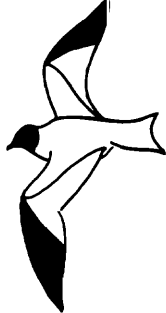


# WESTERN BIRDS



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## THE BIRDS OF SAN ELIJO LAGOON, SAN DIEGO COUNTY, CALIFORNIA

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A group of volunteers conducted monthly bird surveys at San Elijo Lagoon, San Diego County, California, over the ten-year period from November 1973 to October 1983. This paper summarizes the data gathered on these surveys and includes noncount records from before, during, and after the survey period to give a comprehensive picture of the lagoon's avifauna through April 1987. The large number of surveys (120) on a regular basis makes possible a quantitative assessment of each species' status.

### DESCRIPTION AND HISTORY OF THE SURVEY AREA

San Elijo Lagoon, one of eight coastal lagoons in northern San Diego County, is located at 33°00' N, 117°20' W, between the communities of Solana Beach to the south and Cardiff-by-the-Sea to the north, about 35 km north of the city of San Diego. The lagoon is shaped roughly like an hourglass, being between 0.3 and 1 km wide north-south and about 2 km long from the coast inland (east-west). State Road 21 and a railroad cross the lagoon near the beach, and the Interstate 5 freeway crosses in the center; all three run north-south.

The west basin (west of Interstate 5) has large areas of tidal mudflats, deep meandering channels, and emergent salt-marsh vegetation. The east basin is less saline and is filled largely with cattails (*Typha* sp.), one of the largest cattail stands in San Diego County. Bordering the lagoon on the north and south are alluvial slopes of unconsolidated material, covered mostly with scrub. In low areas where sand and silt have been deposited recently, a few dense stands of willows (*Salix* spp.) have grown up. A large stand of acacia, eucalyptus, and other nonnative trees occurs on the upper slope on the south side of the lagoon, just west of the freeway; a few scattered eucalyptus trees grow

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elsewhere on the upper slopes. Eroded sandstone cliffs rise above most of the alluvial slopes. Rather flat mesas extend back from the tops of the cliffs at elevations of 20 to 60 m. The survey area (Figure 1) includes the lagoon and the surrounding upland slopes but not the adjacent beach and ocean (nothing west of State Road 21) nor the mesa tops to the north and south.

The lagoon receives water intermittently from both the east and west. Two freshwater creeks feed the eastern end of the lagoon. At the beach, the tide flows into the lagoon only about half the time, when the mouth is not blocked by a sand berm. While the mouth is open, it tends to be closed gradually by waves, which wash sand into the inlet. The mouth remains closed until the lagoon water level rises (from freshwater runoff) high enough to overtop and wash out the berm. Then the lagoon drains rapidly and becomes tidal again. Typically, this cycle occurs a few times during the year, more frequently during the winter rainy season.

Several important man-made changes have altered San Elijo Lagoon. A railroad was first built across the lagoon in 1887, reducing water circulation. The coast road was built in 1932, the freeway in the 1960s. Between 1934 and 1973, sewage from several sources was discharged into the lagoon. Between 1937 and 1971, organized duck hunting took place, and several dikes and berms were constructed, many of which still remain.

Before and during the study period, the adjacent mesas were slowly converted from chaparral to housing tracts. Also, a section of the northeast alluvial slope was converted from chaparral to an agricultural field. In 1987, construction began on a community college on another portion of the northeast slope. These developments have led to an increase in human activity (jogging, birdwatching, motorcycling, walking of dogs, etc.) at the lagoon. Urbanization considerably increased the sedimentation rate into the lagoon (Barry et al. 1976), most noticeably in the northwest and southeast areas, where formerly wet areas are now sandy and being invaded by willows. Because of this, during the winter of 1981-1982 the San Diego County Department of Public Works carried out a scheme designed by the California Department of Fish and Game, clearing and dredging some of the east basin and creating a permanent water pool with two sandy islands to provide nesting habitat for Least Terns.

## METHODS

Because of several development proposals, Allen and Karin Altman organized in November 1973 a group of volunteers to survey the lagoon's birdlife monthly. Subsequent count leaders were Bill Lenarz, then Mona Baumgartel and John DeBeer.

Counts were conducted usually on the first Sunday of each month by 8 to 15 people. Table 1 lists the count dates. The lagoon was divided into five areas, and count paths were established in each area (Figure 2). Participants assembled between 0730 and 0800 and divided into four groups. One group covered both the NE and NW areas (NE first); the other three groups each took one of the other three areas (W, SW, and SE). Each group consisted of two or more participants, at least one of whom was familiar with the local birds and the count path.

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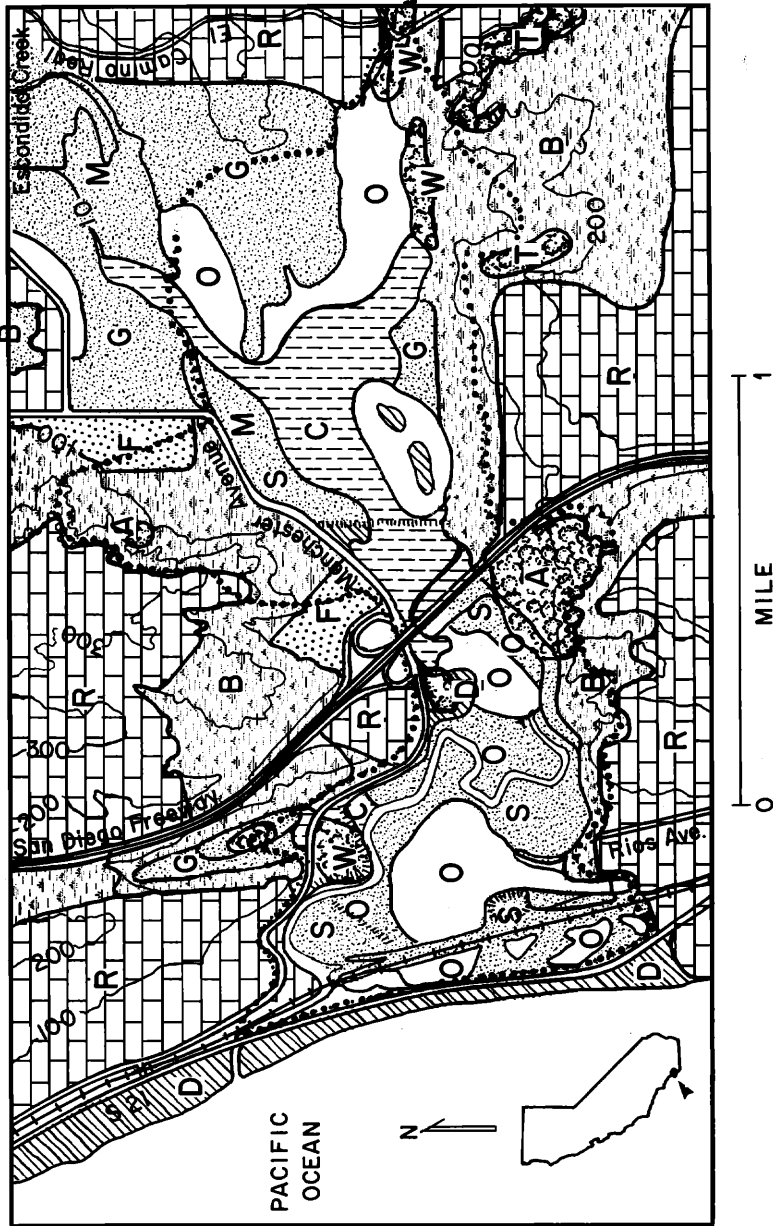


Figure 1. Vegetation of San Elijo Lagoon. The survey area is inside the dotted line. A, acacia and eucalyptus trees; B, brush (sage scrub and chaparral); C, cattail marsh; D, dry open sandy areas; F, agriculture, mostly vegetable farms; G, dry grass and pasture; M, wet grass meadow; O, open shallow water or mudflat; R, residential area; S, *Salicornia*, flooded during high water; T, oak grove; W, willow thicket. Unlabeled white areas are permanent water.

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**Table 1** Dates of Monthly San Elijo Lagoon Surveys

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1973											4	2
1974	6	3	3	7	5	2	7	4	8	13	10	8
1975	5	16	9	6	4	1	6	3	7	5	9	7
1976	11	1	7	11	2	6	11	1	12	10	7	5
1977	9	6	13	3	1	5	10	7	4	2	6	4
1978	8	5	19	2	7	4	2	6	10	1	5	3
1979	7	4	4	1	6	3	8	5	9	14	4	2
1980	6	10	2	13	4	1	13	3	7	12	2	7
1981	11	1	8	5	3	7	12	2	6	4	1	6
1982	10	7	7	4	2	6	11	1	5	3	7	5
1983	9	6	6	10	1	5	3	7	4	2		
Average	8	6	8	6	4	4	9	4	8	8	6	5

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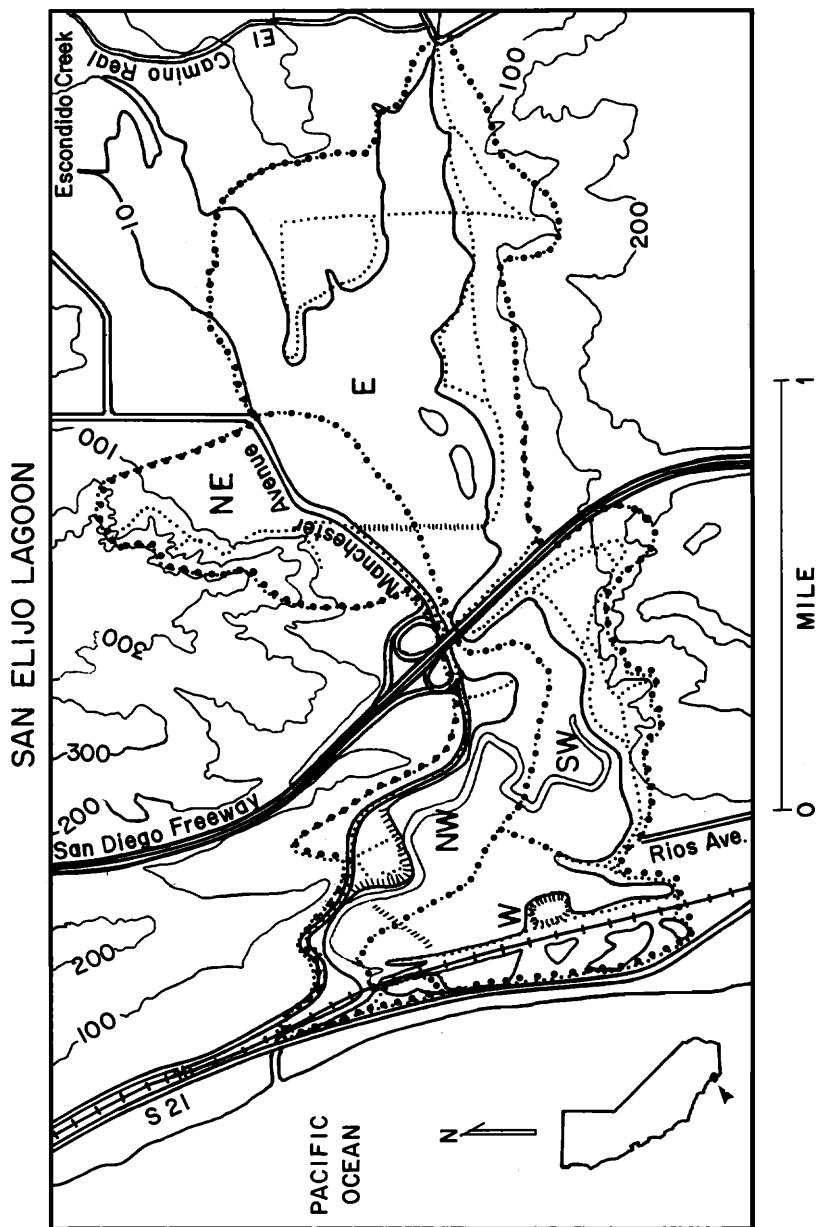


Figure 2. The five survey areas at San Elijo Lagoon. Heavy dots, survey area boundaries; light dots, trails.

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**Table 2** Area Surveyed, Time Spent, and Distance Traveled in Different Habitats during Each Monthly Survey\*

Habitat	Area (ha)	Time (h)	Distance (km)
Woodland (acacia, eucalyptus, and willow)	20	2.5	1
Brush (sage scrub and chaparral)	90	7.0	7
Cattail marsh	180	3.0	2
Open water, mudflat, sand, wet grass, and <i>Salicornia</i>	60	10.5	8
Dry grass and pasture	20	1.0	1
Total	370	24.0	19

\*Total times and distances are about 1.5 times the amount actually spent and traveled since frequently more than one type of habitat was being surveyed at a time.

Groups recorded all identified birds plus date, area, weather, water level, and observers on a field card. Table 2 shows the amount of time and the distances traveled in each type of habitat. Leaders had some flexibility in the amount of time spent at different locations, and groups frequently made a special effort to find birds known to be in their areas in low numbers. Nevertheless, each group covered its entire path and returned by noon for a compilation.

To produce this paper, we entered the count totals plus the data for each area into a computer and cross-checked them to eliminate errors. We then compared our data for each species with the information in Garrett and Dunn (1981) and Unitt (1984) and with our own knowledge of local bird distribution. We deleted or put into unidentified groups (e. g., *Empidonax* sp.), as appropriate, isolated unseasonal sightings and sightings of rare birds that were not verified independently. Two sightings of a Sandwich Tern (*Sterna sandvicensis*), 16 May 1982 (TM) and 24 Apr 1987 (SW), were deleted by the editor because they have not been evaluated by the California Bird Records Committee. The number of changes was small; we changed fewer than 100 data points out of a total of over 51,000. Systematic variations from published information were rare and usually minor (e. g., Heermann's Gull). The data we present are based primarily on the 120 monthly surveys; all statistics were computed from the survey data only. For rare species, however, we attempted to compile all available records. We also cite noncount records for more common species if they are unseasonal or represent exceptionally high numbers for the lagoon. Noncount data from before 1960 are limited mostly to a few specimen records.

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Breeding activity was not systematically sought or recorded on most surveys, so the breeding status of many species is not well known. To remedy this partially, we made a special effort during the spring and summer of 1982 and 1983 to note evidence of breeding on both count and noncount days.

The original data sheets, edited survey data on 5.25-inch floppy disks (ASCII files readable on a personal computer with an MS DOS operating system), computer printouts, and relevant reports have been archived in the library of the San Diego Natural History Museum under the title "San Elijo Lagoon Monthly Bird Survey."

### DATA INTERPRETATION

For a few conspicuous species (e. g., Great Blue Heron), the number recorded on each count was probably close to the number actually present in the survey area. Most species, however, undoubtedly were systematically undercounted, a major unresolved problem with bird censuses (see Ralph and Scott 1981). The amount of undercounting varied not only between species but also with season, weather, and observer skill (see Dawson 1981a). A number of species were more vocal or conspicuous during the breeding season (e. g., Rufous-sided Towhee). Others (e. g., Blue-winged Teal) were in more easily identifiable plumage at certain times of the year. The weather during the counts was generally benign; however, occasional bad weather probably reduced numbers found (see Robbins 1981). Variability in the skills of individual observers had an unquantifiable, but surely major, effect on the number of birds recorded (see Faanes and Bystrak 1981). In the species accounts, the numbers given are the numbers recorded except for the few deletions described above. We made no other attempt to calibrate the data to account for these or other effects.

However, most of the variability from year to year in the number of birds recorded appeared to be due to true variability in the number of birds rather than to various forms of observer error just discussed. For instance, there was considerably less variation in territorial species than in gregarious species. Typical values of the coefficient of variation (the standard deviation divided by the average) ranged from around 0.5 for territorial birds (e. g., Northern Mockingbird) to 1.0 or higher for some gregarious birds (e. g., ducks). This variation, due to many factors, was large but is expected in biological data (see Cushing 1962).

For virtually every species, the distribution of numbers counted in any particular month was positively skewed. That is, there were a few values much higher than the average without corresponding values much lower than the average. (The data followed a Rayleigh rather than a Gaussian distribution.) This tendency, more evident in flocking than in territorial species, is an example of temporal patchiness, a common biological phenomenon (see Dawson 1981b). Because of this skewing, a few years' of data would not have given a reliable picture of the distribution of most species. Over 10 years, however, the fluctuations averaged out so that the plots of average numbers by month curved smoothly (for example, see Table 3).

In the species accounts, we give two measures of the central tendency, the average and the median. Someone interested in the long-term use of the

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**Table 3** Example of the Data: Numbers of Pied-billed Grebes Seen on Each of the Monthly Counts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1973											67	30
1974	14	8	3	4	1	4	4	7	11	15	6	4
1975	4	4	4	3	1	0	1	1	2	2	5	1
1976	5	5	4	0	7	5	11	6	1	8	18	4
1977	4	1	4	0	2	16	2	4	4	9	1	10
1978	39	1	8	5	1	3	0	5	1	1	4	5
1979	1	5	9	5	0	2	3	20	23	16	25	7
1980	13	28	4	4	11	5	3	1	2	5	15	7
1981	7	19	4	12	13	10	10	9	17	16	7	16
1982	5	10	14	6	3	7	12	1	10	8	16	3
1983	8	17	9	2	15	10	19	30	46	26		
Average	10	10	6	4	5	6	7	8	12	11	16	9
Median	6	7	4	4	3	5	4	6	7	9	11	6



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lagoon by a particular species might find the average value most useful, while someone visiting the lagoon for a day would probably be more interested in a median value. These two numbers also allow qualitative inferences about the variance and skewness. Because the data are skewed positively, the average values are greater than median values. If the average and median are relatively close, the variance and skewness are smaller than if the average is much greater than the median.

### DISTRIBUTION OF SPECIES

Of the 281 species recorded at the lagoon, 46 are rare visitors not recorded on any monthly surveys. Another 70 species were recorded on  $\leq 5\%$  of the counts. Together, these 116 rare species constitute 41% of the species list for the lagoon. At the other extreme, 35 species were seen on 95% or more of the counts, including 17 species that were found on all counts.

The average numbers of water bird species, land bird species, and total species recorded per month (about 90) are shown in Figure 3. The highest number of species occurred during spring migration, largely a result of late-departing wintering birds overlapping with early-arriving summering birds, with water birds peaking in April and land birds peaking in May. The maximum number of species recorded on a count was 114 on 7 April 1974, and the minimum number was 68 on 12 July 1981.

Figure 4 shows the average number of birds of all species recorded per month. The average number of land birds (asterisks) remained fairly constant

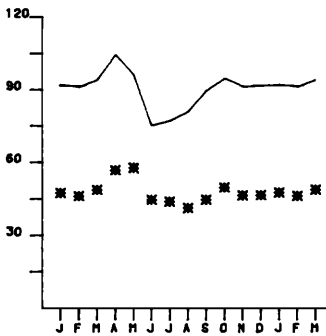


Figure 3. Average number of species recorded at San Elijo Lagoon by month (solid line).

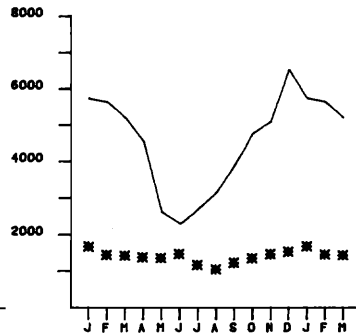


Figure 4. Average number of individual birds recorded at San Elijo Lagoon by month.

Solid line, number of total species; asterisks, number of land bird species (Falconiformes, Galliformes, Columbiformes, and all subsequent groups in the A. O. U. (1983) checklist). Thus the distance between the asterisks and solid line represents the number of water bird species.

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throughout the year, while the average number of water birds decreased greatly from winter to summer.

While the numbers of species and of individual birds reported from San Elijo Lagoon are impressive, the area is not a "vagrant trap." San Elijo Lagoon is important to birds not so much because of the high number of species but because so many species use the area regularly. This is demonstrated by the large number of species, 131 (47% of total), that has been recorded on at least half the counts during at least one season of the year.

### CHANGES IN THE LAGOON AVIFAUNA

One purpose of the 10-year survey was to determine whether and how the avifauna of the lagoon was changing. Figures 5 and 6 show the average number of species and birds, respectively, recorded at the lagoon on each monthly count by year. Clearly, the gross distribution of birds at the lagoon did not change significantly during the survey.

We then analyzed each species to determine which had increased or decreased during the count period. For each species, we plotted the total number seen per year versus year and used a two-tailed Student's *t* test to determine if a least mean square line through the plot had a significant nonzero slope. We combined the results of this (objective but simplistic) test with our understanding of each species' status (a subjective but more complex test) to determine which species were increasing or decreasing.

Numbers of only 25 species changed significantly during the survey. Twelve species increased: Brown Pelican, Double-crested Cormorant, Least Bittern, Great Egret, Mallard, Gadwall, American Wigeon, Red-shouldered Hawk,

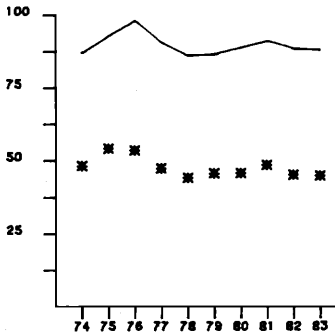


Figure 5. Average number of species recorded at San Elijo Lagoon in each month by year.

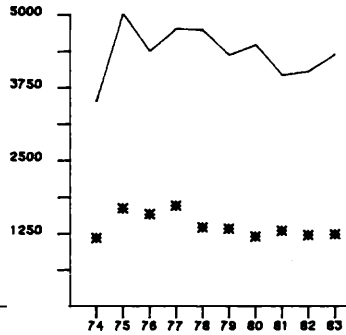


Figure 6. Average number of individual birds recorded at San Elijo Lagoon in each month by year.

Solid line, total species; asterisks, land bird species (see Figures 3 and 4). The year "74" corresponds to the twelve counts from November 1973 to October 1974, etc.

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Anna's Hummingbird, Cassin's Kingbird, Black-tailed Gnatcatcher, and Hut-ton's Vireo. Thirteen decreased: Snow Goose, Canvasback, California Quail, Common Snipe, Greater Roadrunner, Horned Lark, Violet-green Swallow, Rough-winged Swallow, Cactus Wren, California Thrasher, Wilson's Warbler, Song Sparrow, and House Sparrow. More species than this probably changed their status at the lagoon, but these changes were masked by the variability in the data.

Although the reasons for many of these changes are unclear, a few associations suggest themselves. Five of the increasing species are herons and ducks whose primary habitats include shallow water or shorelines, whereas the one decreasing duck uses deep water, correlating with the lagoon's siltation. Very preliminary results of study by Michael Soule of the fauna of 37 canyons in San Diego isolated by housing subdivisions, reported in an interview (Stewart 1987), indicate that small, long-isolated canyons have lost the greatest number of chaparral-dependent birds. The California Quail, Greater Roadrunner, and California Thrasher were found to be the first species to disappear from these isolated canyons. Our results agree with these findings and show that the birds of San Elijo Lagoon are being affected by the adjacent suburban development.

We examined in detail changes in numbers of water birds in the east basin during the last two years of the survey because of the dredging and island construction done in 1981. Numbers of no species noticeably decreased in the east basin from 1981 to 1983. Pied-billed Grebes, Double-crested Cormorants, and Ruddy Ducks increased throughout the year, evidently as a result of the increase in the extent of deep water. Spotted Sandpipers increased during the summer, but this reflects their southward range expansion, not an effect of island creation. Least Terns increased in 1982, the first year they nested on the island, but decreased subsequently (see further information below under Status of Endangered Species).

### STATUS OF ENDANGERED SPECIES

Of special interest are the population levels of endangered species. Eight species on California and/or Federal Threatened, Rare, or Endangered Species lists have been recorded at the lagoon; another 28 species are on the California "Species of Special Concern" list (Remsen 1979). Six of these 36 breed regularly at the lagoon: Least Bittern, Light-footed Clapper Rail, Snowy Plover, California Least Tern, California Black-tailed Gnatcatcher, and Belding's Savannah Sparrow.

The Least Bittern was observed regularly in summer in small numbers during the last six years of the count. It is unclear whether the paucity of records in the first four years (one sighting) was because the birds were absent or merely overlooked. Count participants made a greater attempt to locate this species in the latter years of the count when it came to be expected. Most sightings were in dense cattails east of the freeway.

In 1981, the Clapper Rail was discovered breeding at San Elijo Lagoon in an uncharacteristic habitat, the cattail marsh east of the freeway (R. L. Zembal in Unitt 1984). Clapper Rails were found that year in similar habitats at a number of other locations in southern California. It is unclear whether the rail was overlooked at these locations in the past, whether it had expanded

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(temporarily?) into a new habitat, or whether it was being driven into marginal habitat by deterioration of its preferred marshes. During 1984 and 1985 the populations of Clapper Rails crashed throughout southern California (McCaskie 1986). The fate of the San Elijo birds is not known for certain because no recent extensive searches have been made for them; however, no observers have reported them since 1983.

Snowy Plovers have nested at San Elijo Lagoon at several locations east of the freeway with varying success. Some of these nesting attempts were reported by Page and Stenzel (1981). Nesting success has been low primarily because of fluctuations in water level. In 1982, one pair bred successfully on the newly created islands in the east basin, and 10 to 15 pairs bred there in 1983. Their subsequent numbers and success there are unknown.

During the count period, the Least Tern has nested regularly at San Elijo Lagoon. Between 1974 and 1981, 2 to 20 pairs nested at various sandy spots around the lagoon without establishing a permanent colony site. Nests were usually in insecure locations and were subject to destruction by high water, predators, and motorcyclists. During the summer of 1982, approximately 35 pairs nested on the newly created islands east of the freeway. In subsequent years, however, the colony decreased, to about 25 pairs in 1983, 17-22 in 1984, 13 in 1985, 9 in 1986, and 13 in 1987. Their success has remained low (at most 10 fledglings in 1984, none in 1985, two in 1986, and four in 1987), as a result of continued predation (E. Copper pers. comm.).

The California Black-tailed Gnatcatcher is easily overlooked and confused with the Blue-gray Gnatcatcher by observers unfamiliar with its call. Therefore, its status at the lagoon is not entirely clear. This gnatcatcher was seldom recorded at the lagoon during the summer until 1980, after which a few were noted regularly. One nest with four young was found in the southeast area in June 1980. Therefore, it appears that in 1980 the Black-tailed Gnatcatcher colonized the lagoon or at least increased. This is a hopeful sign but does not negate the serious regional decline of this species shown by Atwood (1980).

The Belding's Savannah Sparrow is easy to recognize in the field and was recorded separately from migrant Savannah Sparrows. It is a common resident, recorded on all counts, but the data show a decline in the number of birds (6% per year) over the years of the count. This rate translates into about half as many birds at the end of the survey as at the beginning. While this decline is not pronounced enough to be unequivocal (because of scatter in the data), there is considerable cause for concern.

## SUMMARY AND RECOMMENDATIONS

This study found that San Elijo Lagoon is an important location for birds for three reasons. First, it is a breeding locality for six rare or endangered species. Second, it is used by a large number of birds, most notably wintering water birds. Third, it is an area that is regularly used by a large number of species. The state and county have recognized the importance of San Elijo Lagoon by declaring it an ecological preserve. However, urbanization continues to degrade the habitat. Ideally, a buffer zone of open space should separate the lagoon from the surrounding development, and corridors of undeveloped, natural habitat should link the lagoon to other undeveloped

areas. Residential and industrial developments should be planned to minimize erosion and the subsequent siltation of the lagoon basins. This study has shown serious cause for concern at San Elijo Lagoon for three endangered species: the Clapper Rail, the Least Tern, and the Belding's Savannah Sparrow. As these birds are also doing poorly throughout their southern California range, clearly much more effort must be directed toward their preservation. The nesting islands in the east basin do not appear to have been of lasting benefit to the Least Tern, possibly because predators have learned that the colony is an easy food source. Furthermore, creating sandy islands by removing cat-tails and *Salicornia* marsh entails a loss of habitat for Least Bittern, Clapper Rail, and Belding's Savannah Sparrow.

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## SPECIES ACCOUNTS

The first of the two numbers following the scientific name of each species on this list is the total number of birds seen on all 120 monthly counts. The second is the total number of counts (out of 120) on which the bird was recorded. If both numbers are zero, the bird was recorded on noncount days only. Next is a qualitative assessment of the bird's abundance. Terms are defined as follows: abundant = average of > 100 per count, very common = average of 30-100 per count, common = average of 10-30 per count, fairly common = average of 3-10 per count, uncommon = average of 1-3 per count, occasional = average of < 1 per count, rare = found on 5 or fewer counts, exceptional = very few records for coastal southern California. If a species was recorded on five or fewer counts, all known occurrences (both count and non-count) are usually listed. Numbers in parentheses following dates refer to the number of birds seen on that date. If only one bird was seen, the number and parentheses are omitted. If a species was seen on more than five counts, the average and median in a given season are listed, separated by a slash. For example, "Ave 11/7 Sep-Feb" should be read as an average of 11 and a median of 7 birds seen on the monthly surveys from September to February. If the median is zero, it and the slash are omitted. No noncount data were used to compute averages or medians, which are rounded to two significant figures. Frequently, not all months are mentioned; statistics for unmentioned months are intermediate between those for mentioned months. Bear in mind that the surveys took place near the beginning of the month (average date the 6th; see Table 1).

Also included are any early, late, or unseasonal records, the maximum number of individuals reported for the lagoon, and the species' breeding status. These may be count or noncount data. "Common breeder" indicates that several pairs bred each year; "yearly breeder" indicates that one or a few pairs bred each year. In addition to the 280 main species on this list, several supplementary entries, enclosed in brackets, are included for any of the following reasons: (1) More than 5% of the individual birds of a group were not identified to species (e. g., dowitcher sp.). In these cases the data for the group as a whole are discussed before the individual species. (2) The species has been reported at the lagoon, we believe reliably, but without a specific date. (3) The species has occurred very near the lagoon and can reasonably be expected at the

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lagoon. Not included in this group are coastal or pelagic species which may be seen from shore. (4) All records are presumed or known to pertain to escaped captives or hybrids. We rarely kept records of exotic species.

Dated records cite the first published source unless a later source discusses the record more fully. AB refers to *American Birds*, AFN to *Audubon Field Notes*. Specimen and egg records are indicated by museum and number: SD refers to the San Diego Natural History Museum, SB to the San Bernardino County Museum, and WF to the Western Foundation for Vertebrate Zoology. Unpublished noncount records are indicated by the observer's initials (see acknowledgments); records without sources are from the monthly surveys. Some uncited records from the monthly surveys have been published previously by Unitt (1984).

Red-throated Loon *Gavia stellata*. 0, 0. Rare; 3 Dec 1972 (SS).

Pacific Loon *Gavia pacifica*. 1, 1. Rare; one in breeding plumage 27 Apr-4 May 1980 (TM).

Pied-billed Grebe *Podilymbus podiceps*. 1041, 115. Common in fall and winter, fairly common in spring and summer. Ave 11/7 Sep-Feb, falling to 5.7/4 Mar-Jul. Max 67 on 4 Nov 1973. Yearly breeder.

Horned Grebe *Podiceps auritus*. 10, 5. Rare winter visitor; 10 Oct 1976, 13 Oct 1974, 5-11 Jan 1975 (6) (SS), 8 Jan 1978, 9 Mar 1975.

Eared Grebe *Podiceps nigricollis*. 1669, 96. Common in winter, uncommon in summer. Ave 22/9 Oct-Apr, falling to 1.3 Jun-Sep. Max 250 on 6 Feb 1983. Bred in 1968 (AFN 22:647, 1968).

Western Grebe *Aechmophorus occidentalis*. 205, 47. Fairly common in winter, rare in summer. Ave 3.2/2 Nov-Apr. Jun-Sep records 7 Mar-1 Aug 1976 and 13 Jul 1980. Max 22 on 5 Dec 1976.

Clark's Grebe *Aechmophorus clarkii*. 1, 1. Not distinguished from Western Grebe during most of the count period. Identified on 8 Nov 1986 (RP) and 9 Jan 1983.

American White Pelican *Pelecanus erythrorhynchos*. 4, 2. Rare from fall through spring; 2 Nov 1985 (BF), 7 Nov 1971 (AF), 2-5 Dec 1973 (SS), 16 Jan 1982 (BM), 17 Mar 1970 (PMcB), 11 Apr 1976 (3), 29 May 1970 (AF).

Brown Pelican *Pelecanus occidentalis*. 335, 18. Increasing; 1980-1983, very common in fall and uncommon in winter. Ave. 1980-1983 61/40 Oct, 1.8 Nov-Feb, none Apr-Jun. Only one record, 11 Jul 1976 (2), 1973-1979. Max 160 on 4 Oct 1981.

Double-crested Cormorant *Phalacrocorax auritus*. 2956, 99. Very common in winter, fairly common in summer; increasing. Ave 34/32 Oct-Apr, falling to 4.6/1 Jun-Jul. Max 150 on 1 Feb 1981.

Magnificent Frigatebird *Fregata magnificens*. 0, 0. Rare summer visitor; 26 Jun 1976 (WTE), 6 Jul 1985 (JO).

American Bittern *Botaurus lentiginosus*. 73, 45. Occasional, mainly in winter. Ave 0.9/1 Nov-May, 0.2 Jun-Oct. Max 4 on 4 Nov 1973, 4 Mar 1979, and 1 Apr 1979.

Least Bittern *Ixobrychus exilis*. 27, 17. Uncommon in summer, rare in winter. Only one record, 7 Apr 1974, in first four years. Ave 1979-1983 1.0/1 Jun-Oct. One winter (Nov-Mar) record, 7-17 Jan 1979 (AB 33:312, 1979). Max 3 on 1 Jun 1980 and 7 Jun 1981. Bred in 1980 (TM) and 1982 (RW) (see also under Status of Endangered Species).

Great Blue Heron *Ardea herodias*. 1086, 120. Fairly common nonbreeding resident. Ave 9.8/8 Jun-Mar, 5.4/5 Apr-May. Max 31 on 7 Mar 1982.

Great Egret *Casmerodius albus*. 1147, 90. Common in winter, uncommon in summer; increasing. Ave 15/9 Oct-Apr, falling to 2.3/1 May-Sep. Max 98 on 4 Oct 1981.



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Snowy Egret *Egretta thula*. 2393, 107. Very common in fall, common in winter, fairly common in summer. Ave 50/26 Sep-Oct, 18/14 Nov-Apr, 5.7/4 May-Jul. Max 280 on 4 Oct 1981.

Little Blue Heron *Egretta caerulea*. 0, 0. Rare; single adults on 20 May 1978 (TM) and 19 Jun 1977 (AB 31:1188, 1977).

Tricolored Heron *Egretta tricolor*. 2, 2. Rare; nine records 5 Oct-4 Mar; one 5 Jun 1977 (JDeB). Only three winter records since 1972: 16 Nov 1980 (TM), 3 Jan 1979 (MB), and 23 Feb-4 Mar 1979 (AB 33:312, 1979). Max 6 from 1 Nov to 23 Dec 1963 (McCaskie 1964).

Reddish Egret *Egretta rufescens*. 0, 0. Rare; 29 Sep 1968 (AFN 23:107, 1969), 13 Dec 1969 (PMcB). The bird seen 11-18 Sep 1962, ascribed by Unitt (1984) to San Elijo Lagoon, was actually at Batiquitos Lagoon, 8 km north of San Elijo (AFN 17:67, 1963).

Cattle Egret *Bubulcus ibis*. 6, 4. Rare in fall and winter; 15 Oct 1986 (J & DS), 3 Dec 1978 (2), 6 Dec 1981, 7 Dec 1980, 8 Jan 1978 (2).

Green-backed Heron *Butorides striatus*. 207, 83. Uncommon resident. Ave 2.3/2 Jul-Nov, falling to 1.3/1 Jan-Jun. Max 9 on 3 Apr 1977. Bred once in "mid 1970s" (JB).

Black-crowned Night-Heron *Nycticorax nycticorax*. 1267, 112. Common nonbreeding resident. Ave 11/8 throughout year. Max 200 on 11 Sep 1963 (GMcC).

Yellow-crowned Night-Heron *Nycticorax violaceus*. 5, 5. Exceptional. One probable immature 1-11 Nov 1963 (McCaskie 1964); one adult recorded intermittently 25 Oct 1981-21 Jun 1986 (Binford 1985, Morlan 1985, AB 40:1255, 1986), presumably the same bird found intermittently in a night-heron rookery at the Scripps Institution of Oceanography, La Jolla.

White-faced Ibis *Plegadis chihi*. 474, 37. Fairly common in winter, uncommon in summer; sporadic. Ave 5.9 Oct-Apr, 1.2 May-Sep. Max 60 on 2 Mar 1980, summer max 20 on 4 Aug 1974 and 3 Aug 1985 (DK).

Wood Stork *Mycteria americana*. 1, 1. Rare in summer; 25-26 May 1986 (AB 40:523, 1986), 30 Jul-3 Aug 1975 (AB 29:1030, 1975), 31 Jul-2 Aug 1964 (AFN 18:535, 1964), 6-10 Aug 1963 (AFN 18:73, 1964), 29 Aug 1961 (18) (AFN 15:492, 1961).

[Greater Flamingo *Phoenicopterus ruber*. 0, 0. Escapees have occurred on several occasions. Max 3 on 13 Dec 1969 (PMcB).]

[Fulvous Whistling-Duck *Dendrocygna bicolor*. 0, 0. Probable escapee recorded on 10 Sep 1972 (AB 27:120, 1973).]

Tundra Swan *Cygnus columbianus*. 0, 0. Rare; 19 Nov-11 Dec 1971 (AB 26:120, 1972), 6 Dec 1963 (2) (AFN 18:386, 1964).

[Bean Goose *Anser fabalis*. 1, 1. Escapee; 3 Oct 1982.]

Greater White-fronted Goose *Anser albifrons*. 3, 2. Rare; 4 Oct-1 Nov 1981 (2), 25-26 Oct 1986 (LS), 2 Nov 1969 (GMcC), 13 Dec 1969 (PMcB), 4 Dec 1970 (AF), 27 Dec 1986 (SK), 17 Mar 1970 (PMcB), 15 Apr 1987 (J & DS).

Snow Goose *Chen caerulescens*. 24, 11. Uncommon winter visitor; decreasing. Only one seen 1977-1983, 23 Nov-7 Dec 1980. Ave 1974-1976 2.0/2 Dec-Feb, none Apr-Oct. Max 6 on 13 Dec 1969 (PMcB).

Ross' Goose *Chen rossii*. 0, 0. Rare; 18 Dec 1982-30 Jan 1983 (3) (LS, DK), 20 Dec 1986 (LS).

Brant *Branta bernicla*. 65, 5. Rare in spring; 22 Feb 1984 (LS), 6 Mar 1983 (2), 13 Mar 1977 (60), 29 Mar-9 May 1981, 4 Apr 1982, and 27 Apr 1973 (SS).

Canada Goose *Branta canadensis*. 77, 4. Rare in winter; about 10 records between 16 Nov and 13 Mar. Max 400 on 21 Jan 1987 (BM).

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[Common Shelduck *Tadorna tadorna*. 1, 1. Escapees; 1 Jun-6 Jul 1975 (2) (TM).]

Green-winged Teal *Anas crecca*. 11366, 89. Abundant in winter, occasional in summer. Ave 220/200 Dec-Mar, falling to four records Jun-Jul and none in Aug. Max 640 on 6 Feb 1977, summer max 5 on 3 Jul 1983. One male *A. c. crecca* 18-24 Mar 1973 (AB 27:662, 1973).

Mallard *Anas platyrhynchos*. 7557, 119. Abundant in summer, very common in winter; increasing. Ave 110/90 Jun-Sep, falling to 32/25 Oct-Apr. Max 510 on 4 Sep 1983. Common breeder. Small numbers of feral ducks were resident at the lagoon but not counted on the surveys.

Northern Pintail *Anas acuta*. 28768, 94. Abundant in winter, fairly common in summer. Ave 470/230 Sep-Feb, highest 1100/670 Dec, falling to 4.1 May-Aug. Max 5300 on 8 Dec 1974.

Blue-winged Teal *Anas discors*. 50, 25. Uncommon spring migrant, occasional otherwise. Ave 1.0 Mar-Jun, falling to 0.1 Aug-Jan. Max 8+ on 19 Oct 1985 (D & MH).

Cinnamon Teal *Anas cyanoptera*. 9576, 116. Abundant spring migrant, very common otherwise. Ave 180/130 Feb-Apr, falling to 42/21 Jun-Jan. Max 920 on 16 Feb 1975. Bred in 1967 (chick SD 36283).

Northern Shoveler *Anas clypeata*. 36389, 94. Abundant in winter, occasional in summer. Ave 300/240 Oct-Nov, 600/480 Dec-Apr, 7.6/2 May, 0.6 Jun-Aug. Max 2000 on 2 Apr 1978, summer max 6 on 6 Jul 1979.

Gadwall *Anas strepera*. 3401, 105. Very common in winter, fairly common in summer; increasing. Ave 42/20 Nov-Apr, falling to 8.8/2 Jul-Oct. Max 180 on 9 Jan 1983. Bred in 1975, 1978 (AF), and 1980.

Eurasian Wigeon *Anas penelope*. 6, 6. Occasional in winter since 1981. Ave 1981-1983 0.5 Nov-Mar. All records (7 Feb-19 Apr 1981 (AB 35:863, 1981), 12 Oct-13 Dec 1981 (AB 36:217, 1982), 24 Oct 1982-6 Feb 1983 (AB 37:223, 1983), 2 Oct 1983 (AB 38:246, 1984), and 29 Sep 1985 (AB 40:158, 1986)) may refer to the same male bird.

American Wigeon *Anas americana*. 6274, 70. Abundant late fall to early winter, very common late winter to early spring, rare in summer; increasing. Ave 150/95 Nov-Jan, 39/24 Feb-Apr. Late spring to early fall records include 3 May-7 Jun 1981 (15), 4 May 1980, 4 Aug 1974, 27 Aug 1985 (RW), and four early Sep records (max 12). Max 460 on 6 Dec 1981.

Canvasback *Aythya valisineria*. 147, 16. Decreasing; since 1979, a rare winter visitor. 85% of birds found the winter of 1973-1974; only two birds seen 1979-1983. Ave 1973-1975 49/19 Nov-Dec, 5/4 Jan-Apr. One summer (May-Sep) record, 3 Jul 1965 (AF). Max 59 on 4 Nov 1973.

Redhead *Aythya americana*. 1310, 58. Common in winter and spring, occasional in late summer. Ave 15/4 Nov-Jun, falling to 0.6 Aug-Sep. Max 420 on 5 Dec 1976. Bred in 1965 (AF).

Ring-necked Duck *Aythya collaris*. 0, 0. Rare; 26 Dec 1974-11 Jan 1975 (2) (SS). [Tufted Duck × Greater Scaup *Aythya fuligula* × *marila*. 0, 0. Exceptional; 20 Feb-22 Mar 1987 (SR).]

Greater Scaup *Aythya marila*. 0, 0. Rare; 21 Dec 1986 (2) (LS), 26 Dec 1974 (SS).

Lesser Scaup *Aythya affinis*. 1193, 51. Common winter visitor. Ave 23/9 Dec-Apr, falling to none May-Sep. Max 200 on 6 Jan 1980.

Oldsquaw *Clangula hyemalis*. 0, 0. Rare; 4 Dec 1984 (BM).

Surf Scoter *Melanitta perspicillata*. 5, 4. Rare in winter and spring; 17 Dec 1986 (RP), 1 Feb 1981, 13 Apr-4 May 1980, 6 May 1979 (2). Common to abundant in winter

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in the surf seaward of the lagoon.

Common Goldeneye *Bucephala clangula*. 0, 0. Rare. One female from "Cardiff," 13 Jan 1958 (SD 30069), presumably was from San Elijo Lagoon.

Bufflehead *Bucephala albeola*. 939, 60. Common winter visitor. Ave 18/15 Dec-Apr, falling to none Jul-Sep. Four May records; one June record, 1 Jun 1980. One October record, 10 Oct 1976. Max 58 on 6 Mar 1983.

Hooded Merganser *Lophodytes cucullatus*. 0, 0. Rare; 21 Dec 1986 (LS).

Common Merganser *Mergus merganser*. 0, 0. Rare; one specimen from "Solana Beach" 18 Dec 1932 (SD 16152).

Red-breasted Merganser *Mergus serrator*. 181, 31. Fairly common in late winter, occasional at other times. Ave 3.6/2 Jan-Apr, 0.3 May-Nov. Max 20 on 1 Feb 1981.

Ruddy Duck *Oxyura jamaicensis*. 11136, 113. Abundant in winter, common in summer. Ave 160/80 Dec-Apr, falling to 23/12 Jun-Sep. Max 970 on 6 Apr 1975. Bred in 1964 (egg set WF 52570) and 1982.

Turkey Vulture *Cathartes aura*. 8, 6. Occasional from fall through spring. Ave 0.1 Oct-May, none in other months. Max 2 on 13 Mar 1977 and 2 Oct 1983.

Osprey *Pandion haliaetus*. 9, 8. Occasional from fall through spring. Ave 0.1 Sep-Apr, none in other months. Max 2 on 2 Nov 1980.

Black-shouldered Kite *Elanus caeruleus*. 199, 75. Uncommon in fall and winter, occasional in spring and summer. Ave 2.7/3 Sep-Jan, falling to 0.5 Mar-Jun. Max 7 on 4 Oct and 1 Nov 1981. Bred in 1982 (three young fledged) (TM).

Bald Eagle *Haliaeetus leucocephalus*. 1, 1. Rare; 8 Dec 1974.

Northern Harrier *Circus cyaneus*. 65, 42. Uncommon in winter, rare in summer. Ave 1.4/1 Nov-Jan. Summer (May-Aug) records 5 Jun 1977 and 13 Jul 1980. Max 3 on six dates. Bred in 1920 (egg set WF 52470).

[*Accipiter* spp. 134, 65. Includes 36% Sharp-shinned and 57% Cooper's Hawks plus 7% not identified to species. All unidentified were found Sep-Mar.]

Sharp-shinned Hawk *Accipiter striatus*. 48, 34. Occasional winter visitor. Ave 0.7 Nov-Apr, falling to none May-Aug. Max 4 on 7 Mar 1976.

Cooper's Hawk *Accipiter cooperii*. 77, 52. Uncommon in winter, occasional in summer. Ave 1.5/1 Nov-Jan, falling to 0.2 Apr-Sep. Max 3 on five Dec and Jan dates.

Red-shouldered Hawk *Buteo lineatus*. 84, 51. Uncommon in fall and winter, occasional in spring and summer; increasing. Ave 1.1/1 Oct-Jan, falling to 0.4 Mar-Jul. Max 5 on 10 Jan 1982.

Red-tailed Hawk *Buteo jamaicensis*. 689, 120. Fairly common in winter, uncommon in summer. Ave 10/9 Dec-Feb, falling to 2.9/3 May-Sep. Max 19 on 5 Jan 1975. Yearly breeder near, but not at, lagoon.

Ferruginous Hawk *Buteo regalis*. 0, 0. Rare; fall 1986-7 Jan 1987 (RP, LS, SW).

Rough-legged Hawk *Buteo lagopus*. 1, 1. Rare; 4 Dec 1977.

Golden Eagle *Aquila chrysaetos*. 1, 1. Rare; 4 Oct 1981, 7 Apr 1979 (2) (DA). Dixon (1937) included San Elijo Lagoon within the territory of a pair that nested at Olivenhain, 1.5 miles northeast of the lagoon, until the 1950s (RQ, fide TS). Urbanization has eliminated this territory (Unitt 1984).

American Kestrel *Falco sparverius*. 640, 118. Fairly common resident. Ave 6.9/6 Sep-Jan, 3.9/4 Mar-Jul. Max 16 on 2 Dec 1979. Probably breeds occasionally; bred in 1919 in "San Elijo Canyon" (egg set WF 55068), which may or may not be San Elijo Lagoon.

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Merlin *Falco columbarius*. 1, 1. Rare in fall and winter; 11 Oct 1963 (GMcC), 12 Oct 1985 (CE), 18 Oct 1980 (TM), 22 Oct 1978 (TM), 18 Dec 1985 (BM), 9 Jan 1983, 20 Mar 1980 (CD).

Peregrine Falcon *Falco peregrinus*. 2, 2. Rare; 3 Oct 1982, 5 May 1974.

Prairie Falcon *Falco mexicanus*. 2, 2. Rare winter visitor; 7 Nov 1976, 5-11 Jan 1975 (SS).

Ring-necked Pheasant *Phasianus colchicus*. 2, 2. Rare; 27 Sep-25 Oct 1981 (2) (TM), 10 Oct 1976, Mar 1985 (BM).

[Common Peafowl *Pavo cristatus*. 0, 0. Feral birds have been seen on several occasions east of the freeway.]

California Quail *Callipepla californica*. 12197, 120. Abundant resident, decreasing. Ave 100/88 throughout the year. Max 340 on 5 Jan 1975. Common breeder.

Black Rail *Laterallus jamaicensis*. 0, 0. Rare in winter; 28 Oct 1973 (AF), 11 Nov 1963 (AFN 18:73, 1964), 15 Nov 1969 (AF), 17 Jan 1964 (Unitt 1984), 21 Feb 1983 (AB 37:338, 1983). A specimen from "Encinitas" 8 Dec 1886 (SD 148) Unitt (1984) suggested was from either San Elijo or Batiquitos lagoons.

Clapper Rail *Rallus longirostris*. 27, 11. Uncommon resident from 1981 through at least 1983. The only records between 1947 (Wilbur 1974) and 1981 were in 1972 (3) (Wilbur et al. 1979) and on 21 Sep 1977 (RC). In Jun 1981, at least 10 birds were found east of the freeway (Unitt 1984). One to three birds were occasionally recorded through 1983, but none has been reported since then. Presumably bred 1981-1983 (PJ). (See also under Status of Endangered Species.)

Virginia Rail *Rallus limicola*. 220, 71. Fairly common in winter, occasional in summer. Ave 3.3/2 Oct-Jan, falling to 0.4 Jun-Jul. Max 17 on 4 Nov 1973. Yearly breeder.

Sora *Porzana carolina*. 708, 90. Fairly common in fall and winter, common in spring, rare in summer. Ave 5.8/6 Sep-Jan, 13/11 Mar-Apr. The only Jun-Jul records are 6 Jun 1982, 8 Jul 1979, and 11 Jul 1976. Max 38 on 9 Mar 1975.

Common Moorhen *Gallinula chloropus*. 45, 25. Occasional. Ave 0.5 Oct-May, falling to 0.2 Jun-Sep. Max 6 on 5 Dec 1976. Bred (adults with chicks as late as 7 Aug) in 1983.

American Coot *Fulca americana*. 59348, 120. Abundant in winter, very common in summer. Ave 1000/860 Nov-Jan, 66/17 Jun-Sep. Max 2000 on 4 Dec 1977. Common breeder.

Black-bellied Plover *Pluvialis squatarola*. 2665, 106. Very common in fall, common in winter and early spring, fairly common in late spring and summer. Ave 47/38 Aug-Sep, 25/20 Oct-Mar, 6.2/5 Apr-Jul. Max 120 on 5 Sep 1982.

Lesser Golden Plover *Pluvialis dominica*. 0, 0. Rare fall migrant; 1-9 Aug 1964 (AFN 18:535, 1964), 16 Aug 1981 (MB), 22 Aug 1968 (AFN 23:108, 1969), 19 Sep 1967 (AFN 22:89, 1968), 12 Oct 1981 (SS).

Snowy Plover *Charadrius alexandrinus*. 888, 63. Common in fall, fairly common otherwise. Ave 16/7 Jul-Sep, falling to 4.6 Oct-Jun. Max 74 on 5 Dec 1982. Yearly breeder (see also under Status of Endangered Species).

Semipalmated Plover *Charadrius semipalmatus*. 2774, 93. Very common in fall, common in winter and spring, fairly common in summer. Ave 53/28 Aug-Oct, 15/6 Nov-May, 5.9/1 Jun-Jul. Max 330 on 1 Oct 1978.

Killdeer *Charadrius vociferus*. 5692, 120. Very common resident. Ave 62/60 Jul-Aug, 45/40 Sep-Jun, min 32/29 Apr-May. Max 160 on 7 Nov 1976. Common breeder.

Black-necked Stilt *Himantopus mexicanus*. 8756, 119. Abundant in summer, very com-

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mon otherwise. Ave 110/97 Jun-Sep, falling to 46/41 Nov-Mar. Max 280 on 11 Jul 1976. Common breeder.

American Avocet *Recurvirostra americana*. 11657, 114. Abundant in spring, very common otherwise. Ave 220/200 Mar-Apr, 56/25 Aug-Jan. Max 780 on 7 Dec 1980. Common breeder.

Greater Yellowlegs *Tringa melanoleuca*. 706, 90. Common in fall, fairly common in winter and spring, rare in summer. Ave 15/14 Aug-Sep, 4.3/3 Nov-Apr. The only May and June records are 1 May 1983 (late spring migrant), 1 Jun 1975 (2), 5 Jun 1977 (4) (summering?), and 27 Jun 1976 (Unitt 1984) (early fall migrant). Max 33 on 1 Aug 1976.

Lesser Yellowlegs *Tringa flavipes*. 480, 70. Fairly common spring and fall migrant, uncommon in winter. Ave 1.4/1 Jul, 10/8 Aug-Sep, 1.8/1 Nov-Feb, 7.5/4 Mar-Apr, none in Jun. Late spring records 2 May 1982 (2) and 4 May 1975. Fall max 44 on 12 Sep 1976, winter max 10 on 6 Dec 1982, spring max 37 on 1 Apr 1979.

Solitary Sandpiper *Tringa solitaria*. 1, 1 (12 Sep 1976). Rare in fall; nine records 16 Aug (1981, TM) to 21 Sep (1962, AFN 17:68, 1963). One spring record, 12 Apr 1975 (AB 29:908, 1975). Max 2 on 3 Sep 1968 (GMcC).

Willet *Catoptrophorus semipalmatus*. 2654, 111. Very common in fall migration, common in winter and spring migration, fairly common in late spring and summer. Ave 55/45 Aug-Sep, 14/13 Nov-Apr, 5.9/4 May-Jun. Max 400+ on 2 Sep 1969 (AF).

Wandering Tattler *Heteroscelus incanus*. 3, 3. Rare in spring; 5 Apr 1981, 2 May-6 Jun 1982.

Spotted Sandpiper *Actitis macularia*. 493, 105. Fairly common from fall to spring; recently a few birds have summered. Ave 7.4/7 Sep, 4.3/4 Oct-Apr, 5.5/5 May, 0.8 Jun-Jul. Max 17 on 10 Sep 1978. Bred in 1982 (AB 36:1016, 1982), 1983 (AB 37:1027, 1983), and 1984 (DK).

Whimbrel *Numenius phaeopus*. 848, 55. Very common in fall, occasional in winter, uncommon otherwise. Ave 36/18 Jul-Aug, 0.3 Nov-Jan, 1.4 Feb-Jun. Max 230 on 6 Aug 1978.

Long-billed Curlew *Numenius americanus*. 19, 10. Occasional in fall and winter. Ave 0.1 Jul-Oct, 0.4 Nov-Feb. One spring record, 7 May 1978. Max 5 on 1 Feb 1981.

Marbled Godwit *Limosa fedoa*. 1072, 90. Common in summer, fairly common in winter. Ave 14/13 Jun-Sep, 3.4/1 Nov-Jan, 16/13 Mar, 4.9/3 Apr-May. Max 180 on 3 Aug 1985 (DK). These data differ from Garrett and Dunn (1981) and Unitt (1984), who indicate that in southern California generally this species is more common in winter.

Ruddy Turnstone *Arenaria interpres*. 78, 35. Uncommon in spring and fall, occasional in summer and winter. Ave 1.5/1 Apr, 0.4 May-Aug, 1.3 Sep-Oct, 0.2 Dec-Jan. Max 8 on 12 Oct 1980.

Black Turnstone *Arenaria melanocephala*. 47, 23. Uncommon in spring, rare in summer, occasional in fall and winter. Ave 0.2 Sep-Jan, 1.2 Mar-Apr. Summer (May-Aug) records 5 May-2 Jun 1974, 3 Jul 1977 (Unitt 1984), and 4 Aug 1974. Max 7 on 2 Mar 1980.

Surfbird *Aphriza virgata*. 0, 0. Rare; 3 Jan 1964 (Unitt 1984).

Red Knot *Calidris canutus*. 97, 15. Fairly common in fall. Ave 7.4/1 Sep, none Nov-Apr. One spring record, 7 May 1978 (2); one summer record (early fall migrants?), 13 Jul 1980 (3). Max 41 on 10 Sep 1978.

Sanderling *Calidris alba*. 5814, 77. Abundant in fall, very common in winter and spring, occasional in summer. Ave 100/55 Sep, 57/21 Oct-May, falling to none in Jun, 0.4 in Jul. Max 590 on 7 Sep 1980.

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[Peeps *Calidris* spp. 40328, 110. Includes, Semipalmated, 53% Western, 13% Least, and Baird's Sandpipers plus 34% not identified to species. Max 4000 on 14 Oct 1979.]

Semipalmated Sandpiper *Calidris pusilla*. 1, 1. Rare fall migrant; 20 Aug 1980 (DK), 7 Sep 1980.

Western Sandpiper *Calidris mauri*. 21453, 98. Abundant in fall and spring, very common in winter, rare in summer. Ave 400/150 Sep–Nov, 95/25 Jan–Mar, 220/110 Apr. Only June records 1 Jun 1975, 12 Jun 1983 (DK). Max 2500 on 14 Oct 1979.

Least Sandpiper *Calidris minutilla*. 5288, 96. Very common in fall and winter, fairly common in spring, occasional in summer. Ave 65/41 Aug–Feb, falling to 8.8/1 Apr–May. One June record, 1 Jun 1980. Max 680 on 12 Oct 1980.

Baird's Sandpiper *Calidris bairdii*. 5, 3. Rare fall migrant. Thirteen records in 1960s of about 25 birds between 14 Aug and 21 Sep. Max 5 on 15 Aug 1965 (Unitt 1984). More recent records 6 Aug 1978 (2), 27 Aug 1985 (2) (RW), 30 Aug 1981 (TM), 7 Sep 1975, 8 Sep 1985 (3) (JD), 10 Sep 1972 (SS), 17 Sep 1986 (3) (J & DS), 23 Sep 1984 (2) (RW), 5 Oct 1975 (2).

Pectoral Sandpiper *Calidris melanotos*. 8, 5. Rare fall migrant. About 20 records during 1960s of about 90 birds between 8 Aug and 18 Oct. Max 20 on 10 Oct 1965 and 11 Oct 1963 (Unitt 1984). More recent records 29 Jun 1977 (exceptionally early) (AB 31:1190, 1977), 6–7 Sep 1981 (TM), 8 Sep 1985 (JD), 17–18 Sep 1972 (SS), 1–8 Oct 1978 (2) (TM), 2 Oct 1983 (3), 5 Oct 1975 (2), 10 Oct 1976.

Dunlin *Calidris alpina*. 970, 55. Common winter visitor. Ave 13/4 Oct–Apr, falling to none Jun–Aug. Four early fall (Sep) records, earliest 4 Sep 1977 (2). Max 340 on 10 Nov 1974.

Curlw Sandpiper *Calidris ferruginea*. 0, 0. Exceptional. One adult 4 Jul 1981 (Binford 1985), the only record for San Diego County.

Stilt Sandpiper *Calidris himantopus*. 0, 0. Rare in fall, exceptional in winter; 2 Sep 1985 (4) (AB 40:158, 1986), 13–25 Sep 1964 (AFN 19:79, 1965), 16 Sep 1967 (GMcC), 21 Sep 1962 (AFN 17:68, 1963), 29 Sep–8 Oct 1984 (3) (AB 39:103, 1985), 21 Oct 1962 (AFN 17:68, 1963), and 21–22 Feb 1982 (AB 36:331, 1982), the only winter record for San Diego County.

Ruff *Philomachus pugnax*. 0, 0. Rare; 21–23 Sep 1962 (McCaskie 1963).

[Dowitchers *Limnodromus* spp. 19675, 114. Includes 4% Short-billed and 28% Long-billed Dowitchers plus 68% not identified to species. Abundant in winter, common in summer. Ave 200/150 Sep–May, falling to 42/21 Jun–Jul. Max 705 on 9 Sep 1979.]

Short-billed Dowitcher *Limnodromus griseus*. 747, 51. Common in fall, fairly common in winter, uncommon in spring. Ave 18/12 Sep–Oct, 3.7 Nov–Apr, 1.1 May–Jun. Max 100 on 3 Jul 1977 (Unitt 1984).

Long-billed Dowitcher *Limnodromus scolopaceus*. 5506, 85. Very common from fall through spring, uncommon in summer. Ave 55/18 Aug–May, 1.2 Jun–Jul. Max 390 on 9 Sep 1979.

Common Snipe *Gallinago gallinago*. 44, 21. Uncommon winter visitor; decreasing. Only four records 1978–1983. Ave 1974–1977 1.6/2 Nov–Apr, none Jun–Aug. Late spring record 4 May 1975. Max 5 on 9 Nov 1975.

Wilson's Phalarope *Phalaropus tricolor*. 1419, 30. Very common in fall, exceptional in winter, fairly common in spring, rare in summer. Ave 13/1 Jul, 99/27 Aug, 22/9 Sep, none Nov–Mar except 5 Jan 1964 (AFN 18:387, 1964), 4.4 May, and Jun records 2 Jun 1974 and 7 Jun 1981. Max 360 on 5 Aug 1979.

Red-necked Phalarope *Phalaropus lobatus*. 5654, 35. Abundant in fall, occasional in spring. Ave 250/140 Sep–Oct, none Dec–Apr, 0.4 May, none Jun–Jul. Max 1400 on 4 Sep 1977.

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Red Phalarope *Phalaropus fulicaria*. 220, 4. Rare in winter and spring; 1-9 Nov 1963 (100) (SD 30725), 7 Nov-5 Dec 1982 (30), 28 Nov 1969 (AS), 5 Dec 1976-9 Jan 1977 (170), 18 May 1978 (PU), 24-25 May 1980 (10) (TM).

Pomarine Jaeger *Stercorarius pomarinus*. 0, 0. Rare; 6 Mar 1964 (GMcC).

Parasitic Jaeger *Stercorarius parasiticus*. 0, 0. Rare; 15 Jul 1984 (GMcC), east of the freeway.

Franklin's Gull *Larus pipixcan*. 0, 0. Rare in fall; 11 Oct-7 Nov 1964 (5) (McCaskie and Cardiff 1965), 25-29 Oct 1969 (2) (AFN 24:100a, 1970), 20 Nov 1971 (AB 26:121, 1972).

Bonaparte's Gull *Larus philadelphia*. 2884, 74. Very common in winter, fairly common in summer. Ave 52/21 Nov-Mar, falling to 3.1 May-Oct. Max 350 on 9 Jan 1977, summer max 41 on 10 Jul 1977.

Heermann's Gull *Larus heermanni*. 394, 30. Common in fall, occasional otherwise. Ave 12/5 Jul-Sep, falling to 0.2 Nov-Jun. Max 69 on 10 Jul 1977. Although this species is common along the coast of southern California Jul-Feb (Garrett and Dunn 1981), apparently it uses brackish lagoons commonly during its northbound (fall) migration only.

[Large gulls *Larus* spp. 25977, 120. Includes 38% Ring-billed, 10% California, 10% Western, and 1% Mew, Herring, Thayer's, and Glaucous-winged Gulls, plus 41% not identified to species. Abundant in fall and winter, very common in summer. Ave 470/270 Dec-Mar, 59/26 May-Jul, 120/87 Sep-Nov. Max 1980 on 16 Feb 1975.]

Mew Gull *Larus canus*. 1, 1. Rare; 10 Oct 1976.

Ring-billed Gull *Larus delawarensis*. 9991, 117. Abundant in winter, common in summer. Ave 190/120 Feb-Mar, 21/9 May-Jul, 110/87 Nov-Jan. Max 830 on 7 Mar 1976, summer max 230 on 5 Jun 1977.

California Gull *Larus californicus*. 2647, 62. Uncommon in fall, very common in winter, rare in summer. Ave 2.4 Aug-Oct, 68/23 Jan-Mar. The only Jun-Jul records are 4-5 Jun 1977 (3), 27 Jun 1976 (Unitt 1984), and 29 Jun 1977 (Unitt 1984) Max 340 on 6 Feb 1977.

Herring Gull *Larus argentatus*. 69, 22. Uncommon winter visitor. Ave 1.3 Dec-Apr, falling to none Jun-Oct. Late spring records 1 May 1977 and 2 May 1976. Max 10 on 9 Mar 1975 and 7 Mar 1976.

Thayer's Gull *Larus thayeri*. 4, 4. Rare winter visitor; 7 Dec 1975, 8 Jan 1978, 11 Jan 1976, 7 Mar 1976.

Western Gull *Larus occidentalis*. 2603, 114. Very common in summer, common in fall and winter, fairly common in spring. Ave 40/13 Jun-Aug, 18/11 Sep-Mar, 8.1/5 Apr-May. Max 350 on 2 Jul 1978.

Glaucous-winged Gull *Larus glaucescens*. 1, 1. Rare; 27 Nov 1981 (TM), 31 Dec 1972 (SS), 4 Apr 1982, 22 Apr 1968 (AF).

[Glaucous Gull *Larus hyperboreus*. 0, 0. One on the beach 100 meters north of the lagoon on 7 Mar 1982 (TM).]

Black-legged Kittiwake *Rissa tridactyla*. 2, 2. Rare in spring; 7 Mar 1976, 3 Apr 1977 (both dead birds), 22 Apr 1968 (AF).

Caspian Tern *Sterna caspia*. 1359, 79. Very common in spring, common in summer and fall, occasional in winter. Ave 38/30 Apr, 15/11 May-Jun, 26/11 Jul-Aug, 0.5 Oct-Jan. Max 140 on 7 Aug 1983.

Royal Tern *Sterna maxima*. 623, 79. Fairly common in spring and fall, uncommon in summer and winter. Ave 8.3/4 Apr-May, 2.8 Jun-Jul, 8.1/4 Sep-Oct, 1.9/1 Dec-Jan. Max 45 on 6 May 1979.

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Elegant Tern *Sterna elegans*. 8398, 69. Very common in spring, abundant in late summer. Ave 45/17 Apr, 12/4 May-Jun, 250/67 Jul-Sep, falling to none Jan-Feb. Early spring record 13 Mar 1977, late fall records 2 Dec 1973 and 7 Dec 1980 (5). Max 2000 on 4 Aug 1974.

[Common/Forster's Tern *Sterna* spp. 10605, 115. Includes 8% Common and 81% Forster's Terns plus 11% not identified to species. Max 550 on 12 Jul 1980.]

Common Tern *Sterna hirundo*. 809, 31. Very common in fall, rare in spring and summer. Ave 34/2 Aug-Sep, falling to none Nov-Mar. Spring and summer (Apr-Jun) records include 12 Apr 1969 (Unitt 1984), 4 May 1980, 4 Jun 1978, 5 Jun 1977 (11), and 7 Jun 1981. Max 240 on 7 Sep 1980.

Forster's Tern *Sterna forsteri*. 8600, 115. Abundant in late summer, very common otherwise. Ave 120/76 Jul-Sep, 46/32 Oct-Jan, 86/56 Feb-Mar, 50/38 Apr-Jun. Max 370 on 10 Jul 1977.

Least Tern *Sterna antillarum*. 1088, 45. Common in summer. Ave 10/7 May, 20/21 Jun, 38/34 Jul-Aug, falling to none Oct-Mar. Extreme dates 6 Apr 1970 (AF) and 13 Apr 1980 in spring, 23 Sep 1969 (AF) in fall. Max 66 on 2 Aug 1981. For data on breeding, see under Status of Endangered Species.

Black Tern *Chlidonias niger*. 13, 8. Occasional in fall, rare in winter and spring. Ave 0.4 Aug-Oct. Nov-Jun records 8-11 Nov 1963 (AFN 18:74, 1964), 11 Feb-9 Mar 1968 (AFN 22:478, 1968), 2 May 1982, 11 May 1980 (TM). Max 3 on 4 Aug 1974.

Black Skimmer *Rynchops niger*. 0, 0. Rare; records during the study period are 6 Aug 1983 (WJ), 28 Sep 1982 (3) (SW), 12 Oct 1981 (SS). There are several subsequent records for this species, which is expanding its range. Max 10 from 27 Oct to 19 Nov 1984 (BM).

Common Murre *Uria aalge*. 0, 0. Rare. A sick bird found east of the freeway on dried mud on 15 Jun 1982 had died by the next day (DK). A specimen from "Cardiff" on 4 Feb 1942 (SD 18950) was probably found on the beach near the lagoon.

Rock Dove *Columba livia*. 6774, 115. Abundant in winter, very common otherwise. Ave 110/85 Dec-Feb, 31/24 Mar-Aug, 56/44 Sep-Nov. Max 380 on 6 Jan 1980. Common breeder.

Band-tailed Pigeon *Columba fasciata*. 0, 0. Rare in spring; 5 Apr 1974 (SS), 26 Apr 1981 (2) (TM).

Spotted Dove *Streptopelia chinensis*. 23, 18. Occasional. Ave 0.2 throughout the year. Max 2 on five dates.

White-winged Dove *Zenaida asiatica*. 1, 1. Rare migrant; 4 Sep 1978 (RAE), 20 Sep 1964 (GMcC), 22 Sep 1962 (AFN 17:69, 1963), 3 May 1981.

Mourning Dove *Zenaida macroura*. 8744, 120. Very common resident. Ave 100/97 Jun-Sep, falling to 55/42 Nov-Apr. Max 220 on 6 Feb 1983. Common breeder.

Greater Roadrunner *Geococcyx californianus*. 57, 42. Occasional; decreasing. Ave 0.5 throughout the year. Max 4 on 5 Apr 1981. Probable yearly breeder.

Common Barn-Owl *Tyto alba*. 17, 11. Occasional. 1-3 seen each month Apr-Sep 1974, 6 scattered records later. All but 1 found along cliffs on N side of lagoon E of freeway. Whitewashed rocks in this habitat suggest this species is regular. Five egg sets (WF) were collected near Cardiff and Solana Beach from 1922 to 1939.

Great Horned Owl *Bubo virginianus*. 3, 3. Rare; 4 Sep 1977, 12 Sep 1976, 23 Nov 1980 (TM), 28 Feb 1982 (TM), 6 May 1976. Egg set from "east of Solana Beach" on 10 Mar 1936 (WF 4514).

Burrowing Owl *Athene cunicularia*. 4, 4. Rare winter visitor; 2 Nov 1980, 7 Dec 1975-1 Feb 1976.



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[Long-eared Owl *Asio otus*. 0, 0. Listed as a rare winter visitor by Summers (1975), but we know of no specific occurrences.]

Short-eared Owl *Asio flammeus*. 0, 0. Rare winter visitor; 19 Oct 1980 (TM), 27 Nov 1981 (TM), 30 Dec 1984 (LS), winter 1969-1970 (TM), 7 Mar 1965 (GMcC).

Lesser Nighthawk *Chordeiles acutipennis*. 0, 0. Rare; 23 May 1976 (TM).

[Common Poorwill *Phalaenoptilus nuttallii*. 0, 0. Specimen from "Cardiff" 21 Nov 1915 (SD 31452).]

[Swifts. 767, 65. Include Black, Chimney, 26% Vaux's, and 65% White-throated Swifts plus 9% not identified to species.]

Black Swift *Cypseloides niger*. 0, 0. Rare; 19 May 1981 (AB 35:864, 1981).

Chimney Swift *Chaetura pelagica*. 0, 0. Rare; 29 Jun-22 Aug 1968 (5) (AFN 22:649, 1968; SD 36690).

Vaux's Swift *Chaetura vauxi*. 202, 11. Common in spring, uncommon in fall. Ave 19/2 May, none Jun-Aug, 1.3 Oct. Early fall record 7 Sep 1975 (2). Winter (Nov-Mar) records 6 and 22 Mar 1964 (AFN 18:388, 1964). Max 160 on 5 May 1974.

White-throated Swift *Aeronautes saxatalis*. 498, 62. Fairly common in spring, uncommon otherwise. Ave 9.7/8 Feb-Apr, falling to 1.1 Aug-Dec. Max 200 on 6 Mar 1964 (Unitt 1984). Probable common breeder in cliffs in northeast area.

Black-chinned Hummingbird *Archilochus alexandri*. 20, 10. Occasional migrant. Ave 0.3 Apr, 0.6 Jul-Sep, none in other months. Max 6 on 7 Aug 1977.

Anna's Hummingbird *Calypte anna*. 2851, 120. Common resident; increasing. Ave 27/26 Aug-Apr, 12/12 Jun-Jul. Max 56 on 12 Oct 1980. Common breeder.

Costa's Hummingbird *Calypte costae*. 19, 15. Occasional. Ave 0.5 Apr-May, 0.1 Jun-Aug, 0.2 Sep-Oct, 0.1 Nov-Mar. Max 3 on 6 Apr 1975.

[Rufous/Allen's Hummingbird *Selasphorus* spp. 404, 42. Includes 32% Rufous and 8% Allen's Hummingbirds plus 59% not identified to species. Fairly common in spring, common in fall, rare in winter. Ave 3.9/2 Apr, none Jun, 12/6 Jul-Sep. Oct-Jan records of unidentified birds on 2 Oct 1977, 4 Nov 1979 (3), and 3 Dec 1978. Max 110 on 11 Jul 1976.]

Rufous Hummingbird *Selasphorus rufus*. 130, 20. Fairly common in fall, uncommon in spring. Ave 5.2 Jul-Aug, none Sep-Jan, 0.2 Feb-Mar, 2.1/1 Apr, and none Jun. Early and late spring dates 4 Feb 1979 and 4 May 1980. Max 74 on 11 Jul 1976.

Allen's Hummingbird *Selasphorus sasin*. 32, 7. Uncommon in fall, rare in spring. Ave 1.6 Jul-Aug. One record Sep-Jun, 3 Apr 1977. Max 10 on 12 Jul 1981.

Belted Kingfisher *Ceryle alcyon*. 214, 86. Uncommon from fall through spring. Ave 2.6/2 Sep-Mar, falling to none Jun. Late spring record 1 May 1977. Max 6 on 4 Aug 1974 and 1 Nov 1981. One summer record after the study period of one 7 Jun 1984 carrying food, presumably to nestlings.

Red-naped Sapsucker *Sphyrapicus nuchalis*. 3, 2. Rare fall migrant; 18 Oct 1981 (TM), 9 Nov 1975, 10 Nov 1974 (2).

Red-breasted Sapsucker *Sphyrapicus ruber*. 4, 4. Rare fall migrant and winter visitor; 1 Oct 1978, 6 Nov 1977, 2 Dec 1973, 6 Feb 1977.

Nuttall's Woodpecker *Picoides nuttallii*. 304, 109. Uncommon resident. Ave 2.5/2 throughout the year. Max 7 on 2 Aug 1981. Yearly breeder.

Downy Woodpecker *Picoides pubescens*. 3, 3. Rare in late summer; 8 Jul 1979, 3 Aug 1980, 6 Sep 1981.

Hairy Woodpecker *Picoides villosus*. 3, 3. Rare in fall through spring; 20 Sep-12 Oct 1975 (AB 30:127, 1976), 3 Oct 1982, 7 Dec 1975, 2 May 1976.

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Common Flicker *Colaptes auratus*. 538, 109. Fairly common in winter, uncommon in summer. Ave 8.2/8 Nov-Jan, falling to 1.9/2 Apr-Sep. Max 20 on 9 Nov 1975. Probable yearly breeder. Apparent Yellow-shafted Flickers (*C. a. luteus*) were recorded 1 Nov 1986 (LS), 9 Nov-7 Dec 1975, 8 Dec 1974, and 3 Feb 1974.

Olive-sided Flycatcher *Contopus borealis*. 23, 13. Uncommon in spring, exceptional in summer, rare in fall. Ave 1.7/1 May, 0.4 Jun, none Jul-Aug except for single record of breeding, 8 Sep 1974, none Oct-Mar. Max 6 on 1 May 1977. Exceptional breeding record 2 May-5 Jul 1982 (TM, DK) of a pair raising one young in a nonnative cypress (not a eucalyptus as reported AB 36:1017, 1982).

Western Wood-Pewee *Contopus sordidulus*. 69, 19. Fairly common spring migrant, occasional fall migrant. Ave 3.0/1 May-Jun, none Jul, 0.7 Sep, none Nov-Apr. Max 20 on 1 Jun 1975.

[*Empidonax* spp. 129, 36. Includes 3% Willow, 3% Hammond's, and 60% Western Flycatchers plus 33% not identified to species. Fairly common in spring, uncommon in fall. Ave 7.6/4 May, none Jul, 1.3/1 Sep-Oct, none Nov-Mar. Max 35 on 4 May 1975.]

Willow Flycatcher *Empidonax traillii*. 4, 3. Rare migrant; 21 May 1985 (RW), 1 Jun 1975, 5 Jun 1977, 12 Sep 1976 (2).

Hammond's Flycatcher *Empidonax hammondi*. 5, 3. Rare in spring; 11 Apr 1976, 17 Apr 1973 (SS), 2 May 1982, 5 May 1974 (3).

Western Flycatcher *Empidonax difficilis*. 78, 30. Fairly common in spring, uncommon in fall. Ave 3.8/2 May, none Jul, 1.1/1 Sep-Oct, none Nov-Mar. Max 20 on 4 May 1975.

Black Phoebe *Sayornis nigricans*. 785, 118. Fairly common. Ave 8.4/8 Jul-Jan, falling to 3.5/3 Mar-Jun. Max 33 on 7 Aug 1983. Probable occasional breeder.

Eastern Phoebe *Sayornis phoebe*. 2, 2. Rare winter visitor; 5 Dec 1976-6 Feb 1977 (AB 31:374 1977).

Say's Phoebe *Sayornis saya*. 315, 62. Fairly common in winter, rare in summer. Ave 6.6/6 Oct-Jan. The only records May-Aug are of a bird that summered in 1980. Early fall dates 5 Sep 1982 (2) and 6 Sep 1981; late spring dates 4 Apr 1982 and 7 Apr 1974. Max 14 on 6 Jan 1980.

Vermilion Flycatcher *Pyrocephalus rubinus*. 0, 0. Rare; 20 Sep 1964 (AFN 19:80, 1965).

Ash-throated Flycatcher *Myiarchus cinerascens*. 114, 35. Uncommon in summer. Ave 2.3/1 May-Sep, none Oct-Mar. Max 14 on 3 Aug 1975. Probable yearly breeder.

Tropical Kingbird *Tyrannus melancholicus*. 0, 0. Rare in fall; 20 Sep 1963 (McCaskie et al. 1967a; SD 30768), 22 Sep 1964 (AFN 19:80, 1965), 28 Sep 1967 (AFN 22:90, 1968), 5 Dec 1965 (AFN 460, 1966).

Cassin's Kingbird *Tyrannus vociferans*. 468, 89. Fairly common in fall, uncommon otherwise; increasing. Ave 8.3/4 Sep-Oct, falling to 2.3/2 Dec-Jun. Max 50 on 6 Sep 1981. Yearly breeder.

Western Kingbird *Tyrannus verticalis*. 124, 35. Fairly common in spring, uncommon in summer. Ave 3.9/2 Apr-May, 1.1 Jun-Sep, none Nov-Mar. Max 25 on 5 Apr 1981.

Eastern Kingbird *Tyrannus tyrannus*. 1, 1. Rare fall migrant; 6 Aug 1978, 27 Aug 1964 (McCaskie et al. 1967a), 25 Sep-2 Oct 1964 (McCaskie et al. 1967a), 28 Sep 1963 (McCaskie et al. 1967a; SD 30767), 28 Sep-1 Oct 1986 (AB 41:145, 1987).

Scissor-tailed Flycatcher *Tyrannus forficatus*. 1, 1. Rare in fall; 8-10 Nov 1974 (AB 29:122, 1975), 22 Nov 1963 (McCaskie et al. 1967a; SD 30769).

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Horned Lark *Eremophila alpestris*. 134, 22. Fairly common in spring, occasional in winter; decreasing. Only 8 birds seen 1978-1979 and none 1980-1983. Ave 1974-1977 5.8/3 Mar-Jul, none Aug-Sep, 0.5 Oct-Feb. Max 20 on 3 Apr 1977, 5 May 1974, and 1 Jun 1975. Probably bred formerly; egg set from "near Olivenhain" (1.5 miles northeast of the lagoon) on 23 May 1922 (WF 5123).

Purple Martin *Progne subis*. 1, 1. Rare; 22 Mar 1964 (2) (Unitt 1984), 6 Apr 1975, 10 Sep 1972 (SS).

Tree Swallow *Tachycineta bicolor*. 2674, 37. Very common in winter and abundant in spring but sporadic; rare otherwise. Ave 7.0 Nov-Dec, 41/1 Jan-Feb, 160/18 Mar. Late spring to early fall (May-Sep) records 2 May 1982 (10), 7 May 1978 (10), 6 Jun 1976 (3), 3 Jul 1983 (8), 4 Aug 1974 (2), 7 Sep 1980. Max 760 on 9 Mar 1975 and 750 on 16 Feb 1987 (JK).

Violet-green Swallow *Tachycineta thalassina*. 156, 13. Common but irregular in spring; decreasing. Ave 11/1 Mar, 2.0 Apr-May, none Jul-Feb. Late spring records 1 Jun 1980 (2) and 5 Jun 1983. Max 65 on 3 Mar 1974.

Northern Rough-winged Swallow *Stelgidopteryx serripennis*. 2265, 70. Very common in spring and summer, fairly common in fall, rare in winter; decreasing. Ave 22/21 Mar, 60/43 Apr-May, 33/21 Jun-Jul, 5.8/2 Aug-Oct. Nov-Feb records 5 Dec 1976 (3), 5 Jan 1975, 16 Feb 1975 (2). Max 220 on 11 Jul 1976. Yearly breeder.

Bank Swallow *Riparia riparia*. 0, 0. Rare; 11 Apr 1975 (Unitt 1984), 4 Jun 1984 (JO), 19 Aug 1973 (SS), 13 Sep 1981 (TM), 21 Sep 1980 (2) (TM).

Cliff Swallow *Hirundo pyrrhonota*. 10400, 64. Abundant in summer. Ave 230/190 Apr-Jul, falling to none Nov-Jan. Early record 16 Feb 1975, late record 4 Oct 1981 (8). Max 620 on 3 Jun 1979. Common breeder; main nesting area is under freeway bridge.

Barn Swallow *Hirundo rustica*. 316, 42. Fairly common spring and fall migrant, occasional in summer. Ave 1.4 Mar-Apr, 6.4/5 May, 0.3 Jun-Aug, 7.2/3 Sep-Nov. Dec-Feb records 9 Jan 1977 and 16 Feb 1987 (3) (DK). Max 46 on 4 Oct 1981. Probable occasional breeder; egg set from "Solana Beach" 16 May 1933 (WF 6578).

Scrub Jay *Aphelocoma coerulescens*. 1069, 119. Common in fall, fairly common otherwise. Ave 19/18 Sep, 6.9/7 Nov-May, 10/10 Jul-Aug. Max 32 on 6 Sep 1981. Yearly breeder.

American Crow *Corvus brachyrhynchos*. 63, 29. Occasional in winter. Ave 0.8 Oct-Apr, 0.1 May-Sep. Max 10 on 4 Oct 1981.

Common Raven *Corvus corax*. 267, 87. Fairly common in spring, occasional in summer, uncommon in fall and winter. Ave 3.8/2 Mar-Jun, 0.5 Aug-Sep, 1.9/2 Oct-Feb. Max 16 on 6 Jun 1976. Occasional breeder; egg set from "Solana Beach" on 30 Apr 1966 (SB 19352).

Verdin *Auriparus flaviceps*. 1, 1. Exceptional; 9 Jan-17 Feb 1975 (AB 29:743, 1975).

Bushtit *Psaltriparus minimus*. 14636, 120. Abundant in fall and winter, very common in spring and summer. Ave 160/150 Sep-Feb, falling to 88/78 Mar-Aug. Max 430 on 6 Nov 1977. Common breeder.

[Red-breasted Nuthatch *Sitta canadensis*. 0, 0. Listed as a rare fall migrant by Summers (1975), but we know of no specific occurrences.]

Cactus Wren *Campylorhynchus brunneicapillus*. 74, 47. Previously an uncommon resident, now extirpated. No records after 6 Sep 1981 when the habitat was converted to farmland. Ave 1973-1981 0.9 throughout the year. All records were from *Opuntia* patch on slopes of northeast area. Max 6 on 9 Mar 1975. Formerly, probable yearly breeder.

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- Rock Wren *Salpinctes obsoletus*. 2, 2. Rare; 13 Oct 1974, 10 Apr 1983.
- Bewick's Wren *Thryomanes bewickii*. 733, 114. Fairly common resident. Ave 6.1/5 throughout the year. Max 28 on 8 Jan 1978. Common breeder.
- House Wren *Troglodytes aedon*. 320, 93. Fairly common in fall, uncommon otherwise. Ave 4.9/4 Sep-Dec, falling to 1.4/1 Mar-Aug. Max 15 on 7 Sep 1980.
- Marsh Wren *Cistothorus palustris*. 2432, 119. Common in winter, fairly common in summer. Ave 29/25 Jan-Jun, 7.3/6 Jul-Sep, 15/16 Oct-Dec. Max 96 on 1 Jun 1975. Common breeder.
- Golden-crowned Kinglet *Regulus satrapa*. 1, 1. Rare; 10 Nov 1976.
- Ruby-crowned Kinglet *Regulus calendula*. 428, 60. Fairly common winter visitor. Ave 8.0/8 Nov-Mar, none Jun-Sep. Late spring (May) records 2 May 1976, 3 May 1981 (2), and 6 May 1979. Max 26 on 1 Nov 1981.
- [Gnatcatchers *Polioptila* spp. 299, 73. Includes 48% Blue-gray and 37% Black-tailed Gnatcatchers plus 14% not identified to species. Max 14 on 11 Jan 1981.]
- Blue-gray Gnatcatcher *Polioptila caerulea*. 145, 46. Uncommon winter visitor. Ave 2.1/1 Sep-Mar, none Apr-Aug. Max 9 on 2 Nov 1980.
- Black-tailed Gnatcatcher *Polioptila melanura*. 112, 38. Uncommon resident; increasing. Only records 1974-1978 were 7 Dec 1975-7 Mar 1976 (max 3). Ave 1979-1983 1.4/1 throughout the year. Max 9 on 5 Dec 1982. Bred in 1980. (See also under Status of Endangered Species.)
- Western Bluebird *Sialia mexicana*. 56, 8. Uncommon winter visitor. Ave 1.4 Nov-Feb, none in other months. Max 20 on 6 Feb 1983.
- Townsend's Solitaire *Myadestes townsendi*. 1, 1. Rare; 1 Feb 1976.
- Swainson's Thrush *Catharus ustulatus*. 5, 4. Rare; five records 4 May-2 June, 20 Jun 1982 (heard singing in willows, TM), 9 Sep 1979. Max 3 from 4 to 13 May 1975 (TM).
- Hermit Thrush *Catharus guttatus*. 189, 38. Fairly common winter visitor. Ave 3.5/2 Nov-Mar, falling to none May-Sep. Max 20 on 9 Nov 1975.
- American Robin *Turdus migratorius*. 5, 3. Rare winter visitor; 25 Oct 1981 (TM), 17 Dec 1974 (SS), 8 Jan 1978, 19 Mar-2 Apr 1978 (2).
- Varied Thrush *Ixoreus naevius*. 0, 0. Rare; 8 Jan 1982 (RWa). Another 16 Jan 1973 (AF) at nearby Glen Park in Cardiff.
- Wrentit *Chamaea fasciata*. 2229, 120. Common resident. Ave 19/19 throughout the year. Max 34 on 11 Jul 1976. Probable common breeder.
- Northern Mockingbird *Mimus polyglottos*. 1946, 120. Common resident. Ave 22/22 Jun-Oct, falling to 11/10 Nov-Apr. Max 53 on 3 Aug 1975. Common breeder.
- Sage Thrasher *Oreoscoptes montanus*. 1, 1. Rare; 6 Feb 1977.
- Bendire's Thrasher *Toxostoma bendirei*. 0, 0. Rare; 27 Aug 1964 (McCaskie et al. 1967b).
- California Thrasher *Toxostoma redivivum*. 852, 116. Fairly common resident; decreasing. Ave 7.1/6 throughout the year. Max 21 on 8 Sep 1974. Common breeder.
- Water Pipit *Anthus spinoletta*. 879, 44. Common winter visitor. Ave 15/2 Nov-Apr, falling to none May-Sep. Max 100 on 7 Feb 1982.
- Cedar Waxwing *Bombycilla cedrorum*. 218, 9. Fairly common but very sporadic winter visitor. Ave 8.5 Jan-Feb. Single records in Nov, Mar, May, and on 6 Jul 1975 (25). Max 70 on 10 Feb 1980.
- Phainopepla *Phainopepla nitens*. 14, 7. Occasional in summer. Ave 0.4 Jun-Aug, none Oct-May. Max 4 on 5 Jun 1983 and 7 Aug 1977.

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Loggerhead Shrike *Lanius ludovicianus*. 942, 119. Fairly common resident. Ave 7.8/8 throughout the year. Max 19 on 10 Sep 1978. Yearly breeder.

European Starling *Sturnus vulgaris*. 6626, 120. Very common resident. Ave 66/54 Jul-Feb, falling to 31/22 Mar-May. Max 230 on 7 Nov 1976. Common breeder; first known to breed in 1964 (egg set WF 75235).

Bell's Vireo *Vireo bellii*. 0, 0. Rare; 20 May 1986 (AW), 21 May 1985 (CE).

Solitary Vireo *Vireo solitarius*. 5, 3. Rare migrant; 6 Apr 1975 (2), 19 Apr 1987 (SW), 4 May 1975 (2), 5 May 1974, 14 Sep 1980 (TM).

Hutton's Vireo *Vireo huttoni*. 13, 9. Occasional after 1980; possibly overlooked previously. Ave 1981-1983 0.4 throughout the year. Max 3 on 2 May 1982. Bred in 1981 and 1982 in thicket of nonnative acacia.

Warbling Vireo *Vireo gilvus*. 136, 27. Common spring migrant, uncommon fall migrant. Ave 11/7 May, none Jul, 1.0/1 Sep, and none Nov-Mar. Early fall migrant 1 Aug 1976. Max 30 on 4 May 1980.

Tennessee Warbler *Vermivora peregrina*. 1, 1. Rare fall migrant; 19 Sep 1962 (AFN 17:70, 1963), 28 Sep 1962 (AFN 17:70, 1963), 13 Oct 1974, 30 Oct 1964 (AFN 19:81, 1965).

Orange-crowned Warbler *Vermivora celata*. 251, 66. Fairly common in spring, uncommon in fall, occasional otherwise. Ave 5.3/2 Mar-May, 0.5 Jun-Aug, 2.6/2 Sep-Oct, 0.6 Nov-Feb. Max 43 on 6 Apr 1975.

Nashville Warbler *Vermivora ruficapilla*. 42, 15. Uncommon in spring, occasional in fall. Ave 1.5 Apr-May, none Jun-Aug, 0.5 Sep-Oct, none Dec-Mar. Max 21 on 4 May 1975.

Virginia's Warbler *Vermivora virginiae*. 0, 0. Rare; 8 Sep 1966 (GMcC), 11-13 Sep 1964 (AFN 19:81, 1965), 12 Oct 1962 (GMcC).

Northern Parula *Parula americana*. 1, 1. Exceptional in winter; female 8 Mar 1981 (AB 35:864, 1981).

Yellow Warbler *Dendroica petchia*. 45, 21. Uncommon migrant. Ave 1.7/1 May, none Jul-Aug, 1.1 Sep-Oct. One Dec-Mar record, 5 Jan 1975. Fall records 12 Aug 1967 (Unitt 1984) to 11 Nov 1964 (AFN 19:80, 1965). Max 5 on two May, one Sep dates.

Yellow-rumped Warbler *Dendroica coronata*. 7862, 75. Abundant winter visitor. Ave 130/120 Nov-Apr, falling to none Jun-Sep. Max 280 on 8 Jan 1978. Myrtle Warblers identified 6 Apr 1975, 16 Apr 1978 (TM).

Black-throated Gray Warbler *Dendroica nigrescens*. 58, 16. Uncommon in spring, occasional in fall. Ave 2.8/1 Apr-May, none Jun-Aug, 0.1 Sep, none Oct-Mar. Max 21 on 4 May 1975.

Townsend's Warbler *Dendroica townsendi*. 75, 13. Fairly common in spring, occasional in fall. Ave 6.9/5 May, none Jul-Aug, 0.2 Sep-Oct, none Nov-Mar. Early spring record 10 Apr 1983 (2). Max 21 on 4 May 1975.

Hermit Warbler *Dendroica occidentalis*. 26, 8. Uncommon spring migrant. Ave 2.6/1 May, none in other months. Max 10 on 5 May 1976.

Prairie Warbler *Dendroica discolor*. 0, 0. Rare; 17 Oct 1964 (2) (AFN 19:81, 1965), 19-28 Oct 1962 (McCaskie and Banks 1964).

Palm Warbler *Dendroica palmarum*. 0, 0. Rare; 12 Oct 1962 (McCaskie and Banks 1964).

Blackpoll Warbler *Dendroica striata*. 0, 0. Rare; 30 Sep 1967 (AFN 22:91, 1968).

Black-and-white Warbler *Mniotilta varia*. 2, 2. Rare in spring; 2 May 1982, 5 May 1976.

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American Redstart *Setophaga ruticilla*. 3, 3. Rare; 13 Sep 1981 (TM), 3 Oct 1982, 2-7 Dec 1973 (SS), 7 Jun 1981.

Northern Waterthrush *Seiurus noveboracensis*. 2, 2. Rare; 2 Sep 1965 (AFN 20:92, 1966), 8 Sep 1985 (JL), 5 Oct 1975, 18 Dec 1974 (AB 29:744, 1975), 5-7 Apr 1974 (AB 28:854, 1974).

MacGillivray's Warbler *Oporornis tolmiei*. 10, 7. Occasional migrant. Ave 0.3 Sep-Oct, 0.2 Apr-May, none in other months. Max 2 on three dates.

Common Yellowthroat *Geothlypis trichas*. 2056, 120. Common resident. Ave 27/22 May-Jun, 13/12 Aug-Dec, 18/17 Jan-Apr. Max 70 on 2 May 1982. Common breeder.

Wilson's Warbler *Wilsonia pusilla*. 341, 37. Common in spring, occasional in fall; decreasing. Ave 4.6/3 Apr, 27/21 May, none Jul, 0.8/1 Sep-Oct, none Dec-Mar. Max 74 on 4 May 1975.

Yellow-breasted Chat *Icteria virens*. 1, 1. Rare; 20 May 1978 (TM), 8 Sep 1974.

Summer Tanager *Piranga rubra*. 1, 1. Rare; 5 Sep 1982.

Western Tanager *Piranga ludoviciana*. 52, 14. Fairly common spring migrant, occasional fall migrant. Ave 4.0/2 May, none Jul, 0.5 Aug-Sep, none Oct-Apr. Max 21 on 4 May 1975.

Black-headed Grosbeak *Pheucticus melanocephalus*. 167, 37. Fairly common in summer. Ave 4.0/3 Apr-Aug, falling to none Nov-Mar. Max 20 on 3 Aug 1980. Yearly breeder in willows.

Blue Grosbeak *Guiraca caerulea*. 0, 0. Exceptional in winter, rare in spring; 22 Feb-13 Mar 1964 (McCaskie et al. 1967c), 23 Apr 1973 (SS), 28 Apr 1984 (BM).

Lazuli Bunting *Passerina amoena*. 5, 2. Rare spring and fall migrant; 18 Apr 1982 (TM), 26 Apr 1981 (2) (TM), 3 May 1981, 4 May 1975 (4), 10 Sep 1972 (SS).

Green-tailed Towhee *Pipilo chlorurus*. 0, 0. Rare; 6 Dec 1973 (SS).

Rufous-sided Towhee *Pipilo erythrophthalmus*. 413, 94. Fairly common in spring, uncommon otherwise. Ave 8.3/8 May-Jun, falling to 2.0/2 Aug-Mar. Max 17 on 4 May 1975. Common breeder.

Brown Towhee *Pipilo fuscus*. 4358, 120. Very common resident. Ave 36/35 throughout the year. Max 74 on 5 Jan 1975. Common breeder.

Rufous-crowned Sparrow *Aimophila ruficeps*. 14, 8. Occasional. Ave 0.1 throughout the year. Max 5 on 12 Jul 1980.

Chipping Sparrow *Spizella passerina*. 5, 4. Rare migrant; 5 Apr 1981, 2 May 1976 (2), 4 May 1975, 10 Sep 1972 (SS), 5 Oct 1975.

Vesper Sparrow *Poocetes gramineus*. 9, 5. Rare in fall and winter; 4 Oct 1981, 5 Oct 1975, 1 Nov 1981 (3), 6 Jan-2 Mar 1980 (2).

Lark Sparrow *Chondestes grammacus*. 1, 1. Rare; 8 Dec 1974.

[Savannah Sparrow *Passerculus sandwichensis*. 4736, 120. The resident race was recorded separately from migrants.]

Belding's Savannah Sparrow *P. s. beldingi*. 4233, 120. Very common resident; decreasing. Ave 35/32 throughout the year. Max 120 on 1 May 1977. Common breeder; see also under Status of Endangered Species.

Migrant Savannah Sparrows. 503, 44. Fairly common in winter. Ave 7.1/1 Oct-Apr, none Jun-Aug. Late spring records 1 May 1977 (2), 2 May 1976. Max 60 on 2 Dec 1979. Large-billed Sparrow (*P. s. rostratus*) identified fall 1981 (TM).

Grasshopper Sparrow *Ammodramus savannarum*. 0, 0. Rare; 11 Apr 1982 (TM).

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Fox Sparrow *Passerella iliaca*. 9, 8. Occasional winter visitor. Ave 0.2 Oct-Feb. None in other months.

Song Sparrow *Melospiza melodia*. 7819, 120. Very common resident; decreasing. Ave 89/82 Jan-Jun, falling to 39/31 Jul-Nov. Max 200 on 5 Jan 1975. Common breeder.

Lincoln's Sparrow *Melospiza lincolni*. 73, 36. Uncommon winter visitor. Ave 1.0 Oct-Apr, falling to none Jun-Aug. Early record 7 Sep 1975, late record 6 May 1979. Max 7 on 6 Apr 1975.

Swamp Sparrow *Melospiza georgiana*. 4, 4. Rare winter visitor; 2-9 Nov 1980 (TM), 10 Dec 1976 (AB 31:375, 1977), 21 Dec 1986 (LS), 9 Jan-6 Mar 1983.

White-throated Sparrow *Zonotrichia albicollis*. 4, 2. Rare winter visitor; 8 Jan 1978 (2), 9 Jan 1983 (2).

Golden-crowned Sparrow *Zonotrichia atricapilla*. 134, 40. Uncommon in winter, fairly common in spring. Ave 1.8/1 Nov-Mar, 5/3 Apr, none Jun-Oct. Max 18 on 3 Apr 1977.

White-crowned Sparrow *Zonotrichia leucophrys*. 7262, 75. Abundant winter visitor. Ave 130/99 Nov-Mar, falling to none Jun-Aug. Early record 10 Sep 1978. Max 500 on 11 Jan 1976.

Dark-eyed Junco *Junco hyemalis*. 6, 3. Rare winter visitor; 13 Oct 1974, 4 Nov-2 Dec 1973 (4), 13 Jan 1973 (SS).

Bobolink *Dolichonyx oryzivorus*. 0, 0. Rare fall migrant; 30 Sep 1967 (SS).

Red-winged Blackbird *Agelaius phoeniceus*. 8828, 118. Very common resident. Ave 100/83 Mar-Jun, falling to 60/35 Jul-Feb. Max 440 on 1 May 1977. Common breeder.

Tricolored Blackbird *Agelaius tricolor*. 27, 3. Rare and sporadic from fall through spring; 25 Jul-10 Sep 1972 (35) (SS), 24 Oct 1981 (BM), 6 Nov 1977 (25), 6 Feb 1977, 1 May 1977, 11 May 1982 (BM), 27 May 1981 (BM).

Western Meadowlark *Sturnella neglecta*. 2657, 120. Very common in winter, common in summer. Ave 32/25 Nov-Apr, falling to 13/10 May-Oct. Max 88 on 1 Feb 1981. Common breeder.

Yellow-headed Blackbird *Xanthocephalus xanthocephalus*. 2, 2. Rare from fall to spring; 18 Oct 1981 (4) (TM), 7 Nov 1982, 4 Feb 1970 (2) (AF), 1-17 May 1983 (4) (BM), 20 May 1979 (TM).

Brewer's Blackbird *Euphagus cyanocephalus*. 2530, 113. Very common in winter, common otherwise. Ave 44/35 Jan-Feb, 12/9 Apr-Aug, 21/17 Sep-Dec. Max 150 on 1 Feb 1981. Yearly breeder.

Great-tailed Grackle *Quiscalus mexicanus*. 0, 0. Rare; 10-11 Feb 1987 (RP).

Brown-headed Cowbird *Molothrus ater*. 152, 36. Fairly common summer visitor. Ave 3.3/2 Apr-Jul, falling to none Dec-Feb. Max 17 on 7 Apr 1974. Yearly breeder; in 1982, seen parasitizing Common Yellowthroat (TM).

Orchard Oriole *Icterus spurius*. 0, 0. Rare; 26-28 Oct 1962 (AFN 17:71, 1963), 27 Oct-3 Nov 1973 (AB 28:110, 1974).

Hooded Oriole *Icterus cucullatus*. 159, 40. Fairly common in summer. Ave 3.1/3 Apr-Aug, falling to none Nov-Mar. Max 11 on 4 May 1975. Yearly breeder.

Northern Oriole *Icterus galbula*. 334, 50. Fairly common in summer. Ave 7.8/7 Apr-Jul, falling to none Oct-Feb. Early record 3 Mar 1974. Max 23 on 2 Jun 1974. Yearly breeder. Baltimore Orioles *I. g. galbula* recorded 2 Jan 1973 (AB 27:665, 1973), 25-29 Sep 1973 (AB 28:110, 1974).

Scott's Oriole *Icterus parisorum*. 0, 0. Rare; 11 May 1980 (TM).

Purple Finch *Carpodacus purpureus*. 3, 1. Rare; 11 Apr 1976 (3).

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House Finch *Carpodacus mexicanus*. 25177, 120. Abundant resident. Ave 280/250 Aug-Dec, falling to 110/95 Mar-May. Max 540 on 12 Oct 1980. Common breeder.

Pine Siskin *Carduelis pinus*. 3, 1. Rare; 7 Dec 1975 (3).

Lesser Goldfinch *Carduelis psaltria*. 2556, 114. Common resident. Ave 21/17 throughout the year. Max 100 on 7 Dec 1980. Common breeder.

Lawrence's Goldfinch *Carduelis lawrencei*. 212, 20. Sporadic; fairly common in spring, uncommon in fall. Ave 4.3 Mar-Jun, none Jul, 1.2 Aug-Oct, none Nov-Jan. Half of the individuals were found in 1975. Max 50 on 9 Mar 1975.

American Goldfinch *Carduelis tristis*. 303, 51. Uncommon resident. Ave 2.5 throughout the year. Max 38 on 11 Jan 1976. Probable occasional breeder.

House Sparrow *Passer domesticus*. 340, 61. Uncommon resident; decreasing. Ave 2.8/1 throughout the year. Max 37 on 5 Jan 1975.

Accepted 26 August 1987



Green-backed Heron

Sketch by Eric Lichtwardt