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Status and distribution of California Gull nesting colonies in Wyoming

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STATUS AND DISTRIBUTION OF CALIFORNIA GULL NESTING COLONIES IN WYOMING

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ABSTRACT. — Historically, two California Gull nesting colonies existed in Wyoming. In 1984 there were six breeding locations consisting of 10 different colonies that included approximately 7,273 nests. The increase in the California Gull nesting population in the state is probably a consequence of man-caused environmental changes that have resulted in the creation of additional breeding habitat and new food sources.

Breeding populations of California Gulls (*Larus californicus*) have increased in Washington State and throughout much of the western United States since the 1920s (Conover et al. 1979, Conover 1983). Reasons for the proliferation of this species include the construction of large water impoundments with isolated islands for nesting, as well as the gulls' exploitation of new man-made terrestrial food sources such as garbage dumps, other human refuse, and agricultural land (Conover 1983). Also, the California Gull has probably benefited from reduced human predation by egg and plumage hunters.

In this paper I present information on the distribution, population status, and habitat of recent California Gull nesting colonies in Wyoming. I also provide details on the history of each colony and give reasons for the population increase of this species in the state. My purpose is to provide baseline data on each colony and to clarify the literature on the current number of California Gull nesting colonies in Wyoming.

METHODS

In 1983 and 1984 I conducted a survey for California Gull breeding locations to obtain recent information on the distribution of nesting colonies in Wyoming. Between 4 April and 31 May 1984 seven aerial searches in fixed-wing aircraft were made for nesting areas of all colonial water birds, including California Gulls. Reservoirs, lakes, marshes or other potential breeding sites not observed during aerial flights were surveyed from the ground with binoculars or a spotting scope. Estimates of active nests were based on total ground counts except for one colony, where the number of nests was determined by a belt transect technique. All colonies were censused in 1984 except for the Molly Islands colony, Yellowstone Lake, Yellowstone National Park; and Bamforth Lake colonies, Albany County. Colonies were censused when most birds were in the late incubation or early hatching stages and based on one visit to each colony. A colony was defined as a geographically continuous group of breeding birds whose territorial boundaries are contiguous (Penney 1968). One exception was the Sand Mesa Wildlife Habitat Management Unit (WHMU), where several small breeding aggregations of California Gulls on man-made islands were treated as one colony.

Historical sources of information on California Gull nesting areas included a literature review, an examination of the files of the Wyoming Game and Fish Department, and contact with biologists, naturalists, bird-watchers, and others considered knowledgeable of California Gull breeding locations in the state.

COLONY DESCRIPTIONS AND HISTORIES

Bamforth Lake

McCreary (1939) considered the California Gull a common summer resident in Albany County and indicated that a small colony had existed since 1934 on an island in Bamforth Lake, 15 km northwest of Laramie (Fig. 1). In 1937 this nesting colony was about one-fourth as large as the Molly Islands, Yellowstone

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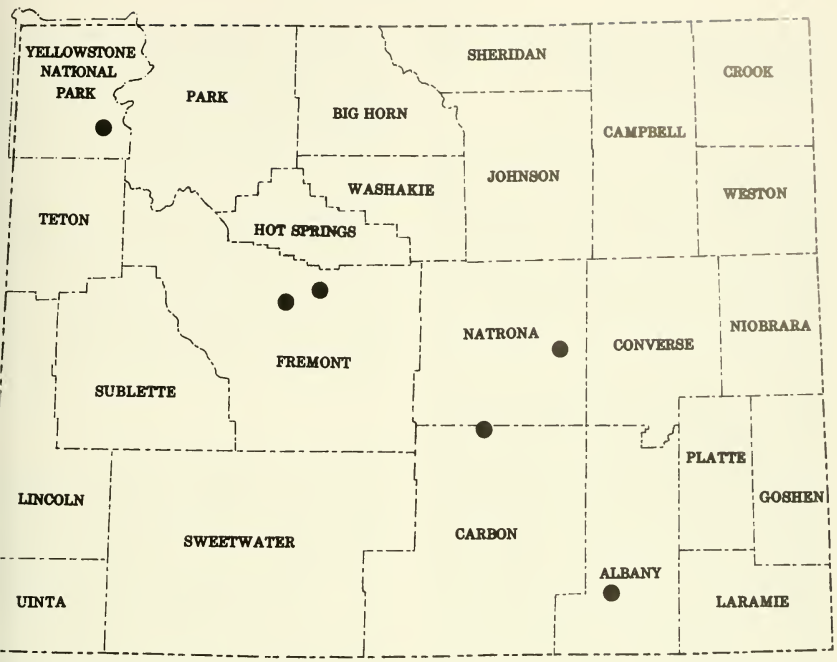

Fig. 1. Locations of California Gull nesting colonies in Wyoming, 1984.

ke, colony in 1932 (McCreary 1939). Total mbers of California Gull nests in the Bam-th Lake colony ranged from a low of 1,364 1967 to 2,003 in 1968, with a mean of 1,842 tween 1967 and 1972 (Kennedy 1973). In 74 this colony contained 2,069 nests and creased to 2,470 nests in 1975 (Raper 1975). pproximately 5,000 gulls were estimated to breeding at the Bamforth Lake colony in 79 and 1980 (Pugesek 1983). In 1984 from 000 to 7,000 California Gulls appeared to be sting at Bamforth Lake. In addition to eeding on Bamforth Island, the traditional sting site, a portion of the California Gulls ed on a 0.4-ha natural island, about 0.5 km uthwest of the main colony. Establishment the new nesting colony in 1984 was proba-y in response to reduced nesting habitat. On July 1983 Bamforth Island was 1.2 ha, hich was 45% smaller than it was in 1975 aper 1975). The nesting island continued to cline in size throughout 1984 because of ing water levels caused by above normal precipitation and increased irrigation runoff. By 1 August Bamforth Island was completely inundated except for the tops of black greasewoods (*Sarcobatus vermiculatus*).

Bamforth Island is primarily composed of bare ground interspersed with dense patches of black greasewood. The new nesting island, Peninsula Island, had more vegetative cover because the colony was recently established. Predominant plants included black greasewood and prickly-pear cactus (*Opuntia* sp.) interspersed with grasses and forbs. Nesting associates at Bamforth Lake in 1984 included the Double-crested Cormorant (*Phalacrocorax auritus*, 72 active nests), Snowy Egret (*Egretta thula*, 7 active nests), Black-crowned Night-Heron (*Nycticorax nycticorax*, 1 active nest), and Herring Gull (*Larus argentatus*, 3 active nests).

Bamforth Lake is a naturally occurring lake, almost entirely in private ownership, except for small portions under jurisdiction of the U.S. Fish and Wildlife Service and set aside as

Bamforth National Wildlife Refuge. Because access is restricted, Bamforth Lake receives minimal use from the public.

Pathfinder Reservoir

The nesting colony at Pathfinder Reservoir, an irrigation impoundment on the North Platte River, is about 70 km northeast of Rawlins, Carbon County (Fig. 1). Although California Gulls were first reported to be breeding here on 7 May 1982 by T. Varcelli, it is unknown when the colony was initiated. On 15 June 1984, I counted 683 California Gull nests. Birds were nesting on a 5.2-ha island, hereafter called Bird Island, about 0.8 km from the mainland and near the mouth of Sand Creek. The island is well vegetated, with silver sagebrush (*Artemisia cana*), gray rabbitbrush (*Chrysothamnus nauseosus*), sand dock (*Rumex venosus*), plains cottonwood (*Populus sargentii*), and willow (*Salix* sp.) being most common. Other colonial waterbirds on Bird Island were the American White Pelican (*Pelecanus erythrorhynchos*, 245 active nests), Double-crested Cormorant, 126 active nests; Great Blue Heron (*Ardea herodias*, 38 active nests), and Caspian Tern (*Sterna caspia*, 15 to 20 active nests).

Although portions of Pathfinder Reservoir receive considerable recreational use, presently human disturbance in the vicinity of Bird Island appears minimal.

Ocean Lake WHMU

Ocean Lake, about 24 km northwest of Riverton, Fremont County (Fig. 1), is a man-made lake that was formed in 1926 from irrigation return flow and seepage from Pilot Butte Reservoir (Serdiuk 1965). California Gulls started breeding here in small numbers during the early 1950s (W. Higby, personal communication). R. Klataske (1970) counted 550 nests on Third Point Island and 110 nesting pairs on Gull Island, and he estimated that about 2,000 California Gulls nested at Ocean Lake in 1970. The one colony that I discovered at Ocean Lake in 1981 was deliberately destroyed by humans. There were 609 California Gull nests at Ocean Lake on 14 May 1983. All gulls were breeding on Peninsula Island in the southeastern portion of the lake. This nesting colony increased to 775 nests on 19 May 1984.

The 0.4-ha nesting island was almost void of vegetation except for sparse black greasewood on its southern portion and cattails (*Typha latifolia*) along the southwestern and eastern shorelines. The only nesting associate in 1984 was the Double-crested Cormorant (205 active nests).

Ocean Lake is included in Ocean Lake WHMU and managed by the Wyoming Game and Fish Department. It is heavily used for recreation during the nesting season. Except as noted in 1981, human disturbance of breeding California Gulls has not been a serious problem because shallow water in the vicinity of the nesting island discourages boating activity.

Sand Mesa WHMU

Sand Mesa WHMU, managed by the Wyoming Game and Fish Department, is approximately 32 km northeast of Riverton, Fremont County (Fig. 1). It consists of several small reservoirs designed primarily for waterfowl production. I counted 181 California Gull nests at Pond No. 1 on 15 May 1983. This was the first year that gulls bred here (K. Asay, personal communication). California Gulls were nesting on six man-made islands that averaged about 0.013 ha. Islands were composed of cobble and were generally void of vegetation. The nesting colony contained 162 nests on 12 May 1984, which is 19 fewer nests than in 1983. This decline was most likely caused by the addition of more cobble making islands dome shaped and less suitable as nesting substrate. Nesting associates in 1984 included the Double-crested Cormorant (21 active nests) and Snowy Egret (from 1 to 2 active nests). When I rechecked the colony 22 June 1984, all California Gull nests had been destroyed, most likely from human intervention.

Soda Lake

Soda Lake, located 3 km north of Casper, Natrona County (Fig. 1) occurs naturally. However, the lake has increased in size because waste water is added to it by the Amoco Oil Refinery. California Gulls have nested here since the late 1950s (O. K. Scott, personal communication). In 1970 G. Dern estimated that approximately 400 breeding gulls were present. There were four California Gull nesting colonies at Soda Lake when I surveyed it in 1984.

MANMADE ISLAND.—This 1.3-ha island on the southeast portion of Soda Lake was developed after the 1983 nesting season. Thus, 1984 was the first year that California Gulls bred here. On 22 May 1984, I estimated that 1,907 ±204 (SE) active California Gull nests were present. Nesting associates included the Double-crested Cormorant (58 active nests), Snowy Egret (1 active nest), and Ring-billed Gull (*Larus delawarensis*, 70 active nests). There was dense vegetative cover on this island. Predominant species were silver sagebrush and cheat grass (*Bromus tectorum*). Other common plants included green rabbitbrush (*Chrysothamnus viscidiflorus*), prickly-pear cactus (*Opuntia polyacantha*), and other grasses.

RATTLESNAKE ISLAND.—This 0.2-ha natural island near the east end of Soda Lake was first utilized for nesting by California Gulls in 1984. On 21 May 1984 I counted 560 active gull nests. One pair of Caspian Terns also bred here. Rattlesnake Island was covered with grasses interspersed with black greasewood and prickly-pear cactus when censused for gulls.

EAST ISLAND.—On 22 May 1984 I found 24 active California Gull nests on this 0.08-ha natural island. Nesting associates included the Double-crested Cormorant (10 active nests) and Black-crowned Night-Heron (1 active nest). This island is disappearing because of high water levels at Soda Lake. It is void of vegetation except for sparse cheat grass, other grasses, black greasewood, and prickly-pear cactus.

WEST ISLAND.—I counted 93 active California Gull nests on this 0.12-ha natural island 22 May 1984. Other colonial waterbirds nesting here were the Double-crested Cormorant (290 active nests), Snowy Egret (2 active nests), and Black-crowned Night-Heron (2 active nests). West Island is mostly bare except for scattered black greasewood and an unidentified forb. Like East Island, this island has decreased in size because of high lake water levels.

California Gulls nesting at Soda Lake are secure from human intervention because this area is "off limits" to the public.

Yellowstone Lake

Linton (1891) indicated there were many adult California Gulls present at Yellowstone Lake, Yellowstone National Park, 10 July 1890 but did not provide substantial evidence of nesting. Breeding was first reported by Skinner (1917), who estimated that 1,000 gulls were present in Yellowstone National Park and practically all nested on the Molly Islands, Yellowstone Lake, in 1898. The California Gull breeding population appeared to have varied considerably between 1917 and 1966 (Diem and Condon 1967). On 6 July 1962 Schaller (1964) estimated there were 600 active nests. Recently, numbers of California Gulls breeding on the Molly Islands have remained relatively unchanged since Schaller's census (K. L. Diem, personal communication).

The Molly Islands have been previously described (Schaller 1964, Diem and Condon 1967, Diem 1979). The two Molly Islands, Rocky Island and Sandy Island, are about 0.4 km apart and 0.8 km from the southern shore of the Southeast Arm of Yellowstone Lake (Fig. 1). The combined surface area of the islands varies between 0.3 ha and 0.5 ha depending on water levels. Both islands are sparsely vegetated. Nesting associates in 1981 included the American White Pelican (290 active nests), Double-crested Cormorant (17 active nests), and Caspian Tern (14 active nests) (K. L. Diem, personal communication).

Because of National Park Service concern for the welfare of white pelicans and other colonial waterbirds breeding on the Molly Islands, scientific investigations have been restricted and the nesting colonies are closed to the public.

DISCUSSION

According to Conover (1983), two California Gull nesting colonies existed in Wyoming in 1980; one was at Bamforth Lake, Albany County, and the other at Yellowstone Lake, Yellowstone National Park. Nesting colonies were also present at Ocean and Soda lakes but were overlooked when Conover conducted his survey. In addition, several new California Gull colonies have become established elsewhere in Wyoming in recent years (Table 1). Table 1 indicates the occurrence of approximately 7,273 nests in the state.

The construction of large reservoirs with isolated islands has created substantial nesting habitat for California Gulls in Wyoming.

TABLE 1. Location, number of nests, year of establishment, and habitat of California Gull colonies in Wyoming, 1984.

Name	Location	Year colony established	Number of nests	Habitat
ALBANY COUNTY				
Bamforth Lake				
1. Bamforth Island	41°24′N,105°44′W	1934	2,470[a]	Lake
2. Peninsula Island	41°24′N,105°44′W	1984	—	
CARBON COUNTY				
Pathfinder Reservoir				
3. Bird Island	42°23′N,106°56′W	Before 1982	683	Reservoir
FREMONT COUNTY				
Ocean Lake WHMU				
4. Peninsula Island	43°07′N,108°35′W	1983	775	Reservoir
Sand Mesa WHMU				
5. Pond No. 1	43°19′N,108°20′W	1983	162	Reservoir
NATRONA COUNTY				
Soda Lake				
6. Man-made Island	42°54′N,106°18′W	1984	1,906 ± 204[b]	Reservoir
7. Rattlesnake Island	42°54′N,106°18′W	1984	560	
8. East Island	42°54′N,106°18′W	Early 1960s	24	
9. West Island	42°54′N,106°19′W	Early 1960s	93	
YELLOWSTONE NATIONAL PARK				
Yellowstone Lake				
10. Molly Islands	44°19′N,110°16′W	Before 1898	600[c]	Lake

[a]Population estimate is from 1975 (Raper 1975).
[b]Mean ± SE.
[c]Population estimate is from 1962 (Schaller 1964).

Seven of eight California Gull nesting colonies (87%) that have become established since the 1960s are on man-made water impoundments, and two of these colonies are on man-made islands.

Although quantitative data are lacking on the diet of California Gulls in most colonies, food resources appear to have been influenced by man's activities in Wyoming. Expanded agriculture may have provided considerable food for California Gulls, especially in colonies at Ocean Lake and Sand Mesa WHMUs. Gulls from these colonies commonly forage in the extensive cultivated and irrigated fields nearby. Although gulls at Ocean Lake and Sand Mesa WHMUs also exploit refuse left by fishermen and other recreational users, minimal sign of garbage occurs in both colonies. In contrast, California Gulls at Soda Lake seem to rely heavily on food resources available at the nearby Casper garbage dump. Gulls nesting at Bamforth Lake, Pathfinder Reservoir, and Yellowstone Lake appear to have a more natural diet. Pugesek (1983) found that most California Gulls from Bamforth Lake foraged at freshwater sources within 20 km of the colony, and he observed that the diet of offspring mainly consisted of aquatic insects, salamanders, and fish. Although California Gulls from colonies in Yellowstone National Park and Pathfinder Reservoir consume refuse left by fishermen and other recreational users, their diet probably consists mostly of natural food resources since man-caused environmental changes, which would create food, have not taken place in either area.

Conover et al. (1979) indicated that decreased human predation on California Gulls and their eggs was partially responsible for the population increase in Washington State. In Wyoming, California Gulls have continued to increase despite continuous human persecution in the state.

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