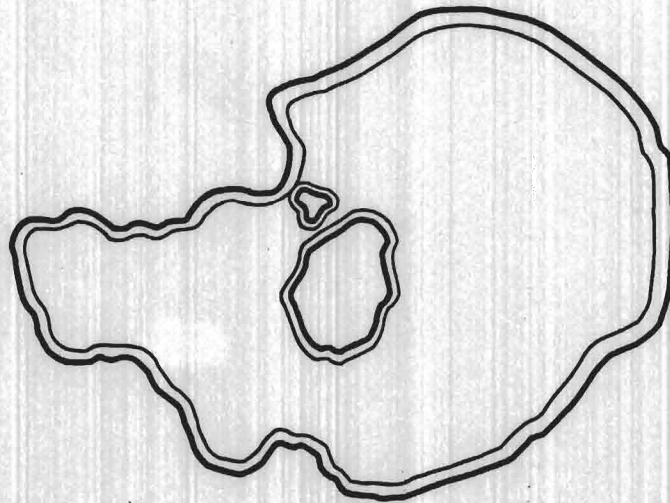


An Auxiliary Report
Prepared for the

MONO BASIN WATER RIGHTS EIR

Vertebrate Surveys on Paoha Island and Adjacent
Mainland, Mono Lake and Basin, California



Prepared under the Direction of:

California State Water
Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95810

Prepared With Funding from:

Los Angeles Department of
Water and Power
Aqueduct Division
P.O. Box 111
Los Angeles, CA 90051

Mono Basin EIR Auxiliary Report No. 2

**An Auxiliary Report
Prepared for the
Mono Basin Water Rights EIR Project**

This auxiliary report was prepared to support the environmental impact report (EIR) on the amendment of appropriative water rights for water diversions by the City of Los Angeles Department of Water and Power (LADWP) in the Mono Lake Basin. Jones & Stokes Associates is preparing the EIR under the technical direction of the California State Water Resources Control Board (SWRCB). EIR preparation is funded by LADWP.

SWRCB is considering revisions to LADWP's appropriative water rights on four streams tributary to Mono Lake, Lee Vining Creek, Rush Creek, Parker Creek, and Walker Creek. LADWP has diverted water from these creeks since 1941 for power generation and municipal water supply. Since the diversions began, the water level in Mono Lake has fallen by 40 feet.

The Mono Basin water rights EIR examines the environmental effects of maintaining Mono Lake at various elevations and the effects of possible reduced diversions of water from Mono Basin to Owens Valley and the City of Los Angeles. Flows in the four tributary creeks to Mono Lake and water levels in Mono Lake are interrelated. SWRCB's decision on amendments to LADWP's water rights will consider both minimum streamflows to maintain fish populations in good condition and minimum lake levels to protect public trust values.

This report is one of a series of auxiliary reports for the EIR prepared by subcontractors to Jones & Stokes Associates, the EIR consultant, and contractors to LADWP. Information and data presented in these auxiliary reports are used by Jones & Stokes Associates and SWRCB, the EIR lead agency, in describing environmental conditions and conducting the impact analyses for the EIR. Information from these reports used in the EIR is subject to interpretation and integration with other information by Jones & Stokes Associates and SWRCB in preparing the EIR.

The information and conclusions presented in this auxiliary report are solely the responsibility of the author.

Copies of this auxiliary report may be obtained at the cost of reproduction by writing to Jim Canaday, Environmental Specialist, State Water Resources Control Board, Division of Water Rights, P.O. Box 2000, Sacramento, CA 95810.



910808: PAOHA.JSA

FINAL REPORT

VERTEBRATE SURVEYS ON PAOHA ISLAND AND ADJACENT MAINLAND,
MONO LAKE AND BASIN, CALIFORNIA

Michael L. Morrison

INTRODUCTION

This report summarizes survey work conducted during spring 1991 as part of Jones and Stokes Associates (JSA) survey of vertebrates in the Mono Lake Basin, Mono Co., California. This report is organized as outlined in the subcontract awarded to Michael L. Morrison by JSA. Objectives of this subcontract were:

On Paoha and adjacent mainland:

1. Conduct bird surveys;
2. Conduct small mammal live-trapping surveys;
3. Conduct pitfall trapping surveys;
4. Conduct track plot surveys;
5. Conduct large mammal sign searches; and
6. Conduct reptile and amphibian surveys.

In addition, the status of 'special-status species' (i.e., those listed by the State or Federal governments as threatened, endangered, or of special concern) was determined. All objectives were met and are reported upon herein.

STUDY PLOTS

Study plots were established on Paoha Island ($n = 10$ plots) and the adjacent mainland ($n = 5$ plots). A written description of the plot locations is given in Appendix 1; a map of approximate plot locations is given in the enclosed map. Following JSA design, all plots measured 50 x 20 m.

All mainland plots were located to the north and northeast of Black Point on the northwest shore of Mono Lake. This location was selected because it most closely resembles the vegetation present on Paoha Island, excluding the marsh on the island (marsh and riparian habitats were measured by a different subcontractor), and is relatively close to the shore and the islands (i.e., versus areas with vegetation similar to the island but at a great distance from it). Dominant vegetation on these plots was Artemesia tridentata, Chrysothamnus nauseosus, Purshia tridentata, and scattered individuals of Sarcobatus vermiculatus, Cercocarpus ledifolius, and Prunus andersonii. Soils were a loose mixture of sands, gravels, ash, and silt. Little herbaceous material or grass occurred.

Paoha Island plots can be divided into marsh ($n = 3$ plots) and nonmarsh (i.e., dry-shrub; $n = 7$ plots). Marsh plots were located in the only wet marsh remaining on the island. Vegetation in the marsh was composed of Juncus effusus, Scirpus americanus, Distichlis spicata, Hordeum jubatum, and Bassia hyssopifolia. The nonmarsh sites were dominated by Sarcobatus vermiculatus, Grayia spinosa; an occasional Artemesia tridentata

was found on or near the plots.

METHODS

Bird Surveys

Each study plot was counted three times for 7 minutes between 0.5 hour before sunrise and lasting no later than 10:00. The counting order was changed among counts. Mainland counts were conducted between 16 May and 24 June; island counts were conducted between 16 May and 4 June. Data are reported here as number of birds per count per plot, which serves as an index of abundance of birds. All birds observed outside of these systematic counts but during the contract period were also recorded.

Small mammal live trapping

Within each plot described above, 18 large Sherman live traps were placed at 10-m spacings (1 row of 6 traps along each long axis of a plot); this design follows JSA requirements. Each plot was trapped for a total of 54 trap nights and days (traps were left open constantly and checked both during the morning and in late afternoon). Traps were baited with rolled oats and peanut butter. All captures were identified to species, sexed, aged, marked, and released at the trap site. Mainland and island traps were run between 7 May and 24 June. Data are reported here as the number of new individuals (i.e., excluding recaptures) captured per 100 trap nights (a standard way to report capture

data) and the number captured per 54 trap nights.

Pitfall trapping

One, 1-gal can was placed near the center of each plot at the most likely location for the capture of shrews (e.g., grass, soft earth, down logs). Cans were placed on all mainland plots and six of the island plots; JSA design called for cans in one-half of all plots. Each can was covered with a wooden board raised 2-3 cm above the can. Traps were run for a minimum of 4 days to a maximum of 17 days (JSA requirements called for a minimum of 3 traps days). Three additional traps were placed in the marsh on the east side of Paoha Island, this being the most likely location for shrews (thus, a total of 6 traps were placed in the marsh). All mainland plots were run between 9-12 June; island plots A to C were run 23 May to 4 June, and island plots D to F were run 7-23 May.

Track Plots

One-m-square areas in an open location near the center of the plots were selected to determine the presence of mammals traveling across a plot. The soil in a track plot was smoothed by hand and wetted with water; fine grained sand or soil was added as needed. A can of chicken flavored cat food was secured at the center of each track plot. Each plot was checked daily for 3 days for evidence of wildlife use; track plots were smoothed and re-wetted each day as required. One-half of the

study plots on the island and three mainland study plots were used (JSA requirements called for one-half of all study plots to be surveyed). Track plot surveys were conducted at various times during the course of this study (i.e., while visiting plots for other purposes).

Large Mammal Sign Searches

All tracks, visual observations, scat, and other evidence of large mammals were recorded as to date, time, location, and evidence noted.

Reptile and Amphibian Surveys

All reptiles or amphibians (herps) observed during visits to the study plots (and general vicinity) were recorded to species (when possible), date, time, location, and general habitat type.

Time-constraint surveys of 1 person-hour duration were conducted in each study plot. The species, date, time, location, and general habitat type for each observation were recorded.

RESULTS

Bird Surveys

California gulls (Larus californicus) were observed flying over, but apparently not using, all island and mainland study plots; they will not be discussed further in Results.

Paoha Island.--Results of the bird survey counts are presented in Tables 1 (Paoha Island) and 2 (mainland). The

dominant species across the island was the violet-green swallow (Tachycineta thalassina), and to a lesser extent, the Brewer's blackbird (Euphagus cyanocephalus) (Table 1). All other species were concentrated in either the marsh or nonmarsh plots, but not both. Dominant species in the marsh were the red-winged blackbird (Agelaius phoeniceus), violet-green swallow, song sparrow (Melospiza melodia), and Brewer's blackbird; Wilson's warbler (Wilsonia pusilla) and common yellowthroat (Geothlypis trichas) were also present. All of these species, with the exception of the Wilson's warbler (status = uncertain), likely bred. The remaining marsh species were either migrants or accidental, including the western meadowlark (Sturnella neglecta), American widgeon (Anas americana), American coot (Fulica americana), and other rarely seen species. The Virginia rail (Rallus limicola) was resident, although only a single individual was seen (i.e., a pair was not observed nor a nest located, so breeding is suspected but not confirmed).

Species seen in the marsh but not during a systematic count were: American avocet (Recurvirostra americana) (4-8 seen regularly near marsh); water pipit (Anthus spinoletta) (migrant); yellow-rumped warbler (Dendroica coronata) (common during migration); Bewick's wren (Thryomanes bewickii) (singing on one occasion; status uncertain); common snipe (Gallinago gallinago) (migrant?); sora (Porzana carolina) (one in marsh early spring; possible breeding); gadwall (Anas strepera) (migrant).

Dominant nonmarsh species were the violet-green swallow,

Brewer's sparrow (Spizella breweri), house finch (Carpodacus mexicanus), and horned lark (Eremophila alpestris); scattered sage thrashers (Oreoscoptes montanus) and Brewer's blackbirds were also evident. All of these species likely bred. Species observed in nonmarsh areas but not during a systematic count were: black-throated gray warbler (Dendroica nigrescens) (migrant); Say's phoebe (Sayornis saya) (likely bred); least sandpiper (Callidrus minutilla) (status uncertain); yellow-rumped warbler (migrant); blue-gray gnatcatcher (Polioptila caerulea) (migrant); brown-headed cowbird (Molothrus ater) (accidental); mountain bluebird (Sialia currucoides) (migrant); cliff swallow (Petrochelidon pyrrhonota) (migrant); northern flicker (Colaptes auratus) (accidental); ruby-crowned kinglet (Regulus calendula) (winter visitor or migrant); chipping sparrow (Spizella passerina) (migrant); mourning dove (Zenaida macroura) (status uncertain; likely accidental); western kingbird (Tyrannus verticalis) (accidental); white-crowned sparrow (Zonotrichia leucophrys) (migrant); Townsend's warbler (Dendroica townsendi) (migrant).

Marsh versus nonmarsh.--Nearly three times as many birds were seen in the marsh compared to the nonmarsh (index of abundance). Fourteen species were seen in the marsh and 11 in the nonmarsh; 10 of these species were unique to the marsh and 7 unique to the nonmarsh; 4 species were shared.

Mainland.--Only the Brewer's sparrow and green-tailed towhee (Pipilo chlorurus) were found on all plots and were the numerically dominant species on the mainland. Sage thrashers, loggerhead shrikes (Lanius ludovicianus), and Brewer's blackbirds were each seen twice, and the remaining species only once during the counts. All of these species except the Pinyon jay (Gymnorhinus cyanocephalus) and violet-green swallow likely nested on or adjacent to the plots (the swallow does nest on the mainland in suitable habitat).

Paoha versus mainland.--A total of 21 species were seen during counts on Paoha compared to only 9 on the mainland. Sixteen species were unique to Paoha, whereas only 4 were unique to the mainland; 5 species were common to both areas. Overall, 8.6 birds/plot/count were observed on Paoha versus only 2.5 on the mainland. Comparing nonmarsh on Paoha with the mainland, 5.8 birds/plot/count were seen on Paoha nonmarsh. The Brewer's sparrow, sage thrasher, horned lark, Brewer's blackbird, and violet-green swallow were present on both areas. The green-tailed towhee was the major mainland species absent from Paoha.

Small Mammal Trapping

Results of small mammal trapping are given in Table 3.

Paoha.--Only two species of small mammal were captured on Paoha: the deer mouse (Peromyscus maniculatus) and the montane vole (Microtus montanus). Deer mice were abundant and captured on all plots. Voles were abundant in the marsh and in one plot

with a heavy grass component (plot G). Deer mice were most abundant in the marsh.

Mainland.--Eight species of small mammals were captured on the mainland, but only four of these were captured more than once. The Great Basin pocket mouse (Perognathus parvus), deer mouse, and Panamint kangaroo rat (Dipodomys panamintinus) were abundant and captured on all plots. The Great Basin kangaroo rat (D. microps) was captured on only one plot (E) but was abundant there. Single individuals of montane vole, brush mouse (Peromyscus boylii), least chipmunk (Eutamias minimum), and Beechy's ground squirrel (Spermophilis beecheyi) were captured.

Paoha versus mainland.--Paoha had about twice the abundance of deer mice as the mainland. Comparing vole abundance between island and mainland is not appropriate because marsh and grassy areas were not sampled on the mainland. Overall, the island ($n = 2$ species) had few species relative to the mainland ($n = 8$ species).

Pitfall Surveys

Paoha.--The six pitfalls in the marsh were run for 13 days for a total effort of 78 pitfall-days (trap-days). Results were, by plot: A = 0 captures; B = 2 voles; C = 4 voles. This results in 7.7 voles/100 pitfall-days or 6/78 pitfall-days.

The three pitfalls in the nonmarsh were run for 17 days for a total effort of 51 pitfall-days. No animals were captured.

Mainland.--The five pitfalls were run for 4 days for a total

SUMMARY AND DISCUSSION

Results of this survey indicate that, except for the marsh habitat on Paoha Island, the mainland harbors a richer fauna than the island. The marsh on Paoha has the highest abundance and species richness found on the island. Comparisons of this marsh with similar mainland marsh habitat will be necessary (but beyond the scope of this study) to determine if Paoha offers any unique faunal situation relative to its mainland counterparts.

Paoha Island has an extremely abundant small mammal fauna, dominated primarily by deer mice. It is likely that these mice provide substantial food for the coyotes present on the island, especially during winter if coyotes remain on the island (i.e., most birds, including gulls, are only spring-summer residents).

This survey indicated that no amphibians, reptiles, or large mammals except coyotes reside on Paoha Island. The island thus offers a unique biological setting typified by high mouse abundance, few mammalian and avian predators, no amphibians or reptiles, and a sparse large mammal fauna. It is likely that the deer mouse and vole reached the island due to human influence: there is an abandoned goat ranch on the southwest shore; small mammals could have been accidentally brought to the island with food and hay shipments. Rafting from adjacent mainland is also possible. Rabbits could have reached the island through rafting or by direct human action to provide a food supply. It is likely that coyotes reached the island by walking or swimming to adjacent Negit Island and then swimming the short distance between islands.

Table 1. Total count by plot and an index of abundance (No./plot/count) for birds observed during three counts on Paoha Island, Mono Lake, California, 1991. Birds ordered by decreasing total index value.

Species	Plot										No./plot/count		
	A	B	C	D	E	F	G	H	I	J	Marsh	Nonmarsh	Total
Violet-green Swallow	5	13	7	6	9	10	6	3	30	9	2.8	3.5	3.3
Red-winged Blackbird	14	10	19								4.8	0.0	1.4
Brewer's Blackbird	6	12	5				2	1	2	2	2.6	0.3	1.0
Song Sparrow	9	8	7								2.7	0.0	0.8
Brewer's Sparrow				3	1	6	2	2	0	1	0.0	0.7	0.5
House Finch							2		9		0.0	0.5	0.4
Horned Lark				1	2	3			2		0.0	0.4	0.3
Wilson's Warbler	2	4	1	1							0.8	0.1	0.3
Yellowthroat	1		2								0.3	0.0	0.1
Meadowlark		3									0.3	0.0	0.1
Yellow-headed ^b Blackbird		2									0.2	0.0	0.1
American Widgeon	2										0.2	0.0	0.1
Sage Thrasher				2		2					0.0	0.2	0.1
Rock Wren ^c									1		0.0	0.1	0.1
Virginia Rail			1								0.1	0.0	+ ^a
Killdeer ^d		1									0.1	0.0	+
American Coot	1										0.1	0.0	+
Dusky Flycatcher ^e		1		1							0.1	+	+

Table 1 (continued).

Species	Plot										No./plot/count		
	A	B	C	D	E	F	G	H	I	J	Marsh	Nonmarsh	Total
Savannah Sparrow ^f	1										0.1	0.0	+
Cassin's Kingbird ^g									1		0.0	+	+
Fox Sparrow ^h										1	0.0	+	+
Total											15.2	5.8	8.6

^a + = index <0.1.

^b Xanthocephalus xanthocephalus

^c Salpinctes obsoletus

^d Charadrius vociferus

^e Empidonax oberholseri

^f Passerculus sandwichensis

^g Tyrannus vociferans

^h Passerella iliaca

Table 2. Total count by plot and an index of abundance (No./plot/count) for birds observed during three counts on the Mono Lake mainland, California, 1991.

Species	Plot					No./plot/count
	A	B	C	D	E	
Brewer's Sparrow	4	5	3	4	3	1.3
Green-tailed Towhee	2	1	1	2	1	0.5
Sage Thrasher	1	1				0.1
Loggerhead Shrike		2				0.1
Brewer's Blackbird			1	1		0.1
Pinyon Jay		1				0.1
Sage Sparrow ^a			1			0.1
Horned Lark			1			0.1
Violet-green Swallow		1				0.1
Total						2.5

^a Amphispiza belli

Table 3. Number of captures of new individuals per 100 trap night (no./54 trap night) on Paoha Island and adjacent mainland, Mono Basin, California, 1991.

Grid	<u>Peromyscus maniculatus</u>	<u>Microtus montanus</u>	<u>Perognathus parvus</u>	<u>Dipodomys microps</u>	<u>Dipodomys panamintinus</u>	<u>Peromyscus boylei</u>	<u>Eutamias minimus</u>	<u>Spermophilus beecheyi</u>
Paoha Island								
A	20.4 (11)	7.4 (4)						
B	14.8 (8)	5.6 (3)						
C	18.5 (10)	5.6 (3)						
D	9.3 (5)							
E	5.6 (3)							
F	13.0 (7)							
G	11.1 (6)	5.6 (3)						
H	20.4 (11)							
I	11.1 (6)							
J	7.4 (4)							
Total marsh (A-C)	17.9	6.2						
Total nonmarsh (D-J)	11.1	0.8						
Total island (A-J)	13.1	2.4						
Mainland								
A	5.6 (3)		13.0 (7)		5.6 (3)			
B	1.9 (1)		5.6 (3)		3.7 (2)			
C	7.4 (4)	1.9 (1)	11.1 (6)		5.6 (3)			
D	11.1 (6)		5.6 (3)		7.4 (4)			
E	7.4 (4)		1.9 (1)	9.3 (5)	5.6 (3)	1.9 (1)	1.9 (1)	1.9 (1)
Total mainland (A-E)	6.7	0.4	7.4	1.9	5.6	0.4	0.4	0.4

Appendix 1. U.S.F.S. map location and description of location for mainland and Paoba Island plots, Mono Basin, California. Plot letters correspond to the accompanying map.

Plot	USFS map location	Description
Paoba Island		
A,B,C	T. 2 N., R. 27 E., Sec. 32, NW $\frac{1}{4}$	In marsh on SE shore
D,E,F	T. 2 N., R. 27 E., Sec. 30, NW $\frac{1}{4}$	On first bench along NW shore
G	T. 2 N., R. 27 E., Sec. 32, NW $\frac{1}{4}$	On cliffs with steam vents on E side
H	T. 2 N., R. 27 E., Sec. 29, SW $\frac{1}{4}$	On cliffs inland on E side; 150 m from G
I	T. 2 N., R. 27 E., Sec. 29, NW $\frac{1}{4}$	On first bench along NE shore, 300 m inland
J	T. 2 N., R. 27 E., Sec. 29, NW $\frac{1}{4}$	On cliffs inland from NE shore, 450 m inland
Mainland		
A	T. 2 N., R. 26 E., Sec. 9, SE $\frac{1}{4}$	Along main dirt road NW of Black Point
B	T. 2 N., R. 26 E., Sec. 15, NE $\frac{1}{4}$	Along Black Point road
C	T. 2 N., R. 26 E., Sec. 14, NW $\frac{1}{4}$	Along Black Point road
D	T. 2 N., R. 26 E., Sec. 15, NW $\frac{1}{4}$	Along Black Point road
E	T. 2 N., R. 26 E., Sec. 3, SE $\frac{1}{4}$	Along main dirt road N of Black Point

