

AERIAL SURVEY OF BIRDS AT MONO LAKE
ON AUGUST 24, 1973

by

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Introduction

An aerial survey of birds at Mono Lake was conducted on August 24, 1973 at about the peak of the fall migration season. Purposes of the flight were as follows: 1) to determine if aerial surveys are practicable in counting water birds, particularly eared grebes and phalaropes, on Mono Lake; 2) to compare aerial counts with sample ground counts; and 3) to determine distribution of each species in relation to habitat types and regions of the lake.

Methods

The main species under consideration were California gulls, eared grebes, American avocets, northern phalaropes and Wilson's phalaropes. Killdeer, waterfowl and other species were counted only incidentally; no effort was made to seek out and survey these species in habitats around the lake.

The aerial survey was preceded by sample counts from the shore on August 23. Water birds were censused at the Mono Marina shorebird census site (S5-26-1) and at the South Boat Ramp site (S5-26-3) (Figure 1). These stations are part of the California Shorebird Survey network of census sites. Because of the lowering water level of the lake, the South Boat Ramp site cannot be as accurately censused now as in previous years. Thus, only half the site was surveyed for this study. The Mono Marina site encompasses 0.64 km (0.4 mile) of shoreline and 26.3 hectares (65 acres) of water. Offshore in shallow water are boulder and tufa tower outcroppings. The area censused at the South Boat Ramp site includes 0.4 km (0.25 mile) of shoreline and 14.2 hectares (35 acres) of water. Numerous tufa towers are exposed along the shoreline. Both counts were conducted by Morris P. Anderson and Ronald M. Jurek using binoculars and a 20x spotting scope.

The aerial survey was flown in the Department's Cessna 185, piloted by Bob Powers. The observers, Anderson and Jurek, recorded counts on tape recorders. During the flight there was no wind and the sky was clear. The survey began at 0811 and ended at 0934.

Shoreline counts from the air were conducted along the perimeter of the lake and around the islands (Figure 1). Included in counts were birds on the shore and on the water out to a distance of 0.4 km (1/4 mile) from shorelines. This part of the survey was flown at an altitude of 300 feet and at a distance of approximately 0.2 km (1/8 mile) from the shorelines.

A special aerial count of grebes and gulls on open water was conducted at the west end of the lake (Figure 1). Included were birds on open water beyond 0.2 km (1/8 mile) from shorelines. Transect lines totaled 14.5 km (9 miles). Observers counted birds out to a distance of 0.2 km (1/8 mile) on each side of transect lines. Since voice counts failed to be registered on one recorder, the census width was 0.2 km (1/8 mile). Total coverage was 2.91 sq. km (720 acres).

Results and Discussion

Calculations from aerial counts indicate that approximately one-half million water birds were on Mono Lake the morning of the count. Most of these were eared grebes.

Along shorelines, 42,800 birds were counted (Table 1). Count figures for gulls and avocets are probably quite accurate, but those for phalaropes are undoubtedly too low. Because grebes dived as the plane approached, they could not be counted.

Only a partial count was obtained around Paoha Island since voice counts were not registered on one tape recorder. Fortunately most of the birds around the island were included in the counts on the operative recorder. Probably only a couple hundred birds (gulls and phalaropes) were missed.

TABLE 1
Aerial Counts of Birds
Along Shorelines of Mono Lake, August 24, 1973

Area ¹	Approximate Length of Shoreline		Species		
	Kilometers	Miles	California gull	American avocet	Phalaropes
Southwest shore (A-B)	12.1	7.5	4,152	20	935
South shore (B-C)	10.5	6.5	3,915	509	245
East shore (C-D)	9.7	6.0	2,943	665	200
North shore (D-E)	16.9	10.5	4,988	10	446
Northwest shore (E-A)	9.7	6.0	11,950	1,383	3,517
Exposed lake bed	3.2	2.0	830	1,443	244
Islets	-	-	265	-	1,825
Negit Island	4.0	2.5	247	-	759
Paoha Island	9.7	6.0	800 ²	-	509 ²
Total	75.8	47.0	30,090	4,030	8,680

¹ Refer to Figure 1.

² Partial census.

On the open water transect, 3,961 eared grebes and 199 California gulls were counted. Many more grebes were excluded from this total since those feeding underwater could not be seen by observers. Densities of visible birds were 1,361 grebes per sq. km (3521 per square mile) and 68 gulls per sq. km (177 per square mile). Excluding portions of the lake within 0.2 km (1/8 mile) of shoreline, there are approximately 181 sq. km (70 square miles) of open water at Mono Lake. The estimated populations on open water are 246,470 grebes (surface count only) and 12,390 gulls.

To arrive at a total grebe population, the percentage of birds underwater at any moment must be known. At Mono Marina two hours before the aerial survey, approximately 40 percent of the grebes were feeding underwater at any given moment. Assuming that the grebes counted on the aerial survey represented only 60 percent of those actually in the transect area, the total population of eared grebes on the lake was approximately 411,000.

Approximately 42,500 California gulls were present at Mono Lake on count day. Most of these, about 71 percent, were near shorelines. Juveniles were very rare along the south and west shores. They were more common on the east and north shores and were particularly numerous around the islands.

American avocets occurred mainly where there were tufa towers. Of the 3,905 avocets counted, approximately 68 percent were found on the shore east of Black Point and around a fairly recently exposed portion of the lake bed west of Negit Island.

Phalaropes were found chiefly in areas with tufa towers and around the islets northeast of Negit Island. Phalaropes were easily counted if they were flying or were swimming in open water. However, those among tufa towers or wading along shorelines were not accurately censused. The total count of 8,680 phalaropes may be less than half the actual figure.

From the air, observers were able to distinguish species of phalaropes only when the birds were flying. All phalaropes identified to species in open water areas were northern phalaropes. Nearer shore, where both Wilson's and northern phalaropes occur, species identification was not possible.

Most of the phalaropes sighted were near land in the west half of the lake. Of those counted, 90 percent were around the islands and along the lake shore from Hot Springs to the area northeast of North Crater. Tufa tower habitat east of Black Point and the islets northeast of Negit Island were the main concentration areas where 62 percent of all phalaropes were observed.

Other species recorded included a flock of 100 ruddy ducks near the lake shore north of Negit Island. Killdeer were sighted in small numbers around the lake, but they were difficult to census.

Eight species of water birds were recorded at the two shoreline census sites (Table 2).

Only for grebes and gulls can aerial and ground population data be compared. No attempt is made to compare the two survey methods with respect to avocet and phalarope populations. Survey comparisons would not be meaningful because avocets are quite rare at the two south shore sites and phalaropes were not accurately censused from the air.

Combining counts at both ground survey sites, density of grebes was 2,743 birds per sq. km (7,104 per square mile) of lake surface. This is about twice the density estimated from the air: 1,361 grebes per sq. km (3,521 per square mile). Again, these are figures only for the number of grebes visible on the surface at any given moment.

Density of gulls at ground stations was 428 birds per km (685 per mile) of shoreline. This density is close to that determined by aerial counts along shorelines: 398 gulls per km (640 per mile).

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TABLE 2
Ground Counts of Birds at Mono Lake, August 23, 1973

Species	Number of Birds	
	Mono Marina (S5-26-1) ¹	South Boat Ramp (S5-26-3) ²
Killdeer	2	2
Least sandpiper	-	20
Western sandpiper	7	-
America avocet	2	2
Wilson's phalarope	100	40
Northern phalarope	600	-
California gull	95	350
Eared grebe	800	310
Total	1,606	724

¹ Wind: 10 m.p.h., sky: clear, time: 1350-1435

² Wind: 15 m.p.h., sky: clear, time: 1545-1605







