NOAA TECHNICAL MEMORANDUM
NMFS-SEFSC-385

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U.S. Department of Commerce
National Oceanographic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, FL 33149

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U.S. DEPARTMENT OF COMMERCE
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Authors' affiliations: (RSW, KWU, MKB,WJC) Chicago Zoological Society/Dolphin Biology Research Institute , c/o Mote Marine Laboratory, 1600 Thompson Parkway, Sarasota, FL 34236; (AJR) Duke University Marine Lab, 123 Duke Marine Lab Road, Beaufort, NC 28516; (MDS), InterAmerican Tropical Tuna Commission, c/o Scripps Inst. of Oceanography, La Jolla, CA 92037.

Copies may be obtained by writing the Southeast Fisheries Science Center, the primary author or:

National Technical Information Service
5258 Port Royal Road
Springfield, VA 22161
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Introduction

The National Marine Fisheries Service (NMFS) is responsible for establishing quotas for take of bottlenose dolphins (*Tursiops truncatus*) and for monitoring the populations of dolphins in the southeastern United States waters. Quotas have been based on a rule-of-thumb developed by the Marine Mammal Commission in which the annual quota has been set at 2% of the estimated dolphin abundance for a geographical location. Most of the live-capture fishery for bottlenose dolphins has occurred in the coastal Gulf of Mexico and the Florida east-coast waters. The NMFS completed sampling surveys in these areas for abundance estimation, and recognized a need for low-level monitoring of bottlenose dolphin stocks in southeastern US waters, designed to detect catastrophic changes in the stocks. The main goals of the monitoring were detection of large-scale changes in dolphin abundance and establishment of archival databases for long-term trend detection. Low-level monitoring could provide a short-term means of detecting large-scale changes in population abundance and give decision makers the information necessary to determine if modification of management plans is necessary. To these ends, in 1987 the NMFS began funding several local research efforts in the southeastern US with the following stated objectives:

1) Detection of large-scale (halving or doubling) interannual changes in relative abundance and/or production of the bottlenose dolphin stocks in the southeast US. The population rate parameters of relevance include: a reliable index or estimate of local relative abundance, natality, mortality, emigration, and immigration.

2) Establishment of archival databases for long-term trend detection in localized geographical regions around the southeast US.

One of the regions selected by NMFS for low-level monitoring was Tampa Bay, Florida. Prior to the regional aerial surveys conducted by NMFS during 1983-1986 (Scott *et al.* 1989), no data were available to support any level of take from Tampa Bay (Scott 1990). Several earlier aerial survey efforts included portions of Tampa Bay and/or waters immediately offshore (Leatherwood and Show 1980; Odell and Reynolds 1980; Thompson 1981). Wells (1986) and Weigle (1990) conducted photographic identification studies in parts of the bay, but there had been no complete systematic estimation of the numbers of dolphins using Tampa Bay. NMFS regional aerial surveys during June-August 1985 (= summer), September - October 1985 (= autumn), and January - February 1986 (= winter) provided the first available estimates of abundance for Tampa Bay proper (Scott *et al.* 1989, Table 26):

Season	Abundance Estimate	Lower 95% CL	Upper 95% CL
Summer	198	78	318
Autumn	248	148	348
Winter	217	130	304

The approach selected for the low-level monitoring of Tampa Bay dolphins was photographic identification (photo-ID) surveys from small boats (see reviews by Würsig and Jefferson 1990; Scott *et al.* 1990a). This technique has proven effective in long-term studies of population-rate parameters in Sarasota Bay, immediately to the south (Wells and Scott 1990). The large numbers of distinctive dolphins photographed by Wells (1986) during surveys initiated in 1975, and later by Weigle

(1990) indicated that Tampa Bay would be an excellent case study for photo-ID surveys.

Photo-ID offers several advantages over aerial surveys for measuring certain population rate parameters. The greatest advantage of using photo-ID methods is the accumulation of information on the occurrence, distribution, and ranging patterns of specific individuals. The ability to recognize individuals over time provides opportunities to estimate abundance using mark-resight methods, to evaluate possible cases of immigration, emigration, or transience, to monitor individual female reproductive case histories, to determine the origins of carcasses for mortality estimates, and to examine community structure (Wells 1986).

This report summarizes the results of six years of NMFS-sponsored bottlenose dolphin research in Tampa Bay, conducted by Dolphin Biology Research Institute (DBRI) and the Chicago Zoological Society (CZS). Annual photo-ID surveys were conducted during September and October of each year from 1988 through 1993. Photographs and sighting data were collected to examine trends in abundance, natality, mortality, immigration, and emigration.

Methods

Study Area

The Tampa Bay study area includes the enclosed bay waters eastward of the chain of barrier islands at the mouth of Tampa Bay, as well as the shallow Gulf coastal waters and passes immediately surrounding the barrier islands (Figure 1). The region is composed of a variety of habitats and conditions, including highly productive seagrass meadows and mangrove shorelines, deep passes between barrier islands, shallow, sandy Gulf waters, dredged channels, open bays, as well as highly altered and polluted regions. This study area was selected in part because of its proximity to the long-term Sarasota study site (Scott *et al.* 1990b; Wells 1991). The location facilitated logistics for the field work, because we were able to use an existing field station. Preliminary studies indicated that a number of distinctively marked dolphins inhabited the region, and at least some were present over a number of years (Wells 1986). The ongoing photo-ID research being conducted in the Sarasota waters immediately to the south facilitated examination of immigration and emigration, at least between adjacent regions.

We have divided the 852-km^2 study area into seven regions for assessment of survey effort (Figure 1). Regions were identified by physiographic and effort criteria. Because of the distances of some parts of the study area from our field stations, it was not possible to survey all of Tampa Bay with uniform effort. The segmentation was done in order to be able to quantify effort in different parts of the study area in an attempt to make the within-region effort comparable across years.

The southernmost sector, Region 1, includes northern Anna Maria Sound, the Manatee River, and Passage Key Inlet. Water depths range from less than one m nearshore, to 12 m in the pass, but generally are 2-4 m. This overlaps the northernmost portion of the long-term Sarasota study area. Immediately to the north, Region 2 includes South Tampa Bay, Southwest Channel, and Terra Ceia Bay. Depths range up to 8 m in the channel, but generally are 3-6 m. Region 3, North Tampa Bay, extends eastward from the Sunshine Skyway Bridge to just west of Egmont Key, and includes the main shipping channel into Tampa Bay. Depths range up to 30 m in the channel, but generally are 6-10 m. Region 4, Boca Ciega Bay, includes a complex of barrier islands, shallow seagrass meadows, and channels. Water depths up to 7 m may be found in the channels, but the waters are typically much more shallow. Region 5, Tampa Bay northeast of the Sunshine Skyway Bridge, is the largest region, including the mostly undeveloped southeastern shoreline of Tampa Bay and associated mangrove/seagrass shallows, the main shipping channel, and to the northwest the highly developed St. Petersburg shoreline. The ship channel is dredged to about 14 m, but most of the region is 2-8 m in depth. Old Tampa Bay, Region 6, is an open bay region crossed by three bridge/causeway systems. In the south, channels reach 8 m in depth, but most of the waters are less than 4 m deep. Region 7, Hillsborough Bay, is the most extensively altered portion of Tampa Bay. To the east, heavy industry has impacted much of the shoreline, and dredge spoils from the shipping channel have filled significant portions of the bay. To the north, dredge and fill activities associated with shipping and with the development of Tampa have defined the shoreline. Influx of water from the polluted Hillsborough and Alafia Rivers, as well as from occasional industrial waste spills, have adversely impacted the water quality in this region. Water depths outside of the channel average less than 5 m. Gulf and Sarasota Bay waters adjacent to the Tampa Bay Regions 1-7 were also surveyed to address the questions of immigration and emigration.

Survey Schedule

A six-week window during September-October was selected to provide ample opportunity to fully survey each region of the study area at least three to five times. Surveys were initiated in early September and were continued into October for as long as was logistically feasible to complete the desired level of coverage. This timing was selected for several reasons. Late summer-early autumn historically brought a period of calm weather, providing a window of favorable survey conditions before the cold fronts begin to penetrate southward into central Florida. The timing was also considered to be advantageous for natality estimates. In adjacent waters to the south, most of the year's calves were born by September-October (Wells *et al.* 1987). Based on an assumption of similar patterns of reproductive seasonality in Tampa Bay and Sarasota, it seemed that a late summer-early autumn survey would provide the best estimate of numbers of calves born during that year (young-of-the-year). Previous surveys conducted during this period found a peak in abundance (Scott *et al.* 1989; Weigle 1990). The timing of our surveys thus allowed us to take advantage of high dolphin densities, and to be able to compare our findings with those from previous surveys.

Additional information on the occurrence of identifiable dolphins in Tampa Bay was provided by surveys in support of a dolphin reintroduction study (Bassos 1993). Data from outside of the NMFS survey period each year were not included in quantitative analyses for this report, but provided perspective.

Field Techniques and Logistics

Surveys were conducted from 6-7 m outboard-powered boats. Two, three, or four boats were used during each survey. Each boat was equipped with a VHF radio, depth sounder, compass, thermometer, and eventually a hand-held LORAN. Survey crews ranged in size from two to six people per boat. Survey routes were selected each day based on predicted weather conditions and the status of survey coverage. While searching for dolphin schools, the boats were operated at the slowest possible speed that would still allow the vessel to plane, typically 33 to 46 km/hr, depending on the vessel. Once schools were encountered, the boats were slowed to match the speed of the dolphins and moved parallel to the schools to obtain photographs.

Every dolphin school encountered along a survey route was approached for photographs. We remained with each dolphin school until we were satisfied that we had photographed the dorsal fin of each member of the school, or until conditions precluded complete coverage of the group. A suite of data including date, time, location, activities, headings, and environmental conditions were recorded for each sighting. Numbers of dolphins were recorded in real time as minimum, maximum, and best point estimates of numbers of total dolphins, calves (dolphins $\leq$ about 80-85% adult size, typically swimming alongside an adult), and young-of-the-year (as a subset of the number of calves). A young-of-the-year is defined as a calf in the first calendar year of life and is recognized by one or more of the following features: (1) small size; 50%-75% of the presumed mother's length, (2) darker coloration than the presumed mother, (3) non-rigid dorsal fin, (4) characteristic head-out surfacing pattern, (5) presence of neonatal vertical stripes, (6) consistently surfacing in "calf position". The specific parameters recorded are defined, and a sample data sheet is presented, in the Appendices 1 and 2.

We used Nikon camera systems (FE, F3, 2020, 8008) with zoom-telephoto lenses, motor drives, and data backs to photograph each school. Over the course of the project, longer lenses (up to 300 mm) and auto-focus cameras and lenses were incorporated, resulting in improved photo quality, and decreasing the time required to obtain satisfactory photographic coverage of each group. Kodachrome 64 color slide film was used throughout the surveys. The fine grain of this film provided excellent clarity for resolution of fin features. Color film allowed evaluation of the age of some wounds and fin features.

During the first four years, the survey team was based on Anna Maria Island, in Region 1. This field station was 72 km from the farthest extent of the study area in Region 6, and 68 km from the most distant point in Region 7. The long distance and the large areas of exposed waters in Tampa Bay meant that the boats often faced abrupt changes in weather conditions and sea states during any given day, at times preventing us from reaching or adequately covering some regions. To facilitate access to the more distant regions, a second field station was established at Ruskin, in Region 5 along the southeastern shore of Tampa Bay, during 1992 and 1993.

Photo-Identification Catalog

The patterns of nicks, notches, and scars on the dorsal fin and visible body scars have been used successfully in numerous studies of bottlenose dolphins to identify individuals over time (Würsig and Jefferson 1990, Scott *et al.* 1990a). Our photographic catalog is based on exclusive categories that classify individuals with similar features together. Each of the 14 categories of the catalog is based on: (1) the division of the trailing edge of the dorsal fin into thirds and distinctive features located in each third; (2) distinctive features on the leading edge of the fin; (3) distinctive features on the anterior portion of the peduncle and (4) evidence of permanent scarring or pigmentation patterns on the fin or body.

The primary photo-ID catalog is composed of the most diagnostic and best quality original slides of each animal, filed alphabetically by each individual dolphin's unique four-place code. Prints are made from the original slides and filed in a working catalog used for initial searching for matches. A duplicate catalog made from color photocopies of the color prints is maintained off-site as a backup copy.

We maintain three photo-ID catalogs that represent our different study areas: the Sarasota Bay region, Charlotte Harbor, and Tampa Bay and the inshore waters of the Gulf of Mexico. The catalog used for these analyses is a subset of a larger catalog incorporating dolphins sighted outside of the limited Tampa Bay region considered for this report. All catalogs are ultimately searched before an addition is made to the appropriate catalog.

The photo-ID catalog included 150 dolphins identified from the Tampa Bay study area during 1975 through 1987 when the census was initiated in 1988. In 1993 we collaborated with Eckerd College (J. Reynolds, pers. comm.) in examination of a portion of the photo-ID catalog established by B. Weigle (Weigle 1990). We made no additions to our catalog, but found 94 matches to dolphins in our existing Tampa and Sarasota catalogs. As of September 1994, there were 2,045 dolphins (1,749 distinctive non-calves) in the DBRI photo-ID catalogs for all study areas, including Tampa Bay.

Analysis of Photographs

Photographic slides are labeled with information from the corresponding sighting: date, film roll number, sighting number, and location code. Labeled slides are filed chronologically in archival-quality storage pages in binders. Comments from sighting data sheets are read for clues and additional information to assist in identification of animals (for example, distinctive features noted in the field, or features distinguishing between two similar animals). Each slide is examined using a 15-power lupe eyepiece to find all distinctive dolphins. Slides are sorted by each identifiable individual within a sighting and the best-quality slides of each animal showing the distinctive features of the fin are selected to compare with the photo-ID catalog.

The most prominent feature of the fin is identified and the category that best describes that feature is searched for a potential match. Matches are often made by comparing the slide directly to the print in the catalog. However, with a close match or to distinguish between fins with similar features, the original slide is used for comparison. To verify a match between similar fins, both fins are projected using a slide projector with a zoom lens and traced to line up distinguishing features. To confirm long-term or difficult matches, three experienced photo-ID researchers examine the potential matches and must vote unanimously on the final match. When a match is made with a fin in our catalog, all slides are labeled with the dolphin's unique 4-place code and its name, and the dolphin is scored as a positive identification.

When a match is not found in the first category searched, all other possible categories are searched to account for dolphins that have multiple identifying characteristics. The entire catalog is searched before a new animal is added to the catalog. If we are confident the fin is reliably recognizable, the dolphin is given a name that describes the most obvious feature of the fin and an original 4-place code that abbreviates the name is selected. To be considered a catalog-quality image, a new entry into the catalog must meet the following criteria: the entire fin, from the anterior insertion to the posterior insertion of the dorsal fin and the trailing edge of the fin must be visible, the image must be in focus and perpendicular to the photographer, and, when available, both right and left side images of the fin are selected for the catalog. The best-quality slide is labeled with the name, code and catalog category that describes the most prominent feature of the fin. A print is made and added to the print catalog and the original slide is filed alphabetically in the slide catalog.

An animal is occasionally "visually confirmed" in the field when it is recognized because it was familiar to an observer and it was counted as a positive identification for photo-analysis even though it may not have been documented photographically.

For photo-analysis, a calf or young-of-the-year is considered positively identifiable only if it can be recognized because of distinctive features that make it identifiable independent of its mother. A small animal that appears in all slides next to a larger animal in the "calf position," (i.e., alongside and slightly behind the presumed mother), is assumed to be a calf. If the calf is with an identifiable mother, but the calf is not distinctive, it is not scored as a positive identification.

In some cases it is possible to identify animals in a sighting that are not sufficiently distinctive to make long-term matches, or appear distinctive but are unidentifiable because the entire fin is not visible, photo coverage is incomplete, or photo quality is substandard. Each of these dolphins is classified as an "other..." with some reference to the most distinguishing feature. Although it is not considered a positive identification, an "other..." dolphin is counted toward revision of the group-size estimates.

Fins that lack distinctive markings are considered "clean" but may also be used in calculating or adjusting group size estimates. In some cases, "clean" fins may be distinguished from one another within a sighting based on differences in fin shape. This minimum count of "clean" fins is added to the positive identifications and "other" fins to calculate the minimum, maximum and best group size estimates. Thus, the minimum estimate is a minimum count of distinguishable fins within a sighting.

A grading system that integrates recognizability, photographic quality, and coverage is used to identify the quality of a given sighting:

Grade-1 - All dolphins in the group were photographed or otherwise positively identified. All the animals in the best field estimate are accounted for as a) confirmed positive identifications; or b) as individuals that can be distinguished within a sighting from a high quality photograph but do not warrant status as a 'marked' dolphin in the catalog.

Grade-2 - There are photographs of some dolphins with distinctive fins that may be in the catalog, but because of the quality of photographs it is not possible to make appropriate comparisons with the catalog and make a match or assign an identification.

Grade-3 - Photographic coverage is known to be incomplete, because all dolphins were not approached for photographs, no photos were taken, film did not turn out, sighting conditions were poor, etc.

Data Processing

Sighting data and results from photo-analysis are entered into the Dolphin Biology Research Institute (DBRI) database. The database currently includes 8,192 sighting records from Sarasota Bay, Tampa Bay, Charlotte Harbor and the inshore Gulf waters from 1975 to 1993. We use the FoxBase+/Mac Version 1.1 relational database management system containing dBase programming language that permits us to write specific programs to manipulate the database. A Macintosh IIsi computer is used for data entry and a Macintosh Centris 650 computer is used primarily for data manipulations.

We defined our dataset based on temporal and geographic criteria. We included sightings collected during the September-October surveys of 1988, 1989, 1990, 1991, 1992, and 1993 within the designated boundaries considered to comprise Tampa Bay (Figure 1).

Group size estimates were derived from adjustments of field estimates based on photo-analysis (see Appendix 2). Minimum, maximum, and best field estimates were increased if the sum of the number of positively identified individuals plus the number of "other..." dolphins, plus the number of "clean" dolphins exceeded the original field estimates. The resulting revised minimum, revised maximum, and final best estimates were used in all calculations involving group size.

Several of the abundance and trend estimates and the power analyses were conducted at the Inter-American Tropical Tuna Commission with a VAX 3100/80 micro-computer and a 486 IBM-compatible personal computer. Linear regressions were performed using a SAS procedure (SAS, 1990). A FORTRAN program designed for use on IBM-compatible personal computers (TRENDS2; Gerrodette 1993) allowed us to conduct a power analysis to detect trends in abundance (Gerrodette 1987).

Estimation procedures: Abundance

The basic questions considered by this project were: "How many dolphins use the Tampa Bay study area during the September-October survey period, and how does this number vary from year to year?" A closed population was assumed because of the short interval during which the surveys took place. There are a variety of ways to calculate indices of abundance of bottlenose dolphins inhabiting Tampa Bay.

Method 1 (catalog-size method) simply involves tallying the number of positively identified ("marked") individuals (M) sighted within the study area during the survey period. We derived our overall catalog of marked animals for each survey year by considering all sightings during the survey period regardless of the photo grade. The inclusion of a fin in the catalog was dependent on the recognizability of a dolphin, not the overall quality of coverage of a sighting. The catalog-size method does not account for dolphins that are not distinctively marked. The size of the annual Tampa Bay catalog (M) is an integral part of each of the following three abundance estimation procedures.

Assuming comparable levels of sighting effort from year to year, the catalog-size approach may provide a reasonable index for detection of trends of abundance. To conduct a power analysis, however, a coefficient of variation ($CV = var^{1/2} / N$) could only be calculated by considering each year (1988-1993) as a replicate sample. A regression analysis of the six annual estimates was conducted to remove the effects of a potential trend; the CV was then calculated from the residuals.

Method 2 (mark-proportion method) calculated the proportion of positively identified dolphins (m) relative to the total group size (n) in each sighting of "Grade-1" quality. The accuracy of the population-size estimates depends on the confidence in identifications. Therefore, only Grade-1 sightings were used to derive the proportion of marked animals. There was no relationship between group size and the proportion of dolphins identified ($r^2 = 0.007$).

The proportions of marked dolphins to group size (m/n) for each sighting were averaged for each year. The total number of marked dolphins in the catalog for a given year (M) was divided by the average proportion of marked dolphins to yield a population estimate (N). A 2000-replicate non-parametric bootstrap resampled the m/n proportions from observed groups to produce variance estimates and percentile confidence limits.

Method 3 (mark-resight method) uses the Bailey modification of the Petersen method to estimate abundance (Bailey 1951; Seber 1982; Hammond 1986). The Bailey modification incorporates resampling with replacement in the model. Because both marked and unmarked dolphins may be resighted multiple times, this modification was deemed appropriate. The equation used was:

$$N = M (n_2 + 1) / (m_2 + 1)$$

with a binomial variance of

$$v = M^2 (n_2 + 1) (n_2 - m_2) / (m_2 + 1)^2 (m_2 + 2)$$

where N is the population size, M is the total number of different marked dolphins sighted during the year, n_2 is the total number of dolphins sighted during all complete surveys of the area, and m_2 is the total number of marked dolphins sighted during the same surveys. A complete survey consisted of a combination of daily surveys that covered all of the regions (Figure 1) once during good or excellent sighting conditions. These combinations were developed *a posteriori* for the purpose of testing this estimation technique. The "complete surveys" required six to nine boat days over periods of 4 to 38 days for completion due to the large area to cover and the incidences of poor weather conditions. Only "Grade-1" sightings were used to ensure that all marked dolphins present during these sightings were identified and the group size was accurately counted. Because of the difficulties of covering such a large area, only 1-3 complete surveys were conducted each year. CVs were calculated from binomial variance estimates.

Method 4 (resighting-rate method) attempts to first estimate the number of unmarked dolphins (u) in the area and then add them to the number of marked dolphins in the catalog sighted that year (M) to estimate N. By assuming that unmarked dolphins are resighted at the same rate as marked dolphins, the following equation would estimate the number of unmarked dolphins:

$$u = (M/m_2) (n_2 - m_2)$$

where M is the number of different marked dolphins sighted during the annual 6-week survey period, n_2 is the total number of dolphins counted from "Grade-1" sightings during the annual survey period, m_2 is the total number of marked dolphins counted from "Grade-1" sightings during these same sightings, n_2-m_2 is the number of unmarked dolphins counted from these sightings, and N/m_2 is the proportion of the number of marked individuals to the number of sightings of these marked individuals. The population size is then estimated by

$$N = M + u$$

and the CV is estimated by the regression analysis described in Method 1.

Estimation procedures: Interannual Trends and Power Analysis

Linear regression analyses were conducted to determine whether a trend was present in the indices or estimates of abundance (i.e., the slope of the regression line of abundance vs. year was significantly different from zero).

We used a power analysis to calculate the number of surveys or the CVs of the estimates required to detect a trend (Gerrodette 1987). The power analysis relates five parameters: alpha (the probability of making a Type-1 error, i.e. concluding that a trend exists when in fact it does not), the power, or 1 - beta (beta is the probability of making a Type-2 error, i.e. concluding that a trend does not exist when in fact it does), n (the number of surveys), r (the rate of change in population size), and the CV of the abundance estimate. Additionally, one must choose whether a t- or z-distribution and a one- or two-tailed test is appropriate, and whether r changes exponentially or linearly. It is also necessary to determine whether the CV is constant with abundance, the square root of abundance, or to the inverse of the square root of abundance. Notice that the actual estimate is not used, only the coefficient of variation of the estimate. This estimate can be the actual abundance (population size as determined from mark-resight methods or censuses) or indices of abundance (such as total number of marked animals in the photo-ID catalog for a particular year, or total number of dolphins sighted per survey or time period).

One of the objectives of this research was to determine whether the photo-ID method could detect a doubling or halving of population size with 80% certainty. Thus, alpha = 0.05, beta = 0.20, power = 0.80, r = 1.00 or -0.50, n = 2 annual surveys, and it is only necessary to calculate the CV required to detect a trend and compare it with the CV of the abundance estimate calculated from the data. Alternatively, one can use the CV of the estimate to solve for n, the number of surveys necessary to detect the trend. In general, the lower the CV, the fewer the number of surveys required to detect a trend (Gerrodette 1987). For mark-resight estimates, the CV decreases as the proportion of marked animals in the population increases (Wells and Scott 1990).

Traditionally in research, one is concerned mainly with alpha and Type-1 errors. This is conservative when considering whether to accept an alternate hypothesis as truth or not, but may not be conservative from a management point of view. Such a case might occur when the null hypothesis that a population is stable is accepted when, in fact, it is declining (Type-2 error). Gerrodette (1987) applied power analysis to linear regressions of abundance. Because the question posed is whether a large change can be detected from one year to the next, and because we used an annual survey period as the sampling unit, the sample size (n), equals two. A linear regression is not feasible with only two data points, so it is necessary to compare two distributions presumed to have known variances rather than use a linear regression (TRENDS2 does this automatically).

Given the initial parameters specified by the NMFS (alpha = 0.05, power = 0.80, r = 1.00 or -0.50, and n = 2), one can calculate the CV necessary to detect trends in abundance. We used a 1-tailed t-distribution for the TRENDS2 program, and specified that rates of increase or decrease be exponential. We made this choice because an exponential function is more typical of biological processes and because detecting a 50% linear decline is a moot exercise given that the population would be reduced to zero at the end of the second year. TRENDS2 also requires that the model of the relationship between CV and abundance be specified. As suggested by Gerrodette (1987) and a graph of our data, the "CV proportional to the square root of abundance" option was selected. Given these parameters, a maximum CV of 0.05 is required to detect an increasing trend and a CV of 0.07 is required for a decreasing trend.

Assuming that the calculated estimates and variances are the true population parameters, then a less conservative z-distribution can be used and the maximum CVs would be 0.16 (increasing trend) and 0.23 (decreasing trend). Conversely, if a more-conservative 2-tailed test were used, the maximum CVs would be 0.02 (increasing trend) and 0.03 (decreasing trend). We chose the 1-tailed t-distribution option because it better fits the situation of considering a change in only one direction at a time and because it could be argued that calculated variances may not truly represent those of the population.

Estimation procedures: Natality

Natality was calculated as the proportion of dolphins in each sighting considered to have been born within the year. Though the total number of calves was recorded for each group sighted, only the subset of calves considered to be young-of-the-year was considered to be relevant to the measurement of natality (Wells and Scott 1990). The average proportion of young-of-the-year was calculated for each year.

Estimation procedures: Mortality

We obtained stranding records from the Southeast U.S. Marine Mammal Stranding Network (D. Odell, pers. comm.) for bottlenose dolphins recovered from Manatee, Hillsborough and Pinellas counties from 1977 to 1993 to estimate a minimum mortality rate for the Tampa Bay area. We examined photographs of dorsal fins of carcasses provided by the Florida Marine Research Institute and Clearwater Marine Science Center and compared them to our photo-ID catalog to identify known mortalities (Urian and Wells 1993). We used photographs of animals that died during the period 1988 through 1993 and were recovered within the counties encompassing the Tampa Bay study area. Stranding records from outside our specified study area may be included because the exact locations of strandings within the counties were not available and Pinellas and Manatee county waters extend beyond our Tampa Bay study area. Photographs of the stranded animals were examined to determine if the markings occurred post-mortem or if decomposition obscured recognition.

Estimation procedures: Immigration/Emigration/Transience

To estimate rates of immigration and emigration, the Tampa Bay catalog of marked animals from 1988-1993 was used to identify individuals that showed "permanent" movement into or out of the study area during our entire survey period. "Permanent" is defined as being present or absent for a period of at least two years (Wells and Scott 1990). Marked dolphins were considered to be "residents" during the survey season if they were identified in at least five of the six survey years.

To derive an immigration rate, we identified individual dolphins not sighted in the first two years of the surveys, 1988 and 1989, but were initially sighted in 1990 and subsequently in 1991, 1992, and 1993. We also identified animals that were not sighted in 1988, 1989, and 1990 but were first sighted in 1991 and subsequently in 1992, and 1993. We searched for these animals in our photo-ID catalogs from other regions (e.g., Sarasota Bay, Charlotte Harbor and the inshore waters of the Gulf of Mexico) and searched for sighting records from times other than during our survey period. An immigration rate was calculated based on the proportion of the number of known and potential immigrants relative to the total catalog size. This immigration rate should be considered an overestimate because it was not possible to factor out additions to the catalog resulting from undetected changes to the fins of existing residents, and animals present but not photographed during 1988-1990.

Emigrants from the Tampa Bay study area were defined as: (1) dolphins identified in the first three years of the surveys but not identified in the last three years, and (2) dolphins identified in the first four years, but not identified in the last two years. Potential emigrants were checked against known mortalities from stranding records and photographs. Sighting records from the DBRI database were examined to identify sightings of these individuals in other areas and years. An emigration rate was calculated based on the proportion of the number of known and potential emigrants relative to the total number of marked animals in the catalog. The rate of emigration should be considered an overestimate because we were not able to differentiate between disappearances due to emigration, mortality and undetected changes to the dorsal fin, and animals present but not photographed during the last two or three years.

The incidence of transience was estimated by identifying individuals that were sighted in only one year of the six-year survey period and had no other sighting records in the DBRI database. To calculate a rate of transience, we selected the years 1990 and 1991 to minimize the probability that an animal might be an immigrant or emigrant. The incidence of transience was estimated to be the proportion of individuals that met the criteria above relative to the total catalog size for each survey year. This rate is probably an overestimate because it may include dolphins that in fact are not transients, but were missed during other surveys, died, or their fins changed without being detected.

The strict criteria used for defining immigrants, emigrants and transients preclude calculating rates for more than the two years, 1990 and 1991. Therefore, trend analyses were not possible for these parameters.

Results

Survey Effort

Surveys were conducted during windows of 34-42 days each year (Table 1). The size of the window each year depended on weather and the number of boats available. Unseasonable cold fronts or tropical storms adversely affected survey schedules in several years. During the first years of the project, only two boats were used, but beginning in 1990 as many as three or four boats were used. Survey effort was measured in several ways. One measure was a count of the number of boat days. A boat day was scored when a boat left the dock to search for dolphins. On average, 42 boat days were spent in the study area each year (range = 30-54 days, Table 1). A more refined measure of survey effort is provided by considering the numbers of hours spent searching for dolphins within the survey area. The total number of search hours (exclusive of time spent with each sighting) spent "on-effort" (under excellent, good, or fair survey conditions, see appendix) is presented in Table 1. An average of 113 hours of on-effort search time was spent each year (range = 85-141 hours).

Another measure of effort is the number of linear kilometers covered by our survey boats. These data are summarized in Table 1, and are presented by region to allow a comparison of within-region effort across years. Differences across years reflect the effects of weather, variable numbers of boats, and the use of different field stations that facilitated access to different regions.

Dolphins were seen throughout the study area, but they were not uniformly distributed. Larger groups tended to be found in the more open and deeper waters (Figures 2a-e). The total number of sightings and dolphins seen each year closely track the level of survey effort (Figure 3). The number of photographs taken was related to the number of dolphins. On average, 5-6 photographs per dolphin were taken each year.

Photo-ID Catalog Development

The level of survey effort was considered sufficient to warrant generation of abundance estimates based on mark-resighting analyses. This conclusion was supported by the high proportion of identifiable dolphins in the population (62% to 82%, Table 2), and the frequency distribution of resightings of identifiable dolphins within survey years (Figures 4a-f). One third to one half of the dolphins were sighted at least twice during a given survey year, up to a maximum of 13 times each. A low number of resightings would have suggested insufficient coverage of the pool of marked animals, resulting in population estimates that varied with the level of survey effort rather than being independent of effort.

Our Tampa Bay catalog for 1988-1993 included 858 different dolphins. The catalog size provides a minimum population estimate for the Tampa Bay study area ranging from 319 identifications in 1990 to 456 in 1992. On average, 57% of the dolphins in an annual catalog were also seen in either the previous or subsequent year, 52% were seen two years earlier or later, 47% were seen three years earlier or later, 44% were seen four years earlier or later, and 35% were seen five years earlier or later (Table 3).

Photographs taken during the 1988-1993 NMFS surveys built upon an existing Tampa Bay catalog of 150 animals identified during 1975-1987 (Figure 5; Wells 1986). As expected, during the initial years of the surveys a large number of identifications were added to the catalog. New fins were added to the catalog at a slower rate during subsequent years (Figure 5). The proportion of first-time identifications comprising the total catalog each year declined from 74% in 1988 to 14% in 1993. These results are comparable to those from the Sarasota community (Wells and Scott 1990), suggesting a relatively closed population for the Tampa Bay study area. Identifications added to the catalog over the years may represent changes to the fins of known animals, non-distinctive calves acquiring new markings (only a small number of calves are in our catalog), or animals that may have been missed in previous years. We found that overall there were few changes to fin markings throughout the surveys, and minor changes could be detected by a skilled observer familiar with the catalog. However, dramatic changes to fin markings could easily be undetected and could result in a previously identified animal being entered twice in the catalog.

The stability of fin markings over time enhances the probability of resighting individuals. The high frequency of resighting individuals and the long-term sighting histories suggest a high degree of residency for some animals in the Tampa Bay study area during the survey period (Figure 4a-f). The consistency of the catalog and stability of fin markings over time contribute to our confidence in meeting the assumptions associated with generating abundance estimates from mark-resighting analyses.

Abundance Estimates and Trends

The catalog-size index (Method 1) resulted in minimum population estimates of 319 to 456 dolphins over the six years of the study, with an average of 386 (Table 2). The Method-1 estimates are known to be underestimates because they do not take into account the unmarked dolphins. Methods 2, 3, and 4 attempted to correct for this underestimation.

Method 2 (mark-proportion method) calculated population-size estimates from proportions of marked animals relative to revised minimum, revised maximum, and final best group size estimates. The differences between minimum and maximum population-size estimates were so small that we present only the estimates based on the final best group size. The number of dolphins estimated by Method 2 ranged from 488 to 567, with an average of 524 (Table 2).

Method 3 (mark-resight method) obtained point estimates for each of the one to three "complete surveys" during each year. The estimates ranged from 479 to 675 across all years, with an average of 564 (Table 2).

Method 4 (resighting-rate method) provided annual point estimates ranging from 416 to 602 dolphins, with an average of 516 (Table 2).

The abundance estimates were examined for trends across the six years of the surveys. Population-size estimates varied from one year to the next independently of effort (Figure 6), and therefore were considered to reflect accurately changes in abundance. Comparison of 95% CL for Methods 2 and 3 (Figure 7) suggest that there were no significant differences in the abundance estimates across all six years of the survey. Additional support for this conclusion was derived from linear regression analyses of the four abundance indices and estimates. These analyses indicated that the slope of the regression lines of abundance *vs.* year did not significantly differ from zero during 1988-1993 ($p = 0.15$ for Method 1; $p = 0.84$ for Method 2; $p = 0.55$ for Method 3; $p = 0.31$ for Method 4).

Power Analysis

The catalog-size index (Method 1) used a regression analysis of the six annual estimates to remove the effect of a potential trend and calculated a CV of 0.11 from the residuals (although no trend was apparent, a test with only six data points would be sensitive to outliers and would have low power). Given that alpha = 0.05, power = 0.80, r = 1.00 or -0.50, and CV = 0.11, we can then calculate the minimum number of surveys necessary to detect a trend. Three survey sessions would be required to detect either an increasing or a decreasing trend.

A bootstrap variance procedure applied to Method 2 (mark-proportion method) yielded CVs ranging from 0.04 to 0.06, with an average CV of 0.05. This would allow an increasing or a decreasing trend to be detected in two surveys.

The CVs for the estimates from each "complete survey" for the mark-resight method (Method 3) ranged from 0.03 to 0.07, with an average CV of 0.05 for 1988-1993. This would allow an increasing or a decreasing trend to be detected in two surveys.

Method 4 (resighting-rate method) used the regression analysis described in Method 1 to yield a CV of 0.11. Three field seasons would be required to detect either an increasing trend or a decreasing trend.

Natality

The natality rate, the proportion of dolphins considered young-of-the-year, varied little during the course of the surveys, ranging from 0.028 to 0.040 (Table 4). If these rates are applied to the population size estimates derived by Method 2 (mark-proportion method), then annual estimates of 14 to 20 young-of-the-year are derived for the Tampa Bay study area. The mark-proportion estimates are used here because the variances were low, and the estimates for population size and natality were calculated in a similar manner, i.e. on a proportion-of-school basis.

Mortality

There were 314 records of stranded animals from Hillsborough, Pinellas and Manatee counties from 1977-1993; 238 of these records were from 1988 to 1993 (Table 5, Figure 8). We were unable to calculate a mortality rate due to the bias associated with an increase in stranding response effort since the mid-1980s. Coastal development and boating activity on Tampa Bay waters have also increased dramatically, possibly contributing to the discovery of carcasses in previously isolated areas. However, there are still many remote and inaccessible areas within Tampa Bay where carcasses are unlikely to be found. All these factors confound determination of the actual number of strandings and make it impractical to calculate a mortality rate based on stranding records alone.

In an attempt to distinguish between mortalities and other kinds of losses from the population, photographs of stranded dolphins were examined. A total of 47 photographs were available to compare with the photo-ID catalog. Dorsal fins in photographs of 30 animals were deemed non-distinctive, i.e., they belonged to neonates, calves or otherwise had no diagnostic markings, they were too decomposed to be used for matching or had obvious signs of post-mortem changes. Seventeen animals were considered distinctive and were used to compare with the photo-ID catalog (Table 5). We identified seven of the stranded animals: five were Sarasota dolphin community members, and two were from Tampa Bay. One of the Tampa Bay animals was not seen during our surveys, but had a sighting history dating back to 1983 and died in 1991. The other was first identified in 1984 and died in 1990.

Of the 858 dolphins in the 1988-1993 Tampa Bay catalog, 459 were not seen during the last year of the study. Six of these (0.013) were confirmed as mortalities based on fin identifications.

Immigration

Fourteen dolphins were identified first in 1990, and were seen in each year thereafter, resulting in their consideration as potential immigrants. Six of these dolphins were sighted in 1990 in months other than September and October, but within the same general areas as during the surveys. Four of these dolphins were identified for the first time during surveys in 1991, but were initially seen outside of the survey period in 1990.

Six of the 14 dolphins considered immigrants had subtle features and may have been seen in previous years before acquiring distinctive markings. Eight dolphins were rated as distinctive with multiple diagnostic features that would have been difficult to miss if the dolphins had been present in a sighting.

There were 28 dolphins considered immigrants in 1991 because they were first identified in 1991 and subsequently in 1992 and 1993. Twelve dolphins had sightings in months outside our census period but no sighting histories in adjacent study areas. One animal had a sighting record outside our artificial Tampa boundary but within the range of its other sightings. Again, approximately half the animals were described as having subtle features and half were considered distinctive with multiple diagnostic features.

The proportion of dolphins in the catalog that met the criteria for immigration was 0.044 in 1990, and 0.066 in 1991, for an average of 0.055 across both years (Table 6). None of these animals was observed outside the Tampa Bay study area prior to their first sighting in the study area, so it was not possible to confirm that they were indeed immigrants, nor was it possible to determine their points of origin.

Emigration

Seven dolphins were considered to be emigrants in 1990 because they were identified in each of the first three years of the study but not in the last three years. Two of these animals were identified during the first three years in months outside the survey period. All of their sightings were within the Tampa Bay study area. All were considered distinctive, however none of these potential emigrants was identified from the stranding records or photographs we examined.

Ten dolphins were identified during each of the first four years of our study but not in the last two years and thus were defined as potential emigrants from Tampa Bay during 1991. Nine of these dolphins were identified in Tampa Bay in months outside the survey period but had no sighting records from the adjacent communities. All were distinctively marked and five had initial sightings between 1975 and 1983.

The proportion of potential emigrants in 1990 was 0.022 of the catalog size for that year, and 0.023 in 1991 (Table 6). None of these animals was seen in other regions after disappearing from the Tampa Bay study area, so it was not possible to confirm that they were actual emigrants, nor was it possible to determine their destinations because there were no sighting records of these dolphins after disappearing.

Transience

Dolphins identified during only one year of the surveys were defined as transients. There were 12 dolphins that met our criteria in 1990 (Table 6). This was 0.038 of the catalog size in 1990. In 1991, 22 dolphins were defined as transients (0.052 of the catalog). None of these animals was seen in the Tampa Bay study area outside of the survey season, nor were they seen in adjacent study areas, so their origins and destinations remain undetermined.

Discussion

Photo-Identification Catalog

The ability to identify individuals over time using natural markings has proved to be a valuable and benign research tool and a standard in population studies of marine mammals. Maintaining a photographic database of individual dolphins enables researchers to monitor not only population parameters but habitat use, social association and distribution patterns.

The high proportion of marked dolphins and the high frequency of resightings underscores the importance of including only excellent quality images of distinctively marked individuals in the photo-ID catalog. This minimizes subjectivity in the matching process and reduces the chance of making incorrect identifications or missing them altogether.

Abundance Estimates and Trends

Comparison of the point abundance estimates from Methods 2, 3, and 4 indicates striking consistency across methods, and lack of change across the six years of the study (Figure 6). In all cases the lower 95% CLs were greater than or equal to the minimum count provided by the catalog-size method. Thus, if we consider the most extreme 95% CL values to be the limits to our estimates, the number of dolphins using the Tampa Bay study area during the surveys was between 437 and 728.

Our estimates are considerably larger than the aerial survey estimate of 148 - 348 (95% CL) reported by Scott *et al.* (1989) for the same months in 1985. In most cases the numbers of dolphins from the catalog-size method exceed the aerial survey estimates as well. It seems unlikely that the differences in the estimates over the three years from 1985 to 1988 are due to dramatic changes in abundance, given the lack of change in abundance over the six year period from 1988 through 1993. A more likely explanation may be the differences in survey methods.

A similar conclusion was reached by Scott *et al.* (1989) when they compared their 1985 aerial survey maximum estimate of 23 (95% CL = 12 - 34) dolphins in Sarasota Bay to published population size estimates of about 100 individuals. Aerial surveys may tend to substantially underestimate the numbers of bottlenose dolphins present, especially where there is high turbidity and/or low contrast between dolphin coloration and water color, as is often the case in Sarasota. The Sarasota Bay comparison may also exaggerate the differences resulting from survey methodology because the study areas did not exactly coincide. The Scott *et al.* (1989) aerial surveys did not include the entire home range occupied by the 91 known members of the Sarasota dolphin community in 1985 (Wells and Scott 1990), and therefore may not have included some resident dolphins in their estimate. Scott *et al.* (1989) also suggested that the estimated resident abundance may not accurately reflect the average daily abundance for the Sarasota dolphin community. While it is true that some Sarasota residents may not be present in the home range every day, non-residents passing through Sarasota may at least partially compensate for this decrease in daily abundance (Wells and Scott 1990). Thus, short-term movements alone probably do not adequately explain the fact that the aerial survey estimates were only 25% of the known 1985 Sarasota population. We are left with methodological rather than biological differences to account for much of the difference in estimates.

The estimates we have derived reflect the numbers of dolphins found in the Tampa Bay study area at least once during a six-week period in September and October of each year. The estimates are based on a catalog that includes all of those dolphins for which satisfactory identification photographs were obtained during the survey period, without distinguishing between differences in the degree of use of the study area waters by different dolphins.

The catalog makes no distinction between those dolphins using the waters of the study area on a regular basis *vs.* those photographed during an infrequent passage through the study area. A number of overlapping home ranges occur along the central west coast of Florida, including Tampa Bay (Wells 1986). The degree of overlap in home ranges in the Tampa Bay study area varies. The probability of finding a given dolphin occupying a partially overlapping home range would be a function of the degree of overlap. The limits of our study area are not biologically based. They do not necessarily coincide with home range boundaries, for example, and therefore do not address the relative importance of waters and habitat features in the study area. Evaluation of the biological basis of population units has important management implications, but this requires more-detailed analysis of the community structure of dolphins in the Tampa Bay area.

Natality

The natality estimate probably underestimates the total number of births in a given year. If a diffuse calving season is assumed, then it is likely that some young calves were lost prior to each annual survey, and some may have been born after the survey. A spring through early fall peak in calving with occasional births occurring at anytime during the year has been reported for Sarasota Bay (Wells *et al.* 1987) and for the west coast of Florida in general (Urian *et al.* in prep.). Thus, the actual crude birth rate may have been higher than the 0.028 to 0.040 reported from the 1988-1993 surveys.

The average natality estimate of 0.033 $\pm$ 0.0909 is slightly lower than that reported for Sarasota Bay. A mean crude birth rate of 0.055 $\pm$ 0.0089 for Sarasota dolphins was calculated for the period 1980-1987 (Wells and Scott 1990). Observational effort in Sarasota has been ongoing, providing opportunities to observe a higher proportion of births. The narrow window for the Tampa Bay survey means that some calves are likely missed. Thus, the Tampa Bay natality measure should be compared to a Sarasota measure between the crude birth rate and the recruitment rate (the proportion of calves surviving to age 1). For Sarasota Bay, the mean recruitment rate for 1980-1987 was 0.048 $\pm$ 0.0085 (Wells and Scott 1990). Therefore, a comparable measure of Sarasota natality might be between 0.048 and 0.055.

The consistency of the natality rate over the six-year survey period also supports the conclusions drawn from the abundance estimates regarding the stability of the population size.

Mortality

Measurements of dolphin mortality rates for Tampa Bay proved to be difficult to obtain during our survey period. In most cases we were unable to distinguish between mortalities, emigrations, undetected fin changes, and animals missed during the Tampa Bay surveys. In Sarasota, it has been possible to evaluate losses from the population from two directions, through the collection and examination of carcasses of identifiable individuals, and through records of disappearances of known individuals (Wells and Scott 1990). Mortality estimates are facilitated in Sarasota as compared to the Tampa Bay project because Sarasota involves a smaller number of dolphins with a higher proportion of them being identifiable, a smaller study area, a more-intensive, year-round monitoring effort, and more-complete and consistent stranding response effort.

The situation in Tampa Bay could improve in time. Stranding response teams are becoming more active in Tampa Bay, and communication between teams is improving. We know that good photographs of fresh carcasses can provide the basis for identifications (Urian and Wells 1993). These identifications are important not only for monitoring the population, but also because knowing the origin of a carcass can provide information that may aid in understanding cause of death or interpreting levels of environmental contaminants in tissues. Long-term and more frequent photographic monitoring of the dolphins in Tampa Bay would improve the basis for identifying and evaluating disappearances of catalog members.

Uneven stranding response effort in Tampa Bay over the six years of the survey precluded trend analyses over the entire period of the project. The unusually high numbers of strandings in 1991 and 1992, followed by a decline in 1993 (Figure 8) may be real. Dolphin strandings, both in Sarasota and more generally along the central west coast of Florida, reached levels two to three times normal from late 1991 through 1992 (unpublished data). The size of the Sarasota population was estimated to have declined about 10% as a result of these unusual mortalities. The data in Figure 7 hint at a similar decline in Tampa Bay, but no significant trend (comparison of 95% CLs) was found.

Immigration/Emigration/Transience

Both immigration and emigration rates are difficult to interpret because of a number of potentially confounding factors. The survey effort was limited to a six-week period, thereby minimizing the opportunity to identify dolphins in other times of the year and other areas. Changes to the fins may hinder our ability to identify individuals, resulting in the scoring of the changed fin as a new identification and the original identification as a loss. Unidentified or missed mortalities obscure actual emigration rates by counting them as losses instead of as known mortalities. It is also possible animals were in the study area but not sighted, or were photographed but not identified because of inadequate photographic quality or coverage (Slooten *et al.* 1992).

Overall, a maximum of about 0.123 of the Tampa population was estimated to be in flux each year, as immigrants, emigrants, or transients (Table 6). The low rates of immigration, emigration and transience found for the dolphins in the Tampa Bay study area in the six-year period suggest a relatively closed population. Resident dolphins have a greater chance of being resighted than do animals that are known to have extended home ranges. Based on the high proportion of marked animals (0.70) that were only sighted once, Weigle (1990) concluded that a large number of transients used Tampa Bay. Contrary to Weigle's findings, our results suggest there is a high proportion of resident dolphins using Tampa Bay, some with extended home ranges, and few transient animals.

Summary of Population Rate Parameters for Tampa Bay

Under stable circumstances during September - October, between 437 and 728 dolphins use the Tampa Bay study area. About 0.035 of these animals are young-of-the-year, but this is likely an underestimate. At most, 0.055 of the dolphins present are recent immigrants, but this value is elevated from the inclusion of dolphins that have not immigrated, but have fins that have changed, or may have been present but not photographed in previous years. About 0.023 of the dolphins will be considered to be lost, through emigration, death, or because of undetected fin changes. Transients account for 0.045 of the total population size. Immigration, emigration, and transience are not major influences on the number of animals present at any given time, but they may be important ecologically by providing a means of genetic exchange between populations, as demonstrated for the Sarasota dolphin community (Duffield and Wells 1991).

Comparison of Abundance Estimation Methods

Methods 2, 3, and 4 produced similar estimates of population size (Table 2) even though the sampling units and calculations differed. All three of these methods have similar assumptions: a closed population, an equal probability of sighting all animals, random samples of dolphins resighted, and permanent and reliable marks on the dolphins.

To detect a trend in abundance, the method with the lowest bias, greatest precision, and easiest implementation in the field would be preferred. The accuracy of the estimates depends greatly on the adherence to the assumptions above. The problem of heterogeneity of sighting probabilities can cause a negative bias in the estimate of N (e.g., Hammond 1986), and has been shown to occur in mark-resight studies on bottlenose dolphins in Sarasota Bay (Wells and Scott 1990). To examine the effects of heterogeneity on the different methods, a greater understanding of the community structure of the area is necessary. Method 3, the mark-resight method, attempted to reduce the potential effect of heterogeneity by balancing the coverage of the regions within the study area, under the assumption that multiple communities of dolphins having restricted home ranges could be over- or under-sampled if coverage is not equal for all regions. Piecing together segments surveyed over a period of several weeks, however, could lead to biases if the assumption of population closure was violated. This assumption, based on the dolphin communities of Sarasota Bay, could be tested when the movements and ranges of Tampa Bay dolphins are better known.

The precision of the estimates is largely a result of the size and number of the samples and the proportion of marked dolphins in the population (M/N). Three of the above methods illustrate a range of compromises that can be made between the first two factors. The mark-proportion method (Method 2) sampled individual dolphin schools as units; this led to a large number of replicates, but the small size of these schools (mean school size = 5.85 $\pm$ 6.012 SD, n = 480) led to relatively high variation in the proportion of marked dolphins in the groups. Alternatively, the resighting-rate method (Method 4) used the entire survey season as a sampling unit, yielding large sample sizes per season (about 200-600 dolphins), but at the expense of replicate sampling. The mark-resight method (Method 3) used one to three "complete surveys" of the area as a sampling unit, and about 100-380 dolphins per field season, with sample sizes of about 20-170 dolphins per survey. The CVs calculated from Methods 2 and 3 were both acceptably low, although they cannot be compared directly because of the difference in variance methods (Method 2 = non-parametric bootstrap; Method 3 = binomial).

All of these methods may be prone to a negative bias due to heterogeneity of sighting probabilities, but this would be particularly true for Methods 2 and 4 if care was not taken to survey all areas at least some time during the six-week period. The similarity of the estimates from Methods 2, 3, and 4 suggest that, in practice, the effect of this potential bias due to unequal effort in different regions was relatively small. Estimates from Methods 2 and 4 averaged 6.0% and 8.0% lower than those of Method 3, but a Wilcoxen paired-sample test revealed no significant differences between any of these methods.

Power Analyses

The power analysis has proved to be a useful tool for survey design and management decisions. One can make *a priori* management decisions about the duration, sampling intensity, and statistical certainty of survey programs if one can estimate the CV of the methods being contemplated. Given the objectives to detect a halving or doubling in the population from one year to the next, it appears that Method 2 (mark-proportion method) and Method 3 (mark-resight method) can accomplish this goal for Tampa Bay dolphins with annual surveys. The other methods require additional assumptions about the 1988-1993 abundance stability and are thus less useful. CVs can be obtained or improved, however, by sampling more often than the annual surveys chosen for this study, although care must be taken that additional variation due to seasonal differences in dolphin abundance, movements, and behavior is taken into account.

Survey Design

Selection of a survey technique for detecting trends in dolphin population-rate parameters should take into account the relative accuracy, precision, repeatability, and efficiency of the available methodology. Our findings from Tampa Bay indicate that coastal aerial surveys, while more efficient than photo-ID surveys at covering large areas, provide estimates that are less accurate and less precise.

The main reason for the close agreement among the estimates calculated from the different methods and the precision of the CVs was the high percentage of marked dolphins identified each year (eventually over 80%). A large amount of survey effort is required to maintain such a high percentage. Ideally, the surveys should have two components: an intensive effort to photograph and identify dolphins (at the potential expense of not following a rigorous survey route or sampling design), and an effort to cover the whole area in a short period of time with repeatable survey routes. The first component allows the development of the photo-ID catalog so that sufficient numbers of marked dolphins are identified to estimate abundance precisely, while the second component would provide a standardized effort each year so that annual comparisons can be made.

Method 3 (mark-resight method) would provide satisfactory estimates from the second component of such a survey because the statistical properties of the more-traditional mark-recapture methods are well-known and the sampling units provided adequate sample sizes of marked animals. In Tampa Bay, however, it proved difficult to conduct "complete surveys" within the available survey window. Instead, we could only survey regions repeatedly while conditions were favorable when other regions were unworkable, and then shift our efforts opportunistically. If "complete surveys" can not be conducted, then Method 2 (mark-proportion) provides an acceptable alternative as long as the numbers of sightings and proportion of marked dolphins are high, and the effort among different regions is not greatly biased. This method is particularly useful because it can be more-readily calculated from the first component of the survey design during which the largest numbers of groups would be sighted. Methods 1 (catalog-size method) and 4 (resighting-rate method) provided useful double-checks on the estimates of the other two methods.

Recommendations

- Monitoring should be continued at least annually. The more frequent the surveys the better the chance of detecting a trend towards a catastrophic decline. More-intensive surveys would permit more-refined determinations of natality, immigration, emigration, transience, and mortality.
- Community structure needs to be examined in more detail to define biologically meaningful management units. Existing information on residency, ranging and social patterns, and genetics should be integrated to arrive at population designations. Analysis of community structure is necessary to interpret immigration, emigration, and transience relative to population size.
- Photo-ID efforts should be expanded to greater distances offshore and north along the coast to examine immigration, emigration, and transience in greater detail.
- Patterns of habitat use in Tampa Bay should be examined through integration of GIS habitat data with our sighting data.
- Additional data are needed to describe community structure. In particular, sample sizes for examination of mt-DNA haplotype distributions in Tampa Bay should be augmented through biopsy darting or capture-release efforts. The genetics data should be supplemented with telemetry data on movements and additional photo-ID efforts.
- Photo-ID work should be expanded to other seasons to examine previous reports of seasonal fluctuations in abundance. If we have surveyed during the peak of abundance, then which of these animals move out during other seasons? Do others move in? The results of other studies indicate that at least some of the Tampa Bay dolphins are present year-around (Bassos 1993).
- The ability of the NMFS to compare rate parameters from one study site to another would benefit from standardization of methodology. A manual describing our research approach and techniques, from design through analysis should be developed.

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Literature Cited

Bailey, N.T.J. 1951. On estimating the size of mobile populations from mark-recapture data, Biometrika 38: 293-306.

Bassos, M.K. 1993. A behavioral assessment of the reintroduction of two bottlenose dolphins. M.S. thesis, University of California, Santa Cruz, 84 pp.

Duffield, D.A. and R.S. Wells. 1991. The combined application of chromosome, protein and molecular data for the investigation of social unit structure and dynamics in *Tursiops truncatus*. Rep. int. Whal. Commn (Spec. Issue) 13:155-169.

Gerrodette, T. 1987. A power analysis for detecting trends. Ecology 68(5): 1364-1372.

Gerrodette, T. 1993. Program Trends: User's Guide. Available from author, Southwest Fisheries Science Center, La Jolla, CA.

Hammond, P.S. 1986. Estimating the size of naturally marked whale populations using mark-recapture techniques. Rep. int. Whal. Commn (Special Issue 8) 253-282).

Leatherwood, S., and I. T. Show. 1980. Development of systematic procedures for estimating sizes of "population(s)" of bottlenose dolphins and estimates of sizes of "population(s)" of bottlenose dolphins in three geographical areas; with incidental observations on densities of West Indian manatees and marine turtles. Final Report, contract No. NA79-GA-C-0038.

Odell, D. K. and J. E. Reynolds III. 1980. Abundance of the bottlenose dolphin, *Tursiops truncatus*, on the west coast of Florida. National Technical Information Service PB-80-197650. 47 pp. US Department of Commerce, Springfield, VA 22161.

SAS Institute Inc. 1989. SAS/STAT User's Guide, Version 6, Fourth Edition. SAS Institute Inc., Cary, NC.

Scott, G. P. 1990. Management-oriented research on bottlenose dolphins by the Southeast Fisheries Center. Pp. 623-639, *In* The Bottlenose Dolphin (S. Leatherwood and R.R. Reeves, eds.). Academic Press, San Diego, 653 pp.

Scott, G.P., D.M. Burn, L.J. Hansen and R.E. Owen. 1989. Estimates of bottlenose dolphin abundance in the Gulf of Mexico from regional aerial surveys. CRD-88/89-07.

Scott, M.D., R.S. Wells, A. B. Irvine and B.R. Mate. 1990a. Tagging and marking studies on small cetaceans. Pp. 489-514, *In* The Bottlenose Dolphin (S. Leatherwood and R.R. Reeves, eds.). Academic Press, San Diego, 653 pp.

Scott, M.D., R.S. Wells, and A. B. Irvine. 1990b. A long-term study of bottlenose dolphins on the west coast of Florida. Pp. 235-244, *In* The Bottlenose Dolphin (S. Leatherwood and R.R. Reeves, eds.). Academic Press, San Diego, 653 pp.

Seber, G.A.F. The estimation of animal abundance. MacMillan Publ. Co., New York. 654 pp.

Slooten, E., S. M. Dawson, and F. Lad. 1992. Survival rates of photographically identified Hector's dolphins from 1984 to 1988. Mar. Mamm. Sci. 8:327-343.

Thompson, N.B. 1981. Estimates of abundance of *Tursiops truncatus* in Tampa Bay, Florida. National Marine Fisheries Service-SEFL, Miami Laboratory, Fishery Anal. Div. Rept. 14 pp.

Urian, K.W. and R.S. Wells. 1993. Identification of stranded bottlenose dolphins from the central west coast of Florida: 1991-1992. Contract No. 40-GENF-2-00613. 3 pp.

Urian, K. W., D. A. Duffield, A. J. Read, R. S. Wells, and E. D. Shell. (in press) Seasonality of reproduction in bottlenose dolphins, *Tursiops truncatus*. J. Mamm.

Weigle, B. 1990. Abundance, distribution and movements of bottlenose dolphins (*Tursiops truncatus*) in lower Tampa Bay, Florida. Rep. int. Whal. Commn (Spec. Issue) 12:195-201.

Wells, R.S. 1986. Population structure of bottlenose dolphins: behavioral studies along the central west coast of Florida. Contract Rept. to National Marine Fisheries Service, Southeast Fisheries Center. Contract No.45-WCNF-5-00366. 58 pp.

Wells, R. S. 1991. The role of long-term study in understanding the social structure of a bottlenose dolphin community. Pp. 199-225, *In*: Dolphin Societies: Discoveries and Puzzles (K. Pryor and K. S. Norris, eds.). University of California Press, Berkeley. 397 pp.

Wells, R. S., M. D. Scott and A. B. Irvine. 1987. The social structure of free-ranging bottlenose dolphins. Pp. 247-305, *In*: Current Mammalogy (H. Genoways, ed.). Plenum Press, New York, 519 pp.

Wells, R.S. and M.D. Scott. 1990. Estimating bottlenose dolphin population parameters from individual identification and capture-release techniques. Rep. int. Whal. Commn (Spec. Issue) 12:407-415.

Würsig, B. and T. A. Jefferson. 1990. Methods of photo-identification for small cetaceans. Rep. Int. Whal. Commn (Spec. Issue) 12: 43-52.

List of Tables

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Appendices

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Table 1. Survey effort, 1988-1993.

	1988	1989	1990	1991	1992	1993	Total
Survey Dates:							
Begin	9-Sep	5-Sep	5-Sep	3-Sep	1-Sep	9-Sep	
End	12-Oct	10-Oct	14-Oct	14-Oct	8-Oct	20-Oct	
Number of Boat Days:							
All Regions	54	46	58	66	47	56	327
Tampa Bay Regions 1-7	35	30	39	54	40	51	249
Number of Survey Hours in Regions 1-7:							
Excellent Conditions	25.38	20.28	47.98	49.75	29.58	44.78	217.75
Good Conditions	61.22	50.80	57.18	57.25	50.12	79.03	355.60
Fair Conditions	25.05	13.55	18.55	15.50	13.58	17.12	103.35
Total	111.65	84.63	123.71	122.50	93.28	140.93	676.70
Number of Kilometers Surveyed in Regions 1-7:							
Region 1	455	371	371	407	256	166	
Region 2	337	336	366	366	270	279	
Region 3	236	125	151	159	163	142	
Region 4	150	66	142	131	137	126	
Region 5	744	600	571	756	691	1,421	
Region 6	404	294	214	454	406	568	
Region 7	145	40	160	139	197	289	
Total	2,471	1,832	1,975	2,412	2,120	2,991	13,801
Number of Sightings:							
All Regions	359	324	381	349	277	322	2,012
Tampa Bay Regions 1-7	241	217	211	251	219	262	1,401
Number of Dolphins Observed (best point estimate):							
All Regions	2,187	1,955	2,162	2,181	1,814	1,810	12,109
Tampa Bay Regions 1-7	1,642	1,323	1,334	1,688	1,446	1,631	9,064
No. of Young-of-the-Year Observed (best point estimate):							
All Regions	135	68	124	89	183	65	664
Tampa Bay Regions 1-7	81	36	82	71	52	63	385
Number of Photographs: All Regions	11,688	10,068	11,795	11,857	10,425	9,952	65,785

Table 2. Annual Tampa Bay dolphin population size estimates.

	1988	1989	1990	1991	1992	1993	Average
Method 1 (Catalog-size)							
No. of dolphins in catalog (M)	337	379	319	425	456	399	386
Method 2 (Mark-proportion)							
No. of Grade 1 sightings (s)	78	100	93	97	68	44	
Mean proportion of marked dolphins/group (m/n)	0.65	0.75	0.62	0.75	0.82	0.82	
Population size estimate (N)	**515**	**505**	**517**	**567**	**554**	**488**	**524**
Standard deviation (SD)	27.5	20.9	30.0	23.5	23.6	24.5	
Coefficient of variation (CV)	0.05	0.04	0.06	0.04	0.04	0.05	0.05
Upper 95% CL	578	581	581	617	607	542	
Lower 95% CL	469	467	464	525	515	447	
Method 3 (Mark-resight)							
Number of "complete surveys"	2	1	3	3	2	3	
Average population size estimate (N)	**635**	**487**	**554**	**675**	**554**	**479**	**564**
Standard deviation (SD)	44.2	24.3	24.5	26.4	18.5	21.1	
Coefficient of variation (CV)	0.07	0.05	0.04	0.04	0.03	0.04	0.05
Upper 95% CL	723	536	603	728	591	521	
Lower 95% CL	547	438	505	622	517	437	
Method 4 (Resighting-rate)							
No. of dolphins sighted per season (n)	550	542	527	594	387	208	
No. of marked dolphins sighted per season (m)	350	391	322	411	321	166	
Population size estimate (N)	**530**	**525**	**522**	**602**	**502**	**416**	**516**

Table 3. Number (%) of dolphins in the catalog of a given year (bold) that were identified in previous or subsequent years.

YEAR	1988	1989	1990	1991	1992	1993
1988	**337**	201 (60%)	162 (48%)	178 (53%)	172 (51%)	130 (36%)
1989	201 (53%)	**379**	186 (49%)	210 (55%)	212 (56%)	167 (44%)
1990	162 (51%)	186 (58%)	**319**	199 (62%)	195 (61%)	151 (47%)
1991	178 (42%)	210 (49%)	199 (47%)	**425**	268 (63%)	230 (54%)
1992	172 (38%)	212 (46%)	195 (43%)	268 (59%)	**456**	261 (61%)
1993	130 (33%)	167 (42%)	151 (38%)	230 (58%)	261 (56%)	**399**

Table 4. Young-of-the-year proportions of the mark-proportion annual population estimates.

	1988	1989	1990	1991	1992	1993	Average
Mean Young-of-the-Year Proportion	0.040	0.030	0.038	0.028	0.036	0 028	0 033
Standard Deviation (SD)	0.0860	0.1041	0.0803	0.0631	0 1197	0.0923	
Calculated No. of Young-of-the-Year in Population	**20**	**15**	**20**	**16**	**20**	**14**	**18**
Upper 95& CL (+ 2 SD)	23	18	23	18	25	17	
Lower 95& CL (- 2 SD)	17	12	17	14	15	11	
Number of Grade 1 Sightings Used for Mean	78	100	93	97	68	44	
Mark-Proportion Population Size Estimate (N)	515	505	517	567	554	488	

Table 5. Summary of known mortalities based on examination and photographs of stranded dolphins in the three counties encompassing the Tampa Bay study area.

	All Counties		Hillsborough County				Pinellas County				Manatee County			
Year	Total No. of Stranded dolphins	No. of Stranded Dolphins from Catalog	No. of Strandings	No. Fins Examined	No. of Distinctive Fins	No. ID from Catalog	No. of Strandings	No. Fins Examined	No. of Distinctive Fins	No. ID from Catalog	No. of Strandings	No. Fins Examined	No. of Distinctive Fins	No. ID from Catalog
1988	30	0	3	0	0	0	18	0	0	0	9	5	2	0
1989	26	0	2	1	0	0	18	0	0	0	6	4	0	0
1990	32	1	10	0	0	0	15	1	0	0	7	5	1	1
1991	54	2	6	1	1	1	33	8	3	0	15	8	4	1
1992	55	3	10	0	0	0	35	0	0	0	10	5	4	3
1993	41	1	8	0	0	0	24	1	1	1	9	8	1	0
Total	238	7	39	2	1	1	143	10	4	1	56	35	12	5

Table 6 Estimated proportion of the Tampa Bay dolphin population that is in flux each year Annual immigration, emigration, and transience rates. See text for explanation of rate derivation

Year	Immigration Rate	Emigration Rate	Transience Rate	Sum
1990	0.044	0.022	0.038	0 104
1991	0.066	0 023	0.052	0.141
Average	**0.055**	**0.023**	**0.045**	**0.123**

Figure 1. Tampa Bay study area depicting survey Regions 1 - 7.

Figure 2a. Locations of sightings during 1988-1993: Groups of 1-5 dolphins.

Figure 2b. Locations of sightings during 1988-1993: Groups of 6-10 dolphins.

Figure 2c. Locations of sightings during 1988-1993: Groups of 11-15 dolphins.

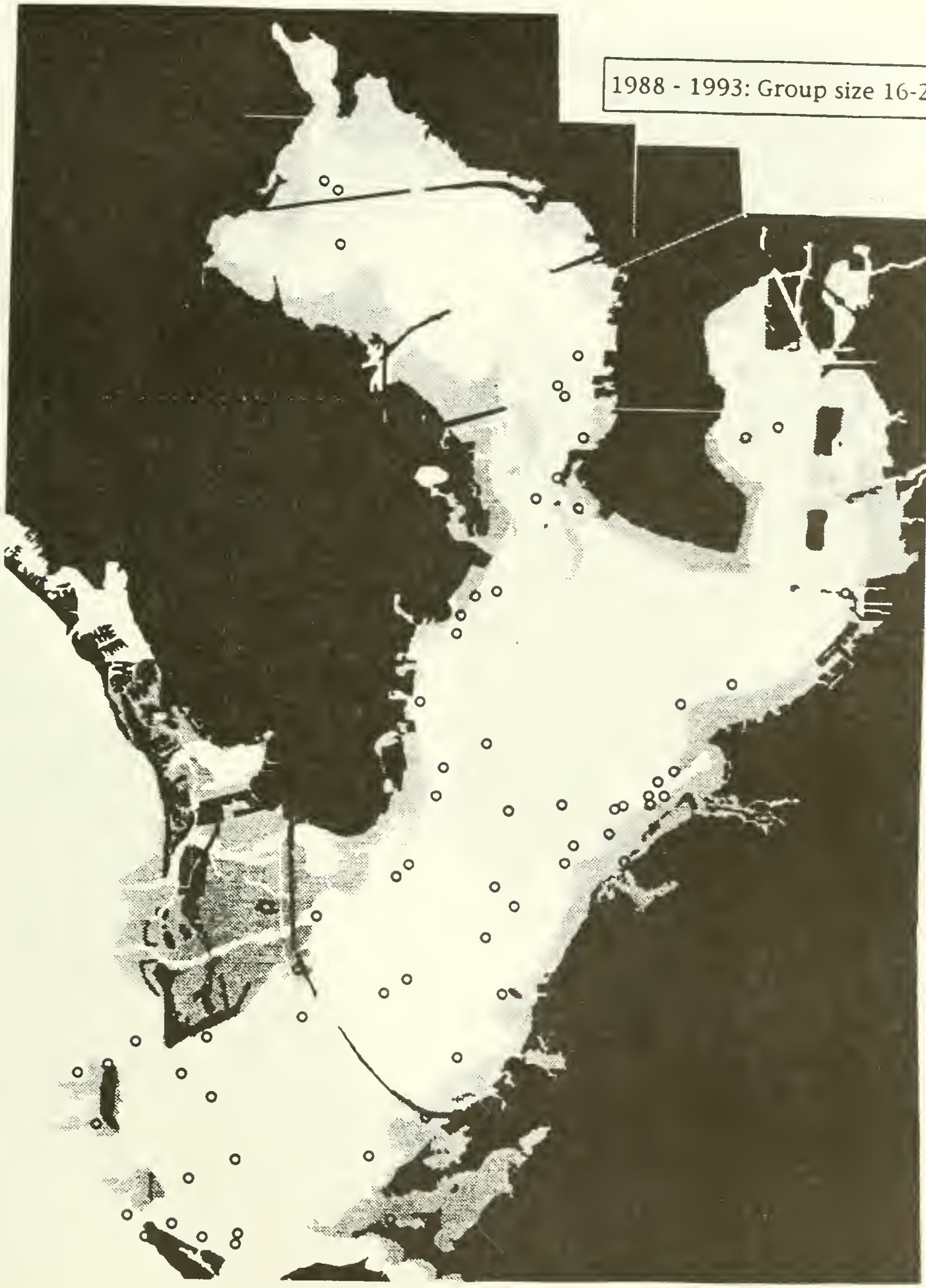


Figure 2d. Locations of sightings during 1988-1993: Groups of 16-20 dolphins.

Figure 2e. Locations of sightings during 1988-1993: Groups of >20 dolphins.

Figure 3. Survey effort and sighting results.

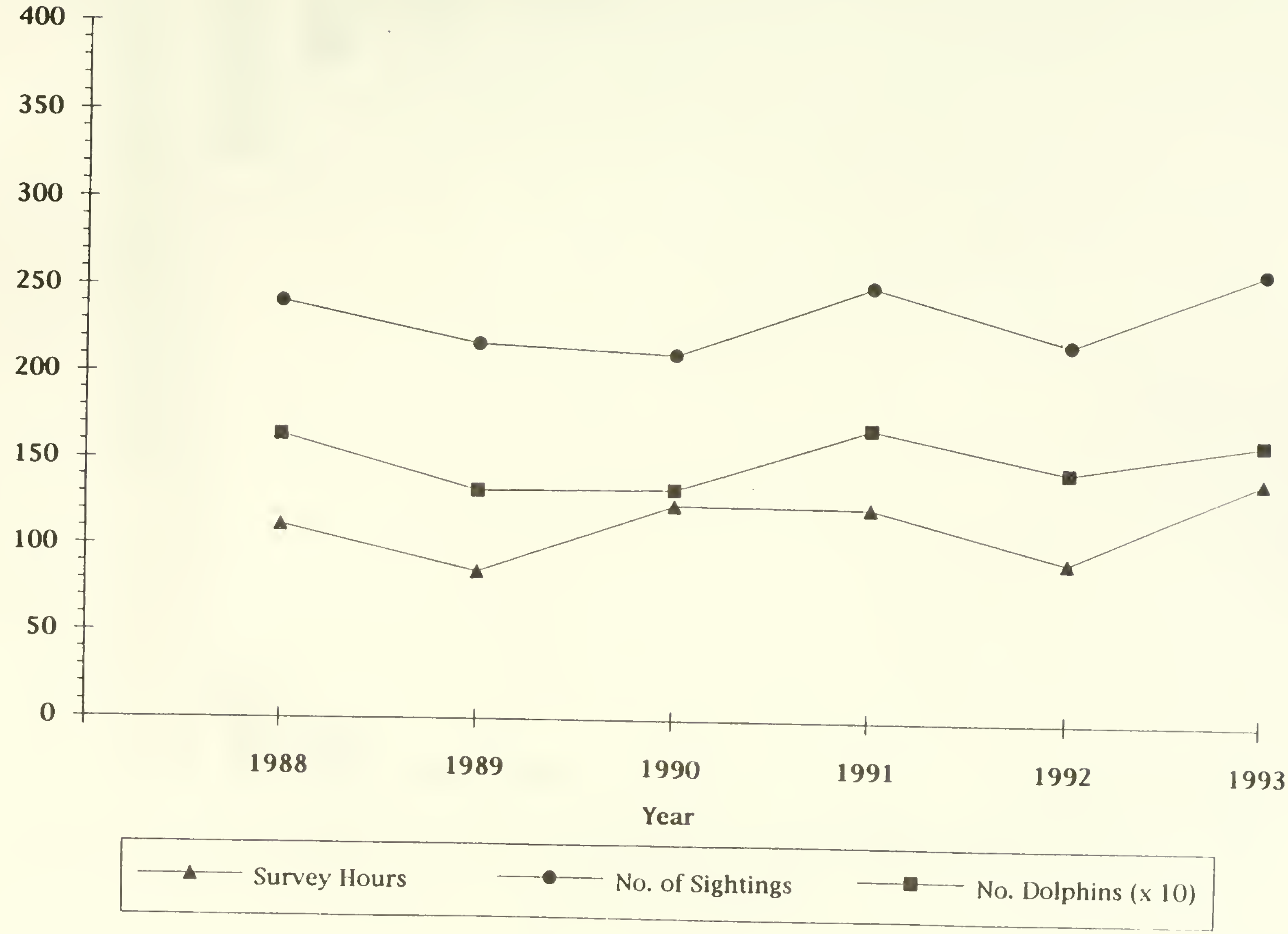


Figure 4a. Frequency distribution of number of sightings per individual dolphin during 1988.

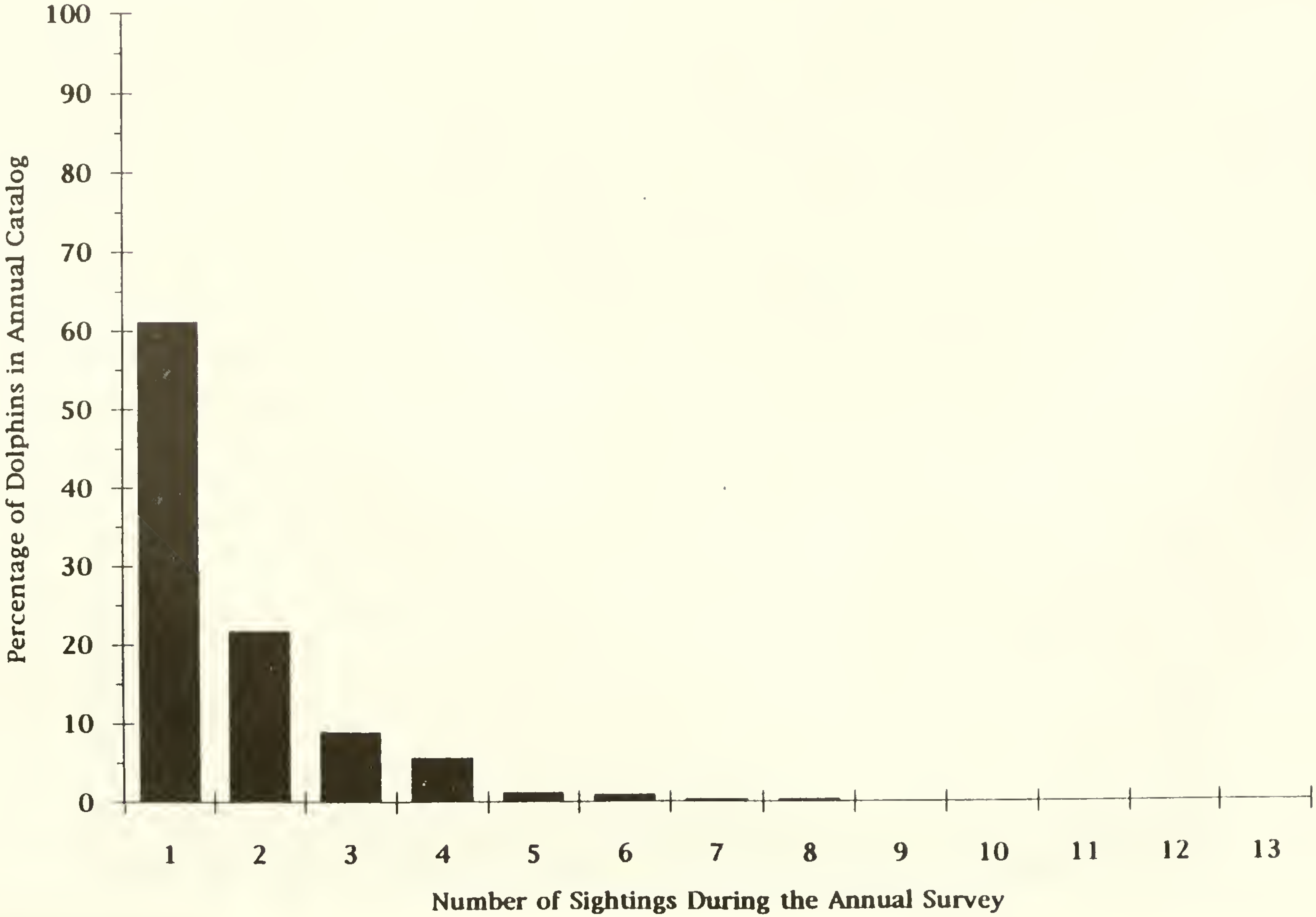


Figure 4b. Frequency distribution of number of sightings per individual dolphin during 1989.

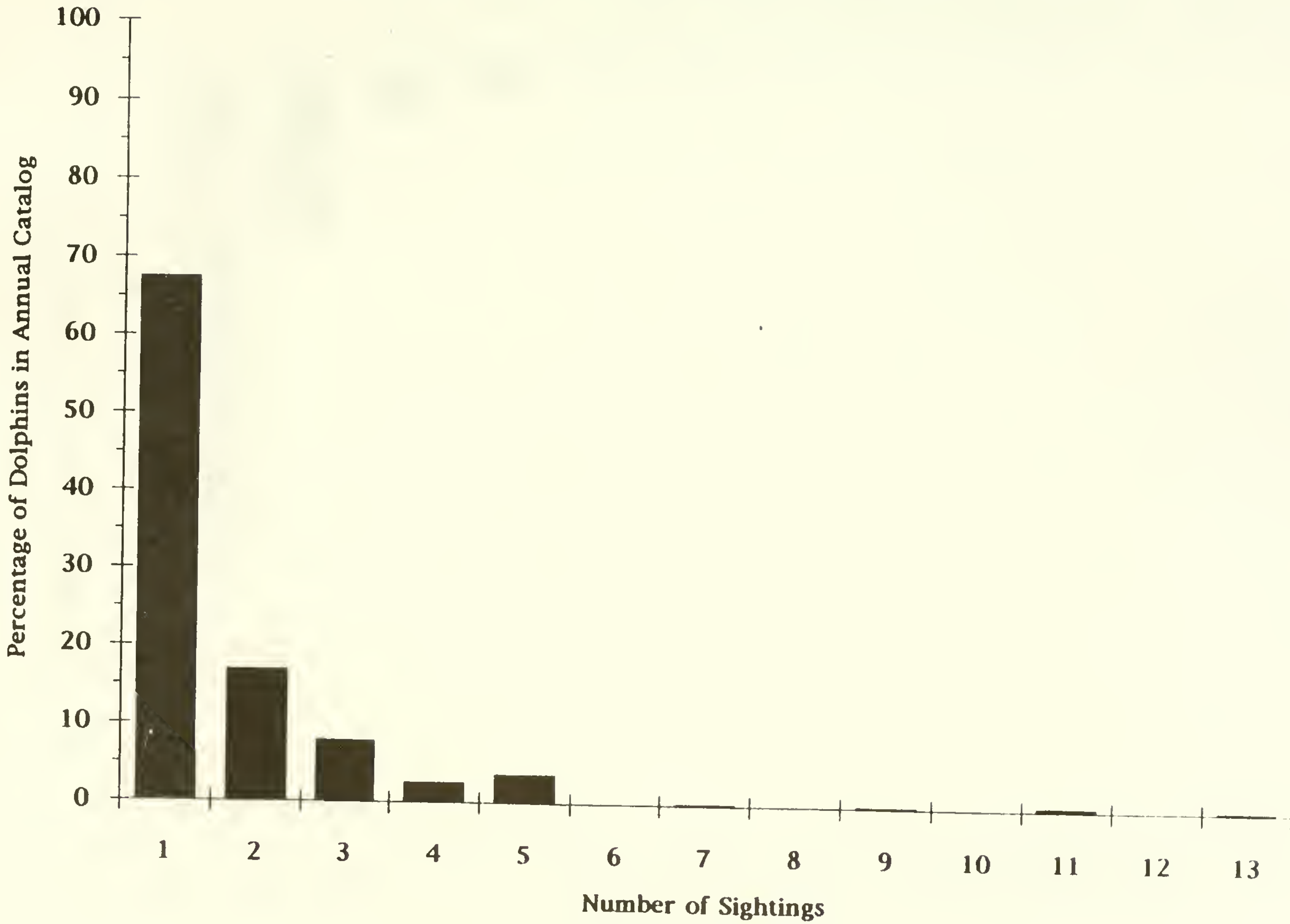


Figure 4c. Frequency distribution of number of sightings per individual dolphin during 1990.

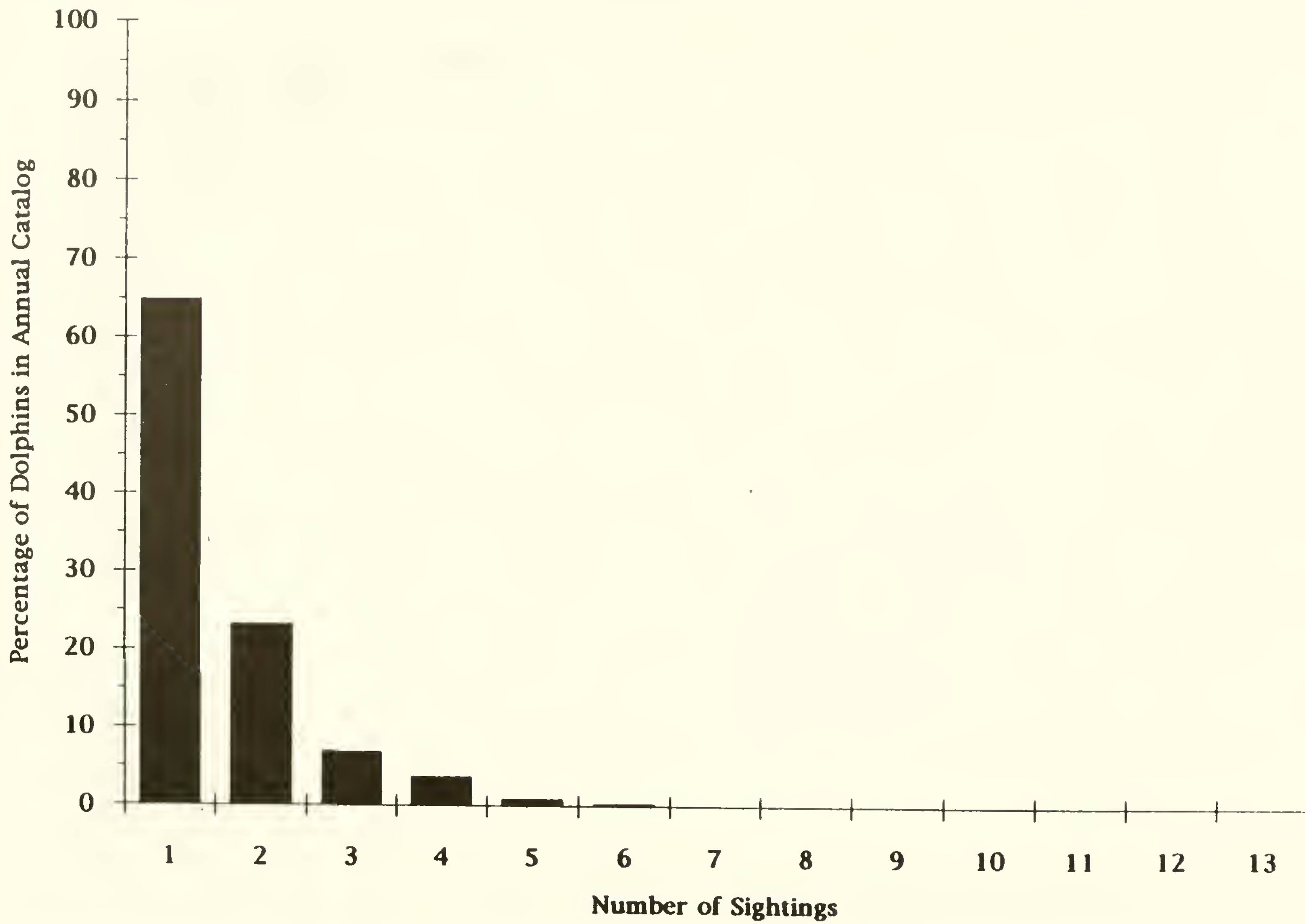


Figure 4d. Frequency distribution of number of sightings per individual dolphin during 1991.

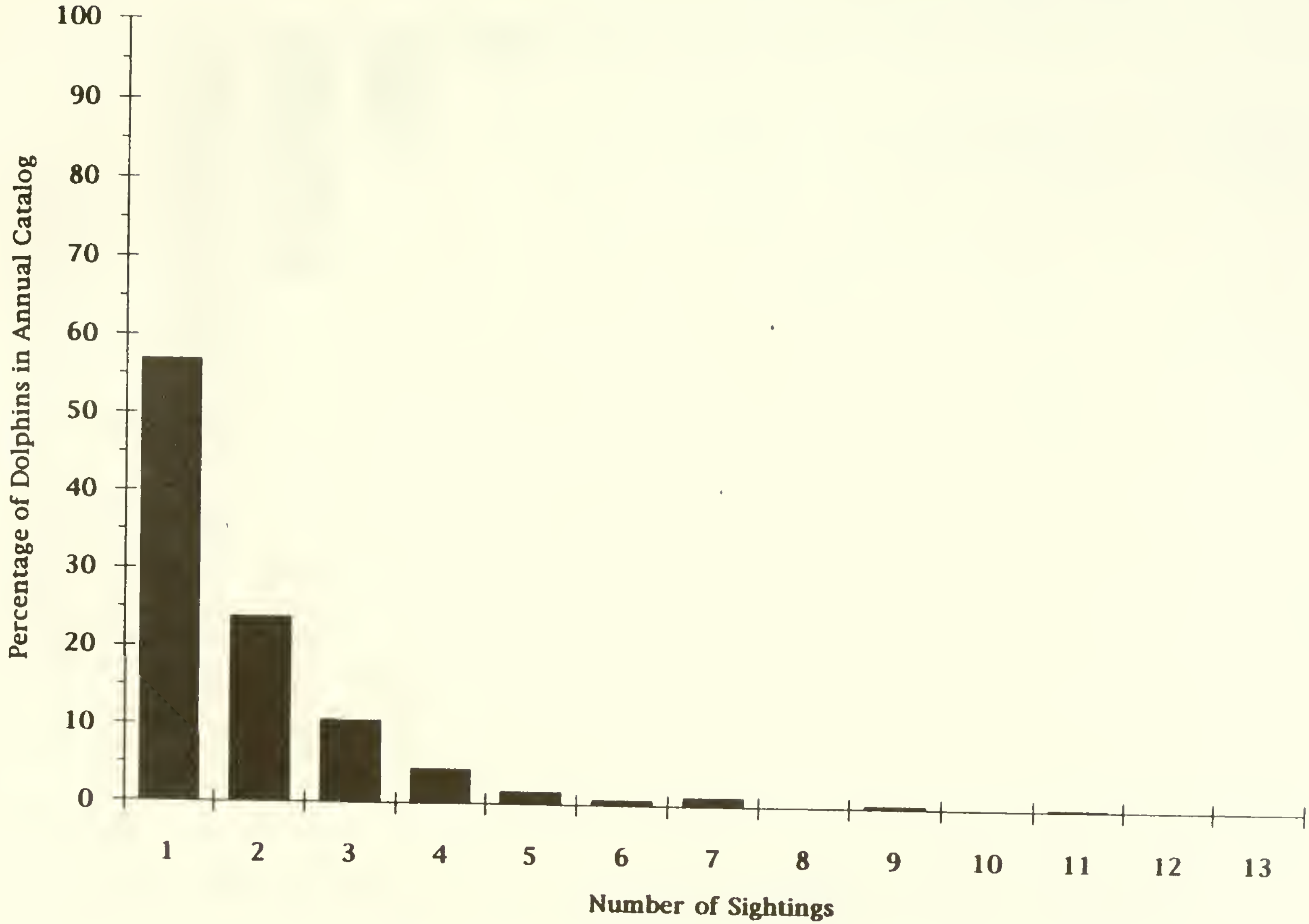


Figure 4e. Frequency distribution of number of sightings per individual dolphin during 1992.

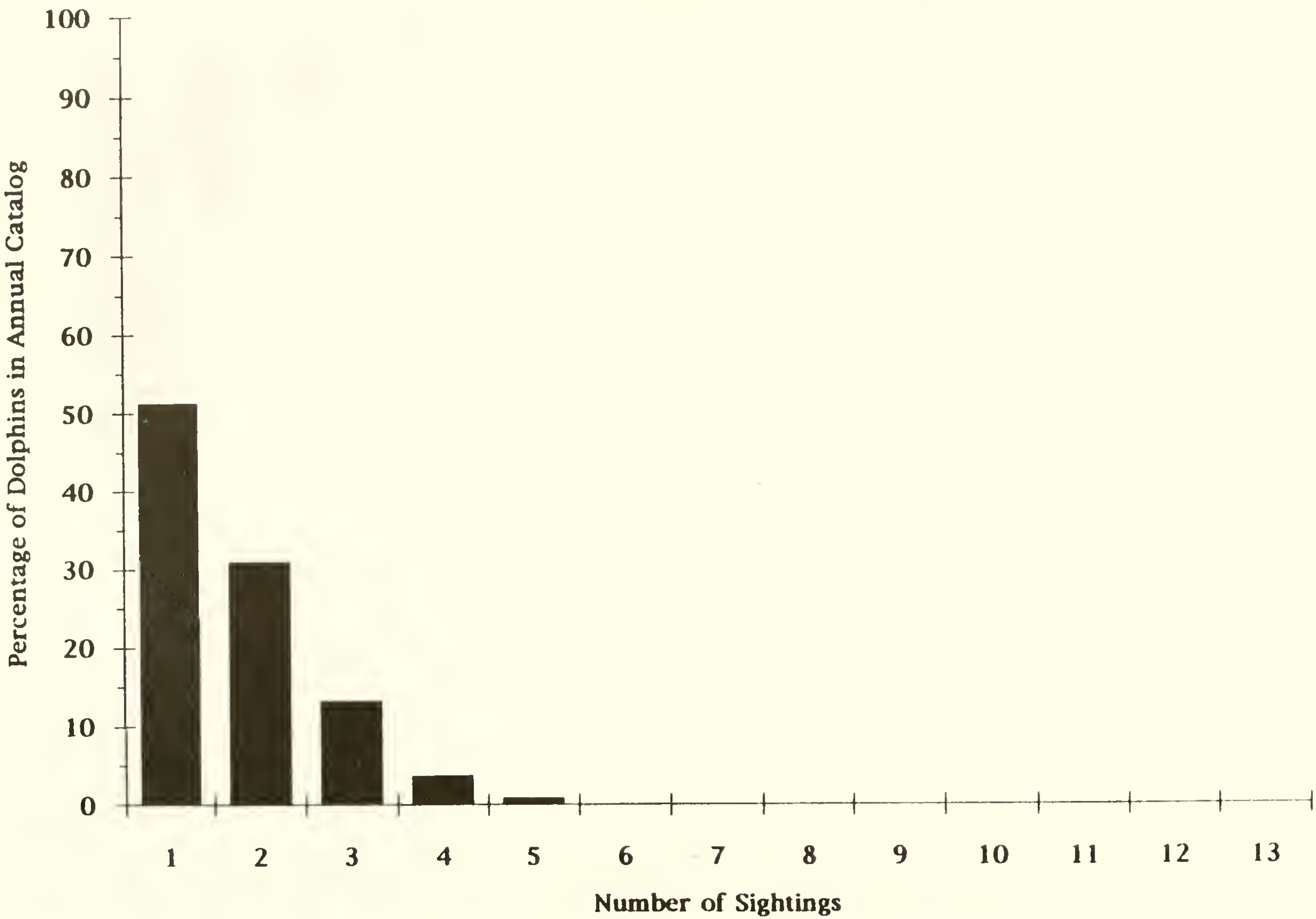


Figure 4f. Frequency distribution of number of sightings per individual during 1993.

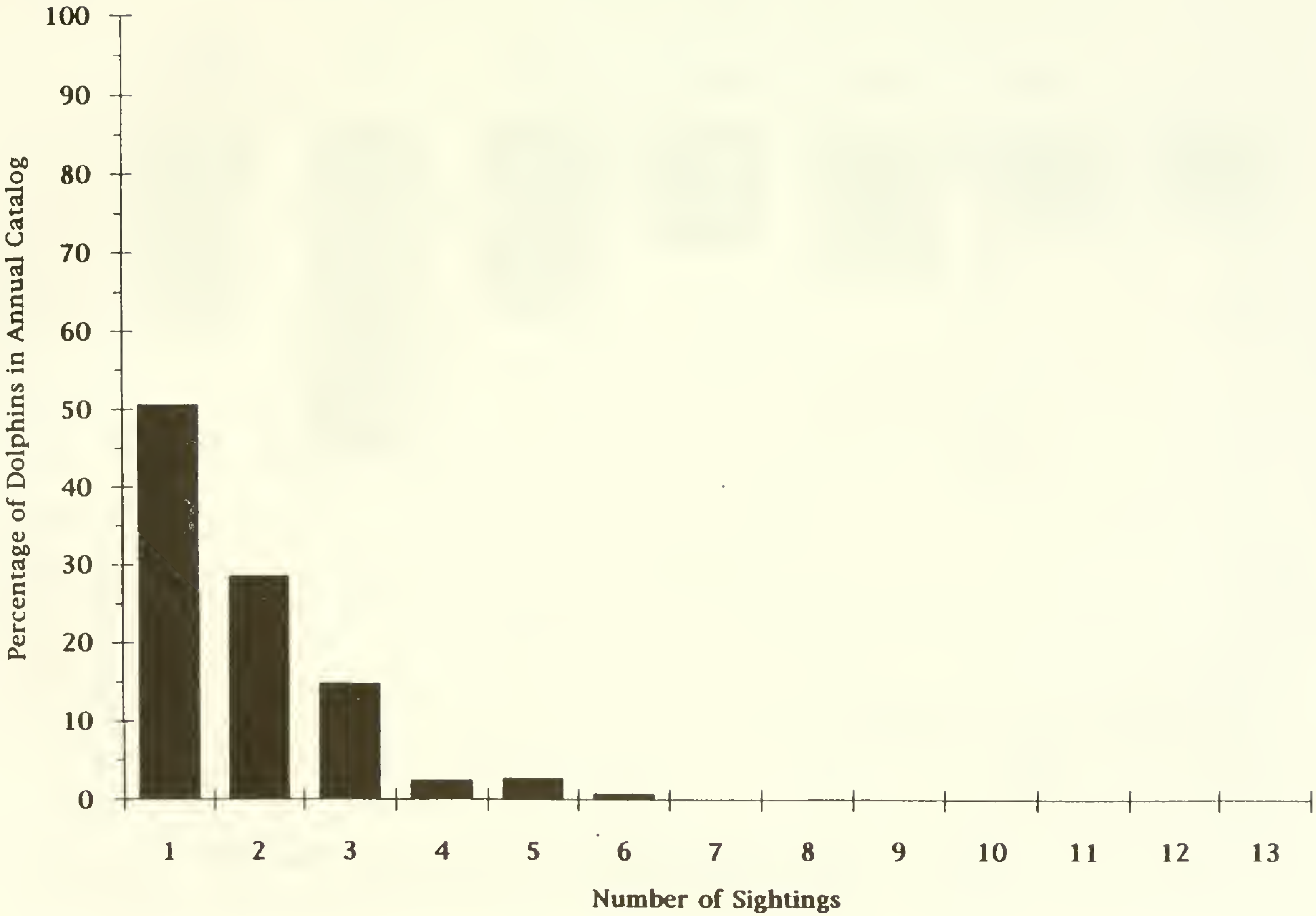


Figure 5. Annual catalog size and numbers of additions to the catalog.

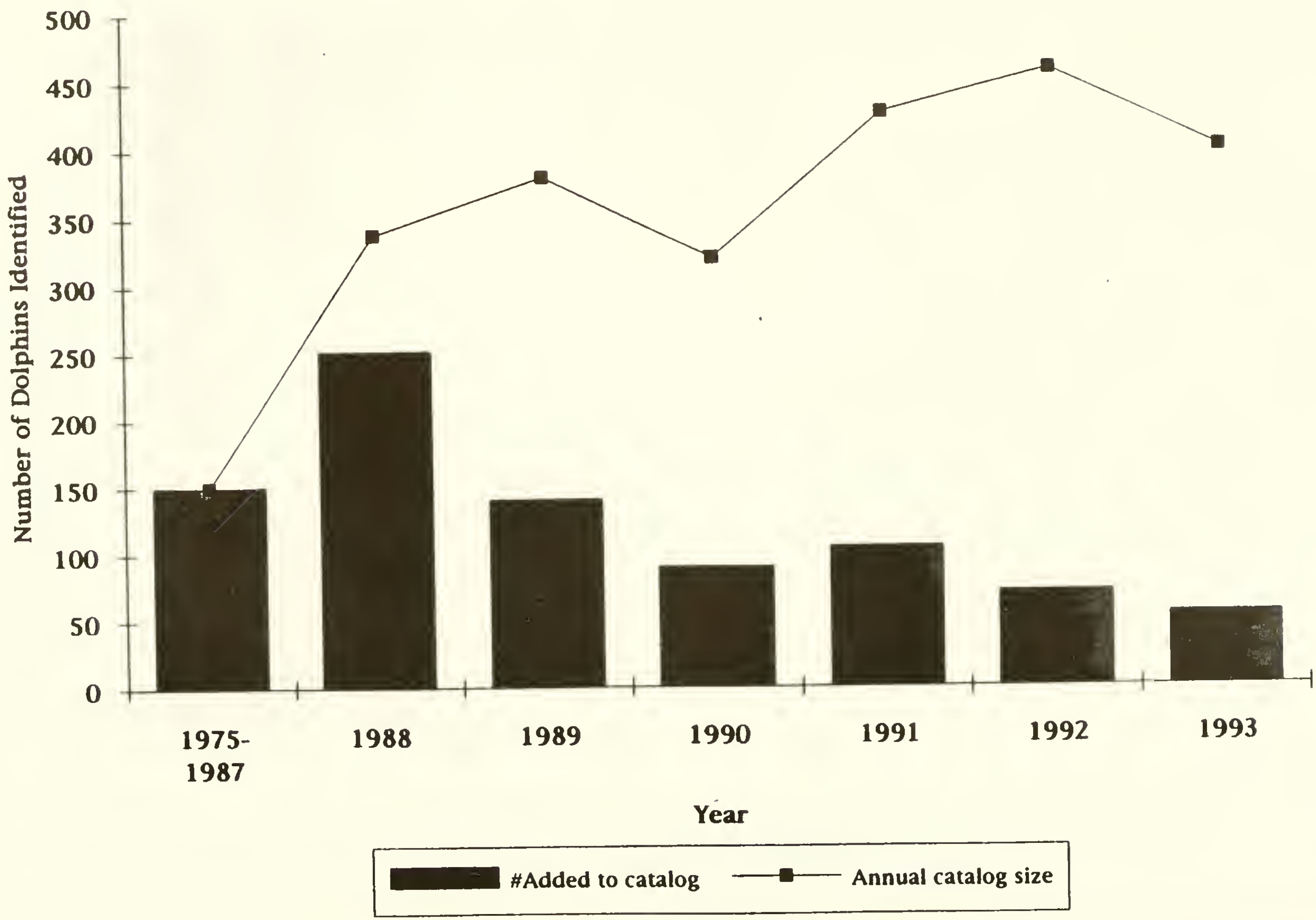


Figure 6. Population size estimates relative to survey effort.

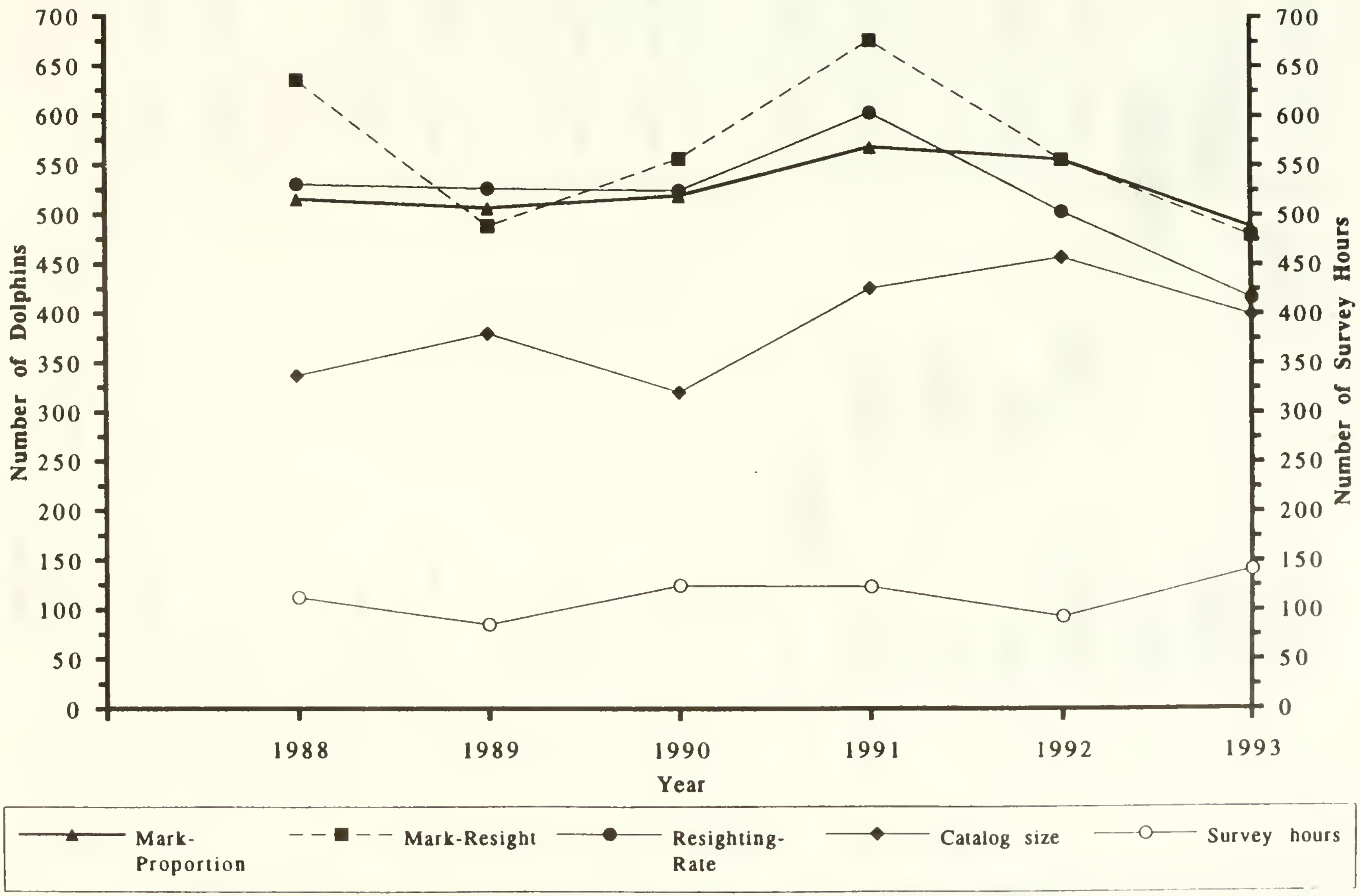


Figure 7. Comparison of Method 2 (mark-proportion) and Method 3 (mark-resight) abundance estimates with 95% CL.

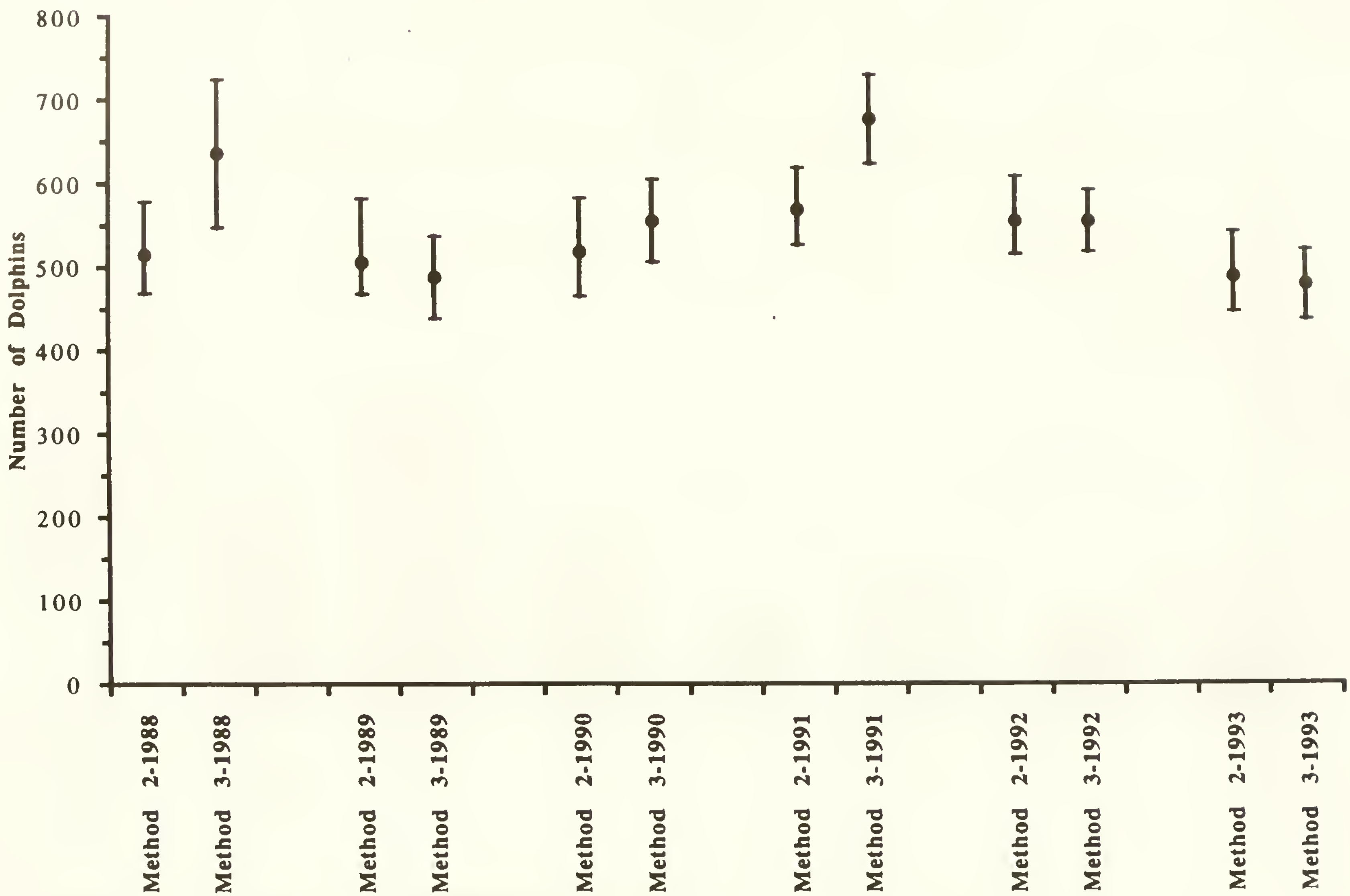
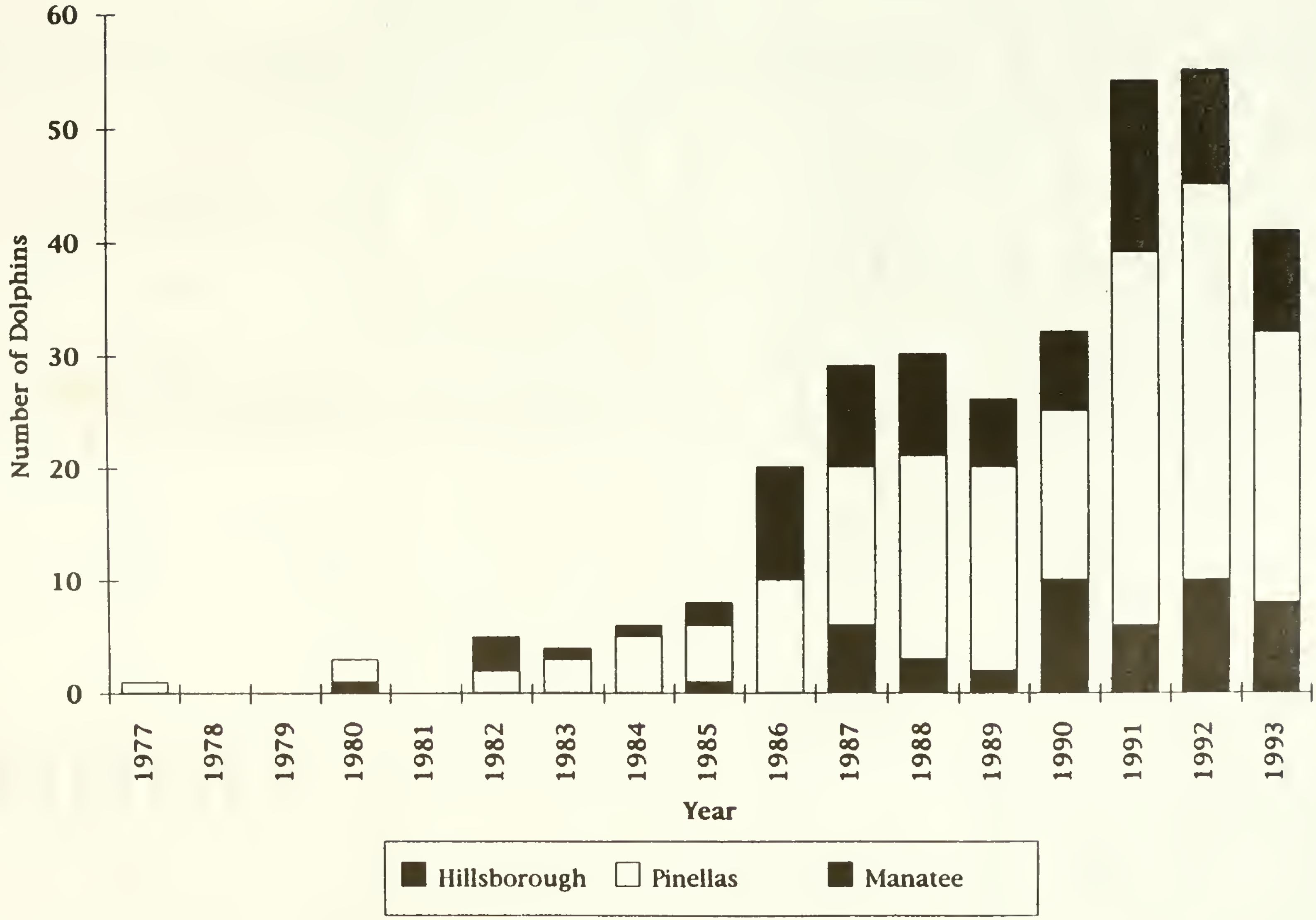


Figure 8. Number of reported strandings, by county.



Dolphin Biology Research Institute
Sighting Sheets

Field Hours ______ to ______

Date: __/__/__

Effort [S O C]

Platform ________ [ ]

Sighting No: [ ]

Observers ________________________________

Time: [ ] to [ ]

Location ________________________________

LOC [ ]

Latitude [ ] [ ] [ ] Longitude [ ] [ ] [ ]

Swim Speed [ ]

Conditions ________________________________

COND [ ]

Depth [ ] ft. Water Temp: [ ] °F Tide: IN 1 OUT 2 HI 3 LOW 4

Heading: [ ] Initial [ ] General

Activity: Mill 1, Feed 2, Prob. Feed 3, Travel 4, Play 5, Rest 6, Leap Tailslap Chuff 7, Social 8, w/Boat 9, Other 0 [ ]

	FIELD ESTIMATES			PHOTO ANALYSIS					
	MIN	MAX	BEST	Pos IDs	Min not IDed	Max not IDed	Revised MIN	Revised MAX	Final BEST
TOTAL DOLPHINS									
TOTAL CALVES									
YOUNG OF YEAR									

Comments: ________________________________

Associated Organisms:

Dolphins Sighted: ID confirmation: P= photograph V= visual O = other (explain)

Name	Code	Conf.	Name	Code	Conf.	Name	Code	Conf

Photos: (roll. frame->frame) ________________________________

Tape: (tape counter) ________________________________

CONDITION CODES:							
SEA STATE		**WEATHER**		**GLARE**		**SIGHTABILITY**	
Wave Height 0-0.2m (8 in)	0	Clear or few clouds	0	None	0	Excellent	0
Wave Height 0.2-0.4m (8-16 in)	1	Partly cloudy	1	Little, non-interfering	1	Good, unlikely to miss dolphins	1
Wave Height 0.4-0.6m (16-24 in)	2	Overcast	2	Some, could interfere	2	Fair, may miss some dolphins	2
Wave Height 0.6-0.8m (24-32 in)	3	Rain	3	Much, interfering	3	Poor, probably missing dolphins	3
Wave Height 0.8-1.0m (32-40 in)	4	Thunderstorm	4			Not on effort	4
Wave Height > 1.0 m (>40 in)	5	Fog	5				
INITIAL OR GENERAL HEADING:							
Use degrees in most cases, "360"=North							
Milling="000"							
In passes, rivers, use "IN" or "OUT" if degrees are less appropriate							
SIGHTING NUMBERS:							
Makila Sightings, beging numbering serially from "1" each day							
Wellcraft Sightings, begin numbering serially from "51" each day							
Resightings are given the initial serial number, followed by "B", "C", etc.							

Appendix 2
Definitions of Relevant Parameters from the Sighting Data Forms

Field Hours: The time the boat left the dock and time it returned. Time "off effort" is recorded when no systematic effort is being made to search for dolphins.

Date: The date is entered as DAY/MONTH/YEAR

Sighting No.: This is entered serially for each day.

Photographic Coverage: The box to the right of "Platform" is for an indication of the quality of the photographic coverage of the group and is filled in during photo analysis. 1 = Excellent: all dolphins in the group were photographed or otherwise positively identified; 2 = Good: there are photographs of dolphins with distinctive fins that might be in the catalog, but because of the photo quality it is not possible to make appropriate comparisons with the catalog (e.g., it is possible the out-of-focus fins may already be in the catalog, but can't be certain); 3 = Poor: photo coverage is known to be incomplete, because not all dolphins were approached for photographs, no photos were taken, film did not turn out, etc.

Time: Time the dolphins were first sighted and the time they were left or last seen.

Location: A description of the location of the initial sighting.

LOC: A 3-letter code based on physiographical features.

Latitude and Longitude: These coordinates are calculated from a chart or from a LORAN and entered as degrees, minutes, and 1/100ths of a minute.

Conditions and COND: This refers to meteorological and sea state conditions. They are described briefly, and entered as a code in the box. The condition codes are given on the attached page. A running log of environmental conditions relative to survey effort (noted at each major change in conditions or significant location) are kept in a separate logbook.

Field Estimates: These nine values are entered in real time in the field. The number of **TOTAL DOLPHINS** includes all age classes in the sighting. The **MIN**imum estimated number present, the **MAX**imum estimated number present, and the **BEST**estimate (between min and max) are entered. The **BEST** estimate is a point estimate, count, or midpoint of a range of estimates. The number of **TOTAL CALVES** includes all calves in the sighting, including young-of-the-year. The number of **YOUNG OF YEAR** are all of the calves born within the year. Typically, these are recognizable as newborns during the first six months of life.

Photo Analysis: These values are entered after completion of photographic analyses, and the **Dolphins Sighted** section at the bottom of the page. **Pos IDs** is the number of animals positively identified from photographs or in real time. **Min not IDed** is the **MIN** minus **Pos IDs**, or the minimum number of dolphins that were not identified. **Max not IDed** is the **MAX** minus the **Pos IDs**, or the maximum number of dolphins not identified. **Revised MIN** is the sum of the number of **Pos IDs** plus the **Min not IDed**. In most cases it will be the same as the **MIN**, except when the number of Pos IDs exceeds the **MIN**. Similarly, the **Revised MAX** will be the sum of the Pos IDs plus the **Max not IDed**. It will equal the **MAX** except in those cases where the **Pos IDs** exceed the **MAX**. The **Final BEST** estimate is the best point estimate, literal count, or midpoint of the **Revised MIN** and **Revised MAX** estimates. It will be about the same as the **BEST** field estimate except in those cases where Pos IDs exceed **MIN**, **MAX**, or **BEST**.

Dolphins Sighted: Dolphins positively identified in real time in the field are listed by their **Name** and a "V" is entered under **Conf.** as a visual confirmation. Most identifications are made in the lab, when the name and four place identification **Code** are entered for each dolphin along with the Photographic Confirmations.

Photos: The photographer, roll and frame numbers.

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19880909	2	2	1101	1130	27	32	3	82	43	0	2	5	0	2	0	0
19880910	1	2	952	1004	27	32	70	82	35	41	1	4	0	0	0	0
19880910	3	1	1141	1149	27	31	80	82	42	18	1	1	0	0	0	0
19880910	4	2	1152	1220	27	31	42	82	42	8	5	6	0	0	0	0
19880912	9	2	1437	1455	27	32	30	82	44	18	1	8	0	1	0	0
19880913	28	1	1512	1531	27	31	23	82	44	38	14	14	5	5	3	3
19880914	22	1	1230	1305	27	31	97	82	44	67	17	17	5	5	4	4
19880915	22	2	1101	1145	27	34	18	82	45	20	3	23	0	3	0	0
19880915	4	2	1227	1302	27	43	25	82	30	25	1	13	0	3	0	1
19880915	5	2	1437	1508	27	35	50	82	39	0	2	8	0	2	0	2
19880915	6	2	1516	1526	27	35	0	82	39	15	1	4	0	0	0	0
19880915	7	1	1529	1541	27	34	20	82	39	75	5	10	0	0	0	0
19880915	8	1	1546	1550	27	33	42	82	41	33	1	1	0	0	0	0
19880916	22	2	1117	1205	27	38	62	82	40	52	15	20	0	5	0	4
19880916	23	1	1247	1306	27	40	72	82	44	58	2	6	0	2	0	0
19880916	24	2	1430	1500	27	31	32	82	38	18	5	6	0	0	0	0
19880916	3	2	1105	1116	27	32	40	82	38	60	2	3	0	0	0	0
19880916	4	2	1154	1222	27	39	5	82	33	80	9	11	1	2	0	0
19880916	5	2	1433	1450	27	33	78	82	39	0	2	9	0	0	0	0
19880916	7A	2	1521	1635	27	32	28	82	43	93	8	18	1	3	0	0
19880916	7B	1	1705	1710	27	32	28	82	43	93	3	4	1	1	0	0
19880916	8	2	1641	1700	27	32	12	82	43	47	8	8	3	3	2	2
19880916	9	1	1641	1700	27	31	93	82	43	48	3	5	0	2	0	2
19880917	1	2	931	948	27	32	12	82	39	47	2	4	0	0	0	0
19880917	10	2	1640	1647	27	31	90	82	43	2	1	2	0	0	0	0
19880917	22	2	1046	1122	27	37	88	82	40	31	1	8	0	2	0	0
19880917	23	2	1146	1234	27	34	68	82	44	81	1	12	0	2	0	0
19880917	24	2	1252	1306	27	35	10	82	45	39	3	7	0	0	0	0
19880917	25	2	1338	1405	27	34	12	82	41	87	2	8	0	0	0	0
19880917	4	2	1222	1255	27	40	25	82	33	70	6	13	0	1	0	1
19880917	5	2	1350	1423	27	44	32	82	30	10	1	3	0	1	0	0
19880917	6	2	1427	1444	27	43	5	82	30	92	2	6	0	0	0	0
19880917	7	2	1502	1528	27	40	33	82	33	62	3	9	0	0	0	0
19880917	8	1	1607	1621	27	31	83	82	42	5	5	5	0	0	0	0
19880917	9	1	1607	1632	27	31	95	82	42	22	6	6	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19880919	10	2	1710	1747	27	58	0	82	39	67	1	7	0	1	0	0
19880919	11	2	1816	1831	27	51	12	82	34	83	1	4	0	0	0	0
19880919	20	2	1205	1224	27	31	85	82	42	83	1	4	0	1	0	0
19880919	22	2	1258	1312	27	41	17	82	33	60	1	4	0	0	0	0
19880919	23	2	1317	1338	27	34	90	82	39	13	10	4	0	0	0	0
19880919	24	1	1410	1413	27	43	3	82	36	63	0	1	0	0	0	0
19880919	25	2	1418	1433	27	44	25	82	36	47	0	2	0	1	0	0
19880919	28	1	1503	1521	27	45	38	82	37	20	17	19	0	0	0	0
19880919	29	2	1619	1653	27	53	7	82	33	33	4	18	0	1	0	0
19880919	3	1	1247	1254	27	33	8	82	41	25	1	1	0	0	0	0
19880919	4	2	1321	1331	27	40	12	82	39	80	1	3	0	0	0	0
19880919	5	1	1337	1341	27	41	8	82	38	90	0	2	0	1	0	0
19880919	6	2	1353	1411	27	42	5	82	36	92	3	5	0	0	0	0
19880919	7	1	1423	1450	27	44	47	82	36	78	1	3	0	1	0	0
19880919	8	1	1454	1514	27	45	43	82	37	10	1	8	0	2	0	1
19880919	9	2	1516	1526	27	45	70	82	37	0	6	13	0	0	0	0
19880920	1	2	1125	1142	27	48	8	82	26	83	2	3	0	1	0	1
19880920	2	1	1238	1402	27	54	37	82	·27	90	17	22	0	1	0	0
19880920	20	1	1125	1230	27	55	20	82	55	20	14	27	0	2	0	2
19880920	21	1	1250	1258	27	56	28	82	40	87	2	3	0	1	0	0
19880920	22	2	1305	1333	27	56	58	82	42	13	2	6	0	0	0	0
19880920	23	1	1414	1444	27	58	50	82	37	77	9	15	0	2	0	2
19880921	2	2	1011	1021	27	45	30	82	36	65	1	4	0	2	0	2
19880921	20	2	1043	1117	27	54	43	82	36	62	3	9	0	2	0	2
19880921	22	1	1152	1201	27	55	25	82	37	17	1	2	0	0	0	0
19880921	4	2	1158	1301	27	54	33	82	27	17	12	22	0	0	0	0
19880922	4	1	1659	1713	27	31	42	82	41	88	2	2	0	0	0	0
19880923	20	1	1215	1223	27	32	12	82	43	70	2	2	0	0	0	0
19880923	21	1	1239	1353	27	35	89	82	45	34	20	27	2	2	2	2
19880924	1	1	1739	1828	27	31	48	82	41	65	10	14	0	1	0	1
19880925	1	2	1111	1118	27	31	32	82	42	0	1	3	0	0	0	0
19880925	2	1	1121	1214	27	31	58	82	41	45	6	9	1	2	0	0
19880925	3A	1	1225	1235	27	31	82	82	42	5	5	7	0	0	0	0
19880925	4	1	1241	1314	27	31	60	82	42	12	7	13	2	2	0	0
19880925	5	2	1325	9999	27	32	75	82	42	72	0	2	0	1	0	0

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19880925	8	1	1121	1214	27	31	58	82	41	45	2	2	0	0	0	0
19880925	9	1	1241	1314	27	31	82	82	42	5	4	7	0	0	0	0
19880927	25	2	1247	1300	27	32	22	82	44	87	5	5	2	2	2	2
19880927	26	2	1507	1609	27	31	17	82	37	25	13	23	0	2	0	2
19880928	20	2	946	1032	27	31	70	82	45	17	5	13	0	1	0	0
19880928	24	1	1435	1550	27	31	83	82	39	35	4	5	0	3	0	0
19880928	25	1	1604	1624	27	31	40	82	41	83	7	8	0	0	0	0
19880929	1	1	952	1022	27	31	72	82	41	77	5	6	0	1	0	0
19880929	10	2	1504	1529	27	35	44	82	42	90	5	17	0	4	0	1
19880929	11	2	1540	1555	27	37	35	82	41	75	0	5	0	0	0	0
19880929	14	1	1030	1055	27	31	82	82	42	37	2	2	0	0	0	0
19880929	2	1	1013	1055	27	31	95	82	42	7	1	3	0	0	0	0
19880929	20	1	949	1003	27	31	17	82	41	88	2	2	0	0	0	0
19880929	23	2	1144	1206	27	37	50	82	40	37	5	11	1	2	1	2
19880929	24	1	1214	1237	27	36	87	82	40	5	5	11	0	2	0	0
19880929	25	1	1249	1309	27	35	33	82	38	22	0	2	0	0	0	0
19880929	26	2	1324	1409	27	34	33	82	40	63	5	10	0	0	0	0
19880929	28	2	1440	1518	27	32	45	82	37	77	6	17	0	3	0	1
19880929	3	2	1030	1055	27	31	93	82	42	53	3	9	0	0	0	0
19880929	30	2	1622	1646	27	34	65	82	45	22	9	23	2	5	2	2
19880929	4	1	1111	1118	27	31	92	82	45	38	2	2	0	0	0	0
19880929	5	1	1111	1140	27	31	98	82	45	7	4	4	1	1	1	1
19880929	6	1	1208	1315	27	36	55	82	46	54	9	27	1	3	0	1
19880929	8	2	1340	1424	27	34	12	82	43	91	4	12	0	4	0	1
19880930	10	2	1718	1758	27	43	90	82	36	67	2	27	1	4	1	1
19880930	2	2	1125	1208	27	39	70	82	33	42	0	7	0	2	0	1
19880930	20	2	1034	1100	27	31	47	82	41	92	1	3	0	0	0	0
19880930	23	2	1215	1300	27	31	58	82	38	85	3	9	0	1	0	0
19880930	24	2	1350	1450	27	39	13	82	42	45	2	13	0	2	0	2
19880930	26	1	1527	1551	27	38	17	82	44	25	4	7	1	1	1	1
19880930	3	2	1145	1208	27	40	57	82	33	5	1	3	0	0	0	0
19880930	4	1	1218	1225	27	41	10	82	33	0	1	2	0	1	0	0
19880930	5	2	1230	1257	27	42	3	82	30	42	2	4	1	2	0	0
19880930	6	2	1514	1524	27	48	80	82	34	25	0	2	0	0	0	0

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19880930	7	2	1537	1553	27	47	2	82	35	83	1	6	0	1	0	0
19880930	9	2	1613	1636	27	47	5	82	36	25	1	11	0	3	0	1
19881001	20	1	1022	1046	27	32	7	82	42	82	2	3	1	1	0	0
19881001	22	2	1133	1247	27	37	50	82	40	8	6	13	0	1	0	1
19881001	24	2	1443	1530	27	39	78	82	38	50	6	7	0	0	0	0
19881001	25	1	1534	1554	27	39	20	82	38	67	2	4	0	0	0	0
19881001	3	2	1206	1241	27	37	50	82	40	8	2	12	0	3	0	0
19881001	4	2	1256	1317	27	39	58	82	41	65	1	5	0	2	0	0
19881001	5	1	1323	1342	27	39	7	82	42	58	1	3	0	0	0	0
19881001	8	2	1545	1555	27	40	47	82	39	53	1	3	0	0	0	0
19881001	9	2	1603	1617	27	38	75	82	40	0	1	4	0	2	0	1
19881004	1	1	1021	1046	27	31	72	82	42	8	4	8	1	1	1	1
19881004	11	2	1851	1900	27	37	23	82	39	50	2	6	1	2	0	0
19881004	2	2	1129	1144	27	35	5	82	41	12	0	3	0	0	0	0
19881004	20	1	1127	1147	27	34	88	82	41	12	2	2	0	0	0	0
19881004	21	2	1217	1251	27	39	80	82	38	42	0	3	0	0	0	0
19881004	22	1	1314	1331	27	39	87	82	37	50	1	3	0	0	0	0
19881004	23	1	1357	1452	27	43	75	82	36	48	12	17	1	1	1	1
19881004	25	1	1555	1619	27	39	0	82	41	72	2	6	0	0	0	0
19881004	26	1	1639	1657	27	39	58	82	41	42	3	6	0	1	0	0
19881004	4	1	1433	1513	27	51	78	82	28	45	2	5	0	0	0	0
19881004	5	2	1603	1625	27	47	10	82	36	22	7	16	0	2	0	0
19881004	6	1	1630	1640	27	45	58	82	36	83	3	7	0	0	0	0
19881004	7	2	1640	1650	27	45	78	82	37	17	3	24	0	2	0	0
19881004	9	2	1802	1828	27	41	78	82	36	52	2	10	0	0	0	0
19881005	1	1	1044	1055	27	31	27	82	42	97	1	1	0	0	0	0
19881005	2	2	1117	1156	27	31	98	82	45	8	3	10	1	3	0	0
19881005	20	2	1115	1147	27	32	50	82	45	20	4	16	0	4	0	1
19881005	21	1	1159	1235	27	32	25	82	45	17	8	8	1	2	1	1
19881009	3	1	1217	1221	27	31	88	82	44	77	2	2	1	1	0	0
19881009	4	1	1223	1236	27	32	17	82	44	87	2	3	0	0	0	0
19881009	5	1	1236	1307	27	32	5	82	44	85	6	6	0	0	0	0
19881010	1	2	908	921	27	36	80	82	38	18	1	3	0	0	0	0
19881010	20	1	1008	1130	27	50	25	82	34	52	5	13	0	3	0	2
19881010	24	1	1520	1527	27	49	48	82	34	23	1	3	0	0	0	0

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19881010	27	2	1637	1639	27	53	35	82	36	88	1	2	0	0	0	0
19881010	28	2	1657	1712	27	40	27	82	38	90	1	4	0	1	0	1
19881010	4	1	1052	1107	27	41	70	82	38	58	4	10	0	5	0	1
19881010	5	1	1114	1124	27	41	70	82	38	28	0	2	0	1	0	0
19881010	6	1	1225	1259	27	52	87	82	32	53	0	5	0	2	0	0
19881010	7	2	1320	1346	27	55	93	82	33	75	2	8	0	2	0	0
19881010	9	1	1520	1525	27	49	48	82	34	23	1	3	0	0	0	0
19881011	1	1	1001	1009	27	32	2	82	40	30	0	1	0	0	0	0
19881011	2	2	1012	1052	27	31	87	82	39	22	9	15	2	2	0	0
19881011	20	2	1155	1228	27	35	68	82	38	48	2	4	0	1	0	0
19881011	22	1	1608	1732	27	35	83	82	45	8	9	15	0	3	0	1
19881011	23	2	1633	1732	27	36	30	82	43	77	20	28	0	2	0	2
19881011	25	1	1812	1819	27	31	33	82	41	82	3	3	1	1	0	0
19881011	3	1	1104	1127	27	32	52	82	35	67	2	3	1	1	0	0
19881011	4	2	1132	1139	27	33	23	82	35	44	1	3	1	1	0	0
19881011	5A	2	1148	1231	27	32	50	82	37	3	4	6	1	1	0	0
19881011	5B	1	1601	1608	27	31	80	82	42	23	2	2	0	0	0	0
19881011	6	1	1517	1555	27	31	93	82	42	68	8	9	3	3	2	3
19881012	1	1	953	956	27	32	12	82	43	63	2	2	0	0	0	0
19881012	20	1	1002	1022	27	31	47	82	43	28	5	5	0	0	0	0
19881012	21	2	1135	1158	27	43	95	82	43	68	1	4	0	1	0	0
19881012	22	1	1215	1225	27	40	75	82	44	40	3	9	0	3	3	3
19881012	23	2	1225	1242	27	40	0	82	45	0	1	2	0	0	0	0
19881012	25	1	1310	1326	27	39	42	82	41	33	4	4	0	0	0	0
19881012	27	1	1343	1407	27	38	27	82	39	67	4	4	0	1	0	0
19881012	28	2	1422	1500	27	35	93	82	41	43	2	13	0	3	0	3
19881012	4	2	1236	1307	27	33	42	82	38	27	3	11	0	1	0	1
19881012	6	1	1434	1450	27	31	68	82	42	10	5	5	0	0	0	0

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19890905	3	1	1452	1538	27	31	50	82	42	0	10	10	0	0	0	0
19890906	1A	1	841	855	27	31	38	82	40	42	2	2	1	1	1	1
19890906	1B	1	1122	1126	27	30	50	82	38	20	2	2	1	1	1	1
19890906	2	2	846	946	27	31	50	82	40	45	1	4	0	0	0	0
19890906	3	1	957	1100	27	31	33	82	39	75	10	19	1	2	0	1
19890906	4	1	1138	1208	27	30	0	82	36	28	3	4	1	1	0	0
19890906	5	1	1225	1250	27	30	75	82	38	28	4	5	1	2	0	1
19890906	6	1	1345	1405	27	31	33	82	43	22	14	15	2	2	0	0
19890907	1	1	922	1033	27	36	50	82	43	67	7	37	0	4	0	1
19890907	10	1	1430	1445	27	31	60	82	42	7	2	4	1	1	0	0
19890907	2	2	1052	1114	27	37	25	82	41	10	2	3	0	1	0	0
19890907	3	1	1123	1127	27	39	33	82	40	85	2	2	0	0	0	0
19890907	5	1	1212	1233	27	38	75	82	44	15	4	6	0	1	0	0
19890907	6	1	1302	1315	27	39	0	82	45	20	2	6	0	1	0	0
19890907	7	1	1321	1326	27	38	10	82	45	90	1	2	0	0	0	0
19890907	8	1	1349	1405	27	32	60	82	44	22	3	6	0	2	0	0
19890907	9	1	1413	1425	27	31	96	82	42	72	4	6	0	0	0	0
19890909	1	1	957	1005	27	33	67	82	38	17	1	2	0	0	0	0
19890909	2	1	1013	1028	27	34	67	82	38	17	3	7	0	0	0	0
19890909	3	1	1051	1107	27	36	67	82	34	75	0	4	0	0	0	0
19890909	4	2	1126	1130	27	41	10	82	31	83	1	2	0	1	0	0
19890909	5	1	1135	1146	27	42	8	82	31	80	1	3	0	0	0	0
19890909	6	1	1313	1352	27	46	30	82	28	80	4	5	0	1	0	0
19890909	7	2	1428	1453	27	42	15	82	31	82	6	17	0	3	0	2
19890909	8	2	1530	1600	27	37	15	82	39	25	1	4	0	2	0	0
19890909	9	1	1530	1600	27	37	2	82	38	62	2	3	1	1	0	0
19890911	1	2	949	957	27	37	67	82	40	97	5	12	0	4	0	1
19890911	10	2	1610	1633	27	35	72	82	36	83	2	9	1	2	0	0
19890911	11	2	1654	1704	27	31	55	82	41	92	7	10	0	0	0	0
19890911	2	2	1016	1029	27	37	82	82	40	63	3	4	0	0	0	0
19890911	3	1	1041	1056	27	40	35	82	40	90	1	2	0	0	0	0
19890911	4	2	1105	1133	27	41	62	82	39	52	3	6	1	3	0	0
19890911	5	1	1140	1211	27	41	75	82	38	48	0	5	0	2	0	0
19890911	6	2	1215	1236	27	41	95	82	37	92	1	6	0	2	0	1
19890911	8	2	1500	1526	27	38	73	82	34	8	5	8	0	1	0	0

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19890912	1	2	1017	1027	27	31	92	82	42	40	1	1	0	0	0	0
19890912	10	1	1604	1608	27	32	3	82	45	13	1	1	0	0	0	0
19890912	11	1	1638	1718	27	31	98	82	43	10	20	20	0	0	0	0
19890912	3	2	1055	1108	27	31	55	82	37	67	5	7	0	0	0	0
19890912	4	2	1203	1223	27	30	88	82	36	68	3	5	0	2	0	1
19890912	5	1	1324	1326	27	33	10	82	39	52	1	1	0	0	0	0
19890912	6	2	1401	1407	27	36	42	82	42	73	0	3	0	1	0	0
19890912	7	1	1407	1426	27	36	60	82	45	10	11	12	0	0	0	0
19890912	8	2	1443	1502	27	37	33	82	41	60	3	5	0	1	0	0
19890912	9	2	1523	1551	27	34	53	82	41	97	1	3	0	1	0	0
19890913	1	1	925	931	27	31	95	82	43	10	1	1	0	0	0	0
19890913	12	1	1622	1643	27	51	90	82	.35	30	2	2	0	0	0	0
19890913	13	2	1649	1703	27	50	28	82	34	50	2	6	0	2	0	1
19890913	2	2	951	1006	27	34	23	82	40	50	0	4	0	0	0	0
19890913	21	1	953	1036	27	31	17	82	41	68	5	11	0	2	0	0
19890913	23	2	1121	1140	27	33	75	82	41	52	2	5	0	0	0	0
19890913	24	2	1201	1239	27	37	75	82	40	50	5	7	0	1	0	0
19890913	25	2	1253	1311	27	39	42	82	41	33	2	7	0	2	0	1
19890913	26	2	1316	1415	27	39	88	82	40	22	9	30	0	1	0	0
19890913	27	2	1449	1511	27	41	45	82	38	50	0	5	0	2	0	0
19890913	28	2	1514	1612	27	41	33	82	37	45	6	19	0	2	0	0
19890913	4	2	1243	1256	27	55	75	82	33	83	3	9	0	2	0	0
19890913	5	1	1317	1328	27	58	8	82	36	3	1	4	0	2	0	2
19890913	6	1	1333	1347	27	57	3	82	36	52	2	3	0	0	0	0
19890913	7	1	1353	1402	27	58	43	82	37	55	0	1	0	0	0	0
19890913	8	2	1357	1402	27	58	0	82	37	10	3	4	0	0	0	0
19890913	9	2	1415	1451	27	58	83	82	37	92	8	23	0	1	0	1
19890914	10	2	1326	9999	27	43	11	82	30	52	2	6	0	1	0	0
19890914	11	2	1536	1546	27	33	5	82	42	58	2	3	0	0	0	0
19890914	23	2	1013	1023	27	34	47	82	41	17	2	4	0	1	0	0
19890914	24	2	1033	1046	27	34	91	82	39	89	3	6	0	0	0	0
19890914	26	1	1223	1253	27	47	89	82	34	85	5	7	0	0	0	0
19890914	27	2	1315	1355	27	53	31	82	33	67	5	9	0	1	0	0
19890914	29	2	1516	1538	27	33	88	82	41	45	2	6	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19890914	3	2	1018	1026	27	33	25	82	39	83	1	4	0	0	0	0
19890914	30	1	1551	1602	27	31	27	82	41	70	6	6	0	0	0	0
19890914	4	2	1042	1100	27	36	25	82	36	19	2	3	0	0	0	0
19890914	5	2	1130	1153	27	37	22	82	34	57	2	4	0	0	0	0
19890914	6	2	1157	1208	27	37	73	82	35	17	3	7	0	1	0	0
19890914	7	1	1239	1240	27	41	79	82	31	80	1	1	0	0	0	0
19890914	8	1	1245	1303	27	42	5	82	31	27	5	6	0	0	0	0
19890915	21	1	925	950	27	31	78	82	42	48	3	3	0	0	0	0
19890915	22	1	1031	1052	27	38	80	82	43	31	3	5	0	2	0	0
19890915	23	2	1113	1135	27	40	30	82	38	85	2	9	0	0	0	0
19890917	2	2	1044	1137	27	32	37	82	40	20	4	9	0	0	0	0
19890917	3	1	1150	1238	27	33	88	82	38	0	11	12	0	0	0	0
19890917	4	1	1306	1333	27	37	12	82	35	33	2	5	0	2	0	1
19890917	5	2	1348	1356	27	39	33	82	33	67	1	2	0	1	0	0
19890917	6	1	1357	1411	27	39	58	82	33	37	1	1	0	0	0	0
19890918	2	2	1003	9999	27	32	17	82	41	37	1	2	0	0	0	0
19890918	3	1	1131	1141	27	31	13	82	36	2	2	2	1	1	1	1
19890918	4	2	1225	1314	27	32	50	82	35	55	3	4	1	1	0	0
19890918	5	2	1339	1357	27	33	75	82	40	25	1	2	0	0	0	0
19890918	6	1	1428	1444	27	35	20	82	45	42	9	10	0	1	0	0
19890918	7	1	1502	1509	27	31	83	82	42	8	2	2	0	0	0	0
19890924	5	1	1302	1308	27	31	25	82	41	37	3	3	0	0	0	0
19890926	1	2	1440	1456	27	31	67	82	42	6	1	3	0	0	0	0
19890926	21	1	1447	1514	27	32	3	82	42	98	4	5	0	0	0	0
19890926	22	1	1510	1535	27	32	37	82	43	70	0	1	0	0	0	0
19890926	23	1	1540	1554	27	32	72	82	43	98	2	3	0	1	0	0
19890926	24	1	1559	1614	27	32	67	82	44	17	2	6	0	2	0	0
19890926	25	1	1621	1655	27	33	8	82	44	15	2	4	0	2	0	0
19890926	26	2	1657	1801	27	33	40	82	43	48	9	17	0	3	0	0
19890926	27	1	1818	1830	27	32	3	82	42	97	4	5	0	0	0	0
19890927	1	2	1044	1126	27	48	58	82	26	3	1	5	0	1	0	0
19890927	2	1	1138	1206	27	50	78	82	26	40	12	15	0	0	0	0
19890927	21	1	1040	1045	27	54	28	82	32	40	0	1	0	0	0	0
19890927	22	2	1100	1143	27	55	48	82	35	22	1	3	0	0	0	0
19890927	23	2	1152	1230	27	56	3	82	34	47	1	4	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19890927	24	1	1236	1250	27	56	40	82	34	10	2	2	0	0	0	0
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19890927	27	1	1436	1449	27	59	57	82	40	32	2	3	0	0	0	0
19890927	29	2	1608	1632	27	45	17	82	36	87	3	9	0	1	0	0
19890927	3	2	1354	1412	27	48	17	82	34	40	4	13	0	0	0	0
19890927	30	1	1701	9999	27	36	68	82	39	90	5	8	0	1	0	0
19890927	5	2	1611	1646	27	33	58	82	38	18	3	6	1	1	0	0
19890927	6	2	1704	1718	27	32	8	82	42	57	3	4	0	0	0	0
19890928	1	2	939	950	27	32	30	82	41	50	2	3	0	0	0	0
19890928	2	1	1020	1043	27	30	78	82	35	65	3	5	0	0	0	0
19890928	21	2	944	950	27	31	72	82	45	10	1	2	0	0	0	0
19890928	3	1	1056	1156	27	30	15	82	34	38	4	5	1	1	0	0
19890928	4	1	1216	1305	27	32	40	82	36	25	9	11	1	2	0	0
19890929	21	1	1014	1118	27	33	8	82	35	88	8	8	1	2	0	0
19890929	22	1	1145	1207	27	32	70	82	36	63	3	3	0	0	0	0
19890929	23	2	1234	1305	27	38	48	82	34	45	6	8	0	0	0	0
19890929	24	2	1319	1336	27	39	38	82	35	33	3	8	0	0	0	0
19890929	25	2	1345	1420	27	40	0	82	34	27	2	6	0	3	0	0
19890929	26	2	1447	1523	27	43	0	82	30	77	3	6	2	2	0	0
19890930	1	1	1046	1126	27	33	83	82	34	90	4	4	1	1	0	0
19890930	2	1	1150	1121	27	34	85	82	37	48	2	2	0	0	0	0
19890930	3	1	1237	1302	27	37	35	82	34	47	2	4	0	0	0	0
19890930	4	1	1308	1336	27	38	32	82	34	42	1	1	0	0	0	0
19890930	5	1	1340	1350	27	38	70	82	33	83	2	4	0	1	0	0
19890930	6	1	1400	1423	27	40	67	82	32	88	1	2	0	1	0	0
19890930	7	1	1434	1439	27	43	23	82	30	15	2	2	0	0	0	0
19891002	2	2	1017	1055	27	38	20	82	39	75	6	12	0	1	0	0
19891002	21	2	939	1009	27	31	58	82	42	12	3	5	1	2	0	0
19891002	22	1	1036	1100	27	13	13	82	45	27	7	17	0	2	0	0
19891002	3	2	1108	1202	27	40	0	82	40	0	8	19	1	6	0	1
19891002	4	1	1209	1216	27	39	98	82	39	58	9	9	0	3	0	0
19891002	5	1	1246	1251	27	31	92	82	43	5	0	1	0	0	0	0
19891004	1	1	830	844	27	31	58	82	41	92	11	11	5	5	2	2
19891004	2	1	850	855	27	31	98	82	42	8	1	1	0	0	0	0
19891004	21	2	956	1023	27	49	0	82	34	50	0	2	0	0	0	0

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19891004	23	1	1051	1112	27	52	20	82	35	10	1	3	0	0	0	0
19891004	25	2	1201	1253	27	53	17	82	34	90	2	6	0	1	0	0
19891004	26	2	1300	1327	27	54	38	82	35	32	4	7	0	1	0	0
19891004	27	2	1342	1353	27	55	33	82	36	53	4	6	0	2	0	0
19891004	28	1	1436	1438	27	55	87	82	37	77	5	6	0	2	0	0
19891004	29	2	1530	1644	27	51	95	82	34	67	8	23	0	7	0	2
19891004	3	2	923	1015	27	38	32	82	37	33	13	32	0	10	0	3
19891004	30	2	1715	1732	27	47	77	82	35	18	1	3	0	0	0	0
19891004	4	1	1212	1315	27	58	6	82	36	37	2	7	0	0	0	0
19891004	5	1	1320	1325	27	56	65	82	33	83	2	2	0	1	0	0
19891004	6	1	1400	1410	27	48	25	82	34	83	1	1	0	0	0	0
19891004	7	1	1442	1452	27	45	88	82	37	30	2	2	0	0	0	0
19891004	8	2	1530	1549	27	34	67	82	41	83	7	9	0	0	0	0
19891004	9	2	1600	1614	27	31	77	82	42	5	1	3	0	0	0	0
19891005	10	1	1710	1727	27	31	38	82	41	85	7	7	3	3	1	1
19891005	2	1	1025	1035	27	37	20	82	34	33	2	2	0	0	0	0
19891005	23	2	1107	1145	27	38	92	82	43	18	2	4	0	1	0	1
19891005	24	2	1151	1225	27	38	83	82	44	35	6	12	0	4	0	0
19891005	3	2	1110	1147	27	42	85	82	30	98	4	8	0	2	0	0
19891005	4	1	1230	1250	27	35	67	82	38	10	4	4	0	0	0	0
19891005	5	1	1345	1440	27	30	50	82	34	87	11	13	2	3	0	2
19891005	6	1	1511	1520	27	34	5	82	44	25	1	1	0	0	0	0
19891005	7	1	1525	1610	27	33	42	82	45	30	5	6	0	1	1	0
19891005	8	1	1621	1627	27	31	83	82	42	75	2	2	0	0	0	0
19891005	9	2	1630	1704	27	31	80	82	42	17	13	16	0	0	0	0
19891006	22	1	1224	1243	27	32	8	82	43	77	4	5	0	0	0	0
19891006	23	2	1307	1344	27	31	8	82	41	43	2	4	0	0	0	0
19891006	25	1	1509	1534	27	32	53	82	42	40	14	14	0	0	0	0
19891007	2	1	924	940	27	32	90	82	44	72	5	7	0	1	0	0
19891007	3	1	940	945	27	33	15	82	44	83	1	1	0	0	0	0
19891007	4	1	954	1007	27	33	75	82	44	58	4	4	0	0	0	0
19891007	5	1	1017	1028	27	32	47	82	43	48	2	2	0	0	0	0
19891009	22	1	1336	1417	27	32	2	82	42	43	10	11	0	0	0	0
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19891009	24	1	1507	1516	27	34	83	82	46	23	3	3	0	0	0	0
19891009	25	2	1522	1533	27	35	35	82	46	23	2	3	0	0	0	0
19891009	27	1	1623	1633	27	32	88	82	42	75	3	3	0	0	0	0
19891009	28	2	1640	1707	27	32	73	82	42	35	3	4	0	0	0	0
19891010	3	1	1010	1019	27	33	50	82	40	18	2	2	0	0	0	0
19891010	4	2	1033	1052	27	34	83	82	43	17	4	9	0	3	0	0
19891010	6	2	1125	1137	27	34	13	82	44	90	1	2	0	1	0	0
19891010	7	1	1152	1159	27	31	88	82	42	98	1	1	0	0	0	0
19891010	8	1	1201	1203	27	31	73	82	42	70	1	1	0	0	0	0

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19900905	8	1	1438	1500	27	36	30	82	44	0	1	1	0	0	0	0
19900906	1	1	904	935	27	31	5	82	42	7	6	9	1	1	0	0
19900906	51	2	905	920	27	31	45	82	42	0	1	3	0	1	0	0
19900907	1	2	1042	1103	27	41	43	82	38	30	1	4	0	2	0	2
19900907	3	2	1254	1356	27	44	30	82	36	15	1	5	0	1	0	1
19900907	4	1	1404	1420	27	43	47	82	36	58	4	6	0	0	0	0
19900907	5	2	1456	1517	27	46	15	82	37	5	3	6	0	0	0	0
19900907	52	2	948	957	27	32	25	82	42	40	2	5	0	0	0	0
19900907	56	1	1305	1325	27	33	54	82	38	15	5	6	0	0	0	0
19900907	57	1	1336	1343	27	35	0	82	37	8	1	1	0	0	0	0
19900907	58	2	1432	1450	27	43	15	82	30	40	1	3	0	1	0	0
19900907	6	1	1354	1610	27	40	41	82	37	43	1	2	0	0	0	0
19900907	60	1	1601	1626	27	37	35	82	38	38	6	10	0	3	0	1
19900909	10	2	1619	1720	27	39	28	82	36	0	7	13	0	1	0	1
19900909	2	1	1023	1033	27	38	15	82	34	5	3	4	1	1	0	0
19900909	3	1	1041	1103	27	38	20	82	33	43	2	2	0	0	0	0
19900909	4	1	1121	1138	27	41	30	82	32	0	7	9	0	0	0	0
19900909	5	1	1212	1219	27	42	40	82	31	10	1	2	0	1	0	0
19900909	51	2	937	1019	27	37	4	82	35	20	2	4	0	0	0	0
19900909	52	2	1030	1134	27	37	30	82	35	5	7	21	0	8	0	2
19900909	53	1	1213	1250	27	35	15	82	39	34	9	10	0	0	0	0
19900909	54	1	1329	1352	27	32	5	82	35	54	2	2	0	0	0	0
19900909	55	2	1410	1440	27	30	32	82	35	21	0	3	0	1	0	1
19900909	6	1	1225	1240	27	42	43	82	31	25	2	2	0	0	0	0
19900909	7	1	1358	1409	27	46	37	82	31	18	1	1	0	0	0	0
19900909	8	2	1411	1443	27	46	48	82	31	17	5	8	0	1	0	0
19900909	9	2	1520	1553	27	41	41	82	33	10	9	17	0	6	0	1
19900910	1	1	1240	1300	27	31	50	82	42	19	4	4	1	1	0	0
19900910	2	2	1315	1348	27	32	15	82	45	5	1	4	0	2	0	0
19900910	3	1	1410	1430	27	33	29	82	44	10	0	1	0	0	0	0
19900910	4	1	1446	1410	27	35	15	82	45	5	25	45	1	15	0	5
19900910	5	1	1715	1720	27	33	55	82	43	40	1	1	0	0	0	0

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19900910	54	1	1447	1511	27	32	30	82	36	5	0	4	0	2	0	1
19900910	55	1	1541	1554	27	32	55	82	38	20	1	1	0	0	0	0
19900910	56	2	1610	1647	27	35	25	82	38	80	3	10	0	0	0	0
19900910	58	2	1740	1748	27	31	45	82	42	20	1	2	0	0	0	0
19900910	6	2	1725	1820	27	33	29	82	43	37	12	30	0	12	0	5
19900911	1	2	910	927	27	35	15	82	40	10	1	3	0	0	0	0
19900911	52	1	1004	1017	27	36	3	82	36	10	0	2	0	0	0	0
19900911	53A	1	1109	1142	27	41	45	82	31	40	13	18	0	5	0	1
19900911	53B	1	1237	1244	27	42	55	82	31	8	5	12	0	4	0	1
19900911	54	1	1324	1339	27	39	25	82	35	40	6	12	0	3	0	1
19900911	55	1	1350	1410	27	37	20	82	38	6	0	5	0	0	0	0
19900911	56	2	1437	1454	27	34	28	82	41	10	4	6	0	0	0	0
19900913	51	1	1026	1051	27	34	16	82	34	35	0	4	0	2	0	1
19900913	53	1	1300	1314	27	35	47	82	45	12	7	8	0	2	0	1
19900913	54	1	1323	1357	27	35	36	82	45	13	4	7	0	1	0	0
19900913	55	1	1523	1534	27	33	17	82	43	28	0	3	0	1	0	0
19900914	51	1	1030	1054	27	50	16	82	26	58	0	2	0	0	0	0
19900914	52	1	1113	1132	27	51	50	82	24	53	1	3	0	1	0	0
19900914	53	1	1140	1148	27	52	55	82	25	6	0	2	0	0	0	0
19900914	56	2	1308	1351	27	50	24	82	27	14	5	10	0	0	0	0
19900914	57	1	1358	1410	27	50	20	82	27	13	0	1	0	0	0	0
19900914	58	1	1415	1424	27	50	16	82	27	13	3	4	0	0	0	0
19900915	51	2	858	907	27	33	18	82	41	55	1	3	0	0	0	0
19900915	52	2	916	927	27	34	18	82	40	33	1	3	0	1	0	0
19900915	53	1	950	1005	27	34	3	82	42	10	2	3	0	0	0	0
19900915	54	2	1016	1028	27	38	51	82	42	45	0	3	0	0	0	0
19900915	57	2	1339	1350	27	41	17	82	42	20	3	8	0	3	0	0
19900915	58	1	1452	1500	27	33	32	82	42	28	1	2	0	0	0	0
19900915	59	2	1508	1533	27	31	3	82	42	0	4	5	1	1	0	0
19900917	10	1	1520	1537	27	37	5	82	39	33	1	3	0	1	0	1
19900917	54	2	1150	1224	27	35	19	82	38	15	3	11	0	1	0	1
19900917	55	2	1255	1305	27	34	25	82	39	49	1	3	0	0	0	0
19900917	56	2	1320	1345	27	34	25	82	45	28	5	14	0	0	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
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19900917	7	2	1235	1245	27	38	43	82	44	47	1	7	0	0	0	0
19900917	8	1	1259	1305	27	37	14	82	44	15	1	1	0	0	0	0
19900925	55	1	1715	1727	27	32	44	82	42	58	0	2	0	0	0	0
19900925	56	2	1736	1756	27	32	49	82	42	58	5	8	0	1	0	1
19900926	1	1	951	1006	27	41	55	82	33	0	6	8	0	0	0	0
19900926	10	1	1645	1702	27	31	55	82	42	42	11	13	3	5	0	1
19900926	2	1	1026	1038	27	46	5	82	28	48	1	1	0	0	0	0
19900926	3	1	1041	1055	27	46	94	82	27	21	4	7	0	0	0	0
19900926	5	1	1140	1157	27	48	48	82	26	38	4	7	0	3	0	2
19900926	51	1	1002	1024	27	45	44	82	33	15	0	2	0	0	0	0
19900926	52	2	1058	1137	27	51	21	82	33	20	2	9	0	4	0	1
19900926	53	2	1142	1229	27	51	5	82	33	45	5	17	0	3	0	0
19900926	54	2	1312	1350	27	53	48	82	32	58	3	7	0	0	0	0
19900926	56	2	1437	1456	27	57	32	82	35	16	3	7	0	2	0	1
19900926	57	1	1545	1622	27	50	56	82	34	37	3	10	0	2	0	1
19900926	6	2	1252	1314	27	51	48	82	28	6	2	4	1	2	0	0
19900926	7	2	1348	1423	27	52	42	82	27	30	4	18	0	3	0	2
19900926	8	1	1441	1456	27	51	27	82	27	15	1	2	0	1	0	0
19900927	14	1	1719	1733	27	31	2	82	42	0	5	5	1	1	0	0
19900927	53	1	937	957	27	31	30	82	42	0	4	4	0	0	0	0
19900927	55	1	1055	1105	27	33	0	82	44	20	1	1	0	0	0	0
19900928	1	1	904	918	27	32	5	82	39	58	1	3	0	1	0	1
19900928	2	2	942	1015	27	30	9	82	34	25	1	4	0	1	0	0
19900928	3	1	1102	1138	27	34	81	82	37	44	13	13	2	4	0	1
19900930	3	1	1705	1715	27	31	58	82	42	51	6	7	2	3	0	1
19900930	4	1	1721	1816	27	31	59	82	43	39	13	13	0	0	0	0
19900930	5	1	1822	1828	27	31	27	82	41	59	2	3	0	1	0	1
19901001	10	2	1707	1725	27	34	57	82	41	45	1	2	0	0	0	0
19901001	2	1	1212	1229	27	53	36	82	28	30	3	8	0	3	0	1
19901001	3	2	1237	1315	27	52	16	82	28	23	6	16	0	5	0	2
19901001	4	2	1357	1420	27	44	40	82	35	33	4	16	0	0	0	0
19901001	5	2	1426	1451	27	45	26	82	36	24	2	10	1	5	0	1
19901001	51	2	1019	1046	27	52	5	82	33	12	0	6	0	0	0	0
19901001	53	1	1211	1225	27	58	30	82	39	21	3	3	0	0	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19901001	54	1	1253	1319	27	59	14	82	40	18	2	2	0	0	0	0
19901001	55	1	1408	1425	27	55	37	82	41	0	4	6	0	0	0	0
19901001	56	1	1504	1523	27	54	24	82	35	7	1	3	0	1	0	0
19901001	57	1	1542	1602	27	51	48	82	35	12	6	13	0	3	0	0
19901001	58	1	1613	1628	27	51	24	82	35	0	4	6	0	2	0	0
19901001	59	2	1643	1653	27	47	49	82	35	12	2	4	1	2	0	0
19901001	59A	1	1703	1720	26	47	19	82	35	12	5	12	0	4	0	1
19901001	6	2	1534	1548	27	41	50	82	36	25	1	5	0	2	0	1
19901001	7	2	1555	1611	27	40	30	82	37	48	3	8	0	0	0	0
19901001	8	1	1621	1640	27	39	36	82	40	54	8	14	0	1	0	0
19901001	9	1	1648	1657	27	37	45	82	40	41	0	2	0	0	0	0
19901002	1	1	1011	1025	27	38	35	82	44	7	1	1	0	0	0	0
19901002	2	2	1038	1057	27	36	30	82	44	17	0	1	0	0	0	0
19901002	4	1	1335	1357	27	34	28	82	46	12	2	2	0	0	0	0
19901002	5	1	1412	1445	27	35	7	82	45	26	9	14	0	3	0	2
19901003	3	2	1338	1405	27	32	45	82	38	55	2	4	1	1	0	0
19901003	52	1	1340	1445	27	30	25	82	36	26	6	11	0	3	0	1
19901003	53	1	1533	1548	27	31	20	82	36	35	1	3	0	0	0	0
19901003	54	1	1608	1613	27	33	95	82	34	13	0	1	0	0	0	0
19901003	55	1	1622	1642	27	33	10	82	35	30	5	8	2	2	0	1
19901004	52	2	952	1024	27	32	10	82	42	2	1	6	0	0	0	0
19901005	1	1	945	1020	27	31	55	82	41	0	4	6	0	0	0	0
19901005	2	1	1035	1045	27	31	30	82	40	17	3	5	0	0	0	0
19901005	3	2	1054	1146	27	30	30	82	37	33	4	10	0	5	0	2
19901005	4	2	1235	1248	27	33	42	82	35	17	2	3	0	1	0	0
19901005	5	1	1257	1322	27	33	15	82	35	35	8	10	1	3	0	0
19901005	6	1	1420	1443	27	34	38	82	37	5	1	2	0	0	0	0
19901005	7	1	1457	1552	27	33	25	82	39	5	4	12	0	0	0	0
19901007	51	2	1038	1114	27	31	60	82	38	25	7	15	1	2	1	2
19901007	52	2	1235	1313	27	35	0	82	36	85	6	20	1	6	0	2
19901007	53	1	1325	1330	27	35	0	82	37	42	2	2	1	1	0	0
19901007	54	1	1420	1452	27	36	50	82	36	0	9	20	1	6	0	2
19901008	51	1	937	1015	27	31	45	82	44	30	3	3	0	0	0	0
19901009	1	1	1637	1704	27	43	99	82	29	20	1	3	0	0	0	0
19901013	51	2	1009	1036	27	35	35	82	36	45	2	10	0	2	0	0

Sighting Data 1990

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19901013	52	1	1119	1158	27	43	55	82	29	0	1	6	0	3	0	0
19901013	53	1	1225	1244	27	45	0	82	28	15	1	1	0	0	0	0
19901013	54	2	1358	1408	27	36	40	82	34	30	1	3	0	0	0	0
19901013	55	2	1425	1449	27	36	10	82	36	15	4	7	0	3	0	0
19901013	56	1	1543	1620	27	33	20	82	38	30	7	9	2	4	0	1
19901013	57	1	1655	1703	27	32	5	82	44	0	2	2	0	0	0	0
19901014	51	1	1345	1411	27	44	89	82	30	66	4	7	0	0	0	0
19901014	52	2	1416	1429	27	44	87	82	29	90	6	13	0	0	0	0
19901014	53	1	1556	1611	27	38	33	82	33	94	1	2	0	0	0	0
19901014	55	1	1656	1658	27	31	48	82	41	96	4	4	1	1	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19910903	1	2	1040	1118	27	47	99	82	25	34	6	10	0	4	0	0
19910903	103	1	1342	1346	27	38	33	82	34	10	3	3	0	0	0	0
19910903	2	2	1138	1245	27	50	76	82	25	68	11	25	0	8	0	3
19910903	3	1	1520	1529	27	41	54	82	39	14	4	5	0	0	0	0
19910903	51	1	1005	1047	27	41	64	82	41	80	6	15	0	1	0	0
19910903	54	1	1353	1408	27	54	67	82	32	51	8	8	0	0	0	0
19910904	104	1	1227	1240	27	31	91	82	36	28	7	8	1	2	0	0
19910904	7	2	1436	1457	27	31	70	82	63	25	5	10	1	1	0	0
19910905	10	1	1353	1402	27	37	78	82	40	57	2	4	0	0	0	0
19910905	103	1	1021	1029	27	37	26	82	34	40	2	2	0	0	0	0
19910905	105	1	1045	1052	27	38	67	82	33	70	1	2	0	0	0	0
19910905	108	2	1239	1256	27	45	91	82	27	65	1	3	0	0	0	0
19910905	11	1	1412	1446	27	37	11	82	42	10	6	15	0	6	0	2
19910905	12	1	1505	1532	27	33	57	82	44	58	5	10	1	3	0	0
19910905	13	1	1545	1545	27	32	1	82	43	95	1	1	0	0	0	0
19910905	14	1	1548	1617	27	32	1	82	43	95	9	9	1	1	1	1
19910905	15	1	1632	1658	27	31	36	82	42	12	2	2	0	0	0	0
19910905	4	1	1122	1145	27	38	60	82	45	21	6	7	1	2	0	0
19910905	51	1	1013	1105	27	49	95	82	33	47	5	10	0	3	0	1
19910905	52	1	1125	1139	27	51	94	82	32	99	0	2	0	0	0	0
19910905	53	2	1227	1247	27	58	66	82	37	97	1	3	0	1	0	0
19910905	54	1	1402	1504	27	56	5	82	42	6	10	26	0	7	0	3
19910905	6	2	1201	1243	27	38	64	82	45	18	5	10	0	2	0	1
19910905	7	2	1246	1258	27	39	1	82	45	3	2	4	0	0	0	0
19910905	8	1	1305	1317	27	38	62	82	44	5	3	10	0	3	0	1
19910905	9	2	1324	1337	27	38	83	82	43	11	1	3	0	0	0	0
19910906	101	2	911	920	27	31	13	82	37	89	1	2	0	1	0	0
19910906	51	1	900	1112	27	42	70	82	34	65	16	20	0	0	0	0
19910906	53	2	1224	1245	27	45	58	82	35	32	7	14	0	0	0	0
19910906	54	1	1344	1443	27	49	75	82	34	12	18	24	0	11	0	2
19910909	102	1	1153	1201	27	41	13	82	32	13	3	3	1	1	0	0
19910909	105	2	1445	1502	27	31	91	82	42	14	6	8	0	2	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19910910	1	2	1028	1039	27	65	8	82	29	77	1	2	0	0	0	0
19910910	101	2	937	1000	27	33	76	82	40	23	4	10	0	2	0	0
19910910	105	1	1315	1420	27	36	52	82	34	42	5	5	0	0	0	0
19910910	3	2	1140	1306	27	48	65	82	25	30	5	28	0	10	0	3
19910910	4	1	1431	1501	27	51	7	82	27	90	2	4	0	2	0	0
19910910	51	1	1025	1032	27	51	29	82	33	51	0	1	0	0	0	0
19910910	52	2	1240	1252	27	57	73	82	37	93	1	2	0	0	0	0
19910910	53	1	1335	1403	27	55	25	82	37	74	3	3	0	0	0	0
19910910	54	2	1417	1445	27	54	68	82	36	99	1	6	0	0	0	0
19910910	55	1	1508	1545	27	53	34	82	33	54	6	16	0	7	0	2
19910911	1	2	947	1002	27	38	21	82	34	85	9	11	0	2	0	1
19910911	2	1	1046	1058	27	43	93	82	28	95	0	2	0	0	0	0
19910911	3	2	1140	1315	27	46	90	82	26	8	7	22	0	8	0	2
19910911	4	2	1338	1354	27	49	25	82	27	96	4	5	0	0	0	0
19910911	51	1	1043	1106	27	58	37	82	36	26	0	2	0	1	0	0
19910911	55	1	1244	1252	27	53	7	82	32	95	1	1	0	0	0	0
19910911	56	1	1313	1325	27	49	24	82	34	54	2	3	0	1	0	0
19910911	57	2	1327	1340	27	49	10	82	34	29	2	7	0	0	0	0
19910911	58	2	1359	1440	27	47	57	82	36	8	9	18	0	7	0	0
19910911	59	2	1444	1450	27	47	8	82	35	82	4	8	0	0	0	0
19910911	60	2	1520	1550	27	34	96	82	41	27	8	10	0	0	0	0
19910912	1	2	848	854	27	31	15	82	42	6	6	10	2	4	1	2
19910912	104	1	940	955	27	31	50	82	41	70	6	7	2	2	0	0
19910912	11	1	1345	1411	27	36	97	82	42	8	6	10	0	4	0	1
19910912	12	1	1435	1505	27	34	91	82	45	27	2	6	0	1	0	1
19910912	13	1	1520	1536	27	34	90	82	45	27	3	3	0	0	0	0
19910912	2	1	900	910	27	31	77	82	42	79	2	2	0	0	0	0
19910912	3	2	920	935	27	31	97	82	43	87	2	4	0	0	0	0
19910912	5	1	1016	1030	27	34	81	82	46	37	3	3	0	0	0	0
19910912	52	2	1108	1154	27	33	35	82	39	21	7	8	0	0	0	0
19910912	53	1	1241	1326	27	38	11	82	34	78	10	18	0	6	0	2
19910912	6	1	1059	1135	27	39	10	82	45	21	3	7	0	3	0	1

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19910912	7	1	1140	1200	27	39	4	82	45	17	0	7	0	2	0	0
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19910912	9	1	1308	1324	27	38	40	82	40	57	4	5	0	1	0	0
19910913	1	1	918	931	27	35	40	82	36	37	6	6	0	0	0	0
19910913	10	2	1506	1522	27	41	18	82	36	92	2	4	0	0	0	0
19910913	102	1	910	921	27	31	64	82	42	2	1	2	0	0	0	0
19910913	2	2	959	1027	27	37	3	82	35	1	4	6	0	1	0	0
19910913	3	1	1033	1047	27	37	73	82	34	90	11	11	0	1	0	0
19910913	4	1	1106	1122	27	39	92	82	33	9	2	2	0	0	0	0
19910913	5	1	1139	1148	27	41	87	82	31	83	5	5	0	0	0	0
19910913	6	1	1208	1220	27	43	5	82	30	33	1	1	0	0	0	0
19910913	7	2	1222	1237	27	43	36	82	29	78	1	7	0	3	0	1
19910913	8	1	1322	1352	27	48	65	82	30	73	2	2	0	0	0	0
19910913	9	1	1430	1450	27	43	58	82	37	2	1	4	0	2	0	0
19910916	1	1	1002	1012	27	45	34	82	28	86	1	1	0	0	0	0
19910916	101	1	1022	1029	27	35	57	82	37	14	5	5	1	1	0	0
19910916	102	1	1104	1110	27	38	56	82	34	5	7	7	0	0	0	0
19910916	103	1	1113	1119	27	38	74	82	34	1	4	4	0	0	0	0
19910916	104	2	1123	1141	27	38	71	82	33	69	5	5	0	0	0	0
19910916	105	2	1145	1206	27	39	12	82	33	48	2	2	0	0	0	0
19910916	106	1	1225	1238	27	40	53	82	32	54	3	3	0	0	0	0
19910916	107	2	1251	1310	27	42	93	82	30	68	9	16	0	5	0	1
19910916	108	2	1324	1414	27	44	15	82	29	36	2	11	0	4	0	3
19910916	109	1	1435	1440	27	43	65	82	30	0	2	2	0	0	0	0
19910916	110	2	1446	1451	27	42	89	82	31	42	6	16	0	5	0	1
19910916	111	1	1510	1537	27	38	37	82	34	68	11	13	1	1	0	0
19910916	2	1	1015	1049	27	45	0	82	29	13	2	6	0	3	0	1
19910916	4	2	1110	1156	27	45	45	82	29	89	8	19	0	5	0	0
19910916	5	2	1240	1301	27	46	35	82	26	36	1	8	0	3	0	1
19910916	52	2	1037	1105	27	54	9	82	37	7	3	8	0	0	0	0
19910916	53	2	1122	1203	27	54	95	82	36	38	1	7	0	0	0	0
19910916	55	2	1355	1451	27	58	16	82	39	80	10	18	0	3	0	1

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
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19910916	57	2	1620	1644	27	56	89	82	56	79	9	18	0	6	0	1
19910916	6	2	1426	1455	27	52	59	82	26	55	4	7	0	2	0	1
19910917	101	1	1250	1257	27	32	7	82	41	81	1	2	0	1	0	0
19910917	102	1	1316	1401	27	30	51	82	36	97	4	14	0	6	0	1
19910917	103	1	1455	1540	27	35	36	82	38	4	9	10	1	1	0	0
19910917	54	2	1518	1543	27	36	25	82	45	80	8	16	0	1	0	0
19910918	101	1	921	958	27	33	7	82	38	97	10	11	0	1	0	0
19910918	102	2	1012	1028	27	32	91	82	38	57	2	3	0	0	0	0
19910918	103	2	1039	1055	27	34	25	82	38	4	6	8	0	0	0	0
19910918	104	2	1136	1151	27	33	90	82	42	28	1	3	0	1	0	0
19910923	101	2	1122	9999	27	35	13	82	37	56	1	4	0	1	0	0
19910924	1	2	1050	1137	27	39	9	82	45	32	1	5	0	0	0	0
19910924	101	2	1051	1103	27	41	36	82	31	86	0	1	0	0	0	0
19910924	2	2	1212	1242	27	39	0	82	42	66	3	8	0	3	0	0
19910924	3	1	1304	1312	27	38	91	82	42	66	2	3	0	0	0	0
19910924	5	1	1408	1424	27	35	64	82	45	18	4	6	0	3	0	1
19910924	54	1	1317	1323	27	34	83	82	37	35	0	1	0	0	0	0
19910924	55	1	1332	1347	27	34	50	82	38	58	4	4	0	0	0	0
19910924	56	1	1400	1412	27	33	67	82	39	93	1	1	0	0	0	0
19910924	57	1	1417	1458	27	33	33	82	39	91	11	12	0	0	0	0
19910924	58	2	1509	1524	27	35	85	82	40	34	1	5	0	0	0	0
19910924	59	2	1526	1534	27	33	67	82	42	44	2	3	0	0	0	0
19910924	6	1	1438	1521	27	33	33	82	44	38	10	28	0	12	0	2
19910924	60	1	1550	1600	27	32	1	82	44	0	4	5	2	2	1	1
19910924	61	1	1604	1608	27	31	77	82	43	46	1	1	0	0	0	0
19910927	101	2	1041	1110	27	49	30	82	34	15	5	13	0	2	0	1
19910927	102	2	1255	1321	27	55	52	82	35	83	3	6	0	0	0	0
19910927	104	2	1421	1452	27	53	90	82	32	72	2	5	0	0	0	0
19910927	2	2	952	1008	27	30	93	82	37	55	1	3	0	0	0	0
19910927	3	1	1118	1144	27	34	81	82	37	33	10	12	0	1	0	0
19910927	4	2	1231	1244	27	38	33	82	34	87	3	8	0	0	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19910927	5	1	1255	1321	27	38	59	82	33	76	5	5	0	0	0	0
19910927	51	2	940	1050	27	31	78	82	43	47	4	12	0	3	0	0
19910927	52	2	1123	1135	27	31	78	82	43	47	1	2	0	0	0	0
19910927	53	1	1218	1241	27	38	64	82	44	32	3	3	0	0	0	0
19910927	54	2	1324	1335	27	38	64	82	44	30	1	1	0	0	0	0
19910927	55	1	1503	1522	27	38	64	82	44	30	2	2	0	0	0	0
19910927	6	1	1353	1400	27	42	28	82	31	66	3	3	0	0	0	0
19910927	7	2	1401	1420	27	42	28	82	31	66	4	8	0	3	0	0
19910930	104	1	1205	1238	27	31	3	82	42	14	10	12	0	0	0	0
19911002	1	1	906	915	27	31	45	82	42	17	3	4	1	2	0	1
19911002	2	1	931	942	27	32	13	82	41	8	3	4	0	0	0	0
19911002	3	1	942	956	27	32	38	82	41	16	3	3	0	0	0	0
19911002	4	1	1146	1213	27	31	44	82	41	96	3	3	0	0	0	0
19911002	6	2	1300	1332	27	31	54	82	42	5	4	5	0	0	0	0
19911003	1	2	1024	1049	27	33	72	82	39	9	4	5	0	0	0	0
19911003	101	2	940	1004	27	41	26	82	39	57	2	3	0	1	0	1
19911003	103	2	1055	1120	27	42	46	82	37	96	1	4	0	2	0	0
19911003	104	1	1155	1240	27	44	61	82	37	26	2	4	0	2	0	0
19911003	105	2	1344	1405	27	46	57	82	36	89	5	9	0	4	0	1
19911003	106	2	1421	1435	27	44	57	82	36	52	4	10	0	3	0	2
19911003	107	2	1500	1510	27	41	57	82	37	80	6	7	0	1	0	0
19911003	108	2	1530	1548	27	41	34	82	40	16	1	4	0	2	0	2
19911003	109	1	1631	1655	27	33	17	82	41	72	4	5	0	0	0	0
19911003	110	2	1715	1740	27	31	59	82	42	3	1	1	0	0	0	0
19911003	2	2	1105	1114	27	33	72	82	39	9	1	2	0	1	0	0
19911003	3	1	1155	1236	27	33	72	82	39	9	5	6	0	0	0	0
19911003	4	2	1313	1343	27	33	72	82	39	9	8	10	0	2	0	0
19911003	52	2	940	1016	27	32	26	82	44	9	4	6	0	1	0	0
19911004	1	1	1226	1253	27	37	76	82	34	72	3	3	0	0	0	0
19911004	101	1	1121	1141	27	31	32	82	42	8	2	3	0	1	0	1
19911004	102	2	1153	1259	27	32	69	82	42	48	11	30	1	12	0	1
19911004	103	1	1337	1415	27	35	28	82	39	71	7	7	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19911004	104	1	1531	1600	27	31	54	82	43	7	7	7	1	1	1	1
19911004	2	1	1254	1309	27	38	8	82	33	99	2	2	0	0	0	0
19911004	3	1	1333	1352	27	39	93	82	33	9	9	10	1	1	0	0
19911004	4	1	1433	1446	27	38	7	82	34	80	4	4	0	0	0	0
19911004	51	1	1140	1155	27	35	12	82	45	49	2	2	0	0	0	0
19911004	52	2	1224	1305	27	36	65	82	43	3	4	8	0	1	0	0
19911004	53	2	1343	1500	27	34	44	82	43	14	9	28	0	6	0	1
19911004	54	1	1532	1548	27	32	13	82	41	47	1	1	0	0	0	0
19911005	101	2	916	941	27	34	28	82	38	55	5	15	0	3	0	0
19911005	103	2	1107	1200	27	41	60	82	33	67	4	12	0	5	0	2
19911005	104	2	1212	1258	27	41	55	82	33	75	3	7	0	0	0	0
19911005	105	2	1323	1355	27	42	12	82	35	23	2	6	0	3	0	0
19911005	2	1	1235	1250	27	34	74	82	38	16	6	7	0	1	0	0
19911005	3	2	1314	1417	27	32	38	82	38	36	11	25	0	10	0	2
19911005	51	1	901	933	27	32	27	82	42	1	5	8	0	2	0	0
19911005	52	2	1011	1203	27	40	26	82	36	35	10	28	0	5	0	0
19911005	53	2	1259	9999	27	44	28	82	34	38	7	8	0	0	0	0
19911009	55	1	1436	1453	27	31	33	82	41	87	2	2	0	0	0	0
19911009	56	2	1526	1542	27	32	6	82	44	22	3	4	1	1	0	0
19911012	1	1	955	958	27	31	81	82	42	51	1	1	0	0	0	0
19911012	2	2	1005	1045	27	32	18	82	43	33	2	5	0	1	0	1
19911012	3	2	1147	1239	27	33	70	82	44	69	5	9	0	2	0	0
19911012	52	2	1343	1420	27	32	6	82	44	22	3	5	0	0	0	0
19911012	53	2	1505	1537	27	32	6	82	44	22	9	13	2	3	0	1
19911014	101	2	1010	1048	27	40	8	82	33	5	7	13	0	1	0	0
19911014	102	1	1053	1102	27	39	8	82	33	15	4	5	1	1	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19920901	1	1	1458	1552	27	30	88	82	87	8	11	12	0	1	0	0
19920901	51	2	1432	1507	27	42	4	82	43	70	12	15	4	4	3	3
19920901	52	2	1551	1600	27	37	39	82	45	45	2	7	0	0	0	0
19920901	53	1	1617	1645	27	36	30	82	44	18	15	22	0	2	0	0
19920902	2	1	1118	1152	27	37	15	82	34	48	3	3	0	0	0	0
19920902	3	1	1235	1340	27	41	82	82	31	30	6	6	0	0	0	0
19920902	4	1	1351	1401	27	40	22	82	33	1	2	2	0	0	0	0
19920902	5	2	1454	1529	27	36	90	82	40	30	7	11	0	3	0	0
19920902	51	1	1004	1026	27	35	31	82	43	86	6	9	0	1	0	0
19920902	54	2	1309	410	27	53	4	82	34	99	13	22	0	7	0	4
19920902	55	2	1420	1434	27	51	88	82	35	8	1	2	0	0	0	0
19920902	56	2	1429	1511	27	48	18	82	35	12	12	19	0	9	0	4
19920902	6	2	1540	1553	27	35	91	82	41	15	1	4	0	0	0	0
19920903	1	2	1046	1128	27	40	34	82	45	23	3	5	0	0	0	0
19920903	2	2	1132	1150	27	40	49	82	44	72	2	4	0	0	0	0
19920903	4	2	1234	1251	27	38	84	82	46	6	2	7	0	3	0	0
19920903	53	2	1032	1112	27	39	6	82	44	95	4	6	0	1	0	0
19920903	55	2	1249	1315	27	33	78	82	42	38	2	6	0	0	0	0
19920904	1	2	925	957	27	31	72	82	42	72	14	15	3	3	1	1
19920904	3	2	1142	1157	27	35	46	82	43	55	2	6	0	2	0	0
19920904	51	2	941	953	27	31	62	82	40	2	1	2	0	0	0	0
19920904	52	2	1039	1120	27	32	47	82	35	52	6	8	0	2	0	0
19920904	6	1	1248	1253	27	31	97	82	42	47	3	3	0	0	0	0
19920907	1	1	1024	1040	27	39	8	82	33	39	5	5	0	0	0	0
19920907	2	2	1058	1231	27	40	30	82	34	45	7	18	1	4	0	0
19920907	3	1	1502	1550	27	32	0	82	42	50	20	23	2	2	1	1
19920907	51	1	952	1009	27	39	20	82	33	19	4	4	0	0	0	0
19920907	52	2	1022	1051	27	40	83	82	32	47	2	7	0	3	0	0
19920907	56	2	1208	1224	27	42	19	82	37	24	4	8	0	0	0	0
19920907	57	1	1256	1304	27	41	73	82	39	46	2	2	0	0	0	0
19920907	58	2	1316	1405	27	41	3	82	40	30	8	13	0	5	0	2
19920907	59	2	1440	1511	27	37	26	82	41	69	2	8	0	2	0	0
19920908	2	2	1039	1134	27	39	58	82	35	58	3	8	0	0	0	0
19920908	3	1	1151	1200	27	39	25	82	34	42	2	2	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19920908	4	1	1200	1209	27	39	8	82	34	16	3	3	0	0	0	0
19920908	5	2	1304	1312	27	42	67	82	31	0	1	2	0	0	0	0
19920908	53	1	1220	1224	27	41	92	82	41	22	1	1	0	0	0	0
19920908	54	1	1240	1242	27	43	62	82	43	84	1	1	0	0	0	0
19920908	55	1	1255	1302	27	43	64	82	43	90	3	3	0	0	0	0
19920908	56	1	1303	1317	27	44	10	82	44	6	1	2	0	1	0	1
19920908	57	2	1410	1419	27	34	77	82	43	62	2	3	0	0	0	0
19920908	58	2	1421	1437	27	34	95	82	43	75	3	5	0	0	0	0
19920908	59	2	1437	1447	27	35	17	82	44	11	7	13	0	0	0	0
19920908	6	1	1317	1325	27	42	88	82	31	32	2	2	1	1	1	1
19920908	7	1	1405	1423	27	35	89	82	36	42	4	4	0	0	0	0
19920908	8	1	1430	1455	27	35	95	82	36	67	3	3	0	0	0	0
19920909	1	2	1019	1047	27	43	93	82	43	22	2	3	0	0	0	0
19920909	3	2	1129	1140	27	39	31	82	45	22	1	4	0	2	0	0
19920909	4	2	1142	1202	27	39	16	82	45	43	5	6	0	2	0	0
19920909	5	1	1300	1325	27	36	26	82	44	50	2	2	0	1	0	0
19920909	51	1	920	935	27	35	7	82	36	81	1	1	0	0	0	0
19920909	53	2	1028	1048	27	40	74	82	32	47	2	5	0	1	0	0
19920909	54	2	1050	1105	27	40	97	82	32	31	3	4	1	1	1	1
19920909	55	2	1107	1119	27	41	32	82	32	0	3	5	0	0	0	0
19920909	56	2	1123	1236	27	41	96	82	31	81	4	6	0	0	0	0
19920909	57	2	1236	1324	27	42	90	82	30	81	10	15	0	1	0	0
19920909	58	2	1354	1431	27	41	22	82	33	44	4	6	0	0	0	0
19920909	59	2	1441	1456	27	39	82	82	35	30	4	7	0	2	0	0
19920909	6	1	1334	1405	27	37	26	82	44	24	6	6	0	0	0	0
19920909	7	1	1412	1423	27	35	65	82	43	67	3	4	0	1	0	0
19920909	9	1	1502	1555	27	33	92	82	42	21	15	18	0	0	0	0
19920910	2	2	908	951	27	31	82	82	53	69	19	28	0	0	0	0
19920910	3	1	1011	1019	27	32	31	82	44	35	1	1	0	0	0	0
19920910	4	1	1021	1057	27	32	11	82	44	26	13	13	3	3	2	2
19920910	5	2	1108	1120	27	32	3	82	43	84	9	12	0	0	0	0
19920910	51	2	1003	1013	27	36	15	82	35	63	3	4	0	0	0	0
19920910	52	2	1018	1031	27	36	94	82	34	92	2	3	0	0	0	0
19920910	53	1	1036	1041	27	36	84	82	35	26	3	3	0	0	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19920910	55	2	1415	1431	27	36	23	82	44	23	1	3	0	1	0	0
19920911	3	2	958	1141	27	40	31	82	38	33	9	25	0	6	0	1
19920911	4	2	1232	1258	27	44	1	82	34	35	2	6	0	3	0	1
19920911	5	2	1315	1341	27	42	59	82	34	55	3	3	0	0	0	0
19920911	51	2	935	1016	27	38	10	82	35	40	5	6	0	1	0	0
19920911	53	2	1043	1111	27	41	0	82	35	99	3	4	0	1	0	0
19920911	54	2	1119	1135	27	42	51	82	32	69	2	3	0	0	0	0
19920911	55	2	1208	1228	27	44	22	82	30	57	2	4	0	0	0	0
19920911	56	2	1247	1316	27	48	58	82	32	82	6	7	0	0	0	0
19920911	57	2	1452	1505	27	36	0	82	44	53	4	5	0	0	0	0
19920911	58	2	1519	1532	27	32	66	82	44	20	2	6	0	3	0	1
19920915	51	2	1015	1043	27	30	39	82	35	97	2	4	0	1	0	0
19920915	52	2	1237	1310	27	36	47	82	36	1	1	3	0	0	0	0
19920915	53	2	1350	1415	27	31	32	82	42	10	6	7	0	0	0	0
19920916	4	1	1513	1533	27	36	25	82	45	98	9	10	0	3	0	0
19920916	5	2	1534	1609	27	36	2	82	46	63	8	18	2	8	0	0
19920917	3	2	1027	1118	27	36	31	82	46	1	16	28	0	0	0	0
19920917	4	1	1136	1205	27	36	51	82	44	43	9	10	1	3	0	0
19920917	5	1	1302	1309	27	37	90	82	40	98	1	2	0	1	0	0
19920917	51	1	919	933	27	31	85	82	39	89	4	4	0	0	0	0
19920917	53	2	1026	1051	27	33	39	82	35	27	2	3	0	0	0	0
19920917	54	2	1144	1203	27	38	31	82	33	76	2	3	0	1	0	0
19920917	55	1	1204	1227	27	38	52	82	33	94	9	9	0	0	0	0
19920917	56	2	1248	1320	27	42	4	82	31	95	6	10	1	2	1	2
19920917	57	2	1315	1345	27	42	68	82	31	57	7	10	0	0	0	0
19920917	58	1	1410	1458	27	40	48	82	35	30	19	24	0	6	0	1
19920917	6	1	1313	1336	27	39	23	82	40	95	2	3	0	0	0	0
19920917	8	2	1525	1540	27	36	11	82	45	57	7	10	0	3	0	0
19920922	1	1	1116	1139	27	44	66	82	29	5	3	3	0	0	0	0
19920922	101	1	1116	1128	27	46	75	82	30	30	2	2	0	0	0	0
19920922	102	2	1157	1257	27	49	70	82	33	30	12	22	0	4	0	1
19920922	104	1	1329	1340	27	51	0	82	33	85	4	5	0	0	0	0
19920922	105	2	1355	1409	27	53	10	82	32	70	3	7	1	3	0	0
19920922	107	1	1439	1459	27	55	35	82	32	35	9	10	0	2	0	1

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
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19920922	3	1	1236	1304	27	45	93	82	27	60	8	15	0	2	0	0
19920922	4	2	1346	1422	27	48	63	82	27	67	5	13	0	3	0	0
19920922	5	1	1503	1518	27	50	5	82	25	77	5	5	0	0	0	0
19920922	51	2	1128	1219	27	48	6	82	35	71	8	18	0	5	0	0
19920922	52	2	1236	1323	27	50	88	82	34	97	9	15	0	0	0	0
19920922	54	2	1431	1453	27	58	45	82	40	17	6	10	0	2	0	1
19920922	6	2	1623	1700	27	43	77	82	29	92	9	12	0	0	0	0
19920923	1	2	1028	1049	27	54	18	82	37	13	0	4	0	0	0	0
19920923	102	1	1030	1040	27	56	15	82	33	40	1	1	0	0	0	0
19920923	103	2	1050	1212	27	56	85	82	32	95	3	7	0	2	0	0
19920923	104	2	1218	1259	27	55	75	82	33	50	2	3	0	0	0	0
19920923	105	1	1326	1353	27	57	95	82	36	30	6	6	0	0	0	0
19920923	106	2	1407	1420	27	55	55	82	34	5	1	2	0	0	0	0
19920923	107	2	1424	1435	27	54	25	82	33	40	5	6	0	2	0	0
19920923	108	2	1549	1555	27	42	95	82	31	0	1	2	0	0	0	0
19920923	109	2	1600	1713	27	43	30	82	30	0	2	7	0	0	0	0
19920923	2	2	1110	1146	27	55	28	82	36	31	1	4	0	1	0	0
19920923	3	1	1317	1324	28	0	10	82	40	30	1	2	0	0	0	0
19920923	4	1	1338	1346	28	2	7	82	38	50	1	1	0	0	0	0
19920923	5	2	1401	1427	27	57	59	82	37	67	5	8	0	4	0	0
19920923	51	2	928	1011	27	48	40	82	27	4	7	9	0	1	0	0
19920923	52	2	1236	1259	27	49	24	82	25	82	13	13	0	0	0	0
19920923	53	1	1336	1350	27	46	87	82	26	0	2	6	0	3	0	0
19920923	54	1	1356	1405	27	46	45	82	26	41	0	2	0	1	0	1
19920923	55	2	1440	1511	27	44	46	82	30	94	5	14	0	5	0	5
19920923	6	1	1444	1458	27	54	36	82	35	9	1	1	0	0	0	0
19920923	8	2	1535	1604	27	51	51	82	35	7	13	22	0	8	0	2
19920924	1	1	1033	1052	27	54	16	82	25	83	1	1	0	0	0	0
19920924	101	2	911	929	27	43	75	82	29	60	4	6	0	0	0	0
19920924	102	2	1056	1107	27	57	50	82	40	30	4	6	0	1	0	1
19920924	2	2	1146	1203	27	52	79	82	25	48	2	8	0	2	0	1
19920924	3	1	1311	1320	27	48	44	82	27	57	1	2	0	1	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19920924	4	1	1321	1352	27	47	88	82	27	87	9	9	0	1	0	0
19920924	51	1	1022	1034	27	55	72	82	32	30	2	2	0	0	0	0
19920924	52	1	1047	1107	27	55	59	82	34	3	1	2	0	1	0	0
19920924	53	1	1125	1137	27	57	43	82	34	54	1	4	0	2	0	0
19920924	54	1	1144	1220	27	57	63	82	36	39	4	5	0	0	0	0
19920924	56	2	1412	1432	27	55	71	82	33	78	1	3	0	0	0	0
19920924	58	1	1454	1459	27	53	30	82	33	44	0	2	0	1	0	0
19920924	59	2	1512	1536	27	42	80	82	31	70	10	16	0	5	0	1
19920924	6	2	1532	1628	27	43	64	82	29	92	6	8	0	1	0	1
19920925	1	2	941	1006	27	45	86	82	27	18	2	3	0	0	0	0
19920925	2	1	1020	1034	27	46	63	82	26	29	1	2	0	1	0	0
19920925	3	2	1100	1140	27	49	69	82	26	77	4	8	0	1	0	0
19920925	4	2	1307	1330	27	45	12	82	28	38	4	10	0	4	0	2
19920925	5	1	1347	1357	27	44	3	82	29	81	0	2	0	1	0	1
19920925	52	2	1046	1113	27	56	75	82	33	14	1	2	0	0	0	0
19920925	53	2	1125	1140	27	57	88	82	36	14	3	4	0	0	0	0
19920925	54	1	1153	1157	27	58	93	82	38	20	0	1	0	0	0	0
19920925	55	2	1236	1254	27	58	93	82	38	19	3	7	0	3	0	1
19920928	2	2	1105	1216	27	39	87	82	40	22	8	13	0	5	0	1
19920929	1	1	937	955	27	33	84	82	41	73	2	2	0	0	0	0
19920929	2	2	1014	1050	27	35	94	82	40	14	2	7	0	3	0	0
19920929	4	2	1304	1320	27	47	73	82	35	76	4	10	0	4	0	0
19920929	5	2	1326	1420	27	47	36	82	36	3	18	27	0	5	0	1
19920929	6	2	1430	1459	27	46	9	82	37	32	8	12	0	4	0	0
19921005	8	2	1355	1404	27	31	43	82	42	88	1	2	0	0	0	0
19921008	1	2	942	1016	27	28	72	82	42	5	4	7	0	2	0	0
19921008	2	2	1128	1142	27	37	58	82	40	4	1	3	0	0	0	0
19921008	3	1	1145	1200	27	37	58	82	40	4	3	3	0	0	0	0
19921008	5	2	1240	1325	27	37	58	82	40	4	2	4	0	2	0	0
19921008	51	1	930	950	27	37	43	82	35	6	3	3	0	0	0	0
19921008	53	2	1008	1030	27	39	36	82	33	92	3	6	0	1	0	0
19921008	54	2	1036	1107	27	40	65	82	33	27	1	4	0	0	0	0
19921008	55	1	1116	1134	27	41	59	82	32	67	6	7	0	0	0	0
19921008	57	1	1159	1222	27	41	85	82	32	85	16	16	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19921008	59	1	1308	1328	27	45	89	82	33	48	5	5	0	0	0	0
19921008	6	1	1325	1442	27	41	0	82	37	78	12	20	0	9	0	2
19921008	7	1	1502	1545	27	41	57	82	37	87	9	10	0	0	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19930909	101	2	1136	1219	27	40	5	82	35	90	8	13	0	3	0	0
19930910	101	1	839	851	27	50	26	82	34	10	1	2	0	1	0	0
19930910	103	2	950	1034	27	55	87	82	32	76	9	15	0	5	0	2
19930910	51	1	845	903	27	47	95	82	25	42	1	2	0	1	0	0
19930913	1	1	1140	1145	27	36	56	82	35	20	6	6	0	0	0	0
19930913	101	2	1047	1109	27	50	14	82	34	69	1	2	1	1	0	0
19930913	102	2	1147	1253	27	55	80	82	34	58	12	15	0	4	0	1
19930913	103	2	1344	1408	27	58	16	82	37	83	5	8	0	2	0	0
19930913	106	2	1534	1556	27	58	30	82	37	62	4	10	0	3	0	0
19930913	152	2	1420	1440	27	34	63	82	46	19	3	4	0	0	0	0
19930913	2	2	1305	1323	27	43	21	82	30	15	2	3	0	0	0	0
19930913	4	2	1437	1443	27	40	55	82	35	13	1	2	0	0	0	0
19930913	5	2	1455	1550	27	38	51	82	36	23	10	22	0	7	0	2
19930913	52	2	1453	1520	27	51	78	82	27	69	1	2	0	0	0	0
19930913	6	2	1630	1637	27	42	53	82	31	22	5	7	1	1	0	0
19930914	1	2	913	930	27	43	72	82	29	96	2	4	0	0	0	0
19930914	102	1	1202	1212	27	58	74	82	40	66	0	2	0	1	0	1
19930914	2	1	1043	1053	27	37	10	82	34	37	2	2	0	0	0	0
19930914	4	2	1621	1655	27	42	56	82	31	34	5	6	1	1	0	0
19930914	54	2	1153	1241	27	54	11	82	32	99	12	20	0	1	0	1
19930915	1	2	1100	1201	27	42	87	82	33	15	13	20	0	3	0	2
19930915	101	2	858	1034	27	43	48	82	30	48	15	20	0	3	0	0
19930915	2	2	1245	1303	27	40	37	82	36	7	1	2	0	0	0	0
19930915	3	2	1358	1409	27	43	71	82	29	63	4	5	0	0	0	0
19930915	4	2	1432	1443	27	44	76	82	30	57	1	2	0	0	0	0
19930915	53	2	1401	1432	27	46	26	82	28	35	2	3	0	1	0	0
19930916	101	2	922	1033	27	43	77	82	30	5	6	19	0	5	0	2
19930916	103	2	1155	1220	27	48	63	82	26	30	2	4	0	1	0	0
19930916	104	2	1420	1501	27	43	84	82	31	55	5	9	0	1	0	0
19930916	2	1	1022	1032	27	54	98	82	36	80	1	1	0	0	0	0
19930916	4	2	1125	1141	27	56	61	82	42	16	2	4	0	0	0	0
19930916	51	2	918	931	27	41	42	82	39	85	1	2	0	0	0	0
19930916	52	1	956	1016	27	39	43	82	40	99	0	1	0	0	0	0
19930916	53	2	1043	1100	27	38	82	82	44	87	2	6	0	2	0	0
19930916	54	2	1135	1147	27	40	9	82	46	11	1	2	0	0	0	0

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DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
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19930916	6	2	1321	1348	27	53	80	82	32	86	10	12	0	3	0	1
19930916	8	2	1416	1431	27	50	40	82	33	88	5	10	0	3	0	2
19930916	9	2	1458	1511	27	46	84	82	31	86	7	11	0	4	0	0
19930917	1	1	934	1043	27	52	89	82	32	78	3	3	0	0	0	0
19930917	10	2	1448	1500	27	44	37	82	33	16	1	2	0	0	0	0
19930917	101	1	920	935	27	48	24	82	25	58	1	2	0	1	0	0
19930917	102	2	1013	1048	27	49	30	82	26	0	9	13	0	6	0	1
19930917	103	1	1129	1155	27	53	88	82	26	31	1	1	0	0	0	0
19930917	104	2	1204	1223	27	54	27	82	26	11	2	6	0	2	0	0
19930917	106	2	1340	1410	27	51	57	82	28	50	6	10	0	5	0	1
19930917	2	2	1044	1119	27	52	46	82	32	85	5	9	0	0	0	0
19930917	3	2	1120	1125	27	53	15	82	32	84	4	7	0	1	0	0
19930917	4	1	1126	1135	27	53	45	82	33	6	3	3	0	0	0	0
19930917	5	2	1136	1154	27	53	87	82	32	89	2	4	0	1	0	1
19930917	51	2	927	1027	27	41	43	82	41	7	3	4	0	0	0	0
19930917	52	1	1041	1056	27	42	56	82	41	65	3	4	0	1	0	1
19930917	53	1	1128	1142	27	41	54	82	43	98	1	1	0	0	0	0
19930917	54	1	1150	1205	27	40	43	82	44	70	3	3	0	0	0	0
19930917	55	2	1220	1258	27	40	43	82	44	70	5	8	0	0	0	0
19930917	56	1	1318	1330	27	38	89	82	44	89	1	2	0	1	0	0
19930917	6	2	1218	1225	27	55	19	82	32	95	3	5	0	1	0	0
19930920	1	1	1140	1204	27	43	37	82	30	54	7	8	1	1	0	0
19930920	101	2	1225	1247	27	49	6	82	35	1	2	3	0	0	0	0
19930920	102	2	1256	1400	27	50	51	82	34	7	12	19	0	7	0	2
19930920	105	2	1625	1650	27	47	93	82	29	65	7	9	0	0	0	0
19930920	2	2	1210	1226	27	42	89	82	30	92	5	8	0	4	0	3
19930920	4	2	1315	1327	27	40	22	82	33	59	2	3	0	0	0	0
19930920	5	1	1446	1453	27	37	69	82	34	0	1	1	0	0	0	0
19930920	54	2	1435	1520	27	37	90	82	39	25	6	12	0	2	0	0
19930920	55	2	1555	1630	27	38	45	82	37	43	8	16	0	5	0	2
19930921	1	2	952	1033	27	48	13	82	35	38	4	8	0	1	0	0
19930921	102	2	957	1020	27	45	58	82	31	20	3	6	0	3	0	0
19930921	103	2	1050	1152	27	50	4	82	34	4	3	5	0	2	0	0

Sighting Data 1993

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19930921	104	2	1210	1235	27	56	59	82	42	70	1	2	0	0	0	0
19930921	105	2	1345	9999	27	51	63	82	35	41	2	4	0	2	0	0
19930921	106	1	1415	1540	27	50	93	82	35	31	27	35	0	10	0	4
19930921	3	2	1144	1203	27	43	2	82	36	72	1	2	0	0	0	0
19930921	4	2	1207	1218	27	41	57	82	37	63	2	4	0	1	0	0
19930921	5	1	1223	1240	27	41	46	82	38	18	8	8	0	0	0	0
19930921	53	2	1403	1435	27	43	66	82	30	45	2	3	0	1	0	0
19930921	54	2	1442	1450	27	43	6	82	30	53	3	5	0	1	0	0
19930922	102	2	1155	1257	27	33	57	82	34	67	3	4	0	1	0	0
19930922	103	2	1406	1451	27	39	8	82	35	14	8	14	0	3	0	0
19930922	104	2	1502	1517	27	40	12	82	34	76	1	2	0	0	0	0
19930922	105	2	1620	1705	27	45	98	82	28	44	13	20	1	6	0	2
19930922	4	1	1139	1147	27	35	76	82	39	17	1	2	0	0	0	0
19930922	51	2	1040	1203	27	35	80	82	44	89	21	28	0	5	0	0
19930922	52	1	1243	1317	27	35	4	82	46	29	3	3	0	0	0	0
19930922	53	2	1404	1455	27	29	30	82	37	90	2	4	0	2	0	0
19930923	1	2	1028	1044	27	41	43	82	38	21	3	8	0	2	0	0
19930923	102	2	1020	9999	27	41	76	82	38	16	7	11	0	1	0	0
19930923	104	2	1140	1205	27	47	65	82	35	76	1	2	0	0	0	0
19930923	105	2	1254	1335	27	47	58	82	35	61	5	14	0	0	0	0
19930923	107	2	1447	1505	27	46	15	82	36	57	8	13	0	4	0	0
19930923	109	2	1620	1635	27	51	42	82	33	39	7	8	0	4	0	0
19930923	11	2	1616	1636	27	44	70	82	31	50	10	11	0	0	0	0
19930923	2	2	1046	1117	27	41	35	82	38	43	7	14	0	5	0	0
19930923	3	2	1128	1133	27	41	5	82	38	31	1	2	0	0	0	0
19930923	51	2	921	931	27	41	12	82	34	28	1	2	0	1	0	0
19930923	55	1	1205	1215	27	32	47	82	43	90	2	2	0	0	0	0
19930923	57	1	1301	1310	27	32	9	82	36	8	1	2	0	1	0	0
19930923	58	1	1440	1445	27	40	18	82	32	50	1	1	0	0	0	0
19930923	60	1	1549	1656	27	42	88	82	31	29	28	36	1	9	0	4
19930923	7	2	1425	1434	27	46	19	82	28	47	3	4	0	1	0	0
19930923	9	1	1504	1507	27	46	78	82	27	20	1	1	0	0	0	0
19930924	1	2	957	1031	27	44	76	82	33	40	7	8	0	0	0	0
19930924	10	2	1536	1554	27	42	70	82	35	53	4	8	0	1	0	0
19930924	103	1	1216	1221	27	48	6	82	34	97	1	2	0	1	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19930924	104	1	1230	1254	27	47	25	82	36	12	6	8	0	0	0	0
19930924	4	2	1148	1235	27	41	37	82	38	22	10	21	0	9	0	3
19930924	5	1	1313	1331	27	40	49	82	38	93	2	2	0	0	0	0
19930924	51	1	952	1030	27	45	80	82	30	50	8	9	0	0	0	0
19930924	53	2	1134	1145	27	46	70	82	26	39	1	4	0	2	0	0
19930924	55	1	1236	1253	27	48	30	82	25	30	9	16	0	0	0	0
19930924	57	1	1314	1319	27	48	89	82	25	56	1	1	0	0	0	0
19930924	59	2	1450	1505	27	39	33	82	36	30	2	3	0	0	0	0
19930924	61	1	1600	1608	27	35	96	82	38	55	1	1	0	0	0	0
19930924	62	2	1628	1652	27	33	54	82	41	25	7	10	0	1	0	0
19930924	8	1	1451	1513	27	42	7	82	36	51	2	3	0	0	0	0
19930924	9	2	1515	1530	27	42	18	82	36	62	2	3	0	0	0	0
19930927	201	2	1130	1217	27	40	80	82	35	0	7	20	0	3	0	0
19930928	103	2	1108	1118	27	55	71	82	32	75	1	2	0	0	0	0
19930928	104	1	1148	1205	27	58	49	82	38	62	4	6	0	0	0	0
19930928	107	2	1343	1413	27	49	8	82	31	13	4	7	0	2	0	0
19930928	108	2	1427	1441	27	48	82	82	28	39	4	6	0	0	0	0
19930928	2	1	1227	1233	27	43	25	82	30	17	2	2	0	0	0	0
19930928	3	2	1305	1326	27	38	87	82	33	69	2	3	0	0	0	0
19930928	5	1	1358	1407	27	37	93	82	34	74	4	4	0	0	0	0
19931004	203	1	1320	1331	27	41	19	82	42	22	1	1	0	0	0	0
19931004	207	2	1534	1545	27	34	31	82	42	95	2	4	0	0	0	0
19931008	153	1	1135	1145	27	36	97	82	43	6	2	2	1	1	0	0
19931008	154	2	1156	1330	27	35	51	82	43	60	20	37	1	5	0	0
19931008	155	1	1348	1355	27	32	72	82	42	18	1	1	0	0	0	0
19931012	201	2	1545	1558	99	99	99	99	99	99	4	9	0	2	0	0
19931013	204	2	1123	1141	27	43	51	82	42	47	1	5	0	2	0	1
19931013	206	2	1253	1309	27	39	5	82	44	99	2	7	0	1	0	0
19931013	208	2	1342	1359	27	38	14	82	41	59	4	8	0	0	0	0
19931018	5	1	1245	1322	27	31	47	82	41	69	6	6	1	1	0	0
19931019	1	1	945	1010	27	32	55	82	40	55	3	4	0	1	0	1
19931019	2	2	1020	1040	27	34	39	82	37	53	2	3	0	0	0	0
19931019	3	2	1058	1119	27	32	97	82	41	12	2	5	0	0	0	0
19931019	4	2	1125	1157	27	33	66	82	40	53	8	10	0	0	0	0
19931019	5	1	1257	1307	27	35	71	82	40	99	5	5	0	0	0	0

DATE	SIGHT#	PHOTO GRADE	TIME BEGIN	TIME END	LAT DEG	LAT MIN	LAT SEC	LONG DEG	LONG MIN	LONG SEC	TOT POSID	TOT BEST	CALF POSID	CALF BEST	YOY POSID	YOY BEST
19931019	6	2	1341	1406	27	36	2	82	43	76	9	16	1	2	0	0
19931019	8	2	1448	1511	27	32	61	82	44	72	7	12	0	4	0	0
19931019	9	2	1511	1530	27	32	60	82	44	69	5	7	0	1	0	1
19931020	203	2	1213	1228	27	42	87	82	30	97	4	12	1	3	0	0
19931020	206	2	1536	1603	27	43	16	82	30	29	8	18	0	3	0	0

DATE	SIGHT#	DOLPHIN CODES
19880909	2	F105 1052 LNPF
19880910	1	FB11
19880910	3	FB17
19880910	4	FB32 FB42 FB52 F130 F134
19880912	9	DRSN
19880913	28	FB05 FB25 FB27 FB31 FB54 FB55 FB63 FB84 FB97 FB22 FB26 FB62 FB92 C311
19880914	22	FB05 FB17 FB55 FB59 FB63 FB79 FB84 FB87 F191 FB90 FB22 FB26 FB32 FB48 FB50 FB92 F131
19880915	22	PLOB 2SDN TFMS
19880915	4	MLBA
19880915	5	LVMA LVMC LBSN
19880915	6	HLBB
19880915	7	TFBT HLBB THLA SLLP NITB
19880915	8	F172
19880916	22	TOFF SLLP FBLN 2SDN RNMA FLIP PN01 BZPN BOLT CLBS BTMN PRN2 HBUT UPSN HBUK
19880916	23	LA71 L17C PAPI PAPC
19880916	24	F149 F136 HDMN KBNN HIQQ
19880916	3	RP61 INHF
19880916	4	F129 F126 F200 MLBA NFMS SFAN LBUT GITR LLBD
19880916	5	F172 F170
19880916	7A	FB17 FB35 FB65 FB73 FB93 F191 FB06 TRNO
19880916	7B	FB35 FB93 FB65
19880916	8	FB59 FB75 FB90 49LA TRNO FB50 C592 TRNC
19880916	9	FB59 FB75 FB90 FB50 C592
19880917	1	F149 HDMN
19880917	10	MW02
19880917	22	CHMP
19880917	23	MOON
19880917	24	PLOB JAGG FRIL
19880917	25	TRNO SRAT
19880917	4	TTM2 TT21 CPCR BTMN USLR LBSH LLBD
19880917	5	LFLG
19880917	6	BTMN LBSH
19880917	7	CHWK WHIT SBHN
19880917	8	F104 F106 F130 F132 F134
19880917	9	FB67 FB18 FB36 FB38 FB44 FB62
19880919	10	QLOB
19880919	11	LULP
19880919	20	CLLA
19880919	22	ELFF
19880919	23	
19880919	24	
19880919	25	
19880919	28	NFMS WARO PNBT BTO3 HFMB HLBB YWMN BRI12 SPIT FTTS ETSN R61M KUBT WGRV NKMA BTMS PIFI

DATE	SIGHT#	DOLPHIN CODES
19880919	29	RCLV HNHN MUBT SOMV
19880919	3	LOBE
19880919	4	BBAN
19880919	5	
19880919	6	NPNT TBXS HNLN
19880919	7	QLOB
19880919	8	QLOB
19880919	9	WARO HFMB PNBT BTO3 BRH2 YWMN
19880920	1	FLMA CFLM
19880920	2	ETET LAPL HKNB DZSO BTLR HUMP SHAT MNTS MDBK UPRF MTNP MBPN WTMN SAMN HKS2 UMLN TNMB
19880920	20	LULP LA51 FNTM FMS2 PUZL SODS LCLN LVMN TTHS ALN2 MM72 SPSD LBUB SQF2
19880920	21	HNNS CLHS
19880920	22	MSSP NPBT
19880920	23	BUCB HKPK TRK2 FMS2 MORX MDSF SCTP TNHS KNLN
19880921	2	TTM2 TM21
19880921	20	ETMS STEN FNTM
19880921	22	BABT
19880921	4	BTLR LAPL MTNP HUMP SAMN MBPN DZSO MDBK UPRF MNTS WCMS SHAT
19880922	4	FB07 FB06
19880923	20	FB67 FB60
19880923	21	TTM3 CHMS CHSC 2SDN PLOB TM31 THLA ETHR JAGG HNBT LSB2 HBBT TFMS FRIL KMSN SSMB NASC LDBZ TSMV MWPN
19880924	1	FB45 FB61 FB65 FB67 FB06 FB32 F106 F132 F134 FB08
19880925	1	F161
19880925	2	FB67 F145 F147 F102 F104 F130
19880925	3A	FB65 FB32 F130 F136 JAWM
19880925	4	FB05 FB45 FB55 FB63 FB75 FB22 FB60
19880925	5	
19880925	7	TTM3 LOBE 2SDN TM31 2SDN JAGG KMBT HDSQ HBBT NASC TSMV CHK2 FRIL FFMA FMC1 MDS2
19880925	8	F154 F156
19880925	9	FB65 FB08 F136 JAWM
19880927	25	FB87 WTMA 49LA 49L2 CWT2
19880927	26	F105 FB26 F120 F124 HDMN LBMA LNPF RTMW HAIR TCV2 ROOS RP19 HAWK
19880928	20	FB67 FB75 LSPL CSTK LMBT
19880928	24	F200 HDMN RP19 TCV2
19880928	25	F106 FB33 FB52 FB66 FB76 F102 F104
19880929	1	F145 F147 F106 F136 HDMN
19880929	10	FFMA PINC FMC1 LNTB LSL1 TTOO
19880929	11	
19880929	14	FB17 FB74
19880929	2	F106
19880929	20	FB17 F134
19880929	23	CHMP PN01 CHMC FRNK FALC RSFG
19880929	24	PN01 FTLN FBLN TMWG FRNK

DATE	SIGHT#	DOLPHIN CODES
19880929	25	
19880929	26	WHIT TWHN SFMH PFMB F206
19880929	28	F124 F120 F140 F147 CONS HAIR
19880929	3	FB67 F104 F106
19880929	30	CHMS TTM3 TM31 CHSC TSC8 ETHR SNLA HPTR CHK2
19880929	4	F154 F156
19880929	5	FB54 FB75 FB84 FB92
19880929	6	F191 TTM3 PLOB TM31 ELFF TFMS TSC8 BRCH MORN
19880929	8	CHMS 2SDN CHSC CAT2 BBLN BBLC
19880930	10	TTM2 TM21
19880930	2	
19880930	20	F106
19880930	23	F147 VNOT RP19
19880930	24	LAMN BTTL
19880930	26	LFLM LFLC PAPI PFLG
19880930	3	MLBA
19880930	4	LBUT
19880930	5	F210 C210
19880930	6	
19880930	7	LULP
19880930	9	HFMB
19881001	20	CLLA CCL1
19881001	22	ZEUS PRGO SFHD NASC RSFG HSPN
19881001	24	MARM TBEL 5NK2 LNST LNTF LNTR
19881001	25	MARX PFMB
19881001	3	CHMP STPO
19881001	4	LAMN
19881001	5	SNLA
19881001	8	MOPK
19881001	9	CHTO
19881004	1	FB59 F106 C592 F134
19881004	11	SKHK SKHC
19881004	2	
19881004	20	SFMH SPNM
19881004	21	
19881004	22	KSLW
19881004	23	FLMA CFLM LUFR BRH2 FTTS BARF TTHS MBLS HGLS WARO BTMT TNHB
19881004	25	ELFS DMBK
19881004	26	LAMN ETHF KMSL
19881004	4	MTNP BTLS
19881004	5	ETOO MBLS KEYM LUFR BTAS FTTS BTMT
19881004	6	BBAN TINT TPNM
19881004	7	BBAN TINT TPNM

DATE	SIGHT#	DOLPHIN CODES
19881004	9	ZEUS LNCY
19881005	1	FB60
19881005	2	LACH THMN NOFN
19881005	20	FB87 WTMA 49LA PHNE
19881005	21	FB27 FB33 FB67 FB83 FB90 DRSN FB76 FB50
19881009	3	FB35 FB93
19881009	4	FB45 FB08
19881009	5	FB45 FB54 FB75 SURR AHLA TTOO
19881010	1	CHWK
19881010	20	FLTH HKMA TINT NUNS HNDB
19881010	24	NFMS
19881010	27	LA84
19881010	28	DALS
19881010	4	THRM CLMW CLMC LDMA LDMC LUSL LUSC CTHM
19881010	5	
19881010	6	
19881010	7	LA21 SMET
19881010	9	NFMS
19881011	1	
19881011	2	FB53 FB57 CLLA F104 F130 F132 F134 F106 CCL1
19881011	20	FNGD HTHR
19881011	22	CHMA CCHM THLA 2SDN CHK2 FRIL JAGG MORN ETHR JIG3 CHKC
19881011	23	CHMS CHSC CHMA CCHM TTM3 CHKC 2SDN THLA LOBE PLOB JAGG FRIL JIG3 CHK2 MORN BRCH HNBT TFMS LDBZ TRNO RT90 ETMA 41LA
19881011	25	FB75 FB90 FB50
19881011	3	F145 F147
19881011	4	F161
19881011	5A	FB26 FB48 SUMO CMRS
19881011	5B	FB26 FB48
19881011	6	FB07 FB63 FB75 FB90 FB84 FB22 FB50 FB92
19881012	1	FB65 FB67
19881012	20	FB54 FB14 FB66 FB76 FB94
19881012	21	SHRD
19881012	22	LA71 L17C PAPI LFLM LFLC
19881012	23	LFLM
19881012	25	BTTL ECPS LSGL BAT3
19881012	27	DPST BBAN FLIP TPSP
19881012	28	CHMS CHSC TOD8
19881012	4	MARX BTM2 DEDO
19881012	6	FB54 FB14 FB66 FB76 FB94

DATE	SIGHT#	DOLPHIN CODES
19890905	3	FB09 F104 F134 FB65 FB67 FB76 FB66 F132 F106 POOF
19890906	1A	CLLA FB20
19890906	1B	CLLA FB20
19890906	2	F102
19890906	3	F210 C210 FB26 F120 F124 F126 F154 FB48 F136 CONS
19890906	4	F105 CLLA FB20
19890906	5	FB20 CLLA C210 F210
19890906	6	FB09 FB11 FB31 FB57 FB53 FB06 FB08 FB22 F104 FB67 F130 F132 FB65 POOF
19890907	1	MLTS TFLG LOBE RLDX MNIP BHOP NASC
19890907	10	FB50 FB90
19890907	2	PRNS FLGS
19890907	3	SFLG WMPY
19890907	5	LA71 LFLM GTFG MDIN
19890907	6	ZORO ZORC MLCB
19890907	7	LFLG
19890907	8	WTMA 49LA CWT2 49C1 LWMN
19890907	9	FB65 FB67 F106 F132
19890909	1	MBAS
19890909	2	CHWK SCBT SCTN
19890909	3	
19890909	4	BTTV
19890909	5	SFAN
19890909	6	CPCR SHVB BXBT HSLV
19890909	7	LNLN BABX MYLV BTAS CLNN HMLS URLN
19890909	8	RNMA RNMC
19890909	9	PN01 LNTB
19890911	1	TFLG ETHR HBBT BBLN MTLR
19890911	10	F163 F168
19890911	11	F102 F104 F106 F132 F154 POOF HAWK
19890911	2	PLOB 2SDN TFLG
19890911	3	PS72
19890911	4	CHTO TTRS STEN
19890911	5	
19890911	6	TBXS
19890911	8	LA68 BTM2 BTTV KATT FB99
19890911	9	F200 F210 RP19 MSLB RTFN BTTV HBUT FB99 BTTV SFAN KATT F157 F158
19890912	1	F136
19890912	10	FB62
19890912	11	FB07 FB09 FB29 FB65 FB10 FB26 FB32 FB48 FB66 FB76 F130 F132 POOF BCLW F106 F104 F160 F162 F102 IIIQQ
19890912	3	F154 F156 F162 POOF F160
19890912	4	CLLA FB20 RTMW RTMC CCLA
19890912	5	FLMB
19890912	6	
19890912	7	LOBE LSPL MOFG LDBZ JAGG NPNT CSTK 41LA FRIL KMSN PSDQ

DATE	SIGHT#	DOLPHIN CODES
19890912	8	BGSQ PMOR USMI
19890912	9	
19890913	1	F874
19890913	12	MSBB BTLB
19890913	13	HKMA HKMC SFHD
19890913	2	
19890913	21	F104 F132 F136 POOF UPR2
19890913	23	WTAB PRNS
19890913	24	LBSN CLBS TFBT NIB2 SCOB
19890913	25	PNSY ALHM
19890913	26	CHMP PN01 SLLP FNMA BOLT HNIP THRC RSFG KUBT
19890913	27	
19890913	28	CHTO BBET HFLY HSLW DEDO BNLN
19890913	4	ETFR SMET ETLN
19890913	5	LNKM LNKC
19890913	6	MDSF BUCB
19890913	7	
19890913	8	FNTM LVMN MSLS
19890913	9	FLTH NPKR FLBB TRK2 LBBT MTFS HNHN TNT3
19890914	10	LCMN CONS
19890914	11	WHIT HVTF
19890914	23	WHIT HVTF
19890914	24	BRCH ALHK MDS2
19890914	26	BUZN BOZO NFMS LRUF LFLG
19890914	27	ABEL LNKM THMS HSMB HSMS
19890914	29	PINC LSL1
19890914	3	LCDB
19890914	30	FB65 FB67 F104 F130 F132 POOF
19890914	4	F140 SUMO
19890914	5	F140 LA13
19890914	6	TMWG RP19 HNIP
19890914	7	SFAN
19890914	8	FB28 MSLB BTTV F116 KATT
19890915	21	F130 F132 F206
19890915	22	LFLM LA71 MDIN
19890915	23	URPL FLBC FLBT
19890917	2	LNBT 5NK2 WTAB PRNS
19890917	3	FNGD WHIT AAR2 HTHR TTOO RTLN FNMA SCBT NAMW WHNM SPNM
19890917	4	BOLT BZPN BZPC
19890917	5	RTMW
19890917	6	LBUT
19890918	2	FB70
19890918	3	CLLA FB20
19890918	4	F145 F147 SPGT

DATE	SIGHT#	DOLPHIN CODES
19890918	5	MORB
19890918	6	CSTK LSPL PSDQ NPNT TRNO HRLB FTMS ETMN TLN2
19890918	7	F130 POOF
19890924	5	POOF HAWK F156
19890926	1	F134
19890926	21	F104 F106 F132 HAWK
19890926	22	
19890926	23	49LA 49C2 F154
19890926	24	NNLA SSMB SSMC
19890926	25	LSB2 TSMV CTSM
19890926	26	MOON LSB2 FB36 FB38 PINC PRNS LSL1 MNCB LNBT
19890926	27	HAWK POOF F104 F106
19890927	1	FLMA FLMC
19890927	2	LAPL HGLS SHAT MDBK TNT3 MBLS HUMP TNMB HFMB LNDF MNTS FTMS
19890927	21	
19890927	22	ETMS
19890927	23	DULF
19890927	24	DULF THLN
19890927	25	NUNS
19890927	27	FLP2 HOS3
19890927	29	MJSU MTPN USLR
19890927	3	LBSH LNLN SHVB ETFR
19890927	30	TMWG LNTB BGSQ HNHW FTLN
19890927	5	SPGT RP19 R19C
19890927	6	F104 F106 F132
19890928	1	F206 F132
19890928	2	HAWK CONS FTTP
19890928	21	THOR
19890928	3	FB39 F143 F161 F164
19890928	4	F145 F147 F102 RP19 R19C SPGT HIQQ F160 F162 BALN
19890929	21	F145 F147 F156 F154 BALN HIQQ F160 F162
19890929	22	F156 F160 F162
19890929	23	CHWK BTMN FTMP BTHV FTD8 TOD8
19890929	24	TMLN TODB BTHV
19890929	25	CHMP FALC
19890929	26	CHTO PSBZ R61M
19890930	1	F145 F147 SPGT MSQS
19890930	2	MARM TBEL
19890930	3	SUMO F140
19890930	4	HKWT
19890930	5	ETSN BITE
19890930	6	HNLB
19890930	7	INHF SFAN
19891002	2	PN01 SKHK SKHC RNMA FLIP HIWN FLBT

DATE	SIGHT#	DOLPHIN CODES
19891002	21	FB63 FB22 FB25
19891002	22	PLOB THLA TTM3 TM31 ETHR DPST TFLG NIK2
19891002	3	FNMA FNMC TLON KMSL BGSQ NAAN MTSD HNDB ETHF ALHM
19891002	4	BUTF BTMN KUBT NPAL SBHN FLBT HBUK DEDO FTMP
19891002	5	
19891004	1	FB19 FB25 FB54 C542 FB05 FB15 FB97 FB55 FB03 FB63 FB22
19891004	2	MBOX
19891004	21	
19891004	22	
19891004	23	MBUT
19891004	25	TTM2 BANR
19891004	26	LCMN THBX HIBX PUZL
19891004	27	MTFS NUNS HSLV NUNC MORX
19891004	28	NUNS NUNC HSLV MTFS MORX BTLR
19891004	29	HKMA HKMC ETMW STEN SFHD SCTP MSBB TPNM BKLB
19891004	3	PN01 SPLT QLOB LFLG JAWM BZPN NITB KMLS RNMA FBLN TSAB URPL LNMA
19891004	30	TTHS
19891004	4	HFBG HNHN
19891004	5	STEN ETFR
19891004	6	TDNK
19891004	7	MTSD TDOT
19891004	8	SQBT TBEL MARM MRMS CKFC BTHV LNTB
19891004	9	F134
19891005	10	FB35 FB93 FB95 F871 FB13 FB21 FB24
19891005	2	F140 RTLN
19891005	23	MNP2 RLDX
19891005	24	LFLM LFLC PFLG LA71 MDIN LCAP PAPI PAPC
19891005	3	TNPF HNLB SFAN JBAK
19891005	4	TODB LA19 HWLS STPO
19891005	5	F145 F147 HAWK CONS SPGT FTTP TABB GITR MSQS F136 RTMW RTMC
19891005	6	THMN
19891005	7	F191 49LA 49C1 FJSR DRAC LMBT
19891005	8	FB09 HITS
19891005	9	FB07 FB79 FB76 FB10 FB32 FB34 FB46 FB66 TWHN F104 F106 F160 F162
19891006	22	F132 F130 F106 FB32
19891006	23	SNK2 WTAB
19891006	25	F102 F104 F106 F132 F134 F206 F160 HIQQ WTAB F136 SNK2 F162 BCLW POOF
19891007	2	FB25 FB27 FB97 FB26 FB48 RTLA
19891007	3	FB74
19891007	4	BTHV RTLN WHNM AAR2
19891007	5	F130 HLNK
19891009	22	FB08 FB18 FB44 F104 F106 F132 F134 POOF WTAB PRNS
19891009	23	LDBZ KMSN
19891009	24	FB73 F191 SURR

DATE	SIGHT#	DOLPHIN CODES
19891009	25	THOR HSMN
19891009	27	WHIT TLN2 KNCK
19891009	28	RTLN WHNM BTHV
19891010	3	MVPN PRNG
19891010	4	HPTR SNLA LCDB HDSQ
19891010	6	MW02
19891010	7	FB74
19891010	8	FB09

DATE	SIGHT#	DOLPHIN CODES
19900905	6	KNPN
19900905	7	LSPL CSTK M145
19900905	8	HKSK
19900906	1	F163 F154 F168 F156 LBMN FB48
19900906	51	FB39
19900907	1	LA84 L84C
19900907	3	NKMA NKMC
19900907	4	THBX SPEA LCMN PIFI
19900907	5	FNTM MSLS MORX
19900907	52	PRNS LNBT
19900907	56	FNGD SQBT NANT MORB CKFC
19900907	57	MSQS
19900907	58	JBAK
19900907	6	BGSQ
19900907	60	MOON SKHK SKHC FLAG LNTB RNMA RNMC FLIP
19900909	10	FNGD SPNM SPNC HTHR LNMA LNMC FTLN FLIP THRC
19900909	2	SUMO MRSL CMRS
19900909	3	ROOS STIP
19900909	4	F200 LBMN TNPF WARO SFAN RTFN INHF
19900909	5	JBAK JBAC
19900909	51	TBEL MARM
19900909	52	OLIL LNMA TNET ANMB TRBU UPSN BLUG
19900909	53	FNGD LNBT WTAB PRNS NIK2 STMN 5NK2 HIWN FLIP
19900909	54	F120 F124
19900909	55	LBMA
19900909	6	NFMS LRUF
19900909	7	HKWT
19900909	8	CPCR SCLP RCLV TINT HNSQ
19900909	9	DALS LNMA BABX FBLN VTHN TODB MBLN FLBT BUTF
19900910	1	F104 FB90 FB50 F134
19900910	2	MGWT MGWC
19900910	3	
19900910	4	THLA PLOB 2SDN MORN BFMB LSB2 CHK2 HKSK NIPP BRCH HNBT JIG3 ETHR TTM3 TSCB MPNM MPNC 2SDC SURR HBBT HBBC MLTS ALIN TNTN TFMS ETMA ETMC BTHS FJSR
19900910	5	TFMS
19900910	51	WTAB BTLN 5NK2
19900910	53	F105 1052
19900910	54	
19900910	55	SUMO
19900910	56	TBEL FLMB SUMO
19900910	58	F134
19900910	6	LOBE PLOB JAGG TSMV 41LA TFMS HNLN FB87 MNCB FB73 F191 FRIL
19900911	1	BTHV

DATE	SIGHT#	DOLPHIN CODES
19900911	52	
19900911	53A	F126 TTM2 TM21 STMN QLOB TNPF BABX JBAK TFBT SPLT LNLN QLOC BTTV RTFN UNLN
19900911	53B	TTM2 TM21 SPLT TFBT STMN QLOB
19900911	54	DALS FBLN FNMA MBLC PRN2 MWDG MBLN FNMC
19900911	55	
19900911	56	CHWK SBHN SQBT WHIT
19900913	51	
19900913	53	TTM3 TM31 RT90 FLGS UPBK TMHK SURR HSL4
19900913	54	THLA THLC ALIN MLTS MORN
19900913	55	
19900914	51	
19900914	52	RFHS
19900914	53	
19900914	56	SHAT DZSO TNT3 RBMS SQLF
19900914	57	
19900914	58	HGLS MSLS QLOB
19900915	51	ELFF
19900915	52	SNLA
19900915	53	MOTF MOGB
19900915	54	
19900915	57	LDMA LDMC WMPY WMPC THRC
19900915	58	MARM
19900915	59	FB51 FB79 FB59 F131
19900917	10	SKHK SKHC
19900917	54	HPTR BOLT BOLC SNLA
19900917	55	CKFC
19900917	56	LNBT PRNS SNK2 MBAB RTFN
19900917	6	RLDX
19900917	7	PFLG
19900917	8	BCRK
19900925	55	
19900925	56	F136 FB17 C172 FB28 F134 F191
19900926	1	SPLT SBHN RDPT CLBS PRG3 HLLB
19900926	10	FB67 C673 FB65 F163 FB09 FB11 FB57 FB53 FB59 FB26 F131 F168
19900926	2	SHVB
19900926	3	NUNS WVET KEYM LULP
19900926	5	MORX HFMA HFMC ELFM ELFC MTMM
19900926	51	
19900926	52	DDM1 HKMA DDMA
19900926	53	BUZN FRLB WGRV BANR LGMS
19900926	54	SMET STEN HFBG
19900926	56	SFLM SFLC HDMA JDFL ETTA
19900926	57	ZEUS LCLN SFHD

DATE	SIGHT#	DOLPHIN CODES
19900926	6	LSLS HSLN
19900926	7	GSLL WCMS LSLS UPRF
19900926	8	LTSM LTSC
19900927	14	CLLA FB20 F104 F132 F136
19900927	53	F104 F102 FB46 FB08
19900927	55	F191
19900928	1	LBMA LBMC
19900928	2	F105 1052
19900928	3	F162 F160 TABB SPGT SPGC SUMO MRSL HAIR GITR CMRS F126 RTMW MSQS F140
19900930	3	FB90 FB50 FB65 FB67 C673 FB84 FB92
19900930	4	FB94 FB66 FB76 FB26 F130 FB48 F106 FTTP F136 F102 F162 HIQQ F160
19900930	5	FB17 C172 F191
19901001	10	MOON
19901001	2	FMS2 ANET MDBK
19901001	3	GSLL MTMM HFMA MORX BTLS TPNC TPNM
19901001	4	BBAN FTTS LUFR STMN
19901001	5	CHTO HSLW
19901001	51	
19901001	53	TSCP USMB JDFL
19901001	54	LA51 SODS
19901001	55	FLBB SSLN HFBG HNHN
19901001	56	MBUT
19901001	57	LCMN SLLA FNTM LVMN MSLS STEN
19901001	58	THLN BGUB DULF STEN STNC
19901001	59	BBET HSMN
19901001	59A	LNLN BUZN NFMS LULP QLOB
19901001	6	ETSN
19901001	7	BOZO PFMB NIKO
19901001	8	LAMN BTLN MTGW SKSW BTMB HSET MOFF THMS
19901001	9	
19901002	1	HVTF
19901002	2	
19901002	4	MVPN PRNG
19901002	5	LOBE PLOB TFMS TFLG TMHK HNBT HNBC BHOP NOMS ETMA
19901003	3	F145 F147
19901003	52	F134 F105 F143 HAWK HIQQ LBMA
19901003	53	FTTP
19901003	54	
19901003	55	F163 F162 F160 F168 RP61
19901004	52	ELFF
19901005	1	F104 F102 F132 HIQQ
19901005	2	F102 F104 F132
19901005	3	F105 LNPF CLLA FTTP

DATE	SIGHT#	DOLPHIN CODES
19901005	4	CONS MSQS
19901005	5	F140 SPGT TABB SUMO RTMW SBLN MSQS GITR
19901005	6	MRSL
19901005	7	SCBT RTLN SFMH WHNM
19901007	51	F162 FB65 FB67 LBMN F160 C673 INHF
19901007	52	TABB SUMO SPGT F126 TUTR NIKO
19901007	53	F161 F164
19901007	54	TABB MRSL SPGT F126 LVMA MSLB HWLS MSQS GITR
19901008	51	FB36 FB38 FB27
19901009	1	TNPF
19901013	51	GTFG F161
19901013	52	RTFN
19901013	53	MSLB
19901013	54	ROOS
19901013	55	SUMO RP61 F161 STIP
19901013	56	TABB F147 F145 SPGT MSQS GITR MSQ2
19901013	57	FB07 FB09
19901014	51	SPLT SCLP FLGS QLOB
19901014	52	CPCR NOLA PN07 SHVB MDJG SCLP
19901014	53	F158
19901014	55	FB84 FB92 FB07 FB09

Dolphins Identified in 1991

DATE	SIGHT#	DOLPHIN CODES
19910903	1	BTLR WVET LDMS PNBT NKMA FGSF
19910903	103	F129 FB58 TNLV
19910903	2	NPKR WCMS ETFR FMS2 TNHB WKNI STMC HSLN VTHG LNPF TNMO STMA
19910903	3	BTMB THMS MTGW BTSP
19910903	51	ALHM THRM BTMB LUSL STFN TTRS
19910903	54	ECHO SMET TDOT HNHN DTMB UBLS MM28 RBSP
19910904	104	TABB SUMO SPGT SPGC GITR F147 MRSL F126
19910904	7	FB57 FB53 FB55 F102 F106
19910905	10	SCBT FLMB
19910905	103	FB28 F116
19910905	105	RP61
19910905	108	THRC
19910905	11	TBEL MNCB NIB2 CNI2 RTFN BTON SNSC
19910905	12	FB65 FB67 FB53 FB57 FB54
19910905	13	FB62
19910905	14	FB71 FB07 C071 FB29 F156 FB09 FB62 LNBT PRNS
19910905	15	FB33 FB63
19910905	4	HKLA ETMN SNIS BHIB LNET ARLA
19910905	51	BUZN NUNS ETMW MTPN AWRT
19910905	52	
19910905	53	TDN2
19910905	54	STPO MRBL ALN2 TRK2 HNNS SFLM DTLN PUZL SLLA ETTA
19910905	6	PFLG BTSP LCAP ETMB SMNC
19910905	7	ETMB THMS
19910905	8	LAMN KMSL HVTF
19910905	9	MTWF
19910906	101	CLLA
19910906	51	TRBU ANMB FLAG MOON TMLN SKHK SCBT TODB FLMB LA68 MTWT MBLN LOBE TBEL SNAG HMLS
19910906	53	YWMN WARO BTO3 PRGO STLB URPL SPIT
19910906	54	MJSU TNMB LNLN CLNN SPLT BUTF BUZN R61M DALS TBXS NPAL CLBS BTAS TALS PN01 NOLA HINP MYLV DEDO CDAL SPLC
19910909	102	MSLB F158 F157
19910909	105	FB94 FB66 FB76 FB33 LFLA STET
19910910	1	RTFN
19910910	101	FB11 FB55 TMSP F134
19910910	105	STIP ROOS MISH FB28 F116
19910910	3	BTLR TNMB SQF2 PNBT TPNM
19910910	4	HFMA HFMC MTMM CMTM
19910910	51	
19910910	52	NESS
19910910	53	GSLL MDSF BUCB
19910910	54	ABEL
19910910	55	WARO SCTP SPIT TTHS LVLD TDOT

DATE	SIGHT#	DOLPHIN CODES
19910911	1	WHIT CHWK MTWT TRBU FLMB SKHK SCBT DALS LA68 CDAL
19910911	2	
19910911	3	WCMS LTSM LCLN TPNM TDNK SHAT KEYM LTSC KEYC
19910911	4	SHAT TDNK LCLN TWSO
19910911	51	
19910911	55	BANR
19910911	56	TNT3 TTHS TTHC
19910911	57	PRGO FTMS
19910911	58	NPAL BUTF BTAS NKMA TALS FOFN CLMW EFLP YELP CLMC
19910911	59	CLBS BTMN QLOB HNSQ
19910911	60	F104 TULA NIK2 HWLS F132 MBOX MIDF TMSP
19910912	1	FB54 FB11 FB84 C845 FB05 F155
19910912	104	MRSL F105 1053 CMRS F168 F163
19910912	11	MNCB HNHW AAR2 LFLG BTMV SNSC
19910912	12	JIG3 HKSK
19910912	13	FB17 F191 FB73
19910912	2	FB26 FB48
19910912	3	FB33 F130
19910912	5	LSPL CSTK TNSN
19910912	52	VTHN STMN F160 SBPN TMSP UBMN LBHL
19910912	53	TABB F126 ROOS SUMO GITR F140 MAPO CHMP SPGT MISH
19910912	6	PAPI PAPC ZORO ZORC LCAP
19910912	7	
19910912	8	
19910912	9	PNSY PS72 MLCB LBPN PNSC
19910913	1	LBMN FB28 INHF SFAN F200 F116
19910913	10	FNMA ZOID
19910913	102	F136
19910913	2	SUMO TABB SPGT HSMS SPGC
19910913	3	F200 SPGT INHF FB28 SFAN TABB SUMO HSMS SPGC F116 GITR LBMN
19910913	4	BTTV KATT
19910913	5	MSLB RP61 F158 F157 SBLN
19910913	6	FTTP
19910913	7	JBAK JBAC
19910913	8	DZSO F206
19910913	9	PSDZ PSDC
19910916	1	RTFN
19910916	101	MSLB F157 F158 SBLN F210
19910916	102	FB28 F116 INHF SFAN TNLV F200 CONS
19910916	103	FB58 TNLV F129 CONS
19910916	104	RP61 FB28 F116 INHF CONS
19910916	105	F200 SFAN
19910916	106	BTTV SFAN KATT

DATE	SIGHT#	DOLPHIN CODES
19910916	107	TTM2 BABX URLN LDMA OLIL UNLN THRC TUSC HAW2 TT21
19910916	108	JBAK JBAC RTMW
19910916	109	LDMA THRC
19910916	110	OLIL BABX UNLN TTM2 HAW2 URLN
19910916	111	F158 F129 MSLB F116 FB28 TNLV FB58 F157 SUMO SBLN INHF
19910916	2	JBAK KEYM KEYC JBAC
19910916	4	LUFR HGLS SQF2 HFMB BRH2 FTTS SCRM MBXW
19910916	5	PNBT
19910916	52	HNHN UBLS RBMS
19910916	53	NKMA
19910916	55	SOPN FLTH SLLA NWLN TSCP HNNS TNHS MRBL BGTR HFBG
19910916	56	PIFI YELP
19910916	57	LNLN BUTF PN01 HNSQ NPAL BTAS FTHN CLNN CPN1 MYLV NOLA
19910916	6	FMS2 BBKB WKNI PNED FMSC
19910917	101	FTLN FTLC
19910917	102	F105 LBMA HBUK HAIR
19910917	103	LBMN FB28 MISH F157 MSLB F158 F116 INHF HSMS
19910917	54	LOBE TFMS KMBT SQBT TFLG MM62 41LA NOMS
19910918	101	SUMO PRNS LNBT SPGT FB48 FB26 MBAB F147 SPGC MSQS F170
19910918	102	F104 F132
19910918	103	NIK2 F102 FLGS HIQQ TMSP NOMS
19910918	104	NAMW
19910923	101	MGWT MGWC
19910924	1	SQNM
19910924	101	
19910924	2	KMSL WMPY HVTF KMSC
19910924	3	ETHF LAMN
19910924	5	RT90 BTON NOPO LSPT RT9C
19910924	54	
19910924	55	RTLN WHNM AAR2 NIPY
19910924	56	PRNG
19910924	57	F134 BUZL F172 HWLS NIK2 HLNK TBEL SBPN NKAL BTHS TMSP
19910924	58	LNST
19910924	59	LNBT HBMW
19910924	6	WTMA 49C2 TSMV HBMB PSDQ CPSD NNLA HAWK MCMA 49LA BBLN L4NK
19910924	60	FB57 FB53 FB75 F175
19910924	61	FB65
19910927	101	LULP WGRV HSLV MTSQ KEYM
19910927	102	ZEUS RCLV SOMV
19910927	104	TDN2 STEN
19910927	2	FTTP
19910927	3	TABB SUMO SPGT ROOS MRSL HSMS GITR SBLN F147 MSQS SPGC
19910927	4	SKHK HNIP HMLS

DATE	SIGHT#	DOLPHIN CODES
19910927	5	F126 STIP INHF F140 LBMN
19910927	51	LNST BGSQ UBMN TNST
19910927	52	RLDX
19910927	53	MOGB LFLM NIPY
19910927	54	THMS
19910927	55	MOGB NIPY
19910927	6	FB58 TNLV BTO3
19910927	7	BABX OLIL URLN UNLN BABC
19910930	104	F104 F134 FB27 FB67 FB65 FB62 FB76 FB66 FB54 FB20
19911002	1	CLLA FTLN FB20 FTLC
19911002	2	F104 F132 MRSL
19911002	3	MBAB F172 TWHN
19911002	4	F102 FB39 HIQQ
19911002	6	F134 F104 F132 CMRS
19911003	1	SFMH F124 AAR2 F120
19911003	101	STFN BCBX BCBC
19911003	103	KMSL
19911003	104	PSBZ TCSN
19911003	105	LNLN CLNN LBSH THIW FTHN MLTI
19911003	106	DALS TFBT BTRE CDAL FLBT FLBC
19911003	107	MOGB WMPY FTMS MOTF BTTN DINO
19911003	108	BCBX BCBC
19911003	109	HIQQ F102 NIK2 CMRS
19911003	110	F104
19911003	2	MGWC MGWT
19911003	3	F158 F157 F200 MSLB SFAN
19911003	4	TABB SUMO F126 SPGT NIK2 HWLS TMSP MSQS
19911003	52	PSDQ L4NK TRSC MTSS
19911004	1	FTTP F120 F124
19911004	101	PBMS HAWK
19911004	102	SURR TSC8 LOBE F130 FRIL ETMA BBLN JAGG MIDF LBDN BBLC ETMC HLNK
19911004	103	PINC LSL1 TTOO WHNM RTLN SFMH BBTT
19911004	104	F162 F136 FB07 C071 F160 FB55 F154
19911004	2	FB99 ROOS
19911004	3	TABB F126 SPGT SPGC SUMO FB28 F116 FTTP GITR CONS
19911004	4	F129 FB58 TNLV SKHK
19911004	51	FB70 FB72
19911004	52	HNBT HNBC TFLG ALIN BRCH
19911004	53	HBBT HBBC CAT2 MOLA HLNK SHOT HFFR MM62 SPIK HSL4 CHSL
19911004	54	F106
19911005	101	TTOO FLAG SFMH LBDN AAR2
19911005	103	DALS CHMP FTWT CLPN CDAL
19911005	104	BTM2 UNLN TNTB

DATE	SIGHT#	DOLPHIN CODES
19911005	105	ETSN PSBZ
19911005	2	TABB SPGT SUMO F126 GITR MSQS SPGC
19911005	3	F105 FB65 FB67 F161 F162 F149 F160 LNPF PLSC PTLS HAIR FB39
19911005	51	KMBT CHK2 BBLN NIPP MM62 CHKC
19911005	52	BGSQ BARF STMN PSBZ LNST USMI VTHN LLBN LBHL RUF2
19911005	53	URPL SQLF TFLG KMLS BTTN KSLW UBMN
19911009	55	F102 HIQQ
19911009	56	CHMA F170 CCHM
19911012	1	THOR
19911012	2	SPIK PBMS PBMC
19911012	3	ELFF HBMB HLNK ETMA LBDN
19911012	52	MRSL HITS 3HNK
19911012	53	F163 F168 HAWK FB57 FB53 F149 LBMA LNPF FTTP
19911014	101	LBMN MISH F157 F158 MSLB BOZO PFMB
19911014	102	RP61 F158 MSLB F157

Dolphins Identified in 1992

DATE	SIGHT#	DOLPHIN CODES
19920901	1	FB48 F826 F168 F124 F120 LBMA CONS INHF HITS MSQ2 ROTL
19920901	51	FB65 FB11 FB90 FB75 F175 FB27 FB17 F191 FB35 C651 F122 C354
19920901	52	THLA HKSK
19920901	53	LOBE PLOB TTM3 ETMA FLGS TMHK CAT2 TFMS MLTS JIG3 HBMB NACK ETSS MHBT MM68
19920902	2	MSLB F158 F157
19920902	3	FB28 F116 BTTV F200 SFAN KATT
19920902	4	FB58 TNLV
19920902	5	BOLT KUBT BZPN FLAG MWDG NITB HILB BOLC BZPC
19920902	51	CHMP PRNS LNBT FTMS BTTN HIWN
19920902	54	NPKR ZEUS LCMN FNTM LA21 BUZN MUBT SFHD DULF ETLN TNT3 STSG LGMS
19920902	55	LCLN
19920902	56	DALS SPLT NPAL FTHN HFMB GRLA BUTF FRNK THIW DEDO QLOB HLLB
19920902	6	NIPY
19920903	1	FB70 FB72 SNKR
19920903	2	THOR MDIN
19920903	4	RT90 MORN
19920903	53	LFLM THMS SMNC SMHK
19920903	55	TWHN F172
19920904	1	F835 FB75 F175 F134 FB90 FB09 FB32 F104 F132 F130 F162 FB65 F122 C354
19920904	3	FB70 FB72
19920904	51	LBMA
19920904	52	F154 F156 TABB F147 F124 SPGT
19920904	6	F136 F132 CMRS
19920907	1	FB28 MSLB F116 F157 F158
19920907	2	RTMW SNK2 F206 MARX MBAS FNGD UBMN
19920907	3	FB90 FB55 FB65 FB48 FB11 FB26 F106 F134 FB36 FB38 FB75 F175 HIQQ F132 F102 F160 F162 F104 F122 HITS
19920907	51	FB28 MSLB F158 F157
19920907	52	BTTV TSMN
19920907	56	DALS CDAL RUF2 HWLS SKHK
19920907	57	LBPN PS72
19920907	58	PNSY THRM ALHM PS72 LBPN BCBX LUSL LUSC NKJG BCBC ALHC CTHM
19920907	59	SNSC NIB2 CNI2
19920908	2	WTAB FNGD HTHR
19920908	3	FB28 F116
19920908	4	FB58 TNLV MSQ2
19920908	5	PFMB
19920908	53	ULWD
19920908	54	DILI
19920908	55	LDMA THRC BHIB
19920908	56	DMBK DMBC
19920908	57	KMSN SPIK

DATE	SIGHT#	DOLPHIN CODES
19920908	58	SPIK ELFF HVTF
19920908	59	FB70 HFFR SPIK KMSN KMBT MM62 LYLU
19920908	6	GITR GRIM
19920908	7	FB28 F116 STIP F140
19920908	8	FB58 TNLV MSQ2
19920909	1	UNIK GMBY
19920909	3	PAPI PAPC
19920909	4	THOR SNKR ETHF DIPY SMHK
19920909	5	NOPO LSPT
19920909	51	STIP
19920909	53	BTTV KATT
19920909	54	F129 GRIM GITR
19920909	55	F158 F157 RP61
19920909	56	MISH F157 MSLB FAL2
19920909	57	MSLB F158 MISH RP61 F140 TFBT LNMA FOFN NNIP BIST
19920909	58	VTHN STMN NNIP PINI
19920909	59	HKWT TODB RSFG SUR2
19920909	6	JIG3 BTLN F130 ETSS RFTN BTMV
19920909	7	MHBT HSL4 HIWN
19920909	9	SUMO F136 F134 F104 F132 F106 MRSL CMRS UPBK GTFG HITS POOF HNMW DBBN MBOX
19920910	2	F172 F104 F102 F132 BTLN TMSP JIG3 LNST HWLS HIQQ TMHK F160 F162 BUZL ETSS HNMW POOF MHBT L106
19920910	3	LFLG
19920910	4	FB05 FB07 FB09 F155 FB84 FB55 FB63 FB13 F160 SRAT C845 C055 F138
19920910	5	TBEL ARLA TLN2 ETMN NKAL MIDF SFRL CLSA STDO
19920910	51	TNLV FB58 MSQ2
19920910	52	FNGD HTHR
19920910	53	PRN2 NIKI BLUG
19920910	55	BRCH
19920911	3	BOLT SLLP RTMW RSFG RNMA TAL2 CTL2 MBLN SUR2 NACK
19920911	4	NPST BNLN CNPS CBNL
19920911	5	SKHK NPST LNDF
19920911	51	FNGD HTHR FALC PRN2 BLUG
19920911	53	FLIP RUF2 ETSN
19920911	54	SKHK LNDF
19920911	55	PFMB MYLV
19920911	56	HGLS DEDO LUFR BTMT BRH2 RCLV
19920911	57	NOPO LSPT TFLG DBBN
19920911	58	TSMV SPNM
19920915	51	SBLN 3HNK
19920915	52	LBMN
19920915	53	F102 F136 F104 HIQQ F132 POOF
19920916	4	TTM3 TM31 NOPO L4NK MTLR MPNM TFLG MPNC HBMB FJSR

DATE	SIGHT#	DOLPHIN CODES
19920916	5	RT90 HKSK MDS2 LSPT NIPP RFTN TFLG MPNM L4NK HBMB EFHT RFTC DIDO
19920917	3	TMHK MHBT FB70 SRAT HBMB LYLU TFLG TLN2 FLGS L4NK LCDB LOBE SCBT SHRD BGLS NOMS
19920917	4	TBEL NKAL SCTN NASC SCBT MOLA FLMB LBPN LA55
19920917	5	KMSL
19920917	51	F131 CONS SFAN F200
19920917	53	F106 F147
19920917	54	KATT BTTV
19920917	55	F129 WARO MSQ2 SPIT LRUF SKHK VTHN STMN FTWT
19920917	56	F129 GITR GRIM STIP FTTP MM72 SXNK
19920917	57	MM72 MTWT SNAG YAMO F126 STIP SXNK
19920917	58	DALS CHMP BOZO PRN2 FLLN LNTN MDJG HINP BTMN PFMB MBLN F158 F157 F129 HLLB NIKI PSNP MYLV CHMC CDAL LNT2
19920917	6	RLDX MNP2
19920917	8	LSPL RT90 FJSR SRAT TLN2 CLSA POLV
19920922	1	F126 HAIR TIBU
19920922	101	CPCR HNSQ
19920922	102	CPCR BARF HSLV TINT LULP MTSQ TCSN MORX TIPV DLNL BSLV HBWB
19920922	104	SFHD TNT3 DULF STSG
19920922	105	SMHW FSLP VTWW
19920922	107	ECHO THBX MM28 LBBT STEN HNHN PEND MNCH BBKB
19920922	108	ECHO STEN MM28 HNHN PEND MNCH HWKY BBKB
19920922	2	LBSH QLOB TTM2
19920922	3	HGLS BTO3 SQF2 LTIP MBLS TTHS BOLF TWSO
19920922	4	HFMB TNMB DZSO GRLA BXBT
19920922	5	SHAT UMLN EEEL BTFG NISQ
19920922	51	SPLT TAL2 HLLB FRNK HBUK PRG3 USLR MUSE TALC SPLC USLC
19920922	52	ZEUS FRLB TDOT FTHN SQLF MTSD SOMV LDHB HKD2
19920922	54	SFLM TRK2 STPO HNNS HWKB DTTP
19920922	6	MISH F126 ROOS LBMN STIP RP61 HAIR F140 TIBU
19920923	1	
19920923	102	PEND
19920923	103	ECHO MDBK ETFR
19920923	104	STEN MNCH
19920923	105	MM28 NWLN HFBG SMET NESS BBBN
19920923	106	LBBT
19920923	107	WGV2 ETMW NUNS SMET FSLP
19920923	108	RP61
19920923	109	F163 F129
19920923	2	NUNS
19920923	3	TNHS
19920923	4	JDFL
19920923	5	ETTA HWKB NPBT ANTT TNMO
19920923	51	LULP MTSQ DLNL TINT HFMB FLGM HBWB

DATE	SIGHT#	DOLPHIN CODES
19920923	52	SQF2 GRLA SCRM BXBT TINT BTLS BTO3 LTIP MBXW BOLF HBWB UBDS FTTP
19920923	53	FLP2 HOS3 CHS3 CFP2
19920923	54	
19920923	55	LBSH QLOB TWSO USLR NOLA CLBH QLOC
19920923	6	TDN2
19920923	8	SQLF ABEL WGRV MORX BGUB THLN DDMA TIPV BNLN TDOT DINO BBLK THMM
19920924	1	LEAT
19920924	101	HAIR F126 MM72 SXNK
19920924	102	TSCP USMB JDFL ETTA
19920924	2	LTSM HSLN
19920924	3	TTHS TTHC
19920924	4	TINT R61M HBWB TTHS NLSQ BTFG BTLS EEEL UMLN TNT3 TTHC
19920924	51	MM28 HKD2
19920924	52	BUZN BUZC
19920924	53	LNKM LNKC
19920924	54	HFBG MRBL NWLN ETFR
19920924	56	MM28
19920924	58	
19920924	59	TTM2 DALS SPLT MJSU MBLN PN01 LNLN BABX SSLN NOLA SPLC CDAL
19920924	6	F126 RP61 STIP MSLB HAIR FLBB
19920925	1	RTFN F129
19920925	2	JBAK JBAC
19920925	3	SHAT EEEL TNMB BTFG
19920925	4	PIFI RTFN PNBT YELP
19920925	5	
19920925	52	STEN
19920925	53	NWLN HFBG MRBL
19920925	54	
19920925	55	NPBT HDMA HWKY
19920928	2	ETHF BTHV USMI LNBT HBMW TUTR MNCB LBTY
19920929	1	F102 HIQQ
19920929	2	SBHN FLIP
19920929	4	R61M TALS FOFN TPBT
19920929	5	MOLA PN01 HINP BTAS HNSQ BUTF FOOP HAWK FRNK LNLN NPAL SBPE THIW BTMT MTLR TUSC LNT2 MYLV
19920929	6	BSLV TBXS SXNK LCMN NNIP TTRS MM72 NKMA
19921005	8	FB09
19921008	1	PLOB TFMS FLT2 LWMN
19921008	2	RTLN
19921008	3	PINC LSL1 BTON
19921008	5	MNCB LBTY
19921008	51	NKNN NKAL TBEL
19921008	53	SLLP NITB MM68

DATE	SIGHT#	DOLPHIN CODES
19921008	54	NPAL
19921008	55	PFMB YAMO MM72 NIKI SSLN FLBB
19921008	57	BLUG NIKI 5NK2 SXNK FOFN WTAB NPAL YAMO BTM2 LA68 PFMB BUTF MM72 FLBB HIWN SSLN
19921008	59	NNIP URPL KMLS KSLW HFLY
19921008	6	BOZO TAL2 LNMA DALS TUTR FTDB FLLN LBHL MBLN TFBT FRNK SCTN CDAL CTL2 MBLC
19921008	7	STMN TUTR UBMN LBHL IVTT SCGL HLIK HUBX CDOT

DATE	SIGHT#	DOLPHIN CODES
19930909	101	BOZO TTOO F163 PFMB MBLN TFBT TNST SBPE
19930910	101	BSLV
19930910	103	SCLP MNCH TJAW NESS PEND HFBG SMET TNHS FANG
19930910	51	JBAK JBAC
19930913	1	F157 FB26 FB48 MSLB TNLV FB58
19930913	101	DCAP
19930913	102	TNT3 HKD2 NESS HNHN SMET LVLD TDOT HWKS VANI TNPN LOBX STWB
19930913	103	NPBT USMB JDFL TSCP RTST
19930913	106	ETTA JDFL ANTT RTST
19930913	152	LNTB LNST HOWL
19930913	2	LCMN FTTP
19930913	4	FTMU
19930913	5	SPLT SPLC SLLP BOLT RUF2 STMN PN01 VTHN BTMT SBPE HOWL
19930913	52	FRLB
19930913	6	MISH LBMN GITR GRIM HAIR
19930914	1	SUMO FTTP
19930914	102	
19930914	2	BTTV KATT
19930914	4	GITR GRIM FTTP FLBB SSLN
19930914	54	NESS TJAW UBLS MNCH TNHS BGTR SMET TDN2 BBBN TNPN TUNI TIGO
19930915	1	FB99 BUTF CHMP HINP BTMN LNT2 STMN PSNP SCGL FALC HAW2 LOCS FINS
19930915	101	MISH F158 F200 FB99 F157 SUMO BTTV FB28 TNLV KATT FB39 FOFN CMRS F116 BKTT
19930915	2	PRNS
19930915	3	SUMO BTTV KATT HAIR
19930915	4	FTWT
19930915	53	STLB MLTI
19930916	101	SUMO CMRS F126 FTHN MTPN LNLN
19930916	103	DZSO UMLN
19930916	104	STMN FINS LOCS SKHK URLN
19930916	2	FLGM
19930916	4	ETTA ETHM
19930916	51	NKJG
19930916	52	
19930916	53	SMHK SMNC
19930916	54	PBMS
19930916	55	TLN2 CHMA LA38 TTNS SOFA
19930916	57	LFLG
19930916	6	DDMC TJAW MNCH HFBG UBLS DDMA SMET NESS WGRV VTWW
19930916	8	QLOB TCSN TALS R61M NOLA
19930916	9	BSLV FLIP SKHK BNLN TBXS SCSI FINK
19930917	1	HFBG ECHO SCRM
19930917	10	BSLV

DATE	SIGHT#	DOLPHIN CODES
19930917	101	TSMN CTSM
19930917	102	TNMB KEYM LBSH TPNM LA49 MTSQ STWB DLNL SULO
19930917	103	NPKR
19930917	104	HBUT FGSF
19930917	106	YELP CYEL PNBT MPNS MORX PNED PIFI
19930917	2	TDOT ECHO HFBG SCRM LA21
19930917	3	SCRM HFBG ECHO BUZN
19930917	4	SCRM ECHO HFBG
19930917	5	DDMA DDMC TNHS
19930917	51	FB20 TTRS PCUT
19930917	52	MLCB CMLC MIMI FTMM
19930917	53	MDIN
19930917	54	CHWI LFLM ECPS
19930917	55	CHWI SMNC LFLM BUMK MARS
19930917	56	
19930917	6	DDMA BUZN TNHS DDMC
19930920	1	F126 GITR GRIM SUMO F158 HAIR BIST
19930920	101	SQF2 SCLP
19930920	102	ZEUS SOMV MDBK TALS FTHN TBXS SFHD MBUT R61M DICE RFHS PLET
19930920	105	LA49 MTSQ KEYM DLNL LTIP TNMB BOLF
19930920	2	F129 SUMO YAMO CONS CONC BIST
19930920	4	FOOP LNT2
19930920	5	F116
19930920	54	MOLA LNTB TWHN LNST MNCB HOWL
19930920	55	PN01 TFBT TAL2 KUBT SCGL PRN2 MTLR ZIPP
19930921	1	WGV2 NUN2 ETMW LDHB
19930921	102	BABX TTM2 TUSC
19930921	103	PEND TSCP HSMN
19930921	104	NPBT
19930921	105	JDFL UBLS
19930921	106	TDOT ECHO MM28 BANR TJAW TNPN FSLP TNT3 MSLS LGMS LOBX TIPV VTWW BUZN HWKS VANI LVLD FANG TDN2 TIGO WGRV EFLP TPBN WDGI NUNS TUNI STBD
19930921	3	BTMT
19930921	4	PN01 CPN1 URPL
19930921	5	MM72 SXNK PRGO BUZL FTMS BTTN SBPN INDT
19930921	53	FOFN MLTI
19930921	54	INHF FOFN MSLB
19930922	102	TABB F147 SPGT
19930922	103	CLPN SBPE FOOP F120 TNET BUTF FAFT F124
19930922	104	THIW
19930922	105	WARO BTAS PFMB TNMB GRIM CONS GITR F126 TWSO F129 SPIT HAIR L130
19930922	4	HNHW
19930922	51	2SDN 2SDC JIG3 MLTS BRCH SHOT KMBT HNBT HNBC TFMS TFLG LNST LOBE JAGG UPBK HBBT MM62 HFFR ETMA BTHS MNIK DBBN WICK

DATE	SIGHT#	DOLPHIN CODES
19930922	52	TTOO LDMG TBBX
19930922	53	BGSP USMI
19930923	1	URPL FRNK HOWL
19930923	102	TAL2 UBMN FLBT LBHL FTMS PRGO BTTN CTL2
19930923	104	BKTT
19930923	105	ETMS BGUB MYLV CPCR PRG3
19930923	107	TWSO MYLV PFMB TSCP JDFL USMB CDOT NIKO
19930923	109	LVLD ETMS TIGO WGV2 BGUB TDOT NUN2
19930923	11	TNLV FB58 SPIT WARO 5NK2 BLUG LNBT WTAB HBMW NIKI
19930923	2	SPLT BOZO SPLC HOWL STLB PN01 FRNK FLLN
19930923	3	HWLS
19930923	51	TAL3 CTA3
19930923	55	LFLG LSPT
19930923	57	SPGT SPGC
19930923	58	F200
19930923	60	F126 F140 MISH GITR GRIM SUMO LBMN RP61 ROOS FTTP KATT F157 F129 MSLB BTTV HAIR LOCS CMRS BIST HUBX TNTB RFHM NPAL MJSU MTPN FTWT FOFN BUTF
19930923	7	F120 LDMA F124
19930923	9	FB20
19930924	1	BTMT SBPN NIK2 POOF LUFR MBOX F132
19930924	10	5NK2 WTAB MBAB LNBT
19930924	103	TPBT TPBC
19930924	104	BKTT BUTF NPAL LBSN SCOB MDJG
19930924	4	SPLT BOZO PN01 TAL2 MJSU TNST SBHN FLBT MUSE FLLN
19930924	5	BLUG NIKI
19930924	51	PFMB 5NK2 MBAB F170 TWSO PRNS STLB NIKO
19930924	53	TTM2 TM22
19930924	55	FRLB HFMB LBSH TPNM SULO PNED AWRT BNLN LCMN
19930924	57	DZSO
19930924	59	RUF2 FTMU
19930924	61	FB68
19930924	62	SPIT MORB LSL1 HWLS ALHK RTLN MRMS
19930924	8	LA68 TMLN
19930924	9	LA68 BTM2
19930927	201	DALS CDAL BOZO LNMA SLLP FOOP TFBT FLBT
19930928	103	TNT3
19930928	104	ETFR DTLN OPSS FGLS
19930928	107	FLP2 FTTS HOS3 BRH2
19930928	108	F120 F124 L130 TNHB
19930928	2	BTTV KATT
19930928	3	STIP RP61
19930928	5	F157 MSLB F200 SFAN
19931004	203	STFN

DATE	SIGHT#	DOLPHIN CODES
19931004	207	DRSN BFWT
19931008	153	HINI LINI
19931008	154	2SDN ALIN HNBT GTFG UPBK HFFR CAT2 BRCH MLTS TFMS BTM2 BTHS DBBN L106 HBBT NASC LA55 SHOT DEDO WICK
19931008	155	F112
19931012	201	PFMB F157 MSLB NIKO
19931013	204	TTRS TTRC
19931013	206	LFLM SMNC
19931013	208	LAMN HVTF RLDX TPSY
19931018	5	FB07 FB90 F122 FB11 F106 FB06
19931019	1	SFMH BOLT BBTT BLC2
19931019	2	F160 F162
19931019	3	PRNS FB68
19931019	4	MTWT ANMB SNAG WHIT FLMB PSBZ DEDO SCBT
19931019	5	TBEL LA68 DEDO BTM2 NKAL
19931019	6	CAT2 NIB2 HFFR DBBN NOMS NASC LA55 TFLG HUCH
19931019	8	ELFF 49LA LOBE 49C3 HNBT TWHN JAGG HBMB
19931019	9	BBLN TTOO TFLG ELFF TWHN
19931020	203	HAWK BABX GRIM F129
19931020	206	MISH SUMO BTTV F126 F162 KATT LNLN BIST