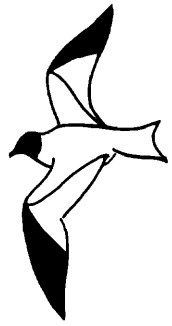


# WESTERN BIRDS



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## **DISTRIBUTION AND HISTORY OF CALIFORNIA GULL COLONIES IN NEVADA**

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Conover (1983) reported on breeding populations of the California Gull (*Larus californicus*) in the western United States and found that the total number of nesting birds in the 1980s had nearly tripled from that in the 1920s (276,000 vs. 101,000). The species' status in Nevada is not well documented, even though rookeries are restricted to a few localities in the western part of that state. For example, Power (1980) presented low and high estimates for the number of breeding adults of 1800 and 7512, respectively, whereas surveys conducted by U.S. Fish and Wildlife Service (USFWS) and Nevada Department of Wildlife (NDOW) biologists during the late 1980s suggest there may be more than 15,000.

In this paper we review what little is known about the status of the California Gull in Nevada, with emphasis on recent population estimates from Stillwater National Wildlife Refuge (NWR), Pyramid Lake (Anaho Island NWR), Fallon NWR, and Lahontan Dam and Reservoir (Figure 1). Our survey is based on the literature, communication with wildlife managers and knowledgeable local biologists, and on Annual Narrative Reports and other documents in USFWS and NDOW files. We report counts by management areas (e.g., wildlife refuges) because data were often presented that way in the unpublished reports we consulted; this occasionally gives the misleading impression that areas are widely separated when they are in fact adjacent. Indeed, these areas were often combined in the reports we reviewed (e.g., Stillwater Wildlife Management Area [WMA] Annual Narrative Reports included Stillwater NWR and parts of Fallon NWR).

### HISTORY OF GULL COLONIES

#### Pyramid Lake (Anaho Island and Gull Rock)

California Gulls on Anaho Island (a 100-ha National Wildlife Refuge established in 1913) in Pyramid Lake now nest on a sandy beach on the south end of

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the island and among the greasewood (*Sarcobatus vermiculatus*) and saltgrass (*Distichlis spicata*) flats along the west side of the island (Figure 2). Historically, gulls nested in rocky habitat on the northern shore (e.g., figure 3 in Ridgway 1877, figure 17 in Woodbury 1966). Data on the Pyramid Lake colony from 1868 through 1990 are given in Table 1. Ridgway (1877:637) described the gull colony in May 1868 as “immense,” spreading over “several acres of ground.” As the densest nesting areas for this species (at Mono Lake, California, and Great Salt Lake, Utah) contain up to 1000 pairs/acre, we infer that the colony seen by Ridgway numbered 4000–6000 birds. There were still “many” on Anaho Island in 1879 (Henshaw 1879), but by 1917 gulls had abandoned the island for Gull Rock, a group of small pinnacles (18 × 27 m, elevation 18–21 m) at the northern end of the lake. Evermann (1923, cited by Hall 1926)

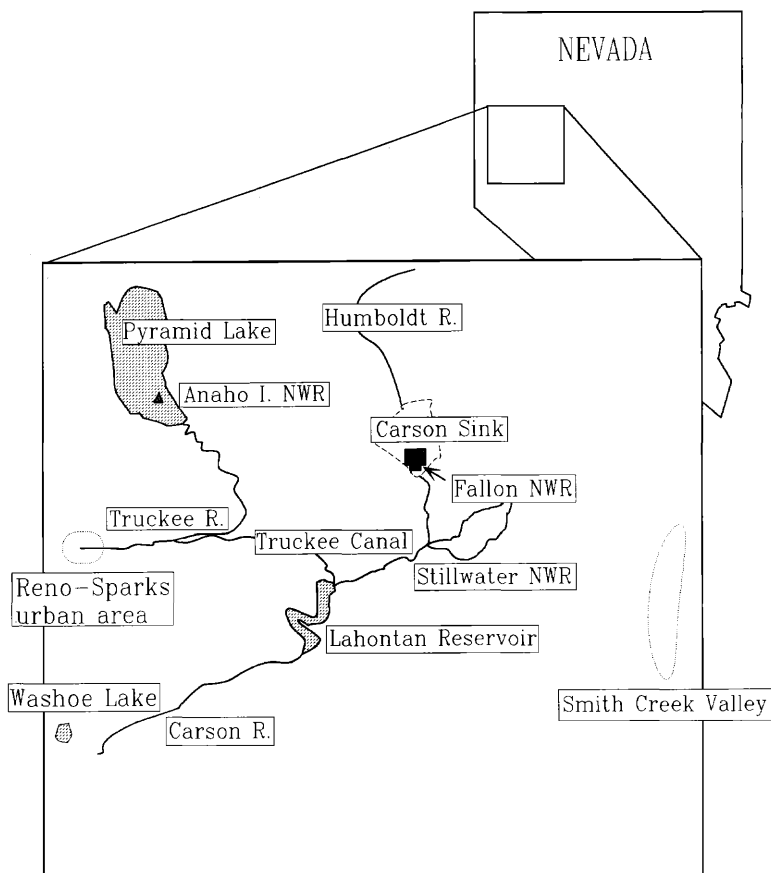


Figure 1. Location of California Gull colonies in Nevada.

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estimated about 300 nests on Gull Rock in 1917, similar to Hall's (1926) estimates of 600 adults and young in 1924 (Hall [1929:2] later stated that his estimate of 600 was "far too low" but did not clarify this). Hall also observed large numbers of gulls near the American White Pelican (*Pelecanus erythrorhynchos*) colony on Anaho Island in 1924 but saw only one nest that was later abandoned.

Ridgway (1877:638) reported that "many bushels of eggs were gathered for food," and it might be that human disturbance and egging prompted a population decline and shift in nesting location, although the record is not sufficient to confirm causality. In any event, Hall (1929), in a letter to H. P. Sheldon (U.S. Game Conservation Officer), urged that Pyramid Lake be designated a bird reservation, primarily because of disturbance to American White Pelican colonies, but he also noted that California Gulls and Double-crested Cormorants (*Phalacrocorax auritus*) "[have] of late years suffered great destruction of eggs and young in the same way as has the White Pelican on Anaho Island."

Native Americans continued to collect eggs after the gull colony moved to Gull Rock, as Hall (1924:3) reported: "I learned that three days previous to my arrival at the lake [15 May 1924], an Indian fisherman had visited the rock and taken all the eggs for food. That they laid again was indicated by my count of three hundred (300) young gulls made on June 28 when I visited the rock."

California Gulls had resumed nesting on Anaho Island by 1927, when Gromme (1930) reported seven nests there; by 1940 there were 200 nests



Figure 2. California Gull rookery at Anaho Island National Wildlife Refuge, Pyramid Lake, Nevada, 23 July 1990.

Photo by Frank S. Todd

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**Table 1** Numbers of California Gulls at Anaho Island, Pyramid Lake, Nevada

Date	Estimated or Counted Adults	Estimated or Counted Nests	Estimated or Counted Young	Total Estimated Population	Source
1868				"immense" <sup>a</sup>	Ridgway 1877
1879				"many"	Henshaw 1879
1924		1 <sup>b</sup>			Hall 1924
1927		7			Gromme 1930
1929				0 <sup>c</sup>	Hall 1929
1940		200			Bond 1940
1942		504			G. Alcorn, cited in Marshall and Giles 1953
1948		1000			V. Mowbray, cited in Marshall and Giles 1953
1950	2000		400 <sup>d</sup>		ANR, SWMA <sup>e</sup>
1951	1800	1706	684	4000	Marshall and Giles 1953
1952		1500	1400	4500	ANR, SWMA
1953		1500	900	4000	ANR, SWMA
1954		1500			ANR, SWMA
1955	2000 <sup>f</sup>				ANR, SWMA
1956	2600	1750			ANR, SWMA
1957		1950			ANR, SWMA
1958	3000	1700	3000		ANR, SWMA
1959		2000	3500		ANR, SWMA
1960		2000 <sup>g</sup>			ANR, SWMA
1961	2150		2000		ANR, SWMA
1962	2550		3500		ANR, SWMA
1963			2500		ANR, SWMA
1964		1000	2100	4000	ANR, SWMA
1965		1200	2500	4500	ANR, SWMA
1966		1200	2500	5000	ANR, SWMA
1967		3000	4500	8000	ANR, SWMA
1968		2800	4200	9000	ANR, SWMA
1969		2200	4000	7500	ANR, SWMA
1970		2500	4625	10,000	ANR, SWMA
1971		1931	2895 <sup>h</sup>	6900	ANR, SWMA
1972		2100	2950	7000	ANR, SWMA
1975			3500		ANR, SWMA
1977		3000			H. Kingery, cited in Alcorn 1988
1978			800		ANR, SWMA
1979	2975		900	3875	ANR, Anaho, 1. NWR
1980	3400		750	4150	ANR, Anaho, 1. NWR

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**Table 1** (Continued)

Date	Estimated or Counted Adults	Estimated or Counted Nests	Estimated or Counted Young	Total Estimated Population	Source
1981	4000	1750	600 <sup>i</sup>		ANR, Anaho 1. NWR
1982		1900			ANR, Anaho 1. NWR
1983		2150	1100		ANR, Anaho 1. NWR
1986	3550	2660 <sup>j</sup>			Thompson 1987
1987	2800	2100			Bill Henry, pers. comm.
1988		2500			Bill Henry, pers. comm.
1989		1900			Bill Henry, pers. comm.
1990		1680			Bill Henry, pers. comm.

<sup>a</sup> 4000 - 6000; see text.

<sup>b</sup> One nest with one egg observed on south shore; nest later deserted. Hall (1924) noted large numbers of adults near pelican colony, to prey on eggs and chicks. Most nests were on Gull Rock; Hall estimated 600 adults and immatures but later felt this number to be "far too low" (Hall 1929).

<sup>c</sup> Author stated "at present and for many years past, the California Gulls . . . have nested many miles away from Anaho Island in the northern end of Pyramid Lake," presumably on Gull Rock.

<sup>d</sup> Mortality of juveniles very high due to banding operations.

<sup>e</sup> Annual Narrative Report, Stillwater Wildlife Management Area.

<sup>f</sup> High mortality of juveniles; no numbers given.

<sup>g</sup> Lowering lake level threatened to connect island to mainland.

<sup>h</sup> Authors noted production down 38% from 1970.

<sup>i</sup> Number fledged.

<sup>j</sup> 13 May estimate; on 12 June, when most young had fledged recently, estimate was 4500 adults on 4500 nests.

present (Bond 1940). During the 1950s the colony fluctuated between 1500 and 2000 nests (Marshall and Giles 1953, Stillwater WMA Ann. Narr. Repts.). Data for the 1960s are difficult to interpret because of unequal censusing effort and inconsistent methods of censusing and reporting data, the precision of which is unstated. From 1964 through 1966 annual estimates of nests by USFWS personnel ranged from 1000 to 1200, but in 1967 and 1968, 2800 - 3000 nests were reported. From 1969 through 1977 counts were similar to 1950s levels, with two exceptions: 2500 in 1970 and 3000 in 1977. Nest counts resumed in 1981 after a lapse of several years and again were similar to 1950s levels; in two years, however, counts were higher (2660 in 1986, 2500 in 1988; Thompson 1987). There were 1680 nests present in 1990 (B. Henry pers. comm.). These counts are based on aerial surveys and ground counts from elevated observation points, and nest estimates are believed to be accurate to within 20%. Note that recent counts are similar to the probable size of the colony described by Ridgway (1877) in the 1860s.

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Stillwater National Wildlife Refuge

Stillwater WMA, which includes Stillwater NWR, was established in 1948 and currently covers about 200,000 acres. Thompson and Merritt (1988) noted that the quality and quantity of its water has been steadily declining, as its source is return flow from irrigated land; for example, estimated wetland acreage declined from over 23,971 in 1986 to 4,388 in 1988 (Thompson and Neel 1989).

California Gulls nest, or have nested, at two sites within Stillwater NWR: Stillwater Point Reservoir and Stillwater Marsh. In most years data are available only for the WMA as a whole, rather than by site, but in Table 2 we have in-

**Table 2** Numbers of California Gulls in the Stillwater National Wildlife Refuge, Nevada

Date	Estimated or Counted Adults	Estimated or Counted Nests	Estimated or Counted Young	Source
1950		15	32	ANR, SWMA <sup>a</sup>
1951		100	128	ANR, SWMA <sup>a</sup>
1952		100	100	ANR, SWMA <sup>a</sup>
1953		15	20	ANR, SWMA <sup>a</sup>
1954		20	25	ANR, SWMA <sup>a</sup>
1955		80	100	ANR, SWMA <sup>a</sup>
1967	300 <sup>b</sup>			ANR, SWMA <sup>a</sup>
1972	100 <sup>b</sup>			ANR, SWMA <sup>a</sup>
1977		1700		H. Kingery, cited in Alcorn 1988
1986		1200		NDOW Rept.
1987	1350 <sup>c</sup>			NDOW Rept.
1988		0		Thompson and Neel 1989
1989		0		NDOW Rept.
1990		0		NDOW Rept.
Stillwater Point Reservoir <sup>d</sup>				
1950		13	20 <sup>e</sup>	Marshall 1951; ANR, SWMA
1951			100	ANR, SWMA
1954 <sup>f</sup>				ANR, SWMA
1955 <sup>g</sup>	426			ANR, SWMA
1956		37 <sup>h</sup>		ANR, SWMA
1957		49 <sup>i</sup>		ANR, SWMA

<sup>a</sup> Annual Narrative Report, Stillwater Wildlife Management Area.

<sup>b</sup> No nesting; see text.

<sup>c</sup> Breeding pairs.

<sup>d</sup> Small bare island, used for first time in 1950, abandoned several years later.

<sup>e</sup> Estimated 6 reached maturity.

<sup>f</sup> Nesting gulls still present.

<sup>g</sup> Colony on island "overflowed," some adults moved to shoreline of Stillwater Pt. and to Nutgrass Dike; predation was high in both areas.

<sup>h</sup> Nests counted on 24 May.

<sup>i</sup> 26 of these on point of land on shoreline.

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cluded the few counts we found for Stillwater Point Reservoir; two counts for Stillwater Marsh are presented below.

Nest counts made in the 1950s ranged from 15 (1950, 1953), to 100 (1951, 1952) (Stillwater WMA Ann. Narr. Repts.). Ten of twelve counts made by USFWS biologists in the 1960s and early 1970s combined California and Ring-billed (*Larus delawarensis*) gulls and therefore could not be used. About 300 California Gulls were present in 1967 and 100 were present in 1972, but apparently none nested; L. Napier (in Alcorn 1988) stated that there was "no nesting at Stillwater from 1967 to 1974." P. Schwabenland (in Alcorn 1988) also reported that California Gulls "come to feed from Anaho where they nest. Have nested at Stillwater in the past although not at present [1974]." From 1976 on, abundance is reported as "use days" with a few anecdotal comments (Stillwater WMA Ann. Narr. Repts.) and is therefore essentially uninterpretable. For example, USFWS biologists reported that in 1976 use was down 65% and production was down 85% from 1975, and that use dropped to an all-time low (about 15% of long-term averages) in 1978. There is one report of 1700 nests in 1977 (H. Kingery, in Alcorn 1988). In 1980, gulls were considered "more abundant" than in 1979, but no numbers were presented (Stillwater WMA Ann. Narr. Repts.). In 1986, 1200 nests were reported, and 1350 breeding pairs were observed in 1987 (NDOW Repts.). No California Gulls nested in the refuge in 1988, 1989, or 1990 (NDOW Repts.; Thompson and Neel 1989).

The few counts reported for individual sites within Stillwater WMA are summarized below.

*Stillwater Point Reservoir.* Stillwater Point Reservoir was first used by nesting California Gulls in 1950, when the refuge biologist recorded 13 nests with 20 young on a small bare island (Stillwater WMA Ann. Narr. Repts.; Marshall 1951). The next report of nesting was in 1955, when 426 adults were counted and the colony "overflowed" to the shoreline of the reservoir and Nutgrass Dike (where predation was high); in 1957 approximately half of the 49 nests counted were on the shoreline and half were on the island within the reservoir (Stillwater WMA Ann. Narr. Repts.). There are no other reports of nesting on the reservoir.

*Stillwater Marsh.* Only two counts are reported for Stillwater Marsh: "total estimated populations" of 200 and 250 in 1951 and 1952, respectively (Stillwater WMA Ann. Narr. Repts.).

### Lahontan Dam and Reservoir

California Gulls nest on two rocky islets (Gull Island and Walleye Island, each approximately 2.4 m above water level) within Lahontan Reservoir (Table 3). The colony at Gull Island (0.52 ha) apparently was not active before 1930 (Conover 1983), but its exact date of establishment is unknown. Alcorn (1988) reported that over 60 chicks were banded there in 1939 and 1940, with nest counts in the early 1940s ranging from 172 to 380. The next counts were made about 40 years later, when Gubanich and Judd (1988) reported that 4000 pairs nested there from 1983 through 1985; they have since revised this estimate downward to 3000 pairs (Gubanich pers. comm.). In 1989, Gubanich and Judd counted 2710 nests on Gull Island in mid-May, and in 1990 counted 2986 nests in 12 May (an additional 30 nests were completed later; Gubanich pers. comm.). The colony on Walleye Island (actually a small group of Califor-

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**Table 3** Numbers of California Gulls at the Lahontan Dam and Reservoir, Nevada

Date	Estimated or Counted Adults	Estimated or Counted Nests	Estimated or Counted Young	Source
1939			65 <sup>a</sup>	Alcorn 1988
1940			61 <sup>a</sup>	Alcorn 1988
1941		172		Alcorn 1988
1942		380		Alcorn 1988
1943		246		Alcorn 1988
1944		364		Alcorn 1988
1946		342		Alcorn 1988
1983-85		3000 <sup>b</sup>		A. Gubanich, pers. comm.
1989	2710			A. Gubanich, pers. comm.
1990	3016			A. Gubanich, pers. comm.

<sup>a</sup> Number of young banded.

<sup>b</sup> Gull Island.

nia Gulls nesting among ca. 2000 pairs of Ring-billed Gulls) was established in 1986, when it consisted of 100 nesting pairs; approximately the same number nested there from 1987 through 1989, with a slight increase to about 150 pairs in 1990 (Gubanich pers. comm.). Gubanich and Judd (1988:126) reported that disturbance (including shooting by humans and nest destruction by dogs) is "a constant threat" at Lake Lahontan, which is a Nevada State Recreation Area.

Fallon National Wildlife Refuge

Fallon NWR (Table 4) was established in 1931, but Thompson and Meritt (1988) reported that a permanent marsh no longer exists because the inflow of water has been sporadic since 1967. Nesting has been reported at three sites within the refuge: Battleground Point, Gull Island, and Pelican Island.

Two large islands (Battleground Point and Gull Island), isolated in the Carson Sink by floods, were used by hundreds of gulls in the mid-1980s. Carson Sink, normally an alkaline playa, was transformed into a 30,000-ha lake with water up to 4 m deep. The lake was quickly pioneered by dense populations of fish (e.g., Tui Chub [*Gila bicolor*] and carp); gull nesting apparently was initiated in 1984. These two colonies produced approximately 2000 young annually before disappearing after 1987 because of low water, although few accurate counts are available (NDOW Repts.; Stillwater WMA Ann. Narr. Repts.).

The "total estimated population" of California Gulls at Pelican Island was 50 in 1952 and 260 in 1956; there were no gulls present in 1951 or 1957 (Stillwater WMA Ann. Narr. Repts.). The next count was in 1987, when 450 pairs were present; there was no nesting in 1988, 1989, or 1990 (NDOW Repts.).



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**Table 4** Numbers of California Gulls in the Fallon National Wildlife Refuge, Nevada

Date	Estimated or Counted Adults	Estimated or Counted Nests	Total Estimated Population	Source
Pelican Island				
1951			0	Ann. Narr. Rept., Stillwater WMA
1952			50	Ann. Narr. Rept., Stillwater WMA
1956			260	Ann. Narr. Rept., Stillwater WMA
1957			0	Ann. Narr. Rept., Stillwater WMA
1987	900 <sup>a</sup>			NDOW Rept.
1989		0		NDOW Rept.
1990		0		NDOW Rept.
Gull Island				
1986	3000	1200		NDOW Rept.
1987	1800 <sup>c</sup>			NDOW Rept.
1988 <sup>c</sup>		0		Thompson and Neel 1989
1989		0		NDOW Rept.
1990		0		NDOW Rept.
Battleground Point				
1986		300 <sup>b</sup>		NDOW Rept.
1988 <sup>c</sup>		0		Thompson and Neel 1989
1989		0		NDOW Rept.
1990		0		NDOW Rept.

<sup>a</sup>Nesting pairs.

<sup>b</sup>Displaced by American White Pelicans by 15 May.

<sup>c</sup>Unsuccessful nesting attempt.

Other Nevada Colonies

According to N. Saake (pers. comm.) approximately 500 pairs nested on islands in Washoe Lake (Figure 1) from at least the 1960s through 1975. However, because the gulls' activities increased erosion rates of the islands, which were designed mainly as waterfowl habitat, attempts were made to eradicate the colony. In recent years up to 50 pairs have bred there, but nesting has been sporadic.

Approximately 150 pairs attempted nesting on Artesia Lake, Smith Valley (Figure 1), in 1987, but evidently failed to fledge young (NDOW Repts.). The area has been dry in subsequent years.

Conover (1983), citing G. Herron (pers. comm.), reported breeding gulls at Reno city parks, Truckee River, and Wild Horse Reservoir, but did not include the year(s) observed or population size. Power (1980), citing a personal communication from G. Herron to D. Babb, also reported nesting within Reno city

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limits. Power (1980) also listed Walker Lake, Carson Lake, Humboldt Lake, and Riptor Reservoir as possible breeding sites, but could not obtain written substantiation for them and so did not include them in his summation. N. Saake (pers. comm.) reported that no California Gulls currently nest at Humboldt, Walker, or Carson lakes, and the biologists and refuge managers we talked to were unfamiliar with Riptor Reservoir. S. Faraisl (pers. comm.) reported that approximately 600-700 pairs nested in the Reno-Sparks urban area in 1989 and 1990: 250 pairs at Highland Reservoir, 250 pairs at Virginia Lake, and several small colonies along the Truckee River. The chicks at Highland Reservoir, which supplies drinking water to Reno, were removed when the colony was determined to be a human health hazard.

## DISCUSSION

The breeding distribution of California Gulls in Nevada is highly localized in the western part of the state (Figure 1). Because it is constrained by the availability of secure nesting sites, which vary with water conditions, major colonies can persist only at permanent bodies of water (e.g., Lahontan Reservoir, Pyramid Lake). Other colonies in this desert landscape are small and ephemeral, and form or vanish as quickly as water conditions change (e.g., Carson Sink).

While it is not possible to reconstruct the history of the Nevada colonies in any detail, it is evident that the state population numbered several thousand birds in the 1870s, decreased to a few hundred breeding pairs in the 1920s, then increased to approximately 7500 pairs in the 1980s. The maximum increase appears to have occurred between 1940 and 1970. Note, however, that much of the recent growth seems attributable to the Lahontan Reservoir area, because the Pyramid Lake colony seems to have stabilized at roughly 4000-6000 breeding adults in the past two decades.

Population trends at Pyramid Lake parallel those at the nearby Mono Lake, California, where the colony grew rapidly in the middle decades of this century but then remained stable in the 1970s and 1980s (Jehl et al. 1984, 1988; for data on Great Salt Lake, Utah, see Paul et al. 1990). We suspect that these changes and the increase in the species' population in the mid-20th century (Conover 1983), as well as the increase of other large gull species in the Northern Hemisphere (e.g., Herring Gull, *Larus argentatus*; Chabrzyk and Coulson 1976), were due largely to enhanced winter survivorship.

It remains to be determined why growth seems to have ceased at Pyramid Lake, where over the past two decades numbers have been similar to those we infer for the 1860s. This correspondence is surprising, because there have been important local changes in factors that might affect gull numbers, e.g., increased protection from human disturbance via formation of a wildlife refuge, law enforcement and education efforts, changes in the ecology of Pyramid Lake, and declines in some fish species (Buchanan and Coleman 1977). Perhaps the limiting factors affecting that colony—although different from those of the last century—still, fortuitously, sum to the same carrying capacity. The alternative is that the same factors operate unchanged; if so, they remain to be identified.

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### SUMMARY

California Gull (*Larus californicus*) rookeries in Nevada are concentrated in the western portion of the state. There are a few permanent colonies (e.g., Pyramid Lake), but others, whose status depends on water conditions (e.g., Carson Sink), are ephemeral. Here we review the history and current status of California Gulls in Nevada. Surveys suggest that the breeding populations there may be larger (ca. 15,000 breeding adults in 1985 and 1986) than previously reported.

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