whitecaps on the sea surface, has a substantial negative impact on survey results. In some cases, however, the weather deteriorated during a flight or changed from one section of the area to another, and therefore it was occasionally necessary to continue a survey begun previously even when slight whitecaps were present. Data on hydrometeorological conditions during the flights were recorded in the survey records.

In some cases, under good weather conditions, gray whales can be sighted at considerable distances from the aircraft, outside the 30% viewing declination angle selected as the outer boundary of the survey strip. The construction of the aircraft caused the occurrence of the “blind strip” beneath the survey aircraft on either side of the transect centerline. The probability of detecting and recording a whale in this blind strip was found to be lower than the remaining part of the survey line beyond this strip. The width of the blind strip was dependent on the altitude above sea level (ASL) of the aerial survey aircraft. When the aircraft was positioned at 300 m (~1000’) ASL (all surveys of the Piltun survey grid), the blind strip was 400 m (200 m on each side of the aircraft). In the Offshore area was always surveyed at 500 m ASL; therefore, the blind strip there

extended ~400 m on each side (Figure 3).

In the quantitative analysis discussed in the main body of this report, only the data on animals recorded within the survey transects and outside of the blind strip (i.e., within clinometer readings of 30-110%) were used. In flights at an altitude of 300 m, this corresponded to a survey zone of 730 m on each side (from 270 m to 1 km from the transect line), while at an altitude of 500 m, the transect width is 1200 m (from 450 to 1650 m from the transect line – Fig. 3). Data on sightings of all animals in an observation area of 10-140%, as well as the instances of sightings by aircraft crew members, who sometimes noticed animals outside the field of vision of the observers (under the aircraft), were used to characterize whale distributions in the Piltun and Offshore areas.

During aerial surveys, the flight speed was kept as close as possible to 200 km/h, although it occasionally varied from 180 to 220-230 km/h from one transect to another, depending upon wind speed and direction. In good weather, at these speeds, the observers were able to see the whales for 15-20 seconds after sighting them in viewing sectors in front of the aircraft.

The scientific team taking part in the flights included two survey observers (one on each side) and one data-logging specialist, who worked with the personal GPS navigator to record the coordinates of whale sightings and turning points of the transects. The survey observers during the 2005 aerial surveys were experts who had participated in whale surveys for several years: S. A. Blokhin (who took part in all surveys), N. V. Doroshenko (present during the first two surveys), and M. K. Maminov (present during the third and fourth surveys). The data recorder was I. P. Marchenko. Scientific team members and the aircraft crew communicated using a stationary intercom system. The observers' seats were at the front windows in the nose of the aircraft cabin, which provided them with unobstructed visual observation within a range of 10-110% (Fig. 3). The survey observers used their voice recorders to keep an ongoing record of whale sightings and weather conditions (cloud conditions, wind direction and speed, air temperature, fog, visibility, wave conditions, sun glare on the sea surface, whitecaps, etc.).

The survey personnel observed the sea continuously during the flights, paying close attention to identifying whales within the main survey zone (at 30-110% declination angles on each side of the aircraft), but not ignoring animals outside the zone. When a whale came into view, the survey observer would report the sighting to the data logger via the intercom, who would record the location on the GPS navigator at the moment the animal was abreast of the aircraft, enter its number on a card, and simultaneously pass the number to the observer who sighted the whale via the communication system. When gray whales or groups were sighted, the presence or absence of characteristic mud plumes indicating their feeding on benthic organisms, the spatial orientation of the whales, indicating their direction of movement, the nature of the animals' activity and other details were recorded, in addition to the number of animals present. The vertical angle to each whale or groups was measured (as a percentage) using a clinometer when the whales were abreast of the airplane (the altitude of which was also recorded).

Sightings of mud plumes from benthos feeding were recorded regardless of whether a whale was actually sighted near the plume. The location of each mud plume was determined with the GPS

navigation system, and the vertical angle to the plume was determined with a clinometer in a manner similar to the procedure used for whale sightings. Since the airplane covers more than 3 km per minute, and the gray whales in the Piltun feeding area stay under water for an average of more than 2 minutes in the shallow Piltun feeding area (Gailey et al., 2004) and up to 6 minutes in a deeper Offshore area (Maminov, unpublished data), aerial observers fail to see some of the whales present in the survey, and mud plumes from benthos feeding, which stay visible for a few minutes, are useful indicators of the presence of one or several gray whales, even if the whales themselves are not sighted as the aircraft flies over the location.

All information recorded during a survey was transferred from the voice recorders to special cards and to a computer using MS Excel at the end of the flight. Coordinate data from the GPS navigator was also transferred to a computer using Waypoint+ software.

2.1.1.3. Calculating Whale Coordinates

The angle to a whale sighting location was measured as a percentage using a clinometer, and this percentage was then converted to degrees and radians. The distance to the whale was determined by the formula $L = flight\ altitude\ /\ tan\ (viewing\ angle)$. The latitude of the aircraft when the animal was perpendicular to the aircraft was assumed to be the same as the latitude of the whale in determining the coordinates of the whales sighted. The longitude of the point at which an animal was sighted was determined according to the following formula provided by LGL Limited (Sidney, British Columbia, Canada):

Longitude = longitude of aircraft position + Acos ([Cos (distance ÷ (1852 × 60)) – Sin (longitude of aircraft position) × Sin (longitude of whale sighting point)] ÷ [Cos (longitude of aircraft position) × Cos (longitude of whale sighting point)]).

2.1.1.4. Data Analysis and Mapping

MS Excel was used for statistical processing of the data. Gray whale distribution charts based on aerial survey data were plotted for both feeding areas and for each series of surveys using Surfer 8.0 software.

2.1.1.5. Minimizing the Impact of Aerial Surveys on Whales

During the surveys, the aircraft never descended below 300 m over the sea, since this flight altitude, as demonstrated by many years' experience in aerial marine-mammal surveys carried out in Far East seas by Russian experts (mainly from TINRO-Center) in the 1970s and 1980s, has no noticeable impact on whale behavior, while allowing reliable observation of the whales.

2.1.2. VESSEL-BASED SURVEYS

2.1.2.1 Study Area

The 2005 vessel-based survey of gray whales in the Piltun area was conducted along a transect running along-shore out to 2.5-3 km from the Sakhalin coast and approximately coinciding with the 20-meter isobath. The surveys in the near-shore area were bounded by 52°30'N latitude in the south and 53°30'N in the north, and the length of the survey transect was about 100 km. For more detailed analysis of the spatial distribution of the gray whales, the route was divided into six equal sections at ten-minute latitudinal intervals, numbered from south to north (Fig. 4). The width of the vessel survey zone in normal visibility (which is a mandatory requirement for conducting the surveys) stretched to the shore on the island side and 4-5 km out to the open sea, which made it possible to observe an area of up to 800 km^2 in the Piltun area during each survey.

The vessel-based survey in the Offshore area was conducted along 9 transects at intervals of 6.5 km oriented from east to west in an area bounded by latitudes 51°54' - 51°57' and 52°25'N latitude in the north and south and longitudes of 143°30' and 143°45' - 143°50'E longitude on the east and west, respectively (Fig. 4). The total Offshore area covered in each survey (when all nine transects were surveyed) was 1600-1800 km^2.

2.1.2.2. Survey Organization and Protocols

Vessel-based gray whale surveys off the northeast coast of Sakhalin Island in 2005 were first performed from the research vessel *Akademik Lavrentyev* (from 12 July to 5 August) and later from the research vessel *Akademik Oparin*, from 6 August to 7 October (including the return voyage to Vladivostok).

Throughout the field study period, observers with appropriate experience (M. K. Maminov and E. P. Shvetsov) performed daily opportunistic observations of marine mammals from the bridge, weather permitting. The observations were conducted concurrently on both sides of the vessel throughout the daylight hours. The elevation of the observation point was 10 m above sea level. For remote observation of marine mammals, determining their species, evaluating their behavior and estimating their individual sizes, the survey observers used Fujinon 7x50 FMTRC-SX 7°30' angle of view reticule binoculars. Members of other scientific teams and the vessel crews also participated in the opportunistic observations to the extent they were able.

Surveys in both feeding areas were performed at a vessel speed of 10-11 knots. The ship's GPS system and the Furuno marine radar system were used to determine the exact position of the vessel during the surveys, and the ship's gyrocompass was used to determine heading. The direction to the animals relative to the vessel was determined clock-wise, with 12 o'clock corresponding to the heading of the vessel. The distance to the animals sighted was determined when whales were abreast of the vessel. Whale surveys were conducted only in conditions of good

visibility (at least 6-8 km) and calm seas (sea state rated at no more than 3 on the Beaufort Sea scale).

Since the distance to whales was determined by sight in the process of vessel-based surveys, the observers undertook regular training in visual determination of distance. There was an opportunity for such practice every time the Zodiac inflatable powerboat was launched for Photo-ID or other work, because it can be seen from long distances, and the distance and direction to the boat could be determined precisely with the ship's radar. In the process, each observer would estimate the distance and direction to the Zodiac several times as it moved in relation to the ship and check their figures against radar readings and measurements with the reticule binoculars. In this way, the required precision in data obtained visually in regard to the positions of the marine mammals sighted was maintained throughout the observation period.

To obtain the most representative data possible on gray whale distribution and abundance in the waters of northeastern Sakhalin, the procedure for vessel-based surveys calls for conducting surveys in the Piltun and Offshore areas with the smallest possible interval between them – within two consecutive days. This makes it possible to minimize the probability of duplicate counting or undercounting of whales as they move from one feeding area to another during the interval and, therefore, improves the reliability of the survey results.

Since the overall program supported by the vessel includes still and video photography of gray whales for identification purposes, hydrobiological (prey/benthic), oceanographic, and acoustic studies, in addition to the distribution surveys, opportunistic gray whale surveys in a number of cases were performed concurrently with other studies. Due to some inevitable deviations from standard survey protocols in this process, the data of such secondary observations were considered only as a non-quantitative ancillary source of information on the gray whales; these data were not used in analysis of their overall distribution or abundance.

Information on the date and time of sightings of animals, their species, the numbers of animals in groups, the distance from the vessel, the position and heading of the vessel, and the weather and visibility was recorded immediately on a special record card and was entered in a computer database at the end of each working day.

2.1.2.3. Calculating Whale Coordinates

The coordinates of whales sighted during vessel-based surveys were calculated using an analytical formula (Yermolayev and Zoteyev, 1988). Minor adjustments were made to the formula, after which it assumed the following form:

$$\varphi_2 = \varphi_1 + \cos K \times S/(1853 \times 60)$$
$$\lambda_2 = \lambda_1 + \sin K \times \sec \varphi_{av} \times S/(1853 \times 60)$$

where φ_2 and λ_2 – latitude and longitude coordinates, respectively, of the animal's position (in decimal degrees);

φ_1 and λ – latitude and longitude coordinates, respectively, of the ship (in decimal degrees);

K – bearing to the animal (in degrees);

S – distance to the animals (in meters);

φ_a – average latitude, computed by the formula:

$$\varphi_{av} = \frac{\varphi_1 + \varphi_2}{2}$$

2.1.2.4. Data Analysis and Mapping

Statistical analysis of the data acquired in the course of the vessel-based survey program was performed with MS Excel 2002, and gray whale distribution charts were plotted with ArcView 3.2 and Surfer 8.0.

2.1.2.5. Minimizing the Impact of Vessel-Based Surveys on Whales

Since ensuring the reliability of vessel-based survey results inevitably requires some vessel encroachment into gray whale concentration areas, detailed special instructions governing survey procedures have been developed based on the standard IWC protocol (listed in Vladimirov, 2005). Compliance with the instructions by the vessel captains and the members of the scientific teams minimizes disturbance to the gray whale population during survey and other studies.

2.1.3. ONSHORE SURVEYS

2.1.3.1. Coastal Features and Locations of Survey Stations

The coastline adjoining the near-shore gray whale feeding area, which stretches approximately from the mouth of Ekhabi Bay in the north to the mouth of Chayvo Bay in the south (i.e., approximately 120 km along the Sakhalin Coast), is divided by a channel connecting Piltun Bay to the sea, which is a water obstacle impassable by vehicles. Therefore, the survey area was divided into the Odoptu-Piltun (north) section, covering north of the mouth of Piltun Bay, and the Astokh-Chayvo (south) section, covering south of the mouth of Piltun Bay (Fig. 5). Onshore route surveys were carried out by two survey teams, one of which (the north team) performed surveys in the Odoptu-Piltun section, while the other (the south team) was responsible for the Astokh-Chayvo section.

The surveys (both north and south) were performed from the same 13 permanent survey stations that had been set up and spatially fixed in the same two sections during 2003-2004. The stations were located in elevated areas of the coast and spaced about 8-10 km apart (Table 1, Fig. 5) to reduce the likelihood of double counting of the same whales in adjacent sectors of the neighboring observation zones. The distances between survey stations was not always the same,

since their locations were selected according to the terrain (the highest points above sea level on shore with the best view of the sea were chosen). Stations were renamed in 2005, when the stations were given sequential numbers from 1 to 13 (previous and new station numbers are indicated in Table 1). Table 1 also provides geographic coordinates and other characteristics for all the survey stations. Unfortunately, Station 24, used for the 2004 surveys, was destroyed after the end of that study season by powerful fall storms, and a new survey station (No. 13) that satisfies all requirements was selected about 1 km farther south to replace it in 2005. Its point coordinates and elevation were determined by the behavioral study team, who have the necessary geodetic equipment (a theodolite). Another two survey stations (14 and 15) were established at the south edge of the area, although no observations were performed from these stations in 2005, as in the previous year. No observations were performed from these stations because no gray whales have yet been seen in the southernmost part of the area and no good condition roads south of Station 13, which hinders vehicle access to these observation stations.

2.1.3.2. Survey Organization and Protocols

Onshore vehicle-based surveys of gray whales (and other marine mammals) were performed by two survey teams – north and south – on coordinated routes run concurrently. The north survey team included S. P. Starodymov, I. P. Marchenko and S. O. Kuchin, and the south team included A. V. Vladimirov (who also supervised the field studies by both teams within the scope of the onshore survey program), N. V. Doroshenko and D. S. Samarin. V. A. Vladimirov also participated in the onshore surveys during the period from 18 September to 12 October.

Owing to the poor condition of the unimproved roads in the study area (and sometimes the actual lack of such roads), all-terrain vehicles were used to perform the route surveys: a Ural truck in the Odoptu-Piltun section, and a 4WD Toyota HiLux Surf in the Astokh-Chayvo section. The use of these vehicles made it possible for the teams to move promptly along the shore from one survey station to another, thus minimizing the time interval between surveys from adjacent stations.

The whale surveys were organized as follows:

- The two teams were assembled in the morning and began the survey if the weather was good. The north group, based in a Sakhalinmorneftegaz housing unit between Odoptu and Piltun bays (Fig. 5), started the survey from the northernmost survey station (station No. 1) and moved south. The survey route in the north section was about 70 km long, and covering all eight survey stations took about 7 hours. The team spent the night in a temporary portacabin near the mouth of Piltun Bay (survey station No. 8) and repeated the survey from south to north, from survey station No. 8 to station No. 1, the next day.
- The south group was permanently based in a stationary portacabin located between survey stations 10 and 11 (Fig. 5), at the base of the Astokh Bar. It took the team about 5 hours to perform a complete survey on the route from survey station No. 9 to station No. 13.

However, the total time required for a complete survey in the Astokh-Chayvo section also was at least 7 hours, since it took the south team about an hour to get from their base to the starting point of the route and the same amount of time at the end of the survey to get back from the end point. Hence the actual length of the route for the south team (for a complete survey) was about 90 km in a day.

The survey direction for the south team was matched with the activities of the north team allowing the two teams to conduct synchronized surveys at the neighboring survey stations near the mouth of Piltun Bay (stations 8 and 9). Therefore, if the north team conducted a survey from station 1 to station 8, the south team conducted a survey moving in the opposite direction, from station 13 to station 9, and the teams finished the surveys in precise synchronization (with the aid of a satellite telephone) by matching the exact time of the start of counting at station 8 and station 9. In similar fashion, if the north team started a survey from station 8 in the morning, the south team started its survey from station 9, and the exact time for the start of the surveys by the two teams was synchronized. This allowed survey duplication of an area near the mouth of Piltun Bay and cross-calibration to improve the confidence in the accuracy of the survey data.

The whale surveys were conducted according to the procedures similar to the behavioral observation team. The basic principle of the procedure is regular, continuous inspection of near-shore water with subsequent statistical processing of the data to calculate the distribution density of the whales in individual areas and estimate whale numbers on that basis. The surveys were performed during daylight hours, when visibility at sea was at least 2 km. Fujinon 7x50 binoculars provided by LGL Limited, with a 7°30' field of view, a built-in compass and a range finder reticule, were used for the surveys. All study participants possessed the necessary skills for working with these binoculars and performing ongoing computer processing of the raw data thus acquired.

All the surveys were performed according to the following consistent protocol:

- observations were conducted from fixed survey stations located along the route, the exact elevations and coordinates of which were known;
- the direction for viewing the water area (scanning) matched the direction of movement along the route, thereby minimizing the interval between scans of adjacent sectors of the survey zones;
- all team members participated in the surveys – two continuously scanned the water area through binoculars, while the third recorded whale sightings;
- scanning was performed from a standing position, using a stabilizing pole for the binoculars, at a constant rate of 10° per minute;
- all cetaceans sighted, as well as all vessels, were recorded.
- the distances and bearings to the whales sighted and other targets were determined according to readings of the built-in compass and range finder reticle scale of the binoculars;

- when whales were sighted, the precise time of the sighting, the species, the number of animals in the groups, the heading, the distance, the direction of movement of the animals, behaviors, cow-calf pairs, and the observer's initials were recorded on a special form;
- hydrometeorological conditions and the starting and ending times of the scanning were also entered in the record; and
- details not included in the record columns were entered as notes.

Surveys were not performed or were terminated under the following conditions:

- sea state rated 4 or higher on the Beaufort Sea scale;
- wind speed of 10 m/sec or higher;
- heavy precipitation (rain, hail, snow);
- fog; and
- other hydrometeorological conditions or combinations of conditions that interfered with visibility and prevented observation of whales more than 2 km from the survey station.

One important feature of the near-shore area is the shallower water south of Piltun Bay, producing waves in the near-shore zone that are higher in the south part of the area than in the north at the same wind speed. Therefore, the south team often had to stop working due to weather conditions, while the north team continued its normal survey work.

Upon completion of each survey, all data recorded on the record forms regarding the number of whales sighted, their positions, hydrometeorological conditions and other details were transferred to computer (in MS Excel electronic worksheets) on the evening of that same day. The survey data were sent to the companies on a daily basis to keep them apprised of the distribution of gray whales in the Piltun area.

Methods and organization of the onshore vehicle-based gray whale surveys are described in greater detail in the report on gray whale distribution in Sakhalin waters for 2004 (Vladimirov et al., 2005).

2.1.3.3. Calculating Whale Coordinates and Distances from Shore

During the surveys, the distance to the whales was determined from the range finder (reticle) scale of the binoculars, and the bearing was selected from the built-in compass. When a whale or spout was sighted with the binoculars, divisions on the reticle scale were counted from the horizon to the whale or the base of the spout. The data were entered into the computer, where the number of divisions was converted to distance. In 2005, as in 2004, the distance was determined by the following formula (Lerczak and Hobbs, 1998):

$$\alpha = \operatorname{arctan}\left(\sqrt{2hR_E + h^2}/R_E\right) \cong \sqrt{2hR_E + h^2}/R_E$$

$$\beta = \frac{\pi}{2} - \alpha - \theta$$

$$H = \alpha R_E \cong \sqrt{2hR_E}$$

$$D_0 = (R_E + h)\cos(\mathrm{U}\beta\mathrm{W}) - \sqrt{(R_E + h)^2\cos(\beta)^2 - (2hR_E + h^2)}$$

$$\delta = \arcsin\left(\sin(\beta)\frac{D_0}{R_E}\right) \cong \sin(\beta)\frac{D_0}{R_E}$$

$$D = \delta R_E \cong \sqrt{D_0^2 - h^2}.$$

where: α is the angle between a horizontal line (90°) and the horizon;

β is the angle between the survey station and the target;

δ is the arc between the survey station and the target;

θ is the angle between the horizon and the target;

h is the elevation of the survey station;

R_E is the radius of the Earth $\left(6.371\times10^6\ \mathrm{m}\right)$;

D_0 is the straight-line distance to the target;

D is the distance between the survey station and the target on the Earth's surface.

A correction for sea level depending on the high or low tidal phase was included in the calculations. Then, given the distance to the whales or groups and the bearing to the animals from a survey station with known coordinates and elevation, the exact coordinates of the animals were calculated using the appropriate formulas (this stage of the calculations is discussed in greater detail in the report for the 2004 field season– Vladimirov et al., 2005).

The methods for the onshore vehicle-based gray whale survey for Sakhalin (with regard to statistical analysis of the survey data) are still being refined, However the current procedure provides representative characteristics of the distribution and abundance of gray whales in the near-shore Piltun area.

2.1.3.4. Data Analysis and Mapping

The data obtained in 2005 in the course of the onshore vehicle-based survey program in northeastern Sakhalin was processed primarily with MS Excel. All the charts were plotted with ArcView GIS.

2.1.3.5. Minimizing the Impact of Onshore Surveys on Whales

Since there is no known direct or indirect impact on the Western gray whale population during the process of visual surveys from shore, no special measures were taken to regulate the survey work to minimize the effect of the surveys on the animals.

2.2. SURVEY COVERAGE AND DATA ACQUISITION

2.2.1 AERIAL SURVEYS

Aerial surveys were conducted in both gray whale feeding areas off the Sakhalin coast (Piltun and Offshore feeding areas) in 2005, from mid-September to the beginning of November. A total of four surveys were performed during this period, and a total of 61 hours 56 minutes was acquired (including flights back and forth between Khabarovsk and Sakhalin), of which 41 hours 18 minutes was spent directly on the surveys (Table 2). A total of 155 gray whales were identified during the survey period, of which 151 whales were recorded on the survey transects in the Piltun and Offshore feeding areas (Tables 3 and 4) and four outside the transects.

A total of 111 individual gray whales sightings occurred in the Piltun feeding area during the survey period, of which 100 animals were recorded on the survey transects and 11 animals outside them (Table 3).

In the Offshore feeding area, 40 gray whales were recorded during the aerial surveys, of which 34 animals were recorded on the survey transects and six outside them (Table 4).

Information on all gray whales and other cetaceans recorded off northeastern Sakhalin in 2005 during surveys is presented in the respective sections of this report and in Appendix 1.

2.2.2. VESSEL-BASED SURVEYS

In accordance with the program design, six full-scale vessel-based gray whale surveys were conducted during the survey period off northeastern Sakhalin (from 13 July to 2 October, 2005) in the Piltun and Offshore areas (Table 5) with inspection of both areas within two consecutive days (unfortunately, one of the surveys, during the early days of October, did not cover the entire survey transects). In addition, about 40 opportunistic surveys were performed in the Piltun area for locations making up 15 to 100% of a standard transect (Table 6). Owing to the number of surveys, it was possible to record seasonal changes in gray whale distribution and abundance in considerable detail. The area north of the Piltun area as far as 54°17' north latitude, including the northeastern part of Sakhalin Bay (Severny [North] Bay), were also covered opportunistically during the study period.

A total of 1384 sightings of individual gray whales and groups were recorded during dedicated and opportunistic vessel-based surveys, with a total of 1886 animals, including 1321 sightings (1798 whales) in the Piltun area (together with whales off Schmidt Peninsula) and 63 sightings (88 animals) in the Offshore area.

Information on gray whales and other marine mammals recorded off northeastern Sakhalin in 2005 during the vessel-based survey period is given in the following sections of the report and in Appendix 2.

2.2.3. ONSHORE SURVEYS

During the period of shore-based vehicle surveys (from 25 June to 16 October), 49 complete surveys were performed in the north part of the Piltun feeding area (in the Odoptu-Piltun section), and 47 surveys were performed in the south part (in the Astokh-Chayvo section) (Table 7). Of these surveys, 39 were synchronized, i.e., began or ended simultaneously at the adjacent survey stations 8 and 9 at the mouth of Piltun Bay. In addition, 17 incomplete surveys were performed, when the survey could not be completed from all stations for various reasons (most often due to deteriorating weather). The total time spent directly on the surveys in 2005 was 201 hours 29 minutes (Table 7).

A total of 3892 sightings of gray whale pods, numbering 4527 animals, were recorded in the Piltun area during the onshore surveys (Table 8, Appendix 3).

In addition to the gray whales, other cetacean and pinniped species were observed during the surveys in the coastal waters of Sakhalin; information on these species is presented in the applicable section of this report and in Appendix 3.

Data on weather conditions in the 2005 onshore survey area are given in Appendix 4.

3. SURVEY RESULTS

3.1. DISTRIBUTION AND ABUNDANCE OF GRAY WHALES

3.1.1. PILTUN AREA

3.1.1.1. Aerial Surveys

Aerial surveys performed during the fall months of 2005 indicated that gray whales are constantly present in the Piltun feeding area during this period, although the number of whales varies (Table 3, Fig. 6). Weather conditions did not allow full coverage of the Piltun area on 17 September, nevertheless, 17 whales were counted there. In all three surveys during the first 10 days of October, 20-22 gray whales were recorded in the Piltun area (Table 3). Aerial surveys conducted on 20-24 October indicated that the number of whales in the Piltun area had decreased (only two to five animals were observed). The number of whales in the Piltun area remained at the same low level at the beginning of November and at the end of October (four animals were recorded during each of the surveys on 2 and 9 November, and 22 October).

Analysis of the aerial survey data also indicated that the distribution of gray whales in the Piltun area during the period covered by the surveys was rather variable. It is difficult to evaluate the distribution of the animals in September with confidence due to the fact that the northern edge of the near-shore area could not be observed during that month; nevertheless, it appears that most of the whales remained in the northern part of the Piltun area during this period (Fig. 6-a). Animals were recorded more frequently in the central part of the Piltun area beginning in early October (Fig. 6-b). A number of whale sightings were recorded in the southern half of the area began in late October and early November (Fig. 6-c, d), although the number of sightings in general at this time (4-5 animals) was low.

A decrease in gray whale sightings north of Piltun Bay in late October and a relative increase in the frequency of sightings south of Piltun Bay during the same period suggest the start of active southward migration of the animals toward their wintering grounds.

The majority of gray whales were recorded during October aerial surveys in 2005, as in 2003-2004, within a 4 km near-shore zone of the Piltun area (Fig. 7), and most of them remained no more than 3 km from shore (Fig. 8).

3.1.1.2. Vessel-Based Surveys

The highest number of gray whales in the Piltun area during the vessel-based surveys in 2005 was 67 in August and 69 in September). The number may have remained high during the first days of October, because 53 animals were observed in an abbreviated opportunistic survey of 50% of the area on 1 October (Table 6). The number of whales recorded on 1 September (72 animals) was not regarded as an index of the whale population in the Piltun area, since some deviations from the standard vessel-based survey protocol occurred that day and may have resulted in repeated counting of the same animals (a double count). The lower figure for the number of whales in a complete survey on 17 August (42 animals) also did not fully reflect the true number of whales, since the survey was performed in the presence of waves at level 3-4 on the Beaufort sea scale and limited visibility in some areas due to fog. The stable number of gray whales observed in the Piltun area in August-September (Table 6) suggests that the arrival of whales from their wintering grounds was completed in August. Overall, the average and peak numbers of gray whales in the Piltun area in 2005 increased by 16% and 10%, respectively, compared to 2004, and the rising trend for this aggregation observed since 2002 was preserved (Fig. 9).

The high frequency of vessel-based surveys in the Piltun area in 2005 provided information on seasonal variations in whale distribution and abundance (Table 6, Figs. 10 and 11). More than half of the whales identified in this area (53.2%) in July were concentrated in the central part of the area, near the mouth of Piltun Bay. By the end of the month, however, the animals had moved from this location (mainly from the third sector) into the northern third of the area, where nearly half (18) of the whales observed in the Piltun area were concentrated as of 29 July.

In August the gray whales formed congregations (14-20 animals) in different locations of the Piltun area along the Piltun and Astokh bars. The overall distribution of the animals in the area, based

on data from vessel-based surveys, was uniform that month, although large aggregations of whales were observed more often in the northern part of the area (sector 5), and the section bounded by latitudes 53°16' and 53°18' NL was the nucleus of the congregation.

More than 60% of the gray whales remaining in the Piltun area in September were already concentrated in the northern third of the area (sectors 5 and 6), and few whales were observed in the southern half of the area by this time.

Over the course of the 2005 observation period, gray whales were sighted everywhere in the near-shore shallow water from 52°28'N to 53°33'N, although their distribution was uneven. There were few whales in the southernmost part of the area, in sector 1 (Table 6, Fig. 11). About 70% of the whales present in the Piltun area were concentrated adjacent to Piltun Bar (sectors 3-5), which make up half of the feeding area. The numbers of animals recorded in different parts of the area (sectors) changed from month to month and from survey to survey, with the changes sometimes by a factor as high as 4 (Fig. 11). In spite of these short-term localized fluctuations, seasonal trends in the overall distribution of whales in the Piltun area were evident.

The majority of gray whales remained within the 20-meter isobath. However, 15.5% of the whales were recorded in deeper water, sometimes as far as 7 km from shore, where they also fed actively. Whales were sighted most often outside the 20-meter isobath in the northern third of the Piltun area (Table 9). In the areas with the highest concentrations of the animals (sectors 3 and 5), the frequency of whale sightings at depths greater than 20 m had different seasonal dynamics: in the north, in sector 5, the frequency of sightings decreased from 29% in July to 17% in September, while near Piltun Bay, in sector 3, it increased from 7.1% to 15.3%, respectively (Table 9).

3.1.1.3. Onshore Surveys

In addition to confirming the general patterns in the distribution of the animals identified in aerial and vessel-based survey work, the onshore surveys, conducted from the end of June through to mid-October, also provided more detail on the seasonal dynamics and patterns.

Variations in the Spatial Distribution of Whales

The results of onshore surveys performed in the Piltun area in 2005 are summarized in Table 8. Only data from complete surveys performed concurrently in the Odoptu-Piltun and Astokh-Chayvo sections were used to determine the overall distribution and abundance of gray whales over the entire area. Results of incomplete (partial) surveys covering individual sections of the Piltun area were used as supplementary data to clarify specific features of whale distribution during the season and in many cases were useful in filling in gaps in data for periods when complete surveys could not be performed.

The overall distribution of gray whales in the Piltun area in June-October 2005 acquired from onshore survey data is shown in Figure 12 (only complete surveys performed concurrently for the entire survey area were used in plotting this and other distribution charts that cover the near-

shore area). This generalized chart, which includes all gray whale sightings throughout the observation period, provides a sufficiently comprehensive representation of the boundaries of the overall summer-fall feeding range of the Okhotsk-Korean gray whale population in the Piltun area, the nature of the distribution of animals during the season in the area as a whole, and the intensity of the whales' use of particular sections of the area. As in 2004, the largest and most extensive congregation of animals was observed in the northern part of the area, while a second, somewhat smaller congregation was observed adjacent to the mouth of Piltun Bay. The most substantial difference from the previous year in the overall distribution of gray whales was the presence of whales almost throughout the season at the extreme southern edge of the feeding area, opposite the northern part of Chayvo Bay, where whale sightings were much less frequent in 2004 and primarily in October (Fig. 1).

To better understand the temporal boundaries of the seasonal-spatial dynamics of whale distribution (such as the conclusion of migration north and initiation of the migration south) a more detailed statistical analysis was performed on the vehicle-based survey data. The use of a standard correlation approach is appropriate given that the data from complete surveys performed repeatedly over a period of several months represent comparable data sets that can be compared throughout the season to provide insight into the dates of changes in the distribution. To perform correlation analysis, the Piltun feeding area (from 52.3°N to 53.5°N) was divided into six equal latitudinal segments of 0.2 degree of latitude (~ 22 km), in which the numbers of animals recorded was summed. Surveys from two different days were compared by pairing the number of sightings at the same station for two different surveys and then treating the 13 pairings that resulted from the comparison of two surveys as sets of coordinates suitable for correlation analysis. To understand the overall variations in whale distribution patterns in the area, some generalization of the data to identify the optimum size of spatial blocks for subsequent correlation analysis was required. The selection of segment size was designed to be large enough so that minor variations in the locations of whales do not mask general trends in whale distribution dynamics, but small enough to detect any useful qualitative variation in the distribution of the animals. A correlation table was calculated for days in which a complete survey was performed for the entire Piltun area, i.e., corresponding data were available for all the survey stations, and this table is shown in Table 10-a. The correlation factors in each cell reflect the degree of similarity of the distribution of whales on the day in question to the distribution on any other given day. High correlation factors (from 0.8 to 1.0) are shown in dark blue, lesser correlations (0.6 to 0.7) are shown in light blue, and the lowest correlation values (0.5 and below) are shown in white. Negative correlation values indicating southward trends in the dynamics of the distribution of the animals are shown in lilac.

A similar correlation table was plotted for the Odoptu-Piltun section (Table 10-b), which makes up about 60% of the Piltun area. This area encompasses the majority of whale sightings throughout the season and therefore displays similar distribution trends to the Table 10-a (the segmentation grid for the entire Piltun area). Since weather conditions allowed more frequent surveys in the north section, 40% of the season was covered instead of the 30% when analyzing surveys for the entire area.

The correlation tables indicate time periods in which the distribution of whales in the area fluctuated, and periods in which it was relatively stable (blocks with a clear prevalence of dark blue and light blue cells for higher correlation factors). By assuming that a stable spatial structure of the whale aggregation indicates the occurrence of events such as the main feeding season and migration to and from the area, it is possible to tentatively assign blocks of days with a stable distribution of animals during the season as representative of these life cycle events.

The blocks of stable spatial structure in Tables 10-a and 10-b coupled with plots of the whale distribution in the area for the corresponding time segments (Fig. 13) suggest that the summer-fall season of 2005 can be assigned into three main stages.

1. The period of arrival from migration to the Piltun area

Onshore surveys in 2005 began on 25 June, and by this time whales were already present in the Piltun area, although the number of whales was still small (Table 8). It is unknown exactly when the animals began to appear off the Sakhalin coast, but the shore-based surveys likely observed the initial stage of the arrival into the area after the spring-summer migration.

The arrival period of most of the whales was mostly complete by 27 July. Based on two blocks distinguished in the correlation tables and an analysis of the whale distribution charts for corresponding time segments (Fig. 13-a, b), this period can be divided into two stages. The first (initial) arrival stage lasted until 4 July. few whales scattered over the entire near-shore zone of the Piltun area were sighted during that period; the whales formed no distinct congregations, but there was a somewhat elevated concentration in the central part of the area (Table 8, Fig. 13-a). The second stage of this period was characterized by the gradual arrival of more animals to the feeding area (Table 8) resulting in a steady increase from 50 whales on 4 July to 102 whales on 27 July (including potential double counts). Whales were present everywhere in the Piltun feeding area during this stage as well, but the majority of them (about 60%) were concentrated near the mouth of Piltun Bay and north of the mouth (in the zone of survey stations 6-10, - Fig. 13-b).

2. Main feeding period

Based on the correlation tables, most whales had arrived and were feeding by 28 July. The overall duration of the feeding season, with its characteristic stable spatial structure of whale aggregation, was longer than two months in 2005; major changes in distribution were recorded around the first week in October, when the fall migration of the animals back to their wintering grounds began. Based on the correlation tables and analysis of the corresponding chart materials, three stages were distinguished within the main feeding season (Table 10, Fig. 13-c, d, e):

- summer stage;
- redistribution stage; and
- fall stage.

The first stage of the feeding season lasted from 28 July to 25 August. During this stage, whales were sighted throughout the Piltun area as before. A decrease in number of whales occurred in the area around the mouth of Piltun Bay (only about 20% of the animals remained there) and an increasing aggregation was observed in the northern part of the area (in the zone of survey stations 2-4), where

about half of the whales were concentrated. Approximately 15% of the animals remained farther south, in the zone of stations 5 and 6. The appearance of a number of gray whales at a greater distance from shore – as much as 5-7 km, in water deeper than 20 m – was also observed during this period (Fig. 13-c).

A shift in the distribution of whales in the Piltun area occurred on 26 August (Table 10), marking the beginning of the redistribution stage of the animals in the Piltun area. The redistribution was manifested in a less defined congregation of whales near the mouth of Piltun Bay, followed by an increase in the northern aggregation (in the zone of survey stations No. 1-4), where up to 65-75% of the animals were observed in early August. Whale abundance also declined in the southern part of the area, in the zone of survey stations 11-13 (Table 8, Fig. 13-d). The initial phase of the redistribution stage was somewhat similar to the summer stage, but as of 5-6 September, more closely matched the fall stage (Table 8). A further major shift in the distribution of whales, occurred around 11 September (Table 10). The survey data (Table 8) indicate that for a currently unknown reason a number of whales moved somewhere else from the northern part of the Piltun area on those days (the overall number of whales in the area decreased on those days – Fig. 14). The distribution of the whales then stabilized, and appeared relatively constant during September starting from observations on 14 September. This fall stage continued until early October (Table 10). As during August, most of the gray whales (more than 70%), remained at the northern end of the Piltun area, in the zone of survey stations 1-4 and the number of whales further offshore increased. A concentration of whales was observed near the mouth of Piltun Bay, in the zone of survey stations 8-9 (Table 8, Fig. 13-e).

Several days can be identified in the course of the feeding season during which the distribution of whales changed for unknown reasons and differed from the normal distribution for the period (Table 10). These shifts are accompanied by an increase or decrease in the number of whales in the area and can last 1-2 days.

There is a certain degree of difficulty in dating the end of the fall phase of the feeding season. In the correlation table based on data from complete surveys of the entire Piltun area, a southward trend in whale distribution, which indicates the end of the stage and the start of the migration period back to the south, can be seen on 16 October (Table 10-a). In the supplementary correlation table calculated separately for the Odoptu-Piltun section (Table 10-b), however, such a trend had already been recorded as early as 7-8 October. No survey could be performed in the Astokh-Chayvo section on either 7 or 8 October, but observers of marine mammals at the Chayvo rig site recorded several whale groups passing southward on those days in direct proximity to survey station 13 (A. S. Blokhin, pers. comm.). This may indicate that the fall migration started around 6 October .

The similar distribution of whales observed on 10 October (Tables 10-a and 10-b) to the feeding season may be explained by the departure of one or several whale groups between 6 October and 9 October, allowing the approximate distribution pattern to be temporarily restored on 10 October. After this date, there follows a larger scale departure for wintering grounds, the number of whales in the area begins to decline.

3. Period of southward fall migration

As stated above, the start of the migration of gray whales from the Piltun area back to their wintering grounds may have initiated around 7 October. Shore-based surveys covered only the first 10 days of this period; nevertheless, a rapid thinning out of animals throughout the Piltun area, movement of most of them to shallow water, breakup of the northern aggregation, and an increase in the number of whales at the south end of the area were observed during this time (Table 8, Fig. 13-f).

The start of the fall southward migration of the gray whales was delayed in 2005 compared to 2004, (around 30 September), based on a similar correlation analysis (Vladimirov et al., 2005). This may be due to climatic factors, as hypothesized for the observed later start of the feeding season. October was warmer in 2005 than in 2004. No snow had fallen as of the time the survey teams left the study areas (19 October), whereas there was already snow as of 14 October in 2004. It is probable that the period of the departure of gray whales from the Piltun area is as irregular in its structure as the other periods, although frequent storms and unfavorable weather conditions during the second half of the fall season severely hinder the collection of data.

In summary, the analysis established that the period of the arrival of gray whales to the Piltun area lasted until 27 July, the main stage lasted from 28 July to around 6 October (including the first stage from 28 July to 25 August, the redistribution stage from 26 August to around 13 September, and the fall stage from approx. 14 September to 5 October), and the fall migration began on 6 October.

All seasonal-spatial variations in the distribution of gray whales in the Piltun area in 2005 are covered in greater detail in the sections that follow.

Seasonal-Spatial Changes in Whale Abundance

Seasonal variations in the number of gray whales in the Piltun area in 2005 were similar to the seasonal dynamics of 2004: The number of counted whales (including potential double counts) increased during the period of arrival (averaging 27.2 during the first stage and 72.0 during the second stage, according to data from complete surveys), it remained stable during the main stage (103.0 whales during the summer stage, a little lower – 95.2 whales – during the redistribution stage, and 107.2 whales during the fall stage), beginning to decrease again with the start of the fall migration back to the wintering grounds (74.0 whales). The overall trends in the number of whales sighted in the area in 2005 are shown in Fig. 14, although it is also of interest to consider the specific spatial-temporal features of the seasonal dynamics.

Dividing the Piltun area into 20-kilometer segments proved optimal in the correlation analysis of seasonal variations in the distribution of whales in the area (see previous section). However, for more detailed characteristics of the seasonal dynamics in the number of animals, such divisions are too large. To better understand more detailed movement of the whales during the 2005 season, the Piltun area was divided into 14 equal segments, from above Station 1 to below Station 13. Trends in whale numbers in all the segments were analyzed for the entire season (Fig. 15-a – 15-n). Only days when complete surveys were conducted for at least one the Odoptu-Piltun section the Astokh-Chayvo section

were included in the analysis.

Gray whales were occasionally observed north of Station 1, but the number of whales sighted in this area was negligible throughout the season (Fig. 15-a). Variations in the number of whales were slight; the number of whales was stable during the summer months, with increasing observations in late August. The fall stage generally was characterized by a slightly elevated concentration of whales north of station 1 followed by a decrease in sightings at the end of the season due to the beginning of the southward migration.

A larger number of whales was recorded in the segment between stations 1 and 2 than north of Station 1. Variations in the number of whales were characterized by a gradual increase in the number of animals from the start of the season and a decrease in sightings at the end of the season due to the beginning of the southward migration (Fig. 15-b). A large increase in the concentration of whales beginning in mid-September due to the fall redistribution was observed.

The segment between stations 2 and 3 was characterized by the highest concentration of whales in the Piltun area. Seasonal variations in the number of whales followed the pattern described for the previous segment (Fig. 15-c).

The segment between stations 3 and 4 exhibited the same features as the two previous segments (Fig. 15-d). The biggest difference was a larger number of animals at the start of the feeding period and a subsequent stabilization until mid-September. As in the areas further north, the fall feeding stage in this segment of the study area was characterized by a noticeable increase in the number of whales. After the fall stage, the number of sightings fell with the start of the southward migration.

The variations in the number of whales between stations 4 and 5 differed from the previous segments, although several similar trends were observed. The number of whales increased from mid-July to the end of the month but then was relatively stable until the end of the summer stage (Fig. 15-e). After the redistribution stage, a general trend toward reduced numbers was observed, although a surge was noted in late September, which is typical of the northern segments.

The segment between stations 5 and 6 was characterized by an increase in the number of whales beginning at the end of June and lasting until late July (Fig. 15-f). With the start of the feeding season, despite differences in the numbers, the general trend can be described as a decrease until the end of the feeding distribution period. On the other hand, there was a notable increase in the number of whales in this segment with the start of the fall migration.

Interesting variations in the number of animals in the interval between stations 6 and 7 were observed. A decrease rather than an increase in the number of whales occurred from the start of the season, in contrast to all segments of the Piltun area further north; the number of whales stabilized only with the start of the feeding season. During the redistribution stage, the number of animals increased, after which numbers declined during the fall stage. With the start of the southward migration, however, the number of whales in the segment, as in the adjacent segment to the north, began to increase again (Fig. 15-g).

A clear increase in the total number of whales in the Piltun area on 4 July, most probably due to the arrival of the large group of animals, is illustrated by the histogram of whale numbers in the section

between stations 7 and 8 (Fig. 15-h). The fact that no decrease in the number of whales was observed that day in other parts of the area suggests that the spike was not due to redistribution but was specifically attributable to the arrival of new animals. Some decrease in the number of whales followed until early August, and then the number stabilized; however, the fall phase of the feeding season was characterized by a further decrease in the number of whales in this segment. A rising trend in the number of animals was again observed, as in two segments further north, with the start of the fall migration.

Near the mouth of Piltun Bay, between stations 8 and 9, the whales concentrated during the period from mid-July to early August. Then, by late August or early September, the number of animals there dropped and then remained low until the end of the season (Fig. 15-i).

In the segment between stations 9 and 10, an increase in the number of whales was observed from mid-July to mid-August, after which the number began a decrease (Fig. 15-j). At the end of the redistribution period, there was a peak in the number of whales in this segment culminating on 11 September, when a reduction in the number was observed in the northern part of the area. During the fall phase of the feeding distribution period, the number of whales was negligible, and some increase was seen only towards mid-October due to the southward migration.

In the segment between stations 10 and 11, whales were sighted mainly between late June and mid-August (Fig. 15-k). The arrival of a new group of animals in the Piltun area was recorded in this segment on 7 July. After the fall redistribution, only solitary whales were observed there.

Between stations 11 and 12, whales were sighted sporadically at the start of the season, after which numbers increased between late July and early August, during the transition from spring migration to the summer feeding stage. Thereafter few whales were sighted in this segment until the redistribution stage, when occasional whale sightings were again recorded (Fig. 15-l). Regular sightings were recorded in this segment in late September, and there was an upward trend in whale numbers.

In the segment between stations 12 and 13, whales were sighted infrequently, but remained in the area for several days at a time (Fig. 15-m). The variation in the number of whales was similar to the previous segment. A number of whales were recorded passing through in early July. Whales were observed in this segment during stable summer and fall distribution periods. As with the segment bordering to the north, a rising number of whales was observed in this segment beginning in late September and continuing until mid-October.

The only sighting of whales in the segment south of Station 13 was recorded on 10 October (Fig. 15-n). This result suggests that the gray whales do not use this area during the summer-fall as a primary feeding location and are observed there only during migration periods.

The data presented above suggests there are locations in the Piltun area where the distribution of animals during the season varies and locations where spatial-temporal structure displays less variation. In particular, the following segments are areas where whale numbers display less variation for the entire season: north of survey station 1; between survey stations 4 and 5 and 7 and 8; and all segments south of station 10.The average numbers of gray whale sightings in these sections for the

season as a whole are shown in Fig. 16, which is based on data from complete surveys of the entire area. Figure 16 shows the large aggregation of animals in the northern part of the Piltun area from survey stations 1 to 4, with the nucleus between survey stations 2 and 3. A second aggregation of whales, although considerably smaller in size, was observed adjacent to the mouth of Piltun Bay, between survey stations 8 and 10.

Figure 17 shows average numbers of whales in near-shore segments during the different stages of the main feeding season – the summer stage, the redistribution stage, and the fall phase. Data were taken only from complete surveys, when the entire area was covered in a single day. Analysis of these figures made it possible to refine the boundaries of the main congregations of whales and to discover patterns in their seasonal and spatial distribution throughout the Piltun area in 2005.

The distribution of animals during the summer stage was characterized by the presence of two aggregations (Fig. 17). The main aggregation – the north aggregation – covered the area between survey stations 1 and 4. The second – the central aggregation, which was somewhat smaller in size – remained near the mouth of Piltun Bay, between stations 8 and 10. An elevated number of whales was also concentrated in the segment between stations 4 and 6, During the fall stage, there was a regrouping of the animals into a single northern congregation, which, as a result, stayed within the same boundaries as in August (from survey station 1 to station 4), although increased in number (Fig. 17).

The segment between stations 6 and 7 is noteworthy. The average number of whales was approximately the same during the two phases of the feeding season, but increased during the redistribution phase. The observed redistribution of whales in late August and early September exhibits features of both stable feeding distribution phases. For example, while the average numbers of whales in the segments between survey stations 2 and 3, 5 and 6, and 9 and 10 matched the summer distribution, it was more similar to the fall distribution in the segments between survey stations 1 and 2, 3 and 4 and 8 and 9 (Fig. 17). This stage lasted about 2 weeks (from 26 August to 11 September) and during that time, as the onshore survey data show, there was a breakup of the whale aggregation near the mouth of Piltun Bay and a northward shift of the animals. The whales observed in the northern part of the feeding area were approximately evenly distributed between stations 1 and 4 in the beginning of September.

To illustrate the seasonal-spatial variations in the number of gray whales in the Piltun area, deviations in the numbers of animals in each segment of the Piltun area throughout the season from the seasonal averages for these values in those segments were analyzed. Only dates when a complete survey was conducted for the entire area were included in the sample. The results (Fig. 18) indicate that the period of the arrival of whales in the Piltun area was distinguished by a lower number of animals in the northern area where feeding whales aggregated later in the season, compared to the season average. This period can be divided into two stages. The first (initial) stage, lasting until the first days of July, is characterized by a low number of whales within the two main future congregations (northern and central); the total number of whales in the Piltun area is still low. The date 4 July marks the division between the first and second arrival stages. On that day, as discussed previously, the arrival of whales was recorded in the segment between stations 7 and 8, and the passing of another group of animals was

observed in the segment between stations 12 and 13. The number of whales adjacent to the mouth of Piltun Bay already exceeded the seasonal average level the next day, 5 July. An increase in the number of animals in the central part of the Piltun area continued throughout the second approach stage (5-27 July), while the number still remained below the seasonal average in the area of the future northern congregation.

The start of the feeding season is characterized by an influx of whales into the northern congregation area and the relative stabilization of the number of animals near the mouth of Piltun Bay. An even distribution of deviations in the actual number of whales from the seasonal average is characteristic of the first (summer) stage of the feeding season (28 July – 25 August). Deviations in the number of whales from the averages support the previously described seasonal trends; some blurring of the borders of the northern congregation, especially in the southern part, was characteristic of this stage.

The spatial structure of whale distribution in the Piltun area changed with the start of the redistribution stage (26 August 26 – about 11 September). Movement of a number of whales, from both north and south, into the boundary area between the north and central aggregations (between survey stations 4 and 6) was recorded on 1 September. Features of both feeding stages are seen in the whale distribution of 5-6 September: a northern aggregation is formed within the boundaries typical of the fall feeding distribution, but at the same time, a somewhat elevated concentration of whales was still observed near the mouth of Piltun Bay (Fig. 18).

The second (fall) stage of the feeding season (12 September – 6 October) is characterized by the final disappearance of the central congregation between stations 8 and 10 and a high concentration of whales in the northern part of the Piltun area. Another noteworthy feature of this stage was the movement of whales into the southern part of the area, starting in mid to late September. One hypothesis to explain this movement is that the feeding area of the northern aggregation has a capacity related to the availability of food supplies and that lower biomass availability towards the end of the season in this area resulted in some whales moving elsewhere to forage. This movement was not observed in 2004, when the benthos biomass in the northern part of the Piltun area was higher due to strengthening of the Amur current (A. N. Rutenko [Pacific Oceanological Institute (TOI) of the Far East Branch of the Russian Academy of Sciences (FEB RAS)], and V. I. Fadeev [Marine Biology Institute (IBM) of FEB RAS] – *unpublished data*).

The period of the fall migration of the gray whales back to the south was characterized by declining numbers of animals, both in the northern segments of the Piltun area and throughout the feeding area. Figure 18 illustrates lower numbers of whales within the northern feeding congregation coupled with an increase in whales in the southernmost segments compared to the seasonal averages.

The information presented above shows that the analysis of seasonal-spatial variations in the distribution of whales among small segments of the Piltun area supports the results of the correlation analysis conducted for considerably larger sections. Similar results from the two analyses provide a representative model for the spatial-temporal dynamics of the distribution of gray whales in feeding locations in the Piltun area during the summer-fall season.

Whale Distribution by Water Depth

The distribution of gray whales in the marine environment can be discussed in relation to distance from shore and as a function of water depth. As gray whales come to the Piltun area mainly to feed and are classified mainly as benthic feeders, their distribution in the Piltun area should be related primarily to the distribution of benthos and epibenthos, which in turn depends on depth (Fadeev, 2003, 2004, 2005). Although water depth increases with the distance from shore, it does not increase equally as a function of distance along the Piltun feeding area; there are both comparatively deep and comparatively shallow areas along this coastline. For example, depths of 26 m can be found 3.7 to 8.9 km from shore and the depth can vary from 5 to 15 m at a distance of 1.3 km from shore and from 10 to 20 m at a distance of 2.5 km. As a result, whales may be found in different water depths in different parts of the area at the same distance from shore (Table 11).

The distribution of whales by water depth in the Piltun area for 2004 showed that it is variable (Vladimirov et al., 2005). The distribution of the animals by depths during the season in 2005 also displayed considerable variation (Table 12).

The gray whales were concentrated primarily at depths less than 15 m throughout the season, and most were recorded near the 10-meter isobath. As the fall phase of the feeding season approached, the percentage of whales in this zone decreased, and the average depth at which animals were observed increased. Overall, throughout the summer feeding season, a total of 10-15% of the whales were sighted at depths beyond the 16-meter isobath.

The first stage of the main feeding season was characterized by maximum whale abundance figures at depths less than 10 m, where more than 60% of the animals were located. The concentration of whales at depths of 21-25 m also increased, and the total number of animals beyond the 16-meter isobath increased compared to earlier in the season..

During the redistribution stage of feeding aggregations that occurred in early September, the distribution of whales in relation to depth in the Piltun area changed (Table 12). An increase in the number of animals between the 10- and 20-meter isobaths was evident, and the numbers of animals at all other depths decreased.

The number of whales at depths of 0 to 5 m increased again during the fall phase of the feeding season. A notable feature of this stage is a similar percentage of whales at depths of 6 to 10 and 11 to 15 m (~47%). This is a decrease in water shallower than 10 m from the summer figure of 61%. This suggests that 20% of the animals feeding within the 10-meter isobath during the summer moved to depths of 11-15 m during the redistribution and some of them moved even farther out to sea. This may be due to the gradual seasonal warming of the seawater and the corresponding increase in biological productivity at greater depths, which, along with the consumption of benthos in the shallow summer feeding areas, causes animals to forage in deeper waters, or because there is seasonality to certain prey distributions.

There was a decrease in the number of whales at greater depths (>20 m) and increase in the number in the zone from 0 to 10 m corresponding to the start of the southward fall migration. This is associated with the movement of the whales out of the deeper northern waters and their advance into

the shallower southern part of the area. As the southward migration starts, there is an increase in the number of whales in the depth range of 16-20 m compared to the feeding periods, The distribution of whales as a function of depth varies over the entire Piltun area through the season. To facilitate identifying these features, data from each stage was plotted for each of the latitudinal segments of the Piltun area (Fig. 19). Working with percentage ratios was not in this case, because whales were recorded in the southern sections, for example, only once or twice in a stage, and these sightings would produce 100% and 50% peaks. Therefore, the sighting frequency index (number of whales / segment / depth / survey) was taken as the criterion for assessment of the prevalent depths for concentrations of animals in different parts of the area.

Analysis of all data from the first stage of migration north indicates that the greatest density of the animals was observed between survey stations 5 and 8 at depths of 7 to 11 m (Fig. 19-a). The single area where whales were recorded in every survey was at an approximate depth of 8 meters in the segment between survey stations 6 and 7.

During the second stage of migration north, as the number of whales in the area increased, the area in which they were concentrated also expanded (Fig. 19-b). Two larger whale concentration centers were identified: the segments between survey stations 5 and 6 and 9 and 11, where they were located primarily at depths from 10 to 12 m, and another less aggregation between survey stations 8 and 9, where the whales were located mainly in the area of the 5- meter isobath.

The start of the feeding stage was manifested in the concentration of gray whales in the two main summer congregations. During the first stage, the frequency of whale sightings in the northern part of the area was highest at depths of 7 to 11 m (Fig. 19-c). On the 25-meter isobath in the segment between stations 2 and 3, whales were also recorded in practically every survey (they were also present there almost constantly in 2004). In 2004 large spawning congregations of sand lance were present in this area, however, there was no direct evidence that gray whales were feeding on the sand lance (Fadeev, 2005).

During the redistribution phase, the breakup of the whale aggregation near the mouth of Piltun Bay and the decrease in the number of whales in the segment between survey stations 4 and 6 was coupled with an increase in the concentration of the animals at depths of 6 to 12 m in the northern part of the area (Fig. 19-d). Near the 12-meter isobath in the segment between stations 2 and 3, the frequency of whale sightings reached the highest level for the entire area over the 2005 survey season (five whales per survey). Animals were also recorded frequently in the segment between stations 3 and 4 at a depth of 10 m – an average of four whales per survey. A regrouping of the remaining animals, concentrated primarily at shallower depths (5-8 m) in the segment between stations 9 and 10, also occurred in the aggregation area at the mouth of Piltun Bay while the overall number of whales decreased.

During the fall phase of the feeding season, a high concentration of whales in quite a limited range in the northern part of the Piltun feeding area was observed (Fig. 19-e). The frequency of whale sightings in the depth range of 7 to 15 m in the segment between survey stations 2 and 3 was especially high, and only slightly fewer animals were sighted there at depths of 5-6 m. The highest concentration

of whales in the northern congregation, occurred at depths of 10 to 12 m. These observations are consistent with an overall trend of animals moving to greater depths in the fall compared to summer.

With the start of the southward migration period, the whales were scattered throughout the Piltun area and were sighted in different locations at various depths. Most of the animals were in the northern part of the Piltun area at depths from 5 to 13 m (Fig. 19-f). Another aggregation of whales was concentrated at the southern edge of the Piltun feeding area during this period, between survey stations 11 and 13, in the area of the 10-meter isobath. No such aggregation in this area and time period was observed in 2004.

These results enabled us to define the general trends in the distribution of gray whales in the Piltun area as a function of water depth in 2005 and to identify the depths preferred by the animals for different parts of the area during different periods of the feeding season. This increases our current understanding of patterns in the use of feeding habitats by gray whales in Sakhalin coastal waters and will provide further useful habitat utilization information when compared with benthos distribution for 2005.

3.1.2. OFFSHORE AREA

3.1.2.1. Aerial Surveys

The truncated period during which aerial surveys were conducted in 2005 limits the conclusions regarding changes in gray whale numbers and distribution patterns in the Offshore feeding area during 2005. However, it appears that the number of whales recorded there from mid-September to the beginning of November was low but exceeded figures for 2004 (one whale in September and three in October). Most of the whales were observed in 2005 on transects 7-9 in the northeastern part of the Offshore area (Fig. 6-a – 6-d).

The sighting of a single gray whale northwest of the Offshore area on 24 October could indicate one of the possible routes followed by the animals when they move between the Offshore feeding area and the Piltun feeding area (see also Yakovlev and Tyurneva 2005).

3.1.2.2. Vessel-Based Surveys

Dedicated distribution surveys of the Offshore feeding area were performed on average twice a month during the entire survey period and additionally opportunistic distribution surveys were conducted in parallel with Photo-ID, acoustic and hydrological studies, whenever circumstances allowed. During all these surveys only one sighting of a single gray whale (on 19 August) was recorded during in July and August (Fig. 10). In September, whales were sighted more regularly in the Offshore feeding area, varying from six animals on 6 September to 14 on 17 September. The largest number of whales – 25 animals – was recorded in the Offshore feeding area on 2 October (Table 5). The relative abundance of western gray whales in the Offshore area, as a proportion of total whales seen in both the

Piltun and Offshore area, also increased steadily from early September to early October with 10.7% of the total number of whales recorded in the Offshore area during a complete survey o 5-6 September, 16.9% of sightings on 17-18 September and 32.0% on 1-2 October (although the latter figure should be viewed with caution, since only half the Piltun area was covered during that survey).

The distribution of gray whales in the Offshore feeding area also changed during the month of September. Animals were sighted primarily in the center part of the area west of 143°40' east longitude at the beginning of the month, while congregations of whales were observed in the northeastern part of the Offshore area in the second half of September and the first days of October (Fig. 10).

Both aerial surveys and vessel-based surveys conducted in the Offshore area in 2005 indicated that the number of gray whales was higher than observed in 2004 but remained at a lower level than observations in 2003, with few animals sighted there during the summer months. The reason for the lower number of sightings in the Offshore area in 2004 and 2005 compared to 2001 – 2003 (Fig. 9) is currently unclear and discussed further in the section "Discussion of Results" of this report.

3.1.3. OTHER GRAY WHALE FEEDING SITES

On 8 September 2005, when the research vessel *Akademik Oparin* was heading toward the north end of Sakhalin Island for shelter from an approaching typhoon, a group of four gray whales was sighted moving north past the Okha Peninsula, at 53°51'N and 143°01'E. During two hours of continuous observation and Photo-ID surveys, the whales moved into an area with coordinates 53°56'N and 143°02'E (Fig. 20).

Another group of two foraging gray whales was observed on the same day west of Cape Elizabeth, in Severnyy Bay, in the northeastern part of Sakhalin Bay, (54°21'N and 143°33'E). One of these whales was sighted the following day approximately 3 km west of the initial sighting location (Fig. 20). Photographs of the whales were taken for photo-identification, and benthic samples were obtained from their feeding points.

Severnyy Bay was inspected again on 28 September, but no gray whales were recorded there.

3.2. GROUP SIZE AND DIRECTION OF MOVEMENT

3.2.1. Piltun Area

3.2.1.1. Aerial Surveys

Solitary gray whales were recorded most frequently (82.7%) during aerial surveys in the Piltun area in September-November 2005, and the average number of animals in a group was 1.23.

In October 2005, as in 2001-2004, the majority of the gray whales observed in motion were moving along-shore (i.e., northward or southward). In contrast to prior years, however, the proportion of whales swimming southward was greater in 2005 compared to previous years (Fig. 21).

3.2.1.2. Vessel-Based Surveys

During the period of vessel-based surveys in the Piltun area in 2005, 1321 gray whale sightings were recorded. The animals were usually solitary (Table 13). The average number of whales in a group during the period from July to October was 1.35 and ranged from 1.34 in September to 1.51 in August and October.

Lone whales were observed most frequently in the Piltun area – 70.7% of the sightings were of single whales. Groups of two whales were sighted 24.8% of the time, groups of three 3.1% of the time, groups of four 1.1%, and groups of five 0.3% (Table 13). The proportion of solitary whales varied in different months: from 65.4-65.7% in July and early October to 70.9-73.9% in August-September. The proportion of groups of two and three whales varied during the survey period, but the differences in percentages were mainly between July and August versus the first days of October. No distinct pattern was observed in the seasonal variation of the frequency of gray whale sightings of a particular group size.

3.2.1.3. Onshore Surveys

Primarily solitary gray whales were observed in the Piltun area (80.3% of the sightings), making up 64% of the whales recorded overall (Table 14) during the onshore survey period (from late June to mid-October 2005). The proportion of groups of two whales was 15.9%, and they made up a total of 25.7% of the whales (about 10% of them were cow-calf pairs). Groups of three were observed with considerably less frequency (3.2% of the sightings, accounting for 7.6% of the animals), groups of four whales made up 0.54% of the sightings (1.7% of the animals), and the number of sightings of groups of five whales was negligible (0.04% of the sightings, and 0.2% of the animals). The average group size for the season was 1.24 whales, and no variation in this index from month to month was observed.

It is noteworthy that groups numbering more than two whales are characteristic primarily of the feeding distribution period, i.e., August and September (Table 14). They were observed mainly within the primary whale concentration sites, and their formation may have been due to the elevated density in whale distribution within the aggregations. For example, large groups of whales were rarely observed adjacent to the mouth of Piltun Bay in September after the aggregation of whales observed there in August had dissipated. Groups formed considerably less frequently during the migration periods but when observed, were made up of animals moving in a specific direction. Group formation during these periods may have served a different function compared to those formed during the feeding season.

The overall distribution of individual whales and groups in the Piltun area was consistent with the spatial-temporal distribution of whales during the summer-fall season, and therefore reflected the relationships among the animals at different stages in the life of a feeding aggregation.

3.3.2. Offshore Area

In aerial surveys conducted over the Offshore area in September-November 2005, lone gray whales accounted for 74% of the sightings, and the average number of whales in a group was 1.33. No patterns in the direction of movement of the animals were discovered: two whales each were swimming northward, southeastward and southwestward, three were swimming westward, five eastward, and six southward.

In the course of the 2005 vessel-based surveys in the Offshore area, 63 gray whale sightings were recorded. The largest groups consisted of four whales, but lone whales, as usual, were prevalent and represented 66.7% of the sightings (Table 15). The average size of groups during the observation period was 1.4 whales. No differences between the Offshore and Piltun areas were found in the average group size or the percentage relationships among particular group sizes, although month to month variations in the latter index were sharper in the Offshore area, which is probably the result of the small number of observations.

3.3. DISTRIBUTION OF COWS WITH CALVES

All gray whale cows that arrive offshore northeastern Sakhalin with suckling calves remain in the shallow water of the Piltun feeding area during the summer and early fall (until the cows have weaned their calves). Therefore, the distribution of mother/calf pairs hereafter is considered only for the Piltun area.

3.3.1. Aerial Surveys

No gray whale mother accompanied by new calves were observed during the aerial surveys, which is not surprising given that many mother/calf pairs have been reported to break up and make the transition to independent life by the first aerial survey of the Piltun area on 18 September (Vladimirov, 2004). In addition, calves have rarely been observed during aerial surveys due to the visual limitations of this survey technique.

3.3.2. Vessel-based Surveys

During the 2005 vessel-based survey period in the Piltun area, 30 sightings of mother/calf pairs and separated calves were recorded from the vessel (Table 16). There were also 18 sightings recorded by the Photo-ID team. Cows with calves and solitary calves were distributed in an irregular manner in the Piltun area. There were two locations where both were observed more frequently: one was in the southern part of the area near the mouth of Piltun Bay, and the other was opposite the northern part of Piltun Bay (fig. 22). The locations where cow/calf pairs and solitary young-of-the-year calves were observed were correlated with the areas with the highest concentrations of adult animals.

Cows with calves were normally observed in July and August at short distance from shore, shoreward of the 10-meter isobath. During those months, calves were usually sighted in the company of one adult whale and less frequently with two adults (Table 21). In the latter case, the calf was never

observed between the adults; it was always to the side of the adult pair. A whale whose body and spout dimensions matched the characteristics of a calf was sighted once (on 18 August) in a group of three adult whales, but no close contact of the kind normally seen in cow/calf pairs was observed in this case. It is possible that a young-of-the-year calf that had already separated from its mother was present among adult whales in the case described.

In the second half of September, frequent sightings of calves without adults were recorded and sometimes at a considerable distance – up to 2 km – from shore (Fig. 22). The highest number of gray whale calves recorded in a single survey in 2005 was five (on 19 September), and only one of them was with its mother.

No mother/calf pairs or lone young-of-the-year calves were sighted in either vessel-based surveys or aerial surveys in the Offshore area, either in 2005 or in previous years (2001-2004).

2.1.2 Onshore Surveys

The first cow together with its young-of-the-year calf was recorded in the near-shore Piltun area on 29 June. Then, during the first stage of the arrival of whales from the wintering grounds, not more than one mother/calf pair was observed in each shore-based survey. During the second stage of northward migration, the number of pairs began to increase gradually, and at the end of the stage, on 29 July, four such pairs were recorded.

The greatest number of cows with calves (five pairs) was observed in the course of shore-based surveys during the summer phase of the feeding season (on 8 August). The breakup of mother/calf pairs in 2005 began at the end of August with the first sighting of a lone calf on 1 September. Calves that had separated from their mothers and made the transition to independent life were later observed on a regular basis. The breakup of mother/calf pairs began earlier in 2004 (at the beginning of the last five-day period in August). The difference may be related to the same factors hypothesized for the delay in the onset of sequential stages of the feeding season in 2005 (e.g. temperature). Cows with calves were recorded for the last time in the Piltun area on 11 September, and sightings of young whales that had separated from their mothers ceased towards the end of the month, which coincided approximately with the end of the feeding season. A young whale was recorded regularly in October, during the southward migration period, in a small local group of adult whales that remained for about a week in the same location in the southern part of the Piltun feeding area (near survey station No. 12). One hypothesis to explain this observation of a young-of-the-year calf being amongst the first to leave northeastern Sakhalin and go south may be the drop in seawater temperatures during autumn and the lack of ability to withstand colder temperatures compared to larger adult animals.

In general, cows and calves in 2005 gravitated toward the main whale aggregation sites in the Piltun area, i.e., toward the north aggregation area (in the area of survey stations 3-7) and the central aggregation area (in the zone of survey stations 7-10, near the mouth of Piltun Bay), with a bias towards the latter (Fig. 23). Only individual cow/calf pairs were observed outside these aggregations.

For the season as a whole, cow-calf pairs were observed more frequently adjacent to the Astokh (south) Bar.

Analysis of water-depth data in places where cows with calves were observed indicated that in 2005, as in 2004, they remained in direct proximity to the shore, in a depth range of 0 to 15 m, with most sightings occurring in the area corresponding to the 5-meter isobath (Fig. 24). The average depth at which mother/calf pairs were present was 6.6 m, and the average depth for calves that had separated from their mothers was 10.6 m.

3.4. FEEDING ACTIVITY

The most reliable information on the distribution of gray whales feeding on benthic organisms is provided by aerial surveys, during which the characteristic mud plumes left by the animals on the surface of the sea are visible from above. These mud plumes are evidence of benthic foraging activity.

Such mud plumes were found next to 16 gray whales in the Piltun area in 2005, which was 30.2% of the total number of animals near which they might have been seen, based on visibility conditions. The presence of mud plumes next to surfacing whales indicates that the animals, as of the time they were sighted, were at locations with sandy or muddy seafloors and were feeding on benthic species.

In aerial surveys of the Offshore feeding area, mud plumes were observed next to 20.1% of the gray whales.

3.5. Estimate of the Size of the Gray Whale Feeding Aggregation in the Piltun area off Northeastern Sakhalin

The results of onshore vehicle-based gray whale surveys performed in June-October 2005 provided more detailed data for estimating the total size of the feeding aggregation spending the summer and fall months in the Piltun area. The data indicate that when averaging the survey totals from complete surveys for half-month time segments and using this number as a comparable population size index, the total population in the area during the primary stage of the feeding season (in August and September) appeared higher in 2005 than the previous year. The increase in this average index from 2004 to 2005 was highest in August (by 37-39%). The maximum number of sightings during an individual surveys during August and September also generally was greater in 2005 compared with 2004 (Table 17). The exception to this was the second half of August were maximum numbers of whales sighted in one survey (including potential double counts) were similar in 2004 and 2005 with 122 and 119, respectively. The highest counts of whales are more useful in assessing the number of gray whales concentrated in the Piltun area, since averaged data include the results of all complete surveys, including those that were not conducted under ideal visibility. Issues associated with double counting, the availability of a whale to be observed (i.e., the time spent under water rather than in the field of view) and the fact that whales were observed in the Offshore area and in other areas off the Sakhalin coast, make it impossible to accurately assess the total population size from shore-based surveys alone. However, based on the highest

onshore survey counts, it seems reasonable to estimate that the maximum number of gray whales observed in the Piltun area in 2004-2005 was approximately 120 animals.

Analysis of the primary survey data (Table 8) shows that during the period from 23 September to 1 October, an unusually high number of counted whales– more than 130 – occurred three times (138 on 23 September, 133 on 25 September, and 137 on 1 October). This jump in the number followed a month and a half of relative consistency in peak numbers (114-119 animals – Table 17). Additional analysis of the survey data indicated that an increase in the number of animals at the northern edge of the area, within the survey zone of stations 1 to 4-5, was observed on those days (Table 8). A possible explanation for the spike in the number of gray whales recorded in late September is the arrival of a group of 15-20 gray whales from other, as yet unknown feeding areas in the Sea of Okhotsk (this increase was also noted in 2003 by V. V. Melnikov and S. P. Starodymov, 2004). The number of observed whales decreased on 2 October (to 89 whales – Table 8), and no such high number was observed thereafter in 2005.

Estimates of whale numbers acquired in the course of onshore vehicle-based surveys should only be considered approximate, since the procedure for the surveys has not yet been fully developed, and known issues such as double counting or undercounting in observations from different stations exist. Nevertheless, by using the same methodology each year it is possible to use the number of sighted whales collected each year as a population size index, and there is sufficient support based on 2004-2005 data to suggest that the total number of gray whales in the Okhotsk-Korean population feeding in the coastal waters off northeastern Sakhalin has remained stable in recent years, and no obvious signs of a decrease have been observed. It is also important to note that as the 2005 vessel surveys demonstrated, these estimates apply only to the feeding aggregation in Piltun since it is possible there are other unknown feeding sites for the animals of this population in the coastal areas in the Sea of Okhotsk, or off the coast of southeastern Kamchatka.

3.6. SIGHTINGS OF OTHER MARINE MAMMAL SPECIES

3.6.1. Piltun area

During the aerial surveys performed over the near-shore area in 2005, in addition to gray whales, two Minke whales (*Balaenoptera acutorostrata*) and one killer whale, *Orcinus orca*, were observed (Appendix 1).

In the process of the 2005 vessel-based surveys in the Piltun, in addition to the gray whales, minke whales (135 sightings, 142 animals) and common harbor porpoises *Phocoena phocoena* (35 sightings, 74 animals) were observed regularly. Killer whales were sighted infrequently (14 sightings, and a total of 31 animals). Minke whales were sighted mainly as solitary animals (92% of the sightings). Among the killer whales, groups of 2-3 accounted for 49% of the sightings, and solitary animals made up 52%; for harbor porpoises, the figures were 43% and 37% of the sightings, respectively. The largest group of killer whales numbered 8 animals, and largest harbor porpoise group was 4 (Appendix 2).

The greatest numbers of cetaceans sighted in a single survey day were as follows: minke whale, 19 animals (11 August); harbor porpoise, 22 (10 August); killer whale, 9 (30 July). These were all sighted throughout the Piltun area, but the first two species were observed more frequently near the mouth of Piltun Bay (Fig. 25-a, b).

Of the pinnipeds, sightings recorded in the Piltun area during the 2005 vessel-based surveys included: the ringed seal (*Pusa hispida*) – 367 animals; spotted seal (*Phoca largha*) – 22 animals; bearded seal (*Erignathus barbatus*) – three animals; and Steller sea lion (*Eumetopias jubatus*) – three juveniles (Fig. 25-c, Appendix 2). The ringed seal, recorded more often than the others in the Piltun area (especially during the summer), was distributed throughout the area with the peak number sighted in a single survey— 83 animals on 27 July.

Based on shore-based survey data, the following cetacean species in addition to gray whales were sighted in the Piltun area in 2005: minke whale (44 sightings, 45 animals); killer whale (10 sightings, 20 animals); and harbor porpoise (44 sightings, 67 animals). Minke whales were observed more frequently in 2005 than in 2004, but at a considerable distance from shore. Their concentration, as in previous years, was higher in the northern part of the area than in the southern part, but they formed no aggregations. The harbor porpoises were observed only near the shore and did not form large aggregations, and they were evenly distributed throughout the area. Killer whales were sighted with considerably less frequency than the other cetacean species. Nevertheless, there were quite regular sightings, primarily near the mouth of Piltun Bay, which was probably due to the presence of large aggregations of seals there (Fig. 26).

A dead Beluga whale (*Delphinapterus leucas*) stranded in the northern part of the Piltun feeding area (near survey station 1) in midsummer. A few weeks later it was washed away by a storm, carried south, and cast ashore north of station 22. No live animals of this species were observed in the Piltun area.

Pinnipeds were represented in the area mainly by three species: the spotted seal, the ringed seal, and the bearded seal. The spotted seal and the ringed seal are the most numerous species. No special surveys of pinnipeds were conducted, but they were sighted constantly in small numbers in the study area. There is a permanent haulout of spotted and ringed seals near the mouth of Piltun Bay, where aggregations of at least 800 animals were estimated.

Of the other pinnipeds observed in 2005, those worth mentioning are the northern fur seal *(Callorhinus ursinus)* and the ribbon seal *(Histriophoca fasciata)*. There were individual sightings of these species in the study area. The northern fur seal was observed near survey station 1, and the ribbon seal was seen a little south of station 20. Sightings of the ribbon seal on shore during the summer months is of particular interest, since this species is a pelagic ice species and rarely hauls out on dry land.

3.6.2. Offshore Area

In the course of the 2005 aerial surveys in the Offshore area, six minke whales and one large whale, whose species could not be determined, were observed (Appendix 1).

Other cetaceans recorded there during vessel-based surveys were minke whales (eight sightings, 14 animals), harbor porpoises (26 sightings, 42 animals) and killer whales (two sightings, three animals). Harbor porpoises were sighted throughout the Piltun area, while killer whales and minke whales were seen in the southwestern part (Fig. 25-d). Pinnipeds recorded in the area were ringed seal (eight sightings, 12 animals) and bearded seal – two sightings of lone animals each time (Appendix 2).

During runs of the research vessel *Akademik Oparin* to the northern part of Sakhalin, as well as en route from the main work area to Vladivostok, seven minke whales, one killer whale, one harbor porpoise, 16 Dall's porpoises *(Phocoenoides dallii)*, nine northern fur seals, two spotted seals and one bearded seal were recorded (Appendix 2).

4. WHALE DISTRIBUTION AND ABUNDANCE DURING OFFSHORE CONSTRUCTION ACTIVITIES

4.1 Introduction

Construction operations connected with the installation of the concrete gravity base structures for the PA-B offshore drilling platform, installation of the Orlan Platform, and laying subsea pipelines to the latter (Fig. 1), were carried out during the summer and fall months of 2005 in the Sakhalin-1 and Sakhalin II license areas. The onshore-based vehicle distribution surveys conducted as described in earlier sections of this report were used as a tool to identify on a near real time basis whether any changes in the distribution of the whales occurred during the offshore construction activities. To achieve this daily field maps and associated data summarizing whale sightings in the study area were prepared and distributed each day to allow for a quality control assessment. Subsequent weekly analyses where performed to assess whether major departures from historical distribution and abundance patterns had occurred. These historical distribution involved the 2001 to 2005 aerial surveys, 2001 to 2003 shore-based behavior surveys , and the 2004-2005 shore-based vehicle surveys, which were analyzed to produce estimates of WGW densities in the surveyed areas. A detailed description of the procedures and methods used for this near real time analysis is provided in Appendix 6 of this report.

4.2 Comparison of survey methods separately

No impact of the offshore construction activities on the gray whale distribution in the Piltun or Offshore feeding areas was recorded during onshore, aerial or vessel-based surveys. The onshore vehicle based data showed a variation in the distribution of animals within the feeding area for the

summer feeding phase (28 July – 25 August). In this period the number of days with a similar distribution compared to other survey days in 2005 ($r > 0.6$) decreased to 68.9% compared to 90,5% in a similar time period in 2004. It should be noted however that variation in the distribution of whales *within* the feeding area is a natural process and there was no indication that any observed variation was due to anthropogenic factors. During the later fall feeding phase, the distribution displayed a correlation index similar to 2004 (94.5 and 95.2%, respectively).

Poor visibility hampered observations of gray whale distribution during the installation of the PA-B CGBS (end of July and early August), However, when the weather returned to normal (6 August) and regular surveys recommenced, no decrease in the number of whales in the work area (observed from survey stations 7 and 8) was observed compared to the preceding period (Table 8).

A number of gray whales were observed almost constantly (Table 8) in direct proximity to the work area (observed from survey stations 12 and 13) during the period of deployment of the Orlan Platform in the Chayvo license area and the laying of the subsea pipeline between the platform and the island coast. In 2004, when there was no offshore work going on in the Chayvo license area, gray whales were sighted at the south end of the area (in the zone of stations 12 and 13) less frequently (Fig. 1), and during the period from 25 July to 29 September 2004, no whales were recorded in the future work area (Vladimirov et al., 2005). This suggests that in this example, whales were able to utilize areas near construction activity without a notable negative impact.

During the onshore surveys, a number of vessels of various size at anchor or moving at different distances from shore could be seen regularly near the Piltun feeding area, with no observed adverse effect on the gray whale distribution.

In the course of vessel-based surveys of the Offshore area in 2005, vessels supporting the construction of drilling platforms and the installation of pipelines, as well as trawling fishing vessels, were observed repeatedly. From the results of the vessel based surveys, comparing 2005 with 2004 data no obvious changes in whale distribution and abundance were observed and hence no adverse effects associated with these vessel movements. .

5. DISCUSSION OF RESULTS

Surveys of the Okhotsk-Korean gray whale population conducted in 2005 off northeastern Sakhalin yielded extensive data on the distribution and abundance of the whales in their summer-fall feeding areas.

Aerial surveys and vessel-based surveys in 2005 both showed that, as during 2004, fewer gray whales were observed in the Offshore feeding area than in 2001-2003, although the number of whales were higher compared to 2004. The maximum number of whales counted in a single survey in the Offshore area in 2005 was whales during aerial surveys and 25 during vessel-based surveys (the corresponding figures for 2004 were two and nine whales, respectively (Vladimirov et al., 2005). In 2002-2003, when the Offshore area was used more extensively by gray whales as a

feeding site, the maximum numbers recorded there in single surveys were 12 and nine whales, respectively, according to aerial survey data (Blokhin et al., 2003, 2004), and 50 and 48 whales according to vessel-based survey data (Blokhin et al., 2002; Maminov, 2004).

Peak figures for the number of whales in the Offshore area in both 2004 and 2005 occurred in the fall (in late September and October) potentially due to food density conditions during this period in the Piltun area. However, observations from 2001 – 2003 suggest that whales can move to the Offshore feeding area during the summer when feeding conditions in the traditional Piltun area might not be entirely favorable for a particular reason. In the last two years the area appears to have been mainly utilized as a site visited by the animals during their gradual movement from the Piltun area southward during the start of their migration back to their wintering grounds, or utilized due to a seasonal variation in available food supplies by the end of the feeding season in the Piltun feeding area, where the majority of the whales have aggregated in 2004 and 2005..

Prior to observations of gray whales feeding actively in the Offshore area during the entire summer-fall season (before 2001), observations in this area had been reported with low numbers of whales (maximum – 8 individuals in August 2000) sighted regularly in the summer and fall (Miyashita et al., 2001; Yazvenko et al., 2002).. The use of the Offshore area by the gray whales and, consequently, the importance of its role in making up their overall food resources during summer is not clear and requires additional detailed study.

Coupled with a decrease in the number of gray whales in the Offshore area compared to 2001-2003, a change in their distribution is also notable. Aerial survey data indicate that while the whales were evenly distributed in the central part of the Offshore area in October 2001, during the same period in 2005 they were observed more frequently in the northeastern quadrant (Fig. 27). The results of vessel-based surveys confirmed this conclusion but also suggested that the overall distribution of the gray whales is variable from year to year. For example, during the September 2002-2005 dedicated surveys, western gray whale distribution differed from year to year (Fig. 28-a). In reviewing consolidated data from all vessel-based surveys conducted for September 2001-2005, there have been annual changes in the general fall whale distribution patterns in the Offshore area over the last 5 years, and the distribution in 2005 matches the distribution of 2002 and especially 2001 quite closely, while differing clearly from the distribution during 2003-2004 (Fig. 28-b). There is no convincing explanation as yet for these changes in the distribution of gray whales in the Offshore area or the decrease in the number of whales there over the last two years. These causes require further study, however, it seems likely that distribution is primarily a function of prey biomass and accessibility of benthic and epibenthic prey from year to year within Piltun and the Offshore feeding areas. There is no sign of deterioration of food resources for gray whales in the Offshore area based on studies performed in 2002-2005 (V. I. Fadeev 2003, 2004, 2005, Fadeev, pers. comm..). Resources in 2004 and 2005 appear similar to their status in 2003, and the arrival of the animals to feed in the Piltun area is most probably due to the presence of higher than normal, easily accessible concentrations of prey organisms.

The number of gray whales in the near-shore Piltun area remained at a high level in 2005, which is consistent with relocation of animals previously concentrated in the Offshore area arriving in the Piltun area to feed (this has been confirmed by Photo-ID data; - Yakovlev and Tyurneva, 2005). A larger number of whales were recorded during the 2005 vessel-based and aerial surveys in the Piltun area than in the previous year. Peak values of 67 and 69 whales were recorded from a vessel in the area in August and September 2005, respectively. This is approximately 10% more than the figures for the same months of the previous year (61 and 63 animals, respectively). In aerial surveys performed in the Piltun area in October 2005, 22 whales were counted; this value exceeds the corresponding figure for the previous year by more than 80% and is the highest such figure for any year's aerial survey during that month (seven animals were recorded there in October 2001, nine in 2002, 16 in 2003, and 12 in 2004 – Fig. 29). Onshore survey data also indicate a high number of gray whales in the Piltun area, but the maximum figures for 2005 for most of the feeding season did not exceed the figures for 2004 (119 and 122 animals, respectively). In late September, however, it appears that a group of 15-20 gray whales arrived in the Piltun area from other locations resulting in maximum counts of 133-138 animals. A vessel-based survey in the Offshore area on 2 October also recorded an increase in the number of gray whales.

This increase in the number of gray whales in the Piltun area recorded during onshore surveys couple with vessel surveys observing gray whales in locations outside of the main historical feeding grounds suggests that there are likely gray whales of the Okhotsk-Korean population that feed in other areas and which may attach themselves to the Piltun feeding aggregation from time to time (the late season approach of whale groups to the north part of the Piltun feeding area has been observed previously (Melnikov and Starodymov, 2004). The discovery of gray whales near the north end of Sakhalin in 2005 is also noteworthy in this regard. Four whales moving slowly northward were sighted from the research vessel *Akademik Oparin* on 8 September, east of the Schmidt Peninsula and about 40 km from the northern border of the Piltun area. Another two whales were sighted the same day feeding in Severnyy Bay west of Cape Elizabeth; one of these was seen again the next day (Fig. 20). This was the first sighting of gray whales in that area during vessel-based surveys that have been conducted since 2001. Benthos samples were taken at the whale feeding site in Severnyy Bay; the samples indicated the presence there of aggregations of benthic invertebrates, including ampeliscid amphipods, which are the basis of zoobenthos in the Offshore area, in patches suitable for feeding. A more comprehensive discussion of this issue will be presented in the forthcoming 2006 benthos and prey studies by V.I. Fadeev (IBM FEB RAS). These observations support the hypothesis that there are other undiscovered feeding areas in the Sea of Okhotsk, in addition to the Piltun and Offshore areas, which are potentially suitable as feeding sites for gray whales. It is premature to consider Severnyy Bay as a new gray whale feeding area and future surveys are planned in this area in 2006. The appearance of whales in the northern Sakhalin area coincided with the redistribution phase of the animals in the Piltun feeding aggregation, discovered in the onshore surveys (26 August – 11 September), when the variation in the distribution of whales in the Piltun area increased and a temporary decrease in sightings was noted. This time period also coincided with regular sightings of

gray whale groups in the Offshore feeding area, which began at just this time (6 September) – suggesting that some of the animals moved to this area from the Piltun area during this redistribution process.

The distribution of whales in the Piltun area in 2005 was basically similar to 2004. The majority of the whales (up to 70-75%) were concentrated in the northern part of the area during the main feeding season (August and September), and a number of sightings (up to 15-20% according to vessel-based survey data), as in 2004, were observed as much as 5-7 km from shore, in deeper water (beyond the 20-meter isobath). This feature of the whale distribution was possibly attributable to the concentration of stocks of mass, easily accessible forage targets, including the formation of large spawning congregations of sand lance, in the northern part of the Piltun area, as previous years (Fadeev, 2005).

Seasonal variations in the distribution and abundance of gray whales in the Piltun area in 2005 were similar to 2004. The arrival of animals there from their wintering grounds was complete by the end of July, and the number of whales remained at a stable level until early October, after which they began gradually moving to the south, out of the study area. Due to safety considerations in 2005, multiyear data from aerial surveys data are only available for October, for which survey data are available since 2001 (Figs. 30-31). The data show that the distribution of whales in the area in late October 2005 differed from the distribution in 2003-2004; most of the whales then spent the period in the northern part of the area. Although the distribution of whales in the Piltun area in October has varied over the last five years, comparative conclusions using aerial and vessel surveys are tentative as they have not always historically been conducted on the same days in October due to weather constraints. This is especially important in October when the fall migration is underway and the distribution of animals at that time can change markedly on a daily basis, as illustrated in the correlation analysis based on data of regular onshore surveys (Table 10-a, 10-b) and by graphs for October 2005 (Figs. 30-31).

Comparison of the spatial variation in the distribution of gray whales throughout the season in the waters of the Piltun area in 2004 and 2005 suggests that the distribution was similar for the whole area ($r = 0.95$) and in the northern part ($r = 0.94$) for 2004 and 2005. This is based on a comparative correlation analysis of data from onshore surveys in 2004 with 2005 (Tables 18-19). The whales began gathering in the northern part of the area somewhat earlier in 2004 compared to 2005 – as early as the second half of the arrival period (i.e., during the second half of July). In addition, the congregation near the mouth of Piltun Bay did not break up by the end of the summer 2004 and was maintained through September. A good correlation of whale distribution was obtained on 7-8 October, when aerial and onshore surveys were conducted concurrently and produced similar plots of gray whale distribution (Fig. 32).

Due to safety considerations, aerial surveys were conducted on a limited scale in 2005. Feeding mud plumes were observed next to 30.2% of the animals in October, which is close to the corresponding figure for 2002-2003, but exceeds the level for 2004 (Fig. 33). The cause of variation in the feeding indices in October 2004 and 2005 is unknown.

During the 2005 onshore surveys in the Piltun area, five mother/calf pairs were observed (six pairs were observed in 2004, and five in 2003). This indicates that the birth rate in the aggregation of whales concentrated off the coast of northeastern Sakhalin during the summer-fall season has remained stable in recent years. A maximum of five calves were also recorded in one survey day during vessel-based surveys, although only one of these calves was with its mother, and the others remained separate from adult whales. No cows with calves were sighted in the Offshore area either in 2005 or in any previous year in which vessel-based surveys were conducted there. This highlights the importance of the Piltun area for the population of whales feeding off northeastern Sakhalin (Perlov et al., 2002, 2002a; Blokhin et al., 2003).

The boundaries of summer-fall gray whale feeding in the Piltun area have remained unchanged in recent years and extend along the Sakhalin shoreline from approximately 52°30'N to 53°40'N. A comparison of the data on the distribution of whales in the Piltun area in 2001-2005 relative to corresponding data obtained during periodic aerial surveys of the near-shore zone of northeastern Sakhalin conducted by TINRO specialists for gray whale survey purposes in 1984-1991 showed the absence of any difference between the boundaries of their current and earlier coastal feeding range (N. V. Doroshenko [TINRO] – *unpublished report*). Figure 34 shows a combined chart of all gray whale sightings for 1984-1991, which indicates that seismic exploration and the development of oil and gas fields on the Sakhalin shelf, which intensified in 2001-2005, has not affected the longer-term distribution of the animals, which has remained similar in 2005 to 15-20 years earlier. Therefore, there are no indications of any short or long term direct or indirect negative impacts on the Piltun feeding population of gray whales as a result of Sakhalin-1 and Sakhalin II development and production activities.

Onshore vehicle-based route surveys are a useful and cost-effective method for gathering the necessary information on the distribution and abundance of gray whales in the Piltun feeding area. The procedure for these surveys and subsequent data analysis is still being refined, in collaboration with LGL Limited and their subcontractors. Studies to resolve issues such as “double counting” of whales, (sighting animals twice in the boundary zones of adjacent survey stations), “availability” (undercounting in scanning the water area due to the whale being underwater) and “sightability” (decreasing ability to see the whale at increasing distances from shore) are currently underway. Nevertheless, the current methodology has merit and provides representative characteristics of the distribution and abundance of western gray whales in the near-shore area that can be used to monitor and minimize the impact on gray whales of commercial development on the northeastern Sakhalin shelf.

6. CONCLUSION

The integrated survey program carried out during the 2005 summer-fall season in the feeding area of gray whales of the Okhotsk-Korean (western) population off the northeast coast of Sakhalin, which included aerial, vessel-based and onshore surveys, yielded information on the distribution and abundance of the animals, as well as a number of other aspects of their biology.

The most important results of the work are as follows:

1. As both aerial surveys and vessel-based surveys have shown, the number of gray whales in the Offshore feeding area increased somewhat in 2005 compared with 2004 but remained lower than in 2002-2003. The highest number of whales sighted in this area in a single survey was seven animals in aerial surveys in 2005 and 25 in vessel-based surveys (the corresponding figures were three and nine animals, respectively, in 2004, and 9-12 and 48-50 animals, respectively, in 2002-2003).

2. Most of the gray whales were concentrated in the near-shore Piltun feeding area in 2005, as they were the year before, and the number of whales was approximately the same. The highest number recorded there was 69 counted whales according to vessel-based survey data (63 in 2004) and 138 counted whales according to onshore survey data (122 in 2004). The corresponding figures for 2003 were 47 and 70 counted whales. Aerial surveys could not be performed in the Piltun area in 2005 during the period of the maximum concentration of whales (August-September) due to safety considerations.

3. The data obtained indicate that gray whales that had previously fed in the Offshore area migrated into the Piltun area for some reason in 2004-2005 (the movement is also documented by Photo-ID data, Yakovlev and Tyurneva 2005). The cause of the redistribution, however, remains unclear. No signs of anthropogenic impact on the whales in the Offshore area have been observed, and their food supply there based on the data of benthos studies has not changed since 2002-2003; the movement of the animals away from the Offshore area and into the Piltun area may be due to the existence of higher than normal, easily accessible concentrations of preferred prey organisms in the area.

4. The total size of the aggregation of gray whales concentrated in the Piltun area during the summer-fall season of 2004-2005, based on onshore survey data, is estimated to be up to 120 animals. It is likely that there are other groups of the Okhotsk-Korean population present in the Sea of Okhotsk during the ice-free season that do not use the Piltun area as their main feeding ground as indicated by increasing gray whale sightings in the Piltun area in late September 2005 and similar cases observed previously.

5. Whales in the near-shore Piltun area in 2005 generally remained within the normal boundaries of their feeding range, extending along the coast of the island from 52°25'N to 53°40'N

6. During the main feeding season (August-September) in 2005, as in the previous year, the majority of the gray whales (up to 70-75%) stayed in the northern part of the Piltun area. This type of spatial distribution of whales in the Piltun area has been observed only in the last two years (previously the aggregations in the northern half of the area only emerged during the fall months).

7. The majority of gray whales (up to 70-80%) in the Piltun area, as observed in previous years, stayed within the 4-kilometer zone of the coastal shallow water, with prevailing depths of less than 15 m, during the feeding season, although as many as 15-20% of the sightings in the northern part of the area were observed at distances up to 5-6 km or more from shore, in deeper waters (up to 20-30 m). This may be due to the presence of concentrations of prey, most probably

(as indicated by data of benthos studies in 2004 and 2005) spawning congregations of sand lance.

8. The period of the spring-summer migration of gray whales to feeding grounds off northeastern Sakhalin, based on the results of correlation analysis of distribution data in the Piltun area obtained during onshore surveys, lasted until late July 2005. Then the distribution of the whale aggregation remained stable for more than two months (until early October) with a brief period of higher variability in distribution at the end of August into early September. Some redistribution of the animals within the Piltun area was recorded, accompanied by a decrease in sightings of whales. The fall migration of the whales to their wintering grounds in 2005 began in early October.

9. Sightings of gray whales in the coastal region off the north end of Sakhalin outside of the Piltun area included two whales feeding in Severnyy Bay west of Cape Elizabeth (8 September) , and another four sighted east of the Schmidt Peninsula, about 40 km from the northern border of the Piltun area. This was coincident with the stage of redistribution of the whales discovered in the Piltun feeding aggregation, which lasted from 26 August to 13 September 2005, The northern sightings were the first gray whale sightings in the area during opportunistic vessel-based observations that have been conducted in the area since 2001. These observations support the existence of other, as yet unknown locations potentially suitable for gray whale feeding in the Sea of Okhotsk, in addition to the Piltun and Offshore areas. The presence in Severnyy Bay of patches of benthic invertebrates suitable for feeding by the whales also supports this hypothesis. The appearance of gray whale groups in the Offshore area (6 September) which may have moved there from the Piltun area and were then sighted there regularly coincided with the stage of redistribution of the animals in the Piltun area.

10. The highest number of cows with calves observed in the Piltun area in one day in 2005 was five pairs. This suggests that the birth rate in the Okhotsk-Korean gray whale population, based on survey data, has been stable in recent years (six such pairs were observed in 2004, and five were observed in 2003). The actual number of offspring in the population is unknown, as it is unknown how many calves perish during the first six months of life in the wintering grounds and on the migration north to Sakhalin. Most of the cows with calves spent the entire season in the shallow water adjacent to the mouth of Piltun Bay. The breakup of mother/calf pairs and the transition of the calves to independent life was complete by mid to late September.

11. The majority of gray whales in the Piltun area, as in previous years, spent the entire season alone or in pairs (the frequency of the sightings varied in the ranges of 70-80% and 15-25%, respectively); larger groups (three-five whales) were rarely sighted. As in previous years, whale movements were primarily north or south along the coast.

In summary, the 2005 distribution surveys conducted under the “Program for Study and Monitoring of the Okhotsk-Korean Gray Whale Population” indicate that the feeding aggregation of the whales present off northeastern Sakhalin during the summer-fall period of 2005 was stable and may have increased compared to 2004. No visible signs of a direct or indirect negative impact

of industrial activity under the Sakhalin-1 and Sakhalin II projects on the population have been observed.

Studies of gray whales of the Okhotsk-Korean population off northeastern Sakhalin will continue, to increase the database of knowledge needed to develop scientifically substantiated measures to reduce the anthropogenic impact on the animals in the presence of continued commercial activities in the region. Further monitoring of the distribution and abundance of the gray whales would be a useful research tool when implemented to accomplish this task.

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TABLES

Table 1

Locations and Characteristics of Shore-Based Survey Stations in 2005

Section	Station Number[1]	Latitude (N)	Longitude (E)	Elevation above sea level, *m*	Maximum visibility,[2] *m*	Distance between survey stations, *km*	
Odoptu-Piltun section	1 (1)	53.41249	143.15274	13.08	14077	1-2	9.08
	2 (3)	53.33517	143.19597	18.13	15908		
						2-3	8.25
	3 (5)	53.26345	143.22717	27.04	19129		
						3-4	9.53
	4 (7)	53.17961	143.25584	14.56	14415		
						4-5	6.15
	5 (9)	53.12498	143.27012	8.99	11710		
						5-6	8.12
	6 (11)	53.05245	143.28461	7.95	11132		
						6-7	8.77
	7 (13)	52.97434	143.30208	9.87	12178		
						7-8	10.03
	8 (15)	52.8822	143.31976	5.9	9894		
						8-9	5.6
Astokh-Chayvo section	9 (20)	52.83290	143.33437	5.29	9495		
						9-10	9,6
	10 (21)	52.74653	143.32310	5.95	9927		
						10-11	11
	11 (22)	52.64637	143.31812	7.73	11006		
						11-12	9.8
	12 (23)	52.55821	143.31059	9.78	12131		
						12-13	9.6
	13 (24)	52.47182	143.28783	5.8	9830		
						13-14	*8.5*
	14[3]	*52.40051*	*143.2513*	*5.29*	*9497*		
						14-15	*8.8*
	15[3]	*52.33144*	*143.1877*	*3.13*	*7917*		

Notes: [1] numbers of the same survey stations in 2004 are indicated in parentheses; only the coordinates and characteristics have changed somewhat for station No. 13, based 1 km further south to replace former station No. 24 destroyed by fall storms.

[2] – distance was calculated to account for the observers' height, taken as 1.8 m.

[3] – no observations were performed from these survey stations.

Table 2

Flight Directions and Time Expenditure,
Aerial Gray Whale Surveys along the Northeast Sakhalin Coast,
September-November 2005

Date	Time		Area		Total time *hrs:min*
	takeoff	landing	Piltun	Offshore	
Stage 1 (September 17-19)					
17.09	9:47	12:11	***Khabarovsk – Nogliki Flight***		2:24
17.09	14:06	17:23		transects 3-9	3:17
18.09	13:08	15:42	transects 1-4		2:34
18.09	16:24	18:26		transects 2, 8-11	2:02
19.09	12:00	14:28	Nogliki – Khabarovsk Flight		2:28
				Всего :	12:45
Stage 2 (October 3-8)					
3.10	10:08:00	12:43:00	Khabarovsk - Okha Flight		2:35
4.10	9:53:00	11:05:00	transects 1-2		2:12
7.10	9:50:00	12:59:00	transects 1-2	transects 7-10	3:09
7.10	14:08:00	17:16:00	transects 3-4	transects 3-6	3:08
8.10	9:43:00	12:44:00	transects 1-2	transects 1,2, 5,6	3:03
8.10	13:59:00	16:26:00	Okhka – Khabarovsk Flight		2:27
				Всего :	16:34
Stage 3 (October 17-24)					
17.10	10:40:00	16:20:10	Khabarovsk - Okha Flight		2:58
20.10	13:12:00	14:24:00	transects 1-2		1:12
22.10	15:04:00	17:15:00	transects 1-4		2:11
23.10	10:40:00	13:19:00	transects 1-2	transects 7-10	3:25
23.10	14:18:00	17:20:00	transects 1-2	transects 3-6	3:39
24.10	9:44:00	13:11:00	transects 1-2	transects 5-10	3:28
24.10	14:13:00	17:06:00	Okhka – Khabarovsk Flight		2:53
			Total :		19:46
Stage 4 (November 1-10)					
1.11	12:19:20	14:41:15	Khabarovsk - Okha Flight		2:23
2.11	9:40:00	12:17:00	transects 1-2		2:37
9.11	10:42:00	13:59:00	transect 2	transects 5-10	3:18
9.11	14:35:00	16:33:00	transects 1, 3	transects 3-4	2:03
10.11	15:00:00	17:30:00	Okhka – Khabarovsk Flight		2:30
				Total:	12:51

Table 3

Number of Gray Whales Recorded During Aerial Surveys in the Piltun Area, September-November 2005

Stage	Date	Transects[1]				
		1	2	3	4	TOTAL
1	18.IX[2]	11	5	1	0	17
2	4.X	15	5			20
	7.X	11	9 (2)	0 (4)	0	20 (6)
	8.X	13	9 (2)			22 (2)
3	20.X	1	1			2
	22.X	2	1	0	1	4
	23.X	4 (1)	1			5 (1)
	24.X	2	0 (1)			2 (1)
4	2.XI	4	0			4
	9.XI	0	4 (1)	0		4 (1)

Note:

1 – without parentheses – number of whales recorded in the survey zone of the transects (viewing angle 30-110%); in parentheses – number of whales observed outside the survey zone of the transects; empty cells indicate that no survey was performed on those transects.

2 – the north part of the area was not covered (Fig. 3).

Table 4

Number of Gray Whales Recorded During Aerial Surveys in the Offshore Area, September-November 2005

Stage	Date	Transects											Total
		1	2	3	4	5	6	7	8	9	10	11	
1	17.IX							1	1	5	0		7
	18 .IX		0						2	2	0	0	4
2	7.X			2	0	0	0	1	2	0	1		6
	8.X	0	0			0	0						0
3	23.X			0	0	0	0	3 (1)	0	0	1		4 (1)
	24.X					0	0	4	1 (3)	2 (2)	0		7 (5)
4	9.XI			0	0	0	0	1	1	0	4		6

Note: without parentheses – number of whales recorded within the survey zone of the transects (viewing angle 30-110%); in parentheses – number of whales observed outside the survey zone of the transects; empty cells indicate that no survey was performed on those transects.

Table 5

Results of Complete Vessel-Based Gray Whale Surveys
in the Piltun and Offshore Areas, July-October 2005

Area / Date	Number of whales recorded on survey transects											
	July		August				September				October	
	15	16	10	11	18	19	5	6	17	18	1	2
Piltun	x	45	x	65	67	x	50	x	x	69	53	x
Offshore	-	x	-	x	x	1	x	6	14	x	x	25
Total:	45		65		68		56		83		78	
Water area covered (%)	133	100	130	95	100	89	94	126	111	100	50	85

Note: x – no survey planned.

- – no whales observed.

Table 6

Number of Gray Whales Recorded During Vessel-Based Surveys in the Piltun Area in July-October 2005

Date	Segments and their boundaries						Total	Comments
	1	2	3	4	5	6		
	52°30' - 52°40' NL	52°40' - 52°50' NL	52°50' - 53°00' NL	53°00' - 53°10' NL	53°10' - 53°20' NL	53°20' - 53°30' NL		
13.VII		8	35	4	3	4	54	Duplicate sightings were not counted.
14.VII		8	16	12	4	2	42	One whale entered at latitude 53°31.929'.
16.VII	2	9	18	5	7	4	45	
17.VII			10				10	Duplicate sightings were not counted.
18.VII			30				30	
19.VII		7	2				9	
22.VII	1	2					3	
24.VII			9				9	
27.VII			15	4	6		25	
28.VII					12	7	19	Duplicate sightings were not counted.
29.VII		1	6	13	18		38	Duplicate sightings were not counted.
30.VII					11	5	16	
6.VIII	3	4					7	
7.VIII		2	8	14	7		31	Duplicate sightings were not counted.
8.VIII		8	11	19			38	
9.VIII	2	10	12				24	
11.VIII		12	9	17	23	4	65	
14.VIII	1	1	17	7			26	
16.VIII		9	7	8	2		26	
17.VIII	1	11	20	2	8	1	43	
18.VIII		8	16	10	23	10	67	One whale entered at latitude 53°30,810'.
20.VIII		14	3	16	22	2	57	
21.VIII				21	12	26	59	
22.VIII	1		1	1			3	
23.VIII	5	8	9	18	2		42	
24.VIII	3	11	7				21	
25.VIII	4	8	8	14	27	5	66	
26.VIII		1	10	3			14	
27.VIII				16	19	3	38	
28.VIII	1	8	16	2	22	2	51	One whale entered at latitude 52°27,982'.
31.VIII			8	18	10	14	50	
1.IX	2	7	2	28	22	11	72	Two whales entered at latitude 53°30,402'.
5.IX		7	13	7	15	8	50	
7.IX	1	2	7	13	27	2	52	The area was covered as far as53°26' NL.
10.IX		1	9				10	
16.IX		3					3	
18.IX	3	2	7	5	39	13	69	One whale entered at latitude 52°29,065'.
19.IX			7	8	23	6	44	
20.IX			4				4	
22.IX				10	54		64	Duplicate sightings were not counted.
24.IX	4	4	9	3	13		33	
25.IX					22	21	43	Duplicate sightings were not counted.
26.IX		7	5				12	
29.IX	3		5	1	26	27	62	One whale entered at latitude 53°32,871'.
1.X			13	4	36		53	

Table 7

Time Expenditure during Onshore Vehicle-Based Gray Whale Surveys
in the Piltun Area, June-October 2005

Months, dates	Number of calendar days	Number of full surveys			Number of partial surveys		Total				Working days
							N*		S*		
		N*	S*	Including concurrent	N*	S*	*n*	Time *hrs:min*	*n*	Time *hrs:min*	
June, 22-30	9	5	4	3	0	0	5	12:00	4	6:04	6
July, 1-31	31	10	11	8	5	0	15	27:54	11	16:41	18
August, 1-31	31	13	12	10	1	1	14	33:00	13	18:32	15
September, 1-30	30	15	15	14	4	2	19	39:30	17	23:23	21
October, 1-17	17	6	5	4	2	2	8	15:54	7	8:31	10
Total	118	49	47	39	12	5	61	128:18	52	73:11	70

Note: * - N – North (Odotpu-Piltun) section; S – South (Astokh-Chayvo) section.

The times indicated in this table include only time spent directly on observations; time spent on travel to survey stations and travel from one station to another were not included in the analysis.

Table 8.

Results of Onshore Gray Whale Surveys
in the Piltun Area, June-October 2005

Date		Number of whales recorded at survey stations													Σ		Total
		North section (N)								South section (S)					N	S	
		1	2	3	4	5	6	7	8	9	10	11	12	13			
June	25	0	0	0	2	2	4	5	4						17		
	26	0	1	2	0	3	4	3	1	4	1	0	1	0	14	6	20
	27									3	0	0	0	0		3	
	28	0	2	1	2	2	2	0	0						9		
	29	0	2	3	0	0	5	6	3	1	2	8	0	0	19	11	30
	30	2	2	4	2	2	6	3	1	2	1	1	1	0	22	5	27
July	1	0	0	2	1	3	5	4	3	6	2	4	4	0	18	16	34
	2	1													1		
	3									6	3	1	1	2		13	
	4	1	4	8	6	2	6	10	10	0	0	0	3	0	47	3	50
	5	4	9	8	2	1	0	8	12	6	11	0	0	0	44	17	61
	7									8	14	4	3	1		30	
	8	0	5												5		
	12	3	5	4	2	6	11	3	18	17	5	0	2	0	52	24	76
	13	4	1	0	0	0	10	5	3	3	4	3	1	0	23	11	34
	14	0	2	3	4	3	10	7	12						41		
	15	3	4	1	7	5	12	11	16	19	7	1	1	0	59	28	87
	16	3	8	8											19		
	23	15	20	8											43		
	24	19	24	22	10										75		
	26	1	11	7	7	11	17	10	9	13	15	1	0	0	73	29	102
	27									9	13	3	0	0		25	
	28	5	13	13	12	9	5	5	9	16	7	4	0	0	71	27	98
	29	6	18	15	6	4	4	0	4	8	7	5	6	1	57	27	84
August	6	3	13	19	9	11	4	8	3	9	3	0	3	0	70	15	85
	7	13	11	10	12	5	3	6	6	12	1	1	5	0	66	19	85
	8	3	15	19	11	6	11	6	17	17	4	1	5	2	88	29	117
	9	7	15	11	10	12	14	7	14	13	4	1	3	2	90	23	113
	10	0	5	13	10	7	4	4	6						49		
	11	0	10	15	10	10	5	4	4	7					58	7	
	18	7	15	24	3	2	3	5	12	19	9	0	0	0	71	28	99
	19	6	19	15	14	16	11	4	4	14	4	0	0	0	89	18	107
	20	9	26	30	19	9	5	3	3	10	5	0	0	0	104	15	119
	21			5	9	11	11	4	7	13	5	2	1	1	47	22	
	22									8	7	0	0	0		15	
	23	3	21	32	20	5	2	3	5	11	8	1	1	1	91	22	113
	25	11	23	18	15	10	13	8	6	3	4	1	1	0	104	9	113
	26	1	15	15	7	1	10	11	13	6	9	0	1	0	73	16	89
	27	4	8	13	16	6	6	8	14						75		
September	1	2	16	20	19	18	17	10	0	8	1	0	0	0	102	9	111
	5	23	20	16	6	9	5	5	4	10	4	0	0	0	88	14	102
	6	14	30	25	17	1	1	3	4	14	5	0	0	0	95	19	114
	7	13	18	18	14	9	3	7	9						91		
	11	2	5	6	1	3	9	4	6	7	16	0	1	0	36	24	60
	13	0	6												6		
	14	15	20	25	19	7	2	6	10	4	1	0	0	0	104	5	109
	15	7	35	35	10	3	7	7	1	0	0	0	1	0	105	1	106
	16	11	27	27	7	2	1	5	3	2	2	0	1	0	83	5	88
	17	6	30	31	10	4	2	2	2	2	1	0	2	0	87	5	92

Date		Number of whales recorded at survey stations													Σ		Total
		North section (N)								South section (S)					N	S	
		1	2	3	4	5	6	7	8	9	10	11	12	13			
	18	4	15	20											39		
	20	4													4		
	21									3	1	0	2	0		6	
	22	7	14	21	17	13	5	5	5	8	3	0	3	2	87	16	103
	23	5	20	35	25	19	6	3	6	9	2	5	3	0	119	19	138
	24	15	25	27	14	5	1	2	2	5	4	0	3	2	91	14	105
	25	14	31	33	27	7	3	3	7	4	2	0	2	0	125	8	133
	26	11	27	42	17									1	97	1	
	27	7	18	16	10	4	2	2	3	6	3	0	2	0	62	11	73
	28	21	38	33	9	1	0	0	4	1	0	0	4	2	106	7	113
	30								1	4					1	4	
	1	18	33	39	14	3	0	1	6	11	6	3	3	0	114	23	137
	2	0	21	31	7	2	0	3	7	7	3	2	4	2	71	18	89
	7	14	18	14	4	4	6	1	1						62		
	8	7	17	3	7	9	9	4	0	5					56	5	
October	10	9	11	19	13	10	4	6	2	5	1	1	9	6	74	22	96
	11												1	0		1	
	12							4	2						6		
	14	3	18	6											27		
	15									5	0	1	10	3		19	
	16	1	4	4	6	3	2	7	2	5	5	0	11	2	29	23	52

Table 9.

Frequency of Gray Whale Sightings beyond the 20-Meter Isobath,
Piltun Area, 2005 (vessel-based survey data).

Sector No.	July		August		September		October		Total	
	1	2	1	2	1	2	1	2	1	2
1	3		21	9.5	13	7.7			37	8.1
2	44		120	2.5	33				197	1.5
3	183	7.1	205	7.8	72	15.3	13	7.7	473	8.7
4	41		186	9.7	80	21.3	4		311	11.3
5	102	29.4	199	25.6	254	17.7	36	25	591	22.8
6	23	34.8	67	37.3	88	30.7			178	33.7
Total	396	12.9	798	14.4	540	27.0	53	18.9	1787	15.5

Notes:
1 – total number of whales in the sector (number of animals)
2 – number of whales sighted beyond the 20-meter isobath (% of number of animals in the sector)

Table 10-a

Correlation Table of Seasonal Variations in Gray Whale Distribution in the Piltun Area, 2005
(based on onshore survey data)

	Arrival Period										Feeding Season																												Departure period	
	stage 1					stage 2					stage 1												Redistribution					stage 2													
Date	26/6	29/6	30/6	1/7	4/7	5/7	12/7	13/7	15/7	26/7	28/7	29/7	6/8	7/8	8/8	9/8	11/8	18/8	19/8	20/8	23/8	25/8	26/8	1/9	5/9	6/9	11/9	14/9	15/9	16/9	17/9	22/9	23/9	24/9	25/9	27/9	28/9	1/10	10/10	16/10
26/6	1.0	0.7	0.6	0.8	0.8	0.2	0.7	1.0	0.7	0.7	0.0	-0.7	0.0	-0.2	0.4	0.5	-0.2	-0.2	-0.6	-0.9	-0.1	0.0	0.6	-0.1	-1.0	-1.0	0.8	-0.9	-0.2	-0.4	-0.4	-0.1	-0.2	-0.5	-0.4	-0.4	-0.5	-0.5	-0.5	0.2
29/6	0.7	1.0	0.3	0.8	0.3	0.0	0.3	0.7	0.1	0.1	-0.7	-0.9	-0.5	-0.9	-0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-0.6	-0.5	-0.2	-0.2	-0.9	-1.0	0.2	-0.8	-0.8	-0.8	-0.8	-0.7	-0.6	-0.9	-0.8	-0.9	-0.9	-0.9	-0.9	0.2
30/6	0.6	0.3	1.0	0.9	0.9	-0.5	0.0	0.9	0.2	0.4	0.0	-0.4	0.6	0.1	-0.1	-0.1	0.4	-0.5	0.2	-0.1	0.3	0.7	0.4	0.7	-0.4	-0.6	0.2	0.0	0.2	0.1	0.3	0.5	0.4	0.2	0.3	0.1	0.5	-0.1	0.2	0.0
1/7	0.8	0.8	0.9	1.0	0.9	-0.2	0.1	1.0	0.1	0.3	-0.6	-1.0	0.1	-0.7	-0.2	-0.2	0.2	-0.4	-0.1	-0.5	-0.2	0.1	-0.1	0.4	-0.8	-0.9	0.2	-0.5	-0.8	-0.6	-0.3	-0.1	-0.1	-0.5	-0.4	-0.7	-0.5	-0.8	-0.5	0.3
4/7	0.8	0.3	0.9	0.9	1.0	-0.5	0.4	0.9	0.4	0.6	0.1	-0.4	0.4	0.1	0.1	0.2	0.0	-0.7	-0.3	-0.6	0.1	0.6	0.7	0.3	-0.6	-0.8	0.5	-0.4	0.2	0.1	0.1	0.3	0.1	0.0	0.1	0.1	0.5	-0.1	0.0	-0.1
5/7	0.2	0.0	-0.5	-0.2	-0.5	1.0	0.7	0.0	0.9	0.8	0.7	0.0	0.0	0.1	1.0	0.9	0.0	0.9	0.0	-0.2	0.3	-0.8	0.4	-0.3	-0.4	-0.1	0.7	-0.5	0.4	-0.6	-0.3	-0.1	0.0	-0.3	-0.2	-0.2	-1.0	-0.2	-0.3	0.7
12/7	0.7	0.3	0.0	0.1	0.4	0.7	1.0	0.7	0.9	0.9	0.4	-0.2	-0.1	0.0	0.8	0.9	-0.6	0.3	-0.7	-0.8	-0.1	-0.2	0.7	-0.7	-0.7	-0.5	1.0	-0.9	-0.1	-0.3	-0.5	-0.2	-0.3	-0.4	-0.4	-0.2	-0.4	-0.3	-0.5	0.1
13/7	1.0	0.7	0.9	1.0	0.9	0.0	0.7	1.0	0.6	0.7	0.1	-0.6	0.5	-0.1	0.3	0.4	1.0	-0.2	-1.0	-1.0	0.0	0.3	0.6	0.5	-0.9	-1.0	0.7	-0.8	-0.1	-0.3	-0.4	0.2	-0.3	-0.4	-0.4	-0.3	-0.3	-0.5	-0.5	0.2
15/7	0.7	0.1	0.2	0.1	0.4	0.9	0.9	0.6	1.0	0.9	0.6	-0.1	0.3	0.3	0.9	1.0	-0.1	0.6	-0.2	-0.5	0.3	-0.1	0.7	-0.3	-0.7	-0.5	0.9	-0.8	0.4	-0.3	-0.2	0.2	0.1	-0.2	0.0	0.0	-0.3	-0.1	-0.2	0.5
26/7	0.7	0.1	0.4	0.3	0.6	0.8	0.9	0.7	0.9	1.0	0.7	-0.1	0.3	0.4	0.8	0.9	-0.2	0.5	-0.4	-0.7	0.3	0.2	0.9	-0.4	-0.8	-0.6	0.9	-0.9	0.5	-0.1	0.0	0.3	0.1	0.0	0.1	0.1	-0.1	0.0	-0.1	0.2
28/7	0.0	-0.7	0.0	-0.6	0.1	0.7	0.4	0.1	0.6	0.7	1.0	0.6	0.7	0.9	0.8	0.7	0.4	0.9	0.6	0.6	0.8	0.4	0.6	0.1	0.3	0.5	0.5	0.2	1.0	0.4	0.6	0.7	0.6	0.6	0.7	0.7	0.3	0.6	0.5	0.3
29/7	-0.7	-0.9	-0.4	-1.0	-0.4	0.0	-0.2	-0.6	-0.1	-0.1	0.6	1.0	0.2	0.7	0.1	0.1	0.0	0.3	0.3	0.7	0.3	0.3	0.2	-0.2	0.9	1.0	-0.2	0.7	0.7	0.8	0.6	0.4	0.3	0.7	0.6	0.8	0.9	0.9	0.7	-0.4
6/8	0.0	-0.5	0.6	0.1	0.4	0.0	-0.1	0.5	0.3	0.3	0.7	0.2	1.0	0.8	0.3	0.2	1.0	0.5	1.0	0.8	1.0	0.8	0.3	0.9	0.2	0.2	0.0	0.5	0.8	0.4	0.8	1.0	1.0	0.8	0.9	0.7	0.4	0.5	0.7	0.4
7/8	-0.2	-0.9	0.1	-0.7	0.1	0.1	0.0	-0.1	0.3	0.4	0.9	0.7	0.8	1.0	0.4	0.4	0.5	0.6	0.8	0.9	0.8	0.7	0.5	0.4	0.7	0.9	0.1	0.8	1.0	0.7	0.9	0.9	0.7	0.9	0.9	0.9	0.7	0.9	0.9	0.0
8/8	0.4	-0.2	-0.1	-0.2	0.1	1.0	0.8	0.3	0.9	0.8	0.8	0.1	0.3	0.4	1.0	1.0	0.0	0.9	0.0	-0.2	0.4	-0.1	0.6	-0.3	-0.4	-0.1	0.8	-0.6	0.7	-0.2	0.0	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.7
9/8	0.5	-0.1	-0.1	-0.2	0.2	0.9	0.9	0.4	1.0	0.9	0.7	0.1	0.2	0.4	1.0	1.0	-0.3	0.7	-0.3	-0.4	0.2	-0.1	0.7	-0.6	-0.4	-0.2	0.9	-0.7	0.7	-0.2	-0.2	0.1	0.0	0.2	0.0	0.1	0.1	0.0	0.2	0.6
11/8	-0.2	-0.3	0.4	0.2	0.0	0.0	-0.6	1.0	-0.1	-0.2	0.4	0.0	1.0	0.5	0.0	-0.3	1.0	0.4	0.9	0.7	0.9	0.6	-0.9	0.9	0.0	0.1	-0.5	0.4	0.5	0.1	0.7	0.9	1.0	0.6	0.8	0.5	0.0	0.2	0.6	0.6
18/8	-0.2	-0.4	-0.5	-0.4	-0.7	0.9	0.3	-0.2	0.6	0.5	0.9	0.3	0.5	0.6	0.9	0.7	0.4	1.0	0.5	0.3	0.7	-0.4	-0.1	0.1	0.0	0.2	0.3	-0.1	0.8	-0.2	0.2	0.4	0.5	0.2	0.4	0.2	-0.9	0.2	0.2	0.8
19/8	-0.6	-0.6	0.2	-0.1	-0.3	0.0	-0.7	-1.0	-0.2	-0.4	0.6	0.3	1.0	0.8	0.0	-0.3	0.9	0.5	1.0	0.9	1.0	0.6	-0.9	0.8	0.4	0.4	-0.6	0.7	0.8	0.4	0.9	1.0	1.0	0.8	0.9	0.7	0.2	0.5	0.8	0.5
20/8	-0.9	-0.9	-0.1	-0.5	-0.6	-0.2	-0.8	-1.0	-0.5	-0.7	0.6	0.7	0.8	0.9	-0.2	-0.4	0.7	0.3	0.9	1.0	0.8	0.7	-0.8	0.6	0.8	0.8	-0.8	0.9	1.0	0.7	1.0	0.9	0.8	1.0	1.0	1.0	0.7	0.8	1.0	0.0
23/8	-0.1	-0.6	0.3	-0.2	0.1	0.3	-0.1	0.0	0.3	0.3	0.8	0.3	1.0	0.8	0.4	0.2	0.9	0.7	1.0	0.8	1.0	0.6	0.2	0.7	0.2	0.3	0.0	0.5	0.7	0.3	0.8	0.9	1.0	0.8	0.9	0.7	0.3	0.5	0.7	0.5
25/8	0.0	-0.5	0.7	0.1	0.6	-0.8	-0.2	0.3	-0.1	0.2	0.4	0.3	0.8	0.7	-0.1	-0.1	0.6	-0.4	0.6	0.7	0.6	1.0	0.5	0.7	0.6	0.4	-0.1	0.9	0.9	0.8	0.8	0.8	0.6	0.8	0.8	0.8	0.9	0.7	0.8	-0.3
26/8	0.6	-0.2	0.4	-0.1	0.7	0.4	0.7	0.6	0.7	0.9	0.6	0.2	0.3	0.5	0.6	0.7	-0.9	-0.1	-0.9	-0.8	0.2	0.5	1.0	-0.9	-0.4	-0.3	0.8	-0.7	0.6	0.3	0.2	0.4	0.1	0.2	0.2	0.4	0.4	0.3	0.1	-0.2
1/9	-0.1	-0.2	0.7	0.4	0.3	-0.3	-0.7	0.5	-0.3	-0.4	0.1	-0.2	0.9	0.4	-0.3	-0.6	0.9	0.1	0.8	0.6	0.7	0.7	-0.9	1.0	0.0	0.0	-0.6	0.5	0.3	0.1	0.7	0.9	0.9	0.5	0.7	0.4	0.2	0.1	0.6	0.4
5/9	-1.0	-0.9	-0.4	-0.8	-0.6	-0.4	-0.7	-0.9	-0.7	-0.8	0.3	0.9	0.2	0.7	-0.4	-0.4	0.0	0.0	0.4	0.8	0.2	0.6	-0.4	0.0	1.0	1.0	-0.7	0.9	0.8	1.0	0.7	0.4	0.3	0.8	0.7	0.9	1.0	1.0	0.8	-0.6
6/9	-1.0	-1.0	-0.6	-0.9	-0.8	-0.1	-0.5	-1.0	-0.5	-0.6	0.5	1.0	0.2	0.9	-0.1	-0.2	0.1	0.2	0.4	0.8	0.3	0.4	-0.3	0.0	1.0	1.0	-0.6	0.8	0.9	0.9	0.7	0.4	0.3	0.8	0.7	0.9	1.0	1.0	0.8	-0.4
11/9	0.8	0.2	0.2	0.2	0.5	0.7	1.0	0.7	0.9	0.9	0.5	-0.2	0.0	0.1	0.8	0.9	-0.5	0.3	-0.6	-0.8	0.0	-0.1	0.8	-0.6	-0.7	-0.6	1.0	-0.9	0.2	-0.3	-0.3	0.0	-0.2	-0.3	-0.2	-0.1	-0.3	-0.2	-0.4	0.2
14/9	-0.9	-0.8	0.0	-0.5	-0.4	-0.5	-0.9	-0.8	-0.8	-0.9	0.2	0.7	0.5	0.8	-0.6	-0.7	0.4	-0.1	0.7	0.9	0.5	0.9	-0.7	0.5	0.9	0.8	-0.9	1.0	1.0	0.9	0.9	0.7	0.6	1.0	0.9	0.9	0.9	0.9	1.0	-0.4
15/9	-0.2	-0.8	0.2	-0.8	0.2	0.4	-0.1	-0.1	0.4	0.5	1.0	0.7	0.8	1.0	0.7	0.7	0.5	0.8	0.8	1.0	0.7	0.9	0.6	0.3	0.8	0.9	0.2	1.0	1.0	0.9	1.0	0.9	0.7	1.0	0.9	1.0	0.9	0.9	1.0	-0.2
16/9	-0.4	-0.8	0.1	-0.6	0.1	-0.6	-0.3	-0.3	-0.3	-0.1	0.4	0.8	0.4	0.7	-0.2	-0.2	0.1	-0.2	0.4	0.7	0.3	0.8	0.3	0.1	1.0	0.9	-0.3	0.9	0.9	1.0	0.8	0.6	0.4	0.9	0.7	0.9	1.0	0.9	0.9	-0.6
17/9	-0.4	-0.8	0.3	-0.3	0.1	-0.3	-0.5	-0.4	-0.2	0.0	0.6	0.6	0.8	0.9	0.0	-0.2	0.7	0.2	0.9	1.0	0.8	0.8	0.2	0.7	0.7	0.7	-0.3	0.9	1.0	0.8	1.0	0.9	0.9	1.0	1.0	0.9	0.8	0.8	1.0	-0.1
22/9	-0.1	-0.7	0.5	-0.1	0.3	-0.1	-0.2	0.2	0.2	0.3	0.7	0.4	1.0	0.9	0.2	0.1	0.9	0.4	1.0	0.9	0.9	0.8	0.4	0.9	0.4	0.4	0.0	0.7	0.9	0.6	0.9	1.0	0.9	0.9	1.0	0.8	0.6	0.7	0.9	0.2
23/9	-0.2	-0.6	0.4	-0.1	0.1	0.0	-0.3	-0.3	0.1	0.1	0.6	0.3	1.0	0.7	0.2	0.0	1.0	0.5	1.0	0.8	1.0	0.6	0.1	0.9	0.3	0.3	-0.2	0.6	0.7	0.4	0.9	0.9	1.0	0.8	0.9	0.7	0.4	0.5	0.8	0.4
24/9	-0.5	-0.9	0.2	-0.5	0.0	-0.3	-0.4	-0.4	-0.2	0.0	0.6	0.7	0.8	0.9	0.2	0.2	0.6	0.2	0.8	1.0	0.8	0.8	0.2	0.5	0.8	0.8	-0.3	1.0	1.0	0.9	1.0	0.9	0.8	1.0	1.0	1.0	0.9	0.9	1.0	0.2
25/9	-0.4	-0.8	0.3	-0.4	0.1	-0.2	-0.4	-0.4	0.0	0.1	0.7	0.6	0.9	0.9	0.1	0.0	0.8	0.4	0.9	1.0	0.9	0.8	0.2	0.7	0.7	0.7	-0.2	0.9	0.9	0.7	1.0	1.0	0.9	1.0	1.0	0.9	0.7	0.8	1.0	0.0
27/9	-0.4	-0.9	0.1	-0.7	0.1	-0.2	-0.2	-0.3	0.0	0.1	0.7	0.8	0.7	0.9	0.1	0.1	0.5	0.2	0.7	1.0	0.7	0.8	0.4	0.4	0.9	0.9	-0.1	0.9	1.0	0.9	0.9	0.8	0.7	1.0	0.9	1.0	0.9	1.0	1.0	-0.3
28/9	-0.5	-0.9	0.5	-0.5	0.5	-1.0	-0.4	-0.3	-0.3	-0.1	0.3	0.9	0.4	0.7	0.0	0.1	0.0	-0.9	0.2	0.7	0.3	0.9	0.4	0.2	1.0	1.0	-0.3	0.9	0.9	1.0	0.8	0.6	0.4	0.9	0.7	0.9	1.0	1.0	0.9	-0.1
1/10	-0.5	-0.9	-0.1	-0.8	-0.1	-0.2	-0.3	-0.5	-0.1	0.0	0.6	0.9	0.5	0.9	0.1	0.0	0.2	0.2	0.5	0.8	0.5	0.7	0.3	0.1	1.0	1.0	-0.2	0.9	0.9	0.9	0.8	0.7	0.5	0.9	0.8	1.0	1.0	1.0	0.9	-0.4
10/10	-0.5	-0.9	0.2	-0.5	0.0	-0.3	-0.5	-0.5	-0.2	-0.1	0.5	0.7	0.7	0.9	0.2	0.2	0.6	0.2	0.8	1.0	0.7	0.8	0.1	0.6	0.8	0.8	-0.4	1.0	1.0	0.9	1.0	0.9	0.8	1.0	1.0	1.0	0.9	0.9	1.0	0.3
16/10	0.2	0.2	0.0	0.3	-0.1	0.7	0.1	0.2	0.5	0.2	0.3	-0.4	0.4	0.0	0.7	0.6	0.6	0.8	0.5	0.0	0.5	-0.3	-0.2	0.4	-0.6	-0.4	0.2	-0.4	-0.2	-0.6	-0.1	0.2	0.4	0.2	0.0	-0.3	-0.1	-0.4	0.3	1.0

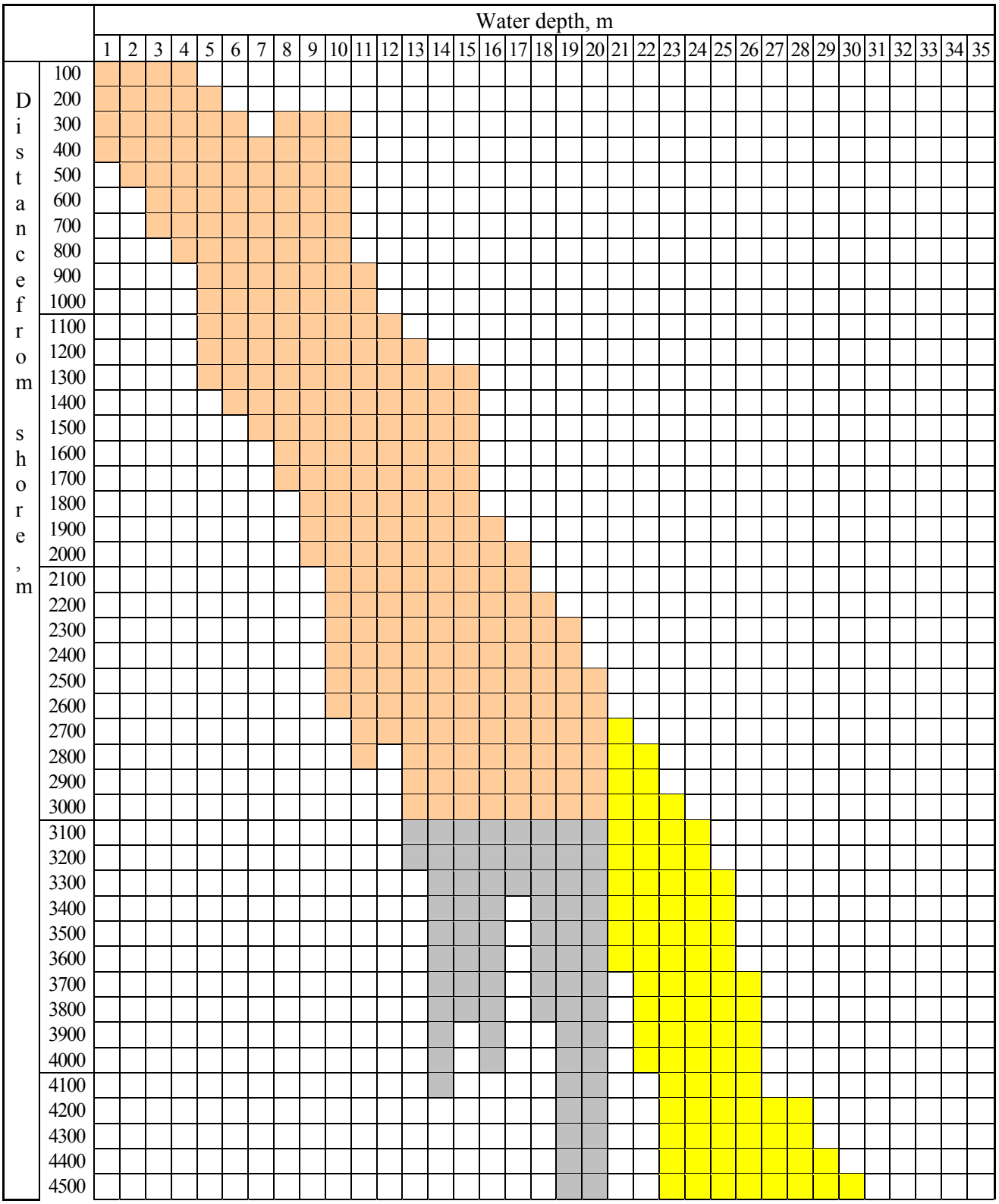
Table 10-b

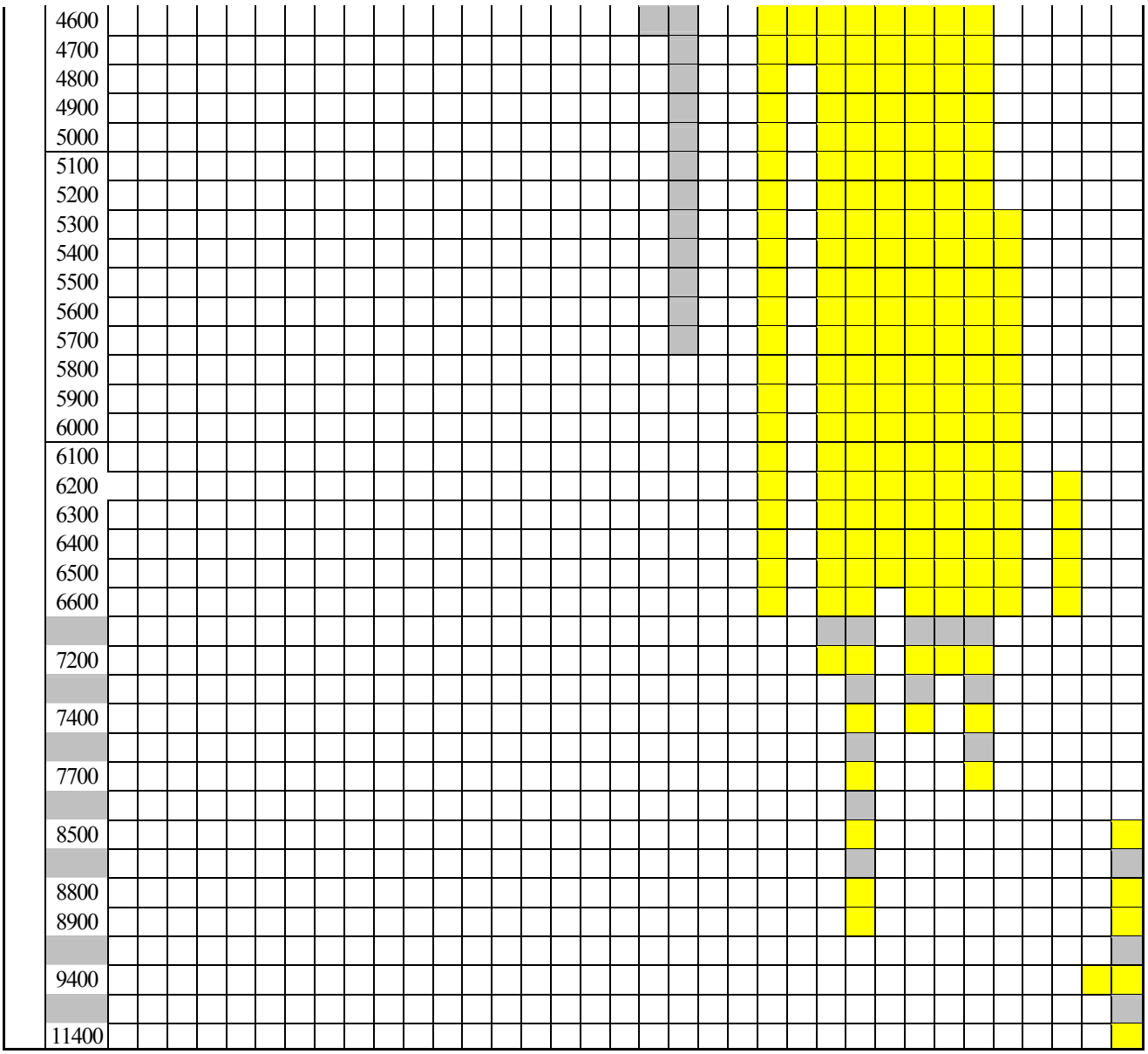
Correlation Table of Seasonal Variations in Gray Whale Distribution in the Odotu-Piltun Section of the Piltun Area, 2005 (based on complete onshore survey data)

	Arrival Period													Feeding Season																																	Depa	
	stage 1							stage 2						stage 1													Redistribution							stage 2												Per	
Date	25/6	26/6	28/6	29/6	30/6	1/7	4/7	5/7	12/7	13/7	14/7	15/7	26/7	28/7	29/7	6/8	7/8	8/8	9/8	10/8	11/8	18/8	19/8	20/8	23/8	25/8	26/8	27/8	1/9	5/9	6/9	7/9	11/9	14/9	15/9	16/9	17/9	22/9	23/9	24/9	25/9	27/9	28/9	1/10	2/10	7/10	8/10
25/6	1.0	1.0	-1.0	1.0	1.0	0.9	1.0	-0.7	0.8	1.0	1.0	0.6	0.7	-0.4	-0.5	-0.2	-0.3	-0.2	0.5	-0.4	-0.2	-0.4	-0.1	-0.4	-0.5	0.2	0.9	-0.5	-1.0	-0.1	-0.5	-0.3	0.9	-0.2	-1.0	-0.2	-0.4	-0.2	-0.5	-0.4	-0.5	-0.4	0.1	-0.5	-0.5	0.4	1.0
26/6	1.0	1.0	0.2	1.0	0.9	1.0	1.0	-0.1	0.7	1.0	0.9	0.7	0.9	-0.3	-0.5	0.1	-0.3	0.2	0.5	0.0	0.1	-0.1	0.0	-0.3	-0.2	0.2	0.6	-0.2	0.0	-0.3	-0.5	-0.1	0.9	-0.3	-1.0	-0.4	-0.3	0.0	-0.1	-0.4	-0.4	-0.4	0.0	-0.5	-0.4	-0.3	-0.5
28/6	-1.0	0.2	1.0	0.1	0.7	0.5	0.2	0.9	-0.2	1.0	0.6	0.8	0.6	0.4	-0.4	0.8	0.2	0.9	1.0	0.9	0.9	0.7	0.7	0.2	0.8	0.4	-0.8	0.8	1.0	-0.5	-0.4	0.7	0.0	-0.1	0.1	-0.6	0.3	0.7	0.8	0.1	0.4	0.0	-1.0	-0.3	0.2	-0.9	-1.0
29/6	1.0	1.0	0.1	1.0	0.8	0.9	1.0	-0.3	0.9	1.0	0.9	0.7	0.7	-0.5	-0.6	-0.1	-0.5	-0.1	0.3	-0.2	-0.1	-0.3	-0.2	-0.5	-0.4	0.0	0.5	-0.4	-0.1	-0.4	-0.6	-0.3	0.9	-0.4	-1.0	-0.5	-0.5	-0.2	-0.3	-0.6	-0.6	-0.6	-0.8	-0.6	-0.6	-0.3	-0.4
30/6	1.0	0.9	0.7	0.8	1.0	1.0	0.9	0.3	0.6	1.0	1.0	1.0	1.0	-0.4	-1.0	0.2	-0.6	0.3	0.8	0.3	0.3	-0.1	-0.1	-0.6	0.0	-0.5	0.0	0.0	0.5	-1.0	-0.9	-0.1	0.8	-0.8	-0.7	-1.0	-0.5	-0.1	0.0	-0.7	-0.4	-0.8	-1.0	-0.9	-0.6	-1.0	-0.8
1/7	0.9	1.0	0.5	0.9	1.0	1.0	0.9	0.1	0.7	0.9	1.0	0.9	0.8	-0.3	-0.6	0.2	-0.3	0.3	0.4	0.2	0.3	0.0	0.1	-0.3	0.0	0.1	0.3	0.0	0.3	-0.5	-0.7	0.0	0.8	-0.4	-0.8	-0.5	-0.3	0.0	0.0	-0.4	-0.3	-0.5	-0.5	-0.6	-0.4	-0.6	-0.7
4/7	1.0	1.0	0.2	1.0	0.9	0.9	1.0	-0.2	0.7	1.0	0.8	0.7	0.9	-0.3	-0.5	0.1	-0.3	0.1	0.5	0.0	0.1	-0.2	0.0	-0.3	-0.2	0.2	0.6	-0.2	0.0	-0.3	-0.5	-0.1	0.9	-0.3	-1.0	-0.4	-0.3	-0.1	-0.2	-0.4	-0.4	-0.4	0.0	-0.5	-0.4	-0.3	-0.5
5/7	-0.7	-0.1	0.9	-0.3	0.3	0.1	-0.2	1.0	-0.5	-0.3	0.2	0.5	0.1	0.6	0.0	0.7	0.4	0.8	0.1	0.9	0.8	0.7	0.6	0.5	0.9	0.2	-0.5	0.9	1.0	-0.1	0.0	0.7	-0.3	0.2	0.4	-0.1	0.5	0.6	0.8	0.4	0.6	0.3	-0.3	0.1	0.5	-0.5	-0.8
12/7	0.8	0.7	-0.2	0.9	0.6	0.7	0.7	-0.5	1.0	0.8	0.7	0.4	0.3	-0.9	-0.8	-0.6	-0.8	-0.5	-0.2	-0.6	-0.6	-0.8	-0.7	-0.9	-0.8	-0.4	0.2	-0.8	-0.4	-0.7	-0.8	-0.8	0.6	-0.8	-1.0	-0.7	-0.9	-0.7	-0.8	-0.9	-0.9	-0.9	-0.7	-0.8	-0.9	-0.4	-0.1
13/7	1.0	1.0	1.0	1.0	1.0	0.9	1.0	-0.3	0.8	1.0	0.8	0.8	1.0	-0.2	-0.3	0.6	-0.2	0.8	0.7	0.9	0.8	0.0	0.4	-0.2	-0.4	0.5	0.7	-0.6	1.0	-0.1	-0.4	0.1	1.0	-0.1	-1.0	-0.2	-0.2	0.2	-0.1	-0.3	-0.4	-0.3	1.0	-0.4	-0.4	-0.2	-1.0
14/7	1.0	0.9	0.6	0.9	1.0	1.0	0.8	0.2	0.7	0.8	1.0	0.9	0.6	-0.4	-0.8	0.0	-0.5	0.2	0.1	0.2	0.2	-0.2	-0.1	-0.5	-0.1	-0.1	0.1	-0.1	0.4	-0.7	-0.8	-0.2	0.6	-0.6	-0.8	-0.7	-0.4	-0.1	-0.1	-0.6	-0.4	-0.6	-0.8	-0.8	-0.5	-0.8	-0.8
15/7	0.6	0.7	0.8	0.7	1.0	0.9	0.7	0.5	0.4	0.8	0.9	1.0	0.7	0.0	-0.6	0.4	-0.2	0.6	0.3	0.6	0.5	0.3	0.3	-0.1	0.3	0.1	0.0	0.3	0.7	-0.5	-0.6	0.2	0.5	-0.3	-0.5	-0.6	-0.1	0.2	0.3	-0.2	0.0	-0.3	-0.5	-0.6	-0.2	-0.7	-0.9
26/7	0.7	0.9	0.6	0.7	1.0	0.8	0.9	0.1	0.3	1.0	0.6	0.7	1.0	0.2	-0.1	0.5	0.2	0.6	0.8	0.4	0.5	0.4	0.5	0.2	0.3	0.7	0.7	0.2	0.4	0.1	-0.1	0.4	0.9	0.2	-0.8	0.0	0.2	0.5	0.3	0.1	0.1	0.1	0.5	-0.1	0.1	-0.1	-0.8
28/7	-0.4	-0.3	0.4	-0.5	-0.4	-0.3	-0.3	0.6	-0.9	-0.2	-0.4	0.0	0.2	1.0	0.7	0.9	1.0	0.8	0.6	0.8	0.8	1.0	0.9	1.0	0.9	0.8	0.2	0.9	0.6	0.7	0.8	1.0	-0.1	0.9	0.9	0.7	1.0	1.0	0.9	1.0	1.0	0.9	0.6	0.8	1.0	0.4	-0.2
29/7	-0.5	-0.5	-0.4	-0.6	-1.0	-0.6	-0.5	0.0	-0.8	-0.3	-0.8	-0.6	-0.1	0.7	1.0	0.4	0.9	0.3	0.5	0.2	0.3	0.6	0.6	0.8	0.4	0.7	0.4	0.4	-0.2	1.0	1.0	0.6	-0.2	0.9	0.9	1.0	0.8	0.6	0.4	0.9	0.7	0.9	1.0	1.0	0.8	0.9	0.7
6/8	-0.2	0.1	0.8	-0.1	0.2	0.2	0.1	0.7	-0.6	0.6	0.0	0.4	0.5	0.9	0.4	1.0	0.8	1.0	0.7	0.9	1.0	1.0	1.0	0.8	0.9	0.8	0.2	0.9	0.9	0.5	0.5	1.0	0.2	0.7	0.6	0.4	0.9	1.0	1.0	0.8	0.9	0.7	0.4	0.5	0.8	0.1	-0.7
7/8	-0.3	-0.3	0.2	-0.5	-0.6	-0.3	-0.3	0.4	-0.8	-0.2	-0.5	-0.2	0.2	1.0	0.9	0.8	1.0	0.7	0.7	0.6	0.7	0.9	0.9	1.0	0.8	0.9	0.4	0.7	0.4	0.9	0.9	0.9	0.0	1.0	1.0	0.9	1.0	0.9	0.8	1.0	1.0	1.0	0.8	0.9	1.0	0.6	0.1
8/8	-0.2	0.2	0.9	-0.1	0.3	0.3	0.1	0.8	-0.5	0.8	0.2	0.6	0.6	0.8	0.3	1.0	0.7	1.0	0.7	1.0	1.0	0.9	0.9	0.8	0.9	0.7	0.2	0.9	1.0	0.3	0.3	0.9	0.2	0.6	0.4	0.3	0.8	0.9	1.0	0.7	0.8	0.6	0.3	0.4	0.7	-0.1	-0.8
9/8	0.5	0.5	1.0	0.3	0.8	0.4	0.5	0.1	-0.2	0.7	0.1	0.3	0.8	0.6	0.5	0.7	0.7	0.7	1.0	0.5	0.7	0.7	0.8	0.7	0.5	1.0	0.8	0.4	0.9	0.6	0.4	0.7	0.7	0.7	-0.1	0.6	0.6	0.8	0.5	0.6	0.5	0.6	0.8	0.5	0.6	0.4	-1.0
10/8	-0.4	0.0	0.9	-0.2	0.3	0.2	0.0	0.9	-0.6	0.9	0.2	0.6	0.4	0.8	0.2	0.9	0.6	1.0	0.5	1.0	1.0	0.9	0.8	0.7	1.0	0.5	-0.1	1.0	1.0	0.2	0.2	0.9	0.0	0.4	0.5	0.1	0.7	0.8	1.0	0.6	0.8	0.5	0.0	0.2	0.7	-0.3	-0.8
11/8	-0.2	0.1	0.9	-0.1	0.3	0.3	0.1	0.8	-0.6	0.8	0.2	0.5	0.5	0.8	0.3	1.0	0.7	1.0	0.7	1.0	1.0	0.9	0.9	0.8	1.0	0.7	0.1	0.9	1.0	0.3	0.3	0.9	0.1	0.6	0.5	0.3	0.8	0.9	1.0	0.7	0.8	0.6	0.2	0.4	0.7	-0.1	-0.8
18/8	-0.4	-0.1	0.7	-0.3	-0.1	0.0	-0.2	0.7	-0.8	0.0	-0.2	0.3	0.4	1.0	0.6	1.0	0.9	0.9	0.7	0.9	0.9	1.0	1.0	0.9	1.0	0.8	0.1	1.0	0.8	0.6	0.6	1.0	0.0	0.8	0.8	0.5	0.9	1.0	1.0	0.9	1.0	0.8	0.4	0.6	0.9	0.2	-0.5
19/8	-0.1	0.0	0.7	-0.2	-0.1	0.1	0.0	0.6	-0.7	0.4	-0.1	0.3	0.5	0.9	0.6	1.0	0.9	0.9	0.8	0.8	0.9	1.0	1.0	0.9	0.9	0.9	0.4	0.9	0.8	0.7	0.6	1.0	0.2	0.8	0.8	0.6	0.9	1.0	0.9	0.9	0.9	0.8	0.6	0.7	0.9	0.3	-0.5
20/8	-0.4	-0.3	0.2	-0.5	-0.6	-0.3	-0.3	0.5	-0.9	-0.2	-0.5	-0.1	0.2	1.0	0.8	0.8	1.0	0.8	0.7	0.7	0.8	0.9	0.9	1.0	0.8	0.8	0.3	0.8	0.5	0.8	0.9	0.9	-0.1	1.0	1.0	0.8	1.0	0.9	0.9	1.0	1.0	1.0	0.8	0.9	1.0	0.5	0.0
23/8	-0.5	-0.2	0.8	-0.4	0.0	0.0	-0.2	0.9	-0.8	-0.4	-0.1	0.3	0.3	0.9	0.4	0.9	0.8	0.9	0.5	1.0	1.0	1.0	0.9	0.8	1.0	0.6	-0.1	1.0	0.9	0.4	0.5	1.0	-0.1	0.7	0.7	0.4	0.9	0.9	1.0	0.8	0.9	0.7	0.2	0.5	0.8	0.0	-0.6
25/8	0.2	0.2	0.4	0.0	-0.5	0.1	0.2	0.2	-0.4	0.5	-0.1	0.1	0.7	0.8	0.7	0.8	0.9	0.7	1.0	0.5	0.7	0.8	0.9	0.8	0.6	1.0	0.7	0.6	0.6	0.8	0.7	0.8	0.5	0.9	1.0	0.7	0.8	0.9	0.7	0.8	0.7	0.8	0.8	0.7	0.8	0.6	-0.1
26/8	0.9	0.6	-0.8	0.5	0.0	0.3	0.6	-0.5	0.2	0.7	0.1	0.0	0.7	0.2	0.4	0.2	0.4	0.2	0.8	-0.1	0.1	0.1	0.4	0.3	-0.1	0.7	1.0	-0.1	-0.9	0.6	0.3	0.2	0.8	0.5	-0.7	0.5	0.2	0.3	0.0	0.3	0.1	0.4	1.0	0.3	0.2	0.6	0.6
27/8	-0.5	-0.2	0.8	-0.4	0.0	0.0	-0.2	0.9	-0.8	-0.6	-0.1	0.3	0.2	0.9	0.4	0.9	0.7	0.9	0.4	1.0	0.9	1.0	0.9	0.8	1.0	0.6	-0.1	1.0	0.9	0.3	0.4	0.9	-0.2	0.6	0.7	0.3	0.8	0.9	1.0	0.7	0.9	0.7	0.1	0.5	0.8	-0.1	-0.6
1/9	-1.0	0.0	1.0	-0.1	0.5	0.3	0.0	1.0	-0.4	1.0	0.4	0.7	0.4	0.6	-0.2	0.9	0.4	1.0	0.9	1.0	1.0	0.8	0.8	0.5	0.9	0.6	-0.9	0.9	1.0	-0.3	-0.2	0.8	-0.2	0.1	0.3	-0.3	0.5	0.8	0.9	0.4	0.6	0.2	-1.0	-0.1	0.4	-0.7	-0.9
5/9	-0.1	-0.3	-0.5	-0.4	-1.0	-0.5	-0.3	-0.1	-0.7	-0.1	-0.7	-0.5	0.1	0.7	1.0	0.5	0.9	0.3	0.6	0.2	0.3	0.6	0.7	0.8	0.4	0.8	0.6	0.3	-0.3	1.0	1.0	0.6	0.0	1.0	0.8	1.0	0.8	0.7	0.4	0.9	0.7	0.9	1.0	1.0	0.8	0.9	0.7
6/9	-0.5	-0.5	-0.4	-0.6	-0.9	-0.7	-0.5	0.0	-0.8	-0.4	-0.8	-0.6	-0.1	0.8	1.0	0.5	0.9	0.3	0.4	0.2	0.3	0.6	0.6	0.9	0.5	0.7	0.3	0.4	-0.2	1.0	1.0	0.6	-0.2	0.9	0.9	1.0	0.8	0.6	0.5	0.9	0.8	0.9	1.0	1.0	0.9	0.9	0.6
7/9	-0.3	-0.1	0.7	-0.3	-0.1	0.0	-0.1	0.7	-0.8	0.1	-0.2	0.2	0.4	1.0	0.6	1.0	0.9	0.9	0.7	0.9	0.9	1.0	1.0	0.9	1.0	0.8	0.2	0.9	0.8	0.6	0.6	1.0	0.0	0.8	0.8	0.5	1.0	1.0	1.0	0.9	1.0	0.8	0.5	0.6	0.9	0.2	-0.5
11/9	0.9	0.9	0.0	0.9	0.8	0.8	0.9	-0.3	0.6	1.0	0.6	0.5	0.9	-0.1	-0.2	0.2	0.0	0.2	0.7	0.0	0.1	0.0	0.2	-0.1	-0.1	0.5	0.8	-0.2	-0.2	0.0	-0.2	0.0	1.0	0.0	-1.0	0.0	-0.1	0.1	-0.1	-0.1	-0.2	-0.1	0.9	-0.2	-0.2	0.0	-0.3
14/9	-0.2	-0.3	-0.1	-0.4	-0.8	-0.4	-0.3	0.2	-0.8	-0.1	-0.6	-0.3	0.2	0.9	0.9	0.7	1.0	0.6	0.7	0.4	0.6	0.8	0.8	1.0	0.7	0.9	0.5	0.6	0.1	1.0	0.9	0.8	0.0	1.0	1.0	0.9	0.9	0.8	0.7	1.0	0.9	1.0	0.9	1.0	0.9	0.8	0.4
15/9	-1.0	-1.0	0.1	-1.0	-0.7	-0.8	-1.0	0.4	-1.0	-1.0	-0.8	-0.5	-0.8	0.9	0.9	0.6	1.0	0.4	-0.1	0.5	0.5	0.8	0.8	1.0	0.7	1.0	-0.7	0.7	0.3	0.8	0.9	0.8	-1.0	1.0	1.0	0.8	1.0	0.8	0.7	1.0	0.9	1.0	-1.0	0.9	1.0	0.5	0.2
16/9	-0.2	-0.4	-0.6	-0.5	-1.0	-0.5	-0.4	-0.1	-0.7	-0.2	-0.7	-0.6	0.0	0.7	1.0	0.4	0.9	0.3	0.6	0.1	0.3	0.5	0.6	0.8	0.4	0.7	0.5	0.3	-0.3	1.0	1.0	0.5	0.0	0.9	0.8	1.0	0.8	0.6	0.4	0.9	0.7	0.9	1.0	1.0	0.8	0.9	0.7
17/9	-0.4	-0.3	0.3	-0.5	-0.5	-0.3	-0.3	0.5	-0.9	-0.2	-0.4	-0.1	0.2	1.0	0.8	0.9	1.0	0.8	0.6	0.7	0.8	0.9	0.9	1.0	0.9	0.8	0.2	0.8	0.5	0.8	0.8	1.0	-0.1	0.9	1.0	0.8	1.0	0.9	0.9	1.0	1.0	1.0	0.7	0.8	1.0	0.5	-0.1
22/9	-0.2	0.0	0.7	-0.2	-0.1	0.0	-0.1	0.6	-0.7	0.2	-0.1	0.2	0.5	1.0	0.6	1.0	0.9	0.9	0.8	0.8	0.9	1.0	1.0	0.9	0.9	0.9	0.3	0.9	0.8	0.7	0.6	1.0	0.1	0.8	0.8	0.6	0.9	1.0	0.9	0.9	0.9	0.8	0.6	0.7	0.9	0.3	-0.5
23/9	-0.5	-0.1	0.8	-0.3	0.0	0.0	-0.2	0.8	-0.8	-0.1	-0.1	0.3	0.3	0.9	0.4	1.0	0.8	1.0	0.5	1.0	1.0	1.0	0.9	0.9	1.0	0.7	0.0	1.0	0.9	0.4	0.5	1.0	-0.1	0.7	0.7	0.4	0.9	0.9	1.0	0.8	0.9	0.7	0.3	0.5	0.9	0.0	-0.6
24/9	-0.4	-0.4	0.1	-0.6	-0.7	-0.4	-0.4	0.4	-0.9	-0.3	-0.6	-0.2	0.1	1.0	0.9	0.8	1.0	0.7	0.6	0.6	0.7	0.9	0.9	1.0	0.8	0.8	0.3	0.7	0.4	0.9	0.9	0.9	-0.1	1.0	1.0	0.9	1.0	0.9	0.8	1.0	1.0	1.0	0.8	0.9	1.0	0.6	0.1
25/9	-0.5	-0.4	0.4	-0.6	-0.4	-0.3	-0.4	0.6	-0.9	-0.4	-0.4	0.0	0.1	1.0	0.7	0.9	1.0	0.8	0.5	0.8	0.8	1.0	0.9	1.0	0.9	0.7	0.1	0.9	0.6	0.7	0.8	1.0	-0.2	0.9	0.9	0.7	1.0	0.9	0.9	1.0	1.0	0.9	0.6	0.8	1.0	0.4	-0.2
27/9	-0.4	-0.4	0.0	-0.6	-0.8	-0.5	-0.4	0.3	-0.9	-0.3	-0.6	-0.3	0.1	0.9	0.9	0.7	1.0	0.6	0.6	0.5	0.6	0.8	0.8	1.0	0.7	0.8	0.4	0.7	0.2	0.9	0.9	0.8	-0.1	1.0	1.0	0.9	1.0	0.8	0.7	1.0	0.9	1.0	0.9	1.0	1.0	0.7	0.3
28/9	0.1	0.0	-1.0	-0.8	-1.0	-0.5	0.0	-0.3	-0.7	1.0	-0.8	-0.5	0.5	0.6	1.0	0.4	0.8	0.3	0.8	0.0	0.2	0.4	0.6	0.8	0.2	0.8	1.0	0.1	-1.0	1.0	1.0	0.5	0.9	0.9	-1.0	1.0	0.7	0.6	0.3	0.8	0.6	0.9	1.0	1.0	0.8	0.9	1.0
1/10	-0.5	-0.5	-0.3	-0.6	-0.9	-0.6	-0.5	0.1	-0.8	-0.4	-0.8	-0.6	-0.1	0.8	1.0	0.5	0.9	0.4	0.5	0.2	0.4	0.6	0.7	0.9	0.5	0.7	0.3	0.5	-0.1	1.0	1.0	0.6	-0.2	1.0	0.9	1.0	0.8	0.7	0.5	0.9	0.8	1.0	1.0	1.0	0.9	0.8	0.6
2/10	-0.5	-0.4	0.2	-0.6	-0.6	-0.4	-0.4	0.5	-0.9	-0.4	-0.5	-0.2	0.1	1.0	0.8	0.8	1.0	0.7	0.6	0.7	0.7	0.9	0.9	1.0	0.8	0.8	0.2	0.8	0.4	0.8	0.9	0.9	-0.2	0.9	1.0	0.8	1.0	0.9	0.9	1.0	1.0	1.0	0.8	0.9	1.0	0.5	0.0
7/10	0.4	-0.3	-0.9	-0.3	-1.0	-0.6	-0.3	-0.5	-0.4	-0.2	-0.8	-0.7	-0.1	0.4	0.9	0.1	0.6	-0.1	0.4	-0.3	-0.1	0.2	0.3	0.5	0.0	0.6	0.6	-0.1	-0.7	0.9	0.9	0.2	0.0	0.8	0.5	0.9	0.5	0.3	0.0	0.6	0.4	0.7	0.9	0.8	0.5	1.0	1.0
8/10	1.0	-0.5	-1.0	-0.4	-0.8	-0.7	-0.5	-0.8	-0.1	-1.0	-0.8	-0.9	-0.8	-0.2	0.7	-0.7	0.1	-0.8	-1.0	-0.8	-0.8	-0.5	-0.5	0.0	-0.6	-0.1	0.6	-0.6	-0.9	0.7	0.6	-0.5	-0.3	0.4	0.2	0.7	-0.1	-0.5	-0.6	0.1	-0.2	0.3	1.0	0.6	0.0	1.0	1.0
10/10	-0.3	-0.3	0.1	-0.5	-0.7	-0.3	-0.3	0.4	-0.8	-0.2	-0.5	-0.2	0.2	1.0	0.9	0.8	1.0	0.7	0.7	0.6	0.7	0.9	0.9	1.0	0.8	0.9	0.4	0.7	0.4	0.9	0.9	0.9	0.0	1.0	1.0	0.9	1.0	0.9	0.8	1.0	0.9	1.0	0.8	0.9	1.0	0.6	0.1
16/10	0.2	0.5	1.0	0.3	0.7	0.5	0.4	0.6	-0.3	1.0	0.4	0.7	0.8	0.7	0.2	0.9	0.6	0.9	0.8	0.8	0.9	0.8	0.9	0.6	0.8	0.8	0.4	0.8	1.0	0.3	0.2	0.8	0.5	0.5	0.1	0.2	0.6	0.8	0.8	0.5	0.6	0.5	0.3	0.2	0.5	-0.1	-1.0

Sea Depth Ranges at Gray Whale Sighting Points in the Piltun Area
vs. Distance from Shore, June-October 2005 (based on onshore survey data)

(distance from shore – from survey data;
depths – from results of calculations based on depth charts)




4600
4700
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7400
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8800
8900
9400
11400

Table 12

Gray Whale Distribution in the Piltun Area vs. Sea Depth,
June-October 2005 (based on onshore survey data)

Depth, *m*	Number of whales by periods of the season, %						
	Arrival period		Feeding season			Reverse migration period	Average % for season
	stage 1	stage 2	stage 1	Redistribution	stage 2		
0-5	4.9	8.6	11.3	7.7	10.0	10.5	8.8
6-10	49.7	46.3	50.0	44.2	37.1	41.8	44.8
11-15	34.0	34.2	25.2	32.3	37.2	32.6	32.6
16-20	4.9	6.6	4.7	8.5	7.9	9.1	7.0
21-25	4.9	3.4	7.0	5.9	4.8	4.6	5.1
26-30	1.6	0.7	1.6	1.2	2.6	1.1	1.5
31-35	-	0.2	0.2	0.2	0.4	0.3	0.2
Max. concen-tration depth, *m*	10	10	10	10	10	10	
% whales	18.4	17.5	15.8	12.8	11.1	15.8	
Average depth, *m*	11.2	10.7	10.8	11.4	11.7	11.2	

Table 13

The Sizes of Gray Whale Groups Recorded in the Piltun Area
During the Period from July 13 to October 1, 2005
(based on vessel-based survey data)

Number of whales in the group	Number of sightings as %									
	July		August		September*		October		Total	
	1	2	1	2	1	2	1	2	1	2
1	185	65.4	437	73.6	290	70.9	23	65.7	935	70.7
2	94	33.2	123	20.7	102	24.9	8	22.9	327	24.8
3	1	0.3	24	4.0	14	3.4	2	5.7	41	3.1
4	3	1.1	7	1.2	2	0.5	2	5.7	14	1.1
5			3	0.5	1	0.3			4	0.3
Total:	283	100	594	100	409	100	35	100	1321	100

Notes:
1 – absolute number of sightings;
2 – number of sightings as %;
* - including whales sighted off Schmidt Peninsula

Table 14

The Sizes of Gray Whale Groups Recorded in the Piltun Area, June-October 2005
(based on onshore survey data)

Number of whales in the group	June 22-30		July 1-31		August 1-31		September 1-30		October 1-17		Total	
	1	2	1	2	1	2	1	2	1	2	1	2
	n / %	n / %	n / %	n / %	n / %	n / %	n / %	n / %	n / %	n / %	n / %	n / %
1	80 / 86.0	80 / 74.0	516 / 79.0	516 / 64	610 / 78.5	610 / 62.1	1085 / 79,7	1085 / 63,5	401 / 85,5	401 / 72,8	2692 / 80,3	2692 / 64,8
2	11 / 11.8	22 / 20.4	115 / 18.0	230 / 28.5	139 / 17.9	278 / 28.3	214 / 15,7	428 / 25,0	55 / 11,7	110 / 20,0	534 / 15,9	1068 / 25,7
3	2 / 2.2	6 / 5.6	15 / 2.4	45 / 5.5	19 / 2.5	57 / 5.8	57 / 4,2	171 /10,0	12 / 2,6	36 / 6,5	105 / 3,2	315 / 7,6
4			4 / 0.6	16 / 2.0	7/ 0.9	28 / 2.8	6 / 0,4	24 /1,5	1 / 0,2	4 / 0,7	18 / 0,54	72 / 1,7
5					2 / 0.2	10 / 1.0					2 / 0,04	10 / 0,2
Average number of whales in pod:	1.16		1.24		1.26		1.25		1.17		1.24	

Notes: 1 – number of sightings of groups of the specified size (sightings / %), 2 – total number of whales in groups of the specified size (animals / %).

Table 15

The Sizes of Gray Whale Pods Recorded in the Offshore Area
During the Period from August 19 to October 2, 2005
(based on vessel-based survey data)

Number of whales in the group	Number of sightings							
	August		September		October		Total	
	1	2	1	2	1	2	1	2
1	2	100	31	70.5	9	52.9	42	66.7
2			12	27.3	6	35.3	18	28.6
3			1	2.3	1	5.9	2	3.2
4					1	5.9	1	1.6
Total:	2	100	44	100	17	100	63	100

Notes:

1 – absolute number of sightings;
2 – number of sightings as %.

Table 16

Number of Gray Whale Calves Recorded in the Piltun Area in 2005
(based on vessel-based survey data)

July			August			September[2]		
Date	Time	Number of whales[1]	Date	Time	Number of whales[1]	Date	Time	Number of whales[1]
23	18:00	1 (1)	7	8:39	1 (1)	16	9:50	1
26	12:00	1 (1)	9	11:40	1 (1)	18	10:20	1
27	9:02	1 (1)	14	11:14	1 (2)	18	8:57	1
28	10:33	1 (1)	16	15:12	1 (1)	19	12:31	1 (1)
28	14:00	1	17	9:03	1	19	11:17	1
28	14:17	1 (1)	18	8:04	1(3)	19	12:11	1
			18	11:07	2	19	14:32	2
			20	8:30	1 (1)	20	8:00	1
			24	12:49	1 (1)	22	14:03	1 (1)
			25	13:44	1 (2)	24	12:35	1
						24	15:05	1 (1)
						1.X	7:45	1

Notes:

1 – in parentheses – number of adult whales with calves; no numbers in parentheses indicates that calves were alone.
2 – including October 1.

Table 17

Gray Whale Population in the Piltun Area During the 2004-2005 Feeding Season
(based on data from complete onshore surveys; may include double counts)

Number of whales counted	August		September	
	1-15	16-31	1-15	16-31
	2004			
Maximum	95	122	106	118
Average	72.8	76.6	91.0	90.0
	2005			
Maximum	117	119	114	138
Average	100.0	106.7	100.3	105.6

Table 18-a

Correlation Table of Whale Distribution in the Piltun Area, 2004 and 2005
(based on complete onshore survey data)

			Arrival Period					Feeding Season																									Departure Period						
								stage 1																	R	stage 2													
		Date	05/07/04	06/07/04	12/07/04	13/07/04	14/07/04	26/07/04	31/07/04	01/08/04	02/08/04	03/08/04	06/08/04	07/08/04	16/08/04	17/08/04	22/08/04	27/08/04	28/08/04	29/08/04	30/08/04	05/09/04	06/09/04	07/09/04	10/09/04	11/09/04	13/09/04	14/09/04	15/09/04	16/09/04	24/09/04	01/10/04	05/10/04	06/10/04	07/10/04	08/10/04	09/10/04	11/10/04
Arrival Period	stage 1	26/06/05	0.3	0.4	1.0	-0.3	0.4	-0.7	-0.1	-0.8	-0.5	-0.6	0.1	0.0	0.0	-0.5	-0.3	-0.4	-0.6	-0.5	0.1	-0.4	0.4	-0.5	-0.8	-0.9	-0.5	-0.1	-0.2	-0.6	-0.9	0.5	0.6	-0.7	0.5	0.5	0.1	-0.8
		29/06/05	-0.1	0.4	0.6	-0.1	0.4	-0.7	-0.5	-0.8	-0.6	-0.6	-0.4	-0.5	0.1	-0.6	-0.4	-0.5	-0.7	-0.5	-0.5	-0.4	0.6	-0.5	-0.8	-0.9	-0.9	-0.6	-0.2	-0.6	-0.8	-0.1	-0.5	-0.9	0.1	0.0	-0.1	-0.5
		30/06/05	0.8	0.9	0.7	0.5	0.9	0.2	0.6	0.0	0.2	0.2	0.4	0.4	0.9	-0.1	0.3	0.3	0.2	0.4	0.7	0.4	0.3	0.3	0.0	-0.1	-0.1	0.5	0.6	0.2	0.0	0.0	0.9	-0.3	1.0	0.1	0.3	-0.7
		01/07/05	0.5	0.8	0.8	0.3	0.8	-0.2	0.1	-0.4	-0.1	-0.2	0.1	-0.1	0.6	-0.2	0.1	0.0	-0.2	0.0	0.0	0.1	0.4	0.0	-0.4	-0.5	-0.9	-0.1	0.3	-0.1	-0.5	-0.3	1.0	-0.8	0.8	-0.2	-0.1	-0.8
		04/07/05	0.5	0.6	0.9	0.0	0.7	-0.3	0.3	-0.4	-0.3	-0.3	0.2	0.2	0.5	-0.5	-0.2	-0.2	-0.3	0.0	0.6	0.0	0.6	-0.2	-0.5	-0.5	-0.1	0.4	0.1	-0.2	-0.4	0.4	0.9	-0.3	0.9	0.5	0.5	-0.7
	stage 2	05/07/05	-0.1	-0.1	0.1	-0.5	-0.3	-0.3	-0.1	-0.4	0.0	0.0	0.5	0.4	-0.5	0.4	0.2	0.0	-0.1	-0.4	-0.7	-0.1	-0.7	-0.1	-0.3	-0.3	-0.3	-0.5	-0.2	-0.1	-0.5	0.8	0.3	-0.4	-0.7	0.1	-0.8	-0.4
		12/07/05	-0.1	-0.3	0.7	-0.8	-0.3	-0.9	-0.3	-0.9	-0.7	-0.7	0.1	0.0	-0.7	-0.4	-0.4	-0.7	-0.8	-0.9	-0.2	-0.7	0.0	-0.7	-0.9	-0.9	-0.1	-0.3	-0.7	-0.8	-0.9	0.9	0.3	-0.5	0.0	0.7	0.0	-0.6
		13/07/05	1.0	1.0	1.0	-0.2	0.9	-0.7	0.4	-0.8	-1.0	-1.0	0.5	0.3	0.6	-0.6	0.1	-0.9	-0.9	-0.4	0.3	0.0	0.4	-0.8	-0.9	-0.9	-0.4	0.1	0.5	-0.8	-0.8	0.5	0.9	-0.7	0.7	0.6	0.2	-0.9
		15/07/05	0.2	0.0	0.6	-0.5	-0.1	-0.6	0.1	-0.7	-0.3	-0.3	0.5	0.4	-0.4	0.1	0.1	-0.2	-0.4	-0.6	0.0	-0.3	-0.4	-0.3	-0.6	-0.6	-0.1	0.0	-0.3	-0.3	-0.8	0.9	0.6	-0.5	0.1	0.5	-0.2	-0.7
		26/07/05	0.3	0.1	0.8	-0.5	0.0	-0.7	0.1	-0.8	-0.4	-0.4	0.5	0.4	-0.4	-0.1	-0.1	-0.3	-0.5	-0.7	0.3	-0.4	-0.2	-0.4	-0.7	-0.8	0.1	0.2	-0.4	-0.5	-0.9	0.9	0.7	-0.3	0.3	0.7	0.1	-0.7
Feeding Season	stage 1	28/07/05	0.4	-0.2	0.1	-0.2	-0.3	0.4	0.5	0.3	0.6	0.6	0.8	0.8	-0.2	0.8	0.6	0.5	0.5	0.2	0.5	0.4	-1.0	0.5	0.5	0.4	0.6	0.6	0.2	0.5	0.2	0.7	0.9	0.3	0.1	0.3	0.0	-0.3
		29/07/05	-0.2	-0.7	-0.6	-0.1	-0.7	0.4	0.2	0.6	0.3	0.3	0.1	0.2	-0.3	0.3	0.0	0.2	0.4	0.2	0.4	0.1	-0.3	0.2	0.6	0.7	0.9	0.5	-0.1	0.3	0.7	0.2	0.1	0.9	-0.2	0.2	0.3	0.6
		06/08/05	0.9	0.6	0.1	0.5	0.6	0.9	1.0	0.7	1.0	1.0	0.9	0.9	0.8	0.9	1.0	1.0	0.9	0.9	0.8	1.0	-0.7	1.0	0.8	0.7	0.3	0.9	1.0	1.0	0.6	0.1	0.9	0.2	0.6	-0.1	0.0	-0.4
		07/08/05	0.4	-0.2	-0.1	0.1	-0.2	0.8	0.7	0.8	0.8	0.8	0.7	0.8	0.1	0.8	0.6	0.7	0.8	0.6	0.8	0.6	-0.7	0.7	0.9	0.9	0.8	0.8	0.5	0.8	0.8	0.4	0.8	0.6	0.3	0.2	0.2	0.0
		08/08/05	0.3	-0.2	0.3	-0.5	-0.3	-0.3	0.1	-0.5	-0.1	-0.1	0.6	0.5	-0.5	0.4	0.2	0.0	-0.2	-0.5	0.0	-0.1	-0.7	-0.1	-0.3	-0.4	0.1	0.0	-0.2	-0.1	-0.5	0.8	0.6	0.3	0.3	0.5	-0.3	-0.2
		09/08/05	0.2	-0.3	0.5	-0.7	-0.4	-0.6	-0.1	-0.6	-0.3	-0.3	0.4	0.4	-0.7	0.1	-0.1	-0.3	-0.4	-0.7	0.0	-0.4	-0.4	-0.4	-0.5	-0.5	0.1	0.0	-0.5	-0.4	-0.7	0.9	0.5	0.4	0.4	0.7	-0.1	-0.1
		11/08/05	0.9	0.7	-0.3	0.9	0.7	0.8	1.0	0.6	0.9	0.9	0.9	0.9	0.8	0.9	1.0	1.0	0.9	0.8	0.6	1.0	-0.6	1.0	0.7	0.6	-0.1	0.7	1.0	0.9	0.5	-0.6	0.9	0.0	0.4	-1.0	-0.6	-0.3
		18/08/05	0.2	0.0	-0.3	-0.1	-0.1	0.2	0.3	0.0	0.5	0.5	0.8	0.8	-0.2	0.8	0.6	0.4	0.4	0.0	-0.3	0.3	-1.0	0.4	0.3	0.2	0.0	0.0	0.2	0.4	0.0	0.4	0.7	-0.1	-0.6	-0.4	-0.9	-0.2
		19/08/05	0.7	0.5	-0.6	0.8	0.4	0.9	1.0	0.8	1.0	1.0	0.8	0.9	0.6	0.9	0.9	1.0	1.0	0.9	0.7	1.0	-0.7	1.0	0.9	0.8	0.3	0.9	0.9	1.0	0.7	-0.6	0.8	0.3	0.2	-0.9	-0.5	0.0
		20/08/05	0.4	0.1	-0.9	0.6	0.1	0.9	0.8	1.0	0.9	0.9	0.5	0.7	0.4	0.8	0.7	0.8	0.9	0.8	0.8	0.8	-0.6	0.9	1.0	1.0	0.7	0.9	0.7	0.9	0.9	-0.6	0.4	0.7	0.0	-0.7	-0.1	0.5
		23/08/05	0.8	0.4	-0.1	0.5	0.4	0.8	0.9	0.6	1.0	1.0	0.9	1.0	0.5	1.0	1.0	0.9	0.9	0.7	0.6	0.9	-0.9	0.9	0.8	0.7	0.3	0.7	0.8	0.9	0.5	0.1	1.0	0.2	0.3	-0.2	-0.3	-0.3
		25/08/05	0.7	0.4	0.2	0.5	0.5	0.8	0.8	0.9	0.6	0.7	0.4	0.5	0.8	0.3	0.4	0.6	0.7	0.9	1.0	0.7	0.1	0.7	0.8	0.8	0.6	1.0	0.7	0.7	0.8	0.0	0.6	0.5	0.8	0.2	0.6	-0.1
	R	26/08/05	0.2	-0.6	0.7	-0.5	-0.6	-1.0	0.1	-0.8	-0.9	-0.9	0.3	0.3	-0.9	-0.7	-0.8	-0.9	-0.9	-1.0	0.5	-1.0	0.4	-1.0	-0.9	-0.8	0.4	0.4	-0.9	-0.9	-0.8	0.9	0.6	0.0	0.5	0.9	0.6	-0.4
		01/09/05	1.0	0.8	-0.1	1.0	0.8	0.8	1.0	0.6	0.9	0.8	0.7	0.7	1.0	0.7	0.8	0.9	0.8	0.9	0.8	1.0	-0.3	0.9	0.7	0.6	-0.1	0.8	1.0	0.9	0.5	-0.8	0.8	0.0	0.7	-1.0	-0.3	-0.3
		05/09/05	-0.2	-0.5	-0.9	0.2	-0.5	0.6	0.2	0.8	0.3	0.4	-0.1	0.1	-0.1	0.2	0.0	0.2	0.5	0.5	0.6	0.2	-0.1	0.3	0.7	0.8	1.0	0.6	0.1	0.4	0.9	-0.4	-0.5	1.0	-0.2	-0.1	0.5	0.9
		06/09/05	-0.3	-0.6	-1.0	0.1	-0.5	0.5	0.2	0.8	0.4	0.4	0.0	0.2	-0.2	0.4	0.1	0.3	0.5	0.4	0.4	0.2	-0.3	0.3	0.7	0.8	1.0	0.6	0.0	0.4	0.8	-0.2	-0.6	1.0	-0.4	-0.1	0.2	0.9
		11/09/05	0.0	-0.2	0.8	-0.7	-0.3	-0.9	-0.2	-0.9	-0.6	-0.7	0.2	0.2	-0.6	-0.3	-0.4	-0.6	-0.7	-0.9	0.0	-0.6	0.0	-0.7	-0.8	-0.9	0.0	-0.1	-0.6	-0.7	-0.9	0.9	0.4	-0.4	0.1	0.8	0.1	-0.6
	stage 2	14/09/05	0.2	-0.1	-0.8	0.6	0.0	0.9	0.6	1.0	0.7	0.7	0.1	0.3	0.4	0.4	0.4	0.6	0.8	0.8	0.9	0.6	-0.2	0.7	0.9	1.0	0.8	0.9	0.5	0.7	1.0	-0.7	0.0	0.9	0.2	-0.5	0.3	0.7
		15/09/05	0.5	-0.3	-0.1	0.2	-0.4	0.9	0.7	1.0	0.7	0.8	0.6	0.7	0.0	0.7	0.5	0.6	0.8	0.8	0.9	0.5	-0.8	0.7	1.0	1.0	0.8	1.0	0.4	0.8	1.0	0.6	0.8	0.7	0.4	0.3	0.4	0.1
		16/09/05	0.1	-0.4	-0.3	0.2	-0.3	0.6	0.4	0.8	0.4	0.4	0.1	0.3	0.1	0.1	0.0	0.3	0.5	0.6	0.8	0.2	0.1	0.4	0.7	0.8	0.9	0.8	0.2	0.4	0.9	0.0	0.2	0.9	0.3	0.3	0.7	0.5
		17/09/05	0.6	0.2	-0.3	0.6	0.2	1.0	0.9	1.0	0.9	0.9	0.6	0.7	0.6	0.7	0.7	0.9	1.0	0.9	0.8	0.8	-0.5	0.9	1.0	1.0	0.7	0.9	0.8	0.9	0.9	-0.1	0.7	0.7	0.4	-0.2	0.2	0.1
		22/09/05	0.8	0.5	0.0	0.5	0.5	1.0	1.0	0.8	1.0	1.0	0.8	0.9	0.7	0.9	0.9	1.0	1.0	0.9	0.9	1.0	-0.6	1.0	0.9	0.9	0.5	0.9	0.9	1.0	0.8	0.1	0.9	0.4	0.6	0.0	0.1	-0.2
		23/09/05	0.8	0.5	-0.2	0.7	0.5	0.9	1.0	0.7	1.0	1.0	0.9	0.9	0.7	0.9	1.0	1.0	1.0	0.9	0.7	1.0	-0.7	1.0	0.9	0.8	0.3	0.8	0.9	1.0	0.6	-0.1	0.8	0.3	0.4	-0.4	-0.2	-0.2
		24/09/05	0.5	0.0	-0.4	0.4	0.0	0.9	0.8	1.0	0.8	0.8	0.5	0.7	0.4	0.7	0.6	0.8	0.9	0.8	0.8	0.7	-0.5	0.8	1.0	1.0	0.8	0.9	0.6	0.8	1.0	0.0	0.6	0.8	0.5	0.1	0.3	0.4
		25/09/05	0.6	0.2	-0.3	0.5	0.2	1.0	0.9	0.9	0.9	1.0	0.7	0.8	0.5	0.8	0.8	0.9	1.0	0.9	0.8	0.9	-0.6	0.9	1.0	1.0	0.7	0.9	0.8	1.0	0.9	0.0	0.8	0.6	0.4	-0.1	0.1	0.1
		27/09/05	0.4	-0.2	-0.3	0.3	-0.2	0.8	0.7	0.9	0.7	0.8	0.5	0.6	0.2	0.6	0.5	0.6	0.8	0.7	0.8	0.6	-0.4	0.7	0.9	1.0	0.9	0.9	0.4	0.7	1.0	0.1	0.6	0.8	0.3	0.1	0.4	0.3
		28/09/05	0.3	-0.2	-0.2	0.3	0.0	0.6	0.4	0.8	0.2	0.3	0.0	0.2	0.3	-0.2	-0.1	0.2	0.4	0.6	0.8	0.2	0.7	0.3	0.7	0.8	0.9	0.8	0.2	0.3	0.9	0.0	0.2	0.8	0.7	0.4	0.9	0.6
		01/10/05	0.1	-0.5	-0.4	0.1	-0.4	0.6	0.5	0.8	0.5	0.5	0.3	0.4	-0.1	0.4	0.2	0.4	0.6	0.5	0.7	0.3	-0.3	0.4	0.8	0.9	1.0	0.8	0.2	0.5	0.9	0.1	0.4	0.9	0.1	0.2	0.5	0.5
Depart		10/10/05	0.5	0.0	-0.4	0.5	0.1	0.9	0.8	1.0	0.8	0.8	0.5	0.6	0.4	0.6	0.6	0.8	0.9	0.9	0.8	0.7	-0.4	0.8	1.0	1.0	0.8	0.9	0.6	0.9	1.0	-0.1	0.5	0.8	0.6	0.1	0.3	0.4
		16/10/05	0.6	0.6	0.1	0.2	0.5	0.1	0.3	-0.2	0.4	0.4	0.7	0.5	0.3	0.7	0.7	0.5	0.3	0.1	-0.3	0.5	-0.7	0.4	0.0	-0.1	-0.6	-0.2	0.5	0.4	-0.3	0.0	0.5	0.3	0.5	0.0	-0.9	-0.1

Correlation Table of Whale Distribution in the Odotu-Piltun Section of the Piltun Area, 2004 and 2005
(based on complete onshore survey data)

		Date	05/07/04	06/07/04	07/07/04	08/07/04	09/07/04	10/07/04	11/07/04	12/07/04	13/07/04	14/07/04	15/07/04	20/07/04	21/07/04	25/07/04
Arrival Period	stage 1	25/06/05	-1.0	0.4	-0.1	1.0	0.9	-1.0	1.0	1.0	0.0	0.4	0.0	-1.0	0.1	-0.3
		26/06/05	0.2	0.7	0.1	1.0	0.9	-0.6	0.4	1.0	0.3	0.7	0.4	-0.4	0.3	0.2
		28/06/05	1.0	0.9	0.8	0.1	0.2	0.7	-1.0	0.2	0.9	0.9	1.0	0.8	1.0	1.0
		29/06/05	0.1	0.5	-0.1	1.0	0.9	-0.7	0.3	1.0	0.1	0.6	0.2	-0.6	0.1	0.0
		30/06/05	0.6	0.9	0.1	0.8	0.9	-0.1	-0.4	0.9	0.4	0.9	0.6	0.0	0.5	0.5
		01/07/05	0.5	0.8	0.2	0.9	0.9	-0.3	0.1	0.9	0.3	0.8	0.5	-0.2	0.4	0.4
		04/07/05	0.2	0.7	0.1	1.0	0.9	-0.6	0.4	1.0	0.3	0.7	0.4	-0.5	0.3	0.2
	stage 2	05/07/05	0.9	0.6	0.7	-0.3	-0.2	0.9	-0.7	-0.2	0.6	0.5	0.8	1.0	0.6	0.9
		12/07/05	-0.2	0.1	-0.6	0.9	0.9	-0.9	0.2	0.7	-0.4	0.1	-0.3	-0.8	-0.4	-0.4
		13/07/05	1.0	1.0	0.5	1.0	0.8	-1.0	0.5	1.0	0.8	1.0	1.0	-1.0	0.9	0.9
		14/07/05	0.5	0.7	0.0	0.8	0.9	-0.3	-0.2	0.8	0.2	0.7	0.5	-0.1	0.3	0.4
		15/07/05	0.8	0.9	0.4	0.6	0.7	0.1	-0.3	0.7	0.5	0.9	0.8	0.3	0.6	0.7
		26/07/05	0.6	0.9	0.6	0.7	0.5	-0.2	0.4	0.9	0.7	0.9	0.7	-0.1	0.8	0.5
Feeding Season	stage 1	28/07/05	0.4	0.4	0.9	-0.5	-0.7	1.0	0.1	-0.2	0.8	0.4	0.6	0.9	0.8	0.7
		29/07/05	-0.4	-0.2	0.5	-0.6	-0.9	0.4	0.5	-0.4	0.4	-0.2	0.0	0.2	0.3	0.0
		06/08/05	0.9	0.7	1.0	-0.2	-0.3	1.0	0.0	0.1	1.0	0.7	0.9	1.0	1.0	0.9
		07/08/05	0.2	0.2	0.9	-0.5	-0.7	0.9	0.3	-0.2	0.8	0.3	0.5	0.8	0.7	0.5
		08/08/05	0.9	0.8	1.0	-0.1	-0.2	0.9	-0.1	0.2	1.0	0.8	1.0	1.0	1.0	1.0
		09/08/05	1.0	0.6	0.8	0.3	0.0	0.5	0.6	0.6	0.9	0.7	0.7	0.6	0.8	0.5
		10/08/05	0.9	0.7	0.9	-0.2	-0.2	0.9	-0.4	0.0	0.9	0.7	0.9	1.0	0.9	1.0
		11/08/05	0.9	0.8	1.0	-0.1	-0.2	0.9	-0.2	0.1	1.0	0.8	0.9	1.0	1.0	1.0
		18/08/05	0.7	0.6	1.0	-0.4	-0.5	1.0	-0.1	-0.1	0.9	0.6	0.8	1.0	0.9	0.8
		19/08/05	0.7	0.6	1.0	-0.2	-0.4	1.0	0.2	0.1	1.0	0.6	0.8	1.0	0.9	0.8
		20/08/05	0.3	0.3	0.9	-0.5	-0.7	0.9	0.2	-0.2	0.8	0.3	0.5	0.8	0.7	0.6
		23/08/05	0.8	0.6	0.9	-0.4	-0.5	1.0	-0.3	-0.2	0.9	0.5	0.8	1.0	0.8	0.9
		25/08/05	0.4	0.5	0.9	0.0	-0.3	0.9	0.6	0.3	0.9	0.6	0.6	0.9	0.8	0.5
	R	26/08/05	-0.8	0.3	0.3	0.5	0.1	-1.0	0.9	0.7	0.4	0.4	0.2	-1.0	0.4	0.0
		27/08/05	0.8	0.6	0.9	-0.4	-0.4	1.0	-0.3	-0.2	0.8	0.5	0.8	1.0	0.8	0.9
		01/09/05	1.0	0.8	0.9	-0.2	0.0	0.8	-1.0	0.0	1.0	0.8	1.0	0.9	1.0	1.0
		05/09/05	-0.5	-0.1	0.6	-0.4	-0.8	0.3	0.6	-0.2	0.5	0.0	0.1	0.2	0.4	0.1
		06/09/05	-0.4	-0.2	0.5	-0.6	-0.9	0.5	0.4	-0.4	0.4	-0.2	0.0	0.3	0.3	0.1
		07/09/05	0.7	0.6	1.0	-0.4	-0.5	1.0	0.0	-0.1	0.9	0.6	0.8	1.0	0.9	0.8
		11/09/05	0.0	0.6	0.2	0.9	0.6	-0.8	0.6	1.0	0.4	0.7	0.4	-0.6	0.4	0.1
	stage 2	14/09/05	-0.1	0.1	0.8	-0.5	-0.7	0.7	0.5	-0.2	0.7	0.2	0.4	0.5	0.6	0.3
		15/09/05	0.1	-0.3	0.6	-1.0	-1.0	0.8	-0.3	-1.0	0.4	-0.4	0.1	0.7	0.3	0.3
		16/09/05	-0.5	-0.2	0.5	-0.5	-0.8	0.3	0.6	-0.3	0.4	-0.1	0.0	0.1	0.3	0.0
		17/09/05	0.4	0.3	0.9	-0.5	-0.7	0.9	0.1	-0.3	0.8	0.3	0.6	0.9	0.7	0.6
		22/09/05	0.7	0.6	1.0	-0.3	-0.5	1.0	0.1	0.0	0.9	0.6	0.8	1.0	0.9	0.8
		23/09/05	0.8	0.6	0.9	-0.4	-0.4	1.0	-0.2	-0.1	0.9	0.6	0.8	1.0	0.9	0.9
		24/09/05	0.1	0.2	0.8	-0.6	-0.8	0.8	0.2	-0.3	0.7	0.2	0.5	0.7	0.6	0.5
		25/09/05	0.4	0.3	0.9	-0.6	-0.7	1.0	0.0	-0.3	0.8	0.3	0.6	0.9	0.7	0.7
		27/09/05	0.0	0.1	0.8	-0.6	-0.8	0.7	0.3	-0.3	0.6	0.1	0.4	0.6	0.6	0.4
		28/09/05	-1.0	0.0	0.5	-0.9	-1.0	-1.0	0.9	0.4	0.5	0.1	0.1	-1.0	0.4	0.0
		01/10/05	-0.3	-0.2	0.5	-0.6	-0.9	0.5	0.4	-0.4	0.4	-0.1	0.1	0.4	0.3	0.1
		02/10/05	0.2	0.2	0.8	-0.6	-0.8	0.9	0.1	-0.3	0.7	0.2	0.5	0.8	0.7	0.5
Depart		07/10/05	-0.8	-0.4	0.2	-0.3	-0.7	-0.2	0.8	-0.2	0.1	-0.3	-0.3	0.0	-0.4	0.4
		08/10/05	-1.0	-1.0	-0.7	-0.3	-0.5	-0.4	0.9	-0.4	-0.8	-1.0	-1.0	-0.6	-0.9	-0.9
		10/10/05	0.1	0.2	0.8	-0.5	-0.7	0.8	0.3	-0.2	0.7	0.3	0.5	0.7	0.7	0.5
		16/10/05	1.0	0.9	0.9	0.2	0.1	0.7	0.1	0.5	1.0	0.9	1.0	0.8	1.0	0.9

		Date	26/07/04	31/07/04	01/08/04	02/08/04	03/08/04	06/08/04	07/08/04	13/08/04	16/08/04	17/08/04	22/08/04	27/08/04	28/08/04	29/08/04	30/08/04	05/09/04	06/09/04
Arrival Period	stage 1	25/06/05	-0.3	-0.3	-0.2	-0.4	-0.4	-0.6	-0.6	0.8	0.2	-0.5	-0.4	-0.3	-1.0	0.1	0.2	-0.2	0.9
		26/06/05	-0.1	0.0	-0.2	-0.2	-0.2	-0.1	-0.2	0.7	0.5	-0.2	0.0	0.0	-0.6	0.2	0.2	0.1	0.6
		28/06/05	0.5	0.9	0.1	0.7	0.7	0.9	0.8	-0.4	1.0	0.7	0.9	0.8	0.6	0.7	0.4	0.9	-0.7
		29/06/05	-0.4	-0.2	-0.4	-0.4	-0.4	-0.2	-0.4	0.6	0.3	-0.4	-0.2	-0.2	-0.7	0.0	0.0	-0.1	0.6
		30/06/05	-0.3	0.2	-0.7	0.0	-0.1	0.3	0.1	0.4	0.7	-0.1	0.2	0.1	-0.2	-0.1	-0.4	0.2	0.1
		01/07/05	-0.1	0.1	-0.3	0.0	-0.1	0.2	0.0	0.5	0.6	-0.1	0.1	0.1	-0.3	0.1	0.1	0.2	0.4
		04/07/05	-0.2	0.0	-0.2	-0.2	-0.2	-0.1	-0.2	0.7	0.5	-0.3	-0.1	-0.1	-0.6	0.2	0.2	0.0	0.6
	stage 2	05/07/05	0.6	0.8	0.3	0.8	0.8	1.0	1.0	-0.3	0.5	0.9	0.9	0.8	0.9	0.4	0.3	0.8	-0.5
		12/07/05	-0.8	-0.6	-0.8	-0.8	-0.8	-0.6	-0.7	0.2	-0.2	-0.8	-0.6	-0.7	-0.9	-0.5	-0.5	-0.6	0.3
		13/07/05	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.9	0.8	0.9	-0.6	0.8	0.3	-1.0	0.5	0.4	0.6	0.7
		14/07/05	-0.3	0.0	-0.5	-0.1	-0.2	0.2	0.0	0.2	0.4	-0.1	0.1	0.0	-0.3	-0.1	-0.1	0.1	0.1
		15/07/05	0.1	0.4	-0.1	0.3	0.2	0.6	0.4	0.2	0.7	0.3	0.5	0.4	0.1	0.2	0.1	0.5	0.1
		26/07/05	0.4	0.5	0.3	0.3	0.3	0.3	0.2	0.8	0.9	0.2	0.4	0.4	-0.3	0.6	0.6	0.5	0.7
Feeding Season	stage 1	28/07/05	1.0	0.9	1.0	0.9	1.0	0.7	0.8	0.2	0.6	0.9	0.8	0.9	1.0	0.9	0.8	0.9	0.1
		29/07/05	0.0	0.2	0.5	0.4	0.5	0.4	0.6	0.3	0.2	0.4	0.3	0.5	0.4	0.6	0.7	0.4	0.3
		06/08/05	0.9	0.9	0.8	1.0	1.0	0.8	0.9	0.3	0.9	0.9	0.9	1.0	0.9	0.9	0.8	1.0	0.2
		07/08/05	0.7	0.8	0.9	0.8	0.9	0.5	0.6	0.3	0.6	0.8	0.7	0.8	0.9	0.9	0.9	0.8	0.3
		08/08/05	1.0	0.9	0.9	1.0	1.0	0.9	0.9	0.3	0.9	0.9	0.9	1.0	0.9	0.9	0.8	1.0	0.1
		09/08/05	0.7	0.6	0.6	0.6	0.6	0.3	0.3	0.9	0.9	0.5	0.5	0.7	0.5	0.9	0.9	0.7	0.8
		10/08/05	0.9	0.7	0.9	0.9	0.9	1.0	1.0	0.0	0.8	0.9	0.9	0.9	0.7	0.6	0.9	-0.2	0.9
		11/08/05	0.9	0.9	1.0	1.0	1.0	0.9	0.9	0.2	0.9	0.9	1.0	1.0	0.9	0.8	0.7	1.0	0.1
		18/08/05	0.9	0.9	0.9	1.0	1.0	0.8	0.9	0.2	0.8	1.0	0.9	0.8	1.0	1.0	0.9	0.8	0.1
		19/08/05	0.9	0.9	0.9	0.9	0.9	0.7	0.8	0.4	0.9	0.9	0.9	1.0	1.0	1.0	0.9	1.0	0.3
		20/08/05	0.8	0.9	1.0	0.9	0.9	0.6	0.7	0.3	0.6	0.8	0.7	0.9	0.9	0.9	0.9	0.8	0.2
		23/08/05	0.9	0.9	1.0	0.8	1.0	0.9	1.0	0.0	0.7	1.0	1.0	1.0	1.0	0.8	0.7	1.0	-0.1
		25/08/05	0.9	0.7	0.9	0.7	0.7	0.4	0.4	0.7	0.8	0.6	0.6	0.7	0.9	1.0	1.0	0.8	0.7
	R	26/08/05	0.3	0.1	0.4	0.0	0.1	-0.3	-0.3	1.0	0.5	-0.1	-0.1	0.1	-1.0	0.6	0.7	0.2	1.0
		27/08/05	0.9	0.9	0.7	1.0	1.0	1.0	1.0	0.0	0.7	1.0	1.0	1.0	1.0	0.7	0.6	0.9	-0.2
		01/09/05	0.7	0.9	0.3	0.9	0.8	1.0	0.9	-0.6	0.9	0.9	1.0	0.9	0.8	0.8	0.6	1.0	-0.8
		05/09/05	0.7	0.4	0.3	0.4	0.3	0.5	0.3	0.7	0.4	0.5	0.2	0.3	0.5	0.5	0.2	0.4	0.9
		06/09/05	0.2	0.2	0.5	0.3	0.5	0.5	0.6	0.7	0.4	0.3	0.5	0.3	0.3	0.5	0.3	0.4	1.0
		07/09/05	0.2	0.8	1.0	0.9	1.0	1.0	0.9	0.8	0.8	1.0	0.9	0.9	0.8	1.0	0.9	1.0	0.8
		11/09/05	0.9	0.6	-0.2	-0.1	0.0	-0.8	0.4	0.4	0.1	0.9	0.0	-0.7	-0.1	0.1	-0.2	0.2	0.3
	stage 2	14/09/05	0.5	0.7	0.5	0.7	0.7	0.9	0.9	0.7	0.4	0.7	0.5	0.7	0.7	0.9	0.9	0.6	0.7
		15/09/05	0.7	0.7	1.0	1.0	0.8	0.9	0.4	0.8	0.4	0.6	1.0	0.9	0.8	0.8	0.9	0.5	-0.8
		16/09/05	0.4	0.1	0.8	0.9	1.0	0.8	0.3	0.5	0.2	0.4	0.2	0.5	0.4	0.3	0.7	0.7	0.4
		17/09/05	0.9	0.9	1.0	1.0	0.7	0.9	0.8	0.9	0.7	0.9	0.9	0.8	0.9	0.9	0.8	0.9	0.1
		22/09/05	0.9	0.9	1.0	0.9	0.5	1.0	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.2
		23/09/05	1.0	1.0	0.9	0.8	0.3	0.8	0.9	1.0	0.9	1.0	1.0	0.8	0.8	0.8	0.8	1.0	-0.1
		24/09/05	0.8	0.7	1.0	1.0	0.8	0.9	0.7	0.8	0.6	0.8	1.0	0.9	0.8	0.8	0.8	0.8	0.2
		25/09/05	0.9	0.9	1.0	0.9	0.7	0.9	0.8	1.0	0.7	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.0
		27/09/05	0.3	0.8	0.6	1.0	1.0	0.9	0.7	0.8	0.5	0.7	1.0	0.9	0.8	0.8	0.7	0.8	0.3
		28/09/05	0.3	0.4	-1.0	0.7	0.8	1.0	0.8	0.3	0.3	0.0	0.2	0.9	1.0	1.0	0.8	0.9	0.2
		01/10/05	0.2	0.4	0.6	0.4	0.9	0.9	1.0	0.8	0.4	0.6	0.2	0.4	1.0	1.0	0.4	0.8	0.1
		02/10/05	0.1	0.9	0.8	1.0	1.0	0.8	0.9	0.7	0.9	0.6	0.8	1.0	0.9	0.2	1.0	0.9	0.4
Depart		07/10/05	0.1	-0.3	0.5	0.6	0.9	0.5	0.0	0.1	-0.3	-0.1	0.7	0.9	0.7	0.5	0.0	0.5	0.3
		08/10/05	-0.6	-0.6	0.0	0.1	0.7	-0.2	-0.8	-0.5	-0.8	-0.7	0.3	0.6	0.7	0.2	-0.1	-0.6	0.5
		10/10/05	0.8	0.7	1.0	1.0	0.8	1.0	0.9	0.4	1.0	0.9	0.4	1.0	0.8	0.6	0.8	1.0	0.3
		16/10/05	0.8	0.8	0.6	0.6	0.1	0.8	1.0	0.8	0.9	0.9	0.4	0.2	0.3	0.6	0.4	0.8	0.4

		Date	07/09/04	08/09/04	10/09/04	11/09/04	13/09/04	14/09/04	15/09/04	16/09/04	18/09/04	19/09/04	24/09/04	28/09/04	01/10/04	04/10/04
Arrival Period	stage 1	25/06/05	-0.4	-1.0	-0.4	-0.2	-0.5	-0.1	-0.1	-0.5	-0.3	-0.4	-0.4	-0.3	0.9	-0.4
		26/06/05	-0.1	-0.5	-0.3	-0.2	-0.5	0.0	0.2	-0.2	0.1	0.0	-0.4	-0.4	0.5	-0.3
		28/06/05	0.8	0.8	0.3	0.1	-0.6	0.4	0.9	0.7	0.9	0.8	-0.1	-0.4	-0.9	0.3
		29/06/05	-0.3	-0.6	-0.5	-0.4	-0.6	-0.2	0.0	-0.4	-0.1	-0.2	-0.5	-0.5	0.4	-0.5
		30/06/05	0.0	0.0	-0.5	-0.7	-1.0	-0.4	0.4	-0.1	0.4	0.1	-0.8	-1.0	-0.2	-0.5
		01/07/05	0.0	-0.2	-0.3	-0.3	-0.7	-0.1	0.3	-0.1	0.3	0.1	-0.5	-0.6	0.3	-0.3
		04/07/05	0.0	0.2	-0.2	-0.5	0.0	0.2	-0.2	0.1	-0.1	-0.4	-0.4	-0.5	0.5	-0.3
	stage 2	05/07/05	0.8	1.0	0.5	0.3	-0.1	0.4	0.7	0.8	0.9	0.9	0.3	0.0	-0.5	0.5
		12/07/05	-0.7	-0.8	-0.9	-0.8	-0.7	-0.7	-0.5	-0.8	-0.5	-0.7	-0.8	-0.7	0.1	-0.9
		13/07/05	0.2	-1.0	-0.3	0.0	-0.3	0.2	0.8	-0.3	1.0	0.4	-0.3	-0.2	0.6	-0.2
		14/07/05	-0.1	-0.1	-0.5	-0.5	-0.8	-0.3	0.2	-0.2	0.3	0.0	-0.6	-0.8	0.0	-0.4
		15/07/05	0.3	0.3	-0.1	-0.1	-0.7	0.1	0.6	0.2	0.6	0.4	-0.3	-0.5	0.0	-0.1
		26/07/05	0.4	-0.1	0.2	0.3	-0.1	0.5	0.6	0.3	0.5	0.4	0.1	0.0	0.7	0.2
Feeding Season	stage 1	28/07/05	0.9	0.9	1.0	1.0	0.7	0.9	0.8	0.9	0.8	0.9	0.9	0.8	0.2	1.0
		29/07/05	0.5	0.2	0.8	0.9	1.0	0.8	0.3	0.5	0.1	0.4	0.9	1.0	0.5	0.8
		06/08/05	1.0	1.0	0.8	0.8	0.3	0.9	1.0	1.0	0.9	1.0	0.7	0.5	0.2	0.9
		07/08/05	0.9	0.8	1.0	1.0	0.8	1.0	0.7	0.8	0.6	0.8	1.0	0.9	0.4	1.0
		08/08/05	1.0	0.9	0.8	0.7	0.2	0.8	1.0	0.9	1.0	1.0	0.6	0.3	0.1	0.8
		09/08/05	0.6	0.6	0.6	0.8	0.4	0.8	0.8	0.5	0.5	0.6	0.6	0.6	0.8	0.6
		10/08/05	0.7	0.9	1.0	0.7	0.6	0.0	0.7	0.9	0.9	1.0	1.0	0.5	0.2	-0.2
		11/08/05	1.0	1.0	0.8	0.7	0.2	0.8	1.0	0.9	1.0	1.0	0.6	0.3	0.1	0.8
		18/08/05	0.5	0.9	0.9	0.9	0.5	0.9	0.9	1.0	0.9	1.0	0.8	0.6	0.1	0.9
		19/08/05	0.5	1.0	0.9	0.9	0.5	1.0	0.9	0.9	0.8	0.9	0.8	0.7	0.4	0.9
		20/08/05	0.9	0.8	1.0	1.0	0.8	1.0	0.8	0.9	0.6	0.8	1.0	0.9	0.3	1.0
		23/08/05	0.3	0.8	0.9	1.0	0.9	1.0	0.9	1.0	0.7	0.9	0.7	0.5	-0.1	0.9
		25/08/05	0.7	0.9	0.8	0.9	0.6	1.0	0.8	0.7	0.6	0.7	0.8	0.8	0.7	0.8
	R	26/08/05	0.1	-1.0	0.2	0.4	0.4	0.5	0.2	0.0	0.0	0.0	0.4	0.5	1.0	0.2
		27/08/05	1.0	1.0	0.8	0.7	0.3	0.8	0.9	1.0	0.9	1.0	0.6	0.4	-0.1	0.8
		01/09/05	1.0	0.9	0.5	0.4	-0.3	0.6	1.0	0.8	1.0	0.9	0.2	-0.2	-1.0	0.6
		05/09/05	0.5	0.2	0.8	0.9	1.0	0.8	0.4	0.5	0.2	0.4	0.9	1.0	0.6	0.8
		06/09/05	0.3	0.5	0.8	0.9	1.0	0.8	0.3	0.5	0.2	0.4	1.0	1.0	0.4	0.8
		07/09/05	1.0	1.0	0.9	0.9	0.5	0.9	0.9	1.0	0.9	1.0	0.8	0.6	0.2	1.0
		11/09/05	0.0	-0.7	-0.1	0.1	-0.2	0.2	0.3	-0.1	0.1	0.0	-0.1	-0.1	0.8	-0.1
	stage 2	14/09/05	0.7	0.5	0.9	1.0	0.9	0.9	0.6	0.7	0.4	0.6	1.0	1.0	0.5	0.9
		15/09/05	0.7	0.7	1.0	1.0	0.8	0.9	0.4	0.8	0.4	0.6	1.0	0.9	-0.5	1.0
		16/09/05	0.5	0.4	0.1	0.8	0.9	1.0	0.8	0.9	0.3	0.4	0.1	0.3	0.9	1.0
		17/09/05	0.9	0.9	1.0	1.0	0.7	0.9	0.8	0.9	0.7	0.9	0.9	0.8	0.2	1.0
		22/09/05	0.9	0.9	1.0	0.9	0.5	1.0	0.9	0.9	0.9	0.9	0.8	0.7	0.3	1.0
		23/09/05	0.3	0.8	0.9	1.0	0.9	1.0	0.9	1.0	0.7	0.5	0.0	0.9		
		24/09/05	0.8	0.7	1.0	1.0	0.8	0.9	0.7	0.8	0.6	0.8	1.0	0.9	0.3	1.0
		25/09/05	0.9	0.9	1.0	0.9	0.7	0.9	0.8	1.0	0.7	0.9	0.9	0.8	0.1	1.0
		27/09/05	0.3	0.8	0.6	1.0	1.0	0.9	0.9	0.6	0.8	0.5	0.7	1.0	1.0	0.4
		28/09/05	0.2	0.9	1.0	1.0	0.8	1.0	0.8	0.3	0.3	0.0	0.2	0.9	1.0	0.7
		01/10/05	0.6	0.4	0.9	0.9	1.0	0.8	0.4	0.6	0.2	0.4	1.0	1.0	0.4	0.8
		02/10/05	0.9	0.8	1.0	1.0	0.8	0.9	0.7	0.9	0.6	0.8	1.0	0.9	0.2	1.0
Depart		07/10/05	0.1	-0.3	0.5	0.6	0.9	0.5	0.0	0.1	-0.3	-0.1	0.7	0.9	0.7	0.5
		08/10/05	-0.6	-0.6	0.0	0.1	0.7	-0.2	-0.8	-0.5	-0.8	-0.7	0.3	0.6	0.7	-0.1
		10/10/05	0.8	0.7	1.0	1.0	0.8	1.0	0.9	0.4	1.0	0.9	0.4	1.0		
		16/10/05	0.8	0.8	0.6	0.6	0.1	0.8	1.0	0.8	0.9	0.9	0.4	0.2	0.3	0.6

FIGURES

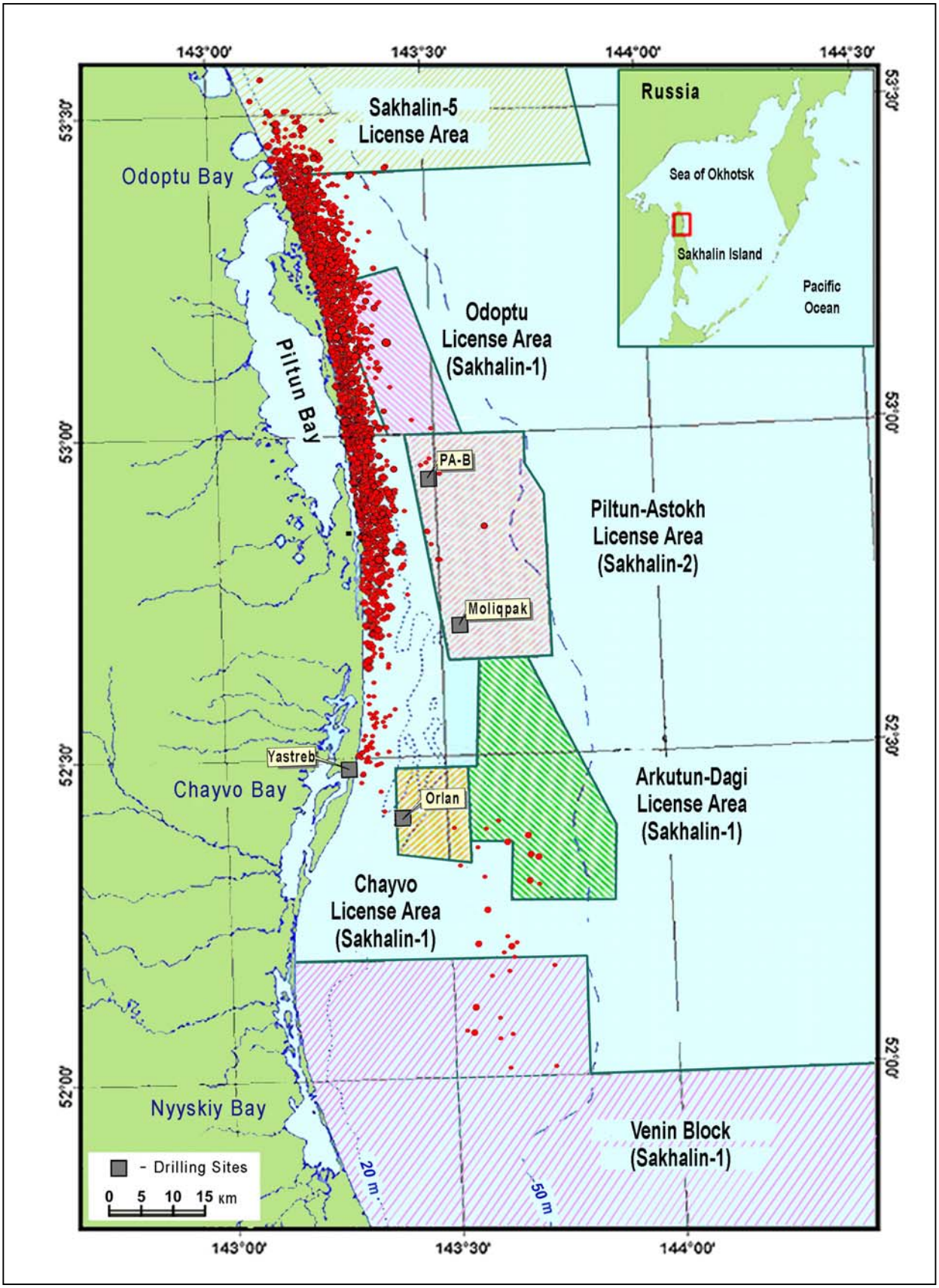


Fig. 1. License areas for oil and gas production on the northeastern Sakhalin shelf and observations of gray whales in their summer-fall feeding area in 2004. (Red marks indicate whale sighting points according to combined data from aerial visual, vessel-based and shore-based surveys.)

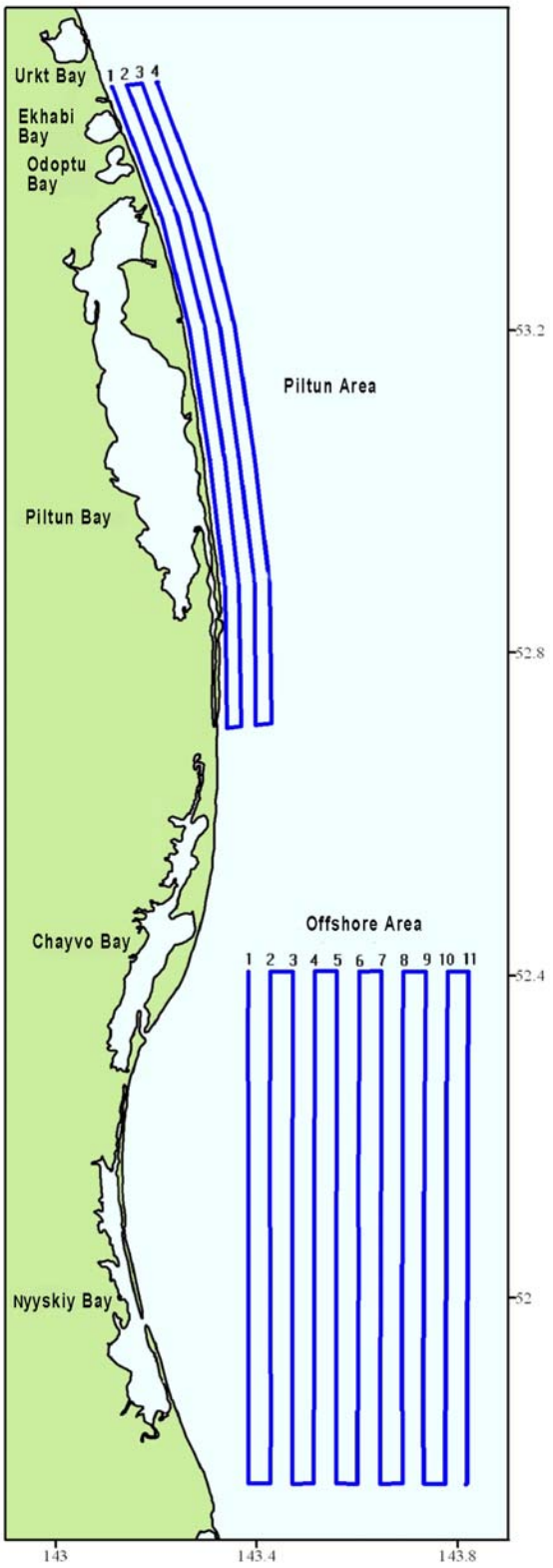


Fig. 2-a. Diagram of planned transects in aerial gray whale surveys off the northeast coast of Sakhalin (in the Piltun and Offshore areas) in September-November 2005.

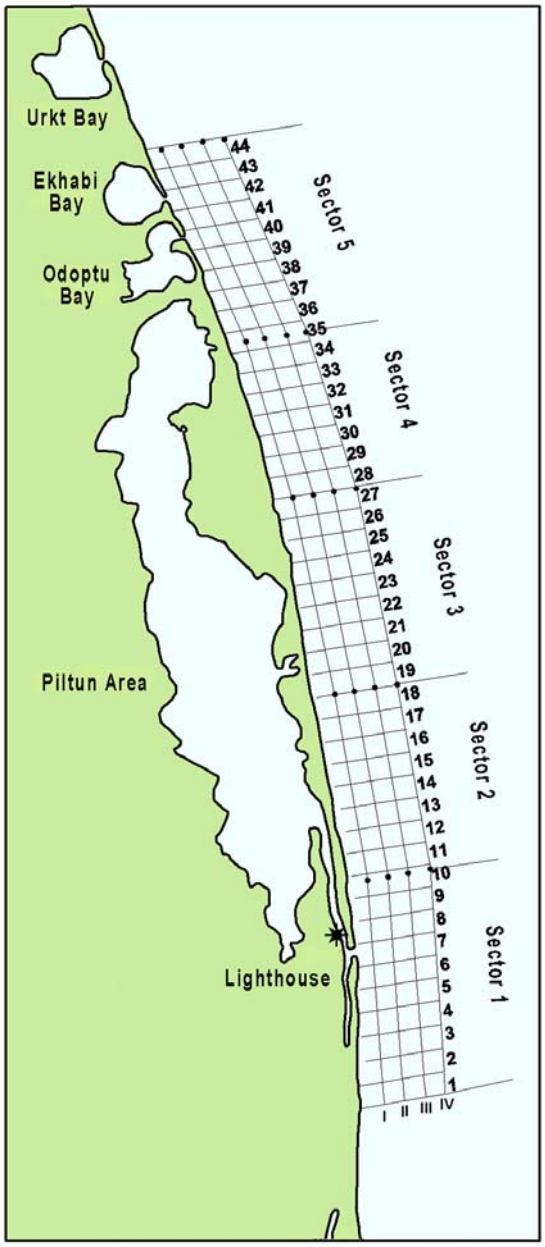


Fig. 2-b. Diagram of sectors and mini-sectors in aerial gray whale surveys in the Piltun area in September-November 2005.

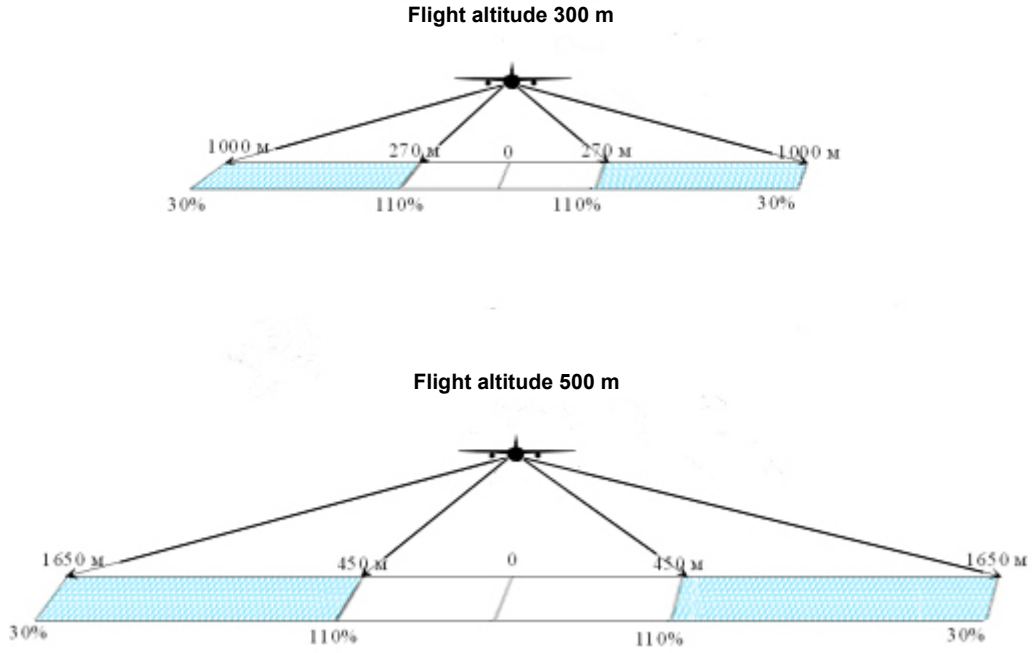


Fig. 3. Water scanning zones depending on flight altitude in aerial transect surveys of gray whales off the northeast coast of Sakhalin in September-November 2005. Blind strip (white) is present underneath the aircraft.

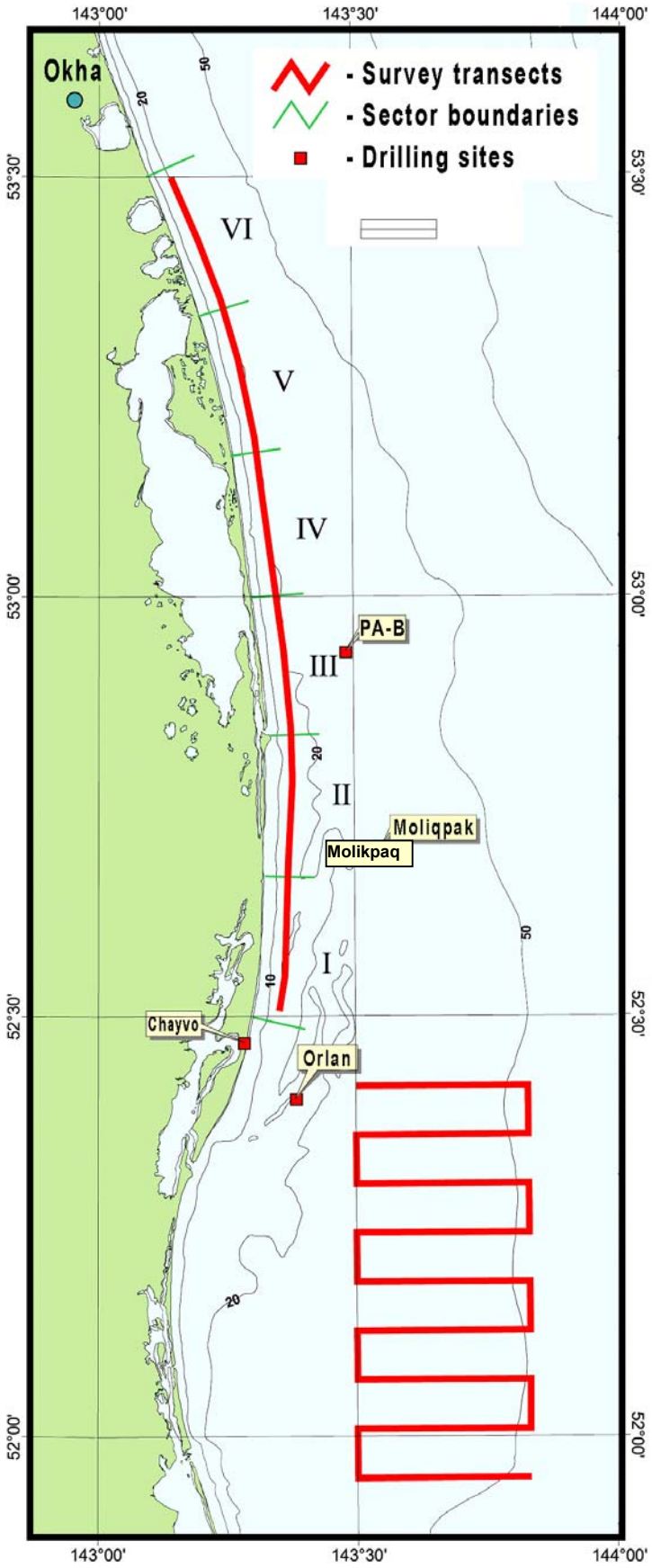


Fig. 4. Planned transects for vessel-based surveys of gray whales in the Piltun and Offshore areas in July-October 2005.

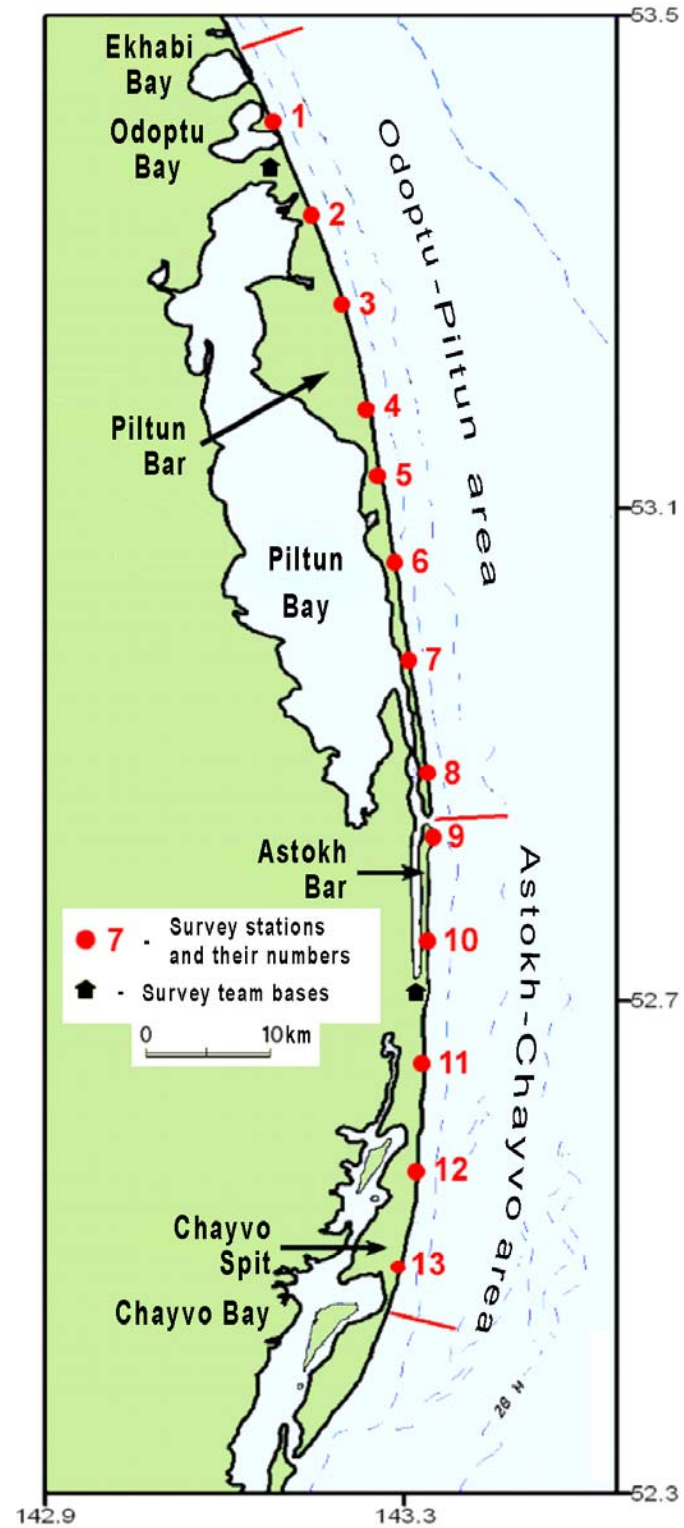


Fig. 5. Locations of survey stations for onshore automobilevehicle-based surveys of gray whales near Piltun and Chayvo bays in June-October 2005.

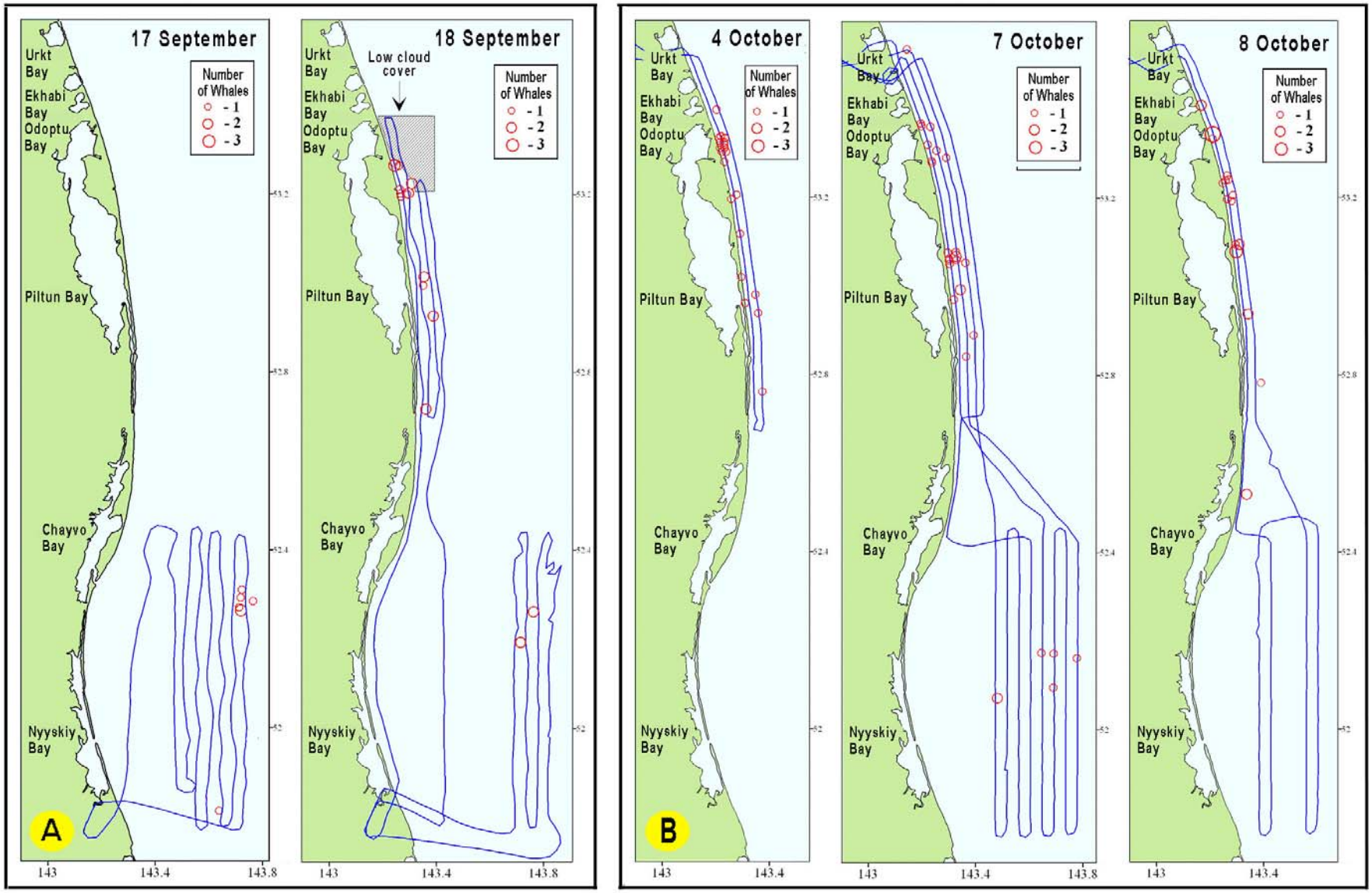


Fig. 6. Gray whale distribution in the Piltun and Offshore areas in September – November 2005 (based on aerial survey data, viewing angle 30-110%).

A – flyover stage 1 (September 17-18); **B** – flyover stage 2 (October 4-8); **C** – flyover stage 3 (October 20-24); **D** – flyover stage 4 (November 2-9). Lines indicate flight transects.

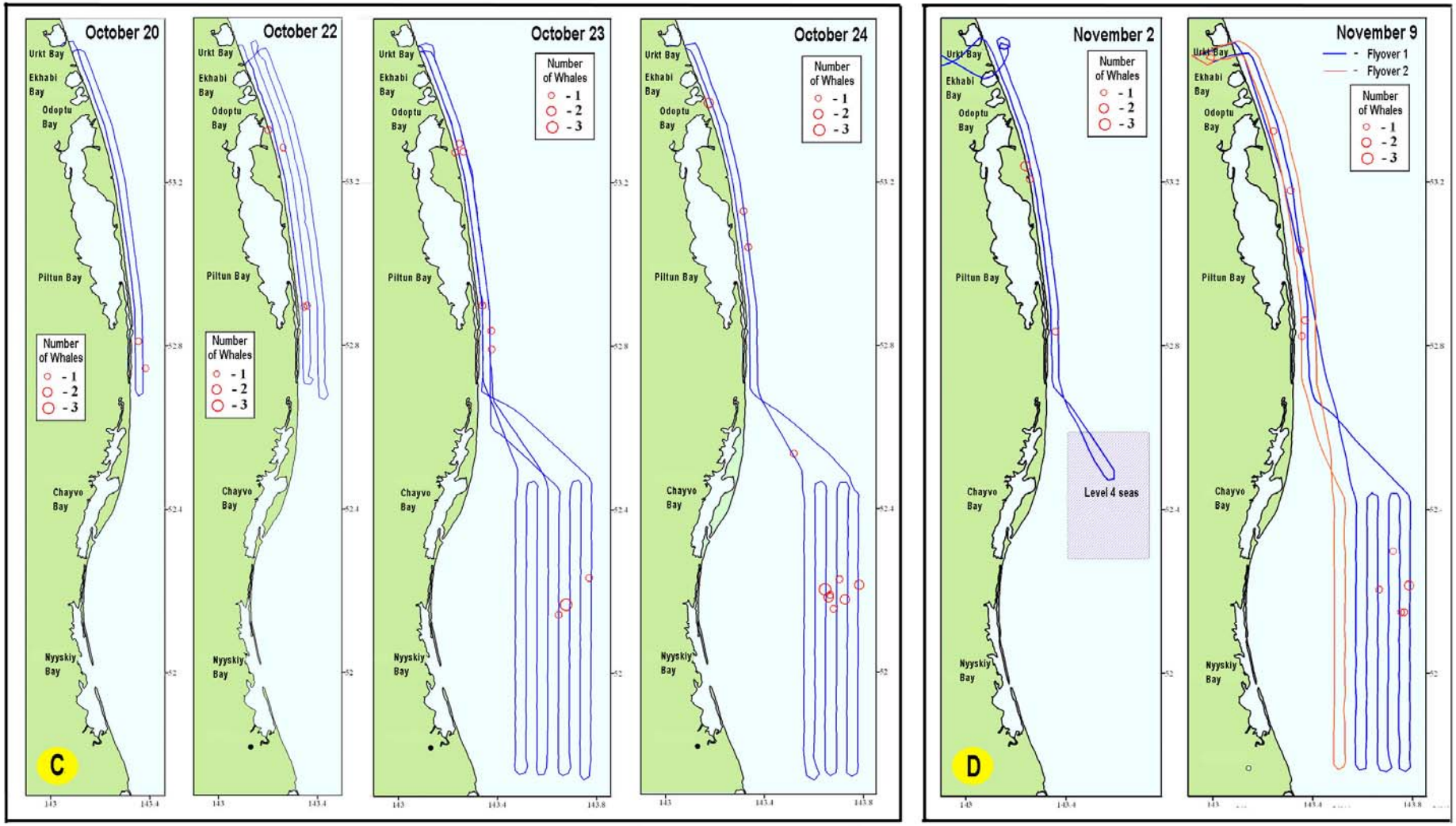


Fig. 6 (continued).

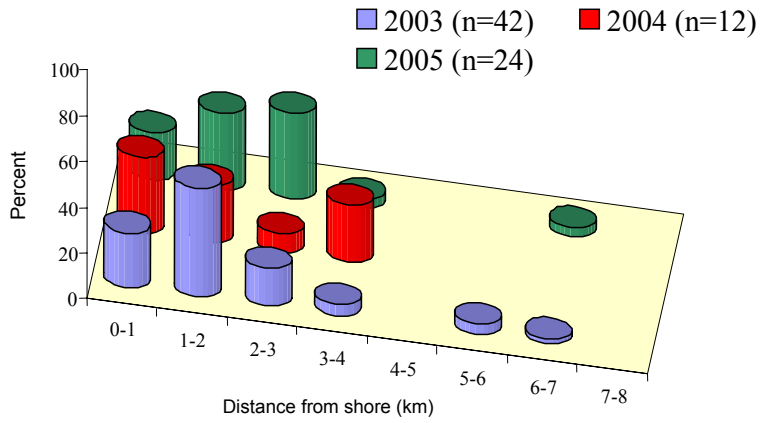


Fig. 7. Distribution of gray whales in the Piltun Area by distance from shore in October 2003-2005

(according to data of full aerial surveys, viewing angle 30-110%).

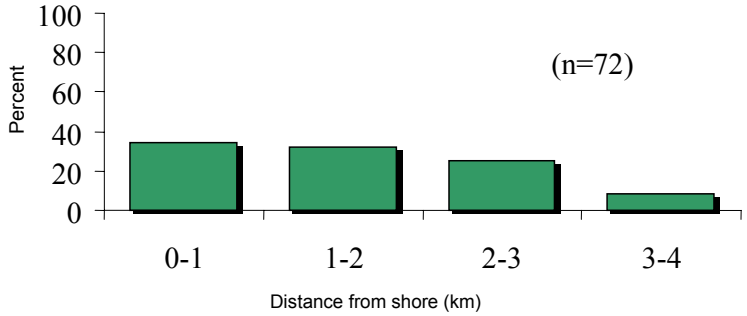


Fig. 8. Distance of gray whales from shore in a 4-kilometer near-shore zone of the Piltun area in October 2005

(according to data of aerial surveys on 1-2 transects, viewing angle 30-110%)

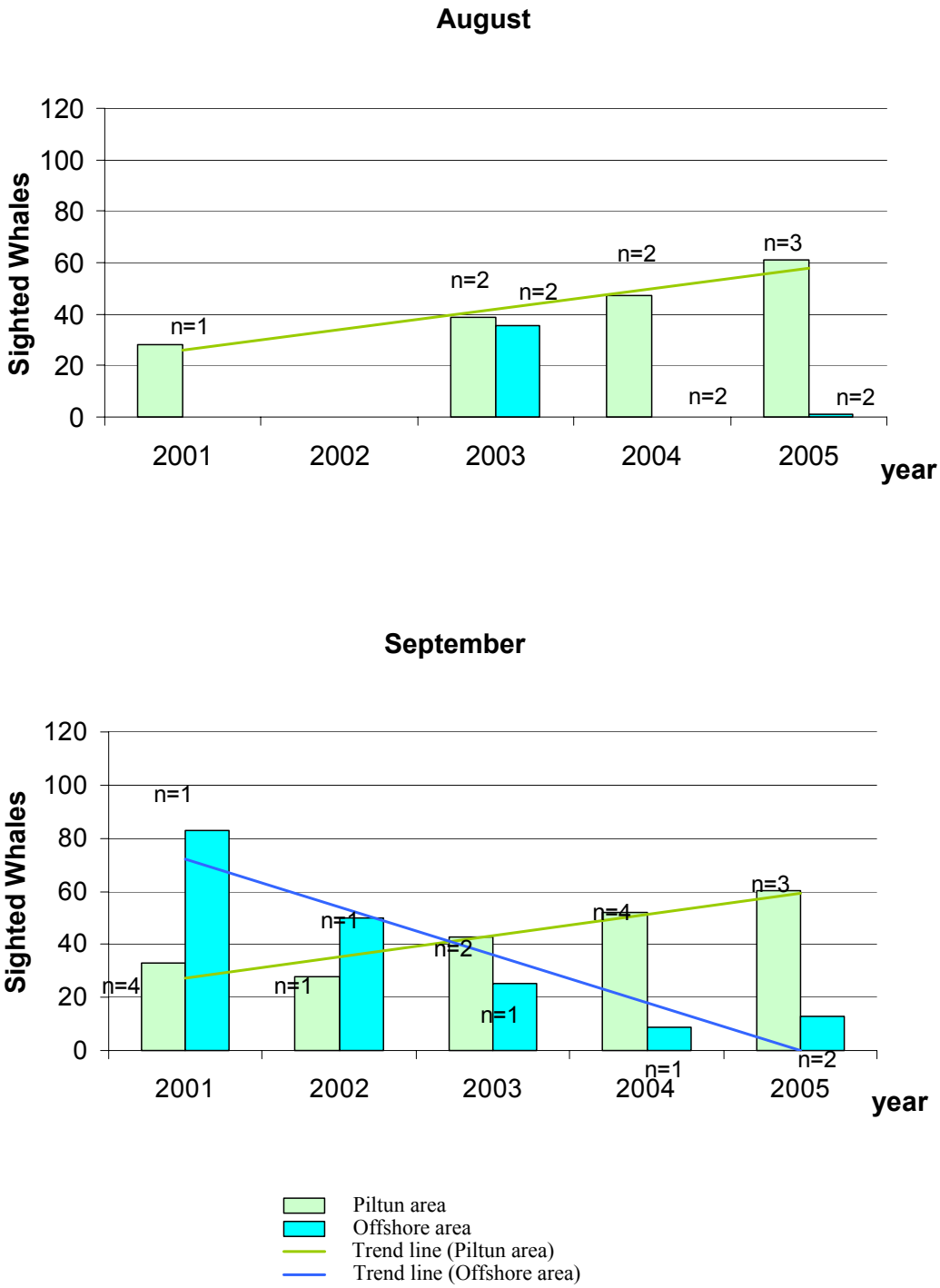


Fig. 9. Variation in numbers of gray whales in the Piltun and Offshore feeding areas in August-September 2001-2005 (n= number of surveys)

(based on vessel-based survey data).

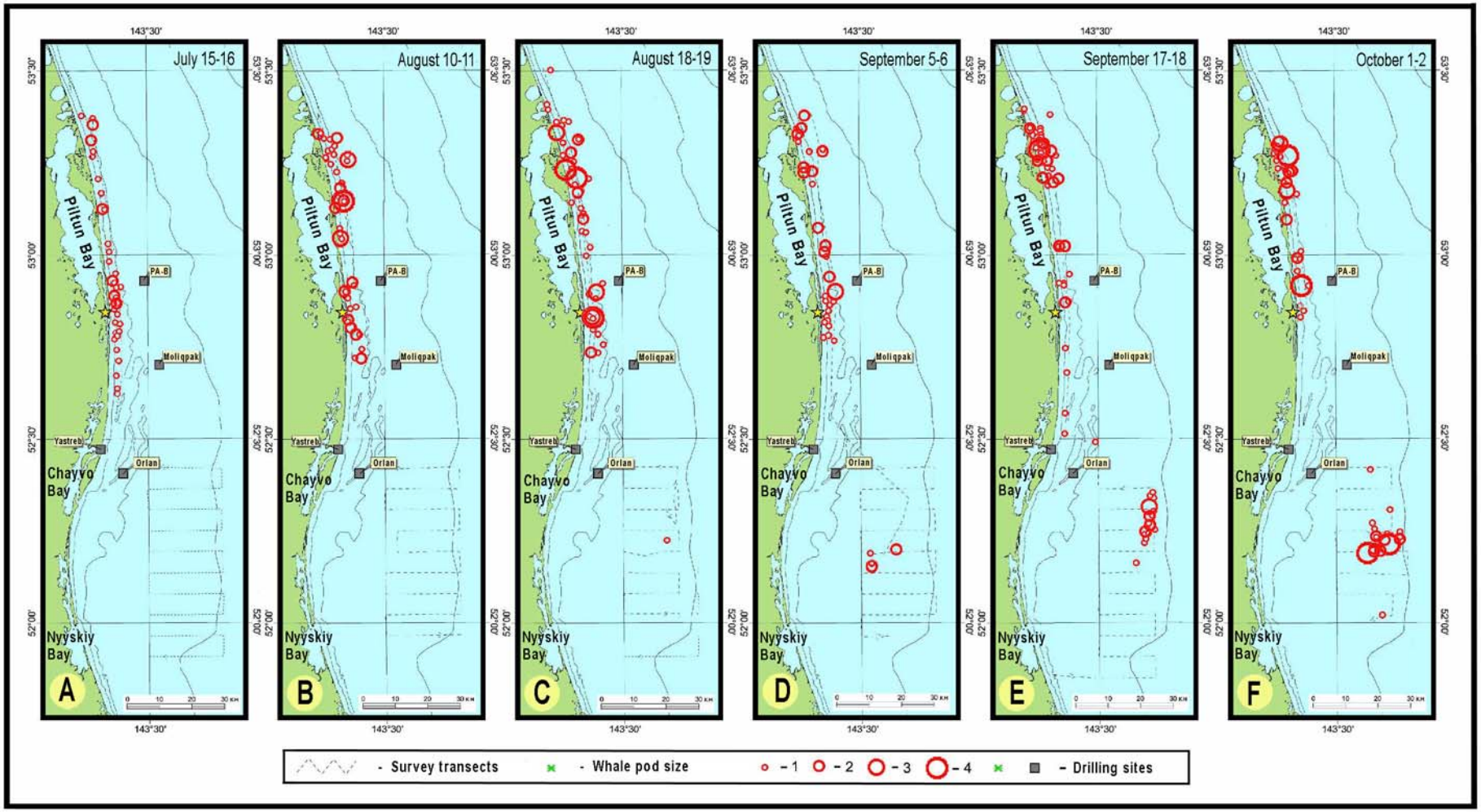


Fig. 10. Distribution of gray whales in the Piltun and Offshore areas in July-October 2005 (based on data of full vessel-based surveys).

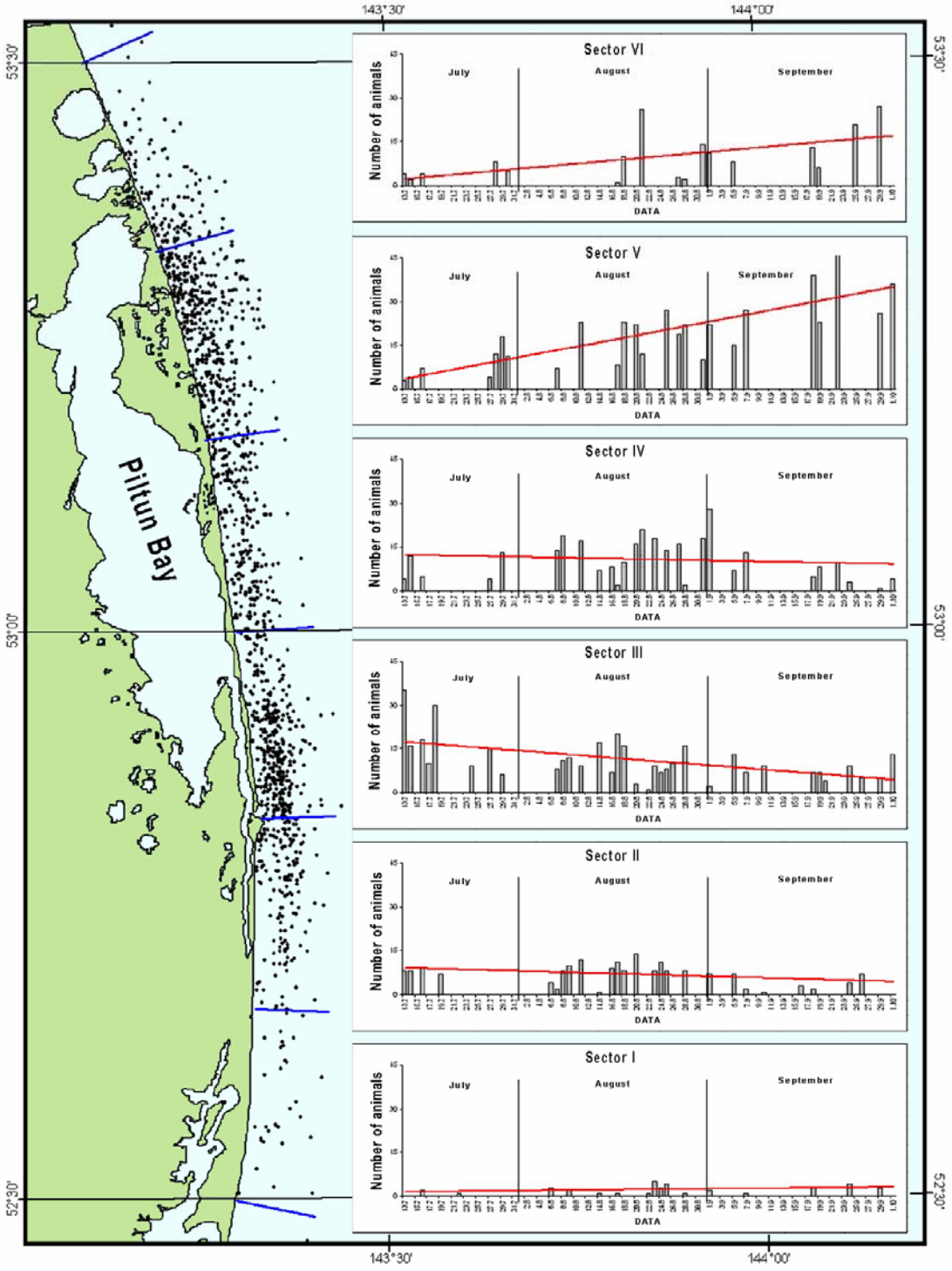


Fig. 11. Seasonal variation of the number of gray whales in sectors of the Piltun area during the period from July 13 to October 1, 2005

(based on vessel-based survey data with coverage of the entire sector).

No whales were found in sector 1 on August 11, 16 or 18 or September 5 or 26, or in sector 2 on August 22 or September 29.

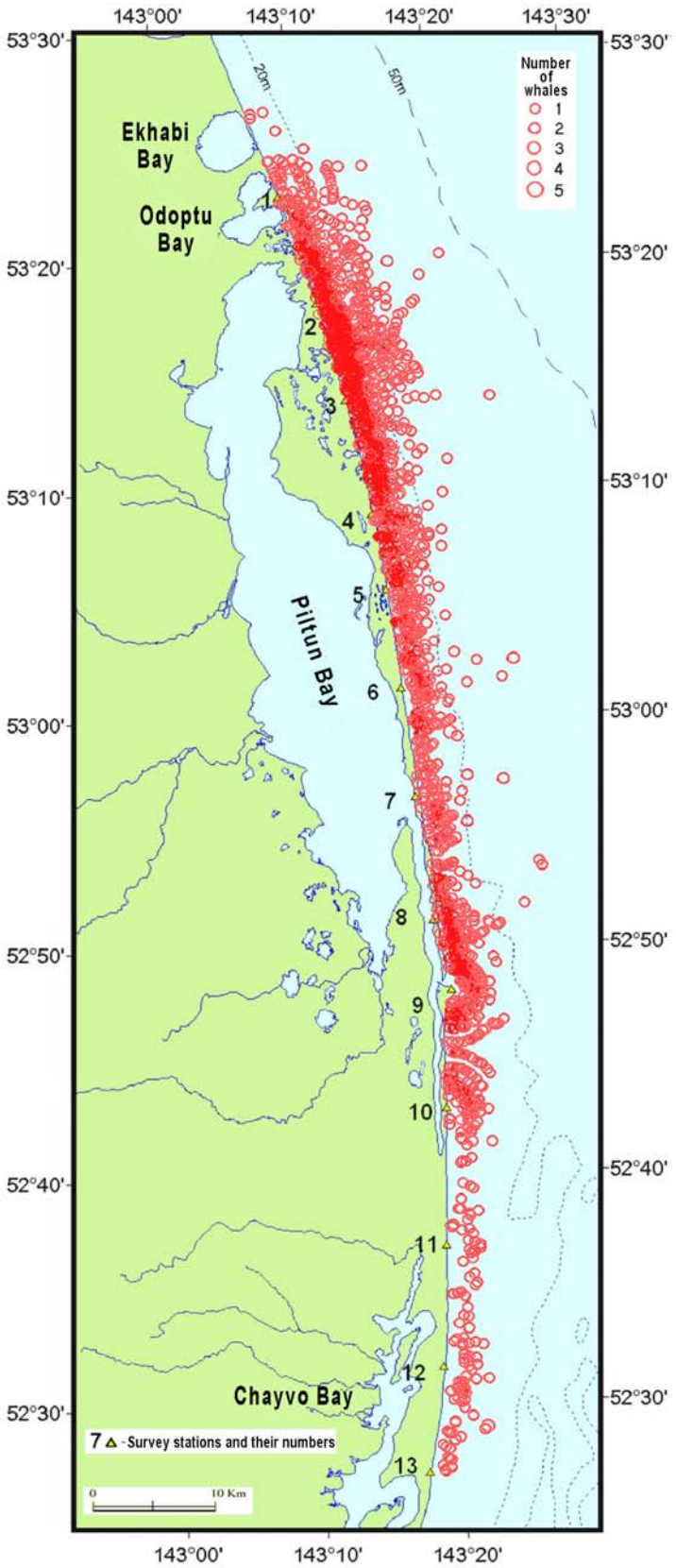


Fig. 12. All sightings of of gray whales in the Piltun area in June-October 2005

(based on combined data from all full concurrent shore-based surveys)

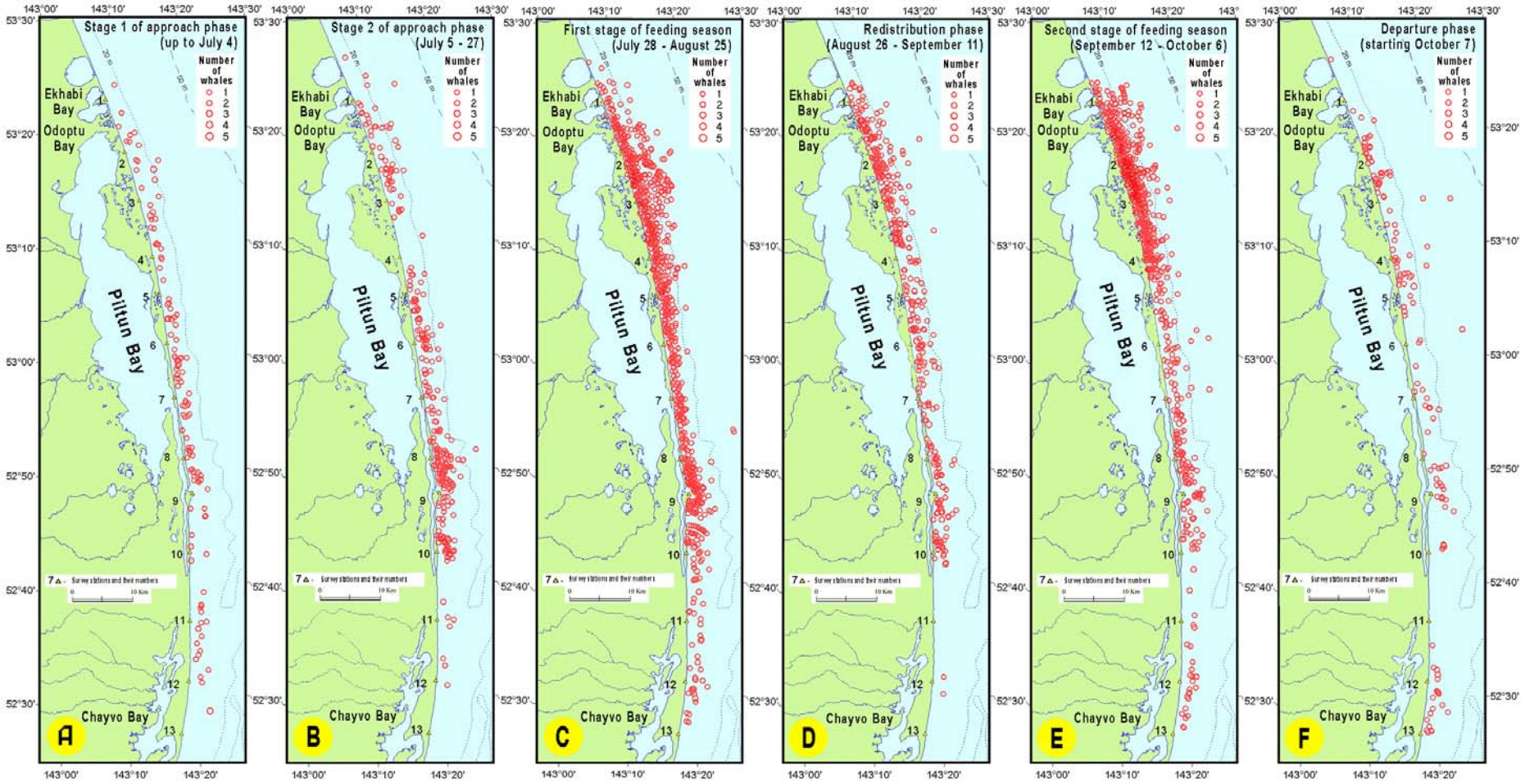


Fig. 13. Distribution of gray whales in the Piltun area during different stages of the summer-fall season, June-October 2005 (based on data of full concurrent shore-based surveys. These plots do not account for variable survey effort for each month).

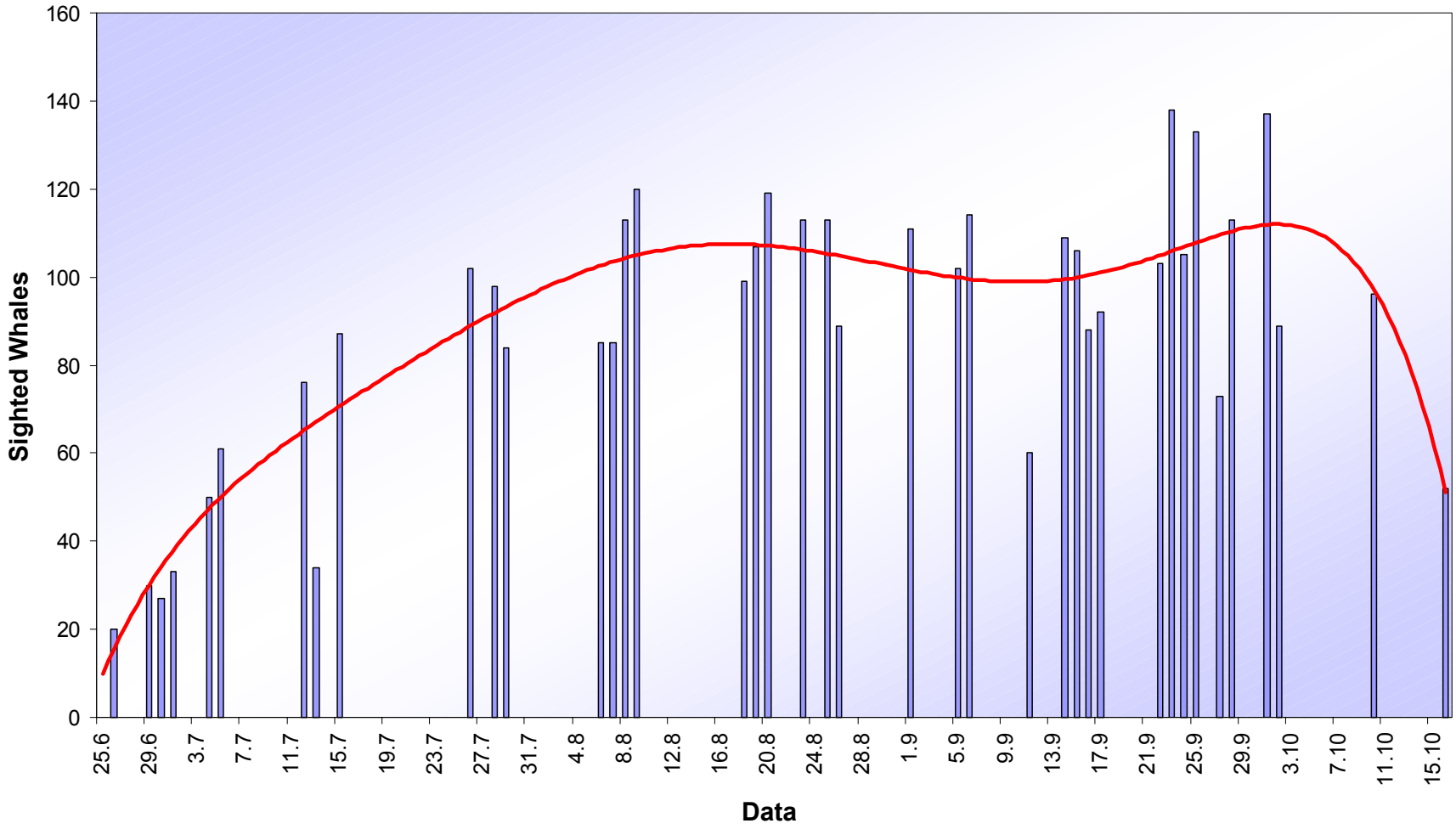


Fig. 14. Seasonal variation in the number number of gray whales (including potential double counts) in the Piltun area in June-October 2005 (based on data of full concurrent shore-based surveys).

Red line – polynomial trend.

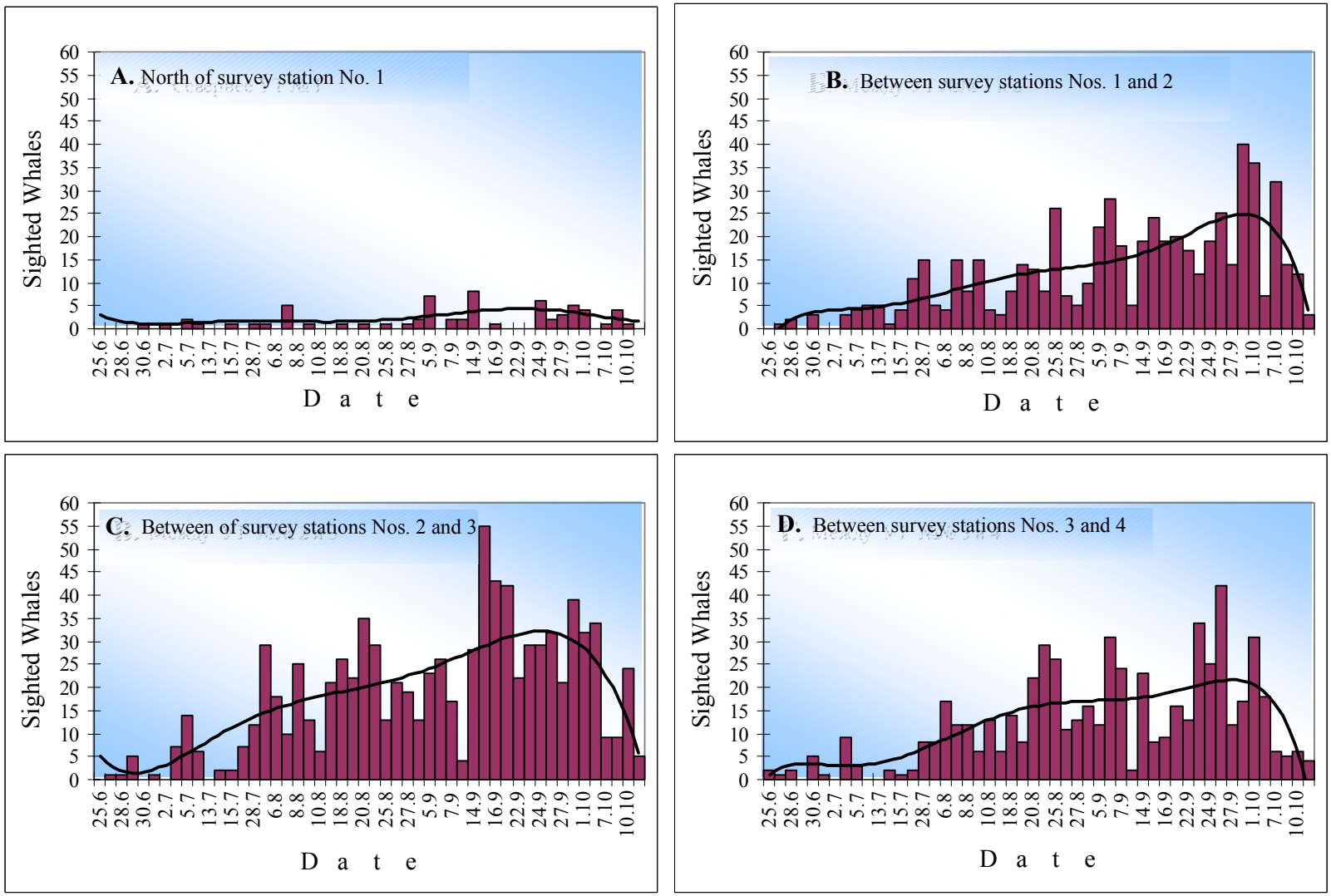


Fig. 15. Variation in the number of gray whales in different segments of the waters of the Piltun area in 2005.
(based on shore-based survey data).

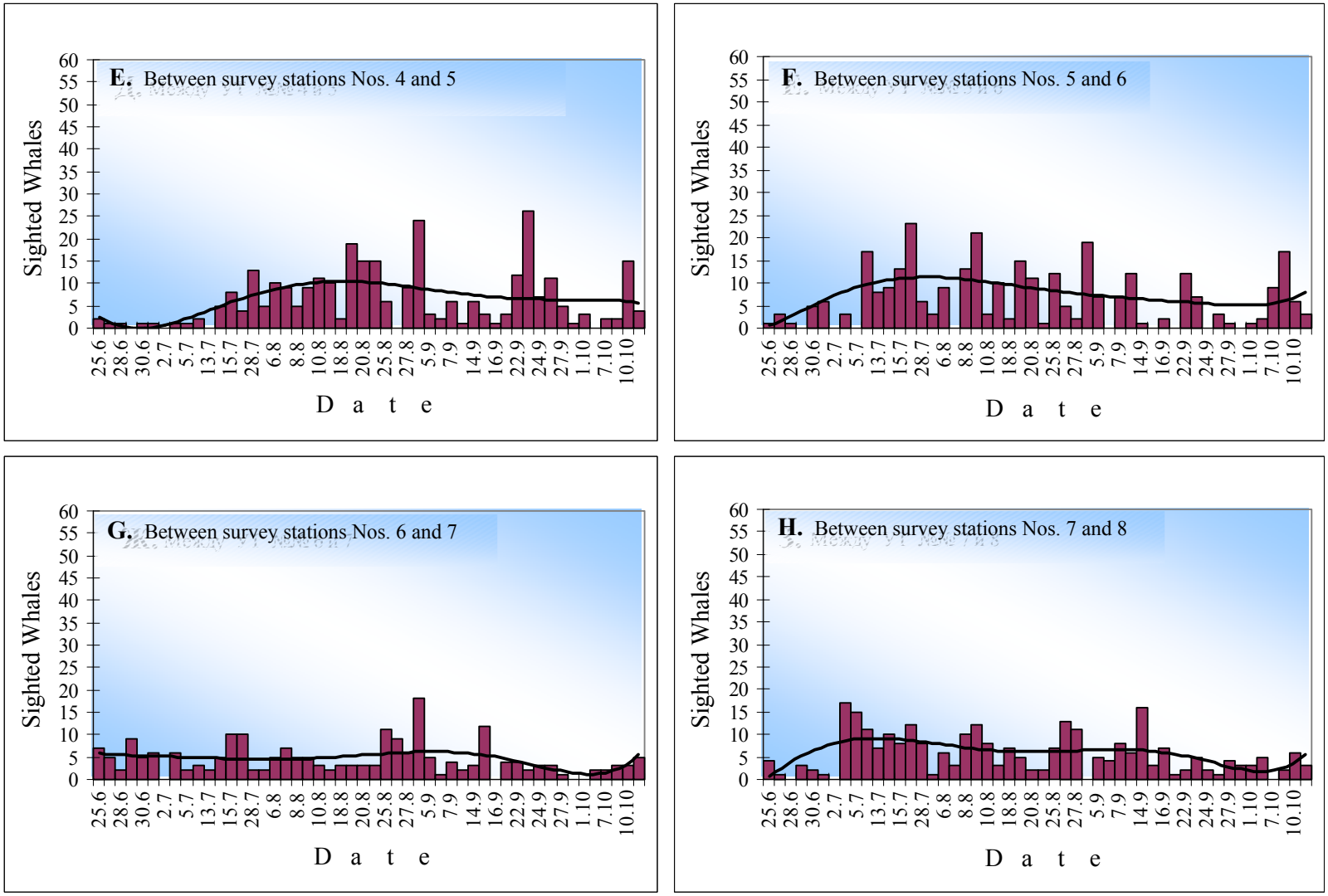


Fig. 15 (*continued*)

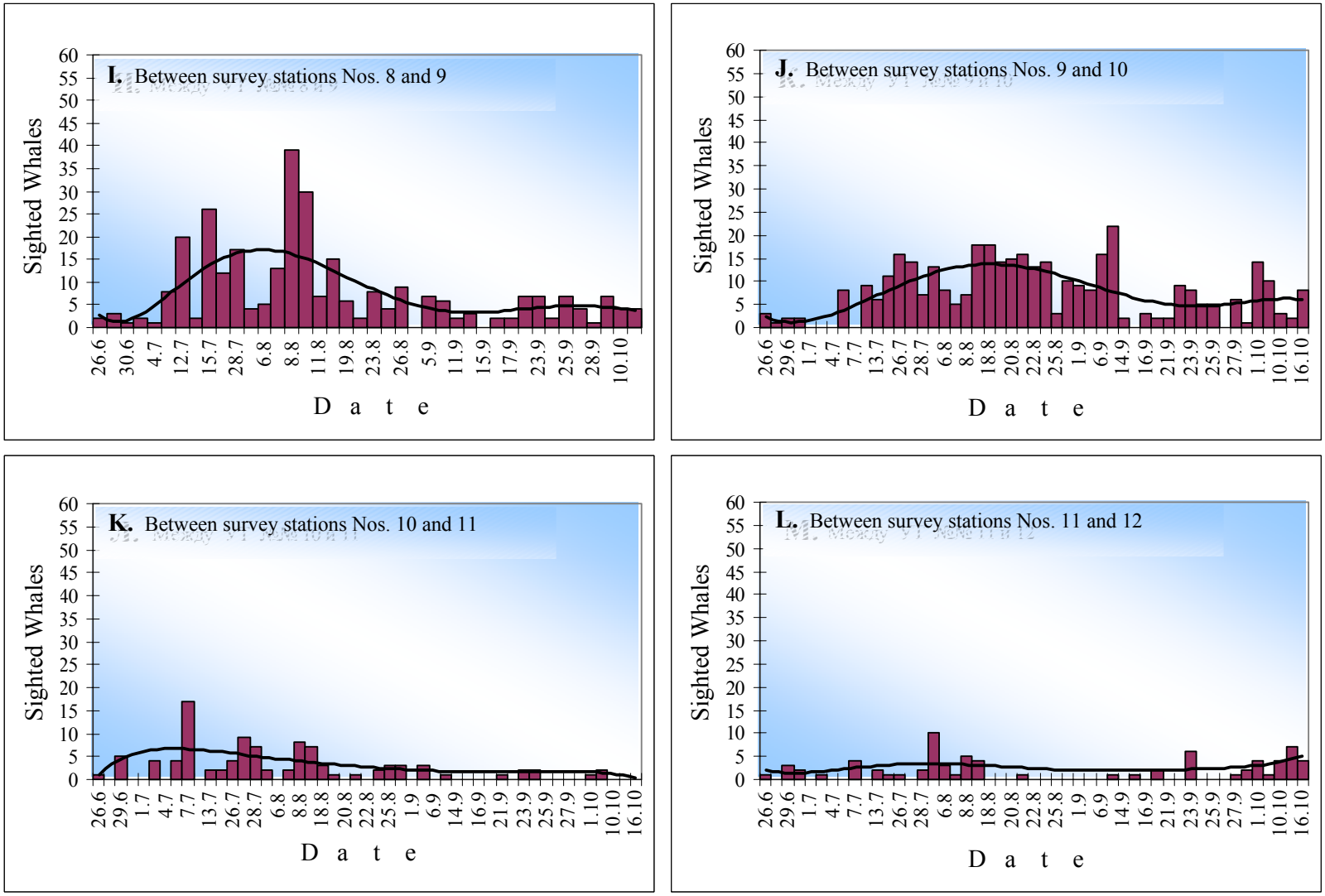


Fig. 15 (*continued*)

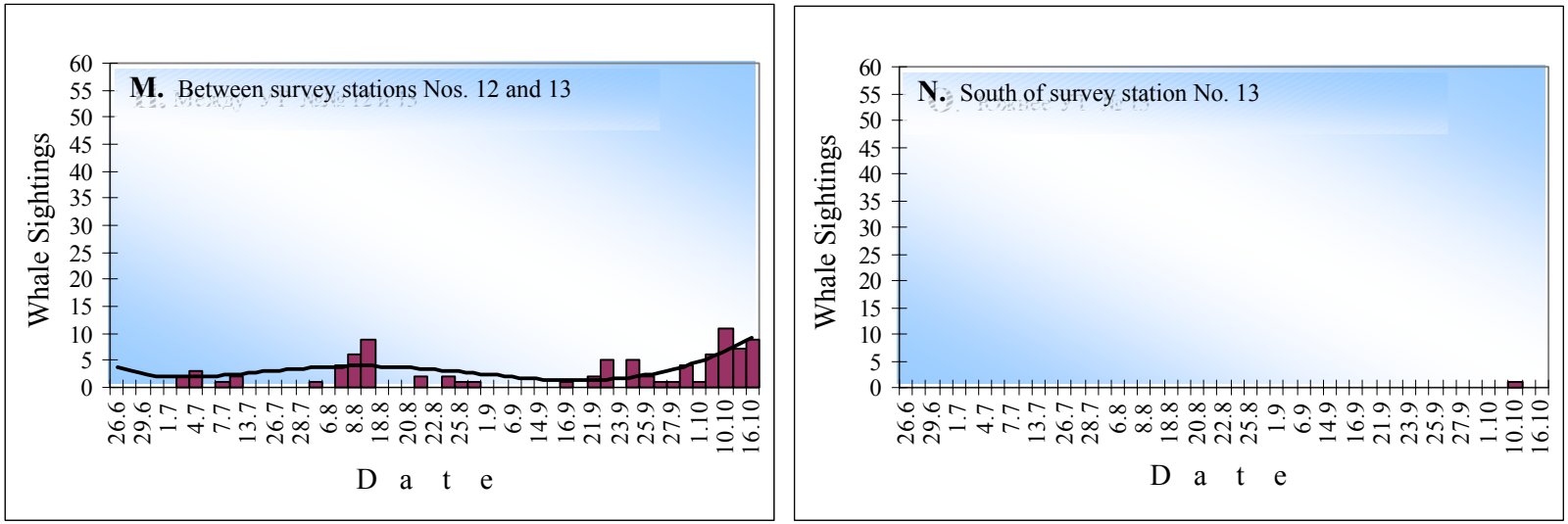

M. Between survey stations Nos. 12 and 13
N. South of survey station No. 13
Whale Sightings
0
5
10
15
20
25
30
35
40
45
50
55
60
26.6
29.6
1.7
4.7
7.7
13.7
26.7
28.7
6.8
8.8
18.8
20.8
22.8
25.8
1.9
6.9
14.9
16.9
21.9
23.9
25.9
27.9
1.10
10.10
16.10
D a t e

Fig. 15 (*end*)

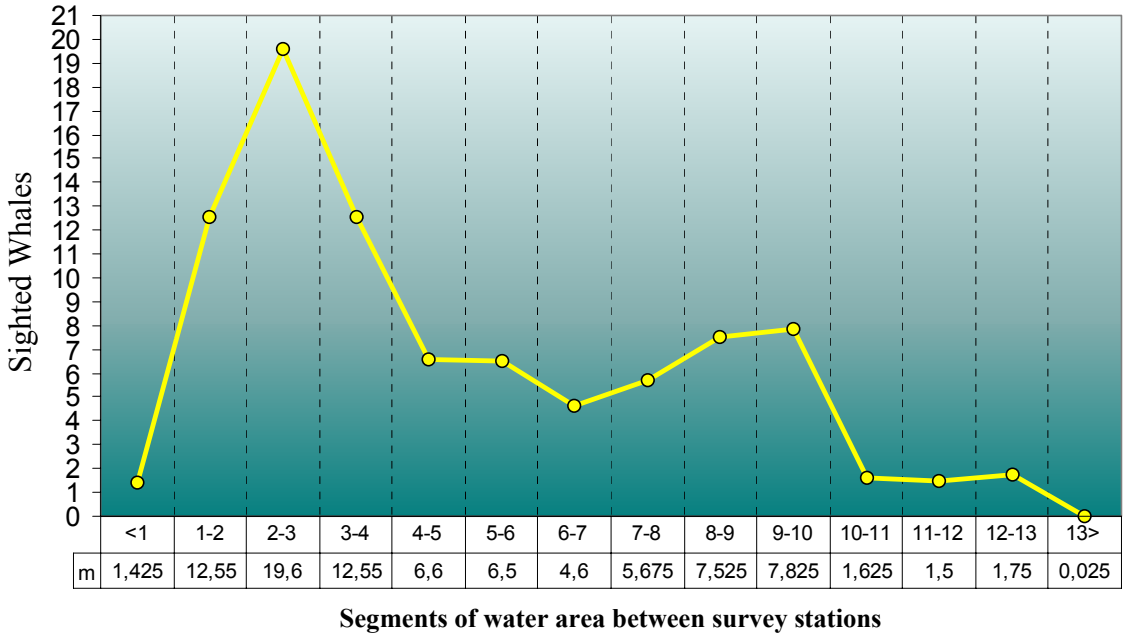


Fig. 16. Average number of sighted gray whales in the Piltun area in June-October 2005 in different segments of the water area (based on shore-based survey data).

m - average for entire season.

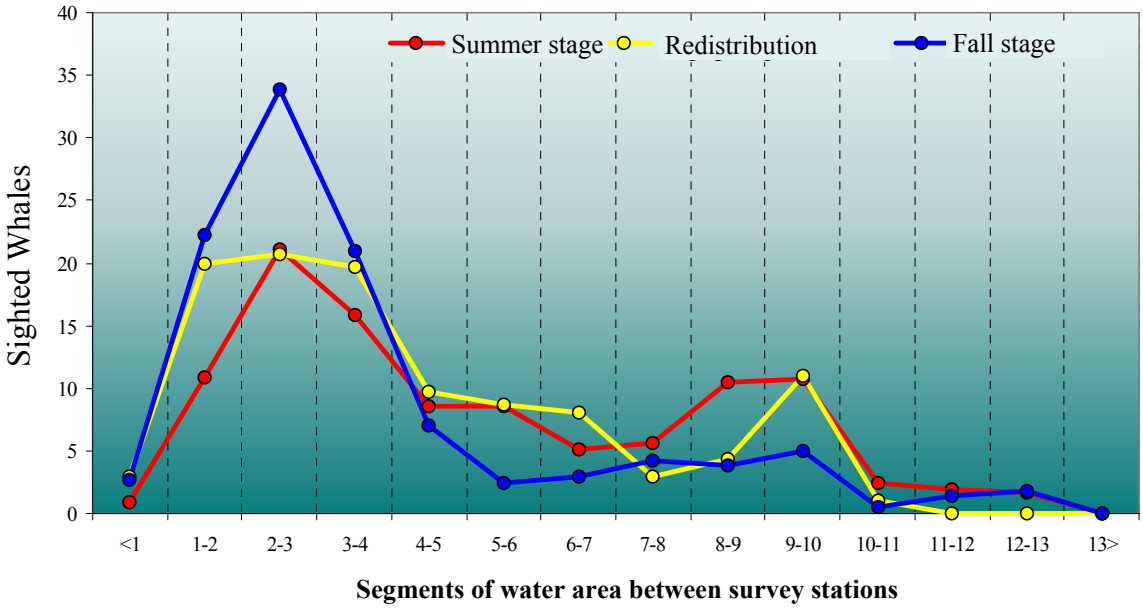


Fig. 17. Seasonal variations in the average numbers of sighted gray whales in the Piltun area during different stages of the feeding season in different segments of the water area (based on shore-based survey data).

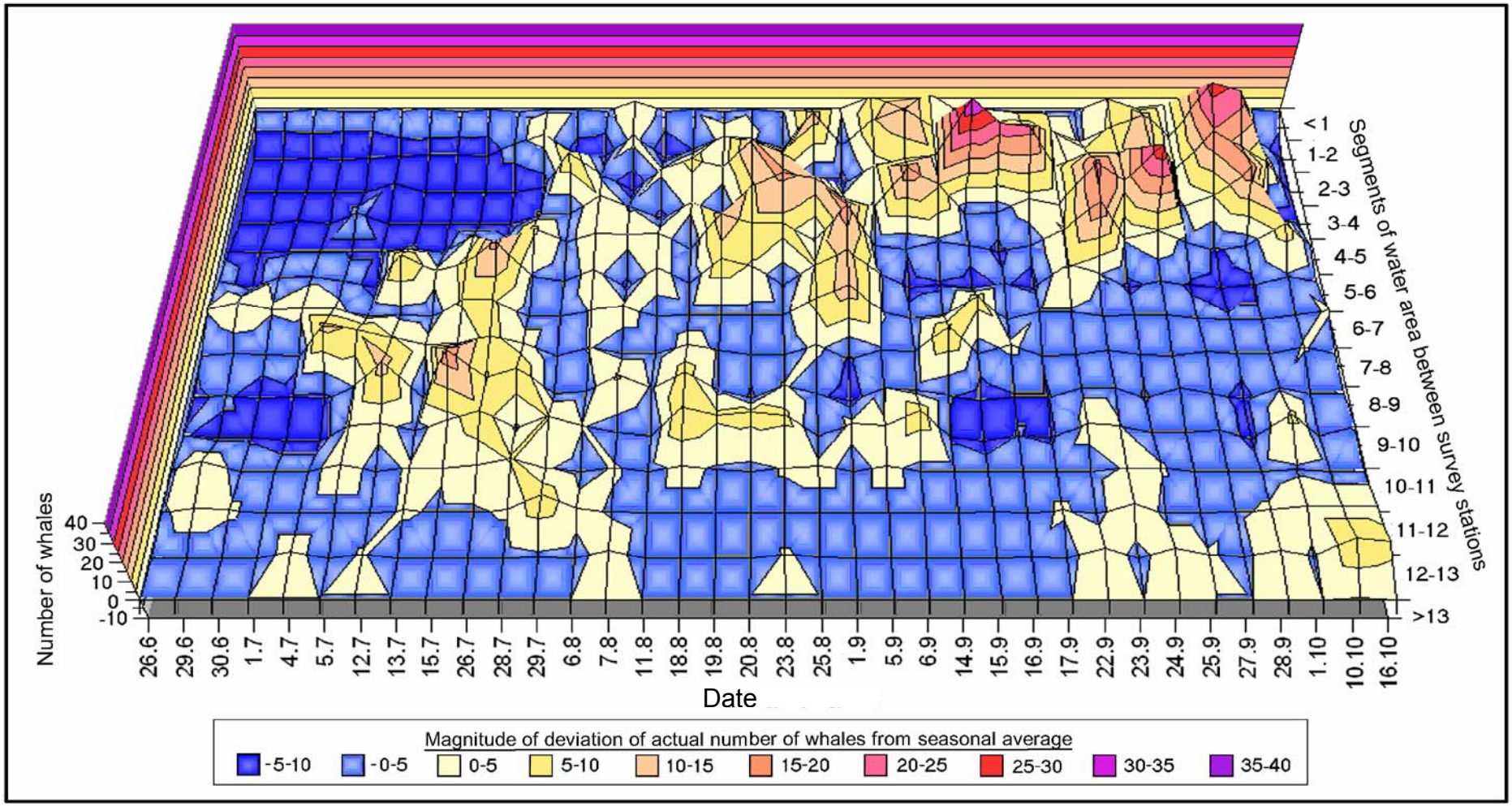


Fig. 18. Spatial-temporal variations in the distribution of gray whales in the Piltun area in June-October 2005 (based on shore-based survey data).
The diagram characterizes the deviations of the actual numbers of animals from one date to another in segments of the water area between survey stations from the seasonal averages for the segments.

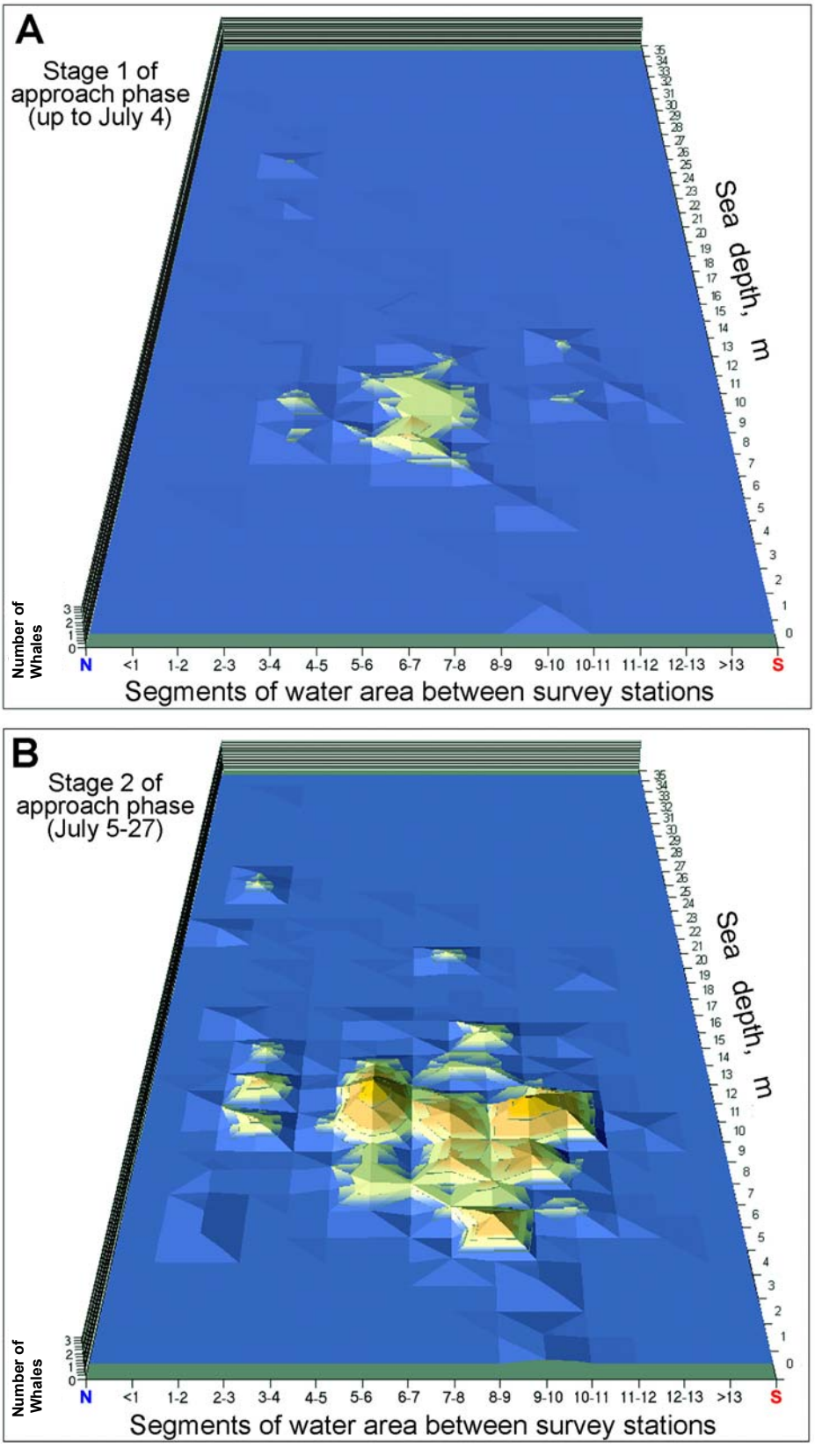


Fig. 19. Distribution of gray whales in the Piltun area by water depth during different stages of the summer-fall season, June-October 2005
(based on shore-based survey data).

The diagram shows the average number of sighted whalessighted whales recorded for the period in question in the specified segment of the water area / at the specified depth / per survey.

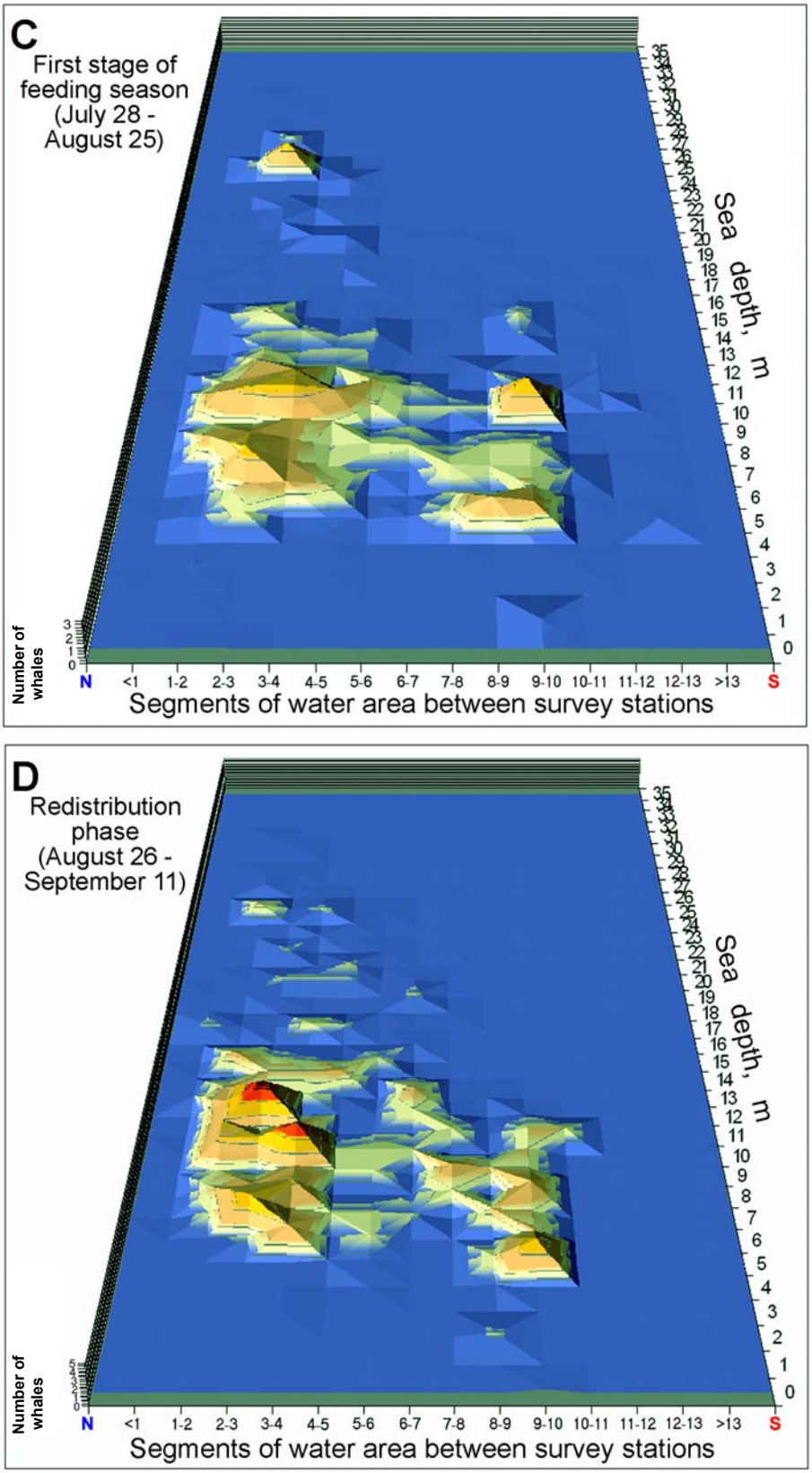


Fig. 19 (*continued*)

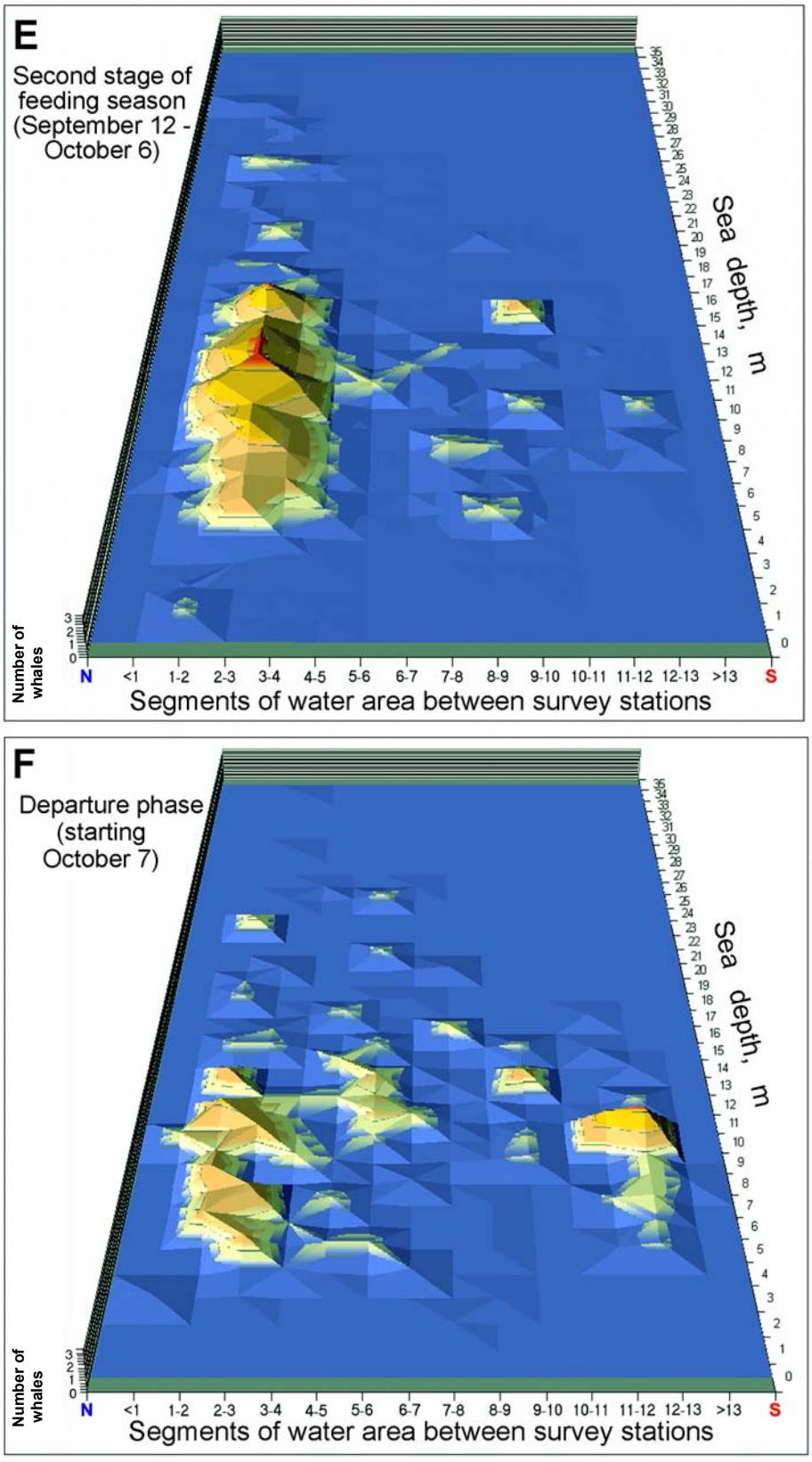

E
Second stage of feeding season (September 12 - October 6)
Sea depth, m
Number of whales
N
<1
1-2
2-3
3-4
4-5
5-6
6-7
7-8
8-9
9-10
10-11
11-12
12-13
>13
S
Segments of water area between survey stations
F
Departure phase (starting October 7)
Sea depth, m
Number of whales
N
<1
1-2
2-3
3-4
4-5
5-6
6-7
7-8
8-9
9-10
10-11
11-12
12-13
>13
S
Segments of water area between survey stations

Fig. 19 (*end*)

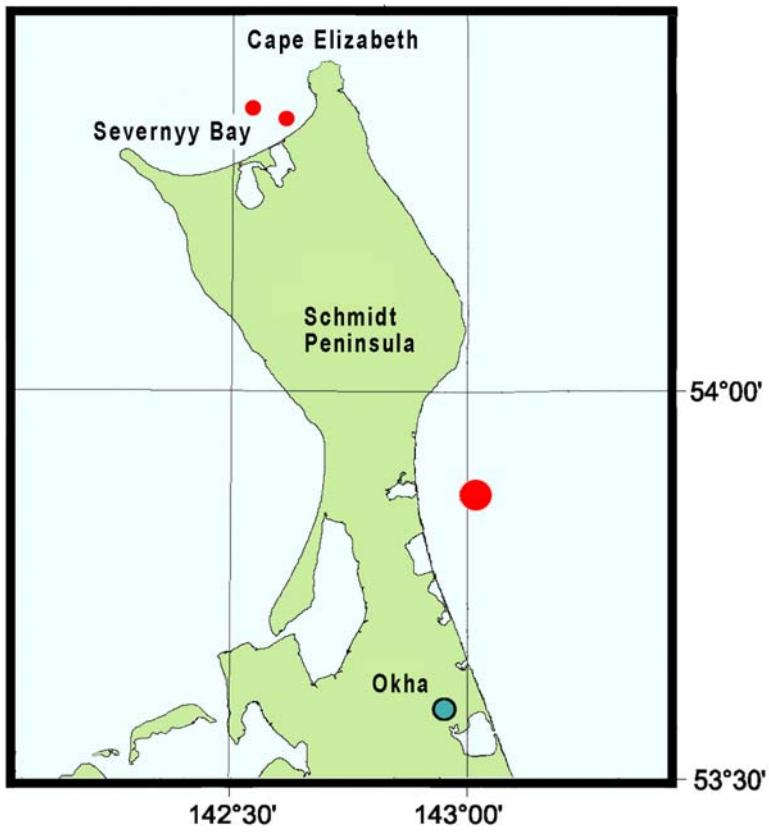


Fig. 20. Sites of gray whale sightings off the northern tip of Sakhalin on September 8, 2005: a pod group of 4 animals east of Schmidt Peninsula and 2 foraging whales in Severnyy Bay
(based on vessel-based survey data).

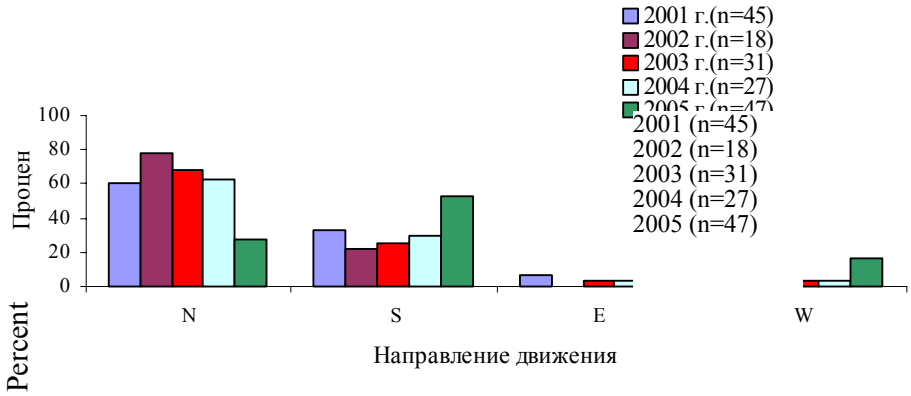


Fig. 21. Direction of movement of gray whales in the Piltun area in October 2001 – 2005
(based on aerial survey data, viewing angle 10 – 140%).

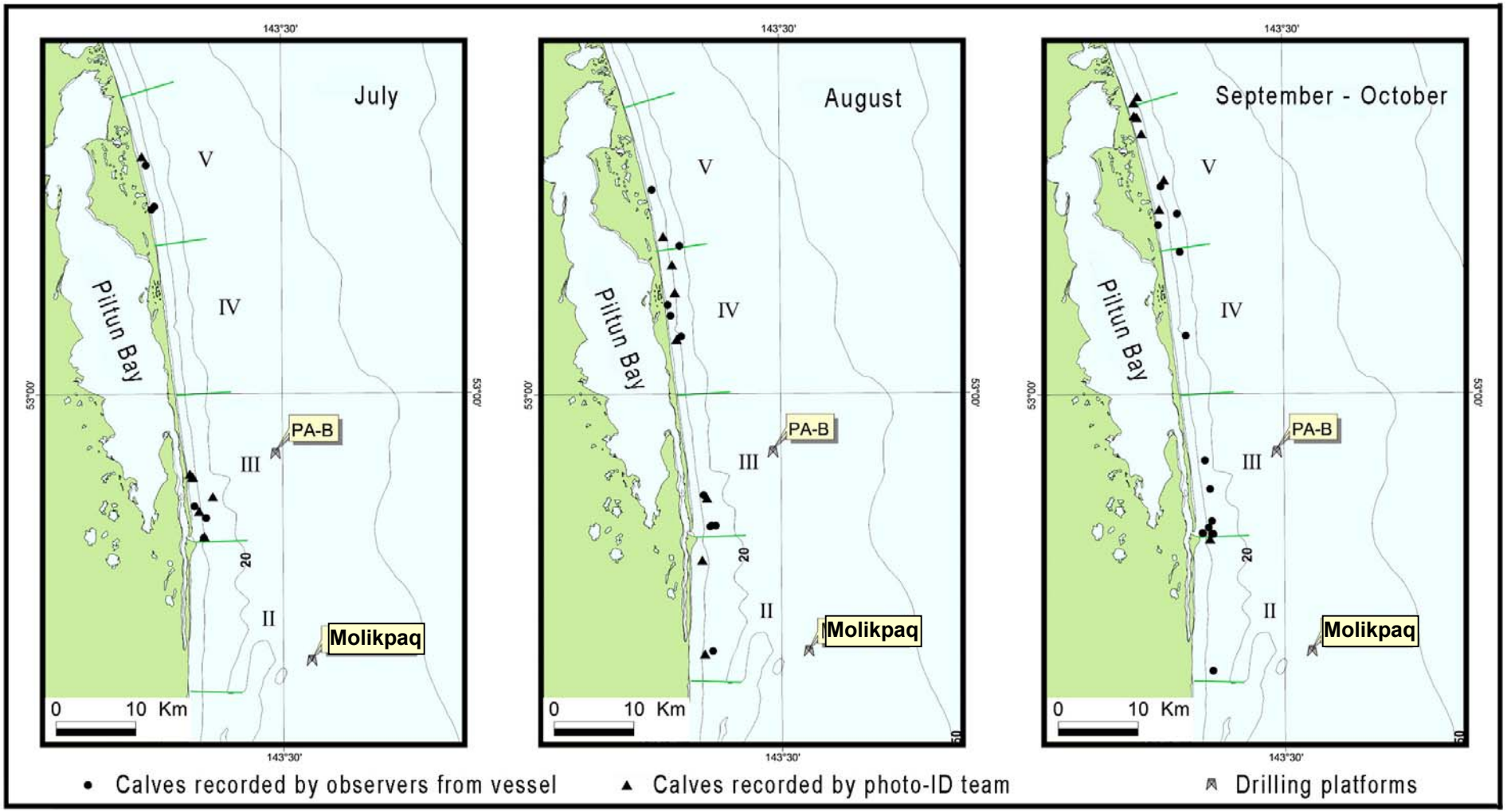


Fig. 22. Distribution of gray whale calves in the Piltun area in 2005

(based on vessel-based observation data).

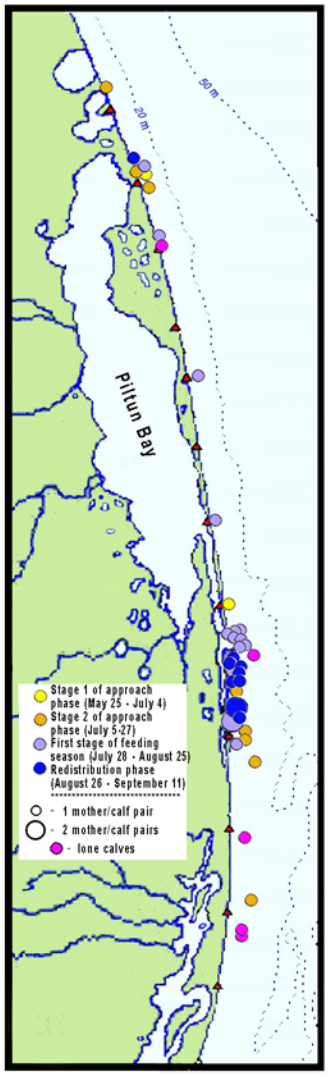
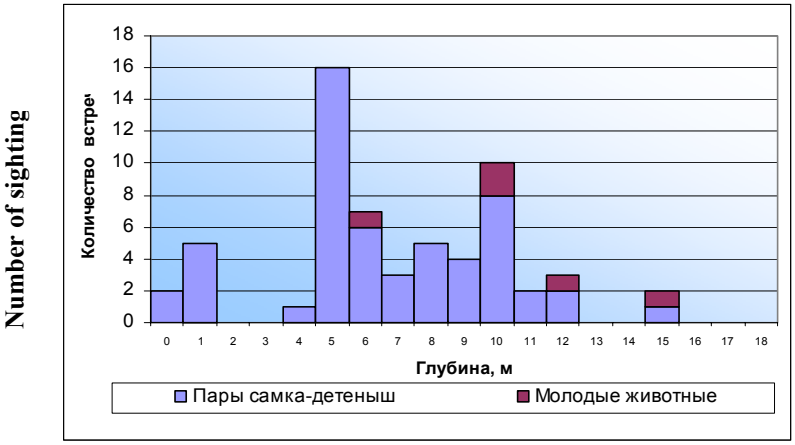


Fig. 23. Distribution of mother/calf gray whale pairs in the Piltun area in June-September 2005 (based on shore-based survey data).



Number of sighting

Depth, m

Cow/calf pairs =Individual calves

Fig. 24. Distribution of mother/calf gray whale pairs and individual calves by water depth in the Piltun area in 2005 (based on shore-based survey data).

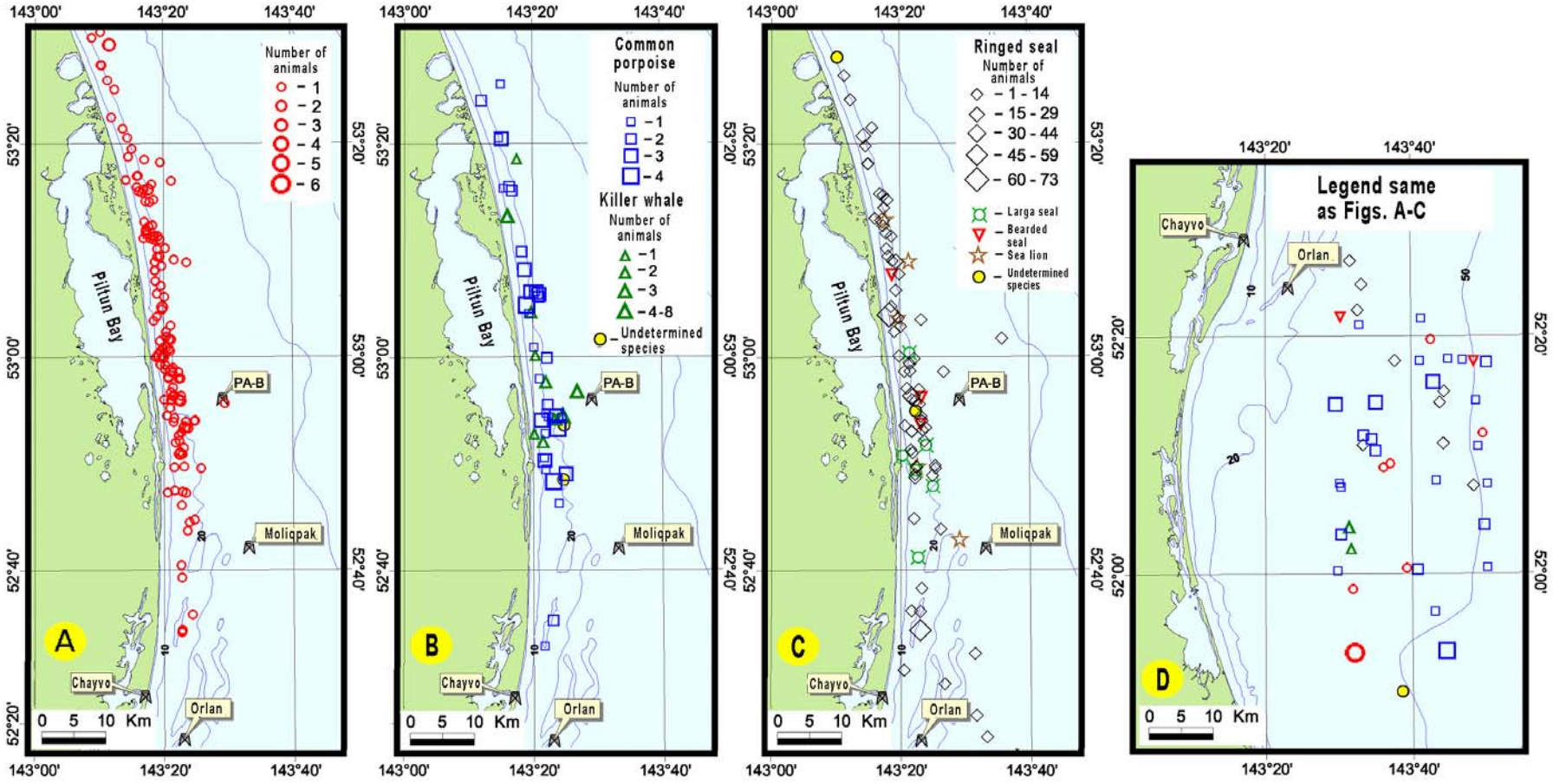


Fig. 25. Distribution of other species of marine mammals (other than gray whales) in the coastal waters of northeastern Sakhalin in July-October 2005 (based on vessel-based survey data).

A, B, C – sightings of Minke whales (A), other cetaceans (B) and pinnipeds (C) in the Piltun area.
D – sightings of cetaceans and pinnipeds in the Offshore area.

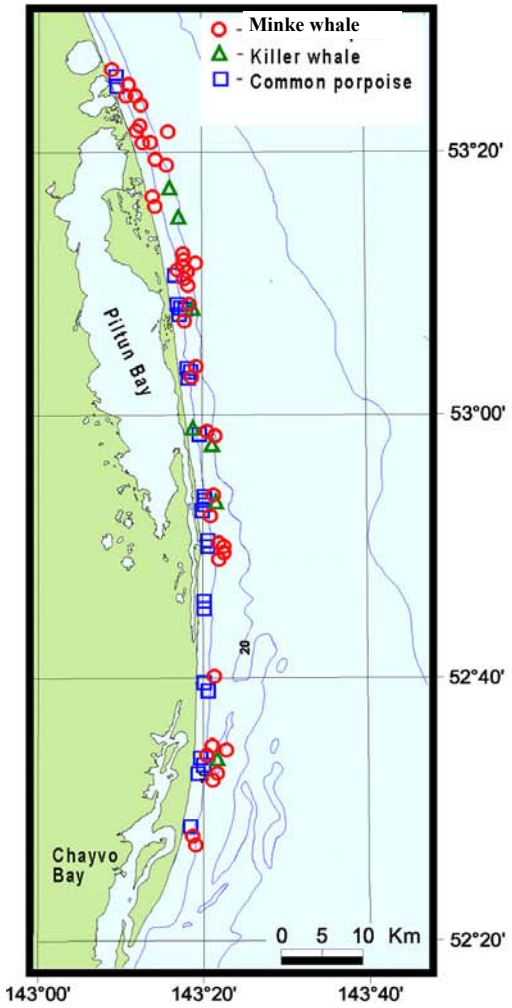


Fig. 26. Sightings of other cetacean species (other than gray whales) in the Piltun area in June-October 2005

(based on shore-based survey data).

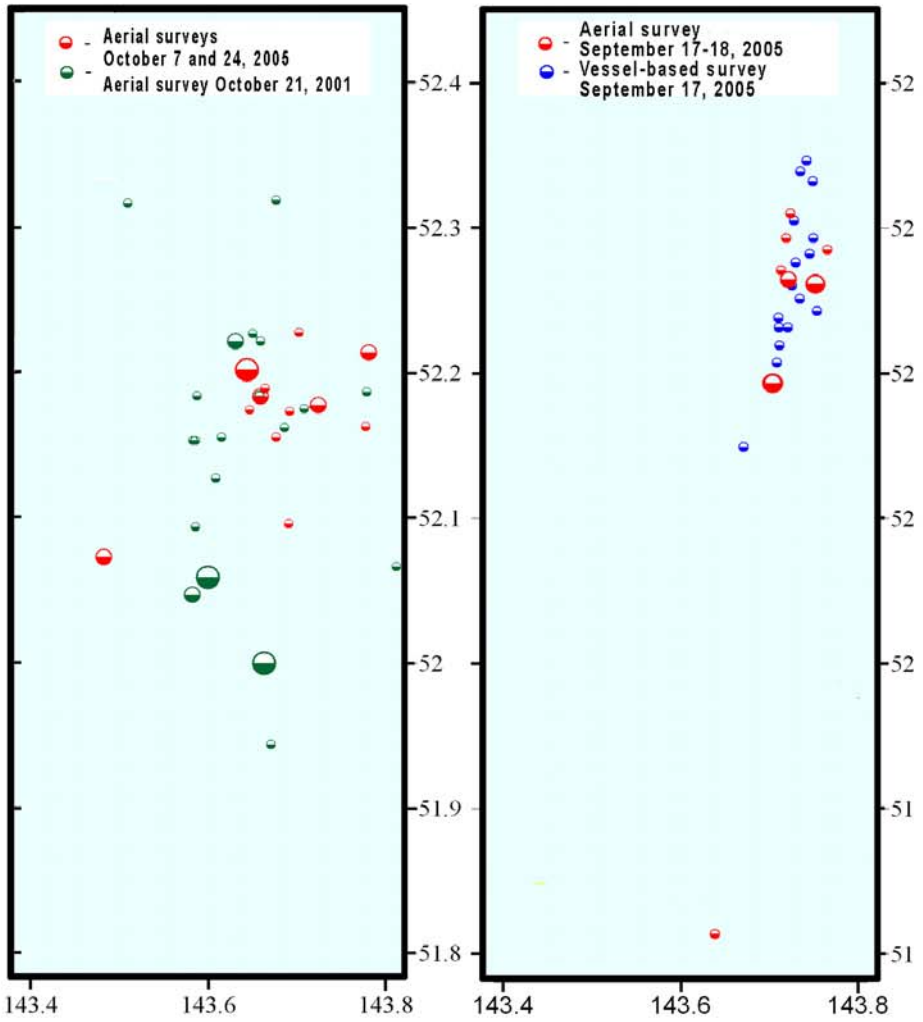


Fig. 27. Distribution of gray whales in the Offshore area in September-October 2001 and 2005

(based on aerial and vessel-based survey data).

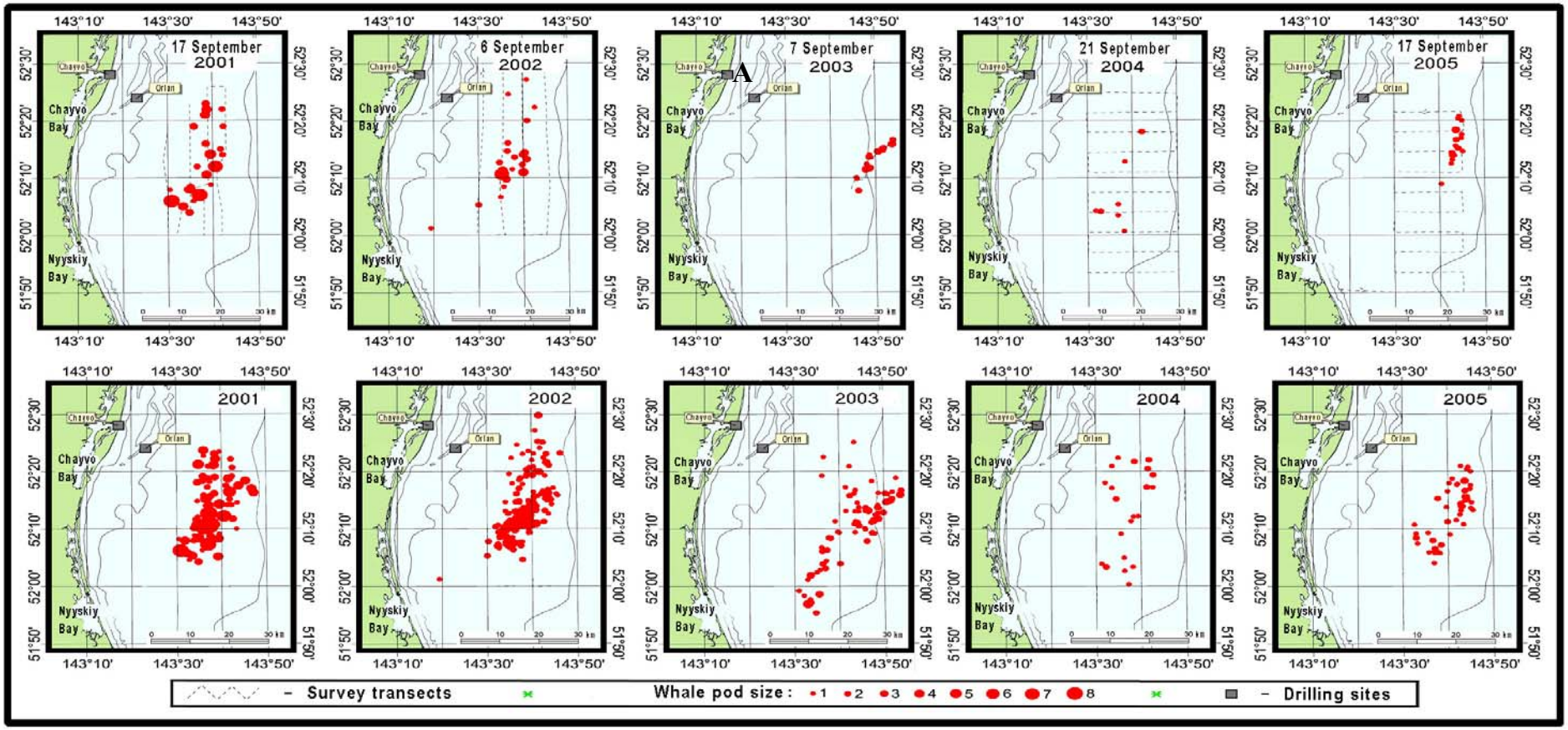


Fig. 28. Distribution of gray whales in the Offshore area in September 2001-2005.

A – based on data of vessel-based surveys performed during full coverage of the entire feeding area;
B - based on data of all vessel-based surveys performed during September.

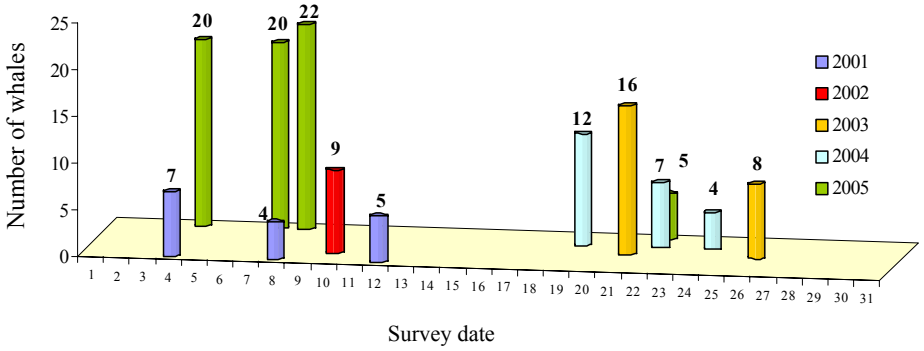


Fig. 29. Number of gray whales recorded during aerial surveys in the Piltun area in October 2001-2005
(viewing angle 30-110%)

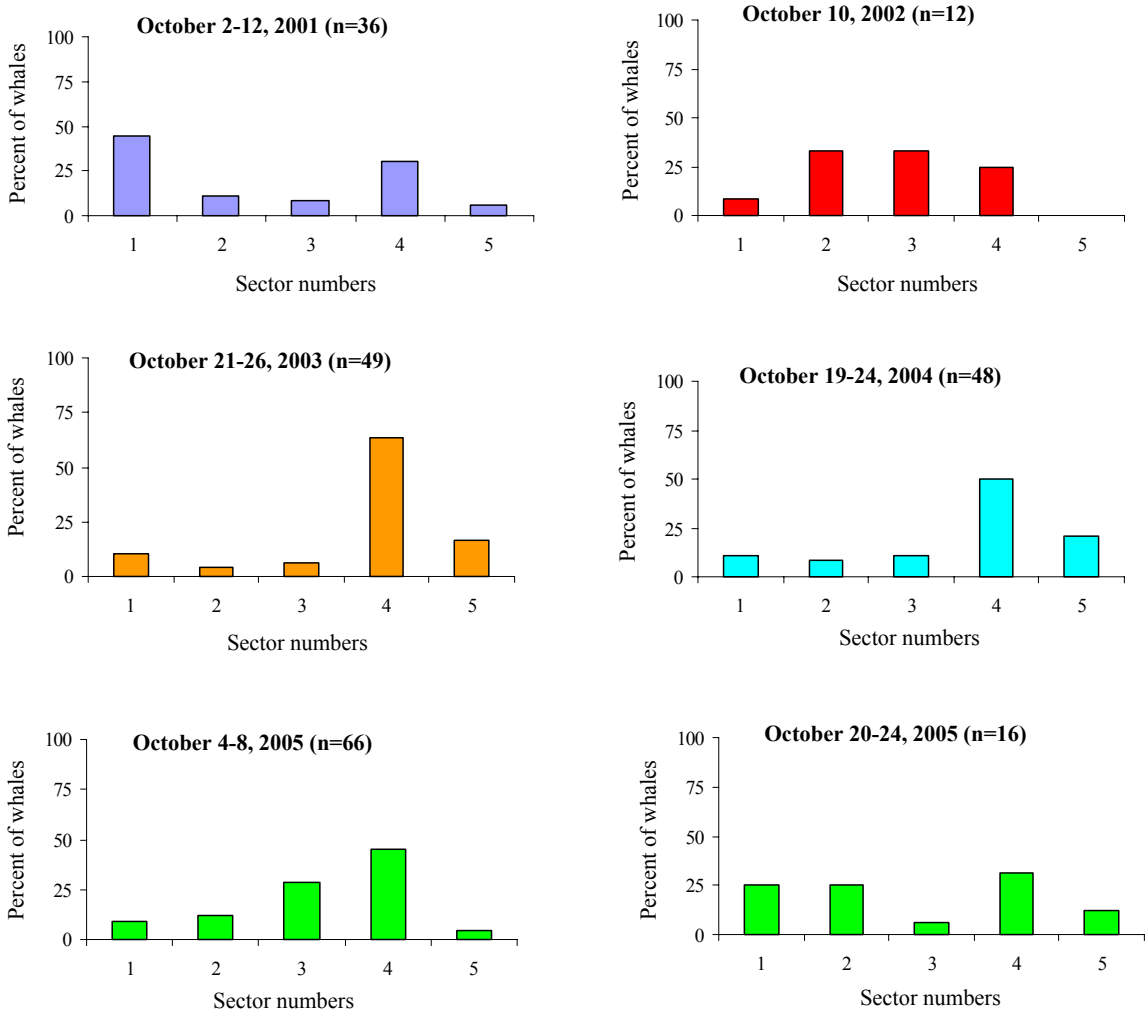


Fig. 30. Distribution of gray whales by sectors of the Piltun area in October 2001-2005 (based on aerial survey data, all recorded animals).

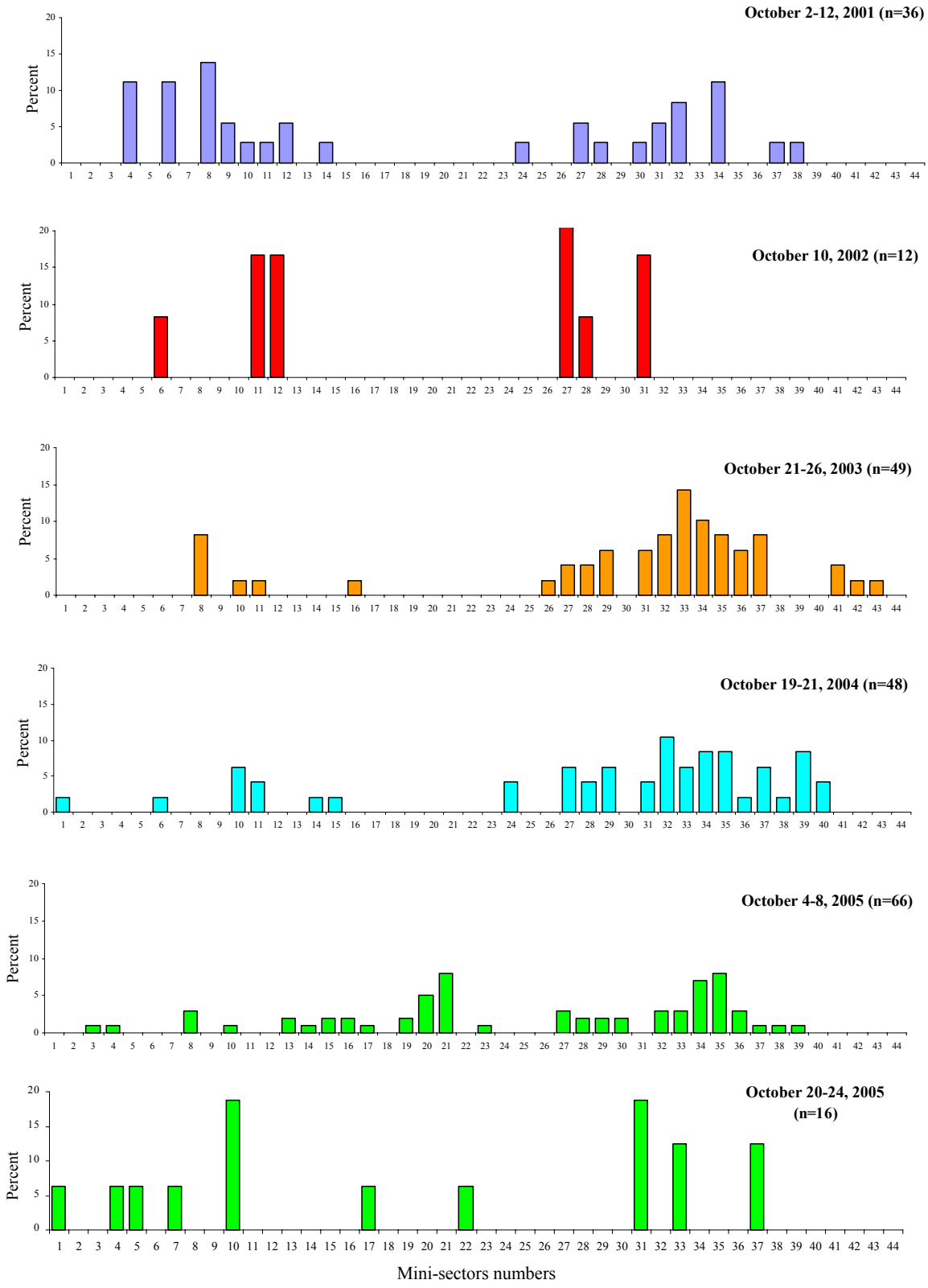


Fig. 31. Distribution of gray whales by mini-sectors of the Piltun area in October 2001-2005

(based on aerial survey data, all recorded animals).

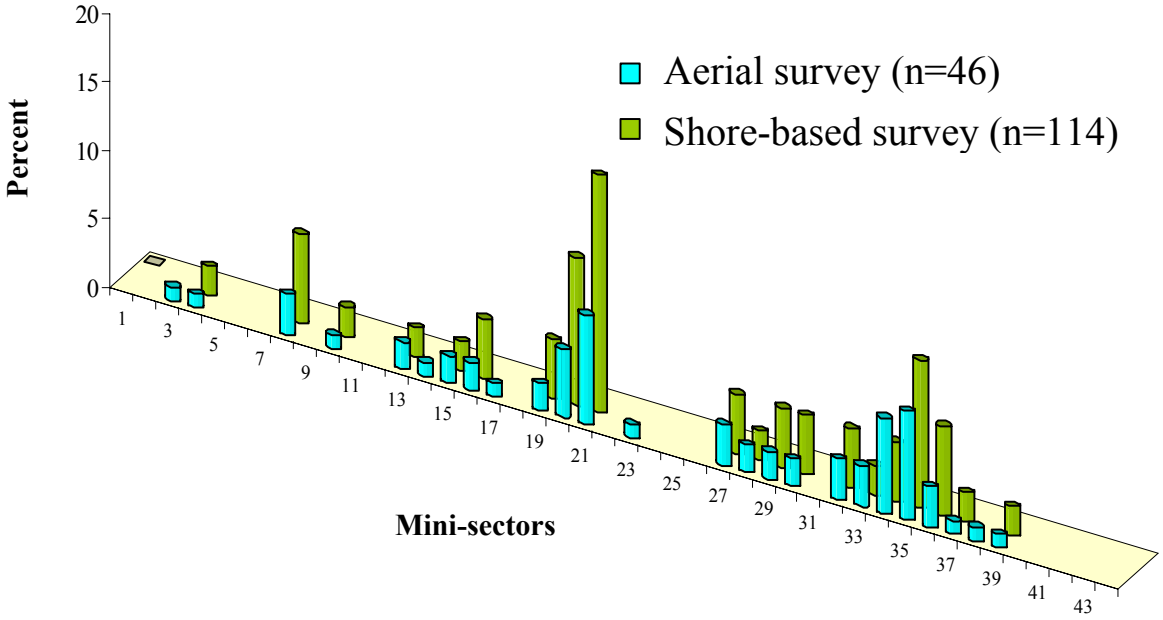


Fig. 32. Distribution of gray whales in the Piltun area, October 7-8, 2005 (based on shore-based and aerial survey results).

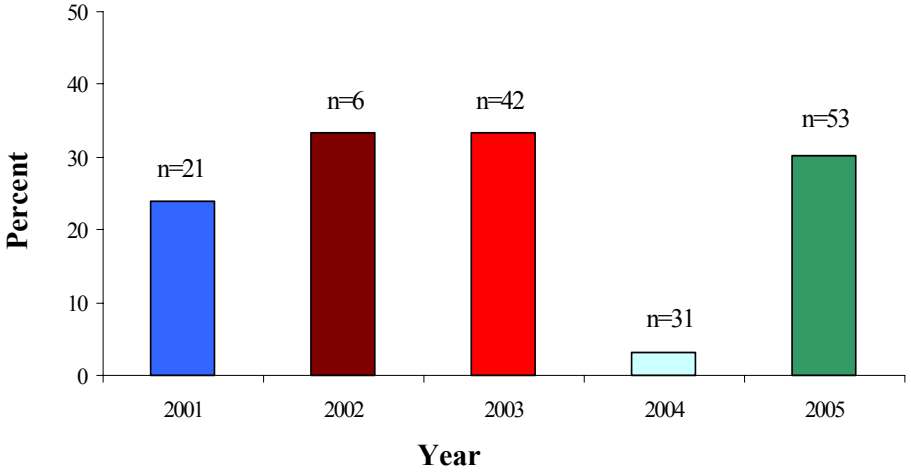


Fig. 33. Feeding activity of gray whales in the Piltun area in October 2001-2005 (based on aerial survey data, viewing angle 30-110%).

Percentages characterized the frequency of sightings of gray whales with feeding mud plumes next to them.

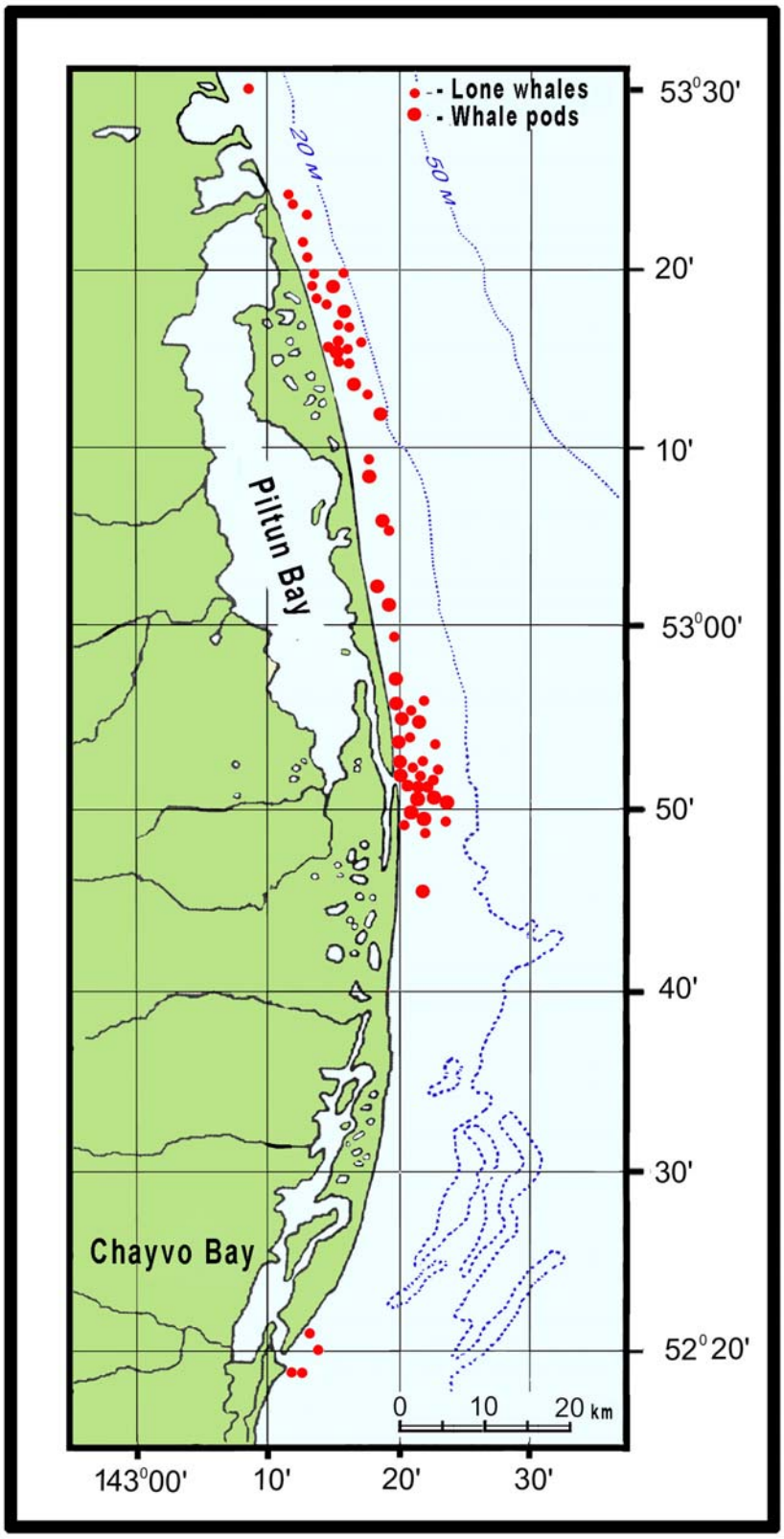


Fig. 34. Distribution of gray whales in the Piltun area in 1984-1991 based on TINRO aerial survey data (N. V. Doroshenko, unpublished report).

Aerial surveys were performed from an Mi-8 helicopter on a single transect 2-3 km from the coast at an altitude of 200-300 m and a speed of 100-150 km/h by three observers. The regular length of transect was from Okha to the south end of Piltun Bay, and sometimes to Lunskiy Bay. A total of 15 aerial surveys were conducted, including 3 each in 1984 and 1985, 2 each in 1987-1989, and one each in 1986, 1990 and 1991. The flight seasons were from late May or early June to late October or early November (whales were observed near the mouth of Chayvo Bay on October 15, 1987).

APPENDICES

Appendix 1

Cetacean observations, recorded during aerial surveys of the coast of northeast Sakhalin in September-November, 2005 (inclination of observation 10-150%).

GW-Gray Whale MW – Minke Whale, KW – Killer Whale, UW – Unidentified species

Date	Latitude	Longitude	Species	Number	Feeding Plume	Observer (Left/right)	Angle (%) - West[1]	Angle (%) - East[1]	Orientation
17 Sept.	51,840641	143,588873	UW	1	0	L	90		SE
17 Sept.	51,813771	143,648627	GW	1	0	R	80		N
17 Sept.	52,310237	143,693029	GW	1	0	R		30	S
17 Sept.	52,293296	143,735284	GW	1	0	R	55		N
17 Sept.	52,285255	143,734796	GW	1	0	L		30	Ю
17 Sept.	52,271415	143,736223	GW	1	0	R	40		?
17 Sept.	52,264881	143,737816	GW	1	0	R	55		?
17 Sept.	52,264882	143,737816	GW	1	0	R	60		?
17 Sept.	51,981474	143,737779	MW	1		L		70	?
18 Sept.	52,993809	143,324853	GW	1	0	R		30	S
18 Sept.	53,193982	143,275098	GW	1	0	L	40		SE
18 Sept.	53,199438	143,273402	GW	1	0	R		50	SE
18 Sept.	53,200811	143,272823	GW	1	0	L	40		S
18 Sept.	53,210242	143,268746	GW	2	0	L	45		E
18 Sept.	53,263189	143,243576	GW	3	0	R		50	?
18 Sept.	53,263189	143,243576	GW	1	0	L	80		?
18 Sept.	53,269631	143,240792	GW	0	1	L	70		?
18 Sept.	53,223846	143,290526	GW	1	0	L		50	SE
18 Sept.	53,201627	143,295332	GW	1	0	R	80		NE
18 Sept.	53,013647	143,338494	GW	2	0	L		70	NW / SW
18 Sept.	52,716565	143,366936	GW	1	0	R	40		N
18 Sept.	52,925643	143,389633	GW	1	0	L	60		S
18 Sept.	52,260466	143,736239	GW	2	0	R		60	W
18 Sept.	52,192075	143,693308	GW	1	1	L		90	W
18 Sept.	52,192076	143,693308	GW	1	1	L		80	NE
4 Oct.	53,334895	143,217806	GW	1	0	R		100	W
4 Oct.	53,330652	143,219388	GW	1	1	L	100		?
4 Oct.	53,330652	143,219388	GW	1	?	R		30	?
4 Oct.	53,320749	143,223674	GW	1	1	L	100		?
4 Oct.	53,320749	143,223674	GW	1	0	L		50	?
4 Oct.	53,308073	143,227542	GW	1	1	R	60		?
4 Oct.	53,308073	143,227542	GW	1	1	L		60	?
4 Oct.	53,300053	143,231088	GW	1	0	L		50	S
4 Oct.	53,300053	143,231088	GW	1	0	R	100		?
4 Oct.	53,277318	143,239650	GW	1	0	R	100		N
4 Oct.	53,202694	143,267335	GW	1	0	L		40	S
4 Oct.	53,193655	143,269047	GW	1	1	R	70		SE
4 Oct.	53,114825	143,288643	GW	1	0	L		90	S
4 Oct.	53,016758	143,311973	GW	1[2]	0	pilot	40		N
4 Oct.	52,958356	143,323045	GW	1	?	R	50		S

Date	Latitude	Longitude	Species	Number	Feeding Plume	Observer (Left/right)	Angle (%) - West[1]	Angle (%) - East[1]	Orientation
4 Oct.	52,758499	143,370037	GW	1	?	L		70	NE
4 Oct.	52,935761	143,357399	GW	1	0	L		110	S
4 Oct.	52,977324	143,347871	GW	1	0	L		110	S
4 Oct.	53,316044	143,254235	GW	1	?	R	30		S
4 Oct.	53,395035	143,211991	GW	1	?	R	80		SW
7 Oct.	53,369206	143,196257	GW	1	0	R	60		3
7 Oct.	53,362699	143,200243	GW	1	0	R	40		E
7 Oct.	53,362699	143,200243	GW	1	0	L		60	?
7 Oct.	53,320883	143,222231	GW	1	0	L		100	S
7 Oct.	53,284131	143,236291	GW	1	?	L		30	?
7 Oct.	53,279813	143,238046	GW	1	?	L		30	?
7 Oct.	53,077789	143,297591	GW	1	?	L		30	N
7 Oct.	53,063353	143,301399	GW	0	1	L		70	?
7 Oct.	53,060274	143,302161	GW	1	1	L		70	SW
7 Oct.	53,052587	143,303872	GW	1	0	R	30		NE
7 Oct.	52,972383	143,320609	GW	1	0	R	110		N
7 Oct.	52,174780	143,646133	GW	1[2]	0	L		20	?
7 Oct.	52,096133	143,690615	GW	1	0	R		90	E
7 Oct.	52,173434	143,691452	GW	1	1	L	50		?
7 Oct.	52,162930	143,777009	GW	0	1*			120	?
7 Oct.	52,843122	143,365783	GW	1[2]	0			40	N
7 Oct.	52,843122	143,365783	GW	1[2]	0			50	N
7 Oct.	52,843122	143,365783	GW	1	0	L	40		?
7 Oct.	52,993729	143,344283	GW	2	0	L	40		W
7 Oct.	53,060955	143,330131	GW	1	?	L	30		?
7 Oct.	53,068905	143,328710	GW	2	?	L	30		?
7 Oct.	53,079323	143,326993	GW	1	0	R		30	S
7 Oct.	53,307804	143,255877	GW	1	?	L	30		S
7 Oct.	53,361765	143,232273	GW	1	0	L	30		?
7 Oct.	53,535556	143,144957	GW	1[2]	0	L			W
7 Oct.	53,291781	143,291228	GW	1[2]	?	L		10	?
7 Oct.	53,054513	143,363181	GW	1[2]	?	R	15		?
7 Oct.	53,031880	143,367521	MW	1		L		70	E
7 Oct.	52,891917	143,393903	GW	1[2]	?	R	20		W
7 Oct.	52,073114	143,470389	GW	2	0	L	70	70	E
8 Oct.	53,360140	143,229881	MW	1		R	60		N
8 Oct.	53,237831	143,285108	GW	1[2]	?	R	10		?
8 Oct.	53,204834	143,298106	GW	1	0	R	40		SE
8 Oct.	53,092879	143,321886	GW	2	0	R	40		W
8 Oct.	53,092879	143,321886	GW	1[2]	?	R	10		?
8 Oct.	53,077537	143,324971	GW	3[2]	?	R	10		?
8 Oct.	52,781582	143,369216	GW	1	?	L		30	?
8 Oct.	52,033664	143,602086	MW	1		L	60		?
8 Oct.	52,530650	143,316082	GW	2[2]	?	R		30	SE
8 Oct.	52,937402	143,326435	GW	2	2	R		40	NW
8 Oct.	53,190404	143,270361	GW	0	1	R		70	?
8 Oct.	53,195259	143,268639	GW	1	0	L	80		S

Date	Latitude	Longitude	Species	Number	Feeding Plume	Observer (Left/right)	Angle (%) - West[1]	Angle (%) - East[1]	Orientation
8 Oct.	53,231673	143,257787	GW	1	0	L	50		?
8 Oct.	53,240009	143,254493	GW	1	1	R		40	?
8 Oct.	53,248613	143,251076	GW	1	1	R		50	SE
8 Oct.	53,331016	143,217022	GW	1	1	L	60		S
8 Oct.	53,341557	143,213804	GW	4	0	L	95		SE
8 Oct.	53,407357	143,173281	GW	2	2	L	80		?
20 Oct.	52,746788	143,369747	GW	1	0	R		40	C
20 Oct.	52,813414	143,368004	GW	1	?	L	40		SE
22 Oct.	53,325437	143,218889	GW	1[2]	?	R	10		?
22 Oct.	52,893612	143,335957	GW	1	1	L		90	N
22 Oct.	52,897362	143,363444	GW	1	0	L	80		N
22 Oct.	53,283032	143,267636	GW	1	0	L	70		E/W
23 Oct.	53,277758	143,269599	GW	1	0	R	70		N
23 Oct.	52,839979	143,367081	GW	1	0	L		70	S
23 Oct.	52,794693	143,367993	GW	1	0	L		60	S
23 Oct.	52,169555	143,646224	GW	3	?	L		30	?
23 Oct.	52,143093	143,645918	GW	1[2]	?	M			?
23 Oct.	51,750728	143,656154	MW	1		M			?
23 Oct.	52,235436	143,778082	GW	1	1	L	60		N
23 Oct.	52,900093	143,338253	GW	1[2]	?	M			?
23 Oct.	53,297258	143,231362	GW	1	0	R		40	S
23 Oct.	53,275800	143,239253	GW	1	?	R	50		
24 Oct.	53,127592	143,314945	GW	1[2]	?	M			?
24 Oct.	53,039433	143,333994	GW	1[2]	?	M			?
24 Oct.	52,535865	143,509609	GW	1	0	L	60		?
24 Oct.	51,792700	143,556182	MW	1		R	60		?
24 Oct.	52,409855	143,603121	MW	1		L	40		?
24 Oct.	52,423818	143,602783	MW	1		L	100		?
24 Oct.	52,189345	143,646498	GW	1	0	L		50	S
24 Oct.	52,183653	143,646809	GW	2	0	L		70	E
24 Oct.	52,155592	143,645763	GW	1	?	L		30	?
24 Oct.	52,202112	143,689654	GW	3[2]	?	L	20		?
24 Oct.	52,227856	143,690009	GW	1	0	R		70	SE
24 Oct.	52,214230	143,734254	GW	2[2]	?	L		20	?
24 Oct.	52,177854	143,733954	GW	0	2	R	80		
24 Oct.	53,393957	143,181655	GW	2	0	L	70		S
2 Nov.	53,238255	143,255013	GW	2	0	R		30	S/W
2 Nov.	53,205773	143,267571	GW	1	0	R		40	?
2 Nov.	52,982308	143,318630	KW	1		R		30	N
2 Nov.	52,834201	143,337893	GW	1	?	L	30		N
9 Nov.	52,320000	143,225000	GW	1	?	L		40	?
9 Nov.	52,206795	143,646954	GW	1	0	L		50	?
9 Nov.	52,300892	143,689896	GW	1	0	R		30	S
9 Nov.	52,151424	143,774809	GW	1	0	L	40		SW
9 Nov.	52,151424	143,774809	GW	1	0	L	80		SW
9 Nov.	52,217111	143,777025	GW	2	0	R		100	S
9 Nov.	52,824020	143,365070	GW	1	?	L	60		SW

Date	Latitude	Longitude	Species	Number	Feeding Plume	Observer (Left/right)	Angle (%) - West[1]	Angle (%) - East[1]	Orientation
9 Nov.	53,034477	143,337132	GW	1	0	R		50	NE
9 Nov.	53,179767	143,304398	GW	1	?	R		70	S
9 Nov.	53,324643	143,250073	GW	1	?	L	70		N
9 Nov.	52,863754	143,396913	GW	1[2]	?	R	20		S

Notes:
[1] – Detection of whales to the west or east of the aircraft on the transect flown when observed
[2] –Whales were observed off-transect (on-transect inclination angle is between 30 % - 110 %

Appendix 2

Observations of gray whales and other sea mammals,
recorded from vessel surveys off the coast of northeast Sakhalin in July-October, 2005

Codes of animal activities: SI - Sink; FD - Front Dive; TH – Thrash Dive; DI – Dive; LO – Look (pinnipeds); SH – Spy-Hopping (whales); SW – Swim; BR – Breach; FE - Feed; FL - Fluking; PL – Play; RE – Rest; OT – Other; UN – Unknown.

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
Gray Whale (Eschrichtius robustus)													
13 July	8	30	52	40,846	143	24,086	255	1	UN	UN	1	5000	
13 July	9	0	52	40,844	143	24,089	223	1	UN	UN	2	5000	
13 July	10	20	52	40,843	143	24,093	230	1	UN	UN	1,5	5000	
13 July	11	5	52	40,212	143	21,546	10	1	SW	SW	9	400	to the south
13 July	11	19	52	40,040	143	21,751	10	1	SW	SW	3	300	to the south
13 July	11	24	52	44,844	143	21,761	50	2	FE	SW	9	300	to the south
13 July	11	24	52	44,844	143	21,761	50	1	SW	DI	9	600	
13 July	11	26	52	45,347	143	21,766	50	1	SW	FE	9	200	
13 July	11	45	52	48,280	143	21,760	60	1	UN	DI	9	2000	
13 July	12	23	52	50,304	143	23,881	105	1	DI	DI	3	2000	
13 July	12	23	52	50,304	143	23,881	105	2	DI	DI	11	3000	
13 July	12	38	52	51,645	143	21,576	311	2	FE	FE	9	800	
13 July	12	38	52	51,645	143	21,576	311	1	FE	FE	9	2000	
13 July	12	41	52	52,000	143	20,700	311	2	FE	FE	3	400	
13 July	12	41	52	52,000	143	20,700	311	2	FE	FE	3	600	
13 July	12	41	52	52,000	143	20,700	311	2	FE	FE	3	300	
13 July	12	44	52	52,246	143	20,420	311	1	FE	FE	3	400	
13 July	12	44	52	52,246	143	20,420	311	2	FE	FE	3	900	
13 July	12	54	52	53,131	143	21,431	53	2	FE	FE	9	200	
13 July	12	56	52	53,264	143	21,751	54	2	FE	FE	2	100	
13 July	12	51	52	52,860	143	20,809	54	1	FE	FE	9	800	
13 July	12	51	52	52,860	143	20,809	54	1	FE	FE	9	300	
13 July	12	59	52	53,550	143	22,425	40	1	FE	FE	9	150	
13 July	12	59	52	53,550	143	22,425	40	1	FE	FE	3	100	
13 July	13	2	52	53,776	143	22,677	41	1	FE	FE	9	1500	
13 July	13	59	52	54,932	143	21,735	40	2	DI	PL	9	800	playing
13 July	13	59	52	54,932	143	21,735	40	1	DI	DI	9	1500	
13 July	13	59	52	54,932	143	21,735	40	1	DI	DI	9	1800	
13 July	14	2	52	55,330	143	22,169	40	1	DI	DI	3	200	
13 July	14	2	52	55,330	143	22,169	40	2	DI	DI	9	1500	
13 July	14	5	52	55,417	143	22,267	30	2	DI	PL	9	600	playing
13 July	14	7	52	55,671	143	22,374	348	2	DI	DI	9	1500	
13 July	14	9	52	56,039	143	22,285	348	1	DI	DI	9	200	
13 July	14	10	52	56,260	143	22,233	348	2	DI	DI	9	1500	
13 July	14	13	52	56,906	143	22,066	348	1	SW	SW	9	1500	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
13 July	14	30	53	0,888	143	20,927	348	1	SW	SW	9	2000	to the south
13 July	14	35	53	1,854	143	20,616	348	2	SW	SW	9	1000	to the south
13 July	14	35	53	1,854	143	20,616	348	2	DI	DI	9	1500	
13 July	14	45	53	4,014	143	19,974	348	2	SW	DI	9	1500	to the south
13 July	15	38	53	15,160	143	16,861	351	2	DI	FE	3	500	
13 July	15	51	53	18,128	143	16,092	349	1	DI	FE	3	400	
13 July	16	8	53	21,539	143	14,407	339	1	FE	FE	9	500	
13 July	16	11	53	22,015	143	14,096	339	1	FE	FE	9	200	small blow
13 July	16	18	53	23,426	143	13,198	339	2	DI	FE	9	2500	
14 July	8	25	53	31,929	143	7,758	355	1	DI	FE	3	400	
14 July	9	29	53	21,556	143	13,587	161	1	SW	SW	3	1000	
14 July	10	16	53	16,215	143	15,382	166	2	DI	PL	9	150	playing
14 July	10	34	53	13,184	143	16,687	167	1	DI	DI	3	700	
14 July	10	39	53	12,607	143	16,904	167	1	DI	SW	3	800	to the south
14 July	11	37	53	9,873	143	17,998	169	1	DI	DI	9	100	
14 July	11	42	53	9,352	143	18,136	169	4	DI	DI	3	1000	
14 July	12	1	53	8,484	143	18,353	171	1	DI	DI	9	100	
14 July	12	9	53	7,094	143	18,696	179	1	DI	DI	3	300	
14 July	12	57	53	2,722	143	19,866	150	2	FE	FE	3	200	
14 July	12	57	53	2,722	143	19,866	150	1	FE	FE	3	600	
14 July	13	1	53	2,065	143	20,479	150	1	FE	FE	3	500	
14 July	13	25	53	0,212	143	21,730	196	1	DI	DI	3	1500	
14 July	13	44	52	57,332	143	22,842	166	1	DI	DI	3	3000	
14 July	13	54	52	55,623	143	23,512	166	1	DI	DI	3	2900	
14 July	13	54	52	55,623	143	23,512	166	1	DI	DI	3	3000	
14 July	13	54	52	55,623	143	23,512	166	1	DI	DI	3	3100	
14 July	14	6	52	54,243	143	23,962	173	1	DI	DI	3	3100	
14 July	14	6	52	54,243	143	23,962	173	1	DI	DI	3	3000	
14 July	14	37	52	53,080	143	20,846	136	2	FE	FE	3	1000	
14 July	14	37	52	53,080	143	20,846	136	1	FE	FE	3	800	
14 July	14	37	52	53,080	143	20,846	136	1	FE	FE	3	200	
14 July	15	17	52	52,020	143	21,649	281	4	FE	FE	3	400	
14 July	15	17	52	52,020	143	21,649	281	1	UN	UN	3	1000	
14 July	15	24	52	51,020	143	22,653	281	1	UN	UN	3	1500	
14 July	15	42	52	49,366	143	24,399	81	1	SW	SW	9	400	
14 July	16	20	52	45,931	143	23,690	190	1	FE	FE	3	1500	
14 July	16	26	52	45,031	143	23,434	190	1	SW	SW	3	800	to the south
14 July	16	26	52	45,031	143	23,434	190	2	SW	SW	3	1000	to the south
14 July	16	37	52	43,353	143	22,900	191	1	SW	SW	3	1500	to the south
14 July	17	5	52	40,887	143	22,098	16	1	DI	DI	1	1000	
14 July	17	23	52	40,116	143	21,723	180	1	SW	SW	9	200	
16 July	8	44	52	37,256	143	22,183	10	1	SW	DI	9	500	to the north, fluking
16 July	8	49	52	38,099	143	22,445	10	1	SW	DI	9	800	to the north
16 July	9	0	52	40,169	143	22,856	10	1	SW	DI	9	1500	
16 July	9	15	52	42,797	143	22,892	357	1	DI	FE	9	900	
16 July	9	25	52	44,617	143	22,855	357	1	UN	DI	9	1500	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
16 July	9	36	52	46,424	143	22,753	357	1	UN	UN	9	2000	
16 July	9	39	52	46,932	143	22,721	358	1	UN	SW	9	1000	
16 July	9	41	52	47,419	143	22,693	358	1	UN	UN	9	1500	
16 July	9	42	52	47,616	143	22,684	358	1	SW	SW	9	500	to the south
16 July	9	49	52	48,835	143	22,614	357	1	SW	DI	9	200	
16 July	9	51	52	49,125	143	22,594	357	1	SW	SW	9	1500	to the south
16 July	9	59	52	50,521	143	22,521	358	1	SW	SW	9	800	to the shore
16 July	10	3	52	51,355	143	22,462	356	1	UN	DI	9	1700	
16 July	10	7	52	52,354	143	22,360	356	1	FE	FE	9	400	
16 July	10	7	52	52,354	143	22,360	356	1	FE	FE	9	700	
16 July	10	7	52	52,354	143	22,360	356	1	UN	DI	9	1700	
16 July	10	7	52	52,354	143	22,360	356	2	FE	FE	9	1000	
16 July	10	12	52	53,217	143	22,263	356	1	SW	SW	9	800	to the south
16 July	10	20	52	53,601	143	22,072	356	2	DI	DI	9	1000	
16 July	10	22	52	54,949	143	22,059	356	1	SW	SW	9	500	
16 July	10	22	52	54,949	143	22,059	356	1	DI	FE	3	800	
16 July	10	25	52	55,724	143	21,970	356	1	DI	FE	9	800	
16 July	10	25	52	55,724	143	21,970	356	1	DI	DI	9	1000	
16 July	10	27	52	56,090	143	21,929	356	2	UN	UN	9	1500	
16 July	10	33	52	57,315	143	21,717	356	1	SW	SW	9	300	to the south
16 July	10	45	52	59,444	143	21,440	351	1	UN	UN	9	2000	
16 July	10	53	53	1,077	143	20,985	351	1	UN	UN	9	1500	to the south
16 July	10	59	53	2,315	143	20,640	351	1	SW	SW	9	1500	
16 July	11	29	53	8,029	143	19,055	351	2	UN	UN	9	1500	
16 July	11	29	53	8,029	143	19,055	351	1	SW	SW	9	800	to the south
16 July	11	45	53	10,761	143	18,303	349	1	DI	FE	9	1000	to the south
16 July	11	57	53	13,094	143	17,541	348	1	DI	FE	9	1000	
16 July	12	17	53	16,911	143	16,290	349	1	UN	UN	9	1500	together
16 July	12	17	53	16,911	143	16,290	349	1	FE	SH	9	1200	
16 July	12	21	53	17,579	143	16,092	350	1	DI	DI	9	1000	
16 July	12	33	53	19,522	143	15,510	350	2	DI	SW	9	800	to the south
16 July	13	0	53	22,628	143	15,166	90	1	DI	DI	9	1000	
16 July	15	30	53	22,249	143	15,444	312	2	SW	SW	9	300	to the south
16 July	15	51	53	23,701	143	12,716	342	1	UN	DI	9	1000	
17 July	10	59	52	53,821	143	22,464	194	2	SW	SW	9	100	
17 July	11	3	52	53,006	143	22,131	194	2	SW	SW	9	200	side by side
17 July	11	3	52	53,006	143	22,131	194	2	SW	SW	9	300	side by side
17 July	11	4	52	52,063	143	21,851	189	1	SW	SW	3	200	
17 July	11	10	52	52,063	143	21,851	189	1	SW	SW	3	600	
17 July	11	29	52	51,414	143	21,713	195	2	DI	FE	9	100	
17 July	16	0	52	52,033	143	20,700	148	5	DI	FE	9	300	maybe playing but not certain
17 July	17	0	52	52,000	143	20,701	40	7	DI	FE	9	400	
17 July	18	0	52	51,992	143	20,755	25	3	FE	FE	11	800	
17 July	18	0	52	51,992	143	20,755	25	1	SW	SW	2	300	
18 July	8	0	52	51,222	143	21,627	70	1	DI	FE	3	200	rain
18 July	8	15	52	51,221	143	21,630	75	1	DI	FE	9	300	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
18 July	8	25	52	51,224	143	21,624	70	1	FE	SW	3	600	
18 July	9	22	52	51,250	143	22,216	90	1	FE	FE	9	150	
18 July	10	24	52	52,479	143	21,520	328	1	DI	FE	9	150	
18 July	10	24	52	52,479	143	21,520	328	2	SW	SW	9	300	
18 July	10	29	52	52,736	143	21,243	324	1	FE	SW	3	300	
18 July	10	29	52	52,736	143	21,243	324	1	FE	SW	9	300	
18 July	14	48	52	55,639	143	22,069	314	1	DI	DI	10	2500	
18 July	14	48	52	55,639	143	22,069	314	1	DI	DI	10	2200	
18 July	14	48	52	55,639	143	22,069	314	1	FE	FE	10	1500	
18 July	15	0	52	56,017	143	21,449	345	2	FE	FE	9	2000	
18 July	15	0	52	56,017	143	21,449	345	1	FE	FE	9	1000	
18 July	15	0	52	56,017	143	21,449	345	2	FE	FE	3	1000	
18 July	15	28	52	55,219	143	21,926	23	1	FE	FE	9	800	
18 July	15	30	52	56,162	143	21,364	23	2	SW	SW	9	1000	to the north
18 July	15	30	52	56,162	143	21,364	23	2	SW	SW	9	1200	to the north
18 July	15	30	52	56,162	143	21,364	23	1	SW	SW	9	800	to the north
18 July	15	55	52	57,469	143	22,406	355	2	UN	UN	9	2500	redistributed to 3+1 in 15 min
18 July	15	55	52	57,469	143	22,406	355	2	UN	UN	9	2000	
18 July	15	55	52	57,469	143	22,406	355	1	UN	UN	9	2200	
18 July	15	55	52	57,469	143	22,406	355	1	DI	FE	9	800	
18 July	16	0	52	57,394	143	22,389	20	1	DI	DI	9	3000	
18 July	17	1	52	52,635	143	20,841	96	1	SW	SW	9	300	
18 July	17	1	52	52,635	143	20,841	96	2	FE	FE	9	400	side by side
18 July	17	6	52	52,609	143	20,896	0	1	FE	FE	3	800	started feeding in 5 min
19 July	10	0	52	50,153	143	22,453	350	1	DI	FE	12	1000	
19 July	10	0	52	50,153	143	22,453	350	1	DI	FE	12	1200	
19 July	15	17	52	46,275	143	21,402	226	1	DI	FE	9	300	
19 July	15	17	52	46,275	143	21,402	226	2	DI	FE	9	700	
19 July	16	28	52	43,560	143	22,033	245	1	SW	DI	9	150	
19 July	16	35	52	43,391	143	21,291	65	2	UN	DI	3	200	
19 July	17	0	52	43,398	143	21,088	255	1	DI	DI	3	500	
22 July	12	8	52	41,745	143	22,812	184	2	DI	DI	3	2000	
22 July	15	40	52	33,203	143	23,683	148	1	SW	SW	9	200	
23 July	18	0	52	51,651	143	22,602	183	1	SW	SW	3	800	to the south
23 July	18	0	52	51,651	143	22,602	183	2	DI	FE	3	1500	calf
23 July	18	0	52	51,651	143	22,602	183	2	DI	FE	2	2000	
24 July	8	0	52	49,386	143	22,375	153	1	DI	DI	8	3000	
24 July	9	0	52	52,169	143	22,059	0	1	SW	FE	9	1000	white, to the S, current to the N
24 July	10	25	52	54,241	143	22,450	351	1	SW	FE	9	800	to the south, depth 19 m
24 July	10	25	52	54,241	143	22,450	351	1	FE	FE	9	1500	fog; patchy visibility (0.4-10 km)
24 July	10	45	52	54,914	143	22,397	290	2	DI	FE	2	1000	
24 July	10	45	52	54,914	143	22,397	290	1	DI	DI	1	3500	
24 July	11	0	52	55,363	143	22,401	290	2	UN	DI	11	3500	
26 July	8	40	52	49,698	143	22,462	80	3	UN	DI	3	5000	solitary
26 July	8	40	52	49,698	143	22,462	80	1	FE	DI	9	2000	to the south
26 July	8	43	52	49,700	143	22,463	80	1	SW	DI	5	400	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
26 July	9	35	52	49,722	143	22,471	125	1	DI	FE	7,5	1500	
26 July	9	35	52	49,722	143	22,471	125	1	DI	SW	10	400	to the south
26 July	9	35	52	49,722	143	22,471	125	1	DI	FE	7	2000	to the north
26 July	9	35	52	49,722	143	22,471	125	1	DI	FE	7	1500	
26 July	12	0	52	49,742	143	22,463	155	2	FE	FE	5	2000	cow-calf
26 July	12	0	52	49,742	143	22,463	155	2	FE	FE	6	2000	
26 July	12	0	52	49,742	143	22,463	155	2	FE	FE	6	1600	maybe a mother with a large calf
26 July	13	42	52	49,774	143	22,454	190	1	BR	DI	1,5	2000	
26 July	18	0	52	49,776	143	22,483	215	2	DI	FE	3	2000	
26 July	18	0	52	49,776	143	22,483	215	2	DI	DI	3,5	2000	
27 July	8	0	52	53,151	143	23,462	40	1	DI	FE	12	1500	fog
27 July	8	26	52	53,316	143	22,010	268	1	DI	DI	12	300	
27 July	9	0	52	53,310	143	21,061	295	2	DI	PL	1,5	2000	playing
27 July	9	0	52	53,310	143	21,061	295	1	SW	SW	2	2500	
27 July	9	2	52	53,193	143	20,628	240	2	SH	PL	11	1500	calf, playing, spy-hopping
27 July	9	26	52	53,188	143	20,363	270	2	DI	BR	9	3000	
27 July	9	30	52	53,188	143	20,363	270	1	SW	SW	3	400	
27 July	9	53	52	53,031	143	22,658	87	1	DI	FE	9	200	20m depth
27 July	10	18	52	56,277	143	22,043	341	1	DI	SW	9	3000	
27 July	10	18	52	56,277	143	22,043	341	1	DI	SW	9	2000	
27 July	10	26	52	58,034	143	21,120	339	1	DI	DI	9	2000	
27 July	10	35	52	59,776	143	20,208	347	1	DI	SW	9	1500	to the south
27 July	10	38	53	0,284	143	19,953	343	1	SW	SW	9	1000	to the south
27 July	10	55	53	3,300	143	18,502	350	2	DI	DI	0	500	resting
27 July	11	12	53	4,009	143	18,266	340	1	DI	DI	1,5	3000	
27 July	16	0	53	12,994	143	17,595	180	4	FE	FE	4	1000	2 pairs
27 July	16	0	53	12,994	143	17,595	180	2	FE	FE	4,5	3000	
28 July	9	4	53	27,925	143	10,161	159	1	DI	SW	9	500	to the north
28 July	9	32	53	23,174	143	12,954	165	2	DI	FE	3	2500	
28 July	9	34	53	22,716	143	13,218	161	1	DI	FE	3	2000	
28 July	9	49	53	20,161	143	14,475	169	1	DI	SW	3	2000	
28 July	9	49	53	20,161	143	14,475	169	2	DI	SW	3	2500	
28 July	9	55	53	18,986	143	14,839	175	1	DI	SW	3	2000	all going N
28 July	9	59	53	18,303	143	15,013	170	1	DI	FE	3	1500	
28 July	10	4	53	17,361	143	15,363	163	1	DI	SW	9	800	
28 July	10	6	53	17,011	143	15,536	162	2	DI	BR	9	2000	breaching
28 July	10	8	53	16,710	143	15,682	163	1	DI	DI	9	5000	
28 July	10	8	53	16,710	143	15,682	163	1	DI	DI	9	4000	
28 July	10	28	53	13,300	143	16,383	187	1	SW	SW	9	1000	
28 July	10	33	53	12,666	143	16,245	185	2	SW	SW	3	800	calf
28 July	10	42	53	12,210	143	16,572	6	2	DI	DI	1	1000	northbound current
28 July	14	0	53	12,752	143	16,009	155	1	DI	FE	3	1000	small
28 July	14	17	53	15,504	143	16,103	1	2	SW	SW	9	1700	with a calf; going north
28 July	14	20	53	15,896	143	16,064	2	1	SW	SW	9	1700	
28 July	14	23	53	16,476	143	16,015	0	1	DI	DI	3	4000	
28 July	14	23	53	16,476	143	16,015	0	1	DI	DI	3	4500	

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28 July	14	35	53	18,363	143	15,907	350	2	SW	SW	9	2500	to the south
28 July	17	0	53	18,367	143	15,583	348	2	SW	PL	3	3500	to the north; playing
28 July	19	30	53	18,358	143	15,567	12	2	SW	SW	2	3000	
28 July	19	30	53	18,358	143	15,567	12	1	SW	SW	7	1500	
28 July	19	30	53	18,358	143	15,567	12	1	DI	FE	8	2300	
28 July	19	30	53	18,358	143	15,567	12	1	FE	FE	9	1800	
28 July	19	30	53	18,358	143	15,567	12	1	FE	FE	9,5	1900	
28 July	19	30	53	18,358	143	15,567	12	2	FE	FE	10	5000	
28 July	19	30	53	18,358	143	15,567	12	2	FE	FE	11	6000	
28 July	19	30	53	18,358	143	15,567	12	1	FE	FE	10	4000	
29 July	8	0	53	9,030	143	18,801	163	1	SW	SW	3	2000	to the north
29 July	8	53	53	11,851	143	17,592	348	1	SW	SW	9	1500	to the north
29 July	9	7	53	14,081	143	16,752	295	1	DI	RE	1	300	
29 July	9	7	53	14,081	143	16,752	295	1	SW	SW	3	500	
29 July	9	7	53	14,081	143	16,752	295	1	DI	FE	1	1500	
29 July	9	7	53	14,081	143	16,752	295	1	DI	RE	0	300	
29 July	9	7	53	14,081	143	16,752	295	1	DI	DI	2	2000	
29 July	9	33	53	14,141	143	16,785	265	2	SW	SW	4	2000	merged in one group
29 July	9	33	53	14,141	143	16,785	265	2	SW	SW	4	2500	
29 July	9	33	53	14,141	143	16,785	265	1	SW	SW	4	1700	
29 July	13	39	53	16,903	143	15,842	345	4	DI	FE	9	2200	
29 July	13	51	53	18,337	143	16,360	74	1	SW	SW	7	500	
29 July	14	0	53	18,491	143	17,380	90	1	DI	RE	9	300	
29 July	14	0	53	18,491	143	17,380	90	2	DI	DI	9	2500	
29 July	15	46	53	18,989	143	15,343	340	2	DI	DI	9	2000	
29 July	15	50	53	18,779	143	15,972	178	2	SW	SW	9	500	made U-turn
29 July	15	50	53	18,779	143	15,972	178	1	DI	DI	3	200	
29 July	15	50	53	18,779	143	15,972	178	1	DI	DI	3	3000	
29 July	15	55	53	17,892	143	16,067	176	2	DI	DI	3	2500	
29 July	15	55	53	17,892	143	16,067	176	2	DI	DI	9	1000	
29 July	16	13	53	14,453	143	16,512	171	1	FE	FE	3	1000	group?
29 July	16	13	53	14,453	143	16,512	171	1	FE	FE	3	1200	
29 July	16	13	53	14,453	143	16,512	171	2	FE	FE	3	1500	
29 July	16	19	53	13,113	143	16,887	168	1	DI	FE	3	1500	
29 July	16	22	53	12,709	143	17,019	169	1	SW	SW	3	1000	to the north
29 July	16	30	53	11,239	143	17,513	170	2	DI	FE	3	2200	with a calf?
29 July	16	37	53	9,930	143	17,810	171	2	SW	SW	9	1000	
29 July	16	40	53	9,116	143	18,101	170	1	SW	SW	9	800	to the north
29 July	16	48	53	7,920	143	18,423	170	1	SW	SW	3	400	to the south
29 July	16	56	53	6,568	143	18,770	171	2	SW	SW	3	1800	to the south
29 July	16	59	53	5,962	143	18,917	171	2	SW	SW	3	1000	to the south
29 July	17	11	53	3,868	143	19,297	174	1	SW	DI	3	700	to the south
29 July	17	22	53	1,952	143	19,669	171	2	SW	SW	9	1500	
29 July	17	24	53	1,521	143	19,824	166	2	SW	SW	3	1500	to the south
29 July	17	30	53	0,545	143	20,244	164	1	DI	FE	3	500	
29 July	17	38	52	59,096	143	20,904	166	1	DI	SW	3	2000	to the south

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29 July	18	50	52	52,308	143	24,770	169	1	DI	DI	3	5000	
29 July	18	50	52	52,308	143	24,770	169	2	DI	DI	3	4500	
29 July	18	53	52	51,637	143	24,946	169	1	DI	DI	3	4500	
29 July	18	53	52	51,637	143	24,946	169	1	DI	DI	3	5000	
29 July	18	58	52	51,403	143	25,089	136	1	DI	DI	3	5000	
30 July	10	34	53	12,112	143	19,728	341	1	SW	DI	9	500	
30 July	10	44	53	12,903	143	16,477	343	2	DI	DI	1	300	
30 July	10	48	53	13,033	143	15,970	343	1	DI	DI	1	500	
30 July	11	32	53	16,501	143	17,139	13	2	SW	SW	9	100	
30 July	13	53	53	17,732	143	16,229	265	2	DI	DI	3	2000	
30 July	13	53	53	17,732	143	16,229	265	2	DI	FE	3	1000	
30 July	16	37	53	19,866	143	15,004	348	1	DI	DI	9	1000	
30 July	16	42	53	20,800	143	14,681	349	1	SW	SW	3	500	
30 July	17	3	53	24,051	143	12,992	303	1	SW	DI	12	100	
30 July	17	15	53	25,218	143	11,348	337	1	SW	SW	3	200	
30 July	17	24	53	26,299	143	11,074	344	1	DI	DI	9	1500	
30 July	17	42	53	28,363	143	10,532	38	1	DI	DI	8	2000	
6 Aug.	11	11	52	32,548	143	24,231	329	2	DI	DI	11	5000	
6 Aug.	11	11	52	32,548	143	24,231	329	1	DI	DI	11	5000	northbound current 1 knot
6 Aug.	14	36	52	42,588	143	23,449	11	1	SW	DI	9	1000	
6 Aug.	14	39	52	43,302	143	23,687	12	1	DI	FE	9	700	
6 Aug.	14	52	52	45,253	143	24,272	12	1	DI	FE	9	1500	
6 Aug.	15	0	52	46,426	143	24,621	9,3	1	DI	DI	9	2000	
7 Aug.	8	0	53	6,161	143	20,444	331	2	SW	DI	4	100	to the south
7 Aug.	8	0	53	6,161	143	20,444	331	1	DI	FE	9	50	water temp.+13 deg, air temp +14 deg
7 Aug.	8	37	53	10,160	143	18,875	343	1	DI	RE	9	200	
7 Aug.	8	39	53	10,479	143	18,739	347	2	DI	RE	9	500	one of them is a calf
7 Aug.	8	51	53	12,292	143	18,043	348	1	DI	FE	9	2000	
7 Aug.	8	55	53	13,022	143	17,802	347	1	SW	RE	3	200	
7 Aug.	8	59	53	13,656	143	17,559	347	1	DI	FE	9	1500	
7 Aug.	8	59	53	13,656	143	17,559	347	2	DI	FE	9	2500	
7 Aug.	9	6	53	14,295	143	17,287	14	1	DI	FE	3	1000	
7 Aug.	10	25	53	16,140	143	17,831	348	2	DI	DI	9	3000	
7 Aug.	10	27	53	16,496	143	17,692	346	1	DI	FE	3	500	
7 Aug.	10	35	53	17,397	143	17,605	9,6	2	DI	DI	9	5000	moved back
7 Aug.	10	43	53	18,070	143	18,019	20	3	DI	FE	3	100	in one area, depth 29m
7 Aug.	10	43	53	18,070	143	18,019	20	3	DI	FE	9	100	
7 Aug.	14	9	53	17,106	143	17,428	171	2	DI	DI	3	4000	
7 Aug.	14	25	53	14,508	143	18,079	173	1	DI	DI	3	3000	
7 Aug.	14	33	53	13,353	143	18,326	174	1	SW	DI	3	400	to the north
7 Aug.	14	39	53	12,355	143	18,532	174	1	DI	DI	3	3000	
7 Aug.	14	47	53	10,970	143	18,820	174	2	DI	DI	3	3000	
7 Aug.	15	4	53	8,147	143	19,424	172	1	DI	FE	3	2500	group
7 Aug.	15	4	53	8,147	143	19,424	172	1	DI	FE	3	2200	
7 Aug.	15	4	53	8,147	143	19,424	172	2	DI	DI	3	2000	

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7 Aug.	15	41	53	2,877	143	20,896	172	2	DI	DI	3	4000	
7 Aug.	16	0	53	0,109	143	21,111	293	2	DI	DI	11	3000	
7 Aug.	16	38	52	58,936	143	21,322	176	1	DI	DI	9	1000	
7 Aug.	16	41	52	58,502	143	21,383	176	1	DI	DI	3	2500	
7 Aug.	16	50	52	57,217	143	21,517	177	1	DI	DI	3	3000	
7 Aug.	16	58	52	56,722	143	21,558	180	1	DI	DI	3	2500	
7 Aug.	19	30	52	54,153	143	23,209	172	1	DI	DI	3	3000	
7 Aug.	20	9	52	50,589	143	25,335	161	1	DI	DI	3	3000	
7 Aug.	20	13	52	48,844	143	26,306	200	2	DI	DI	3	4000	
8 Aug.	8	0	53	5,766	143	21,033	34	2	DI	SW	7	5000	water temp.+ 14 deg, air temp +24 deg
8 Aug.	8	0	53	5,766	143	21,033	34	2	DI	SW	6	5000	
8 Aug.	9	0	53	5,875	143	20,976	131	1	DI	DI	7	6000	
8 Aug.	10	0	53	5,885	143	20,995	140	2	SW	SW	4,5	2000	to the north
8 Aug.	10	40	53	5,890	143	20,996	145	5	DI	DI	4,5	4300	water temp.+ 14 deg, air temp +20 deg
8 Aug.	12	27	53	2,582	143	21,207	179	2	DI	FE	3	800	
8 Aug.	12	28	53	2,392	143	21,210	179	1	DI	FE	3	3000	
8 Aug.	12	37	53	0,819	143	21,270	178	1	SW	FE	3	1000	to the south
8 Aug.	12	37	53	0,819	143	21,270	178	1	SW	SW	3	3500	
8 Aug.	12	37	53	0,819	143	21,270	178	1	SW	SW	3	3700	
8 Aug.	12	43	53	0,367	143	21,318	200	1	DI	DI	3	2500	
8 Aug.	13	4	52	59,684	143	21,404	166	1	DI	FE	3	1000	
8 Aug.	13	30	52	55,980	143	22,683	192	1	DI	FE	3	1700	
8 Aug.	13	30	52	55,980	143	22,683	192	1	DI	FE	3	1900	
8 Aug.	13	46	52	54,981	143	21,883	154	1	SW	SW	3	1000	
8 Aug.	13	46	52	54,981	143	21,883	154	1	DI	FE	3	2300	
8 Aug.	13	54	52	54,257	143	22,796	143	2	DI	DI	3	3500	
8 Aug.	13	54	52	54,257	143	22,796	143	1	SW	DI	3	2000	
8 Aug.	14	3	52	53,587	143	23,620	143	1	DI	DI	3	4000	
8 Aug.	15	25	52	52,173	143	23,685	112	1	DI	DI	3	1500	
8 Aug.	16	15	52	51,103	143	22,775	195	1	DI	FE	3	2000	
8 Aug.	16	31	52	48,711	143	21,845	182	1	FE	FE	3	1000	
8 Aug.	16	34	52	48,323	143	21,839	178	1	FE	FE	9	1000	
8 Aug.	16	40	52	48,082	143	21,949	221	1	DI	DI	2	800	
8 Aug.	16	40	52	48,082	143	21,949	221	2	DI	FE	9	1000	
8 Aug.	17	0	52	48,418	143	22,509	180	2	DI	DI	3	3000	with a calf (photo-ID data)
8 Aug.	18	30	52	43,393	143	23,773	171	1	FE	FE	3	2000	
9 Aug.	8	37	52	36,953	143	25,546	354	1	DI	FE	9	6000	
9 Aug.	8	55	52	39,805	143	25,054	354	1	DI	FE	9	2000	
9 Aug.	9	0	52	40,598	143	24,935	357	2	DI	DI	9	5500	
9 Aug.	9	0	52	40,598	143	24,935	357	1	DI	FE	9	800	
9 Aug.	9	29	52	42,353	143	22,607	65	1	DI	FE	9	3000	
9 Aug.	11	15	52	46,085	143	22,386	359	1	DI	SW	9	300	
9 Aug.	11	30	52	48,882	143	22,309	358	2	DI	DI	9	900	
9 Aug.	11	33	52	49,551	143	22,293	359	2	DI	SW	9	1500	

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9 Aug.	11	33	52	49,551	143	22,293	359	1	DI	SW	9	1900	
9 Aug.	11	40	52	50,852	143	22,257	358	2	SW	SW	3	200	with a calf
9 Aug.	11	40	52	50,852	143	22,257	358	1	DI	DI	9	700	
9 Aug.	11	47	52	51,814	143	22,215	358	2	SW	DI	9	2500	
9 Aug.	11	50	52	52,209	143	22,192	358	1	SW	SW	9	2600	
9 Aug.	11	55	52	53,163	143	22,158	359	1	FE	FE	9	800	
9 Aug.	11	55	52	53,163	143	22,158	359	1	FE	FE	9	700	
9 Aug.	11	57	52	53,419	143	22,150	358	1	FE	FE	9	1000	
9 Aug.	11	58	52	53,660	143	22,142	358	1	DI	SW	9	500	
9 Aug.	12	4	52	54,889	143	22,096	358	2	DI	SW	9	2000	water temp.+ 14 deg, air temp +19 deg
9 Aug.	12	44	53	0,496	143	20,178	0	1	DI	FE	1	100	
9 Aug.	13	17	53	2,231	143	19,942	40	1	DI	FE	9	400	
9 Aug.	13	17	53	2,231	143	19,942	40	1	DI	FE	9	2000	
9 Aug.	13	17	53	2,231	143	19,942	40	1	DI	FE	11	800	northbound current
9 Aug.	13	45	53	2,632	143	21,515	87	1	DI	DI	8	6000	
9 Aug.	15	0	53	2,724	143	21,416	173	1	DI	DI	3	1500	vessel is going south
9 Aug.	15	14	53	0,360	143	21,940	173	1	DI	DI	3	3500	
9 Aug.	15	51	52	54,466	143	23,223	180	1	SW	DI	0	1500	
9 Aug.	16	17	52	52,261	143	23,200	181	1	DI	FE	3	2500	
9 Aug.	16	17	52	52,261	143	23,200	181	1	DI	FE	3	3000	
9 Aug.	16	21	52	51,693	143	23,188	180	2	DI	DI	3	1000	
9 Aug.	16	28	52	50,555	143	23,184	180	1	DI	SW	3	2500	
9 Aug.	16	45	52	47,848	143	23,200	179	2	DI	DI	3	3500	
9 Aug.	17	17	52	42,463	143	23,119	180	1	DI	FE	3	2000	
9 Aug.	17	17	52	42,463	143	23,119	180	2	DI	FE	3	2500	
11 Aug.	10	47	52	43,033	143	25,360	5	2	DI	DI	9	2000	
11 Aug.	10	47	52	43,033	143	25,360	5	1	DI	DI	9	4000	
11 Aug.	10	55	52	44,570	143	25,647	8	1	DI	DI	9	2000	
11 Aug.	11	42	52	47,422	143	25,237	349	2	SW	DI	9	3500	
11 Aug.	11	42	52	47,422	143	25,237	349	1	DI	DI	9	2500	
11 Aug.	11	53	52	48,436	143	25,007	355	2	DI	FE	9	4500	
11 Aug.	12	6	52	49,582	143	24,835	355	1	DI	DI	9	5500	
11 Aug.	12	25	52	49,759	143	24,793	355	2	FE	DI	9	5000	to the north
11 Aug.	12	40	52	51,909	143	24,062	350	1	SW	SW	9	4000	
11 Aug.	12	40	52	51,909	143	24,062	350	1	DI	FE	9	2000	
11 Aug.	13	8	52	53,949	143	23,189	341	1	FE	FE	9	4000	
11 Aug.	13	12	52	54,904	143	22,642	341	2	SW	SW	9	4000	to the south
11 Aug.	13	12	52	54,904	143	22,642	341	1	SW	SW	9	3900	to the south
11 Aug.	13	16	52	55,416	143	22,336	343	1	SW	SW	9	800	
11 Aug.	13	18	52	55,948	143	22,060	341	2	SW	SW	9	800	
11 Aug.	14	29	53	3,131	143	21,180	356	3	SW	SW	9	3500	two pairs
11 Aug.	14	29	53	3,131	143	21,180	356	1	SW	SW	9	3000	
11 Aug.	14	48	53	4,400	143	20,984	350	1	FE	FE	9	3500	
11 Aug.	14	48	53	4,400	143	20,984	350	1	FE	FE	9,5	3500	
11 Aug.	15	33	53	8,190	143	19,385	48	2	SW	FE	9	3000	going south in a tight group

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
11 Aug.	15	40	53	8,625	143	19,242	347	2	SW	FE	9	3000	
11 Aug.	15	45	53	9,354	143	19,007	348	2	FE	FE	9	200	
11 Aug.	15	45	53	9,354	143	19,007	348	4	SW	PL	9	400	
11 Aug.	15	45	53	9,354	143	19,007	348	1	SW	SW	3	300	
11 Aug.	15	55	53	11,361	143	18,325	7,6	2	DI	PL	9	300	
11 Aug.	16	11	53	12,081	143	18,087	352	1	DI	FE	1	600	
11 Aug.	16	39	53	14,279	143	17,329	347	1	DI	FE	9	500	
11 Aug.	16	50	53	15,686	143	16,823	349	3	DI	FE	3	4000	solitary
11 Aug.	16	50	53	15,686	143	16,823	349	1	DI	FE	3	3500	
11 Aug.	16	50	53	15,686	143	16,823	349	1	DI	FE	9	1500	
11 Aug.	17	15	53	16,614	143	16,410	350	1	DI	FE	9	2500	drifting south
11 Aug.	17	17	53	16,829	143	16,348	350	1	DI	FE	9	2500	
11 Aug.	17	18	53	16,983	143	16,302	349	1	DI	FE	9	2500	
11 Aug.	17	12	53	16,614	143	16,410	350	1	DI	FE	3	4000	
11 Aug.	17	19	53	17,382	143	16,195	352	1	SW	SW	9	200	
11 Aug.	17	25	53	17,876	143	16,027	349	1	DI	FE	9	200	
11 Aug.	17	25	53	17,876	143	16,027	349	1	DI	FE	9	400	
11 Aug.	17	25	53	17,876	143	16,027	349	1	DI	FE	9	1500	
11 Aug.	17	28	53	18,342	143	15,866	349	1	DI	FE	3	600	
11 Aug.	17	36	53	19,501	143	15,441	349	1	DI	FE	9	200	
11 Aug.	17	36	53	19,501	143	15,441	349	2	DI	FE	3	2000	drifting north
11 Aug.	18	10	53	20,048	143	14,187	270	1	SW	SW	11	1000	the two of them
11 Aug.	18	10	53	20,048	143	14,187	270	1	SW	SW	11	800	
11 Aug.	18	27	53	20,780	143	13,425	342	1	DI	BR	9	1000	breached 7 times
11 Aug.	18	27	53	20,780	143	13,425	342	2	DI	FE	9	1500	
11 Aug.	18	49	53	24,615	143	11,454	342	1	DI	DI	11	2000	turned south
14 Aug.	8	36	52	47,761	143	25,067	1	1	DI	FE	9	2500	
14 Aug.	9	25	52	53,316	143	23,700	348	1	DI	FE	9	1500	
14 Aug.	9	28	52	53,560	143	23,618	349	1	DI	FE	9	2000	
14 Aug.	9	39	52	53,984	143	22,659	235	1	DI	DI	11	3000	
14 Aug.	9	47	52	53,381	143	21,126	239	1	DI	DI	1	300	
14 Aug.	9	47	52	53,381	143	21,126	239	1	DI	DI	3	800	
14 Aug.	9	47	52	53,381	143	21,126	239	2	DI	DI	3	500	
14 Aug.	10	0	52	54,099	143	20,406	2,7	1	DI	DI	3	50	
14 Aug.	10	3	52	54,644	143	20,547	9	1	SW	SW	9	100	to the south
14 Aug.	10	8	52	55,326	143	20,740	11	1	DI	DI	9	1500	
14 Aug.	10	8	52	55,326	143	20,740	11	1	DI	FE	9	500	
14 Aug.	10	13	52	56,090	143	20,240	9	1	SW	DI	9	1500	
14 Aug.	10	18	52	56,759	143	21,123	9	1	DI	FE	9	400	
14 Aug.	10	24	52	57,749	143	21,193	9	1	DI	FE	9	1000	
14 Aug.	10	24	52	57,749	143	21,193	9	1	DI	FE	9	1200	
14 Aug.	10	24	52	57,749	143	21,193	9	1	DI	FE	9	1500	
14 Aug.	10	29	52	58,542	143	21,211	2	1	DI	FE	9	800	
14 Aug.	10	49	53	1,434	143	20,655	352	2	DI	DI	3	1000	
14 Aug.	10	57	53	2,479	143	20,326	347	1	DI	FE	9	1000	
14 Aug.	11	14	53	3,722	143	18,856	298	3	DI	DI	1	800	with a calf

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
14 Aug.	11	14	53	3,722	143	18,856	298	1	DI	DI	2,5	800	
14 Aug.	12	26	52	56,964	143	20,607	171	2	SW	SW	9	500	we are moving back to the south
14 Aug.	12	26	52	56,964	143	20,607	171	1	SW	SW	3	1500	going to shore
14 Aug.	12	41	52	54,662	143	21,208	171	1	SW	SW	3	300	to the shore
14 Aug.	12	43	52	54,364	143	21,286	171	1	FE	FE	3	1000	
14 Aug.	12	47	52	53,826	143	21,318	171	3	DI	PL	3	1200	playing, penis is visible
14 Aug.	12	47	52	53,826	143	21,318	171	1	DI	FE	3	800	
14 Aug.	13	45	52	52,386	143	23,345	97	1	DI	FE	9	1000	
14 Aug.	13	57	52	53,557	143	23,192	343	2	DI	DI	9	100	vessel is going north
14 Aug.	17	0	52	55,700	143	22,166	164	1	DI	DI	9	500	drifting south
14 Aug.	20	0	52	36,972	143	25,419	188	1	DI	DI	3	4000	
16 Aug.	9	12	53	11,347	143	20,391	180	1	SW	SW	3	5000	to the north
16 Aug.	9	18	53	10,851	143	19,803	219	1	SW	SW	2	3500	
16 Aug.	9	33	53	9,493	143	17,951	216	1	DI	DI	1,5	1800	to the north
16 Aug.	10	3	53	7,009	143	18,560	174	1	SW	SW	9	100	in the sea
16 Aug.	10	22	53	4,640	143	19,057	173	2	SW	SW	3	800	to the north; visibility 2 km
16 Aug.	10	30	53	3,684	143	19,262	173	2	SW	DI	3	800	to the north
16 Aug.	10	50	53	1,304	143	19,989	152	2	SW	SW	3	1000	
16 Aug.	11	19	52	57,975	143	21,001	180	1	SW	SW	3,5	1500	to the north
16 Aug.	11	36	52	55,711	143	21,322	171	1	DI	DI	3	700	to the north
16 Aug.	11	40	52	55,444	143	21,377	173	2	DI	DI	3	1000	to the north
16 Aug.	11	40	52	55,444	143	21,377	173	1	DI	DI	3	2000	to the north; no swell
16 Aug.	12	5	52	53,592	143	20,730	173	1	SW	FE	9	300	in the sea
16 Aug.	12	5	52	53,592	143	20,730	173	1	SW	FE	3	400	
16 Aug.	13	43	52	49,228	143	24,681	162	1	DI	DI	3	3500	
16 Aug.	14	30	52	47,348	143	25,017	208	2	SW	SW	9	400	
16 Aug.	14	42	52	45,990	143	24,233	210	1	DI	DI	3	5000	variable visibility 1-5 km
16 Aug.	14	57	52	43,614	143	22,754	182	1	DI	DI	3	1000	
16 Aug.	15	4	52	42,416	143	22,709	178	2	DI	DI	3	1000	
16 Aug.	15	12	52	42,127	143	22,853	178	2	DI	DI	3	1000	skinny cow with a large calf
17 Aug.	7	56	52	38,867	143	21,776	2	1	DI	FE	9	400	
17 Aug.	8	7	52	41,092	143	21,897	1	1	SW	SW	9	2000	water temp.+ 12 deg, air temp +14 deg
17 Aug.	8	28	52	44,988	143	22,025	1	1	SW	SW	9	1500	to the south
17 Aug.	8	32	52	45,780	143	22,070	2	3	SW	SW	9	1500	to the south; calf?
17 Aug.	8	40	52	47,023	143	22,164	3	1	SW	DI	9	400	to the south
17 Aug.	8	44	52	47,649	143	22,216	3	1	SW	SW	3	500	
17 Aug.	8	51	52	48,804	143	22,294	1	2	SW	SW	3	1000	
17 Aug.	8	54	52	49,274	143	22,301	0	1	DI	FE	3	300	
17 Aug.	8	54	52	49,274	143	22,301	0	1	SW	SW	3	500	
17 Aug.	9	0	52	50,184	143	22,289	355	1	FE	FE	9	600	
17 Aug.	9	0	52	50,184	143	22,289	355	1	FE	FE	9	700	
17 Aug.	9	3	52	50,880	143	22,196	356	1	DI	FE	9	300	small
17 Aug.	9	3	52	50,880	143	22,196	356	1	DI	FE	9	400	
17 Aug.	9	3	52	50,880	143	22,196	356	1	DI	FE	9	700	
17 Aug.	9	6	52	51,410	143	22,137	355	1	DI	FE	9	400	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
17 Aug.	9	6	52	51,410	143	22,137	355	2	DI	FE	9	1000	
17 Aug.	9	6	52	51,410	143	22,137	355	1	DI	FE	9	800	
17 Aug.	9	10	52	51,895	143	22,068	353	1	SW	FE	3	400	to the south
17 Aug.	9	12	52	52,202	143	22,009	353	1	DI	FE	9	600	
17 Aug.	9	14	52	52,596	143	21,928	352	1	SW	FE	9	400	to the south
17 Aug.	9	17	52	53,102	143	21,826	353	1	DI	FE	9	500	
17 Aug.	9	21	52	53,716	143	21,711	353	1	DI	FE	9	200	
17 Aug.	9	21	52	53,716	143	21,679	354	1	DI	FE	9	1500	
17 Aug.	9	26	52	54,522	143	21,552	353	1	DI	FE	9	800	
17 Aug.	9	31	52	55,336	143	21,399	353	2	DI	DI	3	5000	
17 Aug.	9	47	52	57,987	143	20,903	353	1	SW	SW	9	1500	to the south
17 Aug.	9	52	52	58,938	143	20,730	353	1	DI	FE	9	600	
17 Aug.	10	42	53	3,924	143	20,110	352	1	DI	FE	9	1000	northbound current
17 Aug.	11	26	53	7,315	143	18,716	351	1	SW	SW	9	1000	
17 Aug.	11	50	53	10,722	143	17,892	347	1	DI	FE	9	500	
17 Aug.	11	50	53	10,722	143	17,892	347	1	DI	DI	9	600	
17 Aug.	12	6	53	13,228	143	16,983	347	1	DI	FE	9	500	
17 Aug.	12	15	53	14,630	143	16,473	348	1	DI	DI	9	500	
17 Aug.	12	32	53	17,372	143	15,412	347	2	RE	RE	9	700	
17 Aug.	12	37	53	18,152	143	15,113	347	1	SW	SW	9	500	to the south
17 Aug.	12	40	53	18,644	143	14,916	347	1	RE	RE	9	300	twice, without a blow
17 Aug.	13	0	53	21,803	143	13,446	340	1	DI	DI	9	600	variable visibility: shorewards - 2 km, sewards - 6-8 km
18 Aug.	6	19	53	30,810	143	8,787	161	1	SW	SW	9	2000	
18 Aug.	6	52	53	25,652	143	11,475	165	1	DI	FE	3	2200	
18 Aug.	7	0	53	25,010	143	11,808	163	1	FE	FE	3	2200	
18 Aug.	7	13	53	22,664	143	13,029	163	1	DI	FE	9	1500	northbound current
18 Aug.	7	13	53	22,664	143	13,029	163	1	DI	FE	3	1000	
18 Aug.	7	17	53	22,113	143	13,324	163	1	DI	FE	9	2500	
18 Aug.	7	18	53	21,971	143	13,401	160	1	DI	DI	9	300	
18 Aug.	7	23	53	21,167	143	13,844	161	3	FE	FE	3	1700	
18 Aug.	7	36	53	19,079	143	14,892	166	2	FE	FE	9	3800	
18 Aug.	7	36	53	19,079	143	14,892	166	1	FE	FE	9	4000	
18 Aug.	7	36	53	19,079	143	14,892	166	1	FE	FE	9	4300	
18 Aug.	7	36	53	19,079	143	14,892	166	1	FE	FE	3	1000	
18 Aug.	7	47	53	17,363	143	15,595	165	2	FE	FE	9	800	
18 Aug.	7	47	53	17,363	143	15,595	165	1	FE	FE	3	2000	
18 Aug.	8	0	53	15,880	143	16,226	165	1	FE	FE	9	800	water temp.+ 10 deg, air temp +14.5 deg
18 Aug.	8	3	53	14,844	143	16,671	166	1	FE	FE	3	300	
18 Aug.	8	3	53	14,844	143	16,671	166	1	FE	FE	3	500	
18 Aug.	8	4	53	14,638	143	16,753	165	4	FE	FE	3	2000	with a calf
18 Aug.	8	4	53	13,233	143	17,368	165	4	FE	FE	9	400	
18 Aug.	8	18	53	12,561	143	17,630	165	1	DI	FE	9	4000	
18 Aug.	8	22	53	12,039	143	17,744	173	1	FE	FE	3	400	
18 Aug.	8	29	53	10,926	143	17,988	173	2	FE	FE	9	300	

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	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
18 Aug.	8	40	53	9,272	143	18,342	172	1	FE	FE	3	2400	
18 Aug.	8	48	53	8,114	143	18,563	173	1	SW	SW	9	300	
18 Aug.	8	54	53	7,212	143	18,726	173	1	FE	FE	9	1000	
18 Aug.	8	56	53	6,911	143	18,782	174	1	SW	SW	9	300	
18 Aug.	8	59	53	6,400	143	18,884	173	2	FE	FE	9	700	
18 Aug.	9	13	53	4,288	143	19,311	174	1	FE	FE	3	100	
18 Aug.	9	15	53	3,987	143	19,371	172	1	DI	FE	9	1000	
18 Aug.	9	31	53	1,527	143	19,938	172	1	DI	DI	9	1500	
18 Aug.	9	39	53	0,192	143	20,222	174	1	DI	FE	9	150	
18 Aug.	10	9	52	55,266	143	21,269	172	1	DI	FE	9	4000	
18 Aug.	10	16	52	54,086	143	21,542	172	3	TH	PL	9	2000	
18 Aug.	10	17	52	53,911	143	21,585	171	1	FE	FE	3	600	
18 Aug.	10	25	52	53,022	143	21,782	174	1	DI	FE	9	1000	
18 Aug.	11	13	52	50,697	143	22,127	107	3	DI	FE	3	1000	with a calf?
18 Aug.	11	16	52	50,408	143	22,719	134	4	DI	RE	3	1000	with a calf?
18 Aug.	11	7	52	50,859	143	22,214	165	2	DI	RE	3	500	pups
18 Aug.	11	14	52	50,650	143	22,319	107	1	DI	FE	3	1500	
18 Aug.	11	18	52	50,096	143	22,711	187	1	DI	FE	3	2000	
18 Aug.	11	37	52	47,295	143	22,437	183	1	FE	FE	9	1000	
18 Aug.	11	39	52	47,995	143	22,404	183	1	DI	FE	3	500	
18 Aug.	11	39	52	47,995	143	22,404	183	1	DI	FE	3	300	
18 Aug.	11	42	52	45,627	143	22,263	183	1	FE	FE	9	3000	
18 Aug.	12	0	52	44,180	143	22,123	183	1	FE	FE	9	1500	water temp.+ 21 deg, air temp +13 deg
18 Aug.	12	0	52	44,180	143	22,123	183	2	DI	FE	3	700	northbound current
19 Aug.	15	13	52	13,890	143	45,083	183	1	SW	FE	2	4000	to the south
19 Aug.	15	44	52	11,047	143	41,434	269	1	DI	FE	3	1500	repeat
20 Aug.	8	30	52	47,697	143	22,280	355	3	DI	SW	9	3000	with a calf? Northbound current
20 Aug.	8	30	52	47,697	143	22,280	355	2	SW	SW	9	2500	with a calf?
20 Aug.	8	28	52	47,503	143	22,280	355	1	SW	SW	9	3000	all going S
20 Aug.	8	43	52	48,215	143	21,906	298	3	DI	FE	2	800	
20 Aug.	8	43	52	48,215	143	21,906	298	1	DI	FE	3	1000	
20 Aug.	8	43	52	48,215	143	21,906	298	1	DI	FE	2	2000	
20 Aug.	9	44	52	49,274	143	23,013	354	1	DI	FE	9	1000	
20 Aug.	9	44	52	49,274	143	23,013	354	2	DI	FE	10	1500	
20 Aug.	10	53	52	51,545	143	24,138	358	1	FE	FE	9	3000	
20 Aug.	10	58	52	52,374	143	24,061	358	1	FE	FE	9	4000	
20 Aug.	11	35	52	56,860	143	24,620	321	1	SW	SW	9	3600	
20 Aug.	12	11	53	2,037	143	20,040	19	1	DI	FE	9	300	
20 Aug.	12	11	53	2,037	143	20,040	19	1	FE	FE	9	1000	
20 Aug.	12	11	53	2,037	143	20,040	19	1	DI	DI	3	4000	
20 Aug.	12	33	53	3,542	143	19,724	351	1	FE	FE	2	200	
20 Aug.	12	33	53	3,542	143	19,724	351	1	SW	DI	3	4000	
20 Aug.	12	50	53	4,861	143	19,452	354	1	SW	SW	9	500	to the south
20 Aug.	13	0	53	5,798	143	19,254	355	2	DI	PL	9	700	
20 Aug.	13	18	53	6,410	143	19,081	355	1	DI	FE	9	2000	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
20 Aug.	13	18	53	6,410	143	19,081	355	1	DI	FE	9	1500	
20 Aug.	13	18	53	6,410	143	19,081	355	2	DI	FE	9	2500	with a calf
20 Aug.	13	18	53	6,410	143	19,081	355	1	DI	FE	9	100	
20 Aug.	14	0	53	8,454	143	18,420	349	1	PL	PL	3	1000	
20 Aug.	14	0	53	8,454	143	18,420	349	1	SW	SW	9	800	
20 Aug.	14	0	53	8,454	143	18,420	349	1	FE	FE	9	1500	
20 Aug.	14	23	53	10,990	143	17,793	352	1	DI	DI	3	4000	
20 Aug.	14	33	53	11,422	143	18,071	37	1	SW	SW	9	2500	
20 Aug.	14	52	53	11,914	143	18,397	55	1	SW	SW	11	2500	to the south
20 Aug.	14	52	53	11,914	143	18,397	55	1	SW	SW	12	2500	to the south
20 Aug.	15	14	53	13,102	143	18,111	343	2	DI	FE	9	3000	
20 Aug.	15	14	53	13,127	143	18,111	343	1	DI	FE	9	1500	
20 Aug.	15	35	53	16,355	143	16,449	343	1	DI	FE	9	2500	
20 Aug.	15	35	53	16,355	143	16,449	343	1	DI	FE	3	700	
20 Aug.	15	39	53	17,036	143	16,083	342	1	DI	FE	9	2000	
20 Aug.	15	53	53	18,594	143	17,605	2	1	DI	FE	3	1000	
20 Aug.	15	53	53	18,594	143	17,605	2	1	DI	DI	9	4500	
20 Aug.	16	1	53	18,591	143	17,564	360	1	DI	FE	2,5	1000	water temp.+ 9 deg, air temp +16 deg
20 Aug.	16	1	53	18,591	143	17,564	360	2	DI	DI	3	1500	
20 Aug.	16	1	53	18,591	143	17,564	360	2	DI	DI	3	1600	
20 Aug.	16	1	53	18,591	143	17,564	360	3	DI	PL	4	2000	
20 Aug.	16	20	53	19,700	143	17,700	360	1	DI	FE	12	3000	
20 Aug.	16	20	53	19,700	143	17,700	360	1	DI	DI	7	5000	
20 Aug.	16	20	53	19,700	143	17,700	360	1	DI	FE	9	2500	
20 Aug.	16	20	53	19,700	143	17,700	360	1	DI	FE	10	7000	
21 Aug.	8	6	53	17,017	143	19,467	357	1	DI	FE	0	100	
21 Aug.	8	48	53	21,432	143	17,612	352	1	FE	FE	11	800	
21 Aug.	8	48	53	21,432	143	17,612	352	2	FE	FE	6	2000	
21 Aug.	9	12	53	24,041	143	14,560	310	3	BR	PL	1	900	
21 Aug.	9	34	53	26,484	143	12,413	334	1	DI	DI	3	1500	
21 Aug.	10	18	53	24,212	143	13,438	157	1	DI	DI	3	3500	
21 Aug.	10	23	53	23,597	143	13,878	165	1	DI	FE	9	1500	
21 Aug.	10	23	53	23,597	143	13,878	165	1	DI	FE	9	2500	
21 Aug.	10	23	53	23,597	143	13,878	165	4	DI	FE	3	3000	
21 Aug.	10	23	53	23,597	143	13,878	165	1	DI	FE	3	3500	
21 Aug.	10	29	53	22,975	143	14,166	166	1	DI	RE	3	200	
21 Aug.	10	32	53	22,697	143	14,287	164	1	DI	FE	9	400	
21 Aug.	10	36	53	22,217	143	14,498	167	1	DI	DI	4	4000	
21 Aug.	10	47	53	21,066	143	15,041	164	3	DI	FE	3	3000	
21 Aug.	10	55	53	20,597	143	14,944	218	2	DI	FE	9	2000	repeat
21 Aug.	11	0	53	21,157	143	14,085	300	1	SW	SW	12	100	
21 Aug.	11	0	53	21,157	143	14,085	300	1	DI	FE	12	800	
21 Aug.	11	45	53	21,587	143	13,940	137	3	PL	PL	9	900	
21 Aug.	12	12	53	18,730	143	15,609	167	1	FE	FE	3	1000	
21 Aug.	12	18	53	17,635	143	16,015	167	2	FE	FE	3	1500	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
21 Aug.	12	27	53	16,443	143	16,470	167	1	FE	FE	3	400	
21 Aug.	12	30	53	15,883	143	16,675	168	1	DI	DI	3	3000	
21 Aug.	12	50	53	13,046	143	17,620	169	3	SW	SW	3	2500	
21 Aug.	12	52	53	12,645	143	17,573	168	1	DI	FE	3	1500	
21 Aug.	13	11	53	9,891	143	18,627	168	1	SW	SW	3	2500	to the south
21 Aug.	13	15	53	9,316	143	18,816	169	1	SW	SW	3	2000	to the south
21 Aug.	13	15	53	9,224	143	18,840	169	1	DI	RE	9	300	to the north
21 Aug.	13	20	53	8,890	143	18,953	173	1	SW	SW	1,5	600	to the south
21 Aug.	13	29	53	8,734	143	18,987	147	1	SW	SW	2	400	
21 Aug.	13	41	53	7,290	143	20,210	154	1	SW	SW	2	800	to the south
21 Aug.	13	51	53	6,819	143	20,622	155	1	SW	SW	3	2000	to the south
21 Aug.	13	54	53	6,723	143	20,638	151	1	DI	DI	3	300	
21 Aug.	14	12	53	4,648	143	22,331	154	1	DI	DI	3	5000	
21 Aug.	14	32	53	3,796	143	20,693	242	1	SW	SW	0	3000	to the south
21 Aug.	14	51	53	2,900	143	20,592	140	1	SW	SW	3	2500	
21 Aug.	15	0	53	1,911	143	21,825	161	1	DI	DI	3	3000	
21 Aug.	15	16	53	1,049	143	22,365	206	1	DI	DI	2	4500	
21 Aug.	15	22	53	0,276	143	21,893	197	1	DI	DI	3	3500	
21 Aug.	15	50	53	2,423	143	19,101	334	2	SW	DI	9	800	to the south
21 Aug.	16	5	53	3,781	143	18,948	130	2	SW	DI	3	300	to the south
21 Aug.	17	15	52	58,664	143	24,106	224	1	DI	DI	3	5000	
22 Aug.	9	5	53	4,073	143	19,185	165	1	SW	FE	3	300	
22 Aug.	12	12	52	51,975	143	24,005	165	1	DI	FE	3	600	
22 Aug.	15	57	52	35,143	143	22,984	181	1	SW	FE	3	400	drifting north
23 Aug.	9	18	52	34,415	143	22,834	150	1	SW	SW	3	3000	to the north
23 Aug.	9	18	52	34,415	143	22,834	150	1	DI	DI	3,5	4000	drifting north
23 Aug.	9	41	52	34,402	143	22,865	152	2	DI	FE	10	200	patchy fog
23 Aug.	10	27	52	36,406	143	23,031	357	1	SW	SW	3	2000	
23 Aug.	11	15	52	42,498	143	23,215	9	1	DI	FE	9	1000	
23 Aug.	11	51	52	46,313	143	24,270	9	2	SW	SW	9	5000	
23 Aug.	12	12	52	47,807	143	24,645	7	2	SW	SW	9	2000	to the south
23 Aug.	12	28	52	49,055	143	24,864	0	2	DI	DI	9	5500	
23 Aug.	13	27	52	50,010	143	24,040	349	1	DI	DI	9	4300	
23 Aug.	13	28	52	51,163	143	23,992	349	1	DI	DI	9	3500	
23 Aug.	13	29	52	51,374	143	23,927	351	1	DI	DI	9	4300	
23 Aug.	13	33	52	52,177	143	23,738	352	1	DI	DI	9	4500	
23 Aug.	13	33	52	52,177	143	23,738	352	1	DI	FE	9	3000	
23 Aug.	14	0	52	54,016	143	23,612	3	1	DI	DI	12	4500	
23 Aug.	14	27	52	57,591	143	22,233	345	2	SW	FE	9	3200	to the south
23 Aug.	14	35	52	58,987	143	21,632	342	1	SW	SW	9	3200	to the south
23 Aug.	14	41	52	59,943	143	21,066	352	1	DI	FE	9	2500	
23 Aug.	15	20	53	2,191	143	20,022	349	2	SW	SW	9	1000	to the south
23 Aug.	15	24	53	2,789	143	19,738	316	1	DI	FE	10	2000	
23 Aug.	17	0	53	8,261	143	18,334	357	3	DI	PL	9	1000	
23 Aug.	17	0	53	8,470	143	18,225	357	2	DI	PL	9	1000	
23 Aug.	17	15	53	9,629	143	18,106	355	5	BR	PL	9	1000	white-tailed

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
23 Aug.	17	15	53	9,629	143	18,106	355	2	DI	PL	9	1100	
23 Aug.	17	30	53	9,924	143	18,069	355	2	DI	PL	12	700	
23 Aug.	17	30	53	9,924	143	18,069	355	1	DI	FE	3	1500	
23 Aug.	17	35	53	4,100	143	18,022	357	2	PL	PL	9	300	fluked and stayed this way
23 Aug.	18	37	53	12,570	143	17,453	351	2	DI	FE	9	500	
24 Aug.	11	20	52	55,052	143	23,279	179	2	SW	SW	12	200	from the shore
24 Aug.	12	49	52	52,718	143	22,215	156	2	DI	FE	4,5	1500	with a calf
24 Aug.	14	0	52	50,575	143	22,157	183	2	DI	FE	3	1000	
24 Aug.	14	0	52	50,575	143	22,157	183	1	DI	FE	2	500	
24 Aug.	14	0	52	50,575	143	22,157	183	2	DI	DI	1	3500	
24 Aug.	16	15	52	48,205	143	22,119	183	1	DI	DI	2	2500	
24 Aug.	16	28	52	47,206	143	22,080	182	1	SW	SW	12	300	
24 Aug.	16	28	52	47,206	143	22,080	182	1	SW	SW	10	500	
24 Aug.	16	46	52	46,294	143	22,176	180	1	DI	FE	3	1300	
24 Aug.	16	46	52	46,294	143	22,176	180	1	DI	FE	3	800	
24 Aug.	17	28	52	45,553	143	22,417	162	1	DI	DI	3	1000	
24 Aug.	17	34	52	44,546	143	22,961	162	1	SW	DI	3	700	
24 Aug.	17	41	52	43,437	143	23,553	163	1	DI	FE	3	2000	
24 Aug.	17	41	52	43,437	143	23,553	163	1	DI	FE	3	3000	
24 Aug.	18	25	52	35,711	143	27,350	163	2	DI	FE	3	6000	
24 Aug.	18	35	52	34,201	143	28,313	163	1	DI	DI	3	8000	
25 Aug.	6	45	52	30,014	143	22,128	253	1	DI	FE	6	2200	drifting south
25 Aug.	7	28	52	32,428	143	21,859	270	1	FE	FE	11	3000	
25 Aug.	7	28	52	32,428	143	21,859	270	1	FE	FE	1	2500	feeding, no plumes
25 Aug.	7	28	52	32,428	143	21,859	270	1	FE	FE	1	2300	18m depth
25 Aug.	10	19	52	46,832	143	22,254	1	2	FE	BR	3	700	
25 Aug.	10	19	52	46,832	143	22,254	1	1	DI	FE	9	200	
25 Aug.	10	29	52	47,847	143	22,666	1	1	DI	FE	9	200	
25 Aug.	10	29	52	47,847	143	22,666	1	2	DI	FE	1	1000	
25 Aug.	10	29	52	47,847	143	22,666	1	1	DI	DI	9	200	
25 Aug.	10	29	52	47,847	143	22,666	1	1	DI	DI	9	1500	
25 Aug.	11	36	52	50,553	143	23,523	3	1	SW	SW	9	2500	to the south
25 Aug.	11	44	52	51,546	143	23,620	3	1	DI	DI	9	3300	
25 Aug.	12	13	52	54,400	143	23,690	3	1	SW	SW	9	3000	to the south
25 Aug.	12	31	52	54,557	143	23,828	3	1	SW	SW	9	4000	to the south
25 Aug.	12	48	52	56,472	143	23,255	343	1	SW	SW	9	3500	to the south
25 Aug.	13	0	52	58,372	143	22,344	344	1	DI	FE	9	3000	
25 Aug.	13	1	52	58,648	143	22,222	345	1	DI	DI	9	3000	
25 Aug.	13	10	53	0,118	143	21,581	346	1	SW	SW	9	3000	
25 Aug.	13	17	53	1,375	143	21,074	346	2	SW	SW	9	3500	
25 Aug.	13	27	53	3,101	143	20,381	346	1	SW	SW	9	3000	no blow
25 Aug.	13	33	53	4,084	143	19,941	347	1	SW	SW	9	3000	to the south
25 Aug.	13	39	53	5,251	143	19,562	348	2	DI	RE	9	1000	
25 Aug.	13	44	53	5,829	143	19,351	348	3	SW	RE	9	2500	with a calf; going south
25 Aug.	13	39	53	5,251	143	19,562	348	2	SW	SW	9	2500	drifting south
25 Aug.	14	0	53	5,889	143	19,575	348	2	DI	RE	3	3000	

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			Latitude		Longitude								
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25 Aug.	15	45	53	8,662	143	18,840	345	1	SW	SW	9	1500	to the south
25 Aug.	15	57	53	10,690	143	18,102	345	1	DI	FE	9	1500	
25 Aug.	16	23	53	12,139	143	17,670	348	4	DI	PL	9	2500	2 pairs
25 Aug.	16	23	53	12,139	143	17,670	348	3	DI	PL	3	300	playing, moving
25 Aug.	16	24	53	12,304	143	17,600	348	2	DI	PL	9	1000	playing, moving
25 Aug.	16	26	53	12,440	143	17,541	348	1	DI	DI	9	1500	
25 Aug.	16	29	53	12,634	143	17,451	340	2	DI	DI	9	2500	
25 Aug.	16	29	53	12,634	143	17,451	340	1	DI	DI	3	400	
25 Aug.	17	18	53	14,180	143	17,444	345	1	SW	SW	3	2000	
25 Aug.	17	22	53	14,180	143	17,176	344	2	DI	PL	9	200	
25 Aug.	17	24	53	14,946	143	17,089	344	1	DI	FE	9	1000	
25 Aug.	17	34	53	15,444	143	16,865	344	1	DI	DI	9	2000	
25 Aug.	18	46	53	17,510	143	18,858	21	1	DI	DI	9	5000	
25 Aug.	19	11	53	17,357	143	18,924	348	1	DI	FE	3	300	
25 Aug.	19	11	53	17,357	143	18,924	348	1	DI	FE	9	400	
25 Aug.	20	0	53	18,437	143	17,424	344	1	DI	DI	9	4500	
25 Aug.	20	5	53	18,367	143	15,935	344	1	DI	FE	9	2500	
25 Aug.	20	15	53	19,493	143	15,159	339	1	DI	FE	3	400	
25 Aug.	20	15	53	19,493	143	15,159	339	1	SW	SW	9	2500	
25 Aug.	20	20	53	20,402	143	14,609	339	1	SW	SW	9	3000	
25 Aug.	20	23	53	20,964	143	14,264	339	1	FE	FE	9	2000	
25 Aug.	20	26	53	21,436	143	13,971	339	1	FE	FE	9	2500	
25 Aug.	20	33	53	22,538	143	13,290	339	1	SW	SW	9	200	to the south
25 Aug.	20	38	53	23,462	143	12,730	339	1	SW	SW	9	2000	to the south
25 Aug.	20	45	53	24,281	143	12,230	339	1	SW	SW	9	2500	to the south
26 Aug.	7	48	53	2,144	143	20,228	172	1	SW	SW	9	400	
26 Aug.	7	48	53	2,144	143	20,228	172	1	DI	FE	3	2500	
26 Aug.	8	0	53	0,492	143	20,619	172	1	DI	DI	3	1000	water temp.+ 8 deg, air temp +18 deg
26 Aug.	8	29	52	55,701	143	21,588	174	1	SW	SW	3	800	to the south
26 Aug.	8	31	52	55,813	143	21,650	174	1	SW	SW	3	600	to the south
26 Aug.	8	36	52	54,583	143	21,770	174	2	DI	FE	3	800	
26 Aug.	8	40	52	53,552	143	21,956	174	2	FE	FE	3	500	
26 Aug.	8	40	52	53,552	143	21,956	174	1	FE	FE	3	800	
26 Aug.	8	53	52	52,151	143	22,187	183	1	FE	FE	2	800	
26 Aug.	9	0	52	51,705	143	21,922	200	1	FE	FE	10	600	
26 Aug.	9	40	52	49,736	143	21,373	103	1	FE	FE	11	1000	
26 Aug.	10	37	52	53,261	143	24,364	40	1	DI	DI	10	1500	
27 Aug.	8	18	52	57,486	143	21,372	115	3	DI	DI	7	3500	
27 Aug.	9	0	52	57,475	143	21,369	95	1	SW	SW	2,5	2000	
27 Aug.	9	0	52	57,475	143	21,369	95	2	DI	FE	3	2500	
27 Aug.	10	21	52	57,800	143	22,386	228	2	SW	SW	3	1000	in the sea
27 Aug.	10	46	52	55,584	143	22,927	171	5	DI	DI	3	3500	
27 Aug.	11	24	52	54,779	143	21,938	351	2	DI	DI	9	1200	vessel is going north
27 Aug.	11	24	52	54,779	143	21,938	351	1	SW	SW	9	800	
27 Aug.	11	24	52	54,779	143	21,938	351	1	SW	SW	3	500	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
27 Aug.	11	30	52	55,549	143	21,733	350	1	DI	FE	9	400	
27 Aug.	11	30	52	55,549	143	21,733	350	1	DI	FE	9	800	
27 Aug.	11	31	52	55,810	143	21,663	350	1	DI	FE	9	800	
27 Aug.	11	31	52	55,810	143	21,663	350	1	DI	FE	9	400	
27 Aug.	11	41	52	57,567	143	21,211	350	1	DI	FE	3	700	
27 Aug.	11	46	52	58,288	143	21,029	351	1	FE	FE	9	1000	
27 Aug.	11	52	52	59,461	143	20,766	352	1	FE	FE	9	1500	
27 Aug.	12	4	53	1,455	143	20,353	353	1	FE	FE	9	1000	
27 Aug.	12	4	53	1,455	143	20,355	353	1	FE	FE	9	900	
27 Aug.	12	5	53	1,708	143	20,280	352	1	FE	FE	9	800	
27 Aug.	12	5	53	1,708	143	20,280	352	1	FE	FE	9	2500	
27 Aug.	12	7	53	1,988	143	20,211	352	1	FE	FE	9	1500	
27 Aug.	12	8	53	2,196	143	20,167	352	2	FE	FE	9	2000	
27 Aug.	12	8	53	2,196	143	20,167	352	1	FE	FE	9	2500	
27 Aug.	12	11	53	2,676	143	20,062	353	1	FE	FE	9	2500	
27 Aug.	12	12	53	2,903	143	20,014	352	1	FE	FE	9	2000	
27 Aug.	12	41	53	7,742	143	18,719	351	2	SW	SW	9	800	
27 Aug.	12	46	53	8,623	143	18,470	350	4	DI	PL	9	400	
27 Aug.	13	9	53	12,225	143	17,202	347	3	DI	PL	9	1000	
27 Aug.	13	8	53	12,093	143	17,254	347	1	DI	FE	9	2000	
27 Aug.	13	11	53	12,681	143	17,019	347	3	DI	PL	3	2000	
27 Aug.	13	9	53	12,225	143	17,202	347	1	DI	FE	9	2000	
27 Aug.	13	12	53	12,733	143	16,996	347	1	DI	FE	9	800	
27 Aug.	13	24	53	14,629	143	16,276	348	1	DI	DI	9	300	
27 Aug.	13	28	53	15,303	143	16,033	348	1	DI	FE	9	1000	
27 Aug.	13	39	53	15,950	143	15,476	349	2	DI	RE	9	1500	
27 Aug.	13	41	53	17,229	143	15,388	347	1	FE	FE	9	500	
27 Aug.	13	41	53	17,229	143	15,388	347	3	SW	PL	3	300	
27 Aug.	13	41	53	17,229	143	15,388	347	1	DI	DI	9	2300	
27 Aug.	13	44	53	17,755	143	15,190	347	1	SW	SW	9	400	
27 Aug.	14	0	53	20,149	143	14,606	74	1	DI	DI	9	2500	southbound current
27 Aug.	15	0	53	21,473	143	14,361	292	1	DI	FE	2,5	5000	
27 Aug.	16	15	53	23,390	143	12,933	33	1	DI	DI	2	4000	repeat
28 Aug.	9	49	53	21,365	143	13,834	167	1	DI	DI	9	2000	
28 Aug.	9	54	53	20,678	143	14,094	168	1	DI	DI	9	2000	
28 Aug.	10	10	53	18,022	143	15,094	167	1	DI	FE	3	400	
28 Aug.	10	16	53	17,127	143	15,408	167	1	DI	FE	3	700	
28 Aug.	10	17	53	16,842	143	15,492	167	1	DI	FE	3	800	
28 Aug.	10	17	53	16,842	143	15,492	167	1	SW	SW	9	1500	
28 Aug.	10	27	53	15,085	143	16,156	168	1	DI	DI	3	2000	
28 Aug.	10	28	53	14,895	143	16,223	169	2	DI	FE	3	1500	
28 Aug.	10	29	53	14,710	143	16,291	168	2	DI	FE	3	1000	
28 Aug.	10	32	53	14,246	143	16,455	169	1	DI	DI	3	2000	
28 Aug.	10	32	53	14,246	143	16,455	169	1	SW	SW	9	300	
28 Aug.	10	35	53	13,758	143	16,644	167	1	SW	SW	3	1000	to the south
28 Aug.	10	38	53	13,149	143	16,881	167	1	DI	FE	3	400	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
28 Aug.	10	44	53	13,939	143	17,449	156	1	DI	SH	3	2000	4 times
28 Aug.	10	44	53	13,939	143	17,449	156	1	DI	FE	3	800	
28 Aug.	10	47	53	11,176	143	18,015	156	2	DI	PL	9	1500	
28 Aug.	10	44	53	13,939	143	17,449	156	2	DI	DI	3	1800	with a calf?
28 Aug.	10	50	53	11,045	143	18,097	174	1	SW	SW	9	300	
28 Aug.	10	50	53	11,045	143	18,097	174	1	DI	DI	3	2000	
28 Aug.	10	56	53	10,375	143	18,238	172	1	DI	DI	3	2500	
28 Aug.	11	21	53	5,605	143	19,181	173	1	SW	SW	3	300	to the north
28 Aug.	11	32	53	3,584	143	19,598	173	1	DI	FE	3	20	
28 Aug.	11	55	52	59,770	143	20,414	172	2	DI	DI	3	700	
28 Aug.	11	55	52	59,770	143	20,414	172	1	DI	FE	3	500	
28 Aug.	11	58	52	59,106	143	20,530	173	1	DI	FE	3	400	
28 Aug.	12	0	52	58,627	143	20,622	173	1	SW	SW	9	200	water temp.+ 11 deg, air temp +11 deg, fog
28 Aug.	12	15	52	56,104	143	21,132	172	1	DI	FE	3	1000	
28 Aug.	12	21	52	54,907	143	21,362	173	1	DI	FE	3	1500	
28 Aug.	12	24	52	54,502	143	21,447	173	1	DI	FE	3	800	
28 Aug.	12	32	52	52,968	143	21,798	171	1	DI	FE	3	700	
28 Aug.	12	39	52	51,820	143	22,071	172	2	DI	RE	3	1500	
28 Aug.	12	43	52	51,026	143	22,270	171	1	DI	DI	3	1000	
28 Aug.	12	43	52	51,026	143	22,270	171	2	DI	DI	3	2000	
28 Aug.	12	43	52	51,026	143	22,270	171	1	DI	DI	3	2500	
28 Aug.	12	47	52	50,348	143	22,432	176	1	DI	FE	3	800	
28 Aug.	12	50	52	49,780	143	22,355	183	1	SW	SW	9	200	
28 Aug.	12	55	52	48,982	143	22,285	183	1	SW	SW	9	300	
28 Aug.	12	55	52	48,982	143	22,279	183	1	DI	DI	3	2500	
28 Aug.	13	7	52	46,849	143	22,124	182	1	DI	RE	3	1500	
28 Aug.	13	7	52	46,849	143	22,124	182	1	SW	SW	9	200	
28 Aug.	13	11	52	46,128	143	22,071	182	2	SW	SW	9	200	
28 Aug.	13	14	52	45,702	143	22,060	181	1	SW	SW	9	400	
28 Aug.	14	56	52	27,982	143	23,891	154	1	SW	SW	3	500	
31 Aug.	10	0	52	57,939	143	21,801	15	2	DI	FE	9	300	
31 Aug.	9	25	52	55,905	143	20,860	210	2	DI	FE	9	300	
31 Aug.	9	25	52	55,919	143	20,016	210	2	DI	FE	10	4000	
31 Aug.	9	25	52	55,919	143	20,016	210	2	DI	FE	11	4000	
31 Aug.	12	0	53	2,428	143	20,210	331	1	DI	FE	9	500	water temp.+ 11 deg, air temp +10 deg, rain
31 Aug.	12	4	53	2,704	143	20,129	351	1	DI	RE	9	700	
31 Aug.	12	8	53	3,255	143	19,980	351	1	DI	FE	9	400	
31 Aug.	12	8	53	3,255	143	19,980	351	1	DI	FE	9	700	
31 Aug.	12	9	53	3,484	143	19,921	351	2	DI	PL	9	300	
31 Aug.	12	14	53	4,331	143	19,696	350	1	DI	DI	9	500	
31 Aug.	12	14	53	4,331	143	19,696	350	1	DI	DI	9	1000	
31 Aug.	12	14	53	4,331	143	19,696	350	2	DI	DI	9	1500	
31 Aug.	12	22	53	5,683	143	19,334	351	1	DI	FE	9	400	
31 Aug.	12	20	53	6,133	143	19,223	351	2	DI	FE	9	300	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
31 Aug.	12	31	53	6,955	143	19,018	351	2	BR	PL	9	300	6 sec stood tail up
31 Aug.	12	22	53	5,683	143	19,334	351	1	SW	SW	3	600	
31 Aug.	12	32	53	7,402	143	18,819	351	1	SW	SW	9	600	
31 Aug.	12	34	53	7,683	143	18,827	351	1	DI	DI	9	800	
31 Aug.	12	54	53	10,814	143	17,992	349	1	DI	DI	9	2500	
31 Aug.	13	0	53	11,488	143	17,767	349	1	DI	FE	9	700	
31 Aug.	13	1	53	11,716	143	17,692	349	1	DI	FE	9	200	
31 Aug.	13	7	53	12,755	143	17,365	349	1	DI	DI	3	700	
31 Aug.	13	12	53	13,531	143	17,110	349	1	DI	DI	3	1000	
31 Aug.	13	12	53	13,531	143	17,110	349	1	DI	DI	9	2500	
31 Aug.	13	35	53	16,828	143	15,964	348	1	DI	DI	9	2000	
31 Aug.	13	41	53	17,664	143	15,660	348	1	DI	DI	9	2500	
31 Aug.	13	56	53	19,780	143	15,012	350	1	DI	FE	9	2600	
31 Aug.	13	56	53	19,780	143	15,012	350	1	SW	SW	9	1500	
31 Aug.	14	7	53	21,135	143	14,270	339	1	DI	FE	9	2500	
31 Aug.	14	11	53	21,809	143	13,845	338	3	DI	SW	9	2500	
31 Aug.	14	8	53	21,407	143	14,098	338	1	DI	FE	9	1000	
31 Aug.	14	9	53	21,593	143	13,979	339	1	SW	SW	3	200	
31 Aug.	14	13	53	22,074	143	13,674	340	1	DI	DI	9	1500	
31 Aug.	14	16	53	22,478	143	13,419	340	1	DI	FE	9	400	
31 Aug.	14	16	53	22,478	143	13,419	340	1	DI	FE	9	200	
31 Aug.	14	19	53	22,968	143	13,119	340	1	SW	SW	9	1000	to the south
31 Aug.	14	21	53	23,203	143	12,951	338	2	DI	FE	3	1500	
31 Aug.	14	24	53	23,686	143	12,632	338	1	SW	SW	9	2500	to the south
31 Aug.	14	35	53	25,091	143	11,719	338	1	DI	FE	9	800	
1 Sept.	8	36	53	30,402	143	9,157	118	2	DI	FE	12	300	
1 Sept.	10	32	53	22,994	143	13,153	159	1	DI	BR	10	500	
1 Sept.	10	32	53	22,994	143	13,153	159	1	DI	DI	10	1000	
1 Sept.	10	39	53	21,199	143	15,974	161	2	DI	FE	12	200	
1 Sept.	10	52	53	21,310	143	14,169	178	2	DI	DI	2	2500	
1 Sept.	10	52	53	21,310	143	14,169	178	1	DI	DI	3	2200	
1 Sept.	11	12	53	20,916	143	16,086	170	2	DI	FE	10	2000	
1 Sept.	11	12	53	20,916	143	16,086	178	1	DI	DI	2	4400	
1 Sept.	11	12	53	20,916	143	16,086	178	2	DI	DI	2	4000	
1 Sept.	12	45	53	19,036	143	15,112	167	1	DI	DI	3	2500	
1 Sept.	12	52	53	18,488	143	15,122	181	1	DI	FE	2	400	
1 Sept.	13	19	53	16,605	143	15,874	170	2	BR	PL	2,5	1500	
1 Sept.	13	24	53	16,180	143	15,974	190	2	DI	DI	9	2000	
1 Sept.	14	0	53	15,803	143	16,583	233	1	DI	DI	2	2000	
1 Sept.	14	12	53	15,064	143	16,881	170	1	DI	DI	2	300	
1 Sept.	14	12	53	15,064	143	16,881	170	2	SW	FE	9	2000	to the south
1 Sept.	14	23	53	13,073	143	17,505	171	2	DI	FE	3	2500	
1 Sept.	14	27	53	12,357	143	17,687	171	3	DI	FE	3	1000	
1 Sept.	14	38	53	10,487	143	18,170	171	4	SW	SW	9	1000	to the south
1 Sept.	14	41	53	9,908	143	18,312	173	1	SW	SW	3	2400	
1 Sept.	14	43	53	9,554	143	18,379	173	1	DI	DI	3	2200	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
1 Sept.	14	52	53	8,014	143	18,611	171	2	DI	DI	3	2000	
1 Sept.	14	53	53	7,875	143	18,642	172	2	SW	SW	9	100	
1 Sept.	14	53	53	7,875	143	18,642	172	2	SW	SW	9	400	
1 Sept.	15	0	53	6,784	143	18,909	170	2	DI	DI	3	1500	
1 Sept.	15	2	53	6,140	143	19,122	171	2	DI	DI	3	2500	
1 Sept.	15	5	53	5,979	143	19,118	171	3	PL	PL	9	2000	
1 Sept.	15	7	53	5,979	143	19,118	171	1	SW	SW	3	600	to the north
1 Sept.	15	13	53	4,285	143	19,474	174	1	DI	DI	3	1000	
1 Sept.	15	13	53	4,285	143	19,474	174	1	SW	SW	9	500	to the north
1 Sept.	15	18	53	3,448	143	19,633	173	2	DI	PL	9	1000	
1 Sept.	15	18	53	3,448	143	19,633	173	2	SW	DI	9	200	
1 Sept.	15	16	53	3,783	143	19,565	173	1	SW	SW	3	1500	
1 Sept.	15	18	53	3,448	143	19,633	173	2	DI	DI	9	2000	
1 Sept.	15	18	53	3,448	143	19,633	173	1	DI	FE	9	1500	
1 Sept.	15	26	53	2,117	143	19,905	173	1	SW	SW	3	800	to the north
1 Sept.	15	33	53	0,912	143	20,154	173	1	SW	SW	3	1000	
1 Sept.	16	0	52	56,642	143	21,056	173	1	SW	RE	3	300	water temp.+ 10 deg, air temp +15 deg
1 Sept.	16	13	52	53,905	143	21,220	212	1	DI	FE	12	1000	
1 Sept.	18	22	52	48,665	143	21,987	181	5	DI	FE	3	2300	with a calf?
1 Sept.	18	27	52	47,806	143	21,970	181	1	DI	FE	3	2400	
1 Sept.	18	46	52	44,224	143	21,793	181	1	SW	SW	9	100	water temp.+ 10 deg, air temp +14 deg
1 Sept.	19	8	52	39,802	143	22,121	192	2	SW	SW	3	200	visibility dropped
5 Sept.	7	50	53	23,972	143	16,696	164	2	DI	FE	3	2000	swell 1.5 m
5 Sept.	8	0	53	22,269	143	17,539	164	1	DI	DI	3	5500	water temp.+ 14 deg, air temp +14 deg
5 Sept.	8	2	53	22,005	143	17,649	163	2	DI	DI	3	4500	
5 Sept.	8	5	53	21,400	143	17,940	163	2	DI	DI	3	5500	
5 Sept.	8	7	53	21,084	143	18,102	163	1	DI	DI	3	5500	
5 Sept.	8	16	53	19,547	143	18,648	181	1	DI	DI	3	6700	
5 Sept.	8	17	53	19,272	143	18,638	181	1	DI	DI	3	6200	
5 Sept.	8	25	53	17,983	143	18,642	178	1	DI	FE	9	1500	
5 Sept.	8	27	53	17,552	143	18,669	178	2	SW	PL	9	1500	to the south
5 Sept.	8	27	53	17,552	143	18,669	178	1	DI	FE	3	2500	
5 Sept.	8	44	53	14,799	143	18,624	183	2	SW	SW	3	4000	to the north
5 Sept.	8	44	53	14,799	143	18,624	183	1	SW	FE	3	3000	to the north
5 Sept.	8	45	53	14,507	143	18,605	183	1	DI	FE	3	3000	
5 Sept.	8	47	53	14,065	143	18,586	181	2	DI	PL	3	4000	
5 Sept.	8	51	53	14,258	143	18,569	181	2	SW	SW	3	2000	
5 Sept.	8	58	53	12,117	143	18,546	181	1	DI	FE	3	1500	water temp.+ 14 deg, air temp +16 deg
5 Sept.	10	33	53	5,030	143	20,475	168	2	SW	PL	3	2000	
5 Sept.	11	0	53	1,855	143	21,555	173	2	SW	SW	3	1000	to the north
5 Sept.	11	7	53	0,977	143	21,710	175	2	SW	SW	3	1500	to the north
5 Sept.	11	12	53	0,307	143	21,835	173	1	SW	FE	3	1000	to the north

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
5 Sept.	11	40	52	56,984	143	22,681	170	2	DI	SW	2	1000	
5 Sept.	12	13	52	54,221	143	23,527	195	3	PL	PL	11	100	playing near a hydrophone
5 Sept.	12	44	52	54,032	143	23,602	168	1	SW	SW	3	3500	to the north
5 Sept.	12	52	52	53,378	143	23,517	185	1	DI	DI	3	3500	
5 Sept.	12	57	52	52,549	143	23,408	186	1	SW	SW	3	800	
5 Sept.	12	57	52	52,549	143	23,408	186	1	DI	DI	3	3000	
5 Sept.	13	0	52	52,030	143	23,335	184	1	SW	SW	3	1500	
5 Sept.	13	7	52	51,092	143	23,228	184	1	DI	DI	3	2000	
5 Sept.	13	8	52	50,877	143	23,205	184	1	DI	RE	3	2000	
5 Sept.	13	13	52	50,110	143	23,123	184	1	DI	DI	3	2500	
5 Sept.	13	18	52	49,433	143	23,068	182	1	DI	FE	3	2000	
5 Sept.	13	19	52	49,184	143	23,046	184	1	DI	FE	3	2500	
5 Sept.	13	19	52	49,184	143	23,046	184	1	DI	FE	3	3000	
5 Sept.	13	24	52	48,502	143	22,953	185	1	DI	FE	3	1500	
5 Sept.	13	35	52	46,840	143	22,688	189	1	DI	FE	3	1500	
5 Sept.	13	37	52	46,525	143	22,635	185	1	DI	DI	3	3000	
5 Sept.	13	39	52	46,224	143	22,576	186	1	SW	SW	9	500	
6 Sept.	12	0	52	14,497	143	39,753	270	2	UN	UN	9	6000	water temp.+ 14 deg, air temp +15 deg
6 Sept.	12	58	52	10,576	143	32,270	98	1	SW	SW	10	400	
6 Sept.	15	53	52	7,522	143	32,937	270	2	FE	FE	3	1500	
6 Sept.	15	53	52	7,522	143	32,937	270	1	FE	FE	3	3000	
7 Sept.	8	0	52	33,805	143	23,747	270	1	SW	SW	11	9000	to the north
7 Sept.	11	47	52	47,313	143	24,587	7	1	SW	FE	9	5000	to the south
7 Sept.	12	0	52	48,775	143	24,910	8	1	SW	SW	9	5500	water temp.+ 16 deg, air temp +24 deg
7 Sept.	12	11	52	49,209	143	25,073	115	1	DI	DI	8	3000	
7 Sept.	12	11	52	49,209	143	25,073	115	1	DI	DI	8	3500	
7 Sept.	12	49	52	52,110	143	24,070	345	1	DI	FE	9	4500	
7 Sept.	12	50	52	52,289	143	23,991	348	1	DI	FE	9	2000	
7 Sept.	12	50	52	52,289	143	23,977	348	1	DI	FE	9	4000	
7 Sept.	16	0	52	59,980	143	22,381	293	1	FE	FE	9	3000	
7 Sept.	16	5	53	0,031	143	21,335	312	1	FE	FE	10	2500	
7 Sept.	16	11	53	0,039	143	21,329	310	1	FE	FE	2	1500	breached once
7 Sept.	16	35	53	1,544	143	20,563	341	1	DI	FE	3	400	
7 Sept.	16	41	53	2,620	143	19,980	338	1	DI	FE	3	1000	
7 Sept.	16	46	53	3,336	143	19,542	340	2	DI	FE	3	700	played 1 hr
7 Sept.	18	15	53	6,132	143	21,433	346	1	DI	DI	9	4000	
7 Sept.	18	23	53	7,621	143	20,714	343	1	DI	FE	9	2500	
7 Sept.	18	31	53	8,884	143	20,105	344	1	DI	FE	9	4000	
7 Sept.	18	32	53	9,213	143	19,951	345	2	SH	PL	9	3000	spyhopped
7 Sept.	18	35	53	9,577	143	19,781	345	1	DI	DI	9	4000	
7 Sept.	18	35	53	9,577	143	19,781	345	2	DI	PL	9	3000	
7 Sept.	18	41	53	10,567	143	19,344	346	1	DI	FE	9	3500	
7 Sept.	18	55	53	12,897	143	18,315	345	1	DI	FE	9	3500	
7 Sept.	19	5	53	14,444	143	17,607	352	1	DI	DI	9	3000	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
7 Sept.	19	5	53	14,444	143	17,607	352	3	DI	FE	9	2500	
7 Sept.	19	5	53	14,444	143	17,607	352	1	SH	PL	9	1000	spyhopped 3 times, breached
7 Sept.	19	5	53	14,444	143	17,607	352	1	DI	FE	9	800	
7 Sept.	19	7	53	14,686	143	17,545	353	1	DI	FE	9	1000	
7 Sept.	19	7	53	14,686	143	17,545	353	1	DI	FE	9	600	
7 Sept.	19	11	53	15,324	143	17,429	4	2	DI	PL	3	200	
7 Sept.	19	11	53	15,324	143	17,429	4	2	DI	DI	9	3500	
7 Sept.	19	12	53	15,534	143	17,455	0	1	DI	DI	9	2000	
7 Sept.	19	13	53	15,666	143	17,459	353	1	DI	FE	9	1500	
7 Sept.	19	15	53	15,866	143	17,355	341	1	DI	FE	9	1500	
7 Sept.	19	21	53	16,891	143	16,756	340	1	DI	FE	9	3000	
7 Sept.	19	30	53	18,068	143	16,046	341	2	SW	SW	9	3000	
7 Sept.	19	31	53	18,255	143	15,943	341	2	DI	DI	9	2900	
7 Sept.	19	31	53	18,255	143	15,943	341	1	DI	FE	9	3000	
7 Sept.	19	31	53	18,255	143	15,943	341	1	DI	FE	9	2500	
7 Sept.	19	37	53	19,128	143	15,451	340	2	DI	PL	3	1500	
7 Sept.	19	43	53	20,025	143	14,943	338	1	FE	FE	9	1000	
7 Sept.	19	53	53	21,810	143	13,767	338	1	SW	SW	9	2000	
7 Sept.	20	5	53	23,670	143	12,570	330	1	DI	DI	3	2500	
8 Sept.	10	33	53	51,454	143	1,194	335	4	SW	PL	12	1300	to the north; one is breaching
8 Sept.	12	23	53	56,918	143	2,897	0	2	DI	DI	9	200	repeat; fog
8 Sept.	15	56	54	21,300	142	36,100	200	2	DI	FE	9	500	27m depth
9 Sept.	11	0	54	22,085	142	33,725	272	1	DI	FE	12	1500	was moving W to E
10 Sept.	9	45	52	55,280	143	23,025	169	3	DI	PL	3	600	to the south
10 Sept.	10	0	52	54,059	143	23,204	169	2	BR	PL	3	1000	
10 Sept.	10	0	52	54,054	143	23,204	169	1	DI	DI	3	2000	
10 Sept.	10	27	52	52,647	143	23,859	165	2	SW	DI	5	2500	
10 Sept.	10	37	52	51,194	143	24,476	165	1	DI	FE	3	4500	
10 Sept.	11	54	52	42,317	143	22,954	191	1	DI	FE	3	3000	
10 Sept.	17	25	52	19,589	143	39,911	110	1	SW	FE	1	2000	
10 Sept.	17	44	52	18,945	143	40,823	139	1	DI	FE	2	2000	
10 Sept.	18	0	52	18,452	143	41,471	134	1	DI	DI	2,5	4000	
11 Sept.	11	0	52	6,315	143	37,269	141	2	DI	PL	1,5	1000	
11 Sept.	11	0	52	6,315	143	37,269	141	1	DI	FE	0,5	600	
11 Sept.	11	0	52	6,315	143	37,269	141	2	DI	RE	1	800	
11 Sept.	11	0	52	6,315	143	37,269	141	1	DI	RE	12	1500	
14 Sept.	11	0	52	7,641	143	36,626	354	2	DI	FE	12	500	
14 Sept.	11	0	52	7,641	143	36,626	354	1	DI	DI	9	4000	
15 Sept.	8	0	52	7,065	143	36,162	178	2	DI	DI	9	2500	water temp.+ 12 deg, air temp +13 deg
15 Sept.	8	8	52	6,454	143	36,215	177	2	DI	FE	9	800	
15 Sept.	8	25	52	3,998	143	36,594	176	1	SW	SW	9	200	
15 Sept.	11	0	51	54,829	143	34,786	335	2	DI	FE	1	2000	
15 Sept.	11	0	51	54,829	143	34,786	335	1	DI	FE	0,5	2000	
15 Sept.	17	45	52	5,764	143	34,460	353	1	SW	SW	3	1500	
15 Sept.	17	45	52	5,764	143	34,460	353	1	DI	FE	3	3000	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
15 Sept.	18	0	52	9,156	143	33,742	353	1	DI	FE	3	2000	
15 Sept.	18	30	52	14,788	143	32,330	351	2	DI	DI	3	6000	
16 Sept.	8	15	52	53,996	143	23,384	184	1	SW	SW	3	4500	to the north
16 Sept.	8	15	52	53,996	143	23,384	184	1	DI	DI	2	2500	
16 Sept.	9	48	52	50,667	143	21,980	198	1	DI	DI	5	1800	
16 Sept.	9	50	52	50,287	143	21,788	198	1	DI	SH	2,5	1500	calf
16 Sept.	10	48	52	48,660	143	22,282	186	1	SW	SW	4	1000	
16 Sept.	11	0	52	47,288	143	22,058	186	2	DI	FE	3	1000	
17 Sept.	14	19	52	7,561	143	37,023	265	1	UN	UN	5	4500	
17 Sept.	15	39	52	10,951	143	42,397	93	1	UN	UN	9	2800	
17 Sept.	15	39	52	10,951	143	42,397	93	1	UN	UN	9	5500	
17 Sept.	15	41	52	10,940	143	43,190	91	1	UN	UN	9	5500	
17 Sept.	16	8	52	14,505	143	45,014	359	1	SW	SW	2	300	
17 Sept.	16	12	52	14,705	143	43,897	268	2	DI	DI	3	3500	repeat
17 Sept.	16	12	52	14,705	143	43,897	268	1	DI	DI	3,5	5500	
17 Sept.	16	17	52	14,687	143	42,583	267	1	DI	DI	9	2800	repeat
17 Sept.	16	17	52	14,687	143	42,583	267	2	SW	PL	9	700	to the south
17 Sept.	18	0	52	18,063	143	43,668	92	3	DI	PL	9	500	repeat
17 Sept.	18	0	52	18,063	143	43,668	92	1	DI	DI	3	4500	repeat
17 Sept.	18	1	52	18,051	143	44,251	92	2	DI	DI	3	5500	repeat
17 Sept.	18	3	52	18,039	143	44,815	92	1	DI	FE	3	2000	repeat
17 Sept.	18	20	52	20,860	143	45,146	351	1	DI	FE	8	1500	
17 Sept.	18	20	52	20,860	143	45,146	351	1	DI	FE	9	700	
17 Sept.	18	39	52	21,575	143	40,367	270	1	SW	SW	7	6000	
18 Sept.	7	13	52	29,065	143	29,007	132	1	SW	BR	9	500	
18 Sept.	8	0	52	30,897	143	20,911	340	1	DI	FE	7	400	water temp.+ 12 deg, air temp +14 deg
18 Sept.	8	18	52	33,934	143	21,367	3	1	SW	SW	9	400	to the south
18 Sept.	8	57	52	40,720	143	21,975	2	1	DI	BR	9	400	young; to the north
18 Sept.	9	18	52	44,850	143	22,133	1	1	DI	DI	9	1000	
18 Sept.	10	3	52	52,560	143	21,795	353	2	DI	FE	9	500	calf?
18 Sept.	10	3	52	52,560	143	21,795	353	1	DI	FE	3	400	
18 Sept.	10	20	52	55,452	143	21,225	353	1	DI	FE	9	500	young
18 Sept.	10	21	52	55,697	143	21,178	353	1	DI	FE	9	300	
18 Sept.	10	21	52	55,697	143	21,178	353	1	DI	DI	9	2000	
18 Sept.	10	29	52	57,057	143	20,952	357	1	DI	DI	3	1500	
18 Sept.	10	57	53	1,773	143	20,267	354	2	SW	SW	3	500	to the north
18 Sept.	10	57	53	1,773	143	20,267	354	2	DI	FE	9	500	
18 Sept.	10	57	53	1,773	143	20,267	354	1	SW	SW	9	1000	calf? To the south
18 Sept.	12	4	53	11,971	143	17,904	348	1	SW	FE	9	1500	
18 Sept.	12	7	53	12,461	143	17,722	347	2	DI	PL	3	300	
18 Sept.	12	9	53	12,684	143	17,637	347	2	DI	RE	3	2000	
18 Sept.	12	14	53	13,445	143	17,339	346	2	DI	PL	9	2500	
18 Sept.	12	15	53	13,608	143	17,276	347	1	DI	FE	9	700	
18 Sept.	12	23	53	14,575	143	16,882	346	1	DI	FE	3	1000	
18 Sept.	12	24	53	14,860	143	16,777	347	1	SW	SW	9	200	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
18 Sept.	12	32	53	16,088	143	16,305	347	2	DI	PL	9	600	
18 Sept.	12	32	53	16,088	143	16,305	347	1	DI	DI	9	1000	
18 Sept.	12	35	53	16,323	143	16,217	347	2	DI	DI	9	2700	
18 Sept.	12	37	53	16,571	143	16,094	347	1	DI	DI	9	2700	
18 Sept.	12	37	53	16,571	143	16,094	347	1	DI	FE	3	3000	
18 Sept.	12	38	53	16,748	143	16,055	347	1	DI	FE	9	1500	
18 Sept.	12	40	53	17,054	143	15,938	346	1	DI	RE	9	1500	
18 Sept.	12	43	53	17,460	143	15,776	347	1	SW	FE	9	1500	to the north
18 Sept.	12	43	53	17,460	143	15,776	347	1	SW	SW	3	400	
18 Sept.	12	43	53	17,460	143	15,776	347	2	DI	PL	3	1500	
18 Sept.	12	46	53	17,822	143	15,631	345	1	SW	SW	3	400	
18 Sept.	12	49	53	18,273	143	15,432	343	3	DI	RE	9	2800	one separately
18 Sept.	12	51	53	18,494	143	15,326	343	1	DI	FE	9	2500	
18 Sept.	12	53	53	18,671	143	15,229	342	1	DI	RE	9	700	
18 Sept.	12	55	53	18,842	143	15,147	342	1	DI	RE	9	700	
18 Sept.	12	55	53	18,842	143	15,147	342	2	SW	SW	3	200	
18 Sept.	12	56	53	19,085	143	15,023	343	2	DI	RE	9	800	
18 Sept.	12	58	53	19,449	143	14,846	344	1	DI	RE	9	1000	
18 Sept.	13	0	53	19,633	143	14,747	343	1	DI	FE	9	2500	
18 Sept.	13	1	53	19,766	143	14,688	343	1	SW	SW	3	100	
18 Sept.	13	4	53	20,090	143	14,482	344	2	DI	RE	9	2500	
18 Sept.	13	6	53	20,496	143	14,321	344	1	DI	RE	9	2500	
18 Sept.	13	8	53	20,695	143	14,230	343	1	DI	RE	9	2500	
18 Sept.	13	5	53	20,350	143	14,397	344	1	DI	RE	3	300	
18 Sept.	13	6	53	20,496	143	14,321	344	1	DI	RE	3	400	
18 Sept.	13	10	53	20,953	143	14,097	343	1	DI	FE	3	300	
18 Sept.	13	10	53	20,953	143	14,088	343	1	DI	FE	9	1000	
18 Sept.	13	12	53	21,206	143	13,973	343	1	DI	DI	3	500	
18 Sept.	13	15	53	21,545	143	13,796	343	2	DI	PL	9	2500	calf?
18 Sept.	13	17	53	21,862	143	13,641	343	1	DI	PL	9	2500	
18 Sept.	16	0	53	22,875	143	13,502	339	1	UN	UN	3	4500	
18 Sept.	16	12	53	24,735	143	12,282	340	1	DI	FE	9	2800	
18 Sept.	16	15	53	24,978	143	12,160	340	1	DI	FE	9	2500	
19 Sept.	8	30	53	28,756	143	10,397	158	1	DI	SW	9	1000	
19 Sept.	9	11	53	26,425	143	11,949	163	1	SW	SW	3	3000	to the north
19 Sept.	9	37	53	22,609	143	14,250	160	1	DI	FE	3	3000	
19 Sept.	9	49	53	21,109	143	15,157	160	2	DI	FE	3	800	
19 Sept.	9	49	53	21,109	143	15,157	160	1	DI	BR	3	3000	
19 Sept.	9	51	53	20,438	143	15,554	159	1	SW	SW	3	3500	to the south
19 Sept.	9	57	53	19,434	143	16,207	160	1	SW	SW	3	1500	to the north
19 Sept.	9	57	53	19,434	143	16,207	160	1	DI	DI	3	3000	
19 Sept.	10	0	53	18,344	143	16,928	160	2	DI	DI	3	3000	
19 Sept.	10	6	53	18,106	143	17,081	159	1	DI	DI	3	2500	
19 Sept.	10	8	53	17,820	143	17,269	158	1	DI	DI	3	2500	
19 Sept.	10	10	53	17,498	143	17,489	159	2	DI	FE	3	400	calf?
19 Sept.	10	10	53	17,498	143	17,489	159	1	DI	FE	3	1500	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
19 Sept.	10	10	53	17,498	143	17,489	159	2	DI	DI	3	2500	
19 Sept.	10	15	53	16,874	143	17,852	162	1	DI	FE	3	400	
19 Sept.	10	26	53	16,179	143	18,251	162	1	FE	FE	3	500	
19 Sept.	10	26	53	16,179	143	18,251	162	1	DI	DI	3	2500	
19 Sept.	11	6	53	13,585	143	17,332	188	2	DI	PL	3	1500	
19 Sept.	11	17	53	12,313	143	17,070	187	1	DI	FE	11	500	
19 Sept.	11	17	53	12,313	143	17,070	187	1	DI	DI	2	2000	young
19 Sept.	12	11	53	12,044	143	17,310	289	1	DI	SH	3	1200	young
19 Sept.	12	26	53	10,631	143	17,770	150	1	SW	SW	3	1000	to the north
19 Sept.	12	31	53	10,115	143	18,290	148	2	SW	FE	3	400	calf, to the north
19 Sept.	12	31	53	10,115	143	18,290	148	1	SW	SW	3	2000	to the south
19 Sept.	12	52	53	8,554	143	20,091	170	2	DI	DI	3	4200	young? To the south
19 Sept.	12	52	53	8,554	143	20,091	170	1	DI	DI	3	3000	
19 Sept.	12	52	53	8,554	143	20,091	170	1	DI	DI	3	4000	to the north
19 Sept.	13	18	53	6,403	143	20,191	177	1	DI	FE	3	1000	
19 Sept.	14	32	53	4,242	143	20,431	176	2	DI	PL	3	2000	young
19 Sept.	14	21	52	56,967	143	21,566	135	3	SW	PL	11	300	
19 Sept.	14	38	52	55,619	143	21,497	180	1	SW	SW	3	800	
19 Sept.	14	45	52	54,488	143	21,557	175	1	SW	SW	4,5	400	
19 Sept.	15	0	52	51,131	143	21,943	175	1	DI	FE	6	2000	
19 Sept.	15	0	52	51,131	143	21,943	175	1	DI	DI	6	3500	
20 Sept.	8	0	52	50,547	143	21,736	256	1	SW	FE	1,5	700	calf? Water temp. +12 deg; air temp +7 deg
20 Sept.	10	20	52	55,225	143	21,116	350	1	DI	FE	12	300	
20 Sept.	10	32	52	55,937	143	20,606	334	1	DI	FE	12	300	
20 Sept.	10	36	52	56,152	143	20,508	354	1	DI	FE	2	200	
21 Sept.	8	45	53	9,030	143	19,587	280	1	DI	SW	9	4500	to the south
21 Sept.	8	45	53	9,030	143	19,587	280	1	DI	SW	10	3500	to the south
21 Sept.	8	45	53	9,030	143	19,587	280	2	PL	PL	2	2500	
21 Sept.	9	0	53	9,116	143	17,335	269	2	DI	DI	9	2000	
21 Sept.	9	0	53	9,116	143	17,335	269	2	DI	DI	2,5	2000	
21 Sept.	9	0	53	9,116	143	17,335	269	1	DI	FE	2	2000	to the north
21 Sept.	9	15	53	9,248	143	17,176	79	1	DI	FE	9	1500	to the north
21 Sept.	9	35	53	9,015	143	17,582	157	1	DI	SW	11	600	to the north
21 Sept.	10	0	53	9,135	143	18,158	119	2	DI	PL	12	2000	to the north
21 Sept.	11	0	53	9,105	143	19,097	57	2	SW	SW	10	2000	to the north
21 Sept.	11	0	53	9,105	143	19,097	57	2	DI	DI	10	3000	to the north
21 Sept.	11	0	53	9,105	143	19,097	57	1	DI	FE	11	2500	
21 Sept.	12	30	53	9,104	143	20,000	35	1	DI	FE	9,5	500	to the south
22 Sept.	8	39	53	9,093	143	22,688	278	1	SW	RE	2	2000	to the shore
22 Sept.	9	7	53	9,103	143	19,987	278	1	SW	FE	3	1500	to the north
22 Sept.	9	28	53	9,029	143	18,627	297	1	DI	FE	10	1500	
22 Sept.	9	28	53	9,029	143	18,627	297	2	DI	DI	11	2700	
22 Sept.	9	41	53	9,098	143	17,683	298	3	BR	PL	3	1500	to the shore
22 Sept.	9	41	53	9,098	143	17,683	298	1	DI	DI	2	2000	
22 Sept.	9	41	53	9,098	143	17,683	298	1	DI	DI	1,5	5000	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
22 Sept.	13	31	53	10,529	143	19,816	323	1	DI	FE	11	3000	
22 Sept.	13	35	53	11,080	143	19,143	324	1	DI	DI	9,5	3500	
22 Sept.	13	44	53	11,996	143	18,042	325	1	DI	FE	9	3000	
22 Sept.	13	44	53	11,996	143	18,042	325	1	DI	FE	10	200	
22 Sept.	13	52	53	13,110	143	17,196	322	1	DI	FE	9	400	
22 Sept.	13	52	53	13,110	143	17,196	322	1	DI	FE	3	600	
22 Sept.	13	56	53	13,605	143	16,643	327	1	DI	BR	9	600	
22 Sept.	13	56	53	13,605	143	16,643	327	1	DI	DI	9	2000	
22 Sept.	14	0	53	14,194	143	16,108	337	2	SW	SW	3	200	to the shore
22 Sept.	14	3	53	14,406	143	15,985	353	1	SW	FE	9	300	
22 Sept.	14	3	53	14,608	143	15,943	352	2	DI	FE	9	300	calf
22 Sept.	14	10	53	15,430	143	15,568	343	1	SW	SW	9	200	
22 Sept.	14	10	53	15,430	143	15,568	343	1	DI	FE	3	300	
22 Sept.	14	25	53	16,057	143	15,270	347	1	DI	FE	9	1200	
22 Sept.	14	25	53	16,057	143	15,270	347	1	DI	FE	9	1000	
22 Sept.	14	25	53	16,057	143	15,270	347	1	DI	FE	9	600	
22 Sept.	14	25	53	16,067	143	15,276	343	1	SW	FE	9	200	to the north
22 Sept.	14	26	53	15,996	143	15,421	49	1	DI	FE	3	1500	
22 Sept.	15	37	53	15,623	143	15,767	357	1	DI	FE	3	600	
22 Sept.	15	37	53	15,623	143	15,767	357	1	DI	FE	9	200	
22 Sept.	15	37	53	15,623	143	15,767	357	1	DI	FE	9	300	
22 Sept.	15	50	53	16,505	143	15,456	347	1	DI	FE	9	1000	
22 Sept.	15	55	53	16,729	143	15,365	347	2	DI	PL	3	300	
22 Sept.	15	50	53	16,505	143	15,456	347	1	DI	FE	9	1700	
22 Sept.	15	50	53	16,505	143	15,456	347	1	DI	FE	9	300	
22 Sept.	15	55	53	16,729	143	15,365	346	1	DI	FE	9	800	
22 Sept.	16	0	53	17,521	143	15,053	347	1	DI	FE	9	1000	water temp.+ 12 deg, air temp +15 deg
22 Sept.	16	0	53	17,521	143	15,053	347	1	DI	FE	9	700	
22 Sept.	16	0	53	17,521	143	15,053	347	1	DI	FE	9	400	
22 Sept.	16	0	53	17,521	143	15,053	347	1	SW	SW	3	300	
22 Sept.	16	6	53	17,970	143	14,880	347	1	DI	FE	9	400	
22 Sept.	16	11	53	18,549	143	14,666	345	2	DI	DI	9	1800	
22 Sept.	16	11	53	18,549	143	14,666	345	1	DI	FE	9	600	
22 Sept.	16	14	53	18,919	143	14,530	348	1	DI	FE	9	1500	
22 Sept.	16	19	53	19,510	143	14,313	347	1	DI	FE	9	1800	
22 Sept.	16	19	53	19,510	143	14,313	347	1	DI	FE	9	500	
22 Sept.	16	19	53	19,510	143	14,313	347	1	DI	FE	9	400	
22 Sept.	16	24	53	19,769	143	14,250	13	1	DI	FE	9	1600	
22 Sept.	16	24	53	19,769	143	14,250	13	1	DI	FE	9	1500	
22 Sept.	16	24	53	19,769	143	14,250	13	1	DI	FE	9	1000	
22 Sept.	17	0	53	19,422	143	14,248	80	2	SW	PL	10	1000	
22 Sept.	17	30	53	19,216	143	14,021	157	2	DI	PL	3	1500	repeat
22 Sept.	17	37	53	19,216	143	14,021	160	3	PL	BR	4	1700	repeat
22 Sept.	18	0	53	19,465	143	14,669	162	2	PL	BR	3	1500	
23 Sept.	10	36	52	17,530	143	35,966	75	1	UN	UN	2,5	8000	

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23 Sept.	11	0	52	17,660	143	41,633	123	1	DI	FE	11	300	
23 Sept.	11	0	52	17,660	143	41,633	123	1	DI	FE	10	500	
23 Sept.	13	3	52	16,330	143	45,000	314	1	DI	FE	8,5	1500	
23 Sept.	13	3	52	16,330	143	45,000	314	1	DI	FE	8,5	3000	
23 Sept.	18	50	52	23,439	143	39,339	230	1	DI	DI	9	6000	
24 Sept.	10	32	52	34,077	143	22,893	286	1	DI	FE	11	2000	
24 Sept.	11	24	52	38,550	143	22,871	360	1	SW	FE	9	400	light "butterfly" on the tail
24 Sept.	11	24	52	38,550	143	22,871	360	2	BR	PL	9	3000	
24 Sept.	11	46	52	42,537	143	22,849	359	1	DI	FE	9	1000	
24 Sept.	12	9	52	46,481	143	22,828	359	1	DI	FE	9	1000	to the south
24 Sept.	12	25	52	49,075	143	22,529	350	1	DI	FE	9	300	
24 Sept.	12	35	52	50,353	143	22,027	341	1	DI	FE	3	300	
24 Sept.	12	35	52	50,353	143	22,027	341	1	DI	FE	9	400	calf
24 Sept.	12	35	52	50,353	143	22,027	341	1	DI	FE	9	500	calf
24 Sept.	12	38	52	50,799	143	21,759	334	1	DI	DI	8	4000	
24 Sept.	15	5	52	53,470	143	22,243	355	2	DI	FE	9	1000	calf
24 Sept.	15	11	52	54,256	143	22,143	354	1	DI	FE	9	1500	calf?
24 Sept.	15	41	52	59,026	143	21,075	351	1	DI	FE	9	2000	
24 Sept.	15	45	52	59,794	143	20,917	353	2	DI	FE	9	1000	
24 Sept.	16	46	53	4,550	143	19,595	350	1	SW	SW	9	300	
24 Sept.	17	18	53	9,196	143	18,220	350	2	DI	FE	3	300	
24 Sept.	17	30	53	11,031	143	17,670	350	2	DI	PL	9	2200	
24 Sept.	17	30	53	11,031	143	17,670	350	2	DI	PL	9	1500	
24 Sept.	17	31	53	11,171	143	17,629	350	1	DI	FE	9	500	
24 Sept.	17	40	53	12,042	143	17,434	6	3	DI	PL	1	400	
24 Sept.	17	30	53	11,031	143	17,670	35	1	DI	DI	9	2000	
24 Sept.	17	55	53	11,918	143	17,689	295	1	SW	FE	9	800	
24 Sept.	17	55	53	11,918	143	17,689	295	1	SW	FE	8,5	800	
24 Sept.	19	0	53	10,877	143	18,734	352	2	SW	SW	0,5	1000	
25 Sept.	8	28	53	27,870	143	10,074	310	2	DI	FE	10	2500	
25 Sept.	8	39	53	27,139	143	10,885	158	1	DI	FE	3	2000	
25 Sept.	8	42	53	26,656	143	11,200	158	1	DI	FE	3	1000	
25 Sept.	8	47	53	26,033	143	11,607	154	1	DI	FE	3	400	
25 Sept.	8	50	53	25,895	143	11,814	92	1	DI	FE	1,5	1000	
25 Sept.	8	50	53	25,895	143	11,814	92	3	DI	FE	2	1000	
25 Sept.	8	50	53	25,895	143	11,814	92	1	SW	FE	5	2700	
25 Sept.	8	50	53	25,895	143	11,814	92	2	DI	FE	4,5	2700	
25 Sept.	9	0	53	25,740	143	11,900	108	1	DI	DI	5,5	2500	
25 Sept.	9	11	53	25,202	143	12,073	158	1	DI	DI	3	2500	
25 Sept.	9	18	53	24,254	143	12,698	159	1	DI	FE	9	1500	
25 Sept.	9	18	53	24,254	143	12,698	159	1	DI	FE	3	1000	
25 Sept.	9	42	53	21,727	143	14,210	116	1	DI	FE	3	2000	
25 Sept.	9	42	53	21,727	143	14,210	116	1	DI	DI	2	3500	
25 Sept.	9	42	53	21,727	143	14,210	116	1	DI	DI	2	4000	
25 Sept.	9	42	53	21,727	143	14,210	116	1	DI	FE	3	2300	
25 Sept.	10	0	53	21,169	143	14,237	151	1	SW	FE	1	3500	repeat

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
25 Sept.	10	19	53	19,778	143	15,225	160	3	DI	FE	9	2000	
25 Sept.	10	22	53	19,291	143	15,517	160	1	DI	FE	3	2500	
25 Sept.	10	24	53	19,006	143	15,693	160	2	DI	PL	3	1000	
25 Sept.	10	26	53	18,748	143	15,850	160	1	DI	DI	3	3000	
25 Sept.	10	28	53	18,404	143	16,057	160	2	DI	FE	3	1000	
25 Sept.	10	28	53	18,404	143	16,057	160	1	DI	DI	3	3000	
25 Sept.	10	32	53	17,927	143	17,338	161	2	BR	PL	3	400	
25 Sept.	10	32	53	17,927	143	17,338	161	2	DI	PL	9	250	
25 Sept.	10	32	53	17,927	143	17,338	161	2	DI	FE	9	500	
25 Sept.	10	43	53	17,300	143	16,552	220	1	DI	DI	2	3000	
25 Sept.	10	50	53	17,165	143	16,607	187	1	DI	FE	8	1500	
25 Sept.	10	52	53	17,157	143	16,629	171	1	DI	FE	9	1000	
25 Sept.	10	56	53	17,080	143	16,070	130	2	DI	FE	1	1500	
25 Sept.	10	56	53	17,080	143	16,626	130	1	DI	DI	12	2500	
26 Sept.	9	32	52	55,801	143	22,847	170	1	DI	FE	3	3500	
26 Sept.	10	11	52	53,160	143	22,777	200	1	DI	FE	3	2500	
26 Sept.	10	11	52	53,160	143	22,777	200	1	DI	DI	3	3500	
26 Sept.	10	19	52	51,830	143	22,006	197	1	SW	SW	3	400	
26 Sept.	11	0	52	50,060	143	22,384	82	1	DI	DI	5	3500	
26 Sept.	11	7	52	49,914	143	23,062	114	1	DI	DI	7	2000	
26 Sept.	11	28	52	49,404	143	25,294	112	1	DI	DI	3	2500	
26 Sept.	12	0	52	48,519	143	23,303	282	1	DI	FE	2,5	600	water temp.+ 12 deg, air temp +13 deg
26 Sept.	12	45	52	46,633	143	21,611	210	1	DI	DI	9	3500	
26 Sept.	13	7	52	43,148	143	22,082	178	1	BR	SW	3	800	
26 Sept.	13	36	52	40,257	143	22,332	268	2	BR	PL	12	1500	
29 Sept.	9	4	53	32,871	143	6,426	160	1	SW	SW	3	2000	to the south
29 Sept.	9	37	53	27,559	143	9,657	160	1	SW	DI	9	200	
29 Sept.	9	39	53	27,049	143	9,984	160	3	DI	PL	9	300	
29 Sept.	9	39	53	27,049	143	9,984	160	1	DI	FE	3	1000	
29 Sept.	9	50	53	25,971	143	10,984	160	1	DI	FE	9	2500	
29 Sept.	9	50	53	25,971	143	10,984	160	1	DI	FE	8	2500	
29 Sept.	9	50	53	25,971	143	10,984	160	2	SW	PL	12	500	
29 Sept.	9	50	53	25,971	143	10,984	160	1	DI	DI	2,5	2500	
29 Sept.	9	50	53	25,971	143	10,984	160	1	DI	DI	2	2500	
29 Sept.	10	38	53	24,918	143	12,190	162	3	DI	PL	9	500	
29 Sept.	10	46	53	23,512	143	12,899	163	1	DI	DI	3	2000	
29 Sept.	10	50	53	22,914	143	13,199	163	2	PL	PL	3	600	
29 Sept.	10	53	53	22,372	143	13,490	158	1	DI	FE	3	2500	
29 Sept.	11	0	53	22,280	143	13,687	146	1	DI	FE	3	3000	
29 Sept.	11	6	53	21,280	143	13,968	163	3	DI	PL	3	1500	
29 Sept.	11	6	53	21,280	143	13,968	163	1	SW	SW	3	2500	to the south
29 Sept.	11	8	53	21,230	143	14,252	163	1	DI	FE	3	1000	
29 Sept.	11	9	53	20,915	143	14,404	164	1	DI	FE	3	2000	
29 Sept.	11	15	53	20,000	143	14,830	165	1	DI	FE	9	300	
29 Sept.	11	16	53	19,932	143	14,865	165	1	DI	DI	3	2500	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
29 Sept.	11	18	53	19,430	143	15,083	165	1	DI	DI	3	3000	
29 Sept.	11	18	53	19,430	143	15,083	165	2	DI	PL	3	300	
29 Sept.	11	18	53	19,430	143	15,083	165	1	SW	DI	9	500	to the north
29 Sept.	11	22	53	18,860	143	15,342	165	1	DI	FE	3	2500	
29 Sept.	11	33	53	18,109	143	15,819	166	2	DI	PL	3	1000	
29 Sept.	11	33	53	18,109	143	15,819	166	2	DI	FE	3	2000	
29 Sept.	11	33	53	18,109	143	15,819	166	2	DI	FE	3	1500	
29 Sept.	11	33	53	18,109	143	15,819	166	1	DI	DI	3	3000	
29 Sept.	11	40	53	16,943	143	16,269	168	1	DI	FE	3	2000	
29 Sept.	11	40	53	16,943	143	16,269	168	1	DI	FE	3	300	
29 Sept.	11	42	53	15,982	143	16,613	168	1	FE	FE	3	300	
29 Sept.	11	44	53	15,456	143	16,796	167	2	DI	FE	3	1500	
29 Sept.	12	7	53	13,361	143	17,673	171	1	DI	FE	3	600	
29 Sept.	12	9	53	12,892	143	17,801	171	2	SW	SW	3	400	
29 Sept.	12	11	53	12,594	143	17,885	171	1	DI	FE	3	2500	
29 Sept.	12	11	53	12,594	143	17,885	171	1	DI	FE	9	2000	
29 Sept.	12	13	53	12,270	143	17,975	172	1	DI	FE	3	300	
29 Sept.	12	13	53	12,270	143	17,975	172	1	DI	FE	3	500	
29 Sept.	12	23	53	10,561	143	18,411	171	1	DI	DI	3	2800	
29 Sept.	12	25	53	10,201	143	18,500	170	1	DI	RE	3	2500	
29 Sept.	13	54	52	56,369	143	21,589	174	1	DI	FE	3	2000	
29 Sept.	13	54	52	56,369	143	21,589	174	1	SW	DI	3	2800	
29 Sept.	14	2	52	55,041	143	21,796	175	1	DI	FE	3	500	
29 Sept.	14	38	52	50,375	143	22,470	173	1	SW	SW	9	1500	
29 Sept.	14	38	52	50,375	143	22,470	173	1	SW	SH	3	2500	
29 Sept.	16	21	52	38,383	143	21,279	183	1	DI	FE	9	300	
29 Sept.	16	23	52	38,097	143	21,240	185	1	DI	FE	9	200	12 m depth
29 Sept.	16	31	52	36,931	143	21,146	187	1	DI	BR	9	300	
30 Sept.	9	51	52	13,820	143	42,880	190	1	DI	DI	9	2500	
30 Sept.	10	0	52	11,420	143	42,091	205	1	DI	FE	3	500	
30 Sept.	10	8	52	10,917	143	42,003	189	1	DI	FE	9	1500	
30 Sept.	15	7	52	13,483	143	45,689	156	1	SW	SW	2	500	
1 Oct.	7	45	52	51,167	143	21,762	195	1	UN	FE	4	2000	
1 Oct.	7	45	52	51,167	143	21,762	195	1	SW	FE	3	200	calf
1 Oct.	8	24	52	51,169	143	21,764	195	1	DI	SW	0,5	2500	
1 Oct.	11	30	52	55,235	143	21,676	354	1	FE	FE	3	1500	
1 Oct.	11	30	52	55,235	143	21,676	354	4	PL	PL	9	1000	
1 Oct.	11	47	52	57,786	143	21,128	352	1	SW	SW	9	1500	to the south
1 Oct.	12	0	52	59,857	143	20,700	353	1	SW	SW	9	2000	water temp.+ 12 deg, air temp +15 deg
1 Oct.	12	0	52	59,857	143	20,700	353	2	SW	SW	9	1000	
1 Oct.	12	0	52	59,857	143	20,700	353	1	DI	FE	9	400	
1 Oct.	12	6	53	0,981	143	20,437	353	1	SW	SW	3	300	to the south
1 Oct.	12	37	53	6,387	143	19,066	352	2	SW	SW	9	2500	
1 Oct.	13	0	53	9,302	143	18,556	355	1	DI	FE	9	2500	
1 Oct.	13	10	53	9,966	143	17,918	289	3	DI	BR	1,5	2000	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
1 Oct.	13	38	53	9,794	143	20,183	66	1	SW	SW	9	1500	to the shore
1 Oct.	16	11	53	12,687	143	17,895	345	1	FE	FE	9	2000	
1 Oct.	16	11	53	12,687	143	17,895	345	2	DI	PL	9	1000	
1 Oct.	16	20	53	13,925	143	17,349	345	2	PL	SH	9	2000	
1 Oct.	16	22	53	14,124	143	17,262	345	2	PL	PL	3	1000	
1 Oct.	16	22	53	14,124	143	17,262	345	2	PL	PL	3	600	
1 Oct.	16	22	53	14,124	143	17,262	345	1	SW	SW	9	200	
1 Oct.	16	22	53	14,124	143	17,262	345	2	DI	DI	9	2800	
1 Oct.	16	29	53	15,365	143	16,597	336	1	DI	FE	9	500	
1 Oct.	16	29	53	15,365	143	16,597	336	1	DI	DI	9	2700	
1 Oct.	16	37	53	16,536	143	15,725	337	4	SH	PL	3	1500	
1 Oct.	16	41	53	16,895	143	15,471	339	1	DI	FE	9	600	
1 Oct.	17	0	53	16,409	143	15,727	316	1	DI	FE	10	2000	water temp.+ 12 deg, air temp +18 deg
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	2	5000	
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	2,3	5000	
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	2,3	5100	
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	2,5	6000	
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	2,5	6500	
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	2,7	6000	
1 Oct.	17	40	53	15,677	143	16,882	250	2	DI	DI	3	7000	
1 Oct.	17	40	53	15,677	143	16,882	250	3	DI	PL	3	6000	
1 Oct.	17	40	53	15,677	143	16,882	250	1	DI	DI	3	4500	
2 Oct.	8	41	52	25,001	143	39,383	90	1	DI	DI	3	600	one blow
2 Oct.	11	31	52	17,994	143	45,018	180	1	DI	DI	3	400	
2 Oct.	11	53	52	14,539	143	43,814	269	1	DI	DI	9	1000	
2 Oct.	12	0	52	14,114	143	41,957	238	2	DI	DI	9	2500	water temp.+ 12 deg, air temp +16 deg
2 Oct.	12	8	52	13,689	143	41,048	185	1	DI	FE	12	400	
2 Oct.	12	8	52	13,689	143	41,048	185	2	DI	FE	1	300	
2 Oct.	13	31	52	13,714	143	40,880	254	1	DI	DI	3	2000	
2 Oct.	13	31	52	13,714	143	40,880	254	1	DI	DI	3	4000	
2 Oct.	15	11	52	10,989	143	40,549	90	2	DI	FE	9	600	
2 Oct.	15	11	52	10,989	143	40,549	90	2	DI	FE	8	300	
2 Oct.	15	16	52	10,987	143	41,846	90	2	DI	FE	9	400	
2 Oct.	15	24	52	10,979	143	44,546	90	4	DI	FE	9	2500	
2 Oct.	15	34	52	10,993	143	47,172	90	2	DI	FE	9	4000	
2 Oct.	15	34	52	10,993	143	47,172	90	1	DI	DI	9	4500	
2 Oct.	15	34	52	10,993	143	47,172	90	1	DI	DI	9	6000	
2 Oct.	16	36	52	7,422	143	38,422	270	4	DI	FE	3	6000	water temp.+ 12 deg, air temp +11 deg
2 Oct.	18	44	52	0,321	143	42,621	270	1	SW	SW	1	400	
Minke Whale (Balaenoptera acutorostrata)													
13 July	15	24	53	12,188	143	17,595	351	1	SW	SW	3	200	
13 July	16	4	53	20,664	143	14,973	337	1	SW	SW	9	600	
13 July	16	39	53	27,354	143	10,524	339	1	SW	SW	9	100	small

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
14 July	9	44	53	18,765	143	14,558	179	1	SW	SW	9	30	
14 July	11	10	53	12,545	143	17,070	98	1	SW	SW	9	200	
15 July	12	30	52	11,045	143	49,805	90	1	DI	DI	9	1500	
15 July	18	57	51	53,472	143	32,217	270	6	DI	FE	9	200	group
16 July	10	48	53	0,250	143	21,221	350	1	SW	SW	9	1500	to the north
16 July	10	51	53	0,734	143	21,086	350	1	SW	SW	9	200	to the south; small
16 July	12	33	53	19,522	143	15,510	350	1	SW	SW	9	400	to the north
23 July	7	40	52	53,979	143	24,920	168	1	SW	SW	9	50	fog
23 July	7	40	52	53,979	143	24,920	168	1	SW	SW	3	200	swell 1.5-2 m; 120-160 deg.
23 July	18	0	52	51,651	143	22,602	183	1	SP	SP	4	1000	
24 July	12	0	52	56,754	143	22,180	230	1	DI	SW	9	1000	
24 July	16	30	53	5,931	143	19,085	360	1	SW	SW	8	60	
27 July	8	0	52	53,151	143	23,462	40	1	DI	SW	1	500	
27 July	8	0	52	53,151	143	23,462	40	1	DI	DI	11	300	small
27 July	10	16	52	55,884	143	22,280	337	2	DI	FE	3	100	
27 July	10	26	52	58,034	143	21,120	339	1	SW	SW	9	400	
27 July	10	26	52	58,034	143	21,120	339	1	SW	DI	10	400	
27 July	10	30	52	58,844	143	20,695	350	1	SW	DI	9	500	
27 July	10	33	52	59,366	143	20,425	347	1	SW	DI	9	1000	
27 July	10	37	52	59,929	143	20,134	347	2	SW	SW	9	200	chum are often breaching
27 July	10	40	53	0,514	143	19,842	344	1	SW	SW	10	300	to the north
27 July	10	55	53	3,300	143	18,502	350	1	DI	SW	1	100	
27 July	12	0	53	3,773	143	18,307	360	1	SW	SW	3	800	
28 July	9	34	53	22,716	143	13,218	161	1	SW	SW	3	1500	
29 July	13	14	53	15,125	143	16,845	338	1	SW	DI	1	1000	
29 July	13	55	53	18,455	143	17,065	75	1	SW	SW	11	100	
29 July	17	24	53	1,521	143	19,824	166	1	DI	SW	3	400	to the south
29 July	17	28	53	0,855	143	20,100	164	1	SW	SW	9	500	
29 July	18	26	52	55,986	143	22,890	161	2	SW	BR	2	300	breaching
30 July	18	30	53	29,232	143	11,550	249	3	SW	SW	6	100	male, female and calf
7 Aug.	8	26	53	8,268	143	19,667	344	1	SW	DI	1	500	
7 Aug.	10	25	53	16,140	143	17,831	348	1	SW	DI	3	400	
7 Aug.	11	0	53	18,272	143	17,891	281	1	DI	DI	7	5000	
7 Aug.	14	9	53	17,106	143	17,428	171	1	SW	SW	3	1500	
7 Aug.	14	18	53	15,712	143	17,787	172	2	SW	DI	3	100	
7 Aug.	14	25	53	14,508	143	18,079	173	1	SW	SW	3	200	
7 Aug.	14	39	53	12,355	143	18,532	174	1	SW	SW	3	200	
7 Aug.	14	45	53	11,255	143	18,763	173	1	SW	SW	3	2000	
7 Aug.	14	47	53	10,970	143	18,820	174	1	DI	SW	9	700	
7 Aug.	14	47	53	10,970	143	18,820	174	1	SW	DI	3	300	
7 Aug.	14	53	53	10,074	143	19,008	172	1	SW	DI	9	1500	
7 Aug.	15	0	53	8,936	143	19,248	174	1	SW	DI	3	600	
7 Aug.	15	4	53	8,147	143	19,424	172	1	SW	DI	3	800	
7 Aug.	15	10	53	7,169	143	19,661	171	1	SW	SW	3	1000	
7 Aug.	15	13	53	6,665	143	19,780	172	1	SW	SW	3	200	
7 Aug.	15	25	53	4,673	143	20,249	172	2	SW	SW	3	400	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
7 Aug.	15	41	53	2,877	143	20,896	172	1	SW	SW	9	300	
7 Aug.	16	0	53	0,109	143	21,111	293	1	SW	DI	11	2500	
7 Aug.	16	38	52	58,936	143	21,322	176	1	SW	SW	9	200	
7 Aug.	16	41	52	58,502	143	21,383	176	1	SW	SW	9	100	
8 Aug.	8	46	53	5,870	143	20,974	120	1	SW	SW	4	1000	
8 Aug.	12	32	53	1,682	143	21,230	178	1	DI	SW	0	150	
8 Aug.	12	37	53	0,819	143	21,270	178	1	SW	SW	3	1500	
8 Aug.	12	48	53	0,250	143	21,276	203	3	DI	FE	2	2000	
8 Aug.	13	10	52	58,965	143	21,677	165	2	FE	SW	2	800	
8 Aug.	14	8	52	53,466	143	23,751	165	1	SW	SW	2	1500	
9 Aug.	11	40	52	50,852	143	22,257	358	2	DI	SW	3	300	
9 Aug.	11	40	52	50,852	143	22,257	358	1	DI	SW	3	800	
9 Aug.	11	40	52	50,852	143	22,257	358	2	SW	DI	3	400	
9 Aug.	15	25	52	58,557	143	22,317	173	1	SW	DI	9	20	
9 Aug.	15	28	52	57,948	143	22,434	172	1	SW	DI	9	300	
9 Aug.	15	28	52	57,948	143	22,434	172	1	SW	DI	1	50	
9 Aug.	15	51	52	54,466	143	23,223	180	1	SW	SW	3	3000	
9 Aug.	16	34	52	49,715	143	23,182	180	1	SW	SW	1	40	
11 Aug.	11	15	52	44,925	143	25,627	335	1	SW	DI	9	2000	
11 Aug.	11	15	52	44,925	143	25,627	335	1	SW	DI	9	1000	water temp.+ 14 deg, air temp +21 deg
11 Aug.	11	30	52	46,155	143	25,490	356	1	SW	DI	9	3000	
11 Aug.	11	42	52	47,422	143	25,237	349	1	DI	SW	9	2000	
11 Aug.	12	25	52	49,759	143	24,793	355	1	DI	SW	9	3500	to the south
11 Aug.	13	16	52	55,416	143	22,336	343	1	SW	SW	9	1500	
11 Aug.	12	22	52	56,370	143	21,812	339	1	SW	SW	9	400	small
11 Aug.	12	22	52	56,370	143	21,812	339	1	SW	SW	9	2000	
11 Aug.	12	22	52	56,370	143	21,812	339	1	SW	SW	9	100	
11 Aug.	15	45	53	9,354	143	19,007	348	1	SW	SW	3	100	
11 Aug.	15	55	53	11,361	143	18,325	7,6	1	SW	SW	9	1000	
11 Aug.	15	55	53	11,361	143	18,325	7,6	1	SW	SW	3	400	
11 Aug.	15	55	53	11,361	143	18,325	7,6	1	SW	SW	3	1000	
11 Aug.	15	57	53	11,642	143	18,246	6,3	1	SW	SW	9	1000	to the south
11 Aug.	16	1	53	11,931	143	18,155	349	1	DI	DI	9	800	
11 Aug.	16	2	53	12,012	143	18,127	346	1	DI	FE	9	900	
11 Aug.	16	42	53	14,559	143	17,218	347	1	SW	DI	3	100	
11 Aug.	16	42	53	14,559	143	17,218	347	1	SW	DI	3	1500	
11 Aug.	17	18	53	16,983	143	16,302	349	1	SW	DI	9	400	
14 Aug.	15	14	53	2,302	143	20,410	346	1	SW	SW	11	50	
17 Aug.	13	35	53	27,128	143	10,071	340	1	DI	SW	2	600	
18 Aug.	9	45	52	59,226	143	20,419	173	1	SW	DI	3	200	
18 Aug.	14	20	52	47,153	143	23,132	352	1	DI	SW	11	400	
20 Aug.	9	0	52	48,501	143	22,352	340	1	SW	DI	8	3000	
21 Aug.	8	17	53	17,991	143	19,378	352	1	SW	DI	1	500	
22 Aug.	16	0	52	34,143	143	22,946	182	1	SW	SW	3	200	water temp.+ 8 deg, air temp +15 deg; dropped anchor

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
23 Aug.	7	45	52	34,385	143	22,847	343	1	DI	DI	7	100	
23 Aug.	9	41	52	34,402	143	22,865	152	1	DI	DI	1	300	
23 Aug.	10	24	52	35,742	143	23,091	357	1	SW	DI	3	1500	
23 Aug.	10	43	52	39,248	143	22,790	357	1	DI	DI	3	50	low fog, visibility on course 4 km
23 Aug.	10	49	52	40,393	143	22,646	355	1	DI	DI	3	30	small
23 Aug.	11	25	52	43,635	143	23,528	9	1	SW	DI	2	200	
23 Aug.	17	43	53	10,887	143	17,922	351	1	DI	DI	1	400	
24 Aug.	11	29	52	54,236	143	23,252	175	1	SW	DI	2,5	2000	
24 Aug.	16	22	52	47,421	143	22,057	182	1	SW	SW	3	400	to the north
25 Aug.	17	31	53	15,434	143	16,868	336	1	SW	SW	9	200	
25 Aug.	17	49	53	15,276	143	17,078	25	1	SW	SW	9	1000	drifting south
25 Aug.	20	26	53	21,436	143	13,971	339	1	SW	SW	9	300	
27 Aug.	12	20	53	4,219	143	19,688	350	1	DI	SW	1	400	
27 Aug.	13	32	53	15,905	143	15,837	347	1	SW	DI	3	100	
28 Aug.	9	10	53	27,580	143	10,583	160	1	SW	SW	2	500	drifting north
31 Aug.	8	0	52	55,570	143	29,918	186	1	SW	SW	3	400	water temp.+ 13 deg, air temp +16 deg; swell 1.5-2 m high
31 Aug.	9	0	52	55,942	143	21,806	0	1	SW	DI	9	700	
31 Aug.	11	21	52	59,577	143	21,345	125	1	SW	SW	7,5	1800	
31 Aug.	13	35	53	16,828	143	15,964	348	1	SW	SW	9	2000	
1 Sept.	9	41	53	30,853	143	9,881	242	1	SW	SW	9	800	
1 Sept.	10	15	53	26,085	143	11,267	159	1	SW	SW	12	300	
1 Sept.	16	0	52	56,642	143	21,056	173	1	SW	SW	9	100	
5 Sept.	17	0	52	19,848	143	42,947	133	1	SW	SW	3	300	water temp.+ 14 deg, air temp +18 deg
7 Sept.	12	56	52	53,400	143	23,617	347	2	DI	DI	9	400	
7 Sept.	18	38	53	10,169	143	19,521	345	1	SW	SW	9	500	
8 Sept.	9	40	53	45,597	143	3,835	360	1	SW	SW	11	500	water temp.+ 14 deg, air temp +14 deg
9 Sept.	15	25	54	7,395	143	3,533	171	1	SW	SW	9	700	
10 Sept.	11	0	52	49,391	143	25,414	150	1	SW	SW	9	500	
11 Sept.	10	40	52	9,270	143	36,384	175	1	SW	SW	1	600	
11 Sept.	10	40	52	9,270	143	36,384	175	1	SW	SW	9	800	
15 Sept.	12	20	51	58,790	143	32,165	348	1	SW	SW	9	300	
16 Sept.	8	0	52	53,992	143	23,387	189	1	SW	DI	11	200	water temp.+ 12 deg, air temp +12 deg
17 Sept.	11	50	52	0,512	143	39,665	270	1	SW	SW	12	400	
18 Sept.	10	3	52	52,560	143	21,795	353	1	SW	SW	3	600	
18 Sept.	11	37	53	8,085	143	18,863	355	1	SW	SW	9	200	
18 Sept.	11	55	53	10,714	143	18,355	348	1	SW	SW	1	1000	
19 Sept.	8	0	53	29,915	143	8,862	300	1	DI	SW	9	20	water temp.+ 12 deg, air temp +11 deg
19 Sept.	14	18	52	57,133	143	21,361	145	1	SW	SW	11	100	
22 Sept.	8	28	53	9,120	143	24,403	268	1	SW	DI	11	1000	
22 Sept.	8	48	53	9,059	143	21,990	272	1	SW	SW	0,5	400	

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			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
22 Sept.	13	0	53	8,955	143	18,946	33	1	DI	DI	12	1000	
24 Sept.	14	49	52	51,100	143	22,358	2	1	SW	SW	4	200	
24 Sept.	15	0	52	52,104	143	22,366	1	1	SW	SW	3	150	
24 Sept.	15	11	52	54,256	143	22,143	354	1	SW	SW	9	500	
24 Sept.	16	0	53	1,861	143	20,461	351	1	SW	SW	9	100	water temp.+ 12 deg, air temp +12 deg
29 Sept.	10	38	53	24,918	143	12,190	162	1	SW	SW	8	400	
29 Sept.	13	0	53	1,610	143	20,531	172	1	SW	SW	9	500	
1 Oct.	11	0	52	51,496	143	22,245	36	1	SW	SW	2	1000	
5 Oct.	18	20	44	47,973	136	37,639	221	1	SW	SW	10	400	
6 Oct.	8	32	42	58,857	134	12,208	232	1	SW	SW	3	300	
6 Oct.	9	30	42	52,409	134	0,061	233	1	SW	SW	3	2000	
6 Oct.	9	47	42	50,642	133	56,575	236	1	DI	DI	11	400	
Killer Whale (Orcinus orca)													
16 July	10	51	53	0,250	143	21,221	351	1	SW	SW	9	1000	to the south, close to MW
18 July	17	0	52	52,630	143	20,800	20	1	SW	SW	9	800	young male; to the sout
30 July	8	0	53	4,173	143	19,488	190	2	SW	DI	8	300	fog
30 July	10	48	53	13,033	143	15,970	343	3	DI	DI	1	400	male and 2 females
30 July	12	45	53	18,207	143	17,213	115	1	SW	SW	9	800	swell 2.5 m
8 Aug.	13	58	52	53,900	143	23,234	144	8	SW	SW	9	2000	5 males, 1 pup
10 Aug.	18	30	52	0,516	143	31,684	269	1	SW	DI	3	3000	
11 Aug.	13	43	52	57,366	143	21,690	359	2	DI	FE	1	600	male and female
18 Aug.	6	17	53	31,229	143	8,546	161	1	DI	DI	9	2000	
19 Aug.	19	42	52	4,114	143	31,394	271	2	SW	SW	9	300	male and female
21 Aug.	18	0	52	57,826	143	33,406	118	1	DI	DI	3	1000	male
26 Aug.	11	25	52	56,744	143	26,194	349	3	SW	SW	3	700	2 cows and a calf
5 Sept.	13	0	52	52,030	143	23,335	184	2	SW	SW	3	2000	2 males
8 Sept.	17	0	54	20,847	142	36,963	85	1	SW	SW	12	1000	male
16 Sept.	9	17	52	54,059	143	23,864	203	2	SW	SW	3	700	to the north
16 Sept.	9	17	52	54,059	143	23,864	203	1	SW	SW	3	200	to the north
Harbor Porpoise (Phocoena phocoena)													
16 July	12	40	53	20,628	143	15,166	350	1	SW	SW	9	500	emergency stop due to malfunction in engine cooling system
27 July	10	8	52	54,638	143	23,161	339	1	SW	SW	9	1000	
27 July	10	26	52	58,034	143	21,120	339	1	SW	DI	9	200	
29 July	17	5	53	4,889	143	19,115	174	4	TH	SW	3	100	
29 July	18	34	52	54,691	143	23,666	162	3	TH	SW	1	400	
31 July	8	23	53	25,730	143	14,832	191	1	SW	DI	10	300	
4 Aug.	13	41	52	21,033	143	32,877	354	1	SW	DI	3	20	
7 Aug.	8	0	53	6,161	143	20,444	54	1	DI	FE	3	50	
7 Aug.	8	2	53	6,180	143	20,375	64	3	DI	DI	2	200	
8 Aug.	8	46	53	5,870	143	20,974	120	3	SW	DI	7	5000	
8 Aug.	11	0	53	5,891	143	20,991	148	3	DI	SW	3	50	
8 Aug.	12	6	53	5,658	143	20,998	174	2	DI	SW	3	100	
8 Aug.	13	36	52	55,526	143	22,262	226	2	SW	DI	3	100	

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9 Aug.	16	41	52	48,396	143	23,187	180	4	SW	SW	1	50	
10 Aug.	9	41	52	21,487	143	41,374	270	1	DI	DI	3	100	
10 Aug.	11	15	52	18,010	143	41,098	87	1	DI	DI	1	100	
10 Aug.	11	28	52	18,073	143	44,917	88	1	DI	SW	11	200	
10 Aug.	11	34	52	18,066	143	47,026	89	1	DI	SW	3	50	
10 Aug.	12	8	52	14,546	143	48,847	268	1	DI	SW	3	150	
10 Aug.	12	52	52	14,495	143	35,114	268	3	SW	DI	9	50	visibility 100 m
10 Aug.	13	13	52	11,693	143	32,961	180	2	SW	SW	9	500	visibility increased
10 Aug.	13	24	52	10,861	143	34,528	90	2	SW	DI	9	1000	
10 Aug.	14	20	52	10,786	143	49,974	180	1	SW	SW	3	1000	
10 Aug.	14	38	52	7,626	143	50,082	180	1	SW	SW	9	300	
10 Aug.	15	0	52	7,482	143	43,364	269	1	SW	DI	3	800	
10 Aug.	15	45	52	7,558	143	30,100	270	1	SW	DI	3	200	
10 Aug.	15	47	52	7,380	143	29,887	180	1	SW	DI	9	500	fog on the right side, visibility 0.2-4km
10 Aug.	16	6	52	3,917	143	30,329	90	2	SW	SW	3	1000	
10 Aug.	17	11	52	3,984	143	49,902	90	2	SW	SW	9	300	
10 Aug.	17	30	52	0,604	143	50,002	184	1	SW	DI	9	300	
10 Aug.	18	0	52	0,507	143	40,772	270	2	SW	DI	9	200	
10 Aug.	18	38	52	0,312	143	29,743	177	1	SW	SW	9	100	
16 Aug.	12	31	52	52,947	143	21,808	78	1	SW	DI	3	150	variable visibility 4-10 km
17 Aug.	8	55	52	49,521	143	22,301	0	1	SW	SW	9	400	
18 Aug.	13	0	52	32,966	143	21,574	24	1	DI	DI	3	150	
19 Aug.	8	17	52	16,400	143	43,052	152	3	DI	DI	1	400	
19 Aug.	17	11	52	10,406	143	35,070	282	2	SW	TH	1	30	
21 Aug.	10	55	53	20,597	143	14,944	218	3	DI	FE	9	300	
22 Aug.	8	44	53	4,066	143	19,200	197	1	SW	DI	7	200	
23 Aug.	11	51	52	46,313	143	24,246	9	1	SW	DI	9	300	
23 Aug.	12	28	52	49,055	143	24,864	0	3	SW	DI	3	200	
23 Aug.	13	39	52	53,187	143	23,494	351	4	DI	DI	2	400	
27 Aug.	13	32	53	15,905	143	15,837	347	1	SW	DI	9	500	
31 Aug.	14	28	53	24,161	143	12,312	338	2	SW	SW	9	400	
1 Sept.	14	0	53	15,803	143	16,583	233	2	SW	SW	3	500	
1 Sept.	16	11	52	54,182	143	21,480	173	3	SW	SW	2	300	
6 Sept.	11	12	52	17,836	143	50,078	180	2	SW	SW	9	300	
6 Sept.	12	32	52	14,313	143	29,802	180	3	SW	DI	3	200	
7 Sept.	13	17	52	54,055	143	23,688	55	1	SW	SW	12	1000	
7 Sept.	16	0	52	59,980	143	22,381	293	2	SW	SW	11	300	
17 Sept.	9	9	51	53,547	143	44,625	263	4	SW	DI	9	5	
17 Sept.	11	6	51	56,990	143	43,070	90	1	SW	DI	3	200	
18 Sept.	10	52	53	0,964	143	20,420	354	1	SW	SW	9	300	
18 Sept.	11	22	53	5,723	143	19,414	353	3	SW	SW	1	800	
18 Sept.	11	50	53	9,922	143	18,621	355	2	SW	SW	9	400	
18 Sept.	12	30	53	15,615	143	16,484	347	2	SW	SW	3	300	
20 Sept.	9	0	52	50,583	143	21,731	235	1	SW	SW	1	50	
24 Sept.	11	6	52	35,304	143	22,933	359	2	SW	TH	1	100	

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24 Sept.	14	42	52	50,172	143	21,773	24	3	SW	DI	11	300	
24 Sept.	15	13	52	54,773	143	22,052	354	1	SW	SW	9	100	
5 Oct.	18	20	44	47,973	136	37,639	221	1	DI	DI	3	500	
Dall's Porpoise (Phocoenoides dalli)													
4 Oct.	10	32	45	52,880	142	32,350	267	4	TH	TH	11	150	
4 Oct.	13	0	45	50,012	142	59,244	269	3	TH	TH	11	200	
5 Oct.	12	39	45	35,388	137	32,963	218	6	DI	FE	7	200	
5 Oct.	13	45	45	26,075	137	22,333	218	3	DI	SW	3	500	
Unknown Cetaceans													
24 July	8	0	52	49,386	143	22,375	153	1	DI	DI	11	3000	slim high blow
16 Sept.	9	0	52	54,207	143	23,939	145	1	SW	SW	12	1500	
17 Sept.	8	23	51	50,016	143	38,287	91	1	UN	UN	11	400	
Ringed Seal (Pusa hispida)													
13 July	14	21	52	58,711	143	21,611	348	2	SW	SW	9	100	
13 July	14	22	52	59,342	143	21,427	348	2	SW	SW	3	100	
13 July	14	24	52	59,465	143	21,384	348	2	LO	LO	9	50	
13 July	14	57	53	6,258	143	19,306	348	1	SW	SW	9	30	
13 July	15	22	53	11,637	143	17,731	351	2	SW	SW	3	50	
17 July	11	16	52	51,400	143	21,756	141	1	SW	SW	3	200	
19 July	9	34	52	49,810	143	25,334	270	1	LO	DI	3	40	
21 July	10	35	53	3,485	143	23,264	352	2	LO	LO	9	100	
21 July	16	0	53	10,193	143	17,849	308	2	SW	SW	9	40	
22 July	11	0	52	49,560	143	25,379	190	2	SW	LO	9	40	
22 July	13	42	52	38,334	143	23,272	182	1	LO	LO	3	70	
24 July	14	0	52	59,917	143	22,146	260	1	SW	LO	9	50	fog
24 July	16	13	53	4,750	143	18,604	356	1	SW	SW	3	20	
25 July	8	0	53	49,680	143	22,371	70	1	LO	DI	1	20	fog
25 July	13	0	52	43,890	143	26,169	0	1	LO	DI	2	40	received water from "Smith Sakhalin"
25 July	13	20	52	43,893	143	26,209	10	1	SW	SW	3	30	
25 July	13	20	52	43,893	143	26,209	10	1	SW	DI	9	30	
26 July	8	0	52	49,687	143	22,478	43	1	LO	DI	2	20	
26 July	8	0	52	49,687	143	22,478	43	1	SW	LO	10	70	
27 July	8	0	52	53,151	143	23,462	40	1	LO	DI	9	30	
27 July	9	49	52	53,002	143	21,799	90	1	SW	SW	9	20	
27 July	10	0	52	53,390	143	23,908	345	1	SW	DI	9	50	
27 July	10	16	52	55,884	143	22,280	337	7	LO	DI	3	50	solitary
27 July	11	0	53	3,929	143	18,269	359	73	LO	LO	9	30	all solitary, 73 for 45 min of the survey
28 July	9	46	53	20,721	143	14,258	170	25	LO	LO	9	50	within 45 min; solitary
28 July	11	0	53	13,014	143	16,104	214	1	LO	LO	3	20	
29 July	8	0	53	9,030	143	18,801	163	4	LO	DI	3	50	solitary
29 July	9	0	53	12,821	143	17,224	348	16	LO	DI	3	50	together
29 July	12	0	53	15,183	143	17,392	345	2	LO	DI	3	50	
4 Aug.	13	50	52	22,208	143	32,681	15	2	LO	DI	9	20	
4 Aug.	14	0	52	24,360	143	33,093	0	1	LO	DI	3	70	

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4 Aug.	14	35	52	32,174	143	31,422	348	1	LO	DI	3	10	
7 Aug.	9	0	53	13,948	143	17,443	337	14	LO	DI	3	50	for 40 min
7 Aug.	10	0	53	14,709	143	18,074	38	7	LO	DI	9	100	for 1 hr
7 Aug.	15	0	53	8,936	143	19,248	174	18	LO	LO	9	50	for 1 hr
10 Aug.	11	2	52	18,016	143	37,777	90	1	LO	DI	3	70	
10 Aug.	12	24	52	14,470	143	43,839	268	1	LO	LO	9	100	fog; visibility 4 km
10 Aug.	13	19	52	10,890	143	33,298	90	1	LO	LO	2	70	seaward visibility 4 km
10 Aug.	13	59	52	11,007	143	44,282	90	1	LO	DI	1	100	
10 Aug.	14	44	52	7,480	143	48,479	271	2	LO	DI	9	100	
11 Aug.	12	0	52	48,908	143	24,985	355	12	DI	LO	9	100	
11 Aug.	12	22	52	56,370	143	21,812	339	30	LO	DI	9	50	for 12 min
13 Aug.	16	50	53	0,151	143	19,894	174	1	LO	DI	3	100	drifting south
14 Aug.	11	0	53	2,892	143	20,148	344	1	LO	DI	9	70	
16 Aug.	12	5	52	53,592	143	20,730	173	1	LO	DI	2	50	
17 Aug.	7	10	52	30,654	143	20,393	11	1	LO	LO	2	40	
17 Aug.	12	0	53	12,337	143	17,311	348	1	LO	LO	9	30	water temp.+ 14 deg, air temp +14 deg
17 Aug.	12	37	53	18,152	143	15,113	347	1	LO	DI	9	50	
17 Aug.	12	37	53	18,152	143	15,113	347	1	LO	DI	9	100	water temp.+ 11 deg, air temp +14 deg
18 Aug.	10	25	52	53,022	143	21,782	174	5	LO	DI	3	50	
18 Aug.	12	45	52	36,194	143	21,531	180	4	LO	LO	9	70	on a log
19 Aug.	8	36	52	15,357	143	44,499	357	1	LO	DI	3	50	
20 Aug.	14	13	53	9,480	143	18,116	349	1	LO	DI	9	50	
21 Aug.	12	0	53	20,073	143	15,099	134	1	LO	LO	3	700	water temp.+ 7 deg, air temp +16 deg
21 Aug.	12	34	53	15,310	143	16,860	168	1	SW	LO	3	50	
21 Aug.	13	38	53	7,760	143	19,849	156	1	DI	LO	9	50	
21 Aug.	14	43	53	3,644	143	19,705	292	1	LO	DI	2	50	
21 Aug.	15	50	53	2,423	143	19,101	334	6	LO	LO	9	70	solitary
22 Aug.	15	50	52	36,146	143	22,981	180	5	SW	LO	3	50	variable visibility 1-8 km
23 Aug.	8	0	52	34,385	143	22,847	352	50	LO	DI	3	100	water temp.+ 7 deg, air temp +16 deg
23 Aug.	13	33	52	52,177	143	23,738	352	13	LO	LO	9	100	for 15 min
25 Aug.	12	51	52	56,989	143	22,997	344	2	LO	DI	9	100	
26 Aug.	12	33	53	1,717	143	35,848	40	1	LO	LO	9	70	
26 Aug.	14	0	52	58,593	143	26,710	237	1	LO	LO	3	30	
27 Aug.	10	46	52	55,584	143	22,927	171	1	LO	DI	9	10	
27 Aug.	11	0	52	54,462	143	23,280	179	2	LO	LO	3	100	
28 Aug.	9	18	53	26,408	143	11,269	162	1	LO	LO	3	40	
28 Aug.	12	0	52	58,627	143	20,622	173	1	LO	DI	3	50	shoreward visibility 1.5 km
31 Aug.	14	28	53	24,161	143	12,312	338	2	LO	DI	9	100	
1 Sept.	11	0	53	21,448	143	15,615	118	10	LO	LO	9	100	for 15 min
5 Sept.	9	2	53	11,350	143	18,526	180	1	LO	DI	9	100	
5 Sept.	16	0	52	26,404	143	31,655	136	1	LO	LO	3	70	
7 Sept.	13	2	52	54,018	143	23,274	22	1	LO	DI	3	20	

Date	Time		Vessel Coordinates				Heading (°)	# of Animals	Behavior 1	Behavior 2	Direction of animal (clockface)	Approx. Distance to Animal (m)	Comments
			Latitude		Longitude								
	Hour	**Min.**	*Deg.*	*Min.*	*Deg.*	*min.*							
9 Sept.	14	24	54	17,403	142	54,132	150	1	LO	DI	9	20	
16 Sept.	10	45	52	48,967	143	22,334	186	1	SW	LO	3	80	
18 Sept.	7	45	52	29,360	143	26,744	292	1	LO	DI	9	30	
18 Sept.	9	18	52	44,850	143	22,133	1	3	LO	DI	9	100	
18 Sept.	9	41	52	48,647	143	22,269	1	2	LO	DI	9	50	
18 Sept.	10	29	52	57,057	143	20,952	357	3	LO	DI	3	100	
24 Sept.	12	41	52	50,990	143	21,754	326	1	LO	DI	3	150	
24 Sept.	15	20	52	55,969	143	21,829	353	1	LO	DI	9	60	
Spotted (Largha) Seal (Phoca largha)													
24 July	8	0	52	49,386	143	22,375	153	1	LO	LO	7	75	fog; patchy visibility (0.4-10 km)
11 Aug.	14	0	53	0,413	143	21,534	356	4	DI	LO	9	70	
20 Aug.	10	54	52	51,755	143	24,115	357	1	LO	DI	9	150	
22 Aug.	13	50	52	47,907	143	24,995	195	1	LO	LO	3	20	
23 Aug.	11	0	52	41,232	143	22,648	53	1	LO	LO	3	20	
4 Sept.	16	0	54	0,739	142	57,375	265	2	LO	SW	3	200	water temp.+ 14 deg, air temp +19 deg
24 Sept.	13	0	52	50,660	143	21,597	131	15	LO	LO	5	1500	
Bearded Seal (Erignathus barbatus)													
17 July	10	46	52	56,243	143	23,410	192	1	LO	LO	3	200	
18 Aug.	8	50	53	7,790	143	18,627	174	1	LO	SW	10	50	
19 Aug.	11	59	52	21,696	143	30,358	180	1	LO	LO	5	50	
6 Sept.	11	7	52	18,005	143	48,579	90	1	LO	LO	3	100	
7 Sept.	13	0	52	53,787	143	23,386	339	1	LO	LO	9	300	
28 Sept.	15	0	54	20,448	142	21,648	255	1	LO	LO	3	70	
Steller's Sea Lion (Eumetopias jubatus)													
26 July	12	10	52	49,748	143	22,464	165	1	SW	LO	9	10	1-year old
27 July	15	0	53	12,995	143	17,596	180	1	DI	FE	2	30	fed on fish
7 Sept.	17	0	53	3,726	143	19,450	304	1	LO	LO	3	40	
16 Sept.	13	0	52	42,938	143	28,939	138	1	DI	LO	9	100	1-year old
21 Sept.	16	0	53	9,047	143	21,193	327	1	SW	FE	3	50	to the north; 1-year old
Northern Fur Seal (Callorhinus ursinus)													
3 Oct.	12	45	48	47,452	144	51,637	167	1	DI	LO	3	30	
3 Oct.	13	25	48	39,258	144	54,689	163	1	DI	LO	9	70	
3 Oct.	13	33	48	38,057	144	55,177	163	1	DI	LO	9	100	water temp.+ 13 deg, air temp +14 deg
3 Oct.	14	0	48	33,839	144	56,936	163	1	DI	LO	9	20	
3 Oct.	14	14	48	30,589	144	57,945	201	3	DI	LO	9	40	
3 Oct.	17	33	47	57,790	144	38,913	202	1	DI	LO	9	50	
3 Oct.	17	35	47	57,365	144	38,670	203	1	DI	LO	9	20	
UNKNOWN PINNIPEDS													
17 July	10	54	52	54,912	143	22,900	193	1	SW	SW	3	600	
1 Sept.	10	0	53	28,108	143	10,022	158	2	LO	LO	9	200	
9 Sept.	10	25	54	22,105	142	35,619	88	1	SW	DI	12	200	

Appendix 3

Results of vehicle-based surveys of gray whales and other cetaceans
in the Piltun area in June-October, 2005.

1 – Date **2** – Station number **3** – Cetacean type (GW – Gray Whale, MW – Minke Whale, HP – Harbor Porpoise, KW – Killer Whale) **4 –** Number of individuals **5** – Latitude (N) **6** – Longitude (E) **7** – Distance of sighting perpendicular to shore (m)

ODOPTU-PILTUN SECTION

1	2	3	4	5	6	7
25 June	4	GW	2	53,20454	143,26793	1137
25 June	4	GW	1	53,24762	143,29104	3676
25 June	5	GW	1	53,15831	143,28736	1531
25 June	5	GW	1	53,13027	143,31258	2834
25 June	6	GW	1	53,06957	143,31334	2014
25 June	6	GW	1	53,04518	143,31146	1619
25 June	6	GW	1	53,02801	143,32089	1989
25 June	6	GW	1	53,02735	143,30475	905
25 June	7	GW	1	53,01882	143,30627	928
25 June	7	GW	1	53,01863	143,31013	1186
25 June	7	GW	1	52,98390	143,33499	2269
25 June	7	GW	1	52,99506	143,36749	4598
25 June	7	GW	1	52,98136	143,34083	2612
25 June	7	GW	1	52,93502	143,33643	1590
25 June	8	GW	2	52,89431	143,34072	1467
25 June	8	GW	1	52,88538	143,33620	1073
25 June	8	GW	1	52,87441	143,34979	1841
26 June	8	GW	1	52,85754	143,34407	1167
26 June	7	GW	1	52,96496	143,33512	2024
26 June	7	GW	1	53,00250	143,30886	781
26 June	7	GW	1	53,00749	143,30908	898
26 June	6	GW	2	53,03362	143,30324	894
26 June	6	GW	1	53,03060	143,30539	993
26 June	6	GW	1	53,07849	143,30887	1879
26 June	5	GW	1	53,09334	143,31092	2195
26 June	5	GW	1	53,09377	143,31184	2263
26 June	5	GW	1	53,16513	143,27391	724
26 June	3	GW	1	53,25572	143,25587	1576
26 June	3	GW	1	53,26867	143,27794	3349
26 June	2	GW	1	53,34497	143,23328	2644
28 June	2	GW	1	53,33989	143,21579	1361
28 June	2	GW	1	53,34136	143,23534	2647
28 June	3	GW	1	53,28170	143,24156	1392
28 June	4	GW	1	53,19575	143,29188	2599
28 June	4	GW	1	53,18761	143,28351	1909
28 June	5	GW	1	53,15112	143,28619	1355
28 June	5	GW	1	53,08802	143,33332	3597
28 June	6	GW	1	53,02643	143,33063	2616
28 June	6	GW	1	53,03164	143,31142	1409
29 June	8	GW	1	52,86539	143,33700	827
29 June	8	GW	1	52,86145	143,35385	1894
29 June	8	GW	1	52,89707	143,34138	1503
29 June	7	GW	1	52,94698	143,33361	1645
29 June	7	GW	1	52,96238	143,32110	1061
29 June	7	GW	2	52,99117	143,31295	925
29 June	7	GW	2	53,00173	143,31448	1140

1	2	3	4	5	6	7
29 June	6	GW	2	53,01956	143,30869	1094
29 June	6	GW	1	53,00942	143,31914	1603
29 June	6	GW	2	53,02036	143,31152	1289
29 June	3	GW	3	53,29345	143,26963	3492
29 June	2	GW	1	53,30774	143,22330	846
29 June	2	GW	1	53,32290	143,22400	1387
30 June	1	GW	1	53,43259	143,17662	2132
30 June	1	GW	1	53,39200	143,19066	1615
30 June	2	GW	1	53,37275	143,18288	388
30 June	2	GW	1	53,36245	143,22155	2453
30 June	3	GW	1	53,23576	143,26568	1718
30 June	3	GW	3	53,24047	143,25382	1099
30 June	4	GW	1	53,22315	143,25358	580
30 June	4	GW	1	53,14505	143,27998	875
30 June	5	GW	1	53,11728	143,29298	1322
30 June	5	GW	1	53,10274	143,29581	1244
30 June	6	GW	2	53,06523	143,29603	813
30 June	6	GW	1	53,05663	143,30773	1513
30 June	6	GW	1	53,04250	143,30220	956
30 June	6	GW	1	53,02670	143,30909	1185
30 June	6	GW	1	53,03084	143,30600	1037
30 June	7	GW	1	53,01561	143,30959	1091
30 June	7	GW	1	53,00802	143,31019	983
30 June	7	GW	1	52,94819	143,32302	984
30 June	8	GW	1	52,91242	143,33063	821
1 July	8	GW	1	52,86567	143,34174	1143
1 July	8	GW	1	52,86154	143,34351	1214
1 July	8	GW	1	52,88516	143,34336	1552
1 July	7	GW	1	52,97938	143,33908	2464
1 July	7	GW	1	52,99717	143,32161	1548
1 July	7	GW	1	53,00837	143,31128	1063
1 July	7	GW	1	53,00827	143,31227	1125
1 July	6	GW	1	53,02706	143,31178	1369
1 July	6	GW	1	53,02901	143,33235	2765
1 July	6	GW	1	53,08932	143,29025	756
1 July	6	GW	2	53,08938	143,28918	686
1 July	5	GW	2	53,10978	143,28971	989
1 July	5	GW	1	53,11133	143,29265	1212
1 July	4	GW	1	53,17869	143,27623	1218
1 July	3	GW	1	53,23476	143,25686	1119
1 July	3	GW	1	53,32117	143,22759	1549
2 July	1	GW	1	53,42102	143,22155	4489
4 July	1	MW	1	53,39383	143,21633	3295
4 July	1	GW	1	53,35640	143,21104	1598
4 July	2	GW	1	53,35060	143,20111	782
4 July	2	GW	1	53,35060	143,20871	1268

1	2	3	4	5	6	7
4 July	2	GW	2	53,32059	143,27973	4819
4 July	3	GW	1	53,28218	143,23512	973
4 July	3	GW	4	53,30981	143,26882	3819
4 July	3	GW	2	53,24542	143,26155	1700
4 July	3	GW	1	53,22059	143,26173	1042
4 July	4	GW	1	53,19922	143,27266	1369
4 July	4	GW	1	53,20030	143,26854	1108
4 July	4	GW	1	53,20002	143,26974	1185
4 July	4	GW	2	53,20055	143,26733	1031
4 July	4	GW	1	53,19245	143,27983	1747
4 July	5	GW	1	53,17939	143,28004	1484
4 July	5	KW	6	53,13514	143,30373	2281
4 July	5	GW	1	53,08885	143,30451	1692
4 July	6	GW	2	53,09010	143,29936	1373
4 July	6	GW	1	53,02824	143,31811	1807
4 July	6	GW	1	53,02932	143,32018	1959
4 July	6	GW	1	53,02895	143,31950	1909
4 July	6	GW	1	53,01715	143,31045	1178
4 July	7	GW	2	53,03023	143,31389	1553
4 July	7	GW	1	52,96881	143,32991	1709
4 July	7	GW	2	52,96645	143,33115	1771
4 July	7	GW	1	52,96188	143,33487	1973
4 July	7	GW	1	52,95965	143,32712	1426
4 July	7	GW	1	52,94322	143,32927	1293
4 July	7	GW	1	52,94731	143,33942	2035
4 July	7	GW	1	52,94322	143,32927	1293
4 July	8	GW	1	52,92474	143,32007	333
4 July	8	GW	1	52,89882	143,33394	1010
4 July	8	GW	1	52,89457	143,33320	963
4 July	8	GW	2	52,89401	143,33882	1337
4 July	8	GW	2	52,89440	143,33813	1293
4 July	8	GW	2	52,89360	143,33949	1379
4 July	8	GW	1	52,88381	143,33159	753
5 July	8	GW	1	52,86473	143,33073	403
5 July	8	GW	1	52,88150	143,34013	1314
5 July	8	GW	1	52,87830	143,39004	4583
5 July	8	GW	1	52,88610	143,36175	2794
5 July	8	GW	1	52,88497	143,34393	1589
5 July	8	GW	2	52,88623	143,34345	1569
5 July	8	GW	1	52,88989	143,33812	1257
5 July	8	GW	1	52,90891	143,37491	3790
5 July	8	GW	1	52,91478	143,36547	3178
5 July	8	GW	1	52,92200	143,34541	1937
5 July	8	GW	1	52,95154	143,35109	2905
5 July	7	GW	1	52,92232	143,33830	1467
5 July	7	GW	1	52,94871	143,32842	1350
5 July	7	GW	1	52,89740	143,38114	4179
5 July	7	GW	2	52,89657	143,37892	4030
5 July	7	GW	1	52,90896	143,40602	5883
5 July	7	GW	1	52,98456	143,34256	2783
5 July	7	GW	1	53,03004	143,31881	1878
5 July	5	GW	1	53,12874	143,29785	1836
5 July	4	GW	1	53,28924	143,24701	1926
5 July	4	GW	1	53,28913	143,24382	1714
5 July	3	GW	1	53,24911	143,26374	1956
5 July	3	GW	1	53,25855	143,24180	738
5 July	3	GW	3	53,28214	143,23995	1292
5 July	3	GW	1	53,29368	143,23631	1323
5 July	3	GW	2	53,29263	143,24326	1751
5 July	2	GW	1	53,22882	143,29368	3331
5 July	2	GW	2	53,30020	143,22944	1020
5 July	2	GW	1	53,26643	143,26446	2416
5 July	2	GW	1	53,29604	143,23496	1290
5 July	2	GW	2	53,29688	143,23722	1456
5 July	2	GW	1	53,37187	143,22366	2893

1	2	3	4	5	6	7
5 July	2	GW	1	53,36105	143,19540	733
5 July	1	GW	1	53,37420	143,18519	586
5 July	1	GW	1	53,36931	143,23840	3737
5 July	1	GW	1	53,44950	143,18900	3595
5 July	1	GW	1	53,44987	143,18791	3541
8 July	1	MW	1	53,41669	143,18984	2370
8 July	2	GW	1	53,37444	143,22840	3289
8 July	2	GW	1	53,37374	143,23067	3402
8 July	2	GW	2	53,37409	143,22954	3346
8 July	2	GW	1	53,32098	143,27752	4687
12 July	1	GW	1	53,43307	143,18885	2902
12 July	1	GW	1	53,39408	143,17268	620
12 July	1	GW	1	53,39367	143,17159	538
12 July	2	GW	1	53,37175	143,23314	3486
12 July	2	GW	1	53,37136	143,23421	3539
12 July	2	GW	1	53,37563	143,24385	4300
12 July	2	GW	1	53,31658	143,24345	2367
12 July	2	GW	1	53,32214	143,22685	1540
12 July	3	GW	1	53,30893	143,21817	531
12 July	3	GW	1	53,29016	143,23934	1440
12 July	3	GW	2	53,28016	143,24549	1632
12 July	4	GW	2	53,15972	143,27881	983
12 July	5	GW	1	53,12364	143,30928	2512
12 July	5	GW	1	53,08932	143,29625	1153
12 July	5	GW	2	53,08989	143,29831	1299
12 July	5	GW	2	53,08879	143,29416	1006
12 July	6	GW	1	53,08815	143,29751	1217
12 July	6	GW	2	53,07247	143,29962	1166
12 July	6	GW	1	53,07414	143,31856	2449
12 July	6	GW	2	53,06617	143,30763	1596
12 July	6	GW	1	53,05691	143,31280	1855
12 July	6	GW	2	53,05602	143,31315	1870
12 July	6	GW	2	53,05666	143,30787	1522
12 July	7	GW	2	53,01575	143,31328	1338
12 July	7	GW	1	53,01346	143,32734	2241
12 July	8	GW	1	52,90782	143,31995	91
12 July	8	GW	1	52,91319	143,33091	849
12 July	8	GW	1	52,90176	143,33504	1093
12 July	8	GW	1	52,89732	143,33813	1284
12 July	8	GW	1	52,89540	143,34183	1547
12 July	8	GW	1	52,89463	143,33326	968
12 July	8	GW	1	52,89427	143,33858	1323
12 July	8	GW	1	52,88832	143,33750	1196
12 July	8	GW	2	52,88413	143,33833	1208
12 July	8	GW	1	52,88420	143,33573	1034
12 July	8	GW	1	52,88286	143,35563	2364
12 July	8	GW	1	52,88059	143,35556	2337
12 July	8	GW	1	52,87833	143,33919	1213
12 July	8	GW	1	52,87581	143,33946	1188
12 July	8	GW	1	52,87441	143,33802	1063
12 July	8	GW	1	52,87219	143,33802	1015
12 July	8	GW	1	52,86968	143,33311	640
13 July	8	GW	1	52,86932	143,36305	2633
13 July	8	GW	1	52,89347	143,35382	2342
13 July	8	GW	1	52,88411	143,36796	3200
13 July	7	GW	3	52,93871	143,33321	1479
13 July	7	GW	1	52,93904	143,33424	1553
13 July	7	GW	1	52,95135	143,34126	2251
13 July	7	HP	1	52,96812	143,32130	1127
13 July	6	GW	2	53,04417	143,31254	1671
13 July	6	GW	1	53,05994	143,31750	2192
13 July	6	GW	3	53,06343	143,30582	1444
13 July	6	GW	2	53,06365	143,30549	1426
13 July	6	GW	1	53,07044	143,29333	731
13 July	6	GW	1	53,09902	143,29584	1253

1	2	3	4	5	6	7
13 July	5	HP	1	53,12713	143,27247	128
13 July	2	GW	1	53,38542	143,18898	1287
13 July	2	GW	1	53,34022	143,19765	225
13 July	1	GW	1	53,40782	143,16626	532
13 July	1	GW	1	53,38885	143,18580	1194
13 July	1	GW	2	53,40411	143,17200	827
14 July	2	GW	1	53,33902	143,19737	166
14 July	2	GW	1	53,31654	143,22690	1308
14 July	3	GW	1	53,29651	143,23518	1315
14 July	3	GW	1	53,25928	143,24420	913
14 July	3	GW	1	53,22663	143,24688	237
14 July	4	MW	1	53,18060	143,28114	1587
14 July	4	GW	1	53,14864	143,29032	1613
14 July	4	GW	2	53,13107	143,28811	1206
14 July	4	GW	1	53,13074	143,28669	1109
14 July	5	GW	1	53,12545	143,29612	1687
14 July	5	GW	1	53,11071	143,29537	1380
14 July	5	GW	1	53,11098	143,29578	1412
14 July	6	GW	1	53,08797	143,29636	1138
14 July	6	GW	1	53,10007	143,29610	1266
14 July	6	GW	1	53,08722	143,30147	1468
14 July	6	GW	1	53,05787	143,28812	213
14 July	6	GW	1	53,07403	143,30555	1588
14 July	6	GW	1	53,06855	143,30893	1705
14 July	6	GW	1	53,06776	143,31030	1788
14 July	6	GW	1	53,05152	143,30153	1050
14 July	6	GW	1	53,04218	143,32255	2294
14 July	6	GW	1	53,00979	143,32195	1796
14 July	7	GW	1	52,99944	143,30664	610
14 July	7	GW	1	52,98447	143,32460	1591
14 July	7	GW	1	52,96363	143,32386	1258
14 July	7	GW	2	52,96102	143,32326	1187
14 July	7	GW	1	52,96170	143,32439	1272
14 July	7	GW	1	52,92407	143,33709	1429
14 July	8	GW	1	52,92306	143,33200	1070
14 July	8	GW	1	52,91181	143,33406	1049
14 July	8	GW	2	52,89436	143,33247	913
14 July	8	GW	1	52,89110	143,36874	3320
14 July	8	GW	2	52,87986	143,33621	1034
14 July	8	GW	1	52,86920	143,34709	1578
14 July	8	GW	1	52,86643	143,35174	1818
14 July	8	GW	2	52,86450	143,34884	1593
14 July	8	GW	1	52,86304	143,34617	1404
15 July	8	GW	1	52,87231	143,32630	244
15 July	8	GW	1	52,85372	143,33578	568
15 July	8	GW	1	52,84507	143,34683	1212
15 July	8	GW	1	52,85609	143,34449	1167
15 July	8	GW	1	52,85749	143,34817	1438
15 July	8	GW	2	52,86822	143,34439	1392
15 July	8	GW	1	52,86796	143,36367	2639
15 July	8	GW	1	52,87381	143,35745	2334
15 July	8	GW	1	52,87263	143,35667	2257
15 July	8	GW	1	52,87317	143,35009	1834
15 July	8	GW	1	52,87997	143,36948	3260
15 July	8	GW	1	52,88919	143,35823	2594
15 July	8	GW	1	52,92075	143,34083	1613
15 July	8	GW	1	52,92227	143,33057	956
15 July	8	GW	1	52,90607	143,32691	553
15 July	7	GW	1	52,95586	143,31495	564
15 July	7	GW	1	52,95483	143,32809	1426
15 July	7	GW	1	52,95087	143,34210	2297
15 July	7	GW	1	52,96011	143,32551	1325
15 July	7	GW	1	52,98208	143,31868	1156
15 July	7	GW	2	52,98317	143,32321	1476
15 July	7	GW	1	52,98847	143,32125	1414

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15 July	7	GW	1	52,99070	143,31548	1094
15 July	7	GW	1	52,99580	143,31180	874
15 July	7	GW	1	53,06165	143,30271	1216
15 July	6	GW	1	53,00704	143,31026	966
15 July	6	GW	1	53,02986	143,30194	753
15 July	6	GW	1	53,04250	143,31189	1596
15 July	6	GW	1	53,04702	143,30671	1340
15 July	6	GW	2	53,08725	143,30039	1396
15 July	6	GW	2	53,10031	143,28913	799
15 July	6	GW	1	53,10035	143,28774	706
15 July	6	GW	1	53,10038	143,28635	612
15 July	6	GW	2	53,10026	143,29052	892
15 July	5	GW	1	53,10597	143,29291	1118
15 July	5	GW	2	53,11389	143,28842	969
15 July	5	GW	1	53,11408	143,28874	992
15 July	5	GW	1	53,13231	143,27876	591
15 July	4	GW	1	53,13829	143,27786	647
15 July	4	GW	2	53,14474	143,27784	728
15 July	4	GW	2	53,13853	143,27906	731
15 July	4	GW	1	53,14474	143,27784	728
15 July	4	GW	1	53,16429	143,28297	1312
15 July	3	GW	1	53,23929	143,24494	493
15 July	2	GW	2	53,32858	143,21738	1100
15 July	2	GW	1	53,34136	143,21568	1405
15 July	2	GW	1	53,36625	143,19438	849
15 July	1	GW	2	53,37901	143,19035	1100
15 July	1	GW	1	53,47523	143,13848	1454
16 July	1	GW	1	53,42717	143,20620	3814
16 July	1	GW	1	53,41478	143,19875	2827
16 July	1	GW	1	53,40808	143,21114	3453
16 July	2	GW	2	53,35990	143,19326	561
16 July	2	GW	1	53,31789	143,24011	2190
16 July	2	GW	1	53,31165	143,23112	1435
16 July	2	GW	2	53,31202	143,23180	1488
16 July	2	GW	2	53,31059	143,22901	1275
16 July	3	GW	2	53,30586	143,22996	1199
16 July	3	GW	1	53,30588	143,22872	1119
16 July	3	GW	1	53,30582	143,23119	1278
16 July	3	GW	1	53,28474	143,23687	1155
16 July	3	GW	1	53,28463	143,23749	1192
16 July	3	GW	1	53,28062	143,24010	1282
16 July	3	GW	1	53,28183	143,24166	1401
23 July	1	GW	1	53,44536	143,17536	2588
23 July	1	GW	1	53,45657	143,19252	4071
23 July	1	GW	1	53,43474	143,19930	3617
23 July	1	GW	1	53,43490	143,21123	4375
23 July	1	GW	1	53,40159	143,21992	3821
23 July	1	GW	1	53,34539	143,28118	5700
23 July	1	GW	1	53,38203	143,20006	1825
23 July	1	GW	1	53,37881	143,19349	1287
23 July	1	GW	1	53,35499	143,20356	1076
23 July	1	GW	1	53,35447	143,20187	952
23 July	1	GW	4	53,35553	143,20524	1200
23 July	1	GW	1	53,37644	143,18738	812
23 July	2	GW	2	53,35009	143,19608	445
23 July	2	GW	1	53,36047	143,19542	717
23 July	2	GW	1	53,35736	143,19613	671
23 July	2	GW	2	53,36046	143,19689	812
23 July	2	GW	1	53,36033	143,20058	1044
23 July	2	GW	1	53,34987	143,20457	980
23 July	2	GW	1	53,34889	143,20831	1188
23 July	2	GW	2	53,34378	143,21001	1127
23 July	2	GW	2	53,34815	143,21868	1816
23 July	2	GW	1	53,36296	143,24292	3838
23 July	2	GW	1	53,34121	143,21002	1042

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23 July	2	GW	1	53,36955	143,26047	5160
23 July	2	GW	1	53,32303	143,24109	2459
23 July	2	GW	1	53,32484	143,23827	2357
23 July	2	GW	1	53,30317	143,26394	3340
23 July	2	GW	1	53,32139	143,22523	1411
23 July	3	GW	3	53,29164	143,23827	1402
23 July	3	GW	2	53,31001	143,28853	5101
23 July	3	GW	1	53,27560	143,26578	2776
23 July	3	GW	1	53,25458	143,25477	1482
23 July	3	GW	1	53,25136	143,25577	1483
24 July	1	GW	2	53,43454	143,14578	328
24 July	1	GW	1	53,46144	143,15603	2009
24 July	1	GW	1	53,45221	143,16605	2259
24 July	1	GW	1	53,41958	143,20991	3712
24 July	1	GW	1	53,41898	143,21010	3698
24 July	1	GW	2	53,41996	143,23414	5243
24 July	1	GW	1	53,40348	143,17874	1238
24 July	1	GW	1	53,40946	143,16088	306
24 July	1	GW	1	53,40217	143,17733	1114
24 July	1	GW	1	53,39409	143,18037	1097
24 July	1	GW	2	53,40418	143,16525	398
24 July	1	GW	1	53,39380	143,17983	1050
24 July	1	GW	1	53,39924	143,17003	568
24 July	1	GW	2	53,37262	143,20097	1530
24 July	1	GW	1	53,31877	143,21238	506
24 July	2	GW	1	53,44853	143,13883	449
24 July	2	GW	1	53,40958	143,15846	164
24 July	2	GW	1	53,40996	143,16064	314
24 July	2	GW	2	53,38591	143,18891	1297
24 July	2	GW	1	53,36200	143,19538	760
24 July	2	GW	2	53,41278	143,20335	3058
24 July	2	GW	1	53,40943	143,23458	5005
24 July	2	GW	1	53,38197	143,22964	3664
24 July	2	GW	2	53,34705	143,25811	4285
24 July	2	GW	1	53,34901	143,27815	5621
24 July	2	GW	1	53,33959	143,26944	4771
24 July	2	GW	2	53,33344	143,26977	4631
24 July	2	GW	1	53,32963	143,22252	1460
24 July	2	GW	1	53,32491	143,25897	3638
24 July	2	GW	1	53,32637	143,21845	1130
24 July	2	GW	1	53,29105	143,26670	3255
24 July	2	GW	1	53,28960	143,26408	3049
24 July	2	GW	1	53,28498	143,25428	2286
24 July	2	GW	1	53,26751	143,26073	2204
24 July	2	GW	1	53,26277	143,24434	1016
24 July	3	GW	1	53,30599	143,21875	494
24 July	3	GW	1	53,32136	143,21571	809
24 July	3	GW	2	53,31035	143,22477	992
24 July	3	GW	1	53,36216	143,22501	2666
24 July	3	GW	1	53,32066	143,24620	2673
24 July	3	GW	2	53,32820	143,25466	3511
24 July	3	GW	1	53,29101	143,23887	1427
24 July	3	GW	1	53,28662	143,23995	1410
24 July	3	GW	1	53,32484	143,27126	4402
24 July	3	GW	1	53,30253	143,25660	2846
24 July	3	GW	1	53,28574	143,27041	3359
24 July	3	GW	2	53,27930	143,26998	3142
24 July	3	GW	1	53,26709	143,24739	1333
24 July	3	KW	1	53,24667	143,28164	3040
24 July	3	GW	1	53,24915	143,25006	1063
24 July	3	GW	1	53,23096	143,26485	1507
24 July	3	GW	2	53,17160	143,28844	1850
24 July	3	GW	1	53,19228	143,28456	2057
24 July	3	GW	1	53,24299	143,24222	387
24 July	4	GW	2	53,25014	143,24808	954

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24 July	4	GW	1	53,19850	143,26207	657
24 July	4	GW	2	53,19835	143,26317	728
24 July	4	GW	1	53,19988	143,29507	2866
24 July	4	MW	1	53,18437	143,30212	3050
24 July	4	GW	3	53,13227	143,30279	2195
24 July	4	GW	1	53,13276	143,30416	2291
26 July	8	GW	1	52,84542	143,34164	861
26 July	8	GW	1	52,84793	143,35091	1492
26 July	8	GW	1	52,85846	143,34705	1382
26 July	8	GW	1	52,86098	143,35226	1779
26 July	8	HP	1	52,88197	143,32234	121
26 July	8	GW	1	52,88881	143,35026	2056
26 July	8	GW	1	52,91049	143,32994	769
26 July	8	GW	1	52,91069	143,32830	659
26 July	8	GW	1	52,94889	143,32991	1453
26 July	8	GW	1	52,94899	143,32798	1327
26 July	7	GW	1	52,88940	143,33142	803
26 July	7	GW	1	52,89044	143,33876	1307
26 July	7	GW	1	52,89268	143,35077	2137
26 July	7	GW	1	52,89320	143,35313	2295
26 July	7	GW	1	52,92563	143,33937	1618
26 July	7	GW	1	52,92645	143,34217	1823
26 July	7	GW	1	52,92687	143,34355	1924
26 July	7	GW	2	52,97702	143,31599	891
26 July	7	GW	1	53,05736	143,34489	4003
26 July	6	GW	1	53,00646	143,30764	782
26 July	6	GW	1	53,04218	143,32253	2293
26 July	6	GW	1	53,04479	143,31046	1545
26 July	6	GW	1	53,04484	143,31408	1785
26 July	6	MW	1	53,04741	143,30512	1242
26 July	6	GW	1	53,04230	143,34253	3625
26 July	6	GW	1	53,04709	143,31971	2200
26 July	6	GW	1	53,05638	143,31605	2067
26 July	6	GW	1	53,05829	143,30898	1612
26 July	6	GW	1	53,06388	143,32994	3057
26 July	6	GW	1	53,05999	143,31063	1732
26 July	6	GW	1	53,05905	143,30844	1580
26 July	6	GW	1	53,06639	143,31250	1923
26 July	6	GW	3	53,06024	143,29723	836
26 July	6	GW	1	53,13200	143,28519	1018
26 July	6	GW	1	53,13198	143,28750	1172
26 July	5	GW	1	53,04448	143,31305	1710
26 July	5	GW	1	53,04759	143,32685	2681
26 July	5	GW	1	53,10169	143,29411	1127
26 July	5	GW	2	53,10248	143,29611	1262
26 July	5	GW	1	53,10275	143,29676	1307
26 July	5	GW	2	53,11400	143,28376	659
26 July	5	GW	1	53,11766	143,28942	1093
26 July	5	GW	1	53,11777	143,29154	1235
26 July	5	GW	1	53,14253	143,30530	2525
26 July	4	GW	2	53,11279	143,28308	603
26 July	4	GW	2	53,11409	143,29079	1129
26 July	4	GW	1	53,11447	143,29269	1259
26 July	4	GW	1	53,15403	143,31617	3378
26 July	4	GW	1	53,24852	143,25831	1588
26 July	3	GW	1	53,24990	143,25696	1531
26 July	3	MW	1	53,26370	143,24061	799
26 July	3	GW	1	53,30756	143,27370	4077
26 July	3	GW	1	53,30737	143,25573	2908
26 July	3	GW	2	53,28897	143,23260	974
26 July	3	GW	1	53,28903	143,23185	926
26 July	3	GW	1	53,40813	143,25366	6170
26 July	2	GW	1	53,30998	143,22982	1317
26 July	2	GW	1	53,30563	143,24012	1851
26 July	2	GW	1	53,34188	143,26136	4323

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26 July	2	GW	2	53,35176	143,25622	4330
26 July	2	GW	1	53,37085	143,24140	3976
26 July	2	MW	1	53,36414	143,20650	1537
26 July	2	GW	2	53,37440	143,20550	1875
26 July	2	GW	1	53,37429	143,20664	1945
26 July	2	MW	1	53,36042	143,20135	1096
26 July	2	GW	2	53,34449	143,19713	325
26 July	1	GW	1	53,39869	143,20943	3053
28 July	1	GW	1	53,41030	143,16227	428
28 July	1	MW	1	53,40494	143,18231	1511
28 July	1	GW	1	53,34793	143,28076	5753
28 July	1	GW	1	53,34927	143,28263	5915
28 July	1	GW	1	53,34153	143,27083	4923
28 July	1	GW	1	53,36030	143,21355	1876
28 July	2	GW	1	53,44675	143,13616	198
28 July	2	GW	3	53,36024	143,20982	1634
28 July	2	GW	1	53,37102	143,23685	3693
28 July	2	GW	1	53,37348	143,25028	4628
28 July	2	GW	1	53,36570	143,24755	4217
28 July	2	GW	2	53,36407	143,28419	6511
28 July	2	GW	1	53,33181	143,21525	1069
28 July	2	GW	1	53,33122	143,21493	1031
28 July	2	GW	1	53,30050	143,27813	4208
28 July	2	GW	1	53,30964	143,21752	502
28 July	3	GW	1	53,30917	143,21677	444
28 July	3	GW	1	53,32845	143,21044	650
28 July	3	GW	2	53,29685	143,22253	494
28 July	3	GW	1	53,29935	143,22429	665
28 July	3	GW	2	53,40679	143,21985	3985
28 July	3	GW	1	53,29357	143,28561	4543
28 July	3	GW	1	53,26632	143,23670	623
28 July	3	GW	2	53,26078	143,24357	913
28 July	3	GW	1	53,24164	143,24801	735
28 July	3	GW	1	53,24343	143,24190	382
28 July	4	GW	1	53,28414	143,23515	1027
28 July	4	GW	1	53,21689	143,25281	388
28 July	4	GW	2	53,23197	143,25618	985
28 July	4	GW	1	53,22170	143,27364	1847
28 July	4	GW	1	53,15585	143,27578	725
28 July	4	GW	2	53,13924	143,28267	985
28 July	4	GW	2	53,13952	143,28384	1069
28 July	4	GW	1	53,13982	143,28500	1153
28 July	4	GW	1	53,13896	143,28149	901
28 July	5	GW	1	53,15194	143,27031	303
28 July	5	GW	2	53,13463	143,27703	494
28 July	5	GW	2	53,13351	143,28551	1052
28 July	5	GW	1	53,12227	143,30113	1949
28 July	5	GW	1	53,11232	143,29332	1276
28 July	5	GW	1	53,11303	143,29054	1103
28 July	5	GW	1	53,10759	143,28947	931
28 July	6	GW	1	53,13200	143,28288	864
28 July	6	GW	1	53,09999	143,29891	1455
28 July	6	GW	1	53,05889	143,30414	1291
28 July	6	GW	1	53,03214	143,32053	2022
28 July	6	GW	1	52,97616	143,32281	1330
28 July	7	GW	1	52,89782	143,37471	3746
28 July	7	GW	1	52,94268	143,32306	871
28 July	7	GW	2	52,93473	143,32314	721
28 July	7	GW	1	52,88993	143,34427	1669
28 July	8	GW	1	52,95245	143,32433	1143
28 July	8	GW	1	52,95231	143,32839	1412
28 July	8	GW	1	52,91811	143,35446	2495
28 July	8	GW	3	52,87178	143,33628	892
28 July	8	GW	1	52,87097	143,33886	1045
28 July	8	GW	1	52,84326	143,34421	1071

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28 July	8	GW	1	52,85273	143,33539	537
29 July	8	GW	1	52,84250	143,34338	1044
29 July	8	GW	1	52,81924	143,37466	2852
29 July	8	GW	1	52,86794	143,35447	2036
29 July	8	GW	1	52,91163	143,33775	1297
29 July	6	GW	1	53,03333	143,30354	908
29 July	6	GW	1	53,04087	143,34303	3646
29 July	6	GW	1	53,06566	143,29019	426
29 July	6	GW	1	53,13293	143,28753	1182
29 July	5	GW	1	53,10047	143,29069	902
29 July	5	GW	1	53,12160	143,29072	1250
29 July	5	GW	1	53,15071	143,31990	3603
29 July	5	GW	1	53,20951	143,27565	1745
29 July	4	GW	1	53,12950	143,28418	931
29 July	4	GW	1	53,15553	143,31705	3455
29 July	4	GW	1	53,17397	143,29573	2380
29 July	4	GW	1	53,21499	143,27758	1987
29 July	4	GW	2	53,22300	143,26630	1398
29 July	3	GW	1	53,22931	143,25848	1057
29 July	3	GW	1	53,23243	143,25803	1119
29 July	3	GW	1	53,24159	143,25650	1294
29 July	3	GW	1	53,25524	143,24893	1111
29 July	3	GW	1	53,29474	143,27469	3850
29 July	3	GW	1	53,31814	143,25732	3305
29 July	3	GW	1	53,29142	143,22983	847
29 July	3	GW	1	53,29144	143,22901	794
29 July	3	GW	1	53,29931	143,23374	1281
29 July	3	GW	1	53,32939	143,22380	1537
29 July	3	GW	1	53,30975	143,22616	1071
29 July	3	GW	2	53,30223	143,22178	574
29 July	3	GW	2	53,30533	143,21764	398
29 July	2	GW	1	53,30214	143,22888	1031
29 July	2	GW	1	53,32002	143,21292	585
29 July	2	GW	1	53,30617	143,22721	1030
29 July	2	GW	1	53,31933	143,22049	1034
29 July	2	GW	3	53,32099	143,22035	1088
29 July	2	GW	1	53,30265	143,26030	3090
29 July	2	GW	1	53,32123	143,22354	1298
29 July	2	GW	1	53,32466	143,22089	1254
29 July	2	GW	1	53,30391	143,28223	4551
29 July	2	GW	1	53,32665	143,23463	2193
29 July	2	GW	1	53,32955	143,23931	2559
29 July	2	GW	2	53,32899	143,25948	3843
29 July	2	GW	1	53,33389	143,22490	1749
29 July	2	GW	2	53,37291	143,18397	463
29 July	1	GW	2	53,32034	143,21764	894
29 July	1	GW	3	53,38238	143,18169	714
29 July	1	GW	1	53,41569	143,16439	787
29 July	1	MW	1	53,43489	143,15034	621
6 Aug.	1	GW	1	53,32369	143,22790	1662
6 Aug.	1	GW	1	53,32218	143,22266	1277
6 Aug.	1	GW	1	53,32147	143,22000	1084
6 Aug.	2	GW	2	53,34677	143,24467	3427
6 Aug.	2	GW	2	53,33534	143,20523	532
6 Aug.	2	GW	1	53,33099	143,22570	1704
6 Aug.	2	GW	1	53,32999	143,22227	1454
6 Aug.	2	GW	1	53,31528	143,27349	4277
6 Aug.	2	GW	1	53,29642	143,24994	2276
6 Aug.	2	GW	1	53,30433	143,23454	1455
6 Aug.	2	GW	1	53,31074	143,22129	773
6 Aug.	2	GW	1	53,30742	143,22042	650
6 Aug.	2	GW	1	53,29055	143,23528	1182
6 Aug.	2	GW	1	53,30049	143,22398	671
6 Aug.	3	GW	1	53,31400	143,21112	229
6 Aug.	3	GW	1	53,29699	143,22053	367

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6 Aug.	3	GW	1	53,29705	143,22151	432
6 Aug.	3	MW	1	53,27015	143,23423	589
6 Aug.	3	MW	1	53,27068	143,23705	786
6 Aug.	3	GW	1	53,27678	143,24474	1456
6 Aug.	3	GW	1	53,27415	143,25607	2108
6 Aug.	3	GW	1	53,26567	143,25846	2008
6 Aug.	3	GW	2	53,26325	143,30496	4953
6 Aug.	3	GW	1	53,25551	143,26745	2332
6 Aug.	3	GW	1	53,25455	143,28172	3250
6 Aug.	3	GW	1	53,25339	143,25384	1397
6 Aug.	3	GW	1	53,24842	143,27025	2353
6 Aug.	3	GW	1	53,22240	143,31422	4533
6 Aug.	3	GW	1	53,22770	143,26561	1474
6 Aug.	3	GW	1	53,21783	143,26730	1358
6 Aug.	3	GW	2	53,24004	143,24358	416
6 Aug.	3	GW	1	53,20931	143,26146	817
6 Aug.	3	GW	1	53,20831	143,25668	480
6 Aug.	4	GW	1	53,19882	143,27161	1295
6 Aug.	4	GW	1	53,19435	143,27193	1260
6 Aug.	4	GW	1	53,19508	143,27691	1602
6 Aug.	4	GW	1	53,18498	143,27287	1162
6 Aug.	4	GW	1	53,17155	143,27553	1003
6 Aug.	4	GW	1	53,16117	143,28423	1360
6 Aug.	4	GW	1	53,17070	143,26815	501
6 Aug.	4	GW	1	53,16240	143,27724	909
6 Aug.	4	GW	1	53,14791	143,27583	641
6 Aug.	5	GW	1	53,16557	143,26804	359
6 Aug.	5	GW	1	53,14617	143,27974	886
6 Aug.	5	GW	1	53,13647	143,28692	1182
6 Aug.	5	GW	1	53,13267	143,28351	911
6 Aug.	5	GW	1	53,13083	143,28588	1056
6 Aug.	5	GW	1	53,11721	143,30933	2403
6 Aug.	5	GW	1	53,12320	143,27854	484
6 Aug.	5	GW	2	53,12084	143,28540	884
6 Aug.	5	GW	1	53,11748	143,29240	1287
6 Aug.	5	GW	1	53,09961	143,29141	954
6 Aug.	6	GW	1	53,09073	143,28711	574
6 Aug.	6	GW	1	53,07768	143,29845	1176
6 Aug.	6	GW	1	53,05700	143,29732	821
6 Aug.	6	GW	1	53,01677	143,30829	1028
6 Aug.	7	GW	1	53,00411	143,31282	1075
6 Aug.	7	GW	1	52,98968	143,31250	895
6 Aug.	7	GW	2	52,97361	143,31316	652
6 Aug.	7	GW	1	52,97136	143,31419	691
6 Aug.	7	GW	1	52,97073	143,31540	764
6 Aug.	7	GW	2	52,96038	143,31699	761
6 Aug.	8	GW	1	52,90394	143,33026	770
6 Aug.	8	GW	1	52,88569	143,33124	746
6 Aug.	8	GW	1	52,86115	143,33368	553
7 Aug.	8	GW	1	52,87046	143,34044	1140
7 Aug.	8	GW	2	52,87970	143,32942	577
7 Aug.	8	GW	2	52,88090	143,33674	1083
7 Aug.	8	GW	1	52,88241	143,33140	732
7 Aug.	7	GW	1	52,96357	143,32109	1072
7 Aug.	7	GW	1	52,96477	143,32542	1372
7 Aug.	7	GW	1	52,96405	143,32455	1308
7 Aug.	7	MW	1	52,97660	143,33941	2442
7 Aug.	7	GW	2	52,98416	143,31796	1146
7 Aug.	7	GW	1	52,99911	143,31177	931
7 Aug.	7	GW	1	52,99661	143,30877	686
7 Aug.	6	GW	1	53,02406	143,30157	648
7 Aug.	6	GW	1	53,02852	143,29969	585
7 Aug.	6	GW	1	53,02483	143,30483	876
7 Aug.	5	HP	2	53,12576	143,27776	468
7 Aug.	5	HP	1	53,12726	143,27801	499

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7 Aug.	5	GW	1	53,13013	143,28516	1001
7 Aug.	5	HP	1	53,12758	143,27773	484
7 Aug.	5	GW	1	53,12976	143,28206	792
7 Aug.	5	GW	1	53,13122	143,28512	1008
7 Aug.	5	GW	1	53,16499	143,26339	42
7 Aug.	5	GW	1	53,16506	143,26456	119
7 Aug.	4	GW	2	53,14315	143,27644	601
7 Aug.	4	GW	2	53,13778	143,28224	916
7 Aug.	4	MW	1	53,16407	143,30610	2848
7 Aug.	4	GW	1	53,18041	143,26721	689
7 Aug.	4	GW	1	53,18111	143,27042	917
7 Aug.	4	GW	1	53,18158	143,26832	798
7 Aug.	4	GW	1	53,21055	143,27907	1992
7 Aug.	4	GW	1	53,20917	143,26742	1199
7 Aug.	4	GW	1	53,24775	143,27842	2855
7 Aug.	4	GW	1	53,24846	143,24016	400
7 Aug.	4	GW	1	53,24809	143,23616	130
7 Aug.	3	GW	1	53,21377	143,25376	415
7 Aug.	3	GW	1	53,21687	143,26643	1286
7 Aug.	3	GW	1	53,24270	143,27279	2388
7 Aug.	3	GW	1	53,25867	143,24088	682
7 Aug.	3	GW	1	53,27365	143,23633	811
7 Aug.	3	GW	1	53,27445	143,23323	649
7 Aug.	3	GW	1	53,27625	143,23104	593
7 Aug.	3	GW	1	53,28686	143,22529	458
7 Aug.	3	GW	1	53,31519	143,21540	542
7 Aug.	3	GW	1	53,31475	143,21089	246
7 Aug.	2	GW	1	53,29419	143,22617	674
7 Aug.	2	GW	1	53,29554	143,23088	1013
7 Aug.	2	GW	1	53,32761	143,21767	1101
7 Aug.	2	MW	1	53,32399	143,24671	2845
7 Aug.	2	GW	1	53,33272	143,21104	822
7 Aug.	2	GW	1	53,34307	143,21734	1569
7 Aug.	2	GW	1	53,37157	143,22216	2787
7 Aug.	2	GW	1	53,34839	143,20787	1142
7 Aug.	2	GW	2	53,37339	143,21342	2332
7 Aug.	2	GW	1	53,37451	143,18817	785
7 Aug.	2	GW	1	53,37957	143,18585	845
7 Aug.	1	GW	1	53,36776	143,19398	895
7 Aug.	1	GW	1	53,35762	143,21432	1845
7 Aug.	1	GW	1	53,39828	143,17646	967
7 Aug.	1	GW	2	53,39923	143,17819	1100
7 Aug.	1	GW	1	53,39871	143,17740	1038
7 Aug.	1	GW	2	53,40694	143,19972	2685
7 Aug.	1	GW	1	53,41684	143,17104	1244
7 Aug.	1	GW	1	53,42693	143,18407	2397
7 Aug.	1	GW	1	53,43919	143,18215	2753
7 Aug.	1	GW	1	53,44203	143,17307	2319
7 Aug.	1	GW	1	53,46353	143,15467	2039
8 Aug.	1	GW	1	53,41162	143,22030	4142
8 Aug.	1	GW	1	53,37017	143,19339	963
8 Aug.	1	GW	1	53,37060	143,19462	1057
8 Aug.	2	GW	1	53,35972	143,19830	880
8 Aug.	2	GW	1	53,36413	143,25030	4346
8 Aug.	2	MW	1	53,34612	143,22241	1993
8 Aug.	2	GW	1	53,35424	143,25185	4126
8 Aug.	2	GW	1	53,33567	143,26034	4067
8 Aug.	2	GW	1	53,32552	143,25144	3201
8 Aug.	2	GW	1	53,32920	143,21923	1236
8 Aug.	2	GW	1	53,30480	143,28319	4633
8 Aug.	2	GW	1	53,29408	143,30503	5812
8 Aug.	2	GW	1	53,29183	143,30256	5593
8 Aug.	2	GW	1	53,28644	143,29585	5026
8 Aug.	2	GW	1	53,30394	143,23362	1385
8 Aug.	2	GW	1	53,30355	143,23270	1316

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8 Aug.	2	GW	1	53,30952	143,21762	507
8 Aug.	2	GW	1	53,30975	143,21837	560
8 Aug.	2	GW	1	53,28836	143,22725	611
8 Aug.	3	GW	2	53,29335	143,22564	620
8 Aug.	3	GW	1	53,36156	143,23648	3384
8 Aug.	3	GW	1	53,31008	143,23023	1345
8 Aug.	3	GW	1	53,29683	143,23726	1458
8 Aug.	3	GW	1	53,30227	143,23658	1534
8 Aug.	3	GW	1	53,31635	143,26701	3883
8 Aug.	3	GW	1	53,30289	143,25414	2694
8 Aug.	3	GW	1	53,29070	143,28196	4229
8 Aug.	3	GW	1	53,29013	143,28274	4264
8 Aug.	3	GW	1	53,28895	143,28427	4333
8 Aug.	3	GW	1	53,28197	143,29136	4596
8 Aug.	3	GW	1	53,27671	143,28893	4288
8 Aug.	3	GW	1	53,28075	143,29967	5103
8 Aug.	3	GW	1	53,26541	143,27711	3210
8 Aug.	3	GW	1	53,25379	143,29079	3829
8 Aug.	3	GW	1	53,25261	143,25953	1755
8 Aug.	3	GW	1	53,24062	143,26919	2098
8 Aug.	3	GW	1	53,24013	143,24433	466
8 Aug.	4	GW	1	53,24835	143,24222	533
8 Aug.	4	GW	1	53,20981	143,25338	305
8 Aug.	4	GW	1	53,20698	143,25440	299
8 Aug.	4	GW	1	53,24537	143,29199	3699
8 Aug.	4	GW	2	53,18312	143,29392	2485
8 Aug.	4	GW	1	53,18187	143,30141	2937
8 Aug.	4	GW	1	53,16813	143,30258	2669
8 Aug.	4	GW	1	53,16359	143,27964	1083
8 Aug.	4	GW	1	53,14496	143,28368	1116
8 Aug.	4	GW	1	53,11435	143,29489	1405
8 Aug.	5	GW	1	53,21105	143,25819	639
8 Aug.	5	GW	1	53,13800	143,28328	990
8 Aug.	5	GW	1	53,13694	143,28583	1124
8 Aug.	5	GW	1	53,09531	143,29503	1174
8 Aug.	5	GW	1	53,09480	143,29329	1053
8 Aug.	5	GW	1	53,09411	143,29063	867
8 Aug.	6	GW	1	53,10285	143,28351	428
8 Aug.	6	GW	1	53,08257	143,29734	1160
8 Aug.	6	GW	1	53,07416	143,29722	1043
8 Aug.	6	GW	2	53,07388	143,29848	1119
8 Aug.	6	GW	1	53,07373	143,29910	1157
8 Aug.	6	GW	1	53,08008	143,30828	1851
8 Aug.	6	GW	1	53,07190	143,30503	1521
8 Aug.	6	GW	2	53,02075	143,31985	1849
8 Aug.	6	GW	1	53,01656	143,30605	876
8 Aug.	7	GW	1	52,99755	143,30767	630
8 Aug.	7	GW	1	53,06475	143,29749	906
8 Aug.	7	GW	1	52,99864	143,33166	2240
8 Aug.	7	GW	1	52,93562	143,33310	1391
8 Aug.	7	GW	1	52,91984	143,32591	605
8 Aug.	7	GW	1	52,92098	143,33216	1038
8 Aug.	8	GW	1	52,91291	143,33459	1090
8 Aug.	8	GW	1	52,91275	143,33548	1148
8 Aug.	8	GW	1	52,89597	143,34122	1501
8 Aug.	8	GW	1	52,89574	143,34162	1529
8 Aug.	8	GW	2	52,89619	143,34082	1472
8 Aug.	8	GW	1	52,88441	143,32416	257
8 Aug.	8	GW	1	52,87482	143,34454	1503
8 Aug.	8	GW	1	52,87105	143,34496	1451
8 Aug.	8	GW	1	52,86597	143,34376	1283
8 Aug.	8	GW	1	52,86182	143,34591	1379
8 Aug.	8	GW	1	52,86548	143,34280	1207
8 Aug.	8	GW	1	52,85940	143,33964	911
8 Aug.	8	GW	2	52,86523	143,33333	586

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8 Aug.	8	GW	1	52,85280	143,34019	847
8 Aug.	8	GW	1	52,86162	143,33134	398
9 Aug.	8	GW	2	52,85541	143,33747	689
9 Aug.	8	GW	1	52,84620	143,34478	1071
9 Aug.	8	GW	1	52,86435	143,33277	521
9 Aug.	8	GW	1	52,85716	143,34348	1121
9 Aug.	8	GW	1	52,86411	143,34382	1252
9 Aug.	8	GW	1	52,87294	143,33252	668
9 Aug.	8	GW	1	52,88234	143,33800	1176
9 Aug.	8	GW	1	52,88798	143,33962	1334
9 Aug.	8	GW	1	52,89275	143,34694	1879
9 Aug.	8	GW	2	52,90517	143,34871	2015
9 Aug.	8	GW	1	52,90945	143,33553	1143
9 Aug.	8	GW	1	52,91069	143,32745	602
9 Aug.	7	GW	1	52,92352	143,32588	682
9 Aug.	7	GW	1	52,92305	143,32292	476
9 Aug.	7	GW	1	52,94508	143,32657	1142
9 Aug.	7	GW	1	52,94027	143,33709	1763
9 Aug.	7	GW	1	52,93991	143,33609	1691
9 Aug.	7	GW	1	52,96889	143,32535	1404
9 Aug.	7	GW	1	52,99243	143,32178	1522
9 Aug.	6	GW	1	53,02443	143,32071	1929
9 Aug.	6	GW	1	53,04591	143,30326	1091
9 Aug.	6	GW	1	53,04355	143,31216	1634
9 Aug.	6	GW	1	53,04615	143,31835	2092
9 Aug.	6	MW	1	53,05857	143,31845	2247
9 Aug.	6	GW	2	53,07000	143,29597	892
9 Aug.	6	GW	2	53,07012	143,29545	862
9 Aug.	6	GW	1	53,07538	143,29869	1165
9 Aug.	6	GW	1	53,08095	143,29233	806
9 Aug.	6	GW	2	53,08769	143,29207	849
9 Aug.	6	GW	2	53,08115	143,28984	645
9 Aug.	5	GW	1	53,09623	143,29118	930
9 Aug.	5	GW	3	53,10229	143,29350	1086
9 Aug.	5	GW	1	53,09646	143,29201	988
9 Aug.	5	GW	1	53,11031	143,28407	627
9 Aug.	5	GW	3	53,11797	143,29093	1198
9 Aug.	5	GW	1	53,11912	143,29653	1588
9 Aug.	5	GW	1	53,12248	143,29562	1589
9 Aug.	5	GW	1	53,15647	143,27034	375
9 Aug.	4	GW	1	53,12992	143,28394	919
9 Aug.	4	GW	1	53,12963	143,28249	819
9 Aug.	4	GW	2	53,13022	143,28538	1017
9 Aug.	4	GW	1	53,12911	143,27956	620
9 Aug.	4	GW	1	53,13976	143,28505	1154
9 Aug.	4	GW	1	53,13405	143,29924	1972
9 Aug.	4	GW	1	53,16418	143,28728	1598
9 Aug.	4	GW	1	53,18103	143,27593	1266
9 Aug.	4	GW	1	53,18920	143,27253	1211
9 Aug.	3	GW	2	53,20032	143,26095	605
9 Aug.	3	GW	1	53,23175	143,27448	2155
9 Aug.	3	GW	1	53,25938	143,23645	415
9 Aug.	3	GW	1	53,26452	143,24031	802
9 Aug.	3	GW	1	53,27162	143,26524	2614
9 Aug.	3	GW	1	53,31877	143,25589	3230
9 Aug.	3	GW	1	53,31846	143,25750	3325
9 Aug.	3	GW	1	53,31814	143,25910	3419
9 Aug.	3	GW	1	53,31933	143,25264	3037
9 Aug.	3	GW	1	53,32017	143,20745	246
9 Aug.	2	GW	1	53,30735	143,22153	722
9 Aug.	2	GW	1	53,28969	143,26395	3043
9 Aug.	2	GW	1	53,29330	143,24461	1855
9 Aug.	2	GW	1	53,32771	143,21502	929
9 Aug.	2	GW	1	53,32860	143,23631	2345
9 Aug.	2	GW	1	53,34485	143,24661	3482

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9 Aug.	2	GW	1	53,33882	143,26954	4752
9 Aug.	2	GW	1	53,34111	143,26912	4801
9 Aug.	2	GW	1	53,34111	143,22091	1726
9 Aug.	2	GW	1	53,33763	143,20630	681
9 Aug.	2	GW	1	53,34713	143,20032	621
9 Aug.	2	GW	1	53,36171	143,20321	1254
9 Aug.	2	GW	1	53,34239	143,19794	313
9 Aug.	2	GW	1	53,36406	143,20213	1256
9 Aug.	2	GW	1	53,38530	143,18003	711
9 Aug.	1	GW	1	53,32165	143,22962	1695
9 Aug.	1	GW	1	53,35506	143,20350	1074
9 Aug.	1	GW	1	53,38984	143,18017	876
9 Aug.	1	GW	1	53,40044	143,17086	652
9 Aug.	1	GW	1	53,37503	143,24175	4146
9 Aug.	1	GW	1	53,40703	143,17525	1108
9 Aug.	1	GW	1	53,43987	143,14325	373
10 Aug.	1	HP	1	53,41883	143,18238	2024
10 Aug.	2	GW	2	53,34438	143,20292	693
10 Aug.	2	MW	1	53,34568	143,23246	2617
10 Aug.	2	GW	1	53,34015	143,22054	1670
10 Aug.	2	GW	1	53,33920	143,21988	1594
10 Aug.	2	GW	1	53,31514	143,22386	1065
10 Aug.	3	GW	2	53,29276	143,22738	720
10 Aug.	3	GW	2	53,29668	143,22935	937
10 Aug.	3	GW	1	53,26569	143,23962	792
10 Aug.	3	GW	1	53,26255	143,24363	964
10 Aug.	3	GW	1	53,25773	143,26775	2396
10 Aug.	3	GW	1	53,26010	143,24088	721
10 Aug.	3	GW	1	53,24627	143,29092	3643
10 Aug.	3	GW	1	53,25571	143,24245	702
10 Aug.	3	GW	1	53,25363	143,24463	797
10 Aug.	3	GW	1	53,22175	143,27554	1973
10 Aug.	3	GW	1	53,24268	143,24245	391
10 Aug.	4	GW	1	53,21641	143,24744	25
10 Aug.	4	GW	1	53,21649	143,24851	97
10 Aug.	4	GW	1	53,24689	143,25237	1163
10 Aug.	4	GW	2	53,20940	143,27820	1911
10 Aug.	4	GW	1	53,15900	143,27707	858
10 Aug.	4	GW	1	53,15726	143,27143	460
10 Aug.	4	GW	1	53,13909	143,28141	899
10 Aug.	4	GW	2	53,15534	143,27361	574
10 Aug.	5	GW	2	53,13867	143,27764	643
10 Aug.	5	GW	1	53,14649	143,28552	1272
10 Aug.	5	GW	1	53,13297	143,28139	772
10 Aug.	5	GW	2	53,12626	143,31488	2936
10 Aug.	5	GW	1	53,11665	143,28770	962
10 Aug.	6	GW	1	53,06974	143,28776	352
10 Aug.	6	GW	1	53,06631	143,30708	1560
10 Aug.	6	HP	1	53,05096	143,29312	484
10 Aug.	6	GW	1	53,03428	143,31355	1588
10 Aug.	6	GW	1	53,03066	143,31812	1841
10 Aug.	7	GW	1	52,99469	143,30400	338
10 Aug.	7	GW	1	52,96090	143,32344	1198
10 Aug.	7	GW	1	52,94784	143,32236	932
10 Aug.	7	GW	1	52,94277	143,32407	939
10 Aug.	8	GW	1	52,89997	143,32779	605
10 Aug.	8	GW	2	52,89579	143,32852	651
10 Aug.	8	GW	1	52,89989	143,32830	639
10 Aug.	8	GW	1	52,89743	143,33694	1204
10 Aug.	8	GW	1	52,87200	143,33711	951
11 Aug.	8	GW	1	52,84514	143,34303	956
11 Aug.	8	GW	1	52,82535	143,38036	3022
11 Aug.	8	MW	1	52,86759	143,35046	1766
11 Aug.	8	GW	1	52,88003	143,34797	1822
11 Aug.	8	GW	1	52,92129	143,33031	919

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11 Aug.	8	GW	2	52,88655	143,33877	1259
11 Aug.	8	GW	1	52,88512	143,33950	1292
11 Aug.	7	GW	1	52,94743	143,31553	473
11 Aug.	7	GW	1	52,95753	143,33175	1707
11 Aug.	7	KW	3	52,95871	143,35039	2966
11 Aug.	7	GW	2	52,98410	143,31680	1068
11 Aug.	6	GW	1	53,06004	143,31332	1912
11 Aug.	6	GW	1	53,05810	143,30411	1285
11 Aug.	6	GW	1	53,06093	143,31262	1870
11 Aug.	6	GW	1	53,07629	143,29395	864
11 Aug.	6	GW	1	53,07638	143,29325	819
11 Aug.	5	GW	1	53,09609	143,29029	869
11 Aug.	5	GW	1	53,10121	143,29007	858
11 Aug.	5	GW	1	53,08090	143,31209	2114
11 Aug.	5	GW	2	53,10311	143,29539	1219
11 Aug.	5	GW	1	53,13504	143,28703	1165
11 Aug.	5	GW	2	53,14216	143,29614	1911
11 Aug.	5	GW	1	53,13830	143,27875	705
11 Aug.	5	GW	1	53,17484	143,28664	1804
11 Aug.	4	GW	1	53,14607	143,28279	1083
11 Aug.	4	GW	1	53,16994	143,26784	463
11 Aug.	4	GW	2	53,16319	143,32272	3943
11 Aug.	4	GW	1	53,16390	143,32319	3982
11 Aug.	4	GW	1	53,18060	143,31045	3493
11 Aug.	4	MW	1	53,18990	143,32605	4758
11 Aug.	4	GW	1	53,20343	143,30361	3475
11 Aug.	4	GW	1	53,20348	143,29328	2789
11 Aug.	4	GW	1	53,20264	143,26848	1132
11 Aug.	4	GW	1	53,24710	143,25826	1547
11 Aug.	3	GW	1	53,22528	143,28412	2613
11 Aug.	3	GW	2	53,27820	143,30910	5629
11 Aug.	3	GW	2	53,27990	143,30819	5620
11 Aug.	3	GW	1	53,27020	143,23779	816
11 Aug.	3	GW	2	53,29819	143,29001	4928
11 Aug.	3	GW	1	53,27888	143,25320	2066
11 Aug.	3	GW	1	53,27073	143,23677	769
11 Aug.	3	GW	1	53,28417	143,24737	1816
11 Aug.	3	GW	1	53,31409	143,27266	4185
11 Aug.	3	GW	1	53,27794	143,23563	935
11 Aug.	3	GW	1	53,27328	143,23014	407
11 Aug.	3	GW	1	53,31357	143,20974	125
11 Aug.	2	GW	1	53,28115	143,24157	1386
11 Aug.	2	GW	1	53,28487	143,25225	2151
11 Aug.	2	GW	1	53,31254	143,21942	704
11 Aug.	2	GW	1	53,29771	143,27554	3974
11 Aug.	2	GW	1	53,32489	143,21780	1060
11 Aug.	2	GW	1	53,32774	143,22235	1411
11 Aug.	2	GW	1	53,32832	143,23293	2117
11 Aug.	2	GW	1	53,35620	143,26015	4718
11 Aug.	2	GW	1	53,33980	143,20466	654
11 Aug.	2	GW	1	53,34084	143,20429	667
18 Aug.	1	GW	1	53,43408	143,15422	821
18 Aug.	1	MW	1	53,40684	143,20530	3043
18 Aug.	1	GW	1	53,39452	143,21676	3347
18 Aug.	1	GW	1	53,38029	143,21894	2931
18 Aug.	1	GW	1	53,36738	143,23328	3351
18 Aug.	1	GW	1	53,37118	143,20271	1580
18 Aug.	1	GW	1	53,35649	143,21095	1594
18 Aug.	1	GW	1	53,32134	143,23327	1905
18 Aug.	2	GW	1	53,34631	143,20398	820
18 Aug.	2	MW	1	53,35938	143,27303	5642
18 Aug.	2	GW	1	53,33899	143,21597	1340
18 Aug.	2	GW	1	53,33751	143,25568	3827
18 Aug.	2	GW	1	53,32881	143,25486	3546
18 Aug.	2	GW	1	53,31946	143,25722	3335

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18 Aug.	2	GW	1	53,31633	143,25469	3084
18 Aug.	2	GW	1	53,31292	143,23559	1756
18 Aug.	2	GW	1	53,30060	143,22906	1005
18 Aug.	2	GW	2	53,29687	143,23566	1354
18 Aug.	2	GW	3	53,29531	143,23109	1021
18 Aug.	2	GW	1	53,22586	143,28036	2386
18 Aug.	2	GW	1	53,29960	143,22599	782
18 Aug.	3	GW	2	53,29388	143,22384	515
18 Aug.	3	GW	2	53,29391	143,22472	573
18 Aug.	3	GW	1	53,29393	143,22561	632
18 Aug.	3	GW	1	53,27181	143,22821	237
18 Aug.	3	MW	1	53,31682	143,26925	4040
18 Aug.	3	GW	1	53,27759	143,25274	1986
18 Aug.	3	GW	3	53,30275	143,30078	5737
18 Aug.	3	GW	1	53,26889	143,24446	1197
18 Aug.	3	GW	1	53,26391	143,25217	1554
18 Aug.	3	GW	1	53,26506	143,31505	5655
18 Aug.	3	GW	1	53,26343	143,23330	319
18 Aug.	3	GW	4	53,26280	143,24626	1141
18 Aug.	3	GW	1	53,26209	143,28494	3625
18 Aug.	3	GW	1	53,26134	143,24882	1269
18 Aug.	3	GW	1	53,23020	143,26431	1457
18 Aug.	3	GW	2	53,23695	143,25249	912
18 Aug.	3	GW	1	53,23722	143,25326	970
18 Aug.	4	GW	1	53,20770	143,25273	207
18 Aug.	4	GW	1	53,23444	143,24820	555
18 Aug.	4	GW	1	53,23454	143,26101	1385
18 Aug.	5	GW	2	53,12764	143,29603	1704
18 Aug.	6	GW	1	53,07373	143,30131	1302
18 Aug.	6	GW	1	53,07304	143,31361	2105
18 Aug.	6	GW	1	53,02917	143,32040	1972
18 Aug.	7	GW	1	53,01699	143,31489	1468
18 Aug.	7	GW	1	52,98938	143,32248	1522
18 Aug.	7	MW	1	52,97262	143,35234	3253
18 Aug.	7	GW	1	52,94385	143,33221	1498
18 Aug.	7	GW	1	52,94323	143,33042	1370
18 Aug.	7	GW	1	52,94417	143,33309	1562
18 Aug.	8	GW	3	52,91353	143,33103	863
18 Aug.	8	GW	1	52,90601	143,33671	1212
18 Aug.	8	GW	1	52,86671	143,33756	909
18 Aug.	8	GW	2	52,84433	143,35278	1618
18 Aug.	8	GW	1	52,84366	143,35057	1480
18 Aug.	8	GW	1	52,84334	143,34945	1413
18 Aug.	8	GW	1	52,84399	143,35168	1549
18 Aug.	8	GW	1	52,81536	143,36395	2451
18 Aug.	8	GW	1	52,84275	143,34717	1271
19 Aug.	8	GW	1	52,85319	143,33894	779
19 Aug.	8	GW	1	52,81946	143,37446	2830
19 Aug.	8	GW	1	52,87732	143,35412	2189
19 Aug.	8	GW	1	52,90008	143,32784	608
19 Aug.	7	GW	1	52,95425	143,32983	1534
19 Aug.	7	GW	1	52,95643	143,33370	1822
19 Aug.	7	GW	1	52,95815	143,33618	2010
19 Aug.	7	GW	1	52,97242	143,33681	2214
19 Aug.	6	GW	1	53,00551	143,31577	1298
19 Aug.	6	GW	1	53,01895	143,31518	1526
19 Aug.	6	GW	1	53,04882	143,30292	1118
19 Aug.	6	GW	1	53,07088	143,29973	1161
19 Aug.	6	GW	2	53,07219	143,29418	801
19 Aug.	6	GW	3	53,07247	143,29245	693
19 Aug.	6	GW	2	53,07525	143,29147	684
19 Aug.	5	GW	3	53,10072	143,29611	1264
19 Aug.	5	GW	2	53,09894	143,30618	1945
19 Aug.	5	GW	2	53,10093	143,30983	2182
19 Aug.	5	GW	2	53,13600	143,29145	1471

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19 Aug.	5	GW	1	53,15123	143,30587	2670
19 Aug.	5	GW	4	53,17246	143,31443	3552
19 Aug.	5	GW	1	53,13729	143,27571	479
19 Aug.	5	GW	1	53,17943	143,26892	766
19 Aug.	5	GW	1	53,13841	143,30011	2091
19 Aug.	4	GW	1	53,13755	143,28522	1102
19 Aug.	4	GW	1	53,13853	143,28885	1365
19 Aug.	4	GW	1	53,14394	143,28323	1063
19 Aug.	4	GW	1	53,13062	143,29699	1796
19 Aug.	4	GW	1	53,15262	143,29193	1749
19 Aug.	4	GW	3	53,17102	143,29262	2105
19 Aug.	4	GW	1	53,17272	143,29061	2017
19 Aug.	4	GW	1	53,16762	143,30997	3148
19 Aug.	4	MW	1	53,16989	143,29974	2528
19 Aug.	4	GW	1	53,24448	143,30231	4336
19 Aug.	4	GW	1	53,21317	143,27002	1452
19 Aug.	4	GW	2	53,21860	143,26408	1162
19 Aug.	3	GW	1	53,22765	143,25734	936
19 Aug.	3	GW	1	53,24286	143,25383	1139
19 Aug.	3	GW	1	53,25227	143,25089	1181
19 Aug.	3	GW	1	53,24585	143,28194	3044
19 Aug.	3	GW	1	53,27232	143,29843	4774
19 Aug.	3	GW	1	53,27345	143,28271	3793
19 Aug.	3	GW	2	53,28280	143,24041	1332
19 Aug.	3	GW	1	53,28380	143,23518	1018
19 Aug.	3	GW	1	53,28946	143,22964	790
19 Aug.	3	GW	1	53,32263	143,22415	1387
19 Aug.	3	GW	1	53,30319	143,21813	363
19 Aug.	3	GW	3	53,32181	143,21041	491
19 Aug.	2	GW	2	53,28645	143,22852	670
19 Aug.	2	GW	1	53,29963	143,22728	867
19 Aug.	2	GW	1	53,29870	143,22412	640
19 Aug.	2	GW	1	53,27781	143,23824	1101
19 Aug.	2	GW	2	53,32655	143,22283	1422
19 Aug.	2	GW	1	53,32411	143,22905	1749
19 Aug.	2	GW	3	53,32140	143,23252	1862
19 Aug.	2	GW	1	53,34145	143,20071	460
19 Aug.	2	GW	1	53,35400	143,20167	925
19 Aug.	2	GW	1	53,35411	143,20057	858
19 Aug.	2	GW	1	53,36787	143,19908	1208
19 Aug.	2	GW	1	53,36790	143,19812	1152
19 Aug.	2	GW	1	53,36791	143,19429	921
19 Aug.	2	GW	1	53,36521	143,19531	868
19 Aug.	2	GW	1	53,35779	143,19481	599
19 Aug.	1	GW	1	53,36557	143,18910	497
19 Aug.	1	GW	1	53,36596	143,19046	598
19 Aug.	1	GW	1	53,38499	143,18136	786
19 Aug.	1	GW	1	53,38055	143,18343	740
19 Aug.	1	GW	1	53,38088	143,18436	812
19 Aug.	1	GW	1	53,38799	143,18823	1317
20 Aug.	1	GW	1	53,42738	143,15868	817
20 Aug.	1	GW	1	53,37217	143,23863	3847
20 Aug.	1	GW	1	53,35831	143,21354	1816
20 Aug.	1	GW	1	53,35537	143,20539	1204
20 Aug.	1	GW	1	53,35483	143,20371	1080
20 Aug.	1	GW	1	53,35431	143,20201	956
20 Aug.	1	GW	1	53,35380	143,20030	831
20 Aug.	1	GW	2	53,35284	143,19684	580
20 Aug.	2	GW	1	53,34598	143,19859	470
20 Aug.	2	GW	2	53,34998	143,20714	1148
20 Aug.	2	GW	1	53,33978	143,20669	782
20 Aug.	2	GW	1	53,33971	143,20826	878
20 Aug.	2	GW	1	53,33378	143,25522	3686
20 Aug.	2	GW	1	53,32419	143,29761	6072
20 Aug.	2	GW	2	53,32046	143,26653	3964

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20 Aug.	2	GW	1	53,32119	143,26695	4012
20 Aug.	2	GW	5	53,31755	143,26465	3761
20 Aug.	2	GW	1	53,30225	143,28336	4589
20 Aug.	2	GW	1	53,32787	143,21780	1114
20 Aug.	2	GW	1	53,30316	143,28431	4671
20 Aug.	2	GW	1	53,30134	143,28238	4505
20 Aug.	2	GW	2	53,30692	143,28783	4984
20 Aug.	2	GW	2	53,32571	143,21535	915
20 Aug.	2	GW	2	53,32694	143,21063	626
20 Aug.	2	GW	1	53,32402	143,21264	703
20 Aug.	3	GW	1	53,30517	143,20881	0
20 Aug.	3	GW	1	53,31026	143,21652	452
20 Aug.	3	GW	1	53,31070	143,22751	1179
20 Aug.	3	GW	1	53,28360	143,23510	1007
20 Aug.	3	GW	2	53,30760	143,29191	5265
20 Aug.	3	GW	1	53,30156	143,28710	4818
20 Aug.	3	GW	1	53,28635	143,27006	3348
20 Aug.	3	GW	1	53,28522	143,31839	6433
20 Aug.	3	GW	1	53,28221	143,29219	4656
20 Aug.	3	GW	2	53,28804	143,31636	6383
20 Aug.	3	GW	2	53,27804	143,29511	4725
20 Aug.	3	GW	1	53,25830	143,25051	1294
20 Aug.	3	GW	1	53,25803	143,24825	1141
20 Aug.	3	GW	1	53,25626	143,24138	648
20 Aug.	3	GW	1	53,24984	143,24821	955
20 Aug.	3	GW	1	53,25492	143,24036	545
20 Aug.	3	GW	1	53,24418	143,25593	1303
20 Aug.	3	GW	1	53,24616	143,24875	910
20 Aug.	3	GW	2	53,24080	143,24795	716
20 Aug.	3	GW	1	53,20965	143,26675	1169
20 Aug.	3	GW	1	53,20886	143,26358	942
20 Aug.	3	GW	1	53,12889	143,32151	3415
20 Aug.	3	GW	1	53,23980	143,24457	477
20 Aug.	3	GW	1	53,17114	143,28874	1859
20 Aug.	3	GW	2	53,12448	143,30154	2022
20 Aug.	4	GW	1	53,24942	143,24201	540
20 Aug.	4	GW	1	53,23413	143,24984	649
20 Aug.	4	GW	2	53,21871	143,25608	637
20 Aug.	4	GW	1	53,21042	143,25423	368
20 Aug.	4	GW	2	53,21871	143,25495	562
20 Aug.	4	GW	1	53,18689	143,27333	1225
20 Aug.	4	GW	1	53,18778	143,27221	1165
20 Aug.	4	GW	1	53,16613	143,34430	5412
20 Aug.	4	GW	2	53,15969	143,30281	2576
20 Aug.	4	GW	1	53,14362	143,30228	2328
20 Aug.	4	GW	1	53,14267	143,30016	2182
20 Aug.	4	GW	1	53,14049	143,29463	1794
20 Aug.	4	GW	1	53,12875	143,28965	1290
20 Aug.	4	GW	2	53,12807	143,28667	1085
20 Aug.	4	GW	1	53,11290	143,29358	1304
20 Aug.	5	GW	1	53,16649	143,26436	150
20 Aug.	5	GW	1	53,17972	143,27051	876
20 Aug.	5	GW	2	53,14053	143,29206	1629
20 Aug.	5	GW	1	53,16739	143,32786	4334
20 Aug.	5	MW	1	53,11734	143,29834	1678
20 Aug.	5	GW	1	53,11029	143,31206	2473
20 Aug.	5	GW	1	53,10379	143,31487	2525
20 Aug.	5	GW	1	53,10928	143,29186	1121
20 Aug.	5	GW	1	53,10945	143,29760	1503
20 Aug.	6	GW	1	53,08365	143,29683	1122
20 Aug.	6	GW	1	53,08322	143,29953	1305
20 Aug.	6	GW	1	53,08599	143,31847	2583
20 Aug.	6	GW	1	53,06815	143,30240	1266
20 Aug.	6	GW	1	53,03031	143,31112	1370
20 Aug.	7	GW	1	53,01016	143,31177	1143

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20 Aug.	7	GW	1	53,00463	143,31300	1098
20 Aug.	7	GW	1	52,93979	143,32044	649
20 Aug.	8	GW	1	52,90184	143,32564	460
20 Aug.	8	GW	1	52,85281	143,34648	1263
20 Aug.	8	GW	1	52,84254	143,35434	1631
21 Aug.	8	GW	1	52,84344	143,33667	588
21 Aug.	8	GW	1	52,84382	143,33890	711
21 Aug.	8	GW	1	52,84497	143,34437	1048
21 Aug.	8	GW	1	52,84609	143,34862	1330
21 Aug.	8	GW	2	52,85694	143,34566	1261
21 Aug.	8	GW	1	52,89879	143,34849	1987
21 Aug.	7	GW	1	52,92239	143,32641	687
21 Aug.	7	GW	1	53,00752	143,31204	1094
21 Aug.	7	GW	1	53,00716	143,31491	1276
21 Aug.	7	GW	2	53,00260	143,31057	895
21 Aug.	6	GW	1	53,02596	143,30683	1024
21 Aug.	6	GW	1	53,09525	143,32287	3019
21 Aug.	6	GW	1	53,08583	143,30962	1992
21 Aug.	6	GW	1	53,07983	143,30418	1575
21 Aug.	6	GW	1	53,08042	143,30178	1423
21 Aug.	6	GW	2	53,08778	143,30063	1420
21 Aug.	6	GW	1	53,13212	143,29679	1794
21 Aug.	6	GW	1	53,10106	143,28779	706
21 Aug.	6	GW	1	53,08225	143,28223	149
21 Aug.	6	GW	1	53,10109	143,28214	328
21 Aug.	5	GW	1	53,10789	143,29137	1062
21 Aug.	5	GW	1	53,10351	143,29882	1452
21 Aug.	5	GW	1	53,10159	143,30741	2018
21 Aug.	5	GW	1	53,11028	143,30892	2266
21 Aug.	5	GW	1	53,11936	143,28333	721
21 Aug.	5	GW	1	53,10866	143,31672	2739
21 Aug.	5	GW	1	53,12268	143,28766	1072
21 Aug.	5	GW	1	53,12964	143,31540	3015
21 Aug.	5	GW	1	53,14100	143,30005	2159
21 Aug.	5	GW	1	53,14382	143,28699	1310
21 Aug.	5	GW	1	53,17714	143,26136	211
21 Aug.	4	GW	2	53,15441	143,27343	548
21 Aug.	4	GW	1	53,14797	143,30811	2784
21 Aug.	4	GW	1	53,15536	143,30531	2674
21 Aug.	4	GW	1	53,18752	143,28203	1810
21 Aug.	4	GW	2	53,21327	143,26096	864
21 Aug.	4	GW	1	53,21332	143,25998	803
21 Aug.	4	GW	1	53,21798	143,25832	771
21 Aug.	3	GW	1	53,28156	143,25772	2461
21 Aug.	3	GW	1	53,29279	143,27173	3617
21 Aug.	3	GW	1	53,26854	143,23517	592
21 Aug.	3	GW	1	53,30132	143,24683	2181
21 Aug.	3	GW	1	53,29370	143,22739	742
23 Aug.	1	GW	2	53,37810	143,18714	864
23 Aug.	1	GW	1	53,37775	143,18612	787
23 Aug.	2	GW	1	53,36365	143,19618	867
23 Aug.	2	GW	1	53,35262	143,20394	1026
23 Aug.	2	GW	1	53,35099	143,20319	927
23 Aug.	2	GW	1	53,34297	143,20703	912
23 Aug.	2	GW	1	53,33548	143,21310	1039
23 Aug.	2	GW	1	53,32835	143,21722	1084
23 Aug.	2	GW	1	53,32567	143,21544	921
23 Aug.	2	GW	1	53,31994	143,22126	1107
23 Aug.	2	GW	2	53,31436	143,21754	638
23 Aug.	2	GW	1	53,31260	143,22523	1080
23 Aug.	2	GW	1	53,32328	143,21313	716
23 Aug.	2	GW	2	53,28159	143,24119	1367
23 Aug.	2	GW	3	53,29965	143,21970	372
23 Aug.	2	GW	4	53,28831	143,22570	509
23 Aug.	3	GW	2	53,28846	143,22222	283

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23 Aug.	3	GW	1	53,31429	143,21711	609
23 Aug.	3	GW	1	53,29943	143,22428	666
23 Aug.	3	GW	1	53,31463	143,22456	1094
23 Aug.	3	GW	5	53,27252	143,23046	400
23 Aug.	3	GW	1	53,28816	143,23539	1142
23 Aug.	3	KW	1	53,27940	143,26562	2865
23 Aug.	3	GW	1	53,26673	143,23638	613
23 Aug.	3	GW	1	53,28114	143,27495	3517
23 Aug.	3	GW	2	53,24810	143,28692	3417
23 Aug.	3	GW	1	53,22941	143,30479	4064
23 Aug.	3	GW	1	53,22633	143,31832	4875
23 Aug.	3	GW	2	53,24304	143,25555	1255
23 Aug.	3	GW	2	53,24218	143,25372	1120
23 Aug.	3	GW	1	53,22325	143,26558	1358
23 Aug.	3	GW	1	53,22247	143,26321	1183
23 Aug.	3	GW	1	53,22210	143,26201	1095
23 Aug.	3	GW	1	53,21939	143,27100	1633
23 Aug.	3	GW	1	53,23368	143,25336	866
23 Aug.	3	GW	2	53,20136	143,26444	849
23 Aug.	3	GW	1	53,20306	143,27159	1345
23 Aug.	3	GW	1	53,20403	143,27509	1592
23 Aug.	3	GW	1	53,20261	143,26982	1221
23 Aug.	3	GW	1	53,20061	143,26080	598
23 Aug.	4	GW	2	53,20663	143,25600	399
23 Aug.	4	GW	1	53,20431	143,25526	306
23 Aug.	4	GW	1	53,20234	143,25795	433
23 Aug.	4	GW	1	53,20334	143,26734	1070
23 Aug.	4	GW	1	53,18769	143,26336	579
23 Aug.	4	GW	1	53,19340	143,28253	1941
23 Aug.	4	GW	2	53,18920	143,27805	1575
23 Aug.	4	GW	1	53,18148	143,27615	1295
23 Aug.	4	GW	3	53,17904	143,27227	970
23 Aug.	4	GW	1	53,17719	143,27600	1165
23 Aug.	4	GW	1	53,17765	143,26959	760
23 Aug.	4	GW	1	53,17450	143,27659	1137
23 Aug.	4	GW	1	53,17031	143,28038	1293
23 Aug.	4	GW	1	53,17238	143,27054	694
23 Aug.	4	GW	2	53,16881	143,26925	531
23 Aug.	5	GW	1	53,16455	143,26230	0
23 Aug.	5	GW	1	53,15269	143,26870	208
23 Aug.	5	GW	1	53,14916	143,26958	233
23 Aug.	5	GW	1	53,15262	143,27353	527
23 Aug.	5	GW	1	53,15743	143,27508	704
23 Aug.	6	GW	1	53,05347	143,29894	896
23 Aug.	6	GW	1	53,03697	143,30603	1140
23 Aug.	7	GW	2	52,98070	143,32304	1420
23 Aug.	7	GW	1	52,94970	143,31677	597
23 Aug.	8	GW	1	52,89871	143,33571	1128
23 Aug.	8	GW	1	52,88078	143,35136	2059
23 Aug.	8	GW	1	52,85442	143,34714	1331
23 Aug.	8	GW	1	52,85360	143,34470	1164
23 Aug.	8	GW	1	52,84284	143,34983	1408
25 Aug.	1	GW	1	53,42578	143,15290	395
25 Aug.	1	HP	2	53,41275	143,15924	346
25 Aug.	1	GW	1	53,41103	143,16794	806
25 Aug.	1	GW	1	53,37015	143,19341	964
25 Aug.	1	GW	1	53,37683	143,18429	636
25 Aug.	1	GW	1	53,37651	143,18324	558
25 Aug.	1	GW	2	53,37561	143,18003	323
25 Aug.	1	GW	2	53,36719	143,18312	207
25 Aug.	1	GW	1	53,38542	143,17570	437
25 Aug.	1	GW	1	53,37506	143,17786	166
25 Aug.	2	GW	1	53,39183	143,16376	0
25 Aug.	2	GW	1	53,36079	143,18626	139
25 Aug.	2	GW	1	53,36057	143,18477	37

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25 Aug.	2	GW	2	53,34842	143,19452	292
25 Aug.	2	GW	1	53,35935	143,19046	366
25 Aug.	2	GW	2	53,35267	143,20341	995
25 Aug.	2	GW	2	53,34864	143,20429	926
25 Aug.	2	GW	2	53,34353	143,20114	553
25 Aug.	2	GW	1	53,33601	143,20781	719
25 Aug.	2	GW	1	53,33514	143,20789	696
25 Aug.	2	GW	1	53,32863	143,22414	1544
25 Aug.	2	GW	1	53,31952	143,25416	3140
25 Aug.	2	GW	1	53,32388	143,21407	794
25 Aug.	2	GW	1	53,30968	143,22559	1033
25 Aug.	2	GW	1	53,28788	143,22285	313
25 Aug.	2	GW	1	53,30280	143,21437	109
25 Aug.	2	GW	1	53,28817	143,22423	409
25 Aug.	2	GW	1	53,26240	143,23498	400
25 Aug.	2	GW	1	53,26200	143,23285	251
25 Aug.	3	GW	2	53,33904	143,19858	242
25 Aug.	3	GW	1	53,31332	143,20983	120
25 Aug.	3	GW	2	53,32807	143,20861	521
25 Aug.	3	GW	1	53,28602	143,22203	235
25 Aug.	3	GW	2	53,26587	143,23596	562
25 Aug.	3	GW	1	53,25658	143,24686	1011
25 Aug.	3	GW	1	53,25352	143,25347	1376
25 Aug.	3	GW	1	53,25634	143,24172	672
25 Aug.	3	GW	2	53,21108	143,26570	1138
25 Aug.	3	GW	1	53,22103	143,25691	735
25 Aug.	3	GW	2	53,22073	143,25566	646
25 Aug.	3	GW	1	53,21235	143,27023	1453
25 Aug.	3	GW	1	53,21551	143,25595	578
25 Aug.	4	GW	2	53,23161	143,24859	510
25 Aug.	4	GW	1	53,21650	143,26363	1097
25 Aug.	4	GW	4	53,19711	143,26322	717
25 Aug.	4	GW	1	53,21966	143,28314	2436
25 Aug.	4	GW	1	53,21214	143,30342	3623
25 Aug.	4	GW	1	53,19255	143,28272	1939
25 Aug.	4	GW	1	53,18502	143,27375	1221
25 Aug.	4	GW	2	53,18659	143,28361	1899
25 Aug.	4	GW	1	53,18172	143,28575	1917
25 Aug.	4	GW	1	53,11575	143,29197	1229
25 Aug.	5	GW	1	53,16356	143,26702	243
25 Aug.	5	GW	1	53,16359	143,26814	318
25 Aug.	5	GW	1	53,17604	143,27048	776
25 Aug.	5	GW	1	53,16355	143,27376	691
25 Aug.	5	GW	1	53,15619	143,27765	855
25 Aug.	5	GW	1	53,13255	143,29051	1378
25 Aug.	5	GW	1	53,09281	143,30592	1855
25 Aug.	5	GW	1	53,10122	143,29093	916
25 Aug.	5	GW	1	53,09728	143,29543	1224
25 Aug.	5	GW	1	53,09042	143,29913	1363
25 Aug.	6	GW	2	53,06329	143,30346	1286
25 Aug.	6	GW	2	53,06278	143,30762	1557
25 Aug.	6	GW	1	53,06254	143,30792	1574
25 Aug.	6	GW	1	53,05655	143,31251	1832
25 Aug.	6	GW	1	53,05597	143,31273	1841
25 Aug.	6	GW	2	53,03705	143,31001	1403
25 Aug.	6	GW	1	53,03463	143,30518	1039
25 Aug.	6	GW	2	53,02618	143,30664	1015
25 Aug.	6	GW	1	53,02532	143,30354	797
25 Aug.	7	GW	1	53,01548	143,30716	928
25 Aug.	7	HP	2	52,97960	143,30446	169
25 Aug.	7	GW	1	52,99908	143,30951	783
25 Aug.	7	GW	1	52,99649	143,32184	1552
25 Aug.	7	GW	1	52,99689	143,32055	1473
25 Aug.	7	GW	1	52,97947	143,32458	1502
25 Aug.	7	HP	2	52,97059	143,32099	1135

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25 Aug.	7	GW	1	52,95341	143,32530	1221
25 Aug.	7	GW	1	52,95531	143,32163	1002
25 Aug.	7	GW	1	52,95207	143,32154	952
25 Aug.	8	GW	2	52,91254	143,32616	522
25 Aug.	8	GW	2	52,91220	143,32965	753
25 Aug.	8	GW	1	52,87302	143,34128	1249
25 Aug.	8	GW	1	52,86315	143,33365	562
26 Aug.	8	GW	1	52,81669	143,36528	2439
26 Aug.	8	GW	1	52,86143	143,34364	1220
26 Aug.	8	GW	3	52,87841	143,33883	1190
26 Aug.	8	GW	1	52,87797	143,34952	1899
26 Aug.	8	GW	1	52,88145	143,34166	1417
26 Aug.	8	GW	2	52,88417	143,34373	1571
26 Aug.	8	GW	1	52,89217	143,34109	1484
26 Aug.	8	GW	1	52,89948	143,33032	772
26 Aug.	8	GW	1	52,90201	143,33252	923
26 Aug.	8	GW	1	52,90683	143,32862	672
26 Aug.	7	GW	2	52,94189	143,32037	680
26 Aug.	7	GW	4	52,93580	143,32892	1127
26 Aug.	7	GW	1	52,96308	143,32668	1442
26 Aug.	7	GW	1	52,99498	143,31752	1245
26 Aug.	7	GW	1	52,98314	143,30552	303
26 Aug.	7	GW	1	53,00317	143,30902	805
26 Aug.	7	GW	1	53,01592	143,30721	941
26 Aug.	6	GW	1	53,02045	143,31382	1443
26 Aug.	6	GW	1	53,00916	143,32091	1713
26 Aug.	6	GW	1	53,03401	143,30434	973
26 Aug.	6	GW	1	53,04693	143,30322	1108
26 Aug.	6	GW	1	53,04557	143,30592	1260
26 Aug.	6	GW	2	53,07283	143,29780	1052
26 Aug.	6	GW	1	53,07255	143,29897	1125
26 Aug.	6	GW	1	53,07086	143,29471	826
26 Aug.	6	GW	1	53,07355	143,29418	829
26 Aug.	5	HP	2	53,12936	143,27421	265
26 Aug.	5	GW	1	53,20853	143,27072	1403
26 Aug.	4	GW	1	53,19377	143,28864	2351
26 Aug.	4	GW	1	53,20187	143,27177	1341
26 Aug.	4	GW	1	53,20042	143,26931	1161
26 Aug.	4	GW	1	53,20479	143,26966	1256
26 Aug.	4	GW	1	53,20518	143,26744	1121
26 Aug.	4	GW	1	53,21681	143,25824	743
26 Aug.	4	GW	1	53,20888	143,25687	508
26 Aug.	3	GW	1	53,22860	143,25528	834
26 Aug.	3	GW	1	53,23385	143,25321	859
26 Aug.	3	GW	1	53,25861	143,23744	458
26 Aug.	3	GW	2	53,28242	143,23824	1183
26 Aug.	3	GW	1	53,28470	143,24099	1418
26 Aug.	3	GW	1	53,27978	143,23360	840
26 Aug.	3	GW	1	53,29930	143,22743	869
26 Aug.	3	GW	1	53,29127	143,22575	578
26 Aug.	3	GW	1	53,30541	143,22380	789
26 Aug.	3	GW	2	53,31407	143,21715	603
26 Aug.	3	GW	1	53,32812	143,20859	521
26 Aug.	3	GW	1	53,30508	143,21770	391
26 Aug.	3	GW	1	53,32791	143,20671	395
26 Aug.	2	GW	1	53,31983	143,21187	512
26 Aug.	2	GW	1	53,30879	143,22330	866
26 Aug.	2	GW	1	53,31380	143,21561	496
26 Aug.	2	GW	1	53,32113	143,22011	1078
26 Aug.	2	GW	1	53,32498	143,21288	739
26 Aug.	2	GW	1	53,31893	143,23048	1630
26 Aug.	2	GW	2	53,32731	143,21097	655
26 Aug.	2	GW	1	53,32761	143,21323	809
26 Aug.	2	GW	1	53,35333	143,32022	8443
26 Aug.	2	GW	1	53,34230	143,21196	1202

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26 Aug.	2	GW	1	53,34209	143,20990	1065
26 Aug.	2	GW	1	53,34307	143,19672	255
26 Aug.	2	GW	2	53,37200	143,17973	163
26 Aug.	1	GW	1	53,38154	143,17785	443
27 Aug.	1	HP	1	53,41375	143,15835	333
27 Aug.	1	GW	1	53,41690	143,18544	2132
27 Aug.	1	GW	2	53,39848	143,18868	1768
27 Aug.	1	GW	1	53,33031	143,25576	3654
27 Aug.	2	GW	1	53,37426	143,18822	779
27 Aug.	2	GW	1	53,36428	143,20304	1322
27 Aug.	2	GW	1	53,33120	143,22657	1766
27 Aug.	2	GW	1	53,32322	143,21801	1021
27 Aug.	2	GW	2	53,31226	143,22676	1169
27 Aug.	2	GW	1	53,29582	143,23064	1003
27 Aug.	2	GW	1	53,29513	143,22831	836
27 Aug.	3	GW	1	53,32859	143,20253	156
27 Aug.	3	GW	2	53,31021	143,22067	720
27 Aug.	3	GW	1	53,29353	143,22563	624
27 Aug.	3	GW	1	53,32174	143,22419	1358
27 Aug.	3	GW	1	53,36189	143,23940	3580
27 Aug.	3	GW	1	53,31400	143,24707	2529
27 Aug.	3	GW	2	53,28000	143,23471	917
27 Aug.	3	GW	1	53,27795	143,23156	671
27 Aug.	3	GW	1	53,24828	143,24051	419
27 Aug.	3	GW	2	53,22343	143,25252	518
27 Aug.	4	GW	2	53,28552	143,23800	1252
27 Aug.	4	GW	1	53,28531	143,23492	1048
27 Aug.	4	GW	1	53,21221	143,26761	1278
27 Aug.	4	GW	1	53,20541	143,26917	1239
27 Aug.	4	GW	1	53,20024	143,26328	758
27 Aug.	4	GW	1	53,20567	143,26766	1147
27 Aug.	4	GW	4	53,19074	143,26457	710
27 Aug.	4	GW	2	53,22012	143,31304	4420
27 Aug.	4	GW	1	53,17905	143,27923	1422
27 Aug.	4	GW	1	53,14605	143,32432	3820
27 Aug.	4	GW	1	53,14345	143,29765	2017
27 Aug.	5	GW	1	53,17677	143,27049	795
27 Aug.	5	GW	1	53,17674	143,26747	599
27 Aug.	5	GW	1	53,17623	143,28250	1562
27 Aug.	5	GW	1	53,13274	143,29579	1732
27 Aug.	5	GW	2	53,12762	143,32325	3515
27 Aug.	6	GW	1	53,10035	143,28496	519
27 Aug.	6	GW	1	53,05461	143,29656	748
27 Aug.	6	GW	1	53,04482	143,30473	1167
27 Aug.	6	GW	1	53,04142	143,31057	1488
27 Aug.	6	GW	2	53,04082	143,30188	903
27 Aug.	7	GW	1	53,00747	143,30811	833
27 Aug.	7	GW	1	53,00732	143,31002	957
27 Aug.	7	GW	3	52,96053	143,32563	1338
27 Aug.	7	GW	1	52,95609	143,31479	556
27 Aug.	7	GW	1	52,93505	143,31926	483
27 Aug.	7	GW	1	52,92237	143,32320	476
27 Aug.	8	GW	2	52,88680	143,34098	1410
27 Aug.	8	GW	1	52,88657	143,34111	1416
27 Aug.	8	GW	1	52,88635	143,34123	1421
27 Aug.	8	GW	1	52,88566	143,34156	1435
27 Aug.	8	GW	1	52,88333	143,34822	1869
27 Aug.	8	GW	1	52,86455	143,34586	1394
27 Aug.	8	GW	1	52,87302	143,33334	724
27 Aug.	8	GW	1	52,86375	143,34429	1281
27 Aug.	8	GW	2	52,87007	143,32989	433
27 Aug.	8	GW	1	52,86996	143,32954	407
27 Aug.	8	GW	1	52,86726	143,33391	682
27 Aug.	8	GW	1	52,86658	143,33169	529
1 Sept.	1	GW	1	53,41833	143,18746	2318

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1 Sept.	1	GW	1	53,41449	143,18602	2032
1 Sept.	2	GW	1	53,39573	143,17488	804
1 Sept.	2	GW	2	53,35744	143,19483	590
1 Sept.	2	GW	2	53,35930	143,20930	1573
1 Sept.	2	GW	1	53,40815	143,24597	5701
1 Sept.	2	GW	1	53,35834	143,21345	1810
1 Sept.	2	GW	1	53,35993	143,22315	2480
1 Sept.	2	GW	1	53,35216	143,24196	3429
1 Sept.	2	GW	1	53,33728	143,24995	3458
1 Sept.	2	GW	1	53,31785	143,29550	5763
1 Sept.	2	GW	1	53,32345	143,25220	3159
1 Sept.	2	GW	1	53,31080	143,23936	1958
1 Sept.	2	GW	1	53,31429	143,23727	1904
1 Sept.	2	GW	1	53,31387	143,23665	1852
1 Sept.	2	GW	1	53,29839	143,25703	2784
1 Sept.	3	GW	1	53,30323	143,22862	1043
1 Sept.	3	GW	1	53,27047	143,22993	318
1 Sept.	3	GW	1	53,29125	143,23897	1439
1 Sept.	3	GW	1	53,26861	143,23181	381
1 Sept.	3	GW	1	53,27644	143,23933	1113
1 Sept.	3	GW	1	53,26757	143,24535	1216
1 Sept.	3	GW	1	53,26859	143,27722	3300
1 Sept.	3	GW	1	53,26150	143,28464	3590
1 Sept.	3	GW	1	53,24553	143,30042	4250
1 Sept.	3	GW	2	53,25363	143,24589	880
1 Sept.	3	GW	2	53,25501	143,24384	773
1 Sept.	3	GW	2	53,25251	143,24407	739
1 Sept.	3	GW	1	53,22235	143,26644	1389
1 Sept.	3	GW	1	53,21708	143,26796	1390
1 Sept.	3	GW	2	53,17315	143,29677	2430
1 Sept.	3	GW	1	53,19897	143,25961	499
1 Sept.	4	GW	1	53,21867	143,25495	561
1 Sept.	4	GW	1	53,21867	143,25608	636
1 Sept.	4	GW	2	53,21391	143,26005	827
1 Sept.	4	GW	2	53,17466	143,31260	3501
1 Sept.	4	GW	1	53,17526	143,31274	3523
1 Sept.	4	GW	2	53,14018	143,31877	3353
1 Sept.	4	GW	1	53,14576	143,30619	2613
1 Sept.	4	GW	1	53,16104	143,27496	742
1 Sept.	4	GW	2	53,16145	143,27603	818
1 Sept.	4	GW	1	53,13665	143,28012	747
1 Sept.	4	GW	1	53,11273	143,29152	1165
1 Sept.	4	GW	4	53,12793	143,28507	976
1 Sept.	5	GW	1	53,15364	143,27282	496
1 Sept.	5	GW	1	53,20270	143,33682	5673
1 Sept.	5	GW	1	53,13294	143,27666	456
1 Sept.	5	GW	1	53,13216	143,27990	666
1 Sept.	5	GW	1	53,14320	143,31733	3332
1 Sept.	5	GW	1	53,13273	143,30096	2077
1 Sept.	5	GW	2	53,13109	143,30196	2131
1 Sept.	5	GW	1	53,13067	143,32544	3695
1 Sept.	5	GW	1	53,11499	143,32369	3330
1 Sept.	5	GW	1	53,10651	143,31702	2709
1 Sept.	5	GW	1	53,12092	143,28080	583
1 Sept.	5	GW	1	53,11149	143,29484	1360
1 Sept.	5	GW	1	53,11179	143,29114	1122
1 Sept.	5	GW	1	53,08403	143,32890	3271
1 Sept.	5	GW	2	53,10324	143,29080	916
1 Sept.	5	GW	1	53,04388	143,32402	2424
1 Sept.	6	GW	1	53,09074	143,28711	574
1 Sept.	6	GW	1	53,09071	143,28822	647
1 Sept.	6	GW	3	53,09066	143,28933	720
1 Sept.	6	GW	1	53,07830	143,29474	932
1 Sept.	6	GW	1	53,08839	143,30667	1829
1 Sept.	6	GW	1	53,07244	143,30400	1458

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1 Sept.	6	GW	1	53,06078	143,30887	1618
1 Sept.	6	GW	1	53,06538	143,34454	4048
1 Sept.	6	GW	1	53,05177	143,33654	3392
1 Sept.	6	GW	2	53,05205	143,31530	1976
1 Sept.	6	GW	2	53,05004	143,31224	1752
1 Sept.	6	GW	1	53,04698	143,31392	1816
1 Sept.	6	GW	1	53,02992	143,30781	1144
1 Sept.	7	GW	1	53,03048	143,30411	906
1 Sept.	7	GW	2	53,03033	143,30899	1229
1 Sept.	7	GW	2	53,02921	143,32186	2070
1 Sept.	7	GW	1	53,00339	143,31433	1160
1 Sept.	7	GW	3	53,02232	143,35043	3908
1 Sept.	7	GW	1	53,01960	143,35718	4314
5 Sept.	1	GW	1	53,43883	143,16079	1429
5 Sept.	1	GW	1	53,43604	143,16210	1388
5 Sept.	1	GW	1	53,43263	143,16801	1595
5 Sept.	1	GW	1	53,41730	143,15870	490
5 Sept.	1	GW	1	53,42885	143,17771	2048
5 Sept.	1	GW	1	53,43012	143,18061	2275
5 Sept.	1	GW	1	53,43096	143,17903	2209
5 Sept.	1	GW	1	53,41124	143,17586	1266
5 Sept.	1	GW	1	53,40412	143,19090	2042
5 Sept.	1	GW	2	53,38094	143,19380	1392
5 Sept.	1	GW	1	53,36495	143,22154	2526
5 Sept.	1	GW	1	53,39412	143,17340	667
5 Sept.	1	GW	1	53,36030	143,21131	1732
5 Sept.	1	GW	1	53,36897	143,18803	582
5 Sept.	1	GW	1	53,37819	143,18704	862
5 Sept.	1	GW	1	53,37784	143,18603	786
5 Sept.	1	GW	1	53,36972	143,19056	769
5 Sept.	1	GW	1	53,37012	143,19180	863
5 Sept.	1	GW	1	53,37685	143,18295	554
5 Sept.	1	GW	2	53,32339	143,22491	1463
5 Sept.	1	GW	1	53,32265	143,22229	1271
5 Sept.	2	GW	1	53,37682	143,17761	222
5 Sept.	2	GW	1	53,37227	143,18191	310
5 Sept.	2	GW	2	53,36611	143,19348	788
5 Sept.	2	GW	1	53,35145	143,19800	610
5 Sept.	2	GW	1	53,36602	143,20072	1238
5 Sept.	2	GW	1	53,33847	143,20981	933
5 Sept.	2	GW	1	53,33669	143,27950	5335
5 Sept.	2	GW	1	53,33234	143,27940	5213
5 Sept.	2	GW	1	53,33227	143,22578	1754
5 Sept.	2	GW	3	53,32385	143,22382	1410
5 Sept.	2	GW	1	53,28480	143,29215	4734
5 Sept.	2	GW	1	53,30746	143,21936	581
5 Sept.	2	GW	1	53,31805	143,21371	562
5 Sept.	2	GW	3	53,26578	143,24954	1434
5 Sept.	2	GW	1	53,26420	143,24339	992
5 Sept.	3	GW	3	53,30203	143,22181	570
5 Sept.	3	GW	2	53,29926	143,22325	595
5 Sept.	3	GW	1	53,34090	143,21868	1579
5 Sept.	3	GW	1	53,31446	143,22456	1089
5 Sept.	3	GW	1	53,28047	143,24512	1613
5 Sept.	3	GW	1	53,27895	143,25521	2193
5 Sept.	3	GW	1	53,24524	143,29801	4088
5 Sept.	3	GW	1	53,25775	143,24936	1205
5 Sept.	3	GW	1	53,25661	143,24845	1115
5 Sept.	3	GW	1	53,24931	143,26188	1839
5 Sept.	3	GW	1	53,20878	143,28825	2565
5 Sept.	3	GW	1	53,21536	143,25604	583
5 Sept.	3	GW	1	53,21567	143,25743	678
5 Sept.	4	GW	1	53,21731	143,25278	394
5 Sept.	4	GW	1	53,20650	143,25600	397
5 Sept.	4	GW	1	53,19892	143,26965	1166

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5 Sept.	4	GW	1	53,19777	143,27348	1406
5 Sept.	4	GW	1	53,17986	143,28855	2050
5 Sept.	4	GW	1	53,17442	143,28985	2004
5 Sept.	5	GW	2	53,14964	143,29038	1625
5 Sept.	5	HP	1	53,12870	143,28423	928
5 Sept.	5	GW	2	53,11549	143,30690	2216
5 Sept.	5	GW	1	53,11587	143,30717	2239
5 Sept.	5	GW	1	53,11510	143,30662	2194
5 Sept.	5	GW	1	53,09056	143,30289	1614
5 Sept.	5	GW	1	53,04661	143,32487	2532
5 Sept.	5	GW	1	53,07488	143,29523	927
5 Sept.	6	GW	1	53,07670	143,29870	1185
5 Sept.	6	GW	1	53,04989	143,31401	1869
5 Sept.	6	GW	1	53,03920	143,31467	1738
5 Sept.	6	GW	1	53,01719	143,30452	788
5 Sept.	6	GW	1	52,97488	143,32345	1355
5 Sept.	7	GW	2	52,96424	143,32865	1584
5 Sept.	7	GW	3	52,96312	143,32121	1076
5 Sept.	8	GW	3	52,87410	143,34024	1203
5 Sept.	8	GW	1	52,86099	143,34325	1184
6 Sept.	8	GW	1	52,85625	143,34335	1095
6 Sept.	8	GW	1	52,85600	143,34260	1040
6 Sept.	8	GW	1	52,87452	143,34557	1564
6 Sept.	8	GW	1	52,88532	143,34465	1639
6 Sept.	7	GW	1	52,96625	143,30799	218
6 Sept.	7	GW	1	52,89524	143,36264	2944
6 Sept.	7	GW	1	52,96695	143,32696	1495
6 Sept.	6	GW	1	52,97770	143,32926	1784
6 Sept.	5	GW	1	53,17299	143,30285	2824
6 Sept.	4	GW	1	53,17584	143,30512	3037
6 Sept.	4	GW	1	53,23081	143,27909	2430
6 Sept.	4	GW	1	53,21241	143,26570	1154
6 Sept.	4	GW	2	53,23001	143,28353	2698
6 Sept.	4	GW	1	53,20850	143,26805	1226
6 Sept.	4	GW	1	53,21733	143,26158	972
6 Sept.	4	GW	1	53,21726	143,26268	1044
6 Sept.	4	GW	3	53,21746	143,25828	758
6 Sept.	4	GW	2	53,21743	143,25938	830
6 Sept.	4	GW	1	53,22364	143,25740	841
6 Sept.	4	GW	1	53,23259	143,26082	1298
6 Sept.	4	GW	2	53,23257	143,25001	623
6 Sept.	3	GW	1	53,21736	143,26601	1265
6 Sept.	3	GW	3	53,19470	143,29023	2472
6 Sept.	3	GW	1	53,23293	143,25178	747
6 Sept.	3	GW	2	53,23645	143,25510	1062
6 Sept.	3	GW	1	53,23012	143,26165	1280
6 Sept.	3	GW	2	53,25376	143,23884	419
6 Sept.	3	GW	2	53,23634	143,26762	1859
6 Sept.	3	GW	1	53,24625	143,25568	1354
6 Sept.	3	GW	1	53,24655	143,25618	1396
6 Sept.	3	GW	1	53,30333	143,26763	3584
6 Sept.	3	GW	1	53,32722	143,25825	3693
6 Sept.	3	GW	2	53,31506	143,23056	1493
6 Sept.	3	GW	1	53,31010	143,22751	1167
6 Sept.	3	GW	1	53,31000	143,22207	808
6 Sept.	3	GW	1	53,30994	143,22071	718
6 Sept.	3	GW	1	53,30978	143,21800	537
6 Sept.	3	GW	2	53,30968	143,21665	446
6 Sept.	3	GW	1	53,31420	143,21106	233
6 Sept.	2	GW	1	53,27771	143,23052	598
6 Sept.	2	GW	1	53,26335	143,24641	1165
6 Sept.	2	GW	1	53,31614	143,21419	509
6 Sept.	2	GW	1	53,32931	143,20330	228
6 Sept.	2	GW	1	53,31711	143,22493	1211
6 Sept.	2	GW	1	53,32583	143,21259	736

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6 Sept.	2	GW	1	53,31868	143,22745	1434
6 Sept.	2	GW	2	53,32038	143,22974	1647
6 Sept.	2	GW	2	53,32709	143,21661	1022
6 Sept.	2	GW	1	53,32074	143,23017	1689
6 Sept.	2	GW	1	53,33179	143,22000	1372
6 Sept.	2	GW	1	53,33229	143,22018	1400
6 Sept.	2	GW	1	53,33055	143,21941	1291
6 Sept.	2	GW	1	53,33448	143,21645	1221
6 Sept.	2	GW	2	53,33512	143,21648	1243
6 Sept.	2	GW	1	53,34396	143,22519	2097
6 Sept.	2	GW	1	53,34159	143,20985	1045
6 Sept.	2	GW	3	53,38014	143,23643	4031
6 Sept.	2	GW	1	53,38275	143,22695	3524
6 Sept.	2	GW	1	53,39436	143,22114	3618
6 Sept.	2	GW	1	53,38555	143,20971	2566
6 Sept.	2	GW	1	53,38621	143,19634	1777
6 Sept.	2	GW	1	53,38548	143,18149	810
6 Sept.	2	GW	2	53,38532	143,18003	711
6 Sept.	1	GW	2	53,35474	143,20165	946
6 Sept.	1	GW	2	53,35525	143,20333	1069
6 Sept.	1	GW	3	53,35579	143,20500	1192
6 Sept.	1	GW	1	53,37004	143,19688	1173
6 Sept.	1	GW	1	53,40229	143,16979	629
6 Sept.	1	GW	1	53,40175	143,18030	1296
6 Sept.	1	GW	1	53,39797	143,18263	1363
6 Sept.	1	GW	1	53,39892	143,18387	1465
6 Sept.	1	GW	2	53,39522	143,23137	4298
6 Sept.	1	HP	1	53,42599	143,16115	902
7 Sept.	1	GW	1	53,44229	143,15127	965
7 Sept.	1	GW	1	53,43909	143,15299	955
7 Sept.	1	GW	1	53,41030	143,17548	1202
7 Sept.	1	GW	3	53,40913	143,17507	1135
7 Sept.	1	GW	2	53,40709	143,17391	1020
7 Sept.	1	GW	1	53,40006	143,16783	446
7 Sept.	1	GW	2	53,35888	143,20632	1370
7 Sept.	1	GW	1	53,35780	143,20315	1134
7 Sept.	1	GW	1	53,35728	143,20154	1015
7 Sept.	2	GW	1	53,38360	143,17910	599
7 Sept.	2	GW	1	53,38393	143,18194	791
7 Sept.	2	GW	1	53,37259	143,20394	1716
7 Sept.	2	GW	1	53,34086	143,21487	1336
7 Sept.	2	GW	1	53,33742	143,20851	813
7 Sept.	2	GW	2	53,33806	143,21923	1513
7 Sept.	2	GW	1	53,33329	143,20931	728
7 Sept.	2	GW	2	53,32591	143,22152	1324
7 Sept.	2	GW	1	53,32426	143,21116	612
7 Sept.	2	GW	1	53,23260	143,28634	2950
7 Sept.	2	GW	2	53,29549	143,22248	462
7 Sept.	2	GW	1	53,28891	143,22532	496
7 Sept.	2	GW	1	53,28989	143,22933	779
7 Sept.	2	GW	2	53,29577	143,22364	544
7 Sept.	3	GW	3	53,27431	143,23145	538
7 Sept.	3	GW	1	53,27693	143,24195	1293
7 Sept.	3	GW	1	53,27221	143,25085	1713
7 Sept.	3	GW	1	53,26421	143,26875	2636
7 Sept.	3	GW	3	53,25428	143,27364	2715
7 Sept.	3	GW	1	53,25582	143,24740	1025
7 Sept.	3	GW	2	53,25540	143,24694	984
7 Sept.	3	GW	1	53,24454	143,26452	1873
7 Sept.	3	GW	1	53,25474	143,23885	443
7 Sept.	3	GW	1	53,23005	143,29085	3179
7 Sept.	3	GW	1	53,21505	143,27724	1966
7 Sept.	3	GW	1	53,22914	143,25608	896
7 Sept.	3	GW	1	53,21494	143,25158	284
7 Sept.	4	GW	2	53,23136	143,25014	594

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7 Sept.	4	GW	2	53,23129	143,24863	501
7 Sept.	4	GW	2	53,23146	143,25769	1058
7 Sept.	4	GW	1	53,21617	143,26465	1162
7 Sept.	4	GW	1	53,28348	143,27478	3593
7 Sept.	4	GW	1	53,18900	143,26097	444
7 Sept.	4	GW	1	53,20989	143,27546	1741
7 Sept.	4	GW	1	53,18585	143,26050	359
7 Sept.	4	GW	1	53,21330	143,28113	2189
7 Sept.	4	GW	1	53,17615	143,29553	2415
7 Sept.	4	GW	1	53,14522	143,27869	795
7 Sept.	5	GW	1	53,17599	143,27197	871
7 Sept.	5	GW	1	53,17371	143,29533	2348
7 Sept.	5	GW	1	53,12653	143,27551	326
7 Sept.	5	GW	1	53,13004	143,30005	1995
7 Sept.	5	GW	1	53,12459	143,27513	280
7 Sept.	5	GW	2	53,11445	143,28139	507
7 Sept.	5	GW	2	53,09728	143,29542	1224
7 Sept.	6	GW	1	53,07737	143,28262	115
7 Sept.	6	GW	1	53,03079	143,31792	1830
7 Sept.	6	GW	1	53,02761	143,32854	2493
7 Sept.	7	GW	1	53,06057	143,33056	3070
7 Sept.	7	GW	1	53,00507	143,32614	1974
7 Sept.	7	GW	1	53,01087	143,33467	2656
7 Sept.	7	HP	2	52,97541	143,30653	236
7 Sept.	7	HP	1	52,97519	143,30744	293
7 Sept.	7	HP	1	52,97446	143,30865	362
7 Sept.	7	HP	2	52,97426	143,30830	336
7 Sept.	7	GW	1	52,96705	143,33026	1717
7 Sept.	7	GW	1	52,95340	143,33536	1892
7 Sept.	7	GW	1	52,89148	143,35149	2171
7 Sept.	7	GW	1	52,92477	143,34003	1639
7 Sept.	8	GW	1	52,91255	143,32885	702
7 Sept.	8	GW	1	52,92317	143,33082	995
7 Sept.	8	GW	1	52,92185	143,34016	1584
7 Sept.	8	GW	1	52,89773	143,33538	1100
7 Sept.	8	HP	1	52,88351	143,32656	413
7 Sept.	8	GW	1	52,87650	143,34839	1793
7 Sept.	8	GW	1	52,86389	143,34781	1518
7 Sept.	8	GW	1	52,86122	143,34212	1115
7 Sept.	8	GW	1	52,85436	143,34201	985
7 Sept.	8	GW	1	52,84442	143,34862	1339
11 Sept.	1	GW	2	53,43209	143,15524	799
11 Sept.	2	GW	1	53,40945	143,15853	163
11 Sept.	2	GW	1	53,39395	143,17005	447
11 Sept.	2	GW	1	53,35666	143,18979	243
11 Sept.	2	GW	1	53,37636	143,22142	2951
11 Sept.	2	GW	1	53,34403	143,25231	3814
11 Sept.	3	GW	1	53,31914	143,25255	3026
11 Sept.	3	GW	1	53,28795	143,25011	2103
11 Sept.	3	GW	1	53,28880	143,26434	3040
11 Sept.	3	GW	1	53,28362	143,27233	3447
11 Sept.	3	GW	1	53,26049	143,24057	711
11 Sept.	3	GW	1	53,19440	143,28791	2314
11 Sept.	4	GW	1	53,11536	143,28806	964
11 Sept.	5	GW	1	53,13983	143,27594	552
11 Sept.	5	GW	1	53,10930	143,29787	1518
11 Sept.	5	GW	1	53,09691	143,29167	970
11 Sept.	6	GW	2	53,07325	143,28840	443
11 Sept.	6	GW	1	53,07297	143,29140	634
11 Sept.	6	GW	1	53,07273	143,29318	746
11 Sept.	6	GW	1	53,07281	143,31760	2369
11 Sept.	6	GW	1	53,07246	143,31819	2402
11 Sept.	6	GW	3	53,05712	143,30003	1003
11 Sept.	7	GW	1	53,02644	143,31309	1448
11 Sept.	7	GW	1	52,98920	143,30435	349

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11 Sept.	7	GW	1	52,95135	143,31430	459
11 Sept.	7	GW	1	52,94319	143,31765	519
11 Sept.	8	GW	2	52,91068	143,32244	265
11 Sept.	8	GW	1	52,90094	143,32707	557
11 Sept.	8	GW	1	52,88896	143,32711	509
11 Sept.	8	GW	1	52,88001	143,38365	4198
11 Sept.	8	GW	1	52,84686	143,34553	1125
13 Sept.	2	GW	1	53,36035	143,20208	1141
13 Sept.	2	GW	1	53,33096	143,21239	860
13 Sept.	2	GW	1	53,32236	143,23274	1917
13 Sept.	2	GW	1	53,32852	143,21363	855
13 Sept.	2	GW	1	53,32609	143,21596	962
13 Sept.	2	GW	1	53,31565	143,23325	1683
14 Sept.	1	GW	1	53,44033	143,14138	274
14 Sept.	1	GW	1	53,42703	143,18012	2148
14 Sept.	1	GW	1	53,43095	143,21697	4624
14 Sept.	1	GW	1	53,43227	143,21585	4591
14 Sept.	1	GW	1	53,42824	143,21898	4663
14 Sept.	1	GW	1	53,42259	143,22201	4584
14 Sept.	1	GW	1	53,41749	143,22356	4491
14 Sept.	1	GW	1	53,39751	143,20861	2950
14 Sept.	1	GW	1	53,38982	143,22995	3993
14 Sept.	1	GW	1	53,37251	143,20665	1879
14 Sept.	1	GW	1	53,36986	143,20060	1392
14 Sept.	1	GW	1	53,36798	143,19549	996
14 Sept.	1	GW	1	53,37525	143,18708	745
14 Sept.	1	GW	1	53,32170	143,23638	2112
14 Sept.	1	GW	1	53,38147	143,18502	878
14 Sept.	2	GW	1	53,41028	143,15327	0
14 Sept.	2	GW	1	53,37420	143,18237	411
14 Sept.	2	GW	1	53,36077	143,19466	677
14 Sept.	2	GW	1	53,37499	143,19277	1092
14 Sept.	2	GW	2	53,35119	143,20229	875
14 Sept.	2	GW	1	53,39551	143,22164	3689
14 Sept.	2	GW	1	53,41296	143,22188	4269
14 Sept.	2	GW	2	53,35028	143,21522	1673
14 Sept.	2	GW	1	53,35172	143,22492	2335
14 Sept.	2	GW	1	53,34785	143,25203	3930
14 Sept.	2	GW	1	53,34608	143,25306	3933
14 Sept.	2	GW	2	53,32614	143,22803	1755
14 Sept.	2	GW	1	53,32454	143,22910	1768
14 Sept.	2	GW	1	53,32205	143,22948	1702
14 Sept.	2	GW	1	53,31671	143,23518	1838
14 Sept.	2	GW	1	53,31495	143,22728	1278
14 Sept.	2	GW	1	53,32427	143,21062	577
14 Sept.	3	GW	2	53,30990	143,21102	87
14 Sept.	3	GW	1	53,32114	143,20711	259
14 Sept.	3	GW	1	53,32153	143,21049	486
14 Sept.	3	GW	1	53,32093	143,20543	146
14 Sept.	3	GW	1	53,31589	143,22296	1037
14 Sept.	3	GW	1	53,30318	143,23327	1343
14 Sept.	3	GW	1	53,29603	143,24619	2022
14 Sept.	3	GW	2	53,31301	143,25611	3098
14 Sept.	3	GW	1	53,28160	143,26117	2674
14 Sept.	3	GW	1	53,26768	143,24252	1037
14 Sept.	3	GW	2	53,26509	143,24159	901
14 Sept.	3	GW	2	53,26356	143,24073	803
14 Sept.	3	GW	1	53,26263	143,26189	2150
14 Sept.	3	GW	1	53,26003	143,25146	1403
14 Sept.	3	GW	2	53,26001	143,23744	496
14 Sept.	3	GW	1	53,24276	143,28417	3124
14 Sept.	3	GW	1	53,23789	143,26026	1438
14 Sept.	3	GW	1	53,24012	143,25525	1187
14 Sept.	3	GW	1	53,23069	143,26517	1522
14 Sept.	3	GW	1	53,22513	143,26087	1107

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14 Sept.	4	GW	2	53,24618	143,22024	0
14 Sept.	4	GW	1	53,24654	143,22218	0
14 Sept.	4	GW	2	53,24887	143,24007	402
14 Sept.	4	GW	1	53,24902	143,24209	537
14 Sept.	4	GW	1	53,24943	143,25020	1078
14 Sept.	4	GW	1	53,28783	143,25028	2110
14 Sept.	4	GW	1	53,22469	143,25876	957
14 Sept.	4	GW	3	53,28770	143,26604	3118
14 Sept.	4	GW	1	53,20492	143,25820	512
14 Sept.	4	GW	1	53,20407	143,26693	1060
14 Sept.	4	GW	1	53,20032	143,26653	975
14 Sept.	4	GW	1	53,20008	143,26773	1052
14 Sept.	4	GW	1	53,19982	143,26892	1128
14 Sept.	4	GW	1	53,18824	143,27377	1276
14 Sept.	4	HP	2	53,17606	143,26954	715
14 Sept.	4	GW	1	53,08969	143,35605	5130
14 Sept.	5	GW	1	53,16547	143,26450	128
14 Sept.	5	GW	3	53,16553	143,26568	206
14 Sept.	5	GW	1	53,16560	143,27041	512
14 Sept.	5	GW	1	53,14903	143,27955	897
14 Sept.	5	GW	1	53,04321	143,31636	1905
14 Sept.	6	GW	1	53,04624	143,30985	1532
14 Sept.	6	GW	1	53,00811	143,32179	1749
14 Sept.	7	GW	1	52,94759	143,33773	1930
14 Sept.	7	GW	3	52,95591	143,32412	1176
14 Sept.	7	GW	1	52,94948	143,32762	1312
14 Sept.	7	GW	1	52,92147	143,32684	692
14 Sept.	8	GW	1	52,91193	143,32515	450
14 Sept.	8	GW	1	52,91163	143,32858	680
14 Sept.	8	GW	2	52,91153	143,32943	737
14 Sept.	8	GW	1	52,90209	143,32631	505
14 Sept.	8	GW	1	52,89122	143,34053	1435
14 Sept.	8	GW	1	52,88905	143,33497	1036
14 Sept.	8	GW	1	52,88753	143,33655	1123
14 Sept.	8	GW	1	52,88771	143,33639	1115
14 Sept.	8	GW	1	52,88644	143,33574	1056
15 Sept.	8	HP	1	52,88340	143,32409	247
15 Sept.	8	GW	1	52,90767	143,33127	852
15 Sept.	7	GW	1	52,95446	143,33155	1652
15 Sept.	7	GW	1	52,95092	143,33443	1790
15 Sept.	7	GW	1	52,97792	143,36109	3906
15 Sept.	7	GW	2	52,98975	143,36962	4643
15 Sept.	7	GW	1	53,02029	143,35803	4383
15 Sept.	7	GW	1	53,01780	143,30618	909
15 Sept.	6	GW	3	52,99519	143,38587	5813
15 Sept.	6	GW	3	53,02739	143,33386	2844
15 Sept.	6	GW	1	53,04255	143,30476	1126
15 Sept.	5	GW	1	53,17822	143,28938	2061
15 Sept.	5	GW	2	53,21279	143,26308	988
15 Sept.	4	GW	1	53,12948	143,29260	1493
15 Sept.	4	MW	1	53,19446	143,30099	3179
15 Sept.	4	GW	1	53,20073	143,26541	906
15 Sept.	4	GW	1	53,28814	143,24075	1497
15 Sept.	4	GW	1	53,23394	143,24507	339
15 Sept.	4	GW	2	53,28752	143,23129	862
15 Sept.	4	GW	3	53,28776	143,23444	1074
15 Sept.	4	GW	1	53,28694	143,22502	440
15 Sept.	4	GW	1	53,23399	143,26574	1660
15 Sept.	3	GW	1	53,21438	143,25825	721
15 Sept.	3	GW	1	53,16918	143,28067	1281
15 Sept.	3	GW	2	53,21471	143,25968	820
15 Sept.	3	GW	1	53,21506	143,26110	919
15 Sept.	3	GW	1	53,29557	143,29651	5298
15 Sept.	3	GW	1	53,27339	143,24394	1300
15 Sept.	3	GW	4	53,30038	143,28945	4943

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15 Sept.	3	GW	2	53,27313	143,24187	1159
15 Sept.	3	GW	2	53,27567	143,24778	1607
15 Sept.	3	GW	1	53,30520	143,26467	3433
15 Sept.	3	GW	1	53,30308	143,27061	3773
15 Sept.	3	GW	1	53,28072	143,24140	1369
15 Sept.	3	GW	1	53,27428	143,23649	842
15 Sept.	3	GW	1	53,28025	143,24042	1298
15 Sept.	3	GW	1	53,30455	143,24983	2451
15 Sept.	3	GW	1	53,28151	143,23831	1175
15 Sept.	3	GW	1	53,29950	143,25559	2714
15 Sept.	3	GW	1	53,28053	143,23233	766
15 Sept.	3	GW	1	53,27790	143,23331	784
15 Sept.	3	GW	1	53,31521	143,24126	2187
15 Sept.	3	GW	2	53,29757	143,23544	1354
15 Sept.	3	GW	1	53,28899	143,23412	1075
15 Sept.	3	GW	1	53,30314	143,23327	1341
15 Sept.	3	GW	1	53,31581	143,23214	1616
15 Sept.	3	GW	1	53,31541	143,21535	549
15 Sept.	3	GW	2	53,32162	143,21220	598
15 Sept.	3	GW	1	53,29775	143,22140	440
15 Sept.	2	GW	2	53,28943	143,23627	1224
15 Sept.	2	GW	1	53,28986	143,23760	1320
15 Sept.	2	GW	1	53,29030	143,23892	1415
15 Sept.	2	GW	1	53,29075	143,24022	1510
15 Sept.	2	GW	1	53,28263	143,25042	1991
15 Sept.	2	GW	3	53,28320	143,25195	2100
15 Sept.	2	GW	1	53,30951	143,22053	697
15 Sept.	2	GW	1	53,28380	143,25345	2208
15 Sept.	2	GW	1	53,28567	143,25787	2536
15 Sept.	2	GW	1	53,30462	143,26574	3490
15 Sept.	2	GW	4	53,31080	143,29098	5280
15 Sept.	2	GW	1	53,31179	143,29168	5352
15 Sept.	2	GW	4	53,33950	143,20974	965
15 Sept.	2	GW	1	53,34047	143,20876	936
15 Sept.	2	GW	1	53,34884	143,21751	1764
15 Sept.	2	GW	1	53,34839	143,21830	1799
15 Sept.	2	GW	1	53,34854	143,21362	1508
15 Sept.	2	GW	1	53,34649	143,20615	964
15 Sept.	2	GW	2	53,35690	143,21161	1649
15 Sept.	2	GW	1	53,36047	143,19468	669
15 Sept.	2	GW	1	53,36039	143,19246	525
15 Sept.	2	GW	1	53,36445	143,19017	516
15 Sept.	2	GW	2	53,36726	143,19245	779
15 Sept.	2	GW	1	53,36438	143,18931	460
15 Sept.	1	GW	3	53,36833	143,19346	889
15 Sept.	1	GW	1	53,35531	143,20544	1206
15 Sept.	1	GW	1	53,38142	143,18260	729
15 Sept.	1	GW	1	53,35765	143,21199	1696
15 Sept.	1	GW	1	53,36310	143,22421	2643
16 Sept.	1	GW	1	53,42513	143,15215	319
16 Sept.	1	GW	1	53,39495	143,23262	4370
16 Sept.	1	GW	1	53,37528	143,31336	8722
16 Sept.	1	GW	3	53,36934	143,19760	1187
16 Sept.	1	GW	1	53,32421	143,24093	2499
16 Sept.	1	GW	1	53,35854	143,21560	1954
16 Sept.	1	GW	1	53,32330	143,23833	2301
16 Sept.	1	GW	1	53,32158	143,23306	1903
16 Sept.	1	GW	1	53,31996	143,22768	1503
16 Sept.	2	GW	1	53,40988	143,15350	0
16 Sept.	2	GW	1	53,37919	143,18197	590
16 Sept.	2	GW	1	53,37945	143,18456	760
16 Sept.	2	GW	1	53,36478	143,19446	798
16 Sept.	2	GW	1	53,36748	143,19621	1016
16 Sept.	2	GW	1	53,35884	143,19961	938
16 Sept.	2	GW	1	53,35879	143,20030	981

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16 Sept.	2	GW	1	53,36072	143,25765	4711
16 Sept.	2	GW	1	53,35604	143,26241	4858
16 Sept.	2	GW	1	53,34663	143,23761	2976
16 Sept.	2	GW	1	53,33718	143,21085	953
16 Sept.	2	GW	1	53,33585	143,21333	1065
16 Sept.	2	GW	1	53,33608	143,24560	3140
16 Sept.	2	GW	2	53,31474	143,29394	5576
16 Sept.	2	GW	1	53,32594	143,23571	2235
16 Sept.	2	GW	2	53,32512	143,23515	2170
16 Sept.	2	GW	3	53,31062	143,24813	2508
16 Sept.	2	GW	1	53,30618	143,25331	2720
16 Sept.	2	GW	1	53,31601	143,23388	1734
16 Sept.	2	GW	1	53,30501	143,25158	2577
16 Sept.	2	GW	1	53,30381	143,23664	1577
16 Sept.	2	GW	1	53,30680	143,22203	731
16 Sept.	2	GW	1	53,26232	143,24713	1185
16 Sept.	3	GW	1	53,32860	143,19849	0
16 Sept.	3	GW	1	53,32941	143,20423	291
16 Sept.	3	GW	1	53,30259	143,21475	128
16 Sept.	3	GW	1	53,30580	143,21244	95
16 Sept.	3	GW	1	53,30609	143,21492	261
16 Sept.	3	GW	1	53,31049	143,21786	545
16 Sept.	3	GW	1	53,29061	143,22419	461
16 Sept.	3	GW	1	53,32229	143,22588	1484
16 Sept.	3	GW	1	53,29327	143,23709	1364
16 Sept.	3	GW	2	53,29764	143,23444	1291
16 Sept.	3	GW	1	53,29346	143,23534	1254
16 Sept.	3	GW	1	53,30991	143,24262	2136
16 Sept.	3	GW	1	53,31546	143,23823	1999
16 Sept.	3	GW	1	53,29927	143,24238	1844
16 Sept.	3	GW	1	53,28430	143,23667	1129
16 Sept.	3	GW	1	53,27294	143,23465	684
16 Sept.	3	GW	1	53,28460	143,24021	1365
16 Sept.	3	GW	1	53,27737	143,23967	1182
16 Sept.	3	GW	1	53,30828	143,27265	4027
16 Sept.	3	GW	1	53,27689	143,24552	1508
16 Sept.	3	GW	1	53,28666	143,26002	2700
16 Sept.	3	GW	1	53,26882	143,24225	1053
16 Sept.	3	GW	1	53,27306	143,25645	2097
16 Sept.	3	GW	1	53,27510	143,26581	2761
16 Sept.	3	GW	1	53,22197	143,28086	2328
16 Sept.	3	GW	1	53,23816	143,25543	1139
16 Sept.	4	GW	1	53,28661	143,22190	230
16 Sept.	4	GW	1	53,23405	143,24665	444
16 Sept.	4	GW	1	53,24964	143,24403	678
16 Sept.	4	GW	1	53,24944	143,27062	2413
16 Sept.	4	GW	1	53,20237	143,26616	975
16 Sept.	4	GW	1	53,20248	143,26549	932
16 Sept.	4	GW	1	53,24219	143,30959	4723
16 Sept.	4	MW	1	53,17893	143,30733	3249
16 Sept.	5	GW	1	53,15678	143,34375	5244
16 Sept.	5	GW	1	53,08313	143,32810	3212
16 Sept.	6	GW	1	53,08104	143,30704	1782
16 Sept.	6	HP	1	53,05184	143,29825	834
16 Sept.	6	HP	1	53,04465	143,29202	324
16 Sept.	7	GW	1	52,94832	143,34203	2230
16 Sept.	7	GW	1	52,94749	143,34049	2110
16 Sept.	7	GW	2	52,93976	143,34496	2278
16 Sept.	7	GW	1	52,92385	143,34434	1898
16 Sept.	8	GW	1	52,95333	143,33059	1573
16 Sept.	8	GW	1	52,92307	143,33823	1478
16 Sept.	8	GW	1	52,87273	143,33830	1046
17 Sept.	8	GW	1	52,86380	143,34794	1527
17 Sept.	8	GW	1	52,95225	143,33659	1957
17 Sept.	7	GW	1	52,97876	143,32998	1849

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17 Sept.	7	GW	1	52,98021	143,32923	1823
17 Sept.	6	GW	1	53,00378	143,30442	514
17 Sept.	6	GW	1	53,04417	143,32004	2166
17 Sept.	5	GW	2	53,21230	143,26312	981
17 Sept.	5	GW	1	53,15368	143,27032	330
17 Sept.	5	GW	1	53,21210	143,25804	643
17 Sept.	4	GW	1	53,17852	143,28004	1461
17 Sept.	4	GW	1	53,17928	143,28010	1485
17 Sept.	4	GW	1	53,18089	143,27167	989
17 Sept.	4	GW	1	53,18159	143,27051	938
17 Sept.	4	GW	2	53,18605	143,27319	1201
17 Sept.	4	GW	1	53,19849	143,28443	2143
17 Sept.	4	GW	1	53,21228	143,27378	1688
17 Sept.	4	GW	1	53,24973	143,26244	1885
17 Sept.	4	GW	1	53,24979	143,26040	1753
17 Sept.	3	GW	1	53,25296	143,23845	378
17 Sept.	3	GW	1	53,25220	143,25190	1246
17 Sept.	3	GW	1	53,25215	143,26384	2028
17 Sept.	3	GW	1	53,25714	143,26337	2097
17 Sept.	3	GW	1	53,27780	143,24350	1429
17 Sept.	3	GW	1	53,27544	143,24082	1158
17 Sept.	3	GW	1	53,28293	143,24616	1713
17 Sept.	3	GW	2	53,27055	143,23328	538
17 Sept.	3	GW	3	53,27115	143,23141	430
17 Sept.	3	GW	2	53,27178	143,23176	468
17 Sept.	3	GW	1	53,28039	143,23993	1267
17 Sept.	3	GW	1	53,27463	143,23262	624
17 Sept.	3	GW	1	53,29655	143,24330	1846
17 Sept.	3	GW	3	53,30240	143,24131	1845
17 Sept.	3	GW	2	53,27813	143,23161	679
17 Sept.	3	GW	2	53,30658	143,22118	669
17 Sept.	3	GW	1	53,28794	143,22232	280
17 Sept.	3	GW	1	53,29366	143,22119	337
17 Sept.	3	GW	2	53,28896	143,21984	138
17 Sept.	3	GW	1	53,30285	143,21703	283
17 Sept.	3	GW	1	53,28783	143,22090	184
17 Sept.	3	GW	1	53,32109	143,20713	259
17 Sept.	2	GW	1	53,27752	143,23449	850
17 Sept.	2	GW	1	53,29374	143,22507	592
17 Sept.	2	GW	1	53,27793	143,23617	970
17 Sept.	2	GW	1	53,29437	143,22747	763
17 Sept.	2	GW	1	53,27975	143,24275	1444
17 Sept.	2	GW	1	53,22696	143,28338	2613
17 Sept.	2	GW	2	53,30964	143,22141	758
17 Sept.	2	GW	1	53,28240	143,25066	2004
17 Sept.	2	GW	2	53,28357	143,25371	2222
17 Sept.	2	GW	2	53,31076	143,22433	971
17 Sept.	2	GW	1	53,28480	143,25669	2440
17 Sept.	2	GW	1	53,32538	143,24292	2669
17 Sept.	2	GW	1	53,33169	143,22278	1544
17 Sept.	2	GW	1	53,33925	143,22021	1617
17 Sept.	2	GW	3	53,33770	143,20923	868
17 Sept.	2	GW	1	53,33791	143,20639	696
17 Sept.	2	GW	1	53,33891	143,20840	859
17 Sept.	2	GW	1	53,36903	143,26178	5229
17 Sept.	2	GW	1	53,37481	143,19858	1450
17 Sept.	2	GW	2	53,37483	143,19742	1378
17 Sept.	2	GW	1	53,36421	143,18586	238
17 Sept.	2	GW	3	53,36961	143,18079	147
17 Sept.	1	GW	1	53,36672	143,18985	596
17 Sept.	1	GW	3	53,38023	143,18009	522
17 Sept.	1	GW	2	53,38706	143,18468	1062
18 Sept.	1	GW	1	53,43711	143,14570	424
18 Sept.	1	GW	1	53,43513	143,15763	1074
18 Sept.	1	GW	1	53,37751	143,18913	964

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18 Sept.	1	GW	1	53,38044	143,17760	380
18 Sept.	2	GW	2	53,36696	143,19527	935
18 Sept.	2	GW	1	53,36688	143,19992	1218
18 Sept.	2	GW	1	53,35217	143,20373	999
18 Sept.	2	GW	1	53,37685	143,22035	2900
18 Sept.	2	GW	1	53,35420	143,23866	3290
18 Sept.	2	GW	3	53,33734	143,20978	891
18 Sept.	2	GW	1	53,30840	143,24362	2151
18 Sept.	2	GW	1	53,31480	143,23098	1513
18 Sept.	2	GW	2	53,32336	143,21425	789
18 Sept.	2	GW	1	53,30271	143,24622	2172
18 Sept.	2	GW	1	53,30503	143,22600	921
18 Sept.	3	GW	1	53,30987	143,21523	358
18 Sept.	3	GW	1	53,31540	143,23058	1504
18 Sept.	3	GW	1	53,30117	143,24675	2172
18 Sept.	3	GW	2	53,26810	143,23117	323
18 Sept.	3	GW	1	53,27224	143,24306	1215
18 Sept.	3	GW	2	53,29529	143,29592	5254
18 Sept.	3	GW	1	53,26882	143,24287	1093
18 Sept.	3	GW	1	53,26987	143,24596	1322
18 Sept.	3	GW	3	53,26644	143,24380	1083
18 Sept.	3	GW	1	53,26512	143,24191	923
18 Sept.	3	GW	1	53,26255	143,23759	573
18 Sept.	3	GW	2	53,24121	143,28179	2920
18 Sept.	3	GW	2	53,22678	143,32069	5039
18 Sept.	3	GW	1	53,23377	143,25553	1010
20 Sept.	1	GW	1	53,42285	143,15594	476
20 Sept.	1	GW	1	53,32814	143,24039	2605
20 Sept.	1	GW	1	53,35676	143,20200	1029
20 Sept.	1	GW	1	53,32391	143,22772	1658
22 Sept.	1	MW	1	53,41934	143,18863	2432
22 Sept.	1	GW	2	53,39600	143,18327	1355
22 Sept.	1	GW	1	53,39569	143,18278	1315
22 Sept.	1	GW	1	53,39017	143,18743	1345
22 Sept.	1	GW	1	53,37139	143,19716	1246
22 Sept.	1	GW	1	53,35586	143,20070	918
22 Sept.	1	GW	1	53,32262	143,22553	1474
22 Sept.	2	GW	1	53,38462	143,18322	894
22 Sept.	2	GW	1	53,36936	143,19922	1286
22 Sept.	2	GW	1	53,34513	143,22769	2296
22 Sept.	2	GW	1	53,34798	143,23854	3082
22 Sept.	2	GW	1	53,34508	143,23037	2464
22 Sept.	2	GW	1	53,33928	143,21162	1076
22 Sept.	2	GW	2	53,34743	143,25647	4195
22 Sept.	2	GW	3	53,33612	143,24797	3291
22 Sept.	2	GW	1	53,33072	143,21251	861
22 Sept.	2	GW	1	53,32607	143,22210	1365
22 Sept.	2	GW	1	53,26575	143,24956	1434
22 Sept.	3	GW	1	53,31361	143,21276	312
22 Sept.	3	GW	1	53,28818	143,22081	185
22 Sept.	3	GW	1	53,32837	143,21240	772
22 Sept.	3	GW	1	53,31388	143,21570	505
22 Sept.	3	GW	1	53,30525	143,22136	627
22 Sept.	3	GW	1	53,28349	143,22615	430
22 Sept.	3	GW	1	53,28500	143,23239	876
22 Sept.	3	GW	1	53,28226	143,23877	1215
22 Sept.	3	GW	1	53,28898	143,25733	2597
22 Sept.	3	GW	2	53,27706	143,25764	2282
22 Sept.	3	GW	1	53,27144	143,24716	1452
22 Sept.	3	GW	1	53,27586	143,26347	2631
22 Sept.	3	GW	2	53,27152	143,26097	2336
22 Sept.	3	GW	1	53,28182	143,31764	6285
22 Sept.	3	GW	1	53,26320	143,32270	6112
22 Sept.	3	GW	1	53,26221	143,25508	1697
22 Sept.	3	GW	1	53,25657	143,26010	1871

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22 Sept.	3	GW	1	53,24903	143,26395	1968
22 Sept.	3	GW	1	53,24797	143,25999	1685
22 Sept.	4	GW	1	53,28326	143,23533	1011
22 Sept.	4	GW	1	53,28346	143,23835	1212
22 Sept.	4	GW	1	53,24647	143,26018	1647
22 Sept.	4	GW	1	53,20783	143,26689	1138
22 Sept.	4	GW	1	53,20771	143,26771	1191
22 Sept.	4	GW	1	53,20305	143,26429	864
22 Sept.	4	GW	1	53,19105	143,26137	504
22 Sept.	4	GW	1	53,18530	143,26008	322
22 Sept.	4	GW	1	53,19000	143,27050	1089
22 Sept.	4	GW	1	53,18283	143,27266	1112
22 Sept.	4	GW	1	53,17737	143,28980	2066
22 Sept.	4	GW	1	53,17627	143,26873	668
22 Sept.	4	GW	1	53,17696	143,26917	714
22 Sept.	4	GW	2	53,16563	143,31279	3311
22 Sept.	4	GW	1	53,16328	143,31102	3166
22 Sept.	4	GW	1	53,15521	143,27203	468
22 Sept.	5	GW	1	53,16302	143,26595	166
22 Sept.	5	GW	1	53,16306	143,26706	240
22 Sept.	5	GW	1	53,16176	143,28683	1539
22 Sept.	5	GW	1	53,14174	143,29641	1927
22 Sept.	5	GW	1	53,12547	143,33367	4156
22 Sept.	5	GW	1	53,11626	143,31170	2545
22 Sept.	5	GW	1	53,11850	143,28117	562
22 Sept.	5	GW	1	53,09253	143,30356	1694
22 Sept.	5	GW	1	53,08158	143,31313	2194
22 Sept.	5	GW	3	53,09061	143,29773	1274
22 Sept.	5	GW	1	53,07808	143,30129	1369
22 Sept.	6	GW	1	53,08575	143,30505	1686
22 Sept.	6	GW	2	53,06393	143,30527	1414
22 Sept.	6	GW	1	53,04682	143,33169	2986
22 Sept.	6	GW	1	53,02904	143,29633	368
22 Sept.	7	GW	1	53,06071	143,31022	1709
22 Sept.	7	GW	1	53,02538	143,32840	2453
22 Sept.	7	GW	1	52,98632	143,32437	1581
22 Sept.	7	GW	1	52,96408	143,33015	1683
22 Sept.	7	GW	1	52,92218	143,32168	372
22 Sept.	8	GW	2	52,88041	143,34025	1311
22 Sept.	8	GW	1	52,85661	143,34499	1210
22 Sept.	8	GW	1	52,85635	143,34424	1156
22 Sept.	8	GW	1	52,85610	143,34349	1101
23 Sept.	8	GW	2	52,86509	143,33165	474
23 Sept.	8	GW	1	52,86535	143,33263	546
23 Sept.	8	GW	1	52,84707	143,35866	2009
23 Sept.	8	KW	3	52,88728	143,35414	2296
23 Sept.	8	GW	1	52,91241	143,33341	1007
23 Sept.	8	GW	1	52,91255	143,33253	949
23 Sept.	7	GW	3	52,93704	143,33330	1450
23 Sept.	6	GW	1	53,03692	143,31739	1888
23 Sept.	6	GW	1	53,04544	143,32464	2494
23 Sept.	6	GW	1	53,08833	143,29326	938
23 Sept.	6	GW	2	53,10012	143,29611	1267
23 Sept.	6	GW	1	53,10055	143,28077	238
23 Sept.	5	GW	1	53,09841	143,29858	1438
23 Sept.	5	GW	1	53,10266	143,29496	1186
23 Sept.	5	GW	1	53,11516	143,29323	1303
23 Sept.	5	HP	1	53,12584	143,27560	324
23 Sept.	5	GW	1	53,13450	143,29061	1400
23 Sept.	5	GW	1	53,14758	143,27968	895
23 Sept.	5	GW	2	53,15168	143,27264	455
23 Sept.	5	GW	1	53,16324	143,27822	984
23 Sept.	5	GW	1	53,17588	143,27493	1061
23 Sept.	5	GW	3	53,16354	143,27039	467
23 Sept.	5	GW	1	53,17593	143,26752	580

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23 Sept.	5	GW	2	53,16353	143,27039	467
23 Sept.	5	GW	2	53,16353	143,26927	392
23 Sept.	5	GW	1	53,16334	143,26367	18
23 Sept.	5	GW	1	53,17549	143,25865	0
23 Sept.	4	GW	1	53,13194	143,29079	1392
23 Sept.	4	GW	1	53,14212	143,29155	1604
23 Sept.	4	GW	1	53,16631	143,26797	377
23 Sept.	4	GW	2	53,15247	143,28605	1356
23 Sept.	4	GW	2	53,15852	143,29735	2196
23 Sept.	4	GW	2	53,17809	143,27566	1165
23 Sept.	4	GW	1	53,17897	143,26992	815
23 Sept.	4	GW	1	53,20333	143,29305	2773
23 Sept.	4	GW	2	53,18758	143,27072	1064
23 Sept.	4	GW	1	53,18899	143,26422	657
23 Sept.	4	GW	1	53,20773	143,28318	2209
23 Sept.	4	GW	1	53,20829	143,28152	2113
23 Sept.	4	GW	1	53,20952	143,27725	1851
23 Sept.	4	GW	2	53,20782	143,26776	1195
23 Sept.	4	GW	1	53,20490	143,26810	1157
23 Sept.	4	GW	1	53,20805	143,26611	1090
23 Sept.	4	GW	1	53,22234	143,26487	1286
23 Sept.	4	GW	1	53,22256	143,26113	1051
23 Sept.	4	GW	1	53,23148	143,26072	1252
23 Sept.	4	GW	1	53,20017	143,25655	310
23 Sept.	3	GW	1	53,20193	143,26410	833
23 Sept.	3	GW	1	53,22546	143,25645	835
23 Sept.	3	GW	1	53,25012	143,23939	383
23 Sept.	3	GW	2	53,23002	143,25912	1111
23 Sept.	3	GW	1	53,23106	143,26200	1323
23 Sept.	3	GW	3	53,23377	143,26033	1321
23 Sept.	3	GW	2	53,25073	143,24248	598
23 Sept.	3	GW	2	53,22673	143,27302	1935
23 Sept.	3	GW	1	53,25659	143,23778	424
23 Sept.	3	GW	1	53,25258	143,24282	658
23 Sept.	3	GW	1	53,25201	143,24750	953
23 Sept.	3	GW	1	53,25920	143,25732	1759
23 Sept.	3	GW	1	53,26867	143,25811	2069
23 Sept.	3	GW	2	53,27262	143,24560	1389
23 Sept.	3	GW	1	53,27055	143,23914	913
23 Sept.	3	GW	1	53,27656	143,24444	1428
23 Sept.	3	GW	1	53,28712	143,24022	1443
23 Sept.	3	GW	1	53,28738	143,23883	1362
23 Sept.	3	GW	1	53,29097	143,23221	992
23 Sept.	3	GW	1	53,27299	143,23005	389
23 Sept.	3	GW	1	53,29909	143,22951	1000
23 Sept.	3	GW	3	53,31400	143,22015	792
23 Sept.	3	GW	3	53,32015	143,21762	886
23 Sept.	3	GW	1	53,28504	143,22354	310
23 Sept.	3	GW	1	53,31944	143,20940	342
23 Sept.	2	GW	1	53,26332	143,23681	543
23 Sept.	2	GW	1	53,26422	143,24099	837
23 Sept.	2	GW	1	53,22818	143,27110	1845
23 Sept.	2	GW	1	53,28983	143,22938	780
23 Sept.	2	GW	2	53,29260	143,23838	1432
23 Sept.	2	GW	2	53,26865	143,25708	2003
23 Sept.	2	GW	1	53,29216	143,23713	1341
23 Sept.	2	GW	1	53,32053	143,21864	964
23 Sept.	2	GW	1	53,31956	143,22685	1434
23 Sept.	2	GW	1	53,32176	143,22069	1138
23 Sept.	2	GW	1	53,31175	143,28727	5065
23 Sept.	2	GW	1	53,33527	143,20908	776
23 Sept.	2	GW	1	53,33611	143,24744	3257
23 Sept.	2	GW	1	53,34374	143,21263	1293
23 Sept.	2	GW	3	53,35060	143,21104	1418
23 Sept.	2	GW	1	53,34879	143,19448	301

1	2	3	4	5	6	7
23 Sept.	1	GW	1	53,37001	143,19031	765
23 Sept.	1	GW	1	53,35496	143,19328	416
23 Sept.	1	GW	1	53,36962	143,18906	672
23 Sept.	1	GW	1	53,36925	143,18780	579
23 Sept.	1	GW	1	53,40145	143,18458	1567
24 Sept.	1	GW	2	53,42874	143,15101	388
24 Sept.	1	GW	2	53,42701	143,15461	551
24 Sept.	1	GW	1	53,42110	143,18559	2320
24 Sept.	1	GW	1	53,42190	143,19233	2767
24 Sept.	1	GW	1	53,40944	143,18822	1998
24 Sept.	1	GW	1	53,40899	143,17784	1310
24 Sept.	1	GW	1	53,39319	143,25712	5812
24 Sept.	1	GW	1	53,37400	143,24089	4055
24 Sept.	1	GW	1	53,37310	143,23972	3949
24 Sept.	1	GW	1	53,35839	143,21346	1812
24 Sept.	1	GW	1	53,35600	143,20698	1325
24 Sept.	1	GW	1	53,35388	143,20023	829
24 Sept.	1	GW	1	53,36802	143,19206	790
24 Sept.	2	GW	2	53,39361	143,16652	210
24 Sept.	2	GW	1	53,38512	143,17857	612
24 Sept.	2	GW	2	53,39612	143,19107	1833
24 Sept.	2	GW	1	53,35849	143,19409	573
24 Sept.	2	GW	1	53,37276	143,21313	2285
24 Sept.	2	GW	3	53,33928	143,25406	3779
24 Sept.	2	GW	1	53,32711	143,21655	1019
24 Sept.	2	GW	1	53,32233	143,22049	1146
24 Sept.	2	GW	1	53,32381	143,21483	842
24 Sept.	2	GW	1	53,32323	143,21381	757
24 Sept.	2	GW	1	53,30570	143,23849	1747
24 Sept.	2	GW	2	53,32305	143,21346	729
24 Sept.	2	GW	1	53,32139	143,21657	864
24 Sept.	2	GW	1	53,32421	143,21236	689
24 Sept.	2	GW	1	53,29492	143,24817	2124
24 Sept.	2	GW	2	53,31921	143,22438	1268
24 Sept.	2	GW	1	53,31620	143,21413	508
24 Sept.	2	GW	1	53,28972	143,23433	1103
24 Sept.	2	GW	1	53,26579	143,25454	1757
24 Sept.	3	GW	1	53,30238	143,22176	576
24 Sept.	3	GW	2	53,29722	143,22643	757
24 Sept.	3	GW	1	53,30979	143,23293	1517
24 Sept.	3	GW	1	53,28800	143,23759	1286
24 Sept.	3	GW	1	53,30162	143,24102	1809
24 Sept.	3	GW	1	53,29367	143,24286	1749
24 Sept.	3	GW	1	53,29138	143,24440	1796
24 Sept.	3	GW	1	53,28462	143,25038	2023
24 Sept.	3	GW	1	53,27489	143,24225	1228
24 Sept.	3	GW	1	53,27307	143,24284	1221
24 Sept.	3	GW	1	53,27366	143,24267	1223
24 Sept.	3	GW	1	53,27406	143,24386	1310
24 Sept.	3	GW	1	53,26801	143,24371	1123
24 Sept.	3	GW	1	53,26162	143,24829	1241
24 Sept.	3	GW	1	53,25184	143,24780	969
24 Sept.	3	GW	1	53,25163	143,24746	943
24 Sept.	3	GW	1	53,25206	143,24813	996
24 Sept.	3	GW	1	53,25101	143,24779	952
24 Sept.	3	GW	1	53,22443	143,26913	1621
24 Sept.	3	GW	1	53,21608	143,26038	877
24 Sept.	3	GW	1	53,22036	143,25591	654
24 Sept.	3	GW	1	53,20125	143,26451	852
24 Sept.	3	GW	1	53,20087	143,26268	726
24 Sept.	3	GW	3	53,18869	143,26479	690
24 Sept.	4	GW	1	53,21195	143,25415	386
24 Sept.	4	GW	1	53,21569	143,26778	1368
24 Sept.	4	GW	1	53,21110	143,26817	1300
24 Sept.	4	GW	2	53,18623	143,26102	400

1	2	3	4	5	6	7
24 Sept.	4	GW	1	53,20378	143,28225	2061
24 Sept.	4	GW	1	53,20067	143,27469	1521
24 Sept.	4	GW	1	53,19201	143,26990	1084
24 Sept.	4	GW	1	53,19342	143,27464	1420
24 Sept.	4	MW	1	53,19895	143,29904	3118
24 Sept.	4	GW	1	53,18278	143,26472	586
24 Sept.	4	GW	2	53,18018	143,28755	1993
24 Sept.	4	GW	2	53,16531	143,30415	2733
24 Sept.	5	GW	1	53,16260	143,27257	601
24 Sept.	5	GW	1	53,16176	143,28342	1313
24 Sept.	5	GW	2	53,15295	143,29112	1698
24 Sept.	5	MW	1	53,13710	143,30852	2619
24 Sept.	5	GW	1	53,13144	143,30186	2127
24 Sept.	6	GW	1	53,02173	143,31149	1295
24 Sept.	7	GW	2	52,99375	143,32572	1791
24 Sept.	8	GW	1	52,90382	143,33227	905
24 Sept.	8	GW	1	52,89326	143,32689	530
24 Sept.	8	HP	1	52,87776	143,32909	530
25 Sept.	8	GW	1	52,84301	143,35393	1637
25 Sept.	8	GW	2	52,84376	143,35617	1809
25 Sept.	8	GW	1	52,84338	143,35505	1723
25 Sept.	8	GW	2	52,88321	143,37449	3634
25 Sept.	8	GW	1	52,88835	143,32969	675
25 Sept.	7	GW	1	52,99860	143,31939	1426
25 Sept.	7	GW	1	53,01645	143,31726	1615
25 Sept.	7	GW	1	53,03057	143,31066	1343
25 Sept.	6	GW	2	53,05579	143,31136	1748
25 Sept.	6	GW	1	53,10210	143,28209	322
25 Sept.	5	GW	2	53,16367	143,28411	1381
25 Sept.	5	GW	1	53,16449	143,27385	708
25 Sept.	5	GW	1	53,16455	143,26925	405
25 Sept.	5	GW	1	53,17720	143,26897	708
25 Sept.	5	GW	1	53,17701	143,26290	308
25 Sept.	5	GW	1	53,17692	143,26139	208
25 Sept.	4	GW	1	53,15747	143,27361	607
25 Sept.	4	GW	1	53,16605	143,26820	384
25 Sept.	4	GW	1	53,15012	143,30995	2934
25 Sept.	4	GW	1	53,17565	143,28381	1636
25 Sept.	4	GW	1	53,18029	143,29350	2382
25 Sept.	4	GW	1	53,18358	143,28774	2104
25 Sept.	4	GW	1	53,18275	143,26093	335
25 Sept.	4	GW	1	53,18917	143,26709	850
25 Sept.	4	GW	2	53,19097	143,26318	622
25 Sept.	4	GW	1	53,18914	143,26136	472
25 Sept.	4	GW	1	53,22064	143,28106	2318
25 Sept.	4	GW	1	53,20578	143,26528	995
25 Sept.	4	GW	3	53,23162	143,26994	1854
25 Sept.	4	GW	1	53,23175	143,26842	1758
25 Sept.	4	GW	2	53,28509	143,26888	3247
25 Sept.	4	GW	1	53,23228	143,25772	1093
25 Sept.	4	GW	1	53,21718	143,25498	536
25 Sept.	4	GW	1	53,24755	143,25234	1175
25 Sept.	4	GW	2	53,24724	143,24444	652
25 Sept.	4	GW	1	53,23181	143,24394	209
25 Sept.	4	GW	1	53,24679	143,23854	257
25 Sept.	4	GW	1	53,28413	143,22895	629
25 Sept.	3	GW	2	53,21466	143,25172	291
25 Sept.	3	GW	1	53,21493	143,25314	387
25 Sept.	3	GW	1	53,20837	143,25314	252
25 Sept.	3	GW	1	53,21581	143,25735	673
25 Sept.	3	GW	1	53,23264	143,24877	543
25 Sept.	3	GW	1	53,24522	143,24122	396
25 Sept.	3	GW	1	53,21718	143,26283	1052
25 Sept.	3	GW	1	53,23841	143,25308	997
25 Sept.	3	GW	1	53,23504	143,25656	1108

1	2	3	4	5	6	7
25 Sept.	3	GW	3	53,24233	143,25353	1110
25 Sept.	3	GW	1	53,24033	143,25300	1042
25 Sept.	3	GW	1	53,23071	143,27110	1914
25 Sept.	3	GW	1	53,24176	143,25627	1282
25 Sept.	3	GW	1	53,25139	143,25570	1479
25 Sept.	3	GW	2	53,24972	143,26217	1867
25 Sept.	3	GW	1	53,25879	143,25228	1422
25 Sept.	3	GW	2	53,26139	143,27351	2866
25 Sept.	3	GW	1	53,28233	143,24205	1433
25 Sept.	3	GW	1	53,28505	143,24823	1894
25 Sept.	3	GW	1	53,29865	143,23781	1532
25 Sept.	3	GW	1	53,29678	143,22547	685
25 Sept.	3	GW	1	53,30497	143,21772	388
25 Sept.	3	GW	1	53,28929	143,21897	89
25 Sept.	3	GW	1	53,32755	143,20488	267
25 Sept.	3	GW	1	53,32777	143,20675	393
25 Sept.	3	GW	1	53,30870	143,21417	264
25 Sept.	3	GW	1	53,30870	143,21417	264
25 Sept.	3	GW	1	53,33861	143,19642	91
25 Sept.	2	GW	1	53,26456	143,24315	986
25 Sept.	2	GW	1	53,27993	143,23288	794
25 Sept.	2	GW	2	53,26558	143,24725	1280
25 Sept.	2	GW	1	53,26789	143,25525	1863
25 Sept.	2	GW	1	53,30135	143,22452	728
25 Sept.	2	GW	1	53,26728	143,25327	1718
25 Sept.	2	GW	1	53,31393	143,21548	493
25 Sept.	2	GW	1	53,29206	143,23723	1344
25 Sept.	2	GW	1	53,30483	143,23391	1428
25 Sept.	2	GW	1	53,28631	143,25273	2220
25 Sept.	2	GW	1	53,30444	143,23302	1360
25 Sept.	2	GW	1	53,31415	143,24063	2116
25 Sept.	2	GW	1	53,32296	143,22012	1145
25 Sept.	2	GW	2	53,32483	143,22047	1233
25 Sept.	2	GW	2	53,32925	143,22601	1679
25 Sept.	2	GW	1	53,33057	143,21577	1062
25 Sept.	2	GW	1	53,34527	143,27730	5447
25 Sept.	2	GW	1	53,33794	143,20963	903
25 Sept.	2	GW	1	53,34521	143,21020	1184
25 Sept.	2	GW	1	53,35107	143,20969	1345
25 Sept.	2	GW	1	53,34947	143,20250	836
25 Sept.	2	GW	1	53,36817	143,20898	1836
25 Sept.	2	GW	1	53,36570	143,20247	1337
25 Sept.	2	GW	1	53,35934	143,19615	730
25 Sept.	2	GW	1	53,37691	143,18015	384
25 Sept.	2	GW	1	53,37636	143,17651	136
25 Sept.	2	GW	2	53,39201	143,16732	217
25 Sept.	1	GW	1	53,35595	143,19654	655
25 Sept.	1	GW	1	53,36260	143,21531	2057
25 Sept.	1	GW	1	53,37090	143,19269	947
25 Sept.	1	GW	1	53,39538	143,17057	517
25 Sept.	1	GW	2	53,35899	143,20621	1366
25 Sept.	1	GW	1	53,39618	143,17724	968
25 Sept.	1	GW	1	53,39520	143,17527	817
25 Sept.	1	GW	1	53,38254	143,19611	1601
25 Sept.	1	GW	1	53,38645	143,18914	1329
25 Sept.	1	GW	1	53,40410	143,16538	404
25 Sept.	1	GW	1	53,38300	143,19698	1675
25 Sept.	1	GW	1	53,42164	143,15756	543
25 Sept.	1	GW	1	53,43101	143,14967	414
26 Sept.	1	GW	1	53,42297	143,15759	584
26 Sept.	1	GW	1	53,41727	143,15825	460

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26 Sept.	1	GW	1	53,41374	143,19616	2626
26 Sept.	1	GW	2	53,41048	143,17619	1253
26 Sept.	1	GW	2	53,40761	143,17629	1183
26 Sept.	1	GW	1	53,39853	143,21991	3691
26 Sept.	1	GW	1	53,40168	143,18804	1797
26 Sept.	1	GW	1	53,37857	143,19531	1390
26 Sept.	1	GW	1	53,37902	143,19629	1469
26 Sept.	2	GW	1	53,36701	143,18681	424
26 Sept.	2	GW	2	53,39599	143,17663	925
26 Sept.	2	GW	1	53,38669	143,18728	1217
26 Sept.	2	GW	1	53,37474	143,19857	1448
26 Sept.	2	GW	1	53,34227	143,20929	1033
26 Sept.	2	GW	1	53,33805	143,21429	1201
26 Sept.	2	GW	1	53,33734	143,21345	1122
26 Sept.	2	GW	2	53,33465	143,21117	889
26 Sept.	2	GW	1	53,33313	143,23312	2248
26 Sept.	2	GW	1	53,33667	143,22094	1577
26 Sept.	2	GW	1	53,33393	143,21033	813
26 Sept.	2	GW	3	53,33031	143,24099	2682
26 Sept.	2	GW	1	53,33269	143,21023	769
26 Sept.	2	GW	2	53,33063	143,21211	833
26 Sept.	2	GW	1	53,32982	143,21265	838
26 Sept.	2	GW	1	53,32996	143,21154	773
26 Sept.	2	GW	1	53,32247	143,22393	1368
26 Sept.	2	GW	1	53,30859	143,24498	2244
26 Sept.	2	GW	2	53,25466	143,34441	7322
26 Sept.	2	GW	1	53,30568	143,24006	1848
26 Sept.	2	GW	1	53,29601	143,25248	2431
26 Sept.	3	GW	2	53,32086	143,20895	365
26 Sept.	3	GW	1	53,31475	143,21243	341
26 Sept.	3	GW	3	53,32940	143,20822	544
26 Sept.	3	GW	1	53,32121	143,21231	589
26 Sept.	3	GW	1	53,32975	143,21208	800
26 Sept.	3	GW	2	53,33003	143,21596	1054
26 Sept.	3	GW	1	53,32135	143,21400	701
26 Sept.	3	GW	1	53,33035	143,22571	1685
26 Sept.	3	GW	1	53,29750	143,23240	1154
26 Sept.	3	GW	3	53,32928	143,24707	3065
26 Sept.	3	GW	1	53,30939	143,24385	2195
26 Sept.	3	GW	1	53,28781	143,24060	1484
26 Sept.	3	GW	1	53,27496	143,24727	1554
26 Sept.	3	GW	1	53,26736	143,23592	602
26 Sept.	3	GW	2	53,27007	143,24577	1316
26 Sept.	3	GW	1	53,26901	143,24732	1385
26 Sept.	3	GW	1	53,26475	143,24870	1351
26 Sept.	3	GW	1	53,26437	143,27751	3207
26 Sept.	3	GW	1	53,26406	143,24826	1304
26 Sept.	3	GW	1	53,24392	143,27893	2813
26 Sept.	3	GW	2	53,18387	143,43010	11373
26 Sept.	3	GW	1	53,24180	143,27653	2605
26 Sept.	3	GW	1	53,24121	143,28845	3345
26 Sept.	3	GW	3	53,24153	143,26613	1929
26 Sept.	3	GW	1	53,22654	143,28834	2921
26 Sept.	3	GW	2	53,24320	143,25339	1115
26 Sept.	3	GW	1	53,23997	143,25867	1405
26 Sept.	3	GW	1	53,24144	143,24906	801
26 Sept.	3	GW	1	53,24058	143,24644	613
26 Sept.	3	GW	1	53,23898	143,24603	560
26 Sept.	3	GW	1	53,20927	143,26331	935

1	2	3	4	5	6	7
26 Sept.	4	GW	1	53,28478	143,22879	639
26 Sept.	4	GW	2	53,24745	143,24039	393
26 Sept.	4	GW	1	53,28528	143,23493	1048
26 Sept.	4	GW	1	53,24785	143,24634	790
26 Sept.	4	GW	2	53,24800	143,25032	1054
26 Sept.	4	GW	1	53,28448	143,22573	433
26 Sept.	4	GW	1	53,23253	143,24846	521
26 Sept.	4	GW	1	53,23267	143,25309	828
26 Sept.	4	GW	2	53,24802	143,26029	1705
26 Sept.	4	GW	1	53,20398	143,26242	764
26 Sept.	4	GW	1	53,20192	143,26321	773
26 Sept.	4	GW	1	53,22249	143,27265	1797
26 Sept.	4	GW	1	53,22210	143,27513	1953
26 Sept.	4	GW	1	53,27239	143,34251	7629
27 Sept.	8	GW	1	52,87699	143,35644	2335
27 Sept.	8	GW	1	52,89361	143,33754	1248
27 Sept.	8	GW	1	52,91146	143,34581	1839
27 Sept.	7	GW	1	52,93842	143,34346	2147
27 Sept.	7	GW	1	52,97127	143,30958	382
27 Sept.	7	KW	1	52,97530	143,31794	993
27 Sept.	7	KW	1	52,97677	143,30644	253
27 Sept.	7	KW	1	52,97607	143,30929	430
27 Sept.	6	GW	1	53,02860	143,31880	1858
27 Sept.	6	GW	1	53,05489	143,36926	5608
27 Sept.	5	GW	1	53,12778	143,29734	1793
27 Sept.	5	GW	1	53,12676	143,28442	922
27 Sept.	5	GW	1	53,17828	143,27827	1340
27 Sept.	5	GW	1	53,17849	143,26894	739
27 Sept.	4	GW	1	53,16043	143,29495	2064
27 Sept.	4	GW	1	53,19955	143,28712	2334
27 Sept.	4	GW	1	53,20006	143,27993	1862
27 Sept.	4	GW	1	53,21221	143,27063	1479
27 Sept.	4	GW	1	53,22363	143,26777	1510
27 Sept.	4	GW	1	53,21274	143,26680	1232
27 Sept.	4	GW	1	53,20073	143,26154	648
27 Sept.	4	GW	1	53,28657	143,24097	1474
27 Sept.	4	GW	1	53,28619	143,23475	1064
27 Sept.	4	GW	1	53,24814	143,24024	398
27 Sept.	3	GW	1	53,21988	143,25477	570
27 Sept.	3	GW	1	53,21823	143,26865	1454
27 Sept.	3	GW	1	53,20369	143,27536	1604
27 Sept.	3	GW	1	53,22851	143,26769	1629
27 Sept.	3	GW	1	53,24299	143,26352	1781
27 Sept.	3	GW	2	53,26342	143,23868	666
27 Sept.	3	GW	1	53,26990	143,23115	383
27 Sept.	3	GW	1	53,28179	143,23439	919
27 Sept.	3	GW	1	53,29932	143,23586	1420
27 Sept.	3	GW	1	53,30573	143,23367	1436
27 Sept.	3	GW	1	53,29948	143,23377	1287
27 Sept.	3	GW	1	53,27338	143,22987	396
27 Sept.	3	GW	1	53,29723	143,22544	693
27 Sept.	3	GW	1	53,31493	143,22604	1198
27 Sept.	3	GW	1	53,31447	143,21556	521
27 Sept.	2	GW	1	53,31659	143,23273	1677
27 Sept.	2	GW	1	53,31583	143,23163	1583
27 Sept.	2	GW	1	53,32578	143,21455	863
27 Sept.	2	GW	4	53,33293	143,21188	882
27 Sept.	2	GW	1	53,33389	143,20673	582
27 Sept.	2	GW	1	53,35796	143,21159	1680
27 Sept.	2	GW	1	53,34395	143,20198	619
27 Sept.	2	GW	1	53,35881	143,20751	1444
27 Sept.	2	GW	1	53,40869	143,23420	4963

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27 Sept.	2	GW	1	53,34328	143,19942	435
27 Sept.	2	GW	1	53,35666	143,19928	851
27 Sept.	2	GW	1	53,35332	143,19876	718
27 Sept.	2	GW	1	53,36963	143,19824	1239
27 Sept.	2	GW	1	53,36647	143,19711	1027
27 Sept.	2	GW	1	53,36965	143,19521	1054
27 Sept.	1	GW	1	53,39235	143,16911	341
27 Sept.	1	GW	1	53,39682	143,17105	583
27 Sept.	1	GW	1	53,40577	143,16480	413
27 Sept.	1	GW	1	53,40528	143,18240	1527
27 Sept.	1	GW	1	53,41373	143,22038	4187
27 Sept.	1	GW	1	53,41367	143,19380	2475
27 Sept.	1	GW	1	53,43943	143,15616	1165
28 Sept.	1	GW	3	53,42964	143,15852	886
28 Sept.	1	GW	1	53,41608	143,16002	535
28 Sept.	1	GW	1	53,43454	143,22947	5531
28 Sept.	1	GW	1	53,40422	143,26204	6546
28 Sept.	1	GW	2	53,38765	143,25470	5447
28 Sept.	1	GW	1	53,37353	143,20718	1954
28 Sept.	1	GW	1	53,35672	143,21071	1586
28 Sept.	1	GW	1	53,36940	143,19755	1186
28 Sept.	1	GW	3	53,35734	143,21233	1708
28 Sept.	1	GW	1	53,37607	143,18774	819
28 Sept.	1	GW	1	53,35500	143,20573	1215
28 Sept.	1	GW	1	53,38033	143,18001	522
28 Sept.	1	GW	1	53,35342	143,20061	839
28 Sept.	1	GW	1	53,36724	143,19107	695
28 Sept.	1	GW	1	53,31929	143,22489	1302
28 Sept.	1	GW	1	53,32006	143,22761	1502
28 Sept.	2	GW	1	53,41030	143,15810	175
28 Sept.	2	GW	3	53,36916	143,17991	77
28 Sept.	2	GW	2	53,41104	143,16252	477
28 Sept.	2	GW	2	53,41068	143,16031	326
28 Sept.	2	GW	1	53,36028	143,19173	475
28 Sept.	2	GW	1	53,35056	143,20447	995
28 Sept.	2	GW	1	53,34922	143,20419	937
28 Sept.	2	GW	1	53,35606	143,20819	1405
28 Sept.	2	GW	1	53,39080	143,23991	4649
28 Sept.	2	GW	1	53,40292	143,26213	6505
28 Sept.	2	GW	1	53,35044	143,21404	1605
28 Sept.	2	GW	1	53,38413	143,25831	5545
28 Sept.	2	GW	1	53,36941	143,26022	5140
28 Sept.	2	GW	2	53,34150	143,21017	1061
28 Sept.	2	GW	1	53,33613	143,21529	1200
28 Sept.	2	GW	3	53,33539	143,20786	702
28 Sept.	2	GW	1	53,32585	143,22501	1551
28 Sept.	2	GW	1	53,31728	143,22567	1264
28 Sept.	2	GW	1	53,30952	143,22805	1191
28 Sept.	2	GW	1	53,32076	143,21334	638
28 Sept.	2	GW	1	53,32197	143,21371	705
28 Sept.	2	GW	1	53,29246	143,24376	1779
28 Sept.	2	GW	2	53,30142	143,22959	1058
28 Sept.	2	GW	1	53,31375	143,21817	657
28 Sept.	2	GW	2	53,28185	143,24701	1755
28 Sept.	2	GW	2	53,28033	143,24226	1421
28 Sept.	2	GW	1	53,22695	143,27952	2363
28 Sept.	2	GW	1	53,29952	143,22350	617
28 Sept.	3	GW	1	53,30561	143,21506	250

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28 Sept.	3	GW	1	53,30573	143,21629	331
28 Sept.	3	GW	2	53,29728	143,22048	369
28 Sept.	3	GW	3	53,31484	143,21548	532
28 Sept.	3	GW	2	53,31496	143,21698	630
28 Sept.	3	GW	1	53,30601	143,22000	573
28 Sept.	3	GW	1	53,31506	143,21848	726
28 Sept.	3	GW	1	53,29750	143,22543	698
28 Sept.	3	GW	1	53,29740	143,22245	501
28 Sept.	3	GW	1	53,33009	143,23155	2058
28 Sept.	3	GW	3	53,36101	143,25082	4284
28 Sept.	3	GW	1	53,29127	143,23642	1273
28 Sept.	3	GW	1	53,27385	143,23191	541
28 Sept.	3	GW	1	53,29228	143,24122	1610
28 Sept.	3	GW	1	53,28373	143,24245	1485
28 Sept.	3	GW	1	53,28393	143,24557	1693
28 Sept.	3	GW	1	53,27080	143,24304	1169
28 Sept.	3	GW	1	53,27719	143,29484	4682
28 Sept.	3	GW	2	53,26083	143,25135	1419
28 Sept.	3	GW	1	53,25782	143,24715	1063
28 Sept.	3	GW	1	53,24597	143,25824	1507
28 Sept.	3	GW	1	53,23278	143,26833	1780
28 Sept.	3	GW	1	53,22923	143,26990	1791
28 Sept.	3	GW	1	53,23808	143,26503	1749
28 Sept.	3	GW	1	53,23773	143,24700	586
28 Sept.	3	GW	1	53,21971	143,25487	575
28 Sept.	4	GW	2	53,28505	143,23185	843
28 Sept.	4	GW	1	53,24761	143,24237	526
28 Sept.	4	GW	1	53,21690	143,26705	1328
28 Sept.	4	GW	1	53,22249	143,27265	1797
28 Sept.	4	GW	3	53,24296	143,29905	4078
28 Sept.	4	GW	1	53,20531	143,30221	3405
28 Sept.	5	GW	1	53,17599	143,28396	1653
28 Sept.	8	GW	1	52,89177	143,32530	423
28 Sept.	8	GW	1	52,88864	143,32676	482
28 Sept.	8	GW	1	52,88918	143,33846	1272
28 Sept.	8	GW	1	52,88330	143,33040	670
30 Sept.	8	GW	1	52,87615	143,34201	1364
1 Oct.	1	GW	1	53,42779	143,21711	4531
1 Oct.	1	GW	1	53,42577	143,21837	4519
1 Oct.	1	GW	1	53,41589	143,19457	2613
1 Oct.	1	GW	1	53,41543	143,21201	3690
1 Oct.	1	GW	1	53,40926	143,21197	3539
1 Oct.	1	GW	1	53,40708	143,19852	2612
1 Oct.	1	GW	1	53,40613	143,19817	2564
1 Oct.	1	GW	3	53,39360	143,20306	2452
1 Oct.	1	GW	3	53,38442	143,22200	3281
1 Oct.	1	GW	1	53,39648	143,18039	1180
1 Oct.	1	GW	2	53,38893	143,18688	1265
1 Oct.	1	GW	1	53,38030	143,19616	1513
1 Oct.	1	GW	1	53,38411	143,18837	1198
1 Oct.	2	GW	2	53,39497	143,17514	802
1 Oct.	2	GW	1	53,36958	143,18503	417
1 Oct.	2	GW	1	53,37374	143,18603	622
1 Oct.	2	GW	1	53,39623	143,19285	1943
1 Oct.	2	GW	1	53,39624	143,19820	2261
1 Oct.	2	GW	1	53,36693	143,19899	1162
1 Oct.	2	GW	1	53,38602	143,20379	2225
1 Oct.	2	GW	2	53,36999	143,20236	1504

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1 Oct.	2	GW	1	53,36679	143,20177	1331
1 Oct.	2	GW	1	53,35529	143,20390	1107
1 Oct.	2	GW	1	53,34481	143,20290	704
1 Oct.	2	GW	1	53,34450	143,20401	766
1 Oct.	2	GW	1	53,35478	143,22687	2558
1 Oct.	2	GW	1	53,33805	143,20941	892
1 Oct.	2	GW	1	53,34051	143,22571	2009
1 Oct.	2	GW	1	53,32635	143,22730	1711
1 Oct.	2	GW	1	53,32144	143,23103	1773
1 Oct.	2	GW	1	53,33049	143,20791	559
1 Oct.	2	GW	1	53,32524	143,22039	1236
1 Oct.	2	GW	2	53,32158	143,22484	1393
1 Oct.	2	GW	1	53,31711	143,23433	1796
1 Oct.	2	GW	1	53,31886	143,23188	1714
1 Oct.	2	GW	1	53,29650	143,27523	3925
1 Oct.	2	GW	2	53,30430	143,23600	1549
1 Oct.	2	GW	1	53,30196	143,23038	1124
1 Oct.	2	GW	1	53,28995	143,23581	1205
1 Oct.	2	GW	1	53,23108	143,29160	3250
1 Oct.	2	GW	1	53,29037	143,23713	1299
1 Oct.	2	GW	1	53,31832	143,20898	275
1 Oct.	3	GW	1	53,30184	143,21265	0
1 Oct.	3	GW	1	53,32870	143,20448	283
1 Oct.	3	GW	1	53,34077	143,20263	559
1 Oct.	3	GW	2	53,35916	143,18802	203
1 Oct.	3	GW	1	53,34102	143,20489	710
1 Oct.	3	GW	1	53,32892	143,20639	411
1 Oct.	3	GW	1	53,32080	143,21069	473
1 Oct.	3	GW	1	53,36025	143,19644	776
1 Oct.	3	GW	1	53,32135	143,21742	917
1 Oct.	3	GW	1	53,31021	143,22341	900
1 Oct.	3	GW	3	53,31519	143,23208	1595
1 Oct.	3	GW	1	53,31514	143,23359	1690
1 Oct.	3	GW	2	53,29973	143,23381	1295
1 Oct.	3	GW	1	53,30250	143,23547	1467
1 Oct.	3	GW	1	53,26925	143,23352	512
1 Oct.	3	GW	1	53,27350	143,27151	3073
1 Oct.	3	GW	1	53,25937	143,25403	1551
1 Oct.	3	GW	1	53,26019	143,24473	973
1 Oct.	3	GW	1	53,25445	143,24845	1064
1 Oct.	3	GW	1	53,25066	143,24764	935
1 Oct.	3	GW	1	53,22302	143,28142	2384
1 Oct.	3	GW	1	53,23617	143,26123	1443
1 Oct.	3	GW	1	53,23274	143,26019	1265
1 Oct.	3	GW	1	53,23738	143,25208	900
1 Oct.	3	GW	1	53,21505	143,28124	2227
1 Oct.	3	GW	1	53,18346	143,32345	4412
1 Oct.	3	GW	1	53,22239	143,26483	1285
1 Oct.	3	GW	1	53,21715	143,26619	1274
1 Oct.	3	GW	1	53,20340	143,27560	1615
1 Oct.	3	GW	2	53,20197	143,27027	1243
1 Oct.	3	GW	1	53,23056	143,25369	773
1 Oct.	3	GW	1	53,17068	143,28286	1464
1 Oct.	3	GW	1	53,20832	143,25846	595
1 Oct.	3	GW	1	53,17011	143,28014	1273
1 Oct.	4	GW	1	53,23263	143,24218	112
1 Oct.	4	GW	1	53,21767	143,24828	104
1 Oct.	4	GW	1	53,28613	143,23476	1063

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1 Oct.	4	GW	1	53,28633	143,23787	1268
1 Oct.	4	GW	1	53,23307	143,24839	527
1 Oct.	4	GW	1	53,20973	143,25250	246
1 Oct.	4	GW	1	53,19697	143,26052	536
1 Oct.	4	GW	1	53,21270	143,26679	1230
1 Oct.	4	GW	1	53,21245	143,26871	1353
1 Oct.	4	GW	1	53,20859	143,26990	1349
1 Oct.	4	GW	1	53,20542	143,27084	1348
1 Oct.	4	GW	1	53,19111	143,26792	938
1 Oct.	4	GW	2	53,18234	143,30120	2936
1 Oct.	5	GW	1	53,21076	143,27323	1619
1 Oct.	5	GW	1	53,17767	143,27818	1319
1 Oct.	5	GW	1	53,07072	143,38077	6522
1 Oct.	6	HP	2	53,05058	143,29093	333
1 Oct.	7	GW	1	52,94283	143,32510	1009
1 Oct.	8	GW	1	52,92347	143,32725	770
1 Oct.	8	GW	1	52,89387	143,33796	1278
1 Oct.	8	GW	1	52,87083	143,35633	2209
1 Oct.	8	GW	1	52,87586	143,33853	1128
1 Oct.	8	GW	1	52,87254	143,34514	1493
1 Oct.	8	GW	1	52,82139	143,37736	2936
2 Oct.	8	GW	1	52,82124	143,37291	2658
2 Oct.	8	GW	1	52,82239	143,37641	2841
2 Oct.	8	GW	1	52,88282	143,35359	2226
2 Oct.	8	GW	1	52,88601	143,35301	2206
2 Oct.	8	GW	1	52,88495	143,35329	2219
2 Oct.	8	GW	1	52,90849	143,34416	1721
2 Oct.	8	GW	1	52,90249	143,32404	352
2 Oct.	7	GW	1	52,97076	143,33195	1868
2 Oct.	7	GW	1	53,00587	143,32244	1746
2 Oct.	7	GW	1	53,00812	143,30527	665
2 Oct.	5	GW	2	53,10294	143,30914	2136
2 Oct.	4	GW	1	53,18051	143,27401	1126
2 Oct.	4	GW	1	53,23084	143,27911	2432
2 Oct.	4	GW	1	53,23169	143,27309	2062
2 Oct.	4	GW	1	53,23229	143,26698	1679
2 Oct.	4	GW	1	53,24809	143,25630	1447
2 Oct.	4	GW	1	53,22364	143,25227	509
2 Oct.	4	GW	1	53,23260	143,25000	623
2 Oct.	3	GW	1	53,21984	143,25479	571
2 Oct.	3	GW	1	53,24999	143,24004	422
2 Oct.	3	GW	1	53,22866	143,27909	2379
2 Oct.	3	GW	1	53,24467	143,27000	2236
2 Oct.	3	GW	1	53,25309	143,25360	1375
2 Oct.	3	GW	1	53,24650	143,27208	2412
2 Oct.	3	GW	2	53,24839	143,27034	2358
2 Oct.	3	GW	2	53,24969	143,28342	3234
2 Oct.	3	GW	1	53,25549	143,26755	2339
2 Oct.	3	GW	2	53,26520	143,24013	811
2 Oct.	3	GW	1	53,27754	143,23983	1197
2 Oct.	3	GW	1	53,29028	143,24196	1614
2 Oct.	3	GW	1	53,27078	143,23121	408
2 Oct.	3	GW	3	53,27809	143,22728	397
2 Oct.	3	GW	1	53,27808	143,22600	314
2 Oct.	3	GW	1	53,30595	143,22251	725
2 Oct.	3	GW	1	53,30600	143,22375	805
2 Oct.	3	GW	1	53,31475	143,21702	623
2 Oct.	3	GW	1	53,29164	143,22408	478
2 Oct.	3	GW	2	53,30595	143,22251	725
2 Oct.	3	GW	1	53,31508	143,22453	1106
2 Oct.	3	GW	1	53,31463	143,21552	526

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2 Oct.	3	GW	1	53,32928	143,21219	790
2 Oct.	3	GW	1	53,34138	143,21175	1157
2 Oct.	3	GW	1	53,34153	143,21403	1306
2 Oct.	2	GW	1	53,29392	143,22214	405
2 Oct.	2	GW	1	53,28716	143,22484	430
2 Oct.	2	GW	1	53,28813	143,22901	722
2 Oct.	2	GW	1	53,30731	143,22156	723
2 Oct.	2	GW	1	53,30705	143,22075	661
2 Oct.	2	GW	1	53,28020	143,24037	1294
2 Oct.	2	GW	1	53,30099	143,22737	903
2 Oct.	2	GW	1	53,31390	143,22355	1008
2 Oct.	2	GW	1	53,31419	143,22416	1056
2 Oct.	2	GW	1	53,31682	143,22438	1165
2 Oct.	2	GW	1	53,32204	143,22017	1115
2 Oct.	2	GW	1	53,32162	143,23488	2017
2 Oct.	2	GW	1	53,32768	143,22820	1795
2 Oct.	2	GW	1	53,33195	143,20917	680
2 Oct.	2	GW	1	53,33250	143,20951	718
2 Oct.	2	GW	1	53,32863	143,23352	2162
2 Oct.	2	GW	1	53,33635	143,21044	897
2 Oct.	2	GW	1	53,35951	143,20557	1340
2 Oct.	2	GW	1	53,37328	143,20983	2107
2 Oct.	2	GW	1	53,36877	143,21237	2071
2 Oct.	2	GW	1	53,37878	143,18473	743
7 Oct.	1	GW	1	53,44520	143,13938	323
7 Oct.	1	GW	1	53,40941	143,16854	740
7 Oct.	1	GW	2	53,36631	143,22197	2594
7 Oct.	1	GW	1	53,37537	143,20280	1736
7 Oct.	1	GW	1	53,38101	143,19225	1299
7 Oct.	1	GW	1	53,37711	143,18144	471
7 Oct.	1	GW	2	53,35627	143,19629	648
7 Oct.	1	GW	3	53,35721	143,19955	886
7 Oct.	1	GW	1	53,35583	143,19464	529
7 Oct.	1	GW	1	53,35771	143,20117	1004
7 Oct.	2	GW	1	53,38330	143,17921	596
7 Oct.	2	GW	1	53,36278	143,18885	374
7 Oct.	2	GW	3	53,34481	143,20037	542
7 Oct.	2	GW	1	53,36535	143,20330	1376
7 Oct.	2	GW	1	53,36527	143,20418	1429
7 Oct.	2	GW	2	53,36604	143,21818	2343
7 Oct.	2	GW	1	53,34583	143,20401	806
7 Oct.	2	GW	1	53,34096	143,20848	936
7 Oct.	2	GW	1	53,34027	143,20784	872
7 Oct.	2	GW	2	53,34345	143,24512	3338
7 Oct.	2	GW	1	53,31040	143,26710	3724
7 Oct.	2	GW	1	53,30889	143,25181	2694
7 Oct.	2	GW	1	53,31836	143,21700	777
7 Oct.	2	GW	1	53,30113	143,22225	575
7 Oct.	3	GW	1	53,32651	143,20137	9
7 Oct.	3	GW	2	53,32677	143,20322	135
7 Oct.	3	GW	1	53,32701	143,20507	261
7 Oct.	3	GW	1	53,33968	143,21208	1119
7 Oct.	3	GW	2	53,33995	143,21654	1410
7 Oct.	3	GW	1	53,32762	143,21066	640
7 Oct.	3	GW	1	53,34013	143,22101	1699
7 Oct.	3	GW	1	53,33922	143,24780	3374
7 Oct.	3	GW	1	53,23269	143,25656	1043
7 Oct.	3	GW	1	53,23793	143,25058	822
7 Oct.	3	GW	1	53,24606	143,24312	539
7 Oct.	3	GW	1	53,21014	143,25917	691
7 Oct.	4	GW	2	53,22195	143,26105	1029
7 Oct.	4	GW	1	53,16410	143,28145	1209
7 Oct.	4	GW	1	53,12093	143,30731	2333
7 Oct.	5	GW	1	53,12300	143,30001	1889
7 Oct.	5	GW	1	53,08266	143,31374	2253
7 Oct.	5	GW	1	53,05281	143,33338	3191

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7 Oct.	5	GW	1	53,08053	143,30743	1800
7 Oct.	6	GW	1	53,12914	143,29858	1889
7 Oct.	6	GW	1	53,07498	143,29844	1140
7 Oct.	6	GW	1	53,06493	143,30282	1263
7 Oct.	6	GW	1	53,06689	143,30970	1740
7 Oct.	6	GW	2	53,05680	143,30864	1575
7 Oct.	7	GW	1	53,00001	143,32040	1519
7 Oct.	8	GW	1	52,87241	143,33188	614
8 Oct.	7	GW	1	52,95082	143,32625	1246
8 Oct.	7	GW	1	52,94660	143,34937	2683
8 Oct.	7	GW	1	53,01395	143,42711	8818
8 Oct.	7	GW	1	53,05828	143,32478	2668
8 Oct.	6	GW	1	52,98015	143,32544	1570
8 Oct.	6	GW	1	53,02594	143,34701	3702
8 Oct.	6	HP	2	53,05288	143,28671	74
8 Oct.	6	GW	2	53,08992	143,32867	3313
8 Oct.	6	GW	1	53,12399	143,32852	3789
8 Oct.	6	GW	2	53,08578	143,29869	1264
8 Oct.	6	GW	1	53,08592	143,29772	1201
8 Oct.	6	GW	1	53,08024	143,28886	564
8 Oct.	5	GW	1	53,10455	143,28508	572
8 Oct.	5	GW	2	53,09379	143,30353	1714
8 Oct.	5	GW	1	53,10015	143,29880	1446
8 Oct.	5	GW	1	53,10418	143,29506	1215
8 Oct.	5	GW	1	53,10499	143,29684	1351
8 Oct.	5	GW	1	53,09255	143,33171	3556
8 Oct.	5	GW	1	53,12649	143,27718	436
8 Oct.	5	GW	1	53,20561	143,27539	1649
8 Oct.	4	GW	1	53,08393	143,31949	2640
8 Oct.	4	GW	1	53,08328	143,31669	2454
8 Oct.	4	GW	1	53,15377	143,28682	1425
8 Oct.	4	GW	1	53,20552	143,27529	1641
8 Oct.	4	GW	1	53,20068	143,27315	1419
8 Oct.	4	GW	1	53,20205	143,26743	1055
8 Oct.	4	GW	1	53,19921	143,26291	721
8 Oct.	3	GW	1	53,26737	143,24445	1152
8 Oct.	3	GW	1	53,28395	143,23781	1191
8 Oct.	3	GW	1	53,30436	143,21664	298
8 Oct.	2	GW	3	53,31150	143,22050	744
8 Oct.	2	GW	1	53,32157	143,21006	461
8 Oct.	2	GW	2	53,31316	143,22451	1049
8 Oct.	2	GW	1	53,35580	143,23334	3004
8 Oct.	2	GW	1	53,33800	143,20110	366
8 Oct.	2	GW	1	53,36035	143,21586	2025
8 Oct.	2	GW	2	53,35894	143,19963	942
8 Oct.	2	GW	1	53,34045	143,19725	207
8 Oct.	2	GW	1	53,35900	143,19824	854
8 Oct.	2	GW	1	53,35281	143,19507	466
8 Oct.	2	GW	1	53,35115	143,19468	389
8 Oct.	2	GW	2	53,40849	143,16819	677
8 Oct.	1	GW	1	53,35887	143,20422	1235
8 Oct.	1	GW	1	53,37819	143,20790	2160
8 Oct.	1	GW	1	53,40334	143,17300	867
8 Oct.	1	GW	4	53,41338	143,17065	1077
10 Oct.	1	GW	1	53,47497	143,12126	357
10 Oct.	1	GW	1	53,38587	143,19267	1535
10 Oct.	1	GW	1	53,35841	143,21344	1812
10 Oct.	1	GW	1	53,35779	143,21184	1691
10 Oct.	1	GW	2	53,32402	143,23765	2288
10 Oct.	1	GW	1	53,35603	143,20695	1324
10 Oct.	1	GW	1	53,31922	143,22166	1101
10 Oct.	1	GW	1	53,32231	143,23241	1894
10 Oct.	2	GW	1	53,35693	143,19996	903
10 Oct.	2	GW	3	53,35098	143,20028	741
10 Oct.	2	GW	1	53,34546	143,19909	482
10 Oct.	2	GW	1	53,38327	143,22410	3365

1	2	3	4	5	6	7
10 Oct.	2	GW	1	53,34440	143,21269	1318
10 Oct.	2	GW	1	53,33581	143,20116	292
10 Oct.	2	GW	1	53,33455	143,20168	281
10 Oct.	2	GW	1	53,27556	143,36715	9309
10 Oct.	2	GW	1	53,30033	143,25800	2889
10 Oct.	3	GW	1	53,32866	143,20844	531
10 Oct.	3	GW	2	53,32000	143,20751	243
10 Oct.	3	GW	2	53,32884	143,21034	658
10 Oct.	3	GW	1	53,32845	143,20654	404
10 Oct.	3	GW	1	53,30213	143,21837	350
10 Oct.	3	GW	1	53,29319	143,22565	617
10 Oct.	3	GW	1	53,28876	143,22662	578
10 Oct.	3	GW	1	53,29708	143,22250	497
10 Oct.	3	GW	1	53,28375	143,22732	513
10 Oct.	3	GW	1	53,29126	143,23391	1109
10 Oct.	3	GW	1	53,30529	143,23856	1741
10 Oct.	3	GW	1	53,30550	143,23611	1588
10 Oct.	3	GW	1	53,27041	143,24166	1068
10 Oct.	3	GW	1	53,26992	143,24277	1121
10 Oct.	3	GW	1	53,26547	143,33760	7136
10 Oct.	3	GW	1	53,24924	143,25524	1403
10 Oct.	3	GW	1	53,19403	143,34222	5896
10 Oct.	4	GW	2	53,19184	143,25986	418
10 Oct.	4	GW	1	53,18044	143,26493	544
10 Oct.	4	GW	1	53,17724	143,26932	731
10 Oct.	4	GW	1	53,16685	143,33959	5107
10 Oct.	4	GW	1	53,17363	143,26757	527
10 Oct.	4	GW	1	53,15657	143,29389	1937
10 Oct.	4	GW	1	53,15669	143,28540	1376
10 Oct.	4	GW	3	53,13813	143,30747	2567
10 Oct.	4	GW	1	53,15579	143,27411	614
10 Oct.	4	GW	1	53,07922	143,30304	1493
10 Oct.	5	GW	1	53,20619	143,25409	266
10 Oct.	5	GW	1	53,17481	143,26467	366
10 Oct.	5	GW	1	53,14764	143,27292	444
10 Oct.	5	GW	1	53,14094	143,28441	1122
10 Oct.	5	GW	2	53,15035	143,29891	2199
10 Oct.	5	GW	1	53,12347	143,29739	1727
10 Oct.	5	GW	2	53,08388	143,38752	7177
10 Oct.	5	GW	1	53,09552	143,28395	440
10 Oct.	6	GW	1	53,09855	143,28494	525
10 Oct.	6	GW	1	53,12836	143,30068	2021
10 Oct.	6	GW	1	52,98020	143,32541	1569
10 Oct.	6	GW	1	52,97979	143,32331	1423
10 Oct.	7	GW	1	52,98539	143,32414	1561
10 Oct.	7	GW	2	52,95763	143,36092	3654
10 Oct.	7	GW	2	52,89730	143,35838	2647
10 Oct.	7	GW	1	52,89512	143,34931	2050
10 Oct.	8	GW	1	52,88874	143,32334	254
10 Oct.	8	GW	1	52,87230	143,34577	1530
12 Oct.	8	GW	1	52,87150	143,35276	1978
12 Oct.	8	HP	1	52,88218	143,32574	351
12 Oct.	8	HP	1	52,88283	143,32747	471
12 Oct.	8	MW	1	52,89297	143,36032	2779
12 Oct.	8	GW	1	52,89993	143,34292	1621
12 Oct.	7	GW	2	52,97488	143,33161	1899
12 Oct.	7	GW	2	52,97887	143,33063	1894
14 Oct.	1	GW	1	53,37657	143,19010	986
14 Oct.	1	GW	1	53,38100	143,18301	734
14 Oct.	1	GW	1	53,37982	143,17925	453
14 Oct.	2	GW	1	53,36710	143,18678	427
14 Oct.	2	GW	1	53,36727	143,18865	549
14 Oct.	2	GW	1	53,37461	143,18815	788
14 Oct.	2	GW	2	53,34767	143,19496	299
14 Oct.	2	GW	1	53,35021	143,19520	392

1	2	3	4	5	6	7
14 Oct.	2	GW	1	53,34768	143,19533	322
14 Oct.	2	GW	1	53,35406	143,19445	464
14 Oct.	2	GW	1	53,36753	143,19337	847
14 Oct.	2	GW	1	53,35625	143,19551	597
14 Oct.	2	GW	1	53,36065	143,19765	865
14 Oct.	2	GW	1	53,35092	143,20731	1188
14 Oct.	2	GW	1	53,34699	143,20660	1010
14 Oct.	2	GW	1	53,34744	143,23342	2738
14 Oct.	2	GW	1	53,33147	143,21038	745
14 Oct.	2	GW	1	53,33123	143,20824	600
14 Oct.	2	GW	1	53,31397	143,25223	2865
14 Oct.	2	GW	1	53,29825	143,23886	1593
14 Oct.	3	GW	1	53,32199	143,21731	933
14 Oct.	3	GW	1	53,29773	143,22140	440
14 Oct.	3	GW	2	53,28472	143,23959	1329
14 Oct.	3	GW	1	53,28253	143,25324	2177
14 Oct.	3	GW	1	53,25864	143,23573	348
16 Oct.	1	GW	1	53,39685	143,17241	672
16 Oct.	2	GW	1	53,34054	143,19876	307
16 Oct.	2	GW	1	53,34365	143,21080	1173
16 Oct.	2	GW	1	53,32181	143,21525	797
16 Oct.	2	GW	1	53,32201	143,21564	829
16 Oct.	3	GW	1	53,27639	143,22726	352
16 Oct.	3	GW	1	53,28900	143,23034	827
16 Oct.	3	GW	1	53,29025	143,23208	966
16 Oct.	3	GW	1	53,22738	143,26595	1491
16 Oct.	4	GW	1	53,20650	143,26473	974
16 Oct.	4	GW	1	53,21702	143,27050	1559
16 Oct.	4	GW	1	53,18282	143,30122	2950
16 Oct.	4	GW	1	53,16577	143,26846	392
16 Oct.	4	GW	2	53,15213	143,27693	745
16 Oct.	5	GW	1	53,14126	143,27165	270
16 Oct.	5	GW	1	53,11305	143,30557	2098
16 Oct.	5	GW	1	53,10712	143,28320	509
16 Oct.	6	GW	1	53,05779	143,32094	2407
16 Oct.	6	GW	1	53,01782	143,30759	1003
16 Oct.	7	GW	2	52,98453	143,30606	349
16 Oct.	7	GW	1	52,99615	143,31332	981
16 Oct.	7	GW	1	52,97353	143,33618	2187
16 Oct.	7	GW	1	52,96308	143,33060	1704
16 Oct.	7	GW	1	52,94354	143,34936	2634
16 Oct.	7	GW	1	52,92283	143,33449	1226
16 Oct.	8	GW	1	52,86478	143,33904	944
16 Oct.	8	GW	1	52,82069	143,37568	2855

Astokh-Chayvo Section

1	2	3	4	5	6	7
26 June	9	GW	1	52,84817	143,35032	1453
26 June	9	GW	1	52,79972	143,36086	2532
26 June	9	GW	1	52,79944	143,35990	2468
26 June	9	GW	1	52,80030	143,36276	2659
26 June	10	GW	1	52,74308	143,36237	2612
26 June	12	GW	1	52,57385	143,36162	3151
27 June	9	GW	1	52,83218	143,36490	1907
27 June	9	GW	2	52,84082	143,35475	1543
27 June	11	MW	1	52,66307	143,35931	2655
29 June	9	GW	1	52,85683	143,35655	1983
29 June	10	GW	2	52,75528	143,32677	209
29 June	11	GW	2	52,66807	143,34735	1862
29 June	11	GW	1	52,68694	143,35405	2239
29 June	11	GW	1	52,66838	143,34672	1822
29 June	11	GW	1	52,66447	143,34338	1571
29 June	11	GW	1	52,64261	143,34441	1746
29 June	11	GW	1	52,60223	143,34001	1568
29 June	11	GW	1	52,61295	143,33262	1040
30 June	12	GW	1	52,59621	143,33616	1339
30 June	11	GW	1	52,62260	143,34529	1860
30 June	10	GW	1	52,77114	143,33045	490
30 June	9	GW	1	52,80974	143,32813	269
30 June	9	GW	1	52,85242	143,33963	801
1 July	9	GW	2	52,85168	143,35590	1850
1 July	9	GW	1	52,86027	143,34711	1300
1 July	9	GW	1	52,85034	143,34765	1150
1 July	9	GW	1	52,83777	143,37132	2400
1 July	9	GW	1	52,80941	143,36089	2500
1 July	10	GW	2	52,73496	143,32657	250
1 July	11	GW	1	52,65858	143,34654	1500
1 July	11	GW	1	52,64438	143,35803	2100
1 July	11	GW	2	52,63455	143,33781	1400
1 July	12	GW	1	52,58930	143,33094	1000
1 July	12	GW	1	52,58951	143,33005	1000
1 July	12	GW	1	52,56390	143,33891	1500
1 July	12	GW	1	52,55520	143,34298	2000
3 July	13	GW	2	52,50886	143,32620	1763
3 July	12	GW	1	52,60982	143,34706	2031
3 July	11	GW	1	52,66026	143,35372	2322
3 July	10	GW	2	52,70908	143,35846	2547
3 July	10	GW	1	52,70947	143,35952	2617
3 July	9	GW	2	52,85021	143,36132	2213
3 July	9	GW	2	52,87210	143,34610	1547
3 July	9	GW	1	52,86127	143,34717	1450
3 July	9	GW	1	52,86141	143,34635	1398
4 July	12	GW	3	52,51217	143,36119	4042
5 July	10	GW	1	52,73047	143,35129	1924
5 July	10	GW	1	52,73597	143,35184	1896
5 July	10	GW	1	52,73628	143,35214	1915
5 July	10	GW	1	52,74689	143,36884	3038
5 July	10	GW	1	52,74291	143,35617	2197
5 July	10	GW	4	52,74702	143,34979	1752
5 July	10	GW	1	52,76670	143,35444	2132
5 July	10	GW	1	52,76398	143,37155	3296
5 July	9	GW	1	52,82269	143,34289	820
5 July	9	GW	1	52,83770	143,36075	1735
5 July	9	GW	1	52,85788	143,39180	4356
5 July	9	GW	1	52,83929	143,34543	931
5 July	9	GW	2	52,85194	143,36300	2357
7 July	13	GW	1	52,51268	143,31391	869
7 July	12	MW	2	52,56933	143,38007	4452
7 July	12	GW	2	52,57104	143,35638	2835
7 July	12	GW	1	52,59742	143,34240	1753
7 July	11	GW	1	52,60556	143,36835	3478
7 July	11	GW	1	52,64520	143,35220	2256
7 July	11	GW	3	52,67971	143,35017	2021
7 July	10	GW	1	52,71237	143,32384	197
7 July	10	GW	2	52,71308	143,33459	921
7 July	10	GW	1	52,71320	143,33556	985
7 July	10	GW	2	52,71525	143,34584	1684
7 July	10	GW	2	52,72199	143,34443	1537
7 July	10	GW	1	52,73688	143,35276	1956
1	**2**	**3**	**4**	**5**	**6**	**7**
7 July	10	GW	4	52,74148	143,35172	1900
7 July	10	GW	1	52,74239	143,35212	1930
7 July	9	KW	1	52,85767	143,39347	4466
7 July	9	GW	1	52,87440	143,35570	2231
7 July	9	GW	3	52,86444	143,34666	1446
7 July	9	GW	1	52,86457	143,34575	1387
7 July	9	GW	2	52,87578	143,34593	1615
7 July	9	GW	1	52,86505	143,34114	1088
12 July	12	GW	2	52,55021	143,33851	1902
12 July	10	GW	1	52,75631	143,35027	1799
12 July	10	GW	1	52,74998	143,35047	1797
12 July	10	GW	1	52,75928	143,34669	1590
12 July	10	GW	1	52,75772	143,34877	1713
12 July	10	GW	1	52,77862	143,32984	454
12 July	9	GW	1	52,81727	143,33062	308
12 July	9	GW	1	52,80906	143,34403	1343
12 July	9	GW	1	52,81822	143,34406	1141
12 July	9	GW	1	52,81159	143,35453	2010
12 July	9	GW	1	52,84358	143,37101	2634
12 July	9	GW	1	52,85096	143,35111	1549
12 July	9	GW	1	52,84527	143,34583	1143
12 July	9	GW	1	52,85368	143,35607	1916
12 July	9	GW	1	52,85624	143,34711	1344
12 July	9	GW	1	52,84801	143,34213	902
12 July	9	GW	1	52,85277	143,34396	1095
12 July	9	GW	1	52,86256	143,34593	1385
12 July	9	GW	1	52,86297	143,34248	1155
12 July	9	GW	1	52,86324	143,33898	921
12 July	9	GW	1	52,86319	143,33986	980
12 July	9	GW	2	52,86313	143,34073	1038
13 July	9	GW	1	52,83504	143,36039	1635
13 July	9	GW	2	52,83747	143,35952	1649
13 July	9	GW	1	52,82702	143,34672	781
13 July	9	GW	1	52,81466	143,33053	357
13 July	10	GW	2	52,75266	143,34983	1755
13 July	10	GW	2	52,74978	143,34504	1430
13 July	11	GW	2	52,67238	143,33566	1047
13 July	11	GW	1	52,63658	143,34815	2021
13 July	12	GW	1	52,58897	143,33027	941
15 July	9	GW	1	52,85199	143,33396	418
15 July	9	GW	1	52,86118	143,33539	668
15 July	9	GW	1	52,85174	143,33945	777
15 July	9	GW	1	52,86097	143,34028	988
15 July	9	GW	1	52,86953	143,35320	1990
15 July	9	GW	1	52,85311	143,35160	1609
15 July	9	GW	1	52,85273	143,35275	1680
15 July	9	GW	1	52,86498	143,36918	2963
15 July	9	GW	2	52,85075	143,35766	1979
15 July	9	GW	1	52,84618	143,36491	2427
15 July	9	GW	1	52,83954	143,35937	1731
15 July	9	GW	1	52,84313	143,36798	2431
15 July	9	GW	1	52,83875	143,35991	1726
15 July	9	GW	1	52,82634	143,35298	1203
15 July	9	GW	1	52,81882	143,36394	2236
15 July	9	GW	1	52,81820	143,36311	2225
15 July	9	GW	1	52,80508	143,34311	1321
15 July	9	GW	1	52,79457	143,33077	512
15 July	10	GW	1	52,77043	143,33240	625
15 July	10	GW	1	52,76523	143,33767	1006
15 July	10	GW	1	52,76508	143,33821	1043
15 July	10	GW	1	52,75935	143,34374	1393
15 July	10	GW	1	52,75913	143,34410	1415
15 July	10	GW	1	52,74936	143,34377	1345
15 July	10	GW	1	52,74645	143,35268	1947
15 July	11	GW	1	52,65008	143,34511	1760
15 July	12	GW	1	52,57850	143,33418	1272
15 July	12	HP	1	52,55758	143,31372	140
26 July	9	GW	1	52,85054	143,34178	922

26 July	9	GW	1	52,86844	143,35041	1791
26 July	9	GW	1	52,84739	143,35261	1604
26 July	9	GW	3	52,84680	143,35384	1684
26 July	9	GW	1	52,84795	143,35133	1520
26 July	9	GW	1	52,84401	143,36527	2326
26 July	9	GW	1	52,84130	143,36754	2312
26 July	9	GW	1	52,80054	143,36376	2726
26 July	9	GW	1	52,79605	143,33837	1022
26 July	9	GW	1	52,79601	143,33730	950
26 July	9	GW	2	52,79610	143,33943	1094
26 July	10	GW	1	52,76550	143,33343	719
26 July	10	GW	2	52,77023	143,32532	150
26 July	10	GW	2	52,75987	143,32788	338
26 July	10	GW	1	52,78516	143,33931	1076
26 July	10	GW	1	52,76784	143,34046	1185
26 July	10	GW	1	52,76236	143,35240	2010
26 July	10	GW	2	52,74814	143,34553	1464
26 July	10	GW	1	52,74809	143,36232	2597
26 July	10	GW	1	52,74093	143,35485	2110
26 July	10	GW	1	52,74139	143,35042	1813
26 July	10	GW	1	52,74026	143,35451	2085
26 July	10	GW	1	52,73638	143,35867	2356
26 July	11	GW	1	52,64585	143,35776	2627
26 July	12	GW	1	52,55503	143,34669	2389
27 July	12	HP	3	52,54975	143,31374	250
27 July	12	MW	1	52,53641	143,35148	2965
27 July	11	GW	3	52,68888	143,34968	1938
27 July	10	GW	1	52,72740	143,33571	890
27 July	10	GW	2	52,71696	143,36985	3306
27 July	10	GW	2	52,72814	143,36304	2721
27 July	10	GW	1	52,73456	143,35841	2351
27 July	10	GW	1	52,75641	143,36019	2467
27 July	10	GW	1	52,76255	143,35381	2105
27 July	10	GW	1	52,76942	143,35626	2240
27 July	10	GW	1	52,78123	143,35927	2431
27 July	10	GW	1	52,78198	143,35725	2292
27 July	10	GW	2	52,77311	143,34769	1640
27 July	9	GW	4	52,79487	143,34746	1637
27 July	9	GW	1	52,79550	143,35183	1931
27 July	9	GW	1	52,80057	143,37012	3155
27 July	9	GW	1	52,83283	143,36217	1728
27 July	9	GW	1	52,83885	143,36038	1760
27 July	9	GW	2	52,84257	143,36237	2075
27 July	9	GW	1	52,85940	143,35322	1810
28 July	11	GW	2	52,64154	143,35194	2259
28 July	11	GW	1	52,67120	143,35939	2656
28 July	11	GW	1	52,65964	143,32533	456
28 July	10	GW	1	52,70671	143,34042	1337
28 July	10	GW	1	52,70730	143,34384	1566
28 July	10	GW	1	52,70621	143,33696	1104
28 July	10	GW	1	52,72102	143,37655	3709
28 July	10	GW	1	52,74520	143,35276	1953
28 July	10	GW	1	52,74753	143,35741	2266
28 July	10	GW	1	52,77705	143,36890	3091
28 July	9	GW	1	52,80461	143,34583	1506
28 July	9	GW	1	52,80531	143,34987	1776
28 July	9	GW	1	52,80785	143,35904	2364
28 July	9	GW	1	52,81731	143,35435	1788
28 July	9	GW	1	52,82555	143,37124	2418
28 July	9	GW	1	52,83753	143,36155	1780
28 July	9	GW	2	52,83961	143,34725	1053
28 July	9	GW	1	52,83865	143,34431	828
28 July	9	GW	1	52,87195	143,34374	1388
28 July	9	GW	1	52,87185	143,34487	1461
28 July	9	GW	1	52,84784	143,33752	590
28 July	9	GW	1	52,86142	143,34462	1285
28 July	9	GW	1	52,84756	143,34008	761
28 July	9	GW	2	52,84997	143,33351	362
29 July	9	GW	1	52,84640	143,33841	644
29 July	9	GW	1	52,84822	143,35584	1825
29 July	9	GW	1	52,81948	143,36700	2377
29 July	9	GW	2	52,81718	143,36405	2340
29 July	9	GW	1	52,80549	143,38259	3971
29 July	9	GW	1	52,81960	143,34695	1231
29 July	9	GW	1	52,80353	143,32818	321
29 July	10	GW	1	52,78867	143,33196	598
29 July	10	GW	1	52,78687	143,34507	1480
29 July	10	GW	2	52,78788	143,33918	1085
29 July	10	GW	1	52,78463	143,35413	2074
29 July	10	GW	1	52,77895	143,36844	3057
29 July	10	GW	1	52,70799	143,35245	2145
29 July	11	GW	1	52,68993	143,35198	2098
29 July	11	GW	1	52,62438	143,35047	2207
29 July	11	GW	1	52,61735	143,35384	2450
29 July	11	GW	2	52,61698	143,35300	2395
29 July	12	GW	1	52,57692	143,32381	575
29 July	12	GW	1	52,59490	143,34302	1810
29 July	12	GW	1	52,59455	143,34406	1880
29 July	12	GW	2	52,58608	143,34299	1802
29 July	12	GW	1	52,57478	143,34989	2350
29 July	12	GW	2	52,57157	143,34611	2137
29 July	12	GW	1	52,57042	143,34721	2226
29 July	12	MW	1	52,53317	143,34866	2850
29 July	13	GW	1	52,50899	143,31661	1120
29 July	13	HP	2	52,46968	143,29107	160
6 Aug.	12	GW	2	52,56148	143,33643	1631
6 Aug.	12	GW	1	52,56363	143,33544	1542
6 Aug.	10	GW	1	52,73143	143,35056	1874
6 Aug.	10	GW	2	52,76355	143,32768	338
6 Aug.	10	GW	1	52,77737	143,34190	1268
6 Aug.	9	GW	2	52,82169	143,33397	359
6 Aug.	9	GW	2	52,80757	143,33272	603
6 Aug.	9	GW	1	52,80755	143,33345	652
6 Aug.	9	GW	1	52,83471	143,35015	954
6 Aug.	9	GW	1	52,83741	143,34744	921
6 Aug.	9	GW	1	52,83930	143,34963	1168
6 Aug.	9	GW	1	52,84785	143,35251	1599
7 Aug.	9	GW	1	52,85491	143,33326	399
7 Aug.	9	GW	2	52,84778	143,34395	1022
7 Aug.	9	GW	1	52,84302	143,34299	1001
7 Aug.	9	GW	1	52,84951	143,34793	1309
7 Aug.	9	GW	1	52,84284	143,36700	2358
7 Aug.	9	GW	1	52,84108	143,36832	2350
7 Aug.	9	GW	1	52,83185	143,36501	1913
7 Aug.	9	GW	1	52,81450	143,35472	1961
7 Aug.	9	GW	3	52,81755	143,34202	1056
7 Aug.	10	GW	1	52,76437	143,34316	1380
7 Aug.	10	GW	1	52,72791	143,34140	1264
7 Aug.	10	GW	1	52,72809	143,34195	1298
7 Aug.	11	GW	1	52,66157	143,32638	490
7 Aug.	12	GW	1	52,55900	143,35336	2788
7 Aug.	12	GW	1	52,54844	143,36570	3755
7 Aug.	12	GW	1	52,54387	143,36294	3649
7 Aug.	12	HP	1	52,55697	143,31440	193
7 Aug.	12	GW	2	52,53210	143,33415	1891
7 Aug.	12	GW	1	52,52624	143,33373	1924
8 Aug.	9	GW	1	52,85467	143,33453	482
8 Aug.	9	GW	2	52,85460	143,33138	270
8 Aug.	9	GW	1	52,85468	143,33516	525
8 Aug.	9	GW	1	52,85467	143,33579	567
8 Aug.	9	GW	1	52,86970	143,33997	1101
8 Aug.	9	GW	1	52,86947	143,34315	1314
8 Aug.	9	GW	2	52,85840	143,34994	1573
8 Aug.	9	GW	1	52,86856	143,35046	1798
8 Aug.	9	GW	1	52,85685	143,35567	1924
8 Aug.	9	GW	1	52,84713	143,36171	2216
8 Aug.	9	GW	1	52,85069	143,38806	4009
8 Aug.	9	MW	1	52,83357	143,37047	2292
8 Aug.	9	MW	1	52,82946	143,37907	2868
8 Aug.	9	MW	1	52,82528	143,37764	2845
8 Aug.	9	MW	1	52,81422	143,36724	2704
8 Aug.	10	GW	4	52,75655	143,32792	299
8 Aug.	10	GW	1	52,72872	143,34937	1795
8 Aug.	10	GW	1	52,72691	143,34559	1558
8 Aug.	10	GW	1	52,72579	143,34268	1381
8 Aug.	11	GW	1	52,68504	143,35990	2646
8 Aug.	11	GW	2	52,60100	143,33367	1143
8 Aug.	12	GW	1	52,57462	143,34084	1739

8 Aug.	12	GW	1	52,57430	143,34130	1774
8 Aug.	12	GW	1	52,57582	143,37066	3753
8 Aug.	12	GW	1	52,57366	143,34225	1847
8 Aug.	12	GW	1	52,52802	143,33348	1875
8 Aug.	12	GW	1	52,52621	143,32544	1378
8 Aug.	13	GW	2	52,49691	143,31587	1323
8 Aug.	13	GW	1	52,49337	143,30929	953
8 Aug.	13	GW	1	52,49314	143,30991	999
8 Aug.	12	GW	2	52,54233	143,32739	1268
8 Aug.	12	GW	1	52,54216	143,32693	1238
8 Aug.	12	GW	1	52,54632	143,33137	1491
8 Aug.	12	GW	2	52,54623	143,32817	1278
8 Aug.	11	GW	1	52,68116	143,33928	1277
8 Aug.	10	GW	1	52,72262	143,34131	1321
8 Aug.	10	GW	1	52,72743	143,34187	1302
8 Aug.	10	GW	1	52,73248	143,35989	2485
8 Aug.	10	GW	1	52,77210	143,35640	2232
8 Aug.	10	GW	1	52,77891	143,32896	394
8 Aug.	9	GW	1	52,82108	143,34218	873
8 Aug.	9	GW	1	52,84006	143,35429	1468
8 Aug.	9	GW	2	52,84515	143,35555	1798
8 Aug.	9	GW	1	52,84537	143,35519	1773
8 Aug.	9	GW	2	52,85839	143,36099	2306
8 Aug.	9	GW	2	52,85583	143,34762	1372
8 Aug.	9	GW	1	52,86966	143,36306	2645
8 Aug.	9	GW	1	52,86151	143,34998	1640
8 Aug.	9	GW	1	52,85693	143,34014	894
8 Aug.	9	GW	1	52,85686	143,34083	939
8 Aug.	9	GW	1	52,86277	143,34066	1031
8 Aug.	9	GW	2	52,84842	143,33718	575
8 Aug.	9	GW	1	52,86253	143,34324	1204
9 Aug.	9	GW	1	52,85422	143,34075	901
9 Aug.	9	GW	1	52,85982	143,33846	842
9 Aug.	9	GW	2	52,85428	143,34013	859
9 Aug.	9	GW	1	52,84549	143,34376	1002
9 Aug.	9	GW	1	52,84011	143,35095	1292
9 Aug.	9	GW	2	52,83414	143,35470	1240
9 Aug.	9	GW	1	52,82476	143,35656	1490
9 Aug.	9	GW	1	52,82430	143,35608	1479
9 Aug.	9	GW	1	52,82696	143,35840	1539
9 Aug.	9	GW	1	52,81124	143,33609	786
9 Aug.	9	GW	1	52,81144	143,32922	322
9 Aug.	10	GW	1	52,78519	143,33697	919
9 Aug.	10	GW	1	52,78410	143,34357	1362
9 Aug.	10	GW	1	52,77255	143,34524	1477
9 Aug.	10	GW	1	52,75782	143,34999	1796
9 Aug.	10	GW	2	52,71991	143,34337	1491
9 Aug.	11	GW	1	52,64806	143,35168	2207
9 Aug.	11	GW	1	52,65451	143,34474	1732
9 Aug.	12	GW	1	52,60954	143,33047	909
9 Aug.	12	GW	2	52,54025	143,33033	1482
9 Aug.	12	GW	1	52,53984	143,32929	1417
9 Aug.	13	GW	1	52,49840	143,30935	863
9 Aug.	13	GW	1	52,49862	143,30858	809
9 Aug.	12	GW	1	52,53501	143,32581	1287
9 Aug.	12	GW	2	52,53590	143,32908	1488
9 Aug.	12	GW	1	52,53571	143,32844	1450
9 Aug.	12	GW	1	52,53696	143,33222	1673
9 Aug.	11	GW	1	52,59906	143,32597	632
9 Aug.	11	GW	1	52,59915	143,32733	723
9 Aug.	11	GW	1	52,61231	143,33609	1279
9 Aug.	11	GW	1	52,67954	143,34049	1369
9 Aug.	11	GW	2	52,68000	143,33857	1237
9 Aug.	10	GW	2	52,72355	143,34060	1265
9 Aug.	10	GW	1	52,72782	143,34006	1175
9 Aug.	10	GW	1	52,74992	143,34435	1384
9 Aug.	9	GW	1	52,81763	143,33249	424
9 Aug.	9	GW	2	52,81924	143,33229	376
9 Aug.	9	GW	1	52,81759	143,33514	600
9 Aug.	9	GW	1	52,81559	143,33675	749
9 Aug.	9	GW	1	52,80334	143,33758	955
9 Aug.	9	GW	1	52,81921	143,33586	611
9 Aug.	9	GW	1	52,82740	143,35284	1163
9 Aug.	9	GW	1	52,83800	143,35552	1422
9 Aug.	9	GW	1	52,84210	143,35475	1627
9 Aug.	9	GW	3	52,84252	143,35421	1623
9 Aug.	9	GW	1	52,84313	143,35335	1614
9 Aug.	9	GW	1	52,84273	143,35393	1620
9 Aug.	9	GW	1	52,86567	143,37270	3205
9 Aug.	9	GW	1	52,85521	143,34873	1441
9 Aug.	9	GW	2	52,85660	143,34006	883
9 Aug.	9	GW	1	52,85666	143,33937	838
9 Aug.	9	GW	2	52,85305	143,33335	407
11 Aug.	9	GW	2	52,87006	143,34111	1180
11 Aug.	9	GW	1	52,84095	143,35040	1312
11 Aug.	9	GW	2	52,84036	143,36875	2344
11 Aug.	9	GW	1	52,82943	143,37953	2899
11 Aug.	9	GW	2	52,81116	143,36224	2529
11 Aug.	9	GW	1	52,80552	143,33021	450
18 Aug.	12	HP	2	52,56098	143,31740	343
18 Aug.	10	GW	2	52,71663	143,34909	1909
18 Aug.	10	GW	1	52,73442	143,36368	2707
18 Aug.	10	GW	2	52,76858	143,36537	2859
18 Aug.	10	GW	1	52,78148	143,37027	3172
18 Aug.	10	GW	1	52,76743	143,35232	1987
18 Aug.	10	GW	1	52,78551	143,36065	2517
18 Aug.	10	GW	1	52,78628	143,35838	2369
18 Aug.	9	GW	3	52,82012	143,33428	466
18 Aug.	9	GW	3	52,80403	143,34967	1767
18 Aug.	9	GW	1	52,79524	143,36051	2517
18 Aug.	9	GW	1	52,79552	143,36160	2589
18 Aug.	9	GW	1	52,81856	143,35873	1956
18 Aug.	9	GW	1	52,81848	143,36693	2428
18 Aug.	9	GW	1	52,81747	143,36563	2413
18 Aug.	9	GW	2	52,84090	143,35664	1651
18 Aug.	9	GW	1	52,83943	143,35491	1463
18 Aug.	9	GW	3	52,83920	143,35806	1635
18 Aug.	9	GW	1	52,85122	143,34932	1436
18 Aug.	9	GW	1	52,86178	143,34830	1535
19 Aug.	9	GW	2	52,85210	143,39230	4310
19 Aug.	9	GW	2	52,83668	143,35392	1265
19 Aug.	9	GW	1	52,81878	143,36625	2372
19 Aug.	9	GW	1	52,82299	143,35375	1408
19 Aug.	9	GW	1	52,80545	143,38267	3977
19 Aug.	9	GW	1	52,81862	143,35780	1901
19 Aug.	9	GW	1	52,81838	143,35738	1894
19 Aug.	9	GW	2	52,81721	143,35521	1843
19 Aug.	9	GW	2	52,81598	143,35238	1751
19 Aug.	9	GW	1	52,81630	143,34316	1158
19 Aug.	10	GW	1	52,77176	143,35595	2204
19 Aug.	10	GW	1	52,77467	143,37705	3626
19 Aug.	10	GW	1	52,75588	143,34621	1522
19 Aug.	10	GW	1	52,74470	143,37620	3536
20 Aug.	10	GW	1	52,78869	143,35019	1828
20 Aug.	10	GW	1	52,77764	143,34518	1489
20 Aug.	10	GW	3	52,77887	143,33969	1118
20 Aug.	9	GW	2	52,81125	143,33735	869
20 Aug.	9	GW	1	52,81120	143,33610	786
20 Aug.	9	GW	2	52,81138	143,33922	993
20 Aug.	9	GW	1	52,81594	143,34791	1480
20 Aug.	9	GW	1	52,82231	143,35175	1334
20 Aug.	9	GW	1	52,82607	143,35947	1632
20 Aug.	9	GW	1	52,82577	143,36320	1884
20 Aug.	9	GW	1	52,83167	143,36182	1697
21 Aug.	9	GW	2	52,84456	143,35318	1643
21 Aug.	9	GW	1	52,83180	143,38066	2968
21 Aug.	9	GW	1	52,82468	143,35769	1564
21 Aug.	9	GW	2	52,81683	143,35083	1615
21 Aug.	9	GW	1	52,81632	143,34942	1560
21 Aug.	9	GW	1	52,81573	143,34747	1456
21 Aug.	9	GW	1	52,81212	143,34879	1619
21 Aug.	9	GW	2	52,81437	143,34075	1039
21 Aug.	9	GW	2	52,81657	143,33614	688
21 Aug.	10	GW	1	52,78636	143,33981	1121
21 Aug.	10	GW	2	52,77582	143,33720	953
21 Aug.	10	GW	1	52,77568	143,33805	1010
21 Aug.	10	GW	1	52,74958	143,35242	1929
21 Aug.	11	GW	1	52,69230	143,33876	1214

21 Aug.	11	GW	1	52,60060	143,34083	1629
21 Aug.	12	GW	1	52,54738	143,33239	1541
21 Aug.	13	GW	1	52,51160	143,31455	932
22 Aug.	9	GW	2	52,84863	143,34002	768
22 Aug.	9	GW	1	52,83133	143,35816	1450
22 Aug.	9	GW	1	52,83327	143,35420	1196
22 Aug.	9	GW	1	52,82105	143,35251	1454
22 Aug.	9	GW	1	52,81844	143,35982	2024
22 Aug.	9	GW	2	52,81183	143,33666	816
22 Aug.	9	GW	1	52,81493	143,34002	979
22 Aug.	10	GW	2	52,77337	143,32484	101
22 Aug.	10	GW	2	52,77297	143,33100	515
22 Aug.	10	GW	1	52,76159	143,33761	1008
22 Aug.	10	GW	1	52,76530	143,34421	1447
22 Aug.	10	GW	1	52,75923	143,34284	1331
22 Aug.	13	MW	1	52,45658	143,30720	1515
22 Aug.	13	MW	1	52,45073	143,31369	2092
23 Aug.	13	GW	1	52,50999	143,31095	722
23 Aug.	12	GW	1	52,54632	143,32744	1228
23 Aug.	11	HP	3	52,65092	143,32267	240
23 Aug.	11	GW	1	52,67380	143,33661	1113
23 Aug.	10	GW	1	52,72263	143,33885	1156
23 Aug.	10	GW	2	52,75483	143,34362	1341
23 Aug.	10	GW	1	52,76255	143,33081	553
23 Aug.	10	GW	2	52,77686	143,33962	1115
23 Aug.	10	GW	1	52,76121	143,32792	353
23 Aug.	10	GW	1	52,76492	143,33025	507
23 Aug.	9	GW	2	52,81497	143,33268	493
23 Aug.	9	GW	1	52,81873	143,33263	410
23 Aug.	9	GW	1	52,80289	143,34380	1376
23 Aug.	9	GW	1	52,80271	143,34206	1259
23 Aug.	9	GW	1	52,81894	143,35980	1993
23 Aug.	9	GW	1	52,82970	143,36366	1831
23 Aug.	9	GW	1	52,84360	143,34991	1438
23 Aug.	9	GW	1	52,84257	143,35168	1486
23 Aug.	9	GW	2	52,84538	143,35066	1468
23 Aug.	9	GW	1	52,85648	143,34649	1307
25 Aug.	12	GW	1	52,54061	143,31661	554
25 Aug.	11	GW	1	52,65686	143,33619	1153
25 Aug.	10	GW	2	52,73758	143,34119	1177
25 Aug.	10	GW	1	52,76259	143,33618	915
25 Aug.	10	GW	1	52,76709	143,32682	267
25 Aug.	10	GW	1	52,73383	143,34390	1396
25 Aug.	10	GW	1	52,73475	143,34047	1149
25 Aug.	10	GW	1	52,73219	143,34079	1213
25 Aug.	10	GW	1	52,72895	143,34107	1235
25 Aug.	9	GW	1	52,80435	143,34080	1168
25 Aug.	9	GW	2	52,83793	143,34893	1036
25 Aug.	9	GW	1	52,84092	143,34925	1246
25 Aug.	9	GW	1	52,84762	143,34801	1295
26 Aug.	9	GW	3	52,86142	143,34724	1457
26 Aug.	9	GW	1	52,81019	143,34568	1441
26 Aug.	9	GW	1	52,80351	143,33756	953
26 Aug.	9	GW	1	52,80345	143,33501	781
26 Aug.	10	GW	1	52,76751	143,32937	438
26 Aug.	10	HP	2	52,75120	143,32674	195
26 Aug.	10	GW	1	52,75015	143,33496	750
26 Aug.	10	GW	1	52,75333	143,34446	1393
26 Aug.	10	GW	2	52,75462	143,34647	1533
26 Aug.	10	GW	1	52,75122	143,34887	1689
26 Aug.	10	GW	1	52,74363	143,34956	1744
26 Aug.	10	GW	1	52,74090	143,34832	1669
26 Aug.	10	GW	1	52,74063	143,34816	1657
26 Aug.	10	GW	1	52,75377	143,33360	662
26 Aug.	12	GW	1	52,53862	143,33554	1857
1 Sept.	12	KW	2	52,55042	143,35185	2793
1 Sept.	10	GW	1	52,72576	143,34872	1786
1 Sept.	10	GW	1	52,78319	143,35985	2463
1 Sept.	10	GW	1	52,78857	143,33692	932
1 Sept.	10	GW	1	52,78826	143,33933	1095
1 Sept.	9	GW	1	52,81788	143,33820	796
1 Sept.	9	GW	2	52,82406	143,33688	391
1 Sept.	9	GW	1	52,80965	143,34168	1179
1 Sept.	9	GW	1	52,80351	143,33586	838

1 Sept.	9	GW	1	52,80983	143,34301	1266
1 Sept.	9	GW	2	52,80435	143,34593	1514
5 Sept.	10	GW	1	52,72941	143,35536	2199
5 Sept.	10	GW	2	52,72841	143,35383	2098
5 Sept.	10	GW	1	52,77822	143,33163	574
5 Sept.	9	GW	1	52,80303	143,33674	900
5 Sept.	9	GW	2	52,81602	143,34225	1104
5 Sept.	9	GW	2	52,81349	143,34404	1276
5 Sept.	9	GW	1	52,82021	143,34361	1008
5 Sept.	9	GW	1	52,81781	143,34002	919
5 Sept.	9	GW	1	52,86105	143,35064	1674
5 Sept.	9	GW	2	52,87250	143,34622	1564
6 Sept.	9	GW	2	52,84259	143,35172	1489
6 Sept.	9	GW	1	52,83891	143,35929	1696
6 Sept.	9	GW	2	52,79907	143,36260	2650
6 Sept.	9	GW	1	52,79877	143,36162	2585
6 Sept.	9	GW	2	52,82084	143,34154	853
6 Sept.	9	GW	2	52,82092	143,34188	868
6 Sept.	9	GW	2	52,80498	143,33578	828
6 Sept.	9	GW	2	52,80497	143,33417	719
6 Sept.	10	GW	4	52,77054	143,33171	579
6 Sept.	10	GW	1	52,76980	143,35565	2196
11 Sept.	12	GW	1	52,56340	143,33896	1782
11 Sept.	10	GW	1	52,73893	143,32571	137
11 Sept.	10	GW	1	52,74764	143,35105	1837
11 Sept.	10	GW	2	52,75777	143,33938	1082
11 Sept.	10	GW	1	52,75965	143,34081	1201
11 Sept.	10	GW	1	52,76351	143,34949	1810
11 Sept.	10	GW	2	52,76116	143,33720	977
11 Sept.	10	GW	2	52,76101	143,33762	1004
11 Sept.	10	GW	3	52,76362	143,33891	1096
11 Sept.	10	GW	1	52,75993	143,33401	750
11 Sept.	10	GW	1	52,76035	143,33244	650
11 Sept.	10	GW	1	52,76072	143,33083	544
11 Sept.	9	GW	1	52,79692	143,32573	168
11 Sept.	9	GW	2	52,79730	143,34663	1576
11 Sept.	9	GW	1	52,80734	143,34710	1570
11 Sept.	9	GW	1	52,82386	143,34474	847
11 Sept.	9	GW	1	52,80894	143,37960	3724
11 Sept.	9	GW	1	52,82731	143,35489	1300
14 Sept.	10	HP	1	52,74828	143,32838	305
14 Sept.	10	GW	1	52,77675	143,33303	670
14 Sept.	9	GW	1	52,81926	143,34204	965
14 Sept.	9	GW	1	52,85115	143,34148	909
14 Sept.	9	GW	1	52,84878	143,33960	743
14 Sept.	9	GW	1	52,86055	143,33938	919
15 Sept.	12	GW	1	52,58736	143,34448	1902
16 Sept.	12	GW	1	52,53823	143,33093	1558
16 Sept.	10	HP	4	52,74466	143,32801	285
16 Sept.	10	GW	1	52,77733	143,33890	1066
16 Sept.	10	GW	1	52,77716	143,33978	1126
16 Sept.	9	GW	1	52,81561	143,33022	316
16 Sept.	9	GW	1	52,87275	143,33812	1034
17 Sept.	9	GW	1	52,85036	143,36062	2169
17 Sept.	9	GW	1	52,82075	143,34450	1022
17 Sept.	10	GW	1	52,77428	143,34877	1718
17 Sept.	12	GW	2	52,56678	143,33857	1683
21 Sept.	12	GW	2	52,53842	143,32560	1200
21 Sept.	10	GW	1	52,70762	143,34492	1638
21 Sept.	9	GW	1	52,80999	143,33089	451
21 Sept.	9	GW	1	52,82762	143,37149	2386
21 Sept.	9	GW	1	52,85793	143,35758	2071
22 Sept.	13	GW	2	52,50837	143,31238	849
22 Sept.	12	GW	2	52,53281	143,32985	1591
22 Sept.	12	GW	1	52,55782	143,33983	1887
22 Sept.	12	HP	1	52,55985	143,32017	536
22 Sept.	10	GW	1	52,75863	143,34987	1796
22 Sept.	10	GW	1	52,78538	143,34060	1165
22 Sept.	10	GW	1	52,78519	143,34172	1239
22 Sept.	9	GW	1	52,81859	143,33303	439
22 Sept.	9	GW	1	52,79659	143,35246	1971
22 Sept.	9	GW	2	52,82834	143,36024	1626
22 Sept.	9	GW	2	52,83000	143,36089	1642
22 Sept.	9	GW	2	52,87027	143,34556	1481

23 Sept.	9	GW	1	52,85671	143,33799	748
23 Sept.	9	GW	1	52,84864	143,34666	1211
23 Sept.	9	GW	1	52,84822	143,34800	1297
23 Sept.	9	GW	1	52,83196	143,37381	2506
23 Sept.	9	GW	2	52,83155	143,37378	2503
23 Sept.	9	GW	1	52,79450	143,35230	1964
23 Sept.	9	GW	1	52,79470	143,35340	2038
23 Sept.	9	GW	1	52,80916	143,33283	591
23 Sept.	10	GW	2	52,75183	143,35219	1914
23 Sept.	11	GW	2	52,69167	143,34130	1383
23 Sept.	11	GW	1	52,64015	143,34748	1963
23 Sept.	11	GW	2	52,63695	143,34959	2117
23 Sept.	12	GW	1	52,60933	143,33832	1441
23 Sept.	12	GW	2	52,60903	143,33978	1541
23 Sept.	12	MW	1	52,57525	143,34811	2228
24 Sept.	13	GW	1	52,49021	143,31249	1261
24 Sept.	13	GW	1	52,50435	143,32557	1813
24 Sept.	12	GW	2	52,51864	143,32177	1292
24 Sept.	12	GW	1	52,54859	143,34741	2527
24 Sept.	12	HP	1	52,56016	143,31753	355
24 Sept.	12	GW	2	52,57277	143,34265	1887
24 Sept.	10	GW	2	52,72316	143,35193	2031
24 Sept.	10	GW	1	52,76099	143,36488	2832
24 Sept.	10	GW	1	52,76022	143,35452	2127
24 Sept.	9	GW	2	52,79850	143,35370	2051
24 Sept.	9	GW	1	52,80736	143,34709	1569
24 Sept.	9	GW	1	52,82910	143,36333	1817
24 Sept.	9	GW	2	52,86855	143,34611	1509
25 Sept.	9	GW	1	52,86855	143,37160	3176
25 Sept.	9	HP	3	52,83760	143,35730	1515
25 Sept.	9	GW	1	52,83057	143,36470	1894
25 Sept.	9	GW	1	52,82930	143,36435	1882
25 Sept.	9	GW	1	52,82835	143,36400	1874
25 Sept.	9	HP	2	52,82810	143,35481	1275
25 Sept.	10	GW	1	52,75263	143,35884	2363
25 Sept.	10	GW	1	52,75149	143,36630	2866
25 Sept.	11	HP	1	52,64094	143,33709	1257
25 Sept.	12	GW	2	52,53464	143,32765	1416
25 Sept.	12	GW	2	52,53795	143,32812	1378
25 Sept.	13	GW	3	52,49963	143,30744	720
26 Sept.	13	GW	1	52,50470	143,32740	1928
27 Sept.	9	GW	1	52,86163	143,35579	2026
27 Sept.	9	GW	2	52,83878	143,38562	3384
27 Sept.	9	GW	1	52,82251	143,38361	3307
27 Sept.	9	GW	1	52,79331	143,35920	2431
27 Sept.	9	GW	1	52,79060	143,33162	574
27 Sept.	10	GW	2	52,76921	143,32853	373
27 Sept.	10	GW	1	52,77513	143,35177	1928
27 Sept.	12	GW	1	52,56538	143,34345	2033
27 Sept.	12	GW	1	52,54548	143,33446	1713
28 Sept.	13	GW	2	52,48974	143,31550	1470
28 Sept.	12	GW	2	52,50464	143,32102	1504
28 Sept.	12	GW	2	52,56372	143,35064	2548
28 Sept.	9	GW	1	52,83030	143,36401	1849
30 Sept.	9	GW	1	52,85537	143,34809	1399
30 Sept.	9	GW	1	52,83457	143,36766	2113
30 Sept.	9	GW	2	52,80331	143,32814	319
1 Oct.	12	GW	1	52,53981	143,33319	1680
1 Oct.	12	GW	1	52,57540	143,34227	1831
1 Oct.	12	GW	1	52,57573	143,34177	1796
1 Oct.	11	GW	2	52,61057	143,33147	973
1 Oct.	11	GW	1	52,65454	143,35186	2213
1 Oct.	10	GW	1	52,77177	143,37893	3752
1 Oct.	10	GW	2	52,78009	143,36526	2839
1 Oct.	10	GW	1	52,76722	143,33178	602
1 Oct.	10	GW	1	52,78738	143,34024	1156
1 Oct.	10	GW	1	52,78756	143,33906	1077
1 Oct.	9	GW	1	52,82071	143,34367	979
1 Oct.	9	GW	1	52,82559	143,37107	2406
1 Oct.	9	GW	2	52,82915	143,37250	2430
1 Oct.	9	GW	2	52,82955	143,37261	2433
1 Oct.	9	GW	1	52,83076	143,36666	2024
1 Oct.	9	GW	1	52,83350	143,36683	2046
1 Oct.	9	GW	1	52,86917	143,35893	2362

1 Oct.	9	GW	1	52,87009	143,35467	2092
1 Oct.	9	GW	1	52,87165	143,34367	1377
2 Oct.	9	GW	1	52,83486	143,35825	1490
2 Oct.	9	GW	1	52,82577	143,37017	2342
2 Oct.	9	GW	2	52,83182	143,36599	1979
2 Oct.	9	GW	2	52,83082	143,37192	2379
2 Oct.	9	GW	1	52,82409	143,39628	4101
2 Oct.	10	GW	1	52,78594	143,34332	1353
2 Oct.	10	GW	1	52,78549	143,34558	1501
2 Oct.	10	GW	1	52,74060	143,39065	4526
2 Oct.	11	GW	1	52,65433	143,36465	3079
2 Oct.	11	GW	1	52,63460	143,35423	2439
2 Oct.	12	GW	1	52,53398	143,33722	2069
2 Oct.	12	GW	1	52,52795	143,33678	2098
2 Oct.	12	GW	2	52,51669	143,31747	1033
2 Oct.	13	GW	1	52,50605	143,32755	1908
2 Oct.	13	GW	1	52,49131	143,31397	1314
8 Oct.	9	GW	1	52,85846	143,34670	1359
8 Oct.	9	GW	1	52,82770	143,37761	2792
8 Oct.	9	GW	1	52,82587	143,36771	2178
8 Oct.	9	GW	1	52,81742	143,38871	3805
8 Oct.	9	GW	1	52,80632	143,33803	973
10 Oct.	13	GW	1	52,48172	143,30603	1025
10 Oct.	13	GW	2	52,48523	143,30457	841
10 Oct.	13	GW	1	52,49051	143,31032	1113
10 Oct.	13	GW	1	52,50765	143,31310	911
10 Oct.	13	GW	1	52,49866	143,30496	564
10 Oct.	12	GW	1	52,51915	143,32048	1197
10 Oct.	12	GW	1	52,53504	143,32062	938
10 Oct.	12	GW	1	52,52358	143,34184	2529
10 Oct.	12	GW	1	52,51342	143,35442	3568
10 Oct.	12	GW	1	52,53954	143,33524	1822
10 Oct.	12	GW	1	52,54438	143,33237	1591
10 Oct.	12	GW	3	52,56709	143,33514	1448
11 Oct.	12	GW	1	52,57757	143,32630	741
10 Oct.	11	GW	1	52,61306	143,32365	433
10 Oct.	10	GW	1	52,75040	143,35383	2024
10 Oct.	9	GW	1	52,81400	143,36329	2494
10 Oct.	9	GW	1	52,82412	143,36517	2061
10 Oct.	9	GW	1	52,84271	143,35778	1833
10 Oct.	9	GW	1	52,85218	143,34614	1231
10 Oct.	9	GW	1	52,86644	143,35161	1810
15 Oct.	9	GW	1	52,87274	143,34630	1574
15 Oct.	9	GW	1	52,85884	143,35941	2210
15 Oct.	9	GW	1	52,83388	143,36812	2136
15 Oct.	9	GW	1	52,80261	143,37911	3757
15 Oct.	9	GW	1	52,80913	143,34255	1244
15 Oct.	11	GW	1	52,59773	143,33190	1041
15 Oct.	12	GW	1	52,59068	143,33244	1089
15 Oct.	12	GW	1	52,58911	143,33790	1458
15 Oct.	12	GW	1	52,58851	143,33966	1577
15 Oct.	12	MW	1	52,56235	143,33644	1628
15 Oct.	12	GW	1	52,55892	143,34887	2485
15 Oct.	12	GW	1	52,57018	143,33512	1415
15 Oct.	12	GW	1	52,56264	143,35302	2730
15 Oct.	12	GW	2	52,55163	143,34339	2205
15 Oct.	12	GW	1	52,53980	143,32720	1278
15 Oct.	12	GW	1	52,52315	143,31336	648
15 Oct.	13	GW	1	52,50091	143,31035	901
15 Oct.	13	GW	2	52,49708	143,32052	1634
16 Oct.	13	GW	1	52,48496	143,31568	1595
16 Oct.	13	GW	1	52,48525	143,31530	1566
16 Oct.	12	GW	2	52,54103	143,33581	1847
16 Oct.	12	GW	1	52,53802	143,33724	1982
16 Oct.	12	GW	2	52,54297	143,33377	1696
16 Oct.	12	GW	2	52,54103	143,33581	1847
16 Oct.	12	GW	1	52,56065	143,33672	1653
16 Oct.	12	GW	3	52,57526	143,33607	1412
16 Oct.	10	GW	3	52,75491	143,36390	2710
16 Oct.	10	GW	1	52,75786	143,36190	2597
16 Oct.	10	GW	1	52,75619	143,36312	2663
16 Oct.	9	GW	1	52,82806	143,34867	872
16 Oct.	9	GW	1	52,82453	143,36017	1727
16 Oct.	9	GW	1	52,82649	143,36166	1765

16 Oct.	9	GW	1	52,83980	143,36619	2161
16 Oct.	9	GW	1	52,84594	143,34852	1323
16 Oct.	9	GW	1	52,84848	143,35620	1851

Meteorological conditions on the northeast coast of Sakhalin
in June-October, 2005 (Odoptu Meteorological Station)

1 - Date **2** – Time **3** – Sea level atmospheric pressure, (mbar).
4 - Sea level atmospheric pressure (mbar) **5** – Air temperature, (^{o}C) **6** – Surface water temperature (^{o}C) 7 – Wind direction (^{o}) 8 – Wind speed (m/sec)

1	2	3	4	5	6	7	8
20 June	8:00	995,0	996,4	14,3		210	5
20 June	11:00	994,1	995,4	19,9	7,8	200	4
20 June	14:00	993,1	994,4	25,6		280	5
20 June	17:00	993,1	994,4	24,1	6,6	280	7
20 June	20:00	994,4	995,7	20,5		290	8
20 June	23:00	995,7	997,1	16,5	6,0	280	6
21 June	8:00	999,3	1000,7	11,2		80	2
21 June	11:00	999,6	1001,0	11,8	10,7	100	3
21 June	14:00	999,3	1000,7	12,5		120	7
21 June	17:00	998,3	999,7	12,8	13,4	130	7
21 June	20:00	998,1	999,5	12,5		140	9
21 June	23:00	998,9	1000,3	13,1	12,0	160	6
22 June	8:00	996,6	998,0	11,1		150	5
22 June	11:00	995,3	996,7	11,3	7,1	130	8
22 June	14:00	994,4	995,8	10,2		130	9
22 June	17:00	993,2	994,6	8,5	4,6	130	8
22 June	20:00	992,0	993,4	7,0		110	5
22 June	23:00	992,1	993,5	7,1	6,7	140	5
23 June	8:00	988,1	989,5	13,0		250	3
23 June	11:00	987,6	989,0	12,1	6,1	60	1
23 June	14:00	987,8	989,2	11,8		60	2
23 June	17:00	986,6	988,0	8,7	6,5	10	5
23 June	20:00	986,8	988,2	8,1		20	7
23 June	23:00	987,5	988,9	8,8	7,6	50	13
24 June	8:00	994,4	995,8	7,4		360	11
24 June	11:00	995,9	997,3	9,4	10,2	310	10
24 June	14:00	997,2	998,6	9,8		330	12
24 June	17:00	998,1	999,5	11,8	10,7	310	10
24 June	20:00	998,6	1000,0	10,5		310	8
24 June	23:00	999,3	1000,7	8,4	10,3	310	7
25 June	8:00	1001,7	1003,1	9,2		330	7
25 June	11:00	1002,5	1003,9	10,8	10,0	340	6
25 June	14:00	1003,3	1004,7	11,2		360	5
25 June	17:00	1003,3	1004,4	11,5	10,6	290	4
25 June	20:00	1002,3	1003,7	11,2		140	4
25 June	23:00	1003,0	1004,4	8,8	10,8	140	5
26 June	8:00	1001,9	1003,3	11,0		170	5
26 June	11:00	1001,0	1002,4	10,0	8,6	150	6
26 June	14:00	999,4	1000,8	10,0		140	9
26 June	17:00	998,3	999,7	10,3	7,6	140	7
26 June	20:00	998,7	1000,1	9,6		160	5
26 June	23:00	999,0	1000,4	8,2	7,9	160	2
27 June	8:00	997,4	998,8	10,0		140	4
27 June	11:00	997,2	998,6	9,6	3,5	130	4
27 June	14:00	997,1	998,5	8,8		120	6
27 June	17:00	997,2	998,6	8,1	3,6	110	3
27 June	20:00	997,8	999,2	7,8		80	2
27 June	23:00	999,0	1000,4	6,7	3,4	360	3
28 June	8:00	1001,4	1002,8	5,9		340	5
28 June	11:00	1003,2	1004,6	7,3	5,6	360	4
28 June	14:00	1004,6	1006,0	7,5		10	6
28 June	17:00	1006,0	1007,4	7,3	6,5	10	6
28 June	20:00	1008,0	1009,4	6,7		30	5
28 June	23:00	1010,2	1011,6	6,6	5,6	40	5
29 June	8:00	1014,2	1015,6	5,7		20	3
29 June	11:00	1015,8	1017,3	5,3	5,4	50	3
29 June	14:00	1015,3	1016,8	6,6		80	2

1	2	3	4	5	6	7	8
29 June	17:00	1015,3	1016,8	6,9	4,2	110	4
29 June	20:00	1015,5	1017,0	6,3		130	4
29 June	23:00	1015,4	1016,9	5,8	4,7	140	5
30 June	8:00	1011,7	1013,1	5,4		140	5
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
30 June	11:00	1009,8	1011,2	8,6	4,6	130	7
30 June	14:00	1007,4	1008,8	8,6		140	9
30 June	17:00	1005,4	1006,8	9,4	5,2	140	10
30 June	20:00	1005,2	1006,6	9,5		160	5
30 June	23:00	1005,3	1006,7	7,9	7,6	170	4
1 July	8:00	1005,4	1006,8	9,3		290	4
1 July	11:00	1004,6	1006,0	9,9	5,3	300	9
1 July	14:00	1004,1	1005,5	11,1		290	8
1 July	17:00	1004,1	1005,5	10,4	3,2	290	9
1 July	20:00	1003,8	1005,2	10,1		310	9
1 July	23:00	1004,6	1006,0	5,6	3,0	340	5
2 July	8:00	1005,7	1007,1	7,6		330	8
2 July	11:00	1006,3	1007,7	8,2	5,1	340	7
2 July	14:00	1006,7	1008,1	8,6		350	8
2 July	17:00	1007,2	1008,6	8,6	5,8	350	8
2 July	20:00	1007,7	1009,1	8,4		340	6
2 July	23:00	1008,3	1009,7	7,6	5,5	350	5
3 July	8:00	1008,6	1010,0	7,5		20	2
3 July	11:00	1008,8	1010,2	7,3	6,1	40	3
3 July	14:00	1009,1	1010,5	8,1		50	2
3 July	17:00	1008,6	1010,0	8,7	7,2	70	3
3 July	20:00	1009,3	1010,7	8,9		90	2
3 July	23:00	1009,7	1011,1	7,9	7,5	110	2
4 July	8:00	1010,8	1012,2	8,5		60	2
4 July	11:00	1011,5	1012,9	8,5	7,9	60	3
4 July	14:00	1012,0	1013,4	9,0		50	4
4 July	17:00	1012,8	1014,2	8,5	8,2	50	5
4 July	20:00	1013,1	1014,5	7,6		60	3
4 July	23:00	1014,2	1015,6	7,6	8,5	70	4
5 July	8:00	1014,9	1016,3	8,0		90	4
5 July	11:00	1015,1	1016,5	8,1	8,5	80	4
5 July	14:00	1016,0	1017,4	7,8		70	5
5 July	17:00	1015,6	1017,1	7,8	8,7	60	4
5 July	20:00	1015,8	1017,3	7,5		80	3
5 July	23:00	1016,0	1017,5	7,4	8,4	80	4
6 July	8:00	1015,4	1016,9	7,4		60	5
6 July	11:00	1015,3	1016,8	7,7	6,9	30	4
6 July	14:00	1015,0	1016,5	7,2		40	4
6 July	17:00	1014,2	1015,6	7,3	6,6	50	5
6 July	20:00	1013,6	1015,0	7,4		40	4
6 July	23:00	1013,6	1015,0	7,5	6,4	50	6
7 July	8:00	1011,9	1013,3	7,4		40	6
7 July	11:00	1011,8	1013,2	7,6	6,6	50	5
7 July	14:00	1011,7	1013,1	7,9		60	3
7 July	17:00	1011,5	1012,9	8,5	7,0	60	2
7 July	20:00	1011,5	1012,9	8,0		130	2
7 July	23:00	1011,5	1012,9	7,4	6,2	110	2
8 July	8:00	1011,8	1013,2	7,7		130	3
8 July	11:00	1012,0	1013,4	8,0	6,8	130	4
8 July	14:00	1012,0	1013,4	8,6		120	4
8 July	17:00	1011,4	1012,8	9,6	7,8	130	4
8 July	20:00	1011,4	1012,8	7,2		130	4

1	2	3	4	5	6	7	8
8 July	23:00	1012,2	1013,6	7,0	7,4	140	5
9 July	8:00	1012,5	1013,9	5,8		140	6
9 July	11:00	1012,8	1014,2	7,4	5,8	130	6
9 July	14:00	1012,3	1013,7	6,8		130	8
9 July	17:00	1011,8	1013,2	7,6	5,0	150	9
9 July	20:00	1011,4	1012,8	5,4		140	8
9 July	23:00	1011,6	1013,0	5,6	4,7	140	6
10 July	8:00	1011,3	1012,7	4,8		150	8
10 July	11:00	1010,9	1012,3	7,6	4,1	140	8
10 July	14:00	1010,1	1011,5	7,4		140	9
10 July	17:00	1008,6	1010,0	6,5	5,0	140	10
10 July	20:00	1008,1	1009,5	5,9		150	8
10 July	23:00	1008,3	1009,7	7,0	4,4	150	5
11 July	8:00	1006,5	1007,9	6,3		150	5
11 July	11:00	1005,5	1006,9	7,0	4,2	130	7
11 July	14:00	1004,9	1003,6	6,9		140	10
11 July	17:00	1003,8	1005,2	6,9	5,0	140	9
11 July	20:00	1002,5	1003,9	6,1		140	8
11 July	23:00	1002,8	1004,2	7,9	5,4	150	6
12 July	8:00	1000,7	1002,1	11,9		200	6
12 July	11:00	999,9	1001,3	19,2	6,1	180	6
12 July	14:00	999,0	1000,4	14,5		140	4
12 July	17:00	997,9	999,3	13,1	5,6	140	3
12 July	20:00	998,2	999,5	26,0		210	4
12 July	23:00	999,4	1000,7	21,2	5,6	210	4
13 July	8:00	1000,9	1002,3	16,5		200	6
13 July	11:00	1001,3	1002,7	18,4	4,1	230	5
13 July	14:00	1001,8	1003,1	24,6		120	2
13 July	17:00	1001,9	1003,3	13,7	5,1	140	4
13 July	20:00	1002,9	1004,2	21,8		160	4
13 July	23:00	1004,6	1005,9	21,0	8,4	190	5
14 July	8:00	1007,0	1008,4	17,7		200	5
14 July	11:00	1007,5	1008,9	23,0	12,4	180	5
14 July	14:00	1007,1	1008,5	18,2		130	7
14 July	17:00	1006,4	1007,8	21,6	15,6	130	6
14 July	20:00	1006,7	1008,1	20,8		150	5
14 July	23:00	1008,3	1009,7	21,8	16,1	200	8
15 July	8:00	1007,3	1008,7	18,2		210	5
15 July	11:00	1006,9	1008,3	21,6	14,1	180	6
15 July	14:00	1005,8	1007,2	24,5		180	9
15 July	17:00	1005,1	1006,5	23,9	15,8	200	11
15 July	20:00	1005,0	1006,4	23,3		190	10
15 July	23:00	1005,5	1006,9	19,2	13,0	190	11
16 July	8:00	1002,9	1004,3	17,7		200	8
16 July	11:00	1002,5	1003,9	19,6	13,6	220	6
16 July	14:00	1001,9	1003,3	19,0		180	6
16 July	17:00	1000,7	1002,1	16,0	14,9	130	7
16 July	20:00	1000,4	1001,8	16,2		150	6
16 July	23:00	1000,4	1001,8	16,7	14,2	170	5
17 July	8:00	1000,5	1001,9	15,5		230	1
17 July	11:00	1001,2	1002,6	17,0	13,4	230	3
17 July	14:00	1001,0	1002,4	16,0		110	2
17 July	17:00	1000,4	1001,8	16,7	15,1	100	1
17 July	20:00	1001,1	1002,5	15,6		70	4
17 July	23:00	1001,4	1002,8	14,9	14,6	80	3
18 July	8:00	1000,6	1002,0	12,7		20	6
18 July	11:00	1000,5	1001,9	12,3	13,5	30	6
18 July	14:00	1000,0	1001,4	12,0		30	4
18 July	17:00	1000,8	1002,2	12,7	14,4	40	3
18 July	20:00	1001,3	1002,7	12,2		30	4
18 July	23:00	1002,3	1003,7	12,3	14,8	70	7
19 July	8:00	1006,9	1008,3	11,5		100	5
19 July	11:00	1008,0	1009,4	11,7	14,6	100	3
19 July	14:00	1008,2	1009,6	11,8		80	5
19 July	17:00	1008,7	1010,1	12,0	14,4	110	5
19 July	20:00	1009,3	1010,7	11,9		120	6
19 July	23:00	1009,7	1011,1	11,8	14,1	130	8
20 July	8:00	1009,4	1010,8	10,9		130	9
20 July	11:00	1010,0	1011,4	9,9	10,1	130	7
20 July	14:00	1008,9	1010,3	8,6		130	6

1	2	3	4	5	6	7	8
20 July	17:00	1008,3	1009,7	7,7	7,4	120	6
20 July	20:00	1007,7	1009,1	6,9		130	6
20 July	23:00	1007,8	1009,2	6,7	5,1	130	5
21 July	8:00	1006,8	1008,2	7,8		140	5
21 July	11:00	1007,7	1009,1	10,0	3,4	140	4
21 July	14:00	1007,9	1009,3	7,5		130	3
21 July	17:00	1008,3	1009,7	11,9	2,7	140	2
21 July	20:00	1009,7	1011,1	7,6		40	3
21 July	23:00	1010,8	1012,2	9,9	2,8	0	0
22 July	8:00	1012,4	1013,8	12,7		160	1
22 July	11:00	1013,1	1014,5	12,8	3,6	140	6
22 July	14:00	1012,4	1013,8	10,1		120	6
22 July	17:00	1011,6	1013,0	8,4	4,0	120	5
22 July	20:00	1010,9	1012,3	10,1		140	7
22 July	23:00	1011,6	1013,0	9,3	7,2	140	4
23 July	8:00	1012,1	1013,5	8,5		140	4
23 July	11:00	1011,6	1013,0	10,0	7,4	130	4
23 July	14:00	1011,1	1012,5	11,5		130	7
23 July	17:00	1010,0	1011,4	13,2	6,2	140	7
23 July	20:00	1010,7	1012,1	10,8		130	6
23 July	23:00	1010,8	1012,2	9,8	5,3	140	4
24 July	8:00	1011,2	1012,6	10,2		150	3
24 July	11:00	1011,3	1012,7	10,8	6,8	140	4
24 July	14:00	1011,3	1012,7	11,4		120	5
24 July	17:00	1010,7	1012,1	11,4	6,0	120	4
24 July	20:00	1011,3	1012,7	10,6		140	4
24 July	23:00	1011,6	1013,0	9,3	5,6	140	4
25 July	8:00	1011,4	1012,8	12,3		130	3
25 July	11:00	1011,6	1013,3	13,1	9,8	110	1
25 July	14:00	1012,0	1013,4	12,9		110	3
25 July	17:00	1010,6	1012,0	12,7	9,5	120	3
25 July	20:00	1010,1	1011,5	11,8		120	4
25 July	23:00	1010,1	1011,5	11,4	9,5	120	3
26 July	8:00	1008,9	1010,3	12,4		130	3
26 July	11:00	1008,3	1009,7	13,1	9,2	120	2
26 July	14:00	1007,9	1009,3	13,4		110	4
26 July	17:00	1007,0	1008,4	14,2	9,8	100	3
26 July	20:00	1007,1	1008,5	13,9		140	3
26 July	23:00	1007,5	1008,9	13,0	9,9	150	3
27 July	8:00	1007,4	1008,8	13,1		130	2
27 July	11:00	1007,6	1009,0	13,5	9,1	130	2
27 July	14:00	1007,2	1008,6	14,3		100	3
27 July	17:00	1006,9	1008,3	13,6	9,6	100	3
27 July	20:00	1007,3	1008,7	13,1		100	2
27 July	23:00	1007,6	1009,0	13,0	9,8	90	1
28 July	8:00	1007,6	1009,0	11,7		340	3
28 July	11:00	1007,6	1009,0	12,8	10,2	340	4
28 July	14:00	1007,5	1008,9	13,4		50	4
28 July	17:00	1006,6	1008,0	14,8	12,6	350	4
28 July	20:00	1006,4	1007,8	13,9		60	3
28 July	23:00	1007,2	1008,6	12,5	12,4	80	1
29 July	8:00	1006,7	1008,1	12,1		0	0
29 July	11:00	1007,1	1008,5	13,4	12,4	90	3
29 July	14:00	1007,0	1008,4	14,5		50	4
29 July	17:00	1006,7	1008,1	14,5	14,9	70	4
29 July	20:00	1006,8	1008,2	13,7		100	3
29 July	23:00	1006,7	1008,1	12,8	12,6	150	4
30 July	8:00	1006,3	1007,7	13,5		170	4
30 July	11:00	1006,4	1007,8	15,9	8,1	180	5
30 July	14:00	1005,9	1007,3	15,4		130	6
30 July	17:00	1005,4	1006,8	13,0	6,2	140	7
30 July	20:00	1005,2	1006,6	11,1		140	8
30 July	23:00	1005,3	1006,7	9,3	6,4	140	5
31 July	8:00	1005,5	1006,9	14,0		150	3
31 July	11:00	1006,0	1007,4	16,1	2,8	160	4
31 July	14:00	1005,9	1007,3	12,6		140	7
31 July	17:00	1005,2	1006,6	11,0	4,2	140	9
31 July	20:00	1005,5	1006,9	8,5		140	9
31 July	23:00	1006,8	1008,2	7,9	3,1	140	6
1 Aug.	8:00	1007,8	1009,2	12,0		140	4

1	2	3	4	5	6	7	8
1 Aug.	11:00	1007,8	1009,2	11,7	4,4	140	4
1 Aug.	14:00	1007,7	1009,1	10,4		130	7
1 Aug.	17:00	1007,7	1009,1	11,8	6,1	140	7
1 Aug.	20:00	1007,7	1009,1	6,6		130	6
1 Aug.	23:00	1008,2	1009,6	7,2	5,6	140	6
2 Aug.	8:00	1008,2	1009,6	10,6		150	6
2 Aug.	11:00	1007,8	1009,2	11,8	4,6	140	5
2 Aug.	14:00	1006,9	1008,3	9,9		140	9
2 Aug.	17:00	1006,6	1008,0	10,6	6,3	140	8
2 Aug.	20:00	1005,1	1006,5	10,1		150	6
2 Aug.	23:00	1004,8	1006,2	9,2	5,6	150	5
3 Aug.	8:00	1002,1	1003,5	9,3		150	4
3 Aug.	11:00	1001,7	1003,1	9,9	3,9	140	4
3 Aug.	14:00	1000,9	1002,4	10,2		140	5
3 Aug.	17:00	1000,0	1001,4	10,0	4,4	120	5
3 Aug.	20:00	1000,2	1001,6	9,1		110	4
3 Aug.	23:00	1000,6	1002,0	10,2	4,4	130	4
4 Aug.	8:00	1000,5	1001,9	12,9		130	2
4 Aug.	11:00	1000,8	1002,2	11,6	5,1	110	1
4 Aug.	14:00	1001,3	1002,7	12,5		30	2
4 Aug.	17:00	1001,4	1002,8	13,9	4,9	130	2
4 Aug.	20:00	1001,7	1003,1	13,9		130	2
4 Aug.	23:00	1002,6	1004,0	11,8	4,8	130	4
5 Aug.	8:00	1002,6	1004,0	16,5		260	1
5 Aug.	11:00	1002,1	1003,5	17,1	6,8	260	2
5 Aug.	14:00	1001,6	1003,0	17,3		110	2
5 Aug.	17:00	1000,5	1001,9	15,5	7,7	50	1
5 Aug.	20:00	1000,0	1001,4	15,6		300	6
5 Aug.	23:00	1000,1	1001,5	15,0	8,1	260	2
6 Aug.	8:00	998,4	999,8	14,6		240	5
6 Aug.	11:00	996,8	998,2	17,0	12,6	270	10
6 Aug.	14:00	996,9	998,3	18,6		270	12
6 Aug.	17:00	997,2	998,6	15,0	8,3	280	12
6 Aug.	20:00	997,9	999,3	14,9		280	11
6 Aug.	23:00	999,7	1001,1	14,6	7,3	300	8
7 Aug.	8:00	1003,2	1004,6	12,7		210	1
7 Aug.	11:00	1003,4	1004,8	16,8	10,3	200	3
7 Aug.	14:00	1003,6	1005,0	18,3		280	5
7 Aug.	17:00	1003,6	1004,9	22,0	13,1	290	6
7 Aug.	20:00	1004,7	1006,1	21,0		270	4
7 Aug.	23:00	1005,5	1006,9	16,0	13,1	220	2
8 Aug.	8:00	1006,2	1007,6	14,0		170	2
8 Aug.	11:00	1005,7	1007,1	18,8	9,0	130	5
8 Aug.	14:00	1004,3	1005,7	17,4		130	6
8 Aug.	17:00	1002,5	1003,9	18,0	13,2	140	7
8 Aug.	20:00	1001,2	1002,6	16,3		150	5
8 Aug.	23:00	1000,2	1001,6	20,0	14,0	200	6
9 Aug.	8:00	1003,6	1005,0	15,4		290	5
9 Aug.	11:00	1004,0	1005,4	17,8	10,0	290	5
9 Aug.	14:00	1004,5	1005,9	19,8		320	7
9 Aug.	17:00	1004,2	1005,6	19,8	14,1	310	5
9 Aug.	20:00	1003,2	1004,6	16,2		70	2
9 Aug.	23:00	1002,8	1004,2	15,8	13,1	180	1
10 Aug.	8:00	999,5	1000,9	16,8		30	4
10 Aug.	11:00	999,0	1000,3	22,1	12,6	250	3
10 Aug.	14:00	998,5	999,9	18,8		110	4
10 Aug.	17:00	998,6	1000,0	17,3	15,2	110	3
10 Aug.	20:00	999,3	1000,7	17,3		160	3
10 Aug.	23:00	1000,2	1001,6	19,8	12,1	250	3
11 Aug.	8:00	1003,7	1005,1	15,9		350	1
11 Aug.	11:00	1005,1	1006,5	18,4	14,6	130	3
11 Aug.	14:00	1005,7	1007,1	19,0		120	4
11 Aug.	17:00	1006,3	1007,7	19,2	15,5	130	4
11 Aug.	20:00	1006,7	1008,1	16,2		120	4
11 Aug.	23:00	1007,7	1009,1	14,2	13,8	150	5
12 Aug.	8:00	1005,2	1006,6	12,2		140	9
12 Aug.	11:00	1004,4	1005,8	13,6	10,6	150	9
12 Aug.	14:00	1003,4	1004,8	12,8		140	10
12 Aug.	17:00	1001,1	1002,5	12,7	6,5	140	8
12 Aug.	20:00	1000,9	1002,3	11,8		140	5

1	2	3	4	5	6	7	8
12 Aug.	23:00	1000,9	1002,3	9,7	5,8	140	5
13 Aug.	8:00	997,3	998,6	20,9		190	5
13 Aug.	11:00	997,0	998,3	22,7	4,1	220	6
13 Aug.	14:00	996,7	988,0	21,6		220	6
13 Aug.	17:00	995,6	997,0	19,0	4,1	20	4
13 Aug.	20:00	996,9	998,3	17,6		270	5
13 Aug.	23:00	997,5	998,9	15,3	нет	270	7
14 Aug.	8:00	997,4	998,8	14,0		280	11
14 Aug.	11:00	996,6	998,0	14,3	3,4	280	13
14 Aug.	14:00	996,2	997,6	14,6		280	14
14 Aug.	17:00	998,4	999,8	14,1	3,2	320	7
14 Aug.	20:00	999,9	1001,3	12,5		320	9
14 Aug.	23:00	1002,1	1003,5	11,4	3,1	330	11
15 Aug.	8:00	1004,7	1006,1	13,5		310	8
15 Aug.	11:00	1005,3	1006,7	14,2	10,5	330	15
15 Aug.	14:00	1006,1	1007,5	12,2		330	14
15 Aug.	17:00	1006,7	1008,1	11,5	12,8	340	10
15 Aug.	20:00	1007,1	1008,5	11,0		350	9
15 Aug.	23:00	1008,2	1009,6	10,9	13,4	350	8
16 Aug.	8:00	1008,5	1009,9	11,8		30	4
16 Aug.	11:00	1008,5	1009,9	12,7	13,6	80	2
16 Aug.	14:00	1008,6	1010,0	13,2		110	3
16 Aug.	17:00	1008,6	1010,0	13,4	13,4	120	3
16 Aug.	20:00	1008,8	1010,2	13,0		150	3
16 Aug.	23:00	1007,6	1009,0	12,6	12,8	130	7
17 Aug.	8:00	1005,1	1006,5	12,8		160	9
17 Aug.	11:00	1005,0	1006,4	13,8	9,8	160	8
17 Aug.	14:00	1004,8	1006,2	14,0		170	7
17 Aug.	17:00	1005,0	1006,4	12,8	7,5	160	2
17 Aug.	20:00	1007,6	1009,0	13,8		200	1
17 Aug.	23:00	1009,8	1011,2	12,8	6,8	310	3
18 Aug.	8:00	1012,2	1013,6	10,0		250	2
18 Aug.	11:00	1013,3	1014,7	15,6	7,8	250	3
18 Aug.	14:00	1013,1	1014,5	17,7		280	3
18 Aug.	17:00	1012,5	1013,9	15,4	6,9	120	3
18 Aug.	20:00	1012,8	1014,2	14,3		160	3
18 Aug.	23:00	1013,1	1014,5	13,7	9,6	190	3
19 Aug.	8:00	1012,1	1013,5	13,0		220	1
19 Aug.	11:00	1012,0	1013,4	18,7	8,3	270	3
19 Aug.	14:00	1011,4	1012,8	14,4		130	5
19 Aug.	17:00	1011,3	1012,7	13,0	7,5	110	4
19 Aug.	20:00	1011,9	1013,3	13,5		150	1
19 Aug.	23:00	1012,4	1013,8	12,0	7,9	0	0
20 Aug.	8:00	1012,5	1013,9	12,8		170	3
20 Aug.	11:00	1012,7	1014,1	17,1	9,1	170	3
20 Aug.	14:00	1012,1	1013,5	13,3		130	7
20 Aug.	17:00	1011,6	1013,0	16,1	8,7	140	6
20 Aug.	20:00	1011,9	1013,3	12,4		150	4
20 Aug.	23:00	1012,3	1013,7	11,0	8,5	140	3
21 Aug.	8:00	1011,5	1012,9	12,1		170	4
21 Aug.	11:00	1011,6	1013,0	13,7	8,8	130	6
21 Aug.	14:00	1011,1	1012,5	12,5		140	9
21 Aug.	17:00	1010,6	1012,0	11,3	7,0	130	5
21 Aug.	20:00	1010,4	1011,8	14,9		150	5
21 Aug.	23:00	1011,5	1012,9	10,0	7,0	140	3
22 Aug.	8:00	1009,1	1010,5	8,3		140	4
22 Aug.	11:00	1009,2	1010,6	12,8	6,1	240	2
22 Aug.	14:00	1008,9	1010,3	12,0		290	6
22 Aug.	17:00	1008,5	1009,9	14,3	7,4	290	6
22 Aug.	20:00	1006,1	1007,5	13,6		290	6
22 Aug.	23:00	1009,9	1011,3	12,7	6,9	270	4
23 Aug.	8:00	1011,1	1012,5	10,7		300	1
23 Aug.	11:00	1010,8	1012,2	11,6	7,5	90	2
23 Aug.	14:00	1010,0	1011,4	13,6		100	2
23 Aug.	17:00	1008,5	1009,9	11,7	8,3	140	5
23 Aug.	20:00	1008,2	1009,6	11,7		150	3
23 Aug.	23:00	1008,4	1009,8	9,6	7,9	70	3
24 Aug.	8:00	1008,7	1010,1	9,6		360	4
24 Aug.	11:00	1010,2	1011,6	10,8	7,8	350	4
24 Aug.	14:00	1011,6	1013,0	11,1		20	4

1	2	3	4	5	6	7	8
24 Aug.	17:00	1012,0	1013,4	12,0	9,0	70	2
24 Aug.	20:00	1013,0	1014,4	12,8		0	0
24 Aug.	23:00	1012,9	1014,3	13,2	8,4	200	3
25 Aug.	8:00	1011,7	1013,1	13,6		220	7
25 Aug.	11:00	1011,2	1012,6	19,0	9,6	210	5
25 Aug.	14:00	1010,0	1011,4	23,8		210	7
25 Aug.	17:00	1009,2	1010,6	25,6	10,2	210	5
25 Aug.	20:00	1008,4	1009,8	23,3		220	7
25 Aug.	23:00	1008,4	1009,8	18,8	9,6	210	6
26 Aug.	8:00	1008,0	1009,4	17,2		240	6
26 Aug.	11:00	1009,0	1010,4	22,0	9,6	280	7
26 Aug.	14:00	1010,1	1011,5	14,0		350	6
26 Aug.	17:00	1011,0	1012,4	13,1	9,9	360	6
26 Aug.	20:00	1011,6	1013,0	11,3		30	4
26 Aug.	23:00	1012,4	1013,8	11,2	10,3	70	4
27 Aug.	8:00	1012,0	1013,4	10,7		70	3
27 Aug.	11:00	1012,0	1013,4	12,4	10,8	100	3
27 Aug.	14:00	1011,3	1012,7	13,0		90	5
27 Aug.	17:00	1011,0	1012,4	13,2	13,4	90	5
27 Aug.	20:00	1010,6	1012,0	13,1		80	6
27 Aug.	23:00	1010,3	1011,7	12,9	13,0	100	7
28 Aug.	8:00	1009,1	1010,5	12,9		90	5
28 Aug.	11:00	1009,0	1010,4	12,9	12,5	100	7
28 Aug.	14:00	1008,6	1010,0	12,9		110	6
28 Aug.	17:00	1007,7	1009,1	12,6	12,1	80	6
28 Aug.	20:00	1007,1	1008,5	12,7		90	3
28 Aug.	23:00	1007,1	1008,5	12,2	12,4	90	3
29 Aug.	8:00	1005,0	1006,4	12,0		50	3
29 Aug.	11:00	1004,8	1006,2	12,7	10,8	50	2
29 Aug.	14:00	1004,1	1005,5	13,4		30	2
29 Aug.	17:00	1003,6	1005,0	13,1	11,0	40	2
29 Aug.	20:00	1004,0	1005,4	12,9		80	2
29 Aug.	23:00	1004,1	1005,5	12,9	10,7	130	3
30 Aug.	8:00	1002,3	1003,7	12,1		110	6
30 Aug.	11:00	1001,3	1002,7	12,4	10,1	120	6
30 Aug.	14:00	1000,7	1002,1	12,3		120	7
30 Aug.	17:00	1000,6	1002,0	12,3	10,1	130	6
30 Aug.	20:00	1001,6	1003,0	11,5		130	5
30 Aug.	23:00	1001,9	1003,3	12,3	9,8	150	5
31 Aug.	8:00	1003,9	1005,3	10,1		190	2
31 Aug.	11:00	1004,3	1005,7	13,5	7,8	260	5
31 Aug.	14:00	1004,8	1006,2	11,1		280	4
31 Aug.	17:00	1004,3	1005,7	10,7	7,3	350	3
31 Aug.	20:00	1005,6	1007,0	12,1		0	0
31 Aug.	23:00	1006,1	1007,5	12,1	13,0	220	4
1 Sept.	8:00	1008,3	1009,7	9,0		200	3
1 Sept.	11:00	1008,3	1009,7	12,4	9,2	130	3
1 Sept.	14:00	1008,2	1009,6	13,2		120	4
1 Sept.	17:00	1008,2	1009,6	12,8	10,1	100	4
1 Sept.	20:00	1008,7	1010,1	12,2		100	2
1 Sept.	23:00	1009,0	1010,4	11,7	9,7	90	3
2 Sept.	8:00	1006,7	1008,1	13,0		70	6
2 Sept.	11:00	1006,6	1008,0	13,0	11,3	70	7
2 Sept.	14:00	1005,5	1006,9	13,2		50	9
2 Sept.	17:00	1004,6	1006,0	12,4	12,1	30	8
2 Sept.	20:00	1004,4	1005,8	12,1		20	8
2 Sept.	23:00	1003,5	1004,9	12,4	10,4	20	10
3 Sept.	8:00	998,5	999,9	10,4		360	14
3 Sept.	11:00	996,6	998,0	9,6	12,1	350	14
3 Sept.	14:00	995,0	996,4	9,6		340	15
3 Sept.	17:00	994,3	995,7	10,2	12,0	310	10
3 Sept.	20:00	995,4	996,8	10,8		340	10
3 Sept.	23:00	997,3	998,7	10,7	12,0	340	9
4 Sept.	8:00	1000,3	1001,7	11,2		310	8
4 Sept.	11:00	1005,7	1007,1	14,2	12,5	310	7
4 Sept.	14:00	1006,7	1008,1	14,5		300	8
4 Sept.	17:00	1007,6	1009,0	15,1	13,0	280	7
4 Sept.	20:00	1008,7	1010,1	13,9		280	5
4 Sept.	23:00	1009,7	1011,1	11,4	13,2	240	5
5 Sept.	8:00	1011,5	1012,9	10,6		260	3

1	2	3	4	5	6	7	8
5 Sept.	11:00	1011,9	1013,3	16,0	13,0	260	4
5 Sept.	14:00	1011,6	1012,9	15,7		30	2
5 Sept.	17:00	1011,6	1013,0	18,8	13,2	300	6
5 Sept.	20:00	1012,6	1014,0	15,3		260	2
5 Sept.	23:00	1013,7	1015,1	12,3	13,1	250	3
6 Sept.	8:00	1014,8	1016,2	11,6		270	4
6 Sept.	11:00	1015,0	1016,4	17,8	12,2	230	3
6 Sept.	14:00	1014,4	1015,8	20,4		210	4
6 Sept.	17:00	1013,2	1014,6	19,0	12,6	150	7
6 Sept.	20:00	1012,3	1013,7	14,4		150	4
6 Sept.	23:00	1011,5	1012,9	16,3	12,4	200	9
7 Sept.	8:00	1010,1	1011,5	14,6		220	5
7 Sept.	11:00	1009,9	1011,3	19,4	11,6	250	6
7 Sept.	14:00	1010,3	1011,7	16,3		10	4
7 Sept.	17:00	1010,6	1012,0	13,0	13,2	60	5
7 Sept.	20:00	1010,8	1012,2	12,6		90	2
7 Sept.	23:00	1010,1	1011,5	13,0	12,7	120	3
8 Sept.	8:00	1007,0	1008,4	12,4		120	1
8 Sept.	11:00	1005,8	1007,2	13,2	12,0	140	6
8 Sept.	14:00	1004,7	1006,1	12,4		140	4
8 Sept.	17:00	1002,7	1004,1	13,3	13,1	150	4
8 Sept.	20:00	1002,9	1004,3	12,6		120	2
8 Sept.	23:00	1003,4	1004,8	12,3	12,4	130	2
9 Sept.	8:00	1005,1	1006,5	12,1		120	2
9 Sept.	11:00	1006,3	1007,7	13,4	11,4	250	4
9 Sept.	14:00	1008,1	1009,5	12,9		350	2
9 Sept.	17:00	1009,7	1011,1	12,9	11,1	60	1
9 Sept.	20:00	1011,1	1012,5	12,4		80	2
9 Sept.	23:00	1012,1	1013,5	13,3	12,0	240	3
10 Sept.	8:00	1011,5	1012,9	11,3		160	4
10 Sept.	11:00	1008,8	1010,1	12,4	9,8	140	8
10 Sept.	14:00	1005,3	1006,7	14,2		140	10
10 Sept.	17:00	1001,5	1002,9	14,5	10,6	130	8
10 Sept.	20:00	1000,6	1002,0	18,7		170	7
10 Sept.	23:00	999,4	1000,8	17,6	11,0	190	8
11 Sept.	8:00	995,2	996,6	15,8		200	5
11 Sept.	11:00	995,1	996,5	15,8	7,9	280	8
11 Sept.	14:00	994,5	995,9	16,3		280	6
11 Sept.	17:00	994,9	996,3	15,5	6,8	280	8
11 Sept.	20:00	996,0	997,4	12,6		260	5
11 Sept.	23:00	996,6	998,0	11,4	6,5	300	10
12 Sept.	8:00	1005,3	1006,7	8,6		330	11
12 Sept.	11:00	1007,4	1008,8	9,1	9,1	340	10
12 Sept.	14:00	1008,2	1009,6	9,7		340	8
12 Sept.	17:00	1008,0	1009,4	10,5	9,4	360	9
12 Sept.	20:00	1008,5	1009,9	9,7		350	9
12 Sept.	23:00	1008,7	1010,1	9,6	10,9	360	6
13 Sept.	8:00	1009,1	1010,5	9,2		10	6
13 Sept.	11:00	1009,6	1011,0	10,0	11,9	350	5
13 Sept.	14:00	1009,8	1011,2	10,7		350	5
13 Sept.	17:00	1010,0	1011,4	10,8	12,5	50	4
13 Sept.	20:00	1010,0	1011,4	10,0		0	0
13 Sept.	23:00	1010,2	1011,6	7,4	11,8	230	3
14 Sept.	8:00	1009,0	1010,4	7,7		220	4
14 Sept.	11:00	1007,8	1009,2	14,6	11,6	190	4
14 Sept.	14:00	1006,4	1007,8	18,1		200	5
14 Sept.	17:00	1005,0	1006,4	18,7	13,0	230	6
14 Sept.	20:00	1005,0	1006,4	15,1		200	4
14 Sept.	23:00	1004,7	1006,1	12,3	12,1	190	4
15 Sept.	8:00	1001,8	1003,2	10,6		280	3
15 Sept.	11:00	1002,3	1003,7	13,3	11,7	340	5
15 Sept.	14:00	1002,6	1004,0	12,4		360	4
15 Sept.	17:00	1002,9	1004,3	11,6	11,7	350	4
15 Sept.	20:00	1006,9	1008,3	10,1		350	8
15 Sept.	23:00	1009,0	1010,4	8,7	11,2	350	6
16 Sept.	8:00	1013,9	1015,3	7,1		290	2
16 Sept.	11:00	1015,4	1016,8	12,0	11,7	280	4
16 Sept.	14:00	1015,7	1017,1	13,0		90	3
16 Sept.	17:00	1015,6	1017,0	12,7	12,5	130	5
16 Sept.	20:00	1016,0	1017,4	10,3		170	3

1	2	3	4	5	6	7	8
16 Sept.	23:00	1016,1	1017,5	11,3	11,7	180	6
17 Sept.	8:00	1014,8	1016,2	10,7		160	4
17 Sept.	11:00	1014,2	1015,6	12,2	11,2	140	4
17 Sept.	14:00	1013,8	1015,2	12,8		90	2
17 Sept.	17:00	1012,9	1014,3	12,8	12,3	60	3
17 Sept.	20:00	1012,5	1013,9	11,1		40	2
17 Sept.	23:00	1012,0	1013,4	11,3	10,8	0	0
18 Sept.	8:00	1009,6	1011,0	10,2		20	2
18 Sept.	11:00	1009,0	1010,4	11,2	10,2	350	4
18 Sept.	14:00	1007,9	1009,3	11,3		350	5
18 Sept.	17:00	1007,8	1009,2	10,5	10,6	340	5
18 Sept.	20:00	1008,3	1009,7	9,6		340	7
18 Sept.	23:00	1008,7	1010,1	9,6	9,8	340	7
19 Sept.	8:00	1009,1	1010,5	9,5		350	7
19 Sept.	11:00	1009,0	1010,4	10,2	9,8	360	5
19 Sept.	14:00	1009,2	1010,6	10,6		350	4
19 Sept.	17:00	1007,2	1008,6	10,2	10,7	10	4
19 Sept.	20:00	1007,1	1008,5	9,4		350	3
19 Sept.	23:00	1007,3	1008,7	6,6	9,7	270	2
20 Sept.	8:00	1004,4	1005,8	5,8		270	4
20 Sept.	11:00	1004,1	1005,5	12,6	10,8	310	7
20 Sept.	14:00	1004,1	1005,5	12,6		310	9
20 Sept.	17:00	1003,7	1005,1	11,0	10,8	290	7
20 Sept.	20:00	1004,0	1005,4	10,1		280	6
20 Sept.	23:00	1004,3	1005,7	9,0	9,9	290	6
21 Sept.	8:00	1008,9	1010,3	7,3		320	5
21 Sept.	11:00	1008,8	1010,2	10,5	9,9	300	4
21 Sept.	14:00	1008,0	1009,4	13,6		280	9
21 Sept.	17:00	1007,9	1009,3	11,5	10,2	290	7
21 Sept.	20:00	1008,8	1010,2	11,5		260	4
21 Sept.	23:00	1010,0	1011,4	11,4	10,2	270	4
22 Sept.	8:00	1012,5	1013,9	8,8		0	0
22 Sept.	11:00	1012,5	1013,9	13,8	10,7	280	4
22 Sept.	14:00	1012,1	1013,5	15,4		290	7
22 Sept.	17:00	1012,2	1013,6	15,8	11,0	280	7
22 Sept.	20:00	1013,6	1015,0	11,1		270	3
22 Sept.	23:00	1014,2	1015,6	9,7	11,1	260	2
23 Sept.	8:00	1013,1	1014,4	9,5		240	6
23 Sept.	11:00	1013,3	1014,7	15,7	10,7	250	6
23 Sept.	14:00	1012,8	1014,2	19,3		280	5
23 Sept.	17:00	1012,6	1014,0	19,0	11,3	290	5
23 Sept.	20:00	1013,3	1014,7	13,5		240	2
23 Sept.	23:00	1013,8	1015,2	11,5	11,0	350	5
24 Sept.	8:00	1013,9	1015,3	8,7		330	3
24 Sept.	11:00	1014,1	1015,5	11,3	10,2	350	2
24 Sept.	14:00	1013,1	1014,5	12,5		80	3
24 Sept.	17:00	1012,3	1013,7	14,7	11,7	130	1
24 Sept.	20:00	1012,6	1014,0	13,7		250	2
24 Sept.	23:00	1012,9	1014,3	10,8	9,9	250	1
25 Sept.	8:00	1013,4	1014,8	8,5		220	4
25 Sept.	11:00	1013,5	1014,9	13,7	10,3	250	1
25 Sept.	14:00	1013,2	1014,6	17,8		280	7
25 Sept.	17:00	1014,2	1015,6	17,5	11,4	290	5
25 Sept.	20:00	1016,4	1017,8	10,7		350	5
25 Sept.	23:00	1017,8	1019,2	9,3	10,4	360	2
26 Sept.	8:00	1019,8	1021,2	8,0		0	0
26 Sept.	11:00	1020,8	1022,2	10,6	10,7	150	4
26 Sept.	14:00	1019,7	1021,1	12,1		140	6
26 Sept.	17:00	1018,8	1020,2	11,3	11,8	140	8
26 Sept.	20:00	1017,6	1019,0	9,6		150	6
26 Sept.	23:00	1017,4	1018,8	10,0	10,9	180	5
27 Sept.	8:00	1016,7	1018,1	10,7		210	4
27 Sept.	11:00	1016,5	1017,9	14,4	11,4	210	4
27 Sept.	14:00	1016,1	1017,5	11,8		50	4
27 Sept.	17:00	1015,8	1017,2	11,6	11,8	110	2
27 Sept.	20:00	1016,3	1017,7	11,4		360	1
27 Sept.	23:00	1016,1	1017,5	10,0	11,0	360	1
28 Sept.	8:00	1016,1	1017,5	8,2		140	2
28 Sept.	11:00	1015,7	1017,1	10,0	11,2	200	3
28 Sept.	14:00	1015,0	1016,4	11,6		110	4

1	2	3	4	5	6	7	8
28 Sept.	17:00	1013,9	1015,3	11,3	11,6	140	5
28 Sept.	20:00	1014,0	1015,4	11,1		180	3
28 Sept.	23:00	1013,7	1015,1	10,8	11,2	180	4
29 Sept.	8:00	1011,8	1013,2	10,8		190	6
29 Sept.	11:00	1010,8	1012,2	15,0	11,4	200	6
29 Sept.	14:00	1008,8	1010,2	19,8		200	7
29 Sept.	17:00	1007,5	1008,9	19,9	11,8	200	7
29 Sept.	20:00	1007,7	1009,1	16,0		190	7
29 Sept.	23:00	1007,4	1008,8	14,4	10,5	190	5
30 Sept.	8:00	1005,1	1006,5	12,3		210	4
30 Sept.	11:00	1003,9	1005,3	13,1	10,5	190	4
30 Sept.	14:00	1002,5	1003,9	9,6		310	9
30 Sept.	17:00	1004,1	1005,5	9,0	10,1	280	5
30 Sept.	20:00	1006,1	1007,5	8,9		230	4
30 Sept.	23:00	1008,2	1009,6	6,7	9,2	230	4
1 Oct.	8:00	1008,9	1010,3	4,8		230	3
1 Oct.	11:00	1008,5	1009,9	9,4	9,8	250	5
1 Oct.	14:00	1007,1	1008,5	12,8		280	5
1 Oct.	17:00	1006,3	1007,7	13,2	10,8	290	4
1 Oct.	20:00	1005,7	1007,1	8,4		150	3
1 Oct.	23:00	1004,2	1005,6	7,6	10,0	140	4
2 Oct.	8:00	998,3	999,7	7,6		200	6
2 Oct.	11:00	997,2	998,6	8,0	9,3	240	7
2 Oct.	14:00	996,8	998,2	10,4		280	8
2 Oct.	17:00	997,5	998,9	8,2	10,7	300	10
2 Oct.	20:00	998,9	1000,3	5,3		300	4
2 Oct.	23:00	999,1	1000,5	3,4	9,9	270	2
3 Oct.	8:00	998,7	1000,2	2,2		230	6
3 Oct.	11:00	999,1	1000,5	4,7	10,1	230	5
3 Oct.	14:00	998,6	1000,0	7,8		280	11
3 Oct.	17:00	999,5	1000,9	6,6	10,1	270	7
3 Oct.	20:00	1000,5	1001,9	5,2		270	3
3 Oct.	23:00	1000,1	1001,5	2,9	9,6	170	3
4 Oct.	8:00	994,0	995,4	4,1		180	4
4 Oct.	11:00	991,2	992,6	6,9	10,1	190	6
4 Oct.	14:00	990,5	991,9	7,6		200	8
4 Oct.	17:00	989,1	990,5	5,6	10,3	220	9
4 Oct.	20:00	995,9	996,8	3,7		290	12
4 Oct.	23:00	996,6	998,0	2,6	9,9	270	7
5 Oct.	8:00	995,4	996,9	0,3		250	11
5 Oct.	11:00	996,5	998,0	0,8	8,0	250	10
5 Oct.	14:00	998,2	999,6	4,2		280	12
5 Oct.	17:00	1000,4	1001,8	4,5	7,3	290	14
5 Oct.	20:00	1002,6	1004,1	2,3		270	12
5 Oct.	23:00	1003,3	1004,8	0,9	7,8	270	11
6 Oct.	8:00	1004,6	1006,0	2,8		270	8
6 Oct.	11:00	1005,8	1007,3	3,6	8,1	270	10
6 Oct.	14:00	1006,6	1008,0	4,7		280	10
6 Oct.	17:00	1008,2	1009,7	4,1	8,4	290	11
6 Oct.	20:00	1011,3	1012,7	4,7		300	9
6 Oct.	23:00	1013,3	1014,7	4,3	8,0	290	5
7 Oct.	8:00	1014,3	1015,8	0,7		200	5
7 Oct.	11:00	1014,4	1015,7	3,0	7,9	210	5
7 Oct.	14:00	1013,3	1014,7	9,8		220	4
7 Oct.	17:00	1012,8	1014,2	10,8	8,2	250	5
7 Oct.	20:00	1013,4	1014,8	4,6		260	2
7 Oct.	23:00	1013,8	1015,3	3,2	7,8	210	2
8 Oct.	8:00	1012,0	1013,4	1,2		200	2
8 Oct.	11:00	1010,9	1012,4	3,4	8,0	360	1
8 Oct.	14:00	1009,7	1011,1	8,6		120	3
8 Oct.	17:00	1008,3	1009,7	7,4	9,4	60	2
8 Oct.	20:00	1008,3	1009,7	7,0		10	3
8 Oct.	23:00	1007,5	1008,9	6,3	8,6	320	3
9 Oct.	8:00	1008,6	1010,1	3,3		310	5
9 Oct.	11:00	1009,6	1011,0	4,9	8,1	280	5
9 Oct.	14:00	1009,2	1010,7	2,5		280	7
9 Oct.	17:00	1009,5	1011,0	4,0	8,2	280	6
9 Oct.	20:00	1011,5	1013,0	3,5		300	4
9 Oct.	23:00	1012,7	1014,2	1,5	7,7	250	3
10 Oct.	8:00	1016,6	1018,1	0,2		220	1

1	2	3	4	5	6	7	8
10 Oct.	11:00	1018,0	1019,5	5,2	8,4	260	4
10 Oct.	14:00	1017,7	1019,1	10,4		270	3
10 Oct.	17:00	1018,2	1019,6	9,0	8,7	120	3
0 Oct.	20:00	1019,0	1020,5	6,5		150	1
10 Oct.	23:00	1019,5	1021,0	4,3	8,5	200	2
11 Oct.	8:00	1019,4	1020,9	2,7		210	2
11 Oct.	11:00	1020,0	1021,5	6,0	8,2	210	2
11 Oct.	14:00	1018,3	1019,7	10,0		100	3
11 Oct.	17:00	1017,2	1018,6	9,6	8,5	150	5
11 Oct.	20:00	1017,2	1018,7	7,8		170	2
11 Oct.	23:00	1016,8	1018,3	7,9	8,2	200	4
12 Oct.	8:00	1013,4	1014,8	8,0		110	1
12 Oct.	11:00	1013,2	1014,6	8,9	8,4	290	4
12 Oct.	14:00	1012,6	1014,0	10,0		270	5
12 Oct.	17:00	1011,9	1013,3	12,8	8,9	280	4
12 Oct.	20:00	1012,7	1014,1	8,6		240	3
12 Oct.	23:00	1012,2	1013,6	6,7	8,2	250	4
13 Oct.	8:00	1010,7	1012,1	4,5		190	5
13 Oct.	11:00	1010,0	1011,4	7,4	8,2	190	5
13 Oct.	14:00	1007,0	1008,4	13,8		180	7
13 Oct.	17:00	1004,1	1005,5	12,9	9,2	140	7
13 Oct.	20:00	1001,5	1002,9	11,1		170	7
13 Oct.	23:00	999,4	1000,8	10,8	8,4	180	7
14 Oct.	8:00	994,3	995,7	11,4		200	11
14 Oct.	11:00	993,3	994,7	12,8	8,9	220	9
14 Oct.	14:00	991,7	993,1	13,2		200	8
14 Oct.	17:00	992,0	993,4	7,3	9,6	310	10
14 Oct.	20:00	994,0	995,4	5,7		290	4
14 Oct.	23:00	994,8	996,2	4,8	8,7	240	4
15 Oct.	8:00	999,0	1000,5	1,8		220	7
15 Oct.	11:00	1000,4	1001,8	4,5	7,6	220	6
15 Oct.	14:00	999,1	1000,5	7,7		200	9
15 Oct.	17:00	998,7	1000,1	9,0	8,0	230	9
15 Oct.	20:00	999,4	1000,8	5,5		160	5
15 Oct.	23:00	1000,0	1001,4	4,1	7,4	160	5
16 Oct.	8:00	996,9	998,3	3,5		210	3
16 Oct.	11:00	997,7	999,1	4,4	7,7	280	3
16 Oct.	14:00	997,0	998,4	7,4		280	7
16 Oct.	17:00	998,7	1000,1	7,2	8,0	270	6
16 Oct.	20:00	1001,6	1003,0	3,9		220	2
16 Oct.	23:00	1002,4	1003,8	2,8	7,6	170	3
17 Oct.	8:00	993,3	994,7	3,9		200	9
17 Oct.	11:00	991,1	992,5	6,2	7,6	190	8
17 Oct.	14:00	989,8	991,2	4,9		220	10
17 Oct.	17:00	990,8	992,2	4,7	7,5	260	7
17 Oct.	20:00	1000,8	1002,2	2,4		300	10
17 Oct.	23:00	1004,3	1005,7	2,0	7,3	270	5
18 Oct.	8:00	1003,9	1005,4	1,8		190	6
18 Oct.	11:00	1003,8	1005,3	0,6	6,5	240	13