

WESTERN BIRDS



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WESTERN BIRDS

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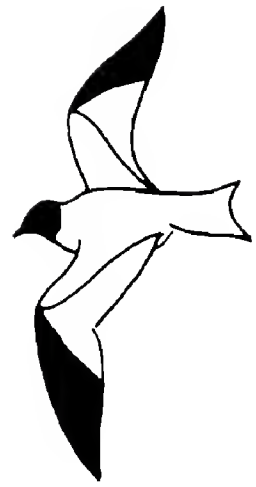
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BIRDS OF HASTINGS RESERVATION, MONTEREY COUNTY, CALIFORNIA

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The Hastings Natural History Reservation was established in October 1937 as a field station of the Museum of Vertebrate Zoology (MVZ), University of California, Berkeley. At that time, Jean M. Linsdale of the Museum staff became the first resident director and initiated a program of research and instruction. Human disturbance to the land was kept to a minimum, a policy which continues to be enforced. Since the beginning of the Reservation's history at least one ornithologist has been permanently resident and a large file of records and field notes on the avifauna has been compiled. Contributors to this file include Reservation and Museum staff members, students, postdoctoral fellows, visiting scientists and members of visiting classes.

Information has been provided by George A. Bartholomew, Jeram L. Brown, Gene M. Christman, Nicholas E. and Elsie C. Collias, Keith L. Dixon, Harvey I. Fisher, Ralph J. Gutiérrez, Elgin Hurlbert, Ned K. Johnson, Nancy E. Joste, Carl B. Koford, Jean M. Linsdale, Michael H. and Barbara R. MacRoberts, Joe T. Marshall, Jr., Alden H. Miller, Ron L. Mumme, Sandy Nishimura, Frank A. Pitelka, Richard B. Root, Charles G. Sibley, William L. Thompson, J.J.A. van Iersel, Nicolaas A.M. Verbeek, Laidlaw Williams and Henry G. Weston, Jr. Many of these workers are cited in the species accounts which follow. In addition, we have used information provided by many other zoologists not primarily ornithologists who have worked at the Reservation including Floyd E. Durham, Robert B. Finley, Jr., Henry S. Fitch, Lawrence M. Hanks, Lloyd P. Tevis, Jr. and P. Quentin Tomich.

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As a result of the efforts of these workers, the occurrence of birds at the Reservation has been monitored continuously for 42 years. Therefore, it is possible to compile a reasonably complete annotated list for this station which may serve 1) as a basis for comparison with other areas, 2) as a baseline against which future changes in the avifauna may be measured, and 3) to assess changes which have oc-

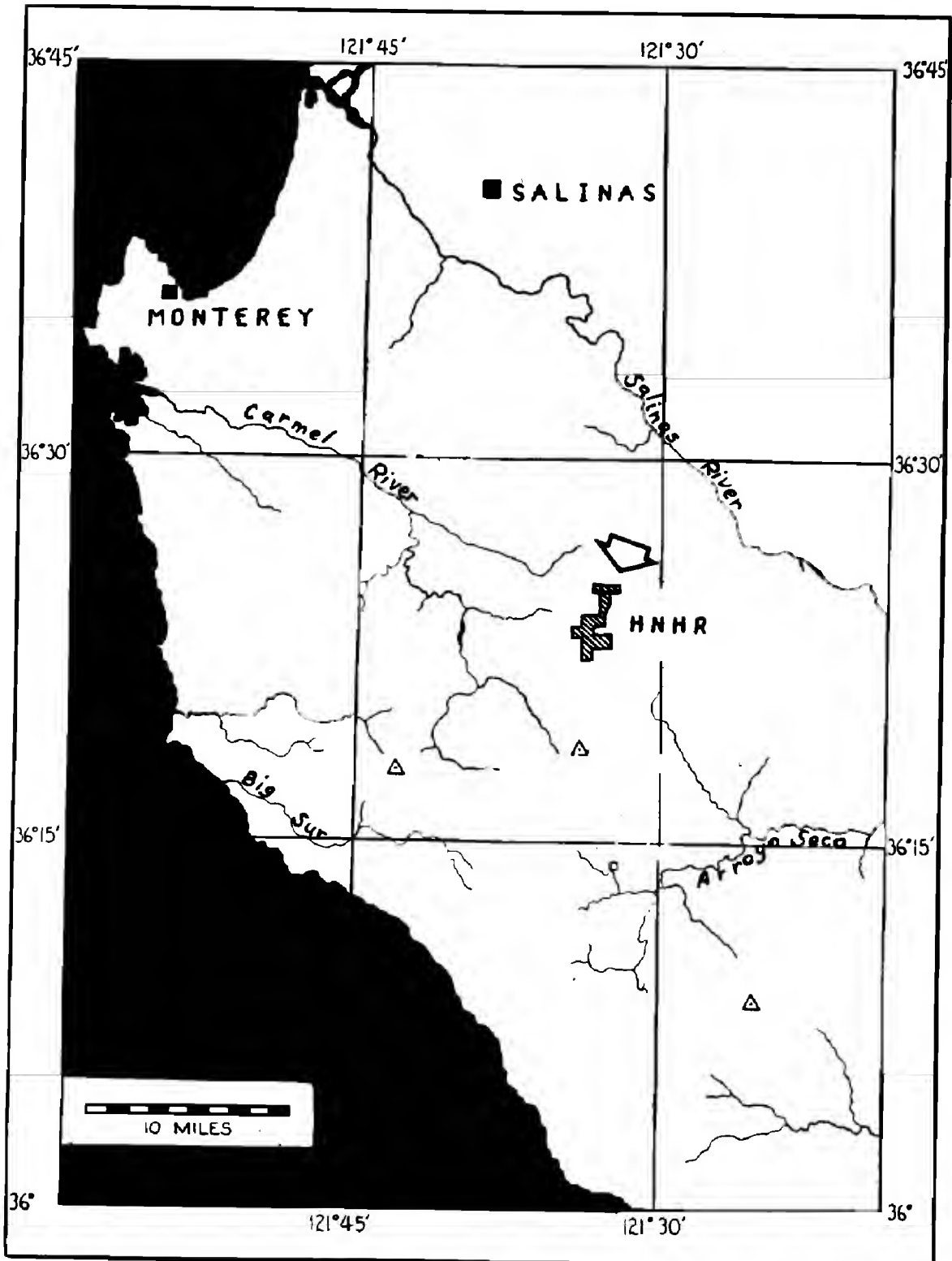


Figure 1. Location of Hastings Reservation (HNHR) in Monterey Co., California.

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curred since the Reservation's founding. Linsdale (1947) provided a list of the birds which had been recorded at the Reservation in the first 10 years of its operation, but the arrangement of species in his list makes it difficult to use and many new records have been added in subsequent years, making the compilation of a new list desirable.

The Reservation lies in the drainage of the upper Carmel River although not on the river proper (Figure 1). It is on the USGS Rana Creek and Chews Ridge quadrangles, covering 770 ha, with elevations ranging from 470 to 940 m. Location of headquarters, near the center of the Reservation, is 36°23' N and 121°33' W.

The Reservation contains five major vegetation types (Figure 2) typical of south coast range foothill vegetation (Griffin 1974). These are: mixed evergreen forest, including Black (*Quercus kelloggii*), Golden (*Q. chrysolepis*), and Coast Live (*Q. agrifolia*) oaks, California Laurel (*Umbellularia californica*), and Madrone (*Arbutus menziesii*), with an understory of Poison Oak (*Rhus diversiloba*), Coffeeberry (*Rhamnus californica*), gooseberry (*Ribes* sp.), Cream Bush (*Holodiscus discolor*), and Brake Fern (*Pteridium aquilinum*); foothill woodland, dominated by Blue Oaks (*Q. douglasii*) with Valley Oaks (*Q. lobata*) locally present, especially in oak savannas; riparian woodland of Western Sycamores (*Platanus racemosa*), Coast Live and Valley oaks, willows (*Salix* sp.), and Bigleaf Maple (*Acer macrophyllum*) and Red Alder (*Alnus rhombifolia*) locally; chapar-



Figure 2. View of Hastings Reservation showing the five major vegetation types.

Photo by W.D. Koenig

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ral, dominated by Chamise (*Adenostoma fasciculatum*), with Coast Ceanothus (*Ceanothus ramulosus*) and Eastwood Manzanita (*Arcostaphylos glandulosa*) locally; and grassland, dominated by Mediterranean annual grasses, especially Soft Chess (*Bromus mollis*), Wild Oat (*Avena fatua*), and Bronco Grass (*Bromus diandrus*). Conifers are essentially absent. There are three intermittent creeks on the Reservation.

Weather records have been kept at Reservation headquarters continuously since 1938. Forty-year means (1938-1977) are as follows: annual precipitation, 52.3 cm (range 26.2 cm in 1975-76 to 105.2 cm in 1940-41); mean monthly maximum temperatures range from 30.7°C (July) to 15.5°C (January); mean monthly minima range from 9.7°C (July and August) to 1.3°C (January). Very little rainfall (an average of 2.2 cm) falls between May and September, inclusive.

ANNOTATED LIST

Species are listed according to whether they are residents (permanent, summer or winter), migrants (spring or fall), visitants (recorded several times, but neither residents nor migrants), or accidental. Abundance categories are common (present in numbers each year), uncommon (present in small numbers each year), and rare (not recorded some years). Irregular species are those which vary markedly in abundance between years. Nomenclature generally follows the current AOU checklist except in a few cases where we have chosen to follow the more recent changes of Mayr and Short (1970). Species known to have bred at least once are indicated by an asterisk (*).

COMMON LOON, *Gavia immer*. Accidental. One seen flying over the Reservation 18 Dec 1937 (Linsdale).

ARCTIC LOON, *G. arctica*. Accidental. An injured bird found in a creek on the Reservation 15 Apr 1941 was collected (Tevis, specimen, Hastings Reservation).

RED-THROATED LOON, *G. stellata*. Accidental. One record of a bird stranded in a field 28 Mar 1973 (M. MacRoberts).

GREAT BLUE HERON, *Ardea herodias*. Visitant. Five records: 15 Aug 1946 (Riney), 18 Sep 1953 and 10 Aug 1974 (Davis), 16 Jul 1979 (Joste) and 28 Jun 1980 (P. Williams).

GREEN HERON, *Butorides striatus*. Rare spring migrant and fall visitant. Six records, four between 19 Apr and 29 May, one each 23 Jul and 23 Aug.

CANADA GOOSE, *Branta canadensis*. Accidental. Three records of small flocks passing over the Reservation on 18 Nov 1947 and 21 Dec 1948 (Tomich) and 22 Dec 1948 (Linsdale).

MALLARD, *Anas platyrhynchos*. Accidental. One record, two birds flying over on 22 Mar 1951 (Christman). Resident in small numbers on stock ponds adjacent to the Reservation.

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- PINTAIL, *A. acuta*. Visitant. Several fall and winter records of flocks passing over the Reservation.
- CINNAMON TEAL, *A. cyanoptera*. Accidental. Two records of three on a stock pond adjacent to the Reservation 12 Mar 1979 (Koenig) and 25 Jan 1980 (Mumme).
- COMMON MERGANSER, *Mergus merganser*. Accidental. The dried remains of one were found on 5 Jan 1951 (Tomich).
- TURKEY VULTURE, *Cathartes aura*. Uncommon summer resident. Rarely reported in winter.
- *WHITE-TAILED KITE, *Elanus leucurus*. Irregular summer resident. Recorded 17 out of 43 years between 1938 and 1980. Bred in at least five years.
- *SHARP-SHINNED HAWK, *Accipiter striatus*. Uncommon resident. Numbers increase in fall and winter.
- *COOPER'S HAWK, *A. cooperii*. Uncommon resident. Numbers increase in fall and winter.
- *RED-TAILED HAWK, *Buteo jamaicensis*. Common resident.
- *RED-SHOULDERED HAWK, *B. lineatus*. At present a common resident. Only one record until 1948. Recorded nearly every year since 1949 and has nested regularly since 1959.
- GOLDEN EAGLE, *Aquila chrysaetos*. Uncommon resident. Known to breed within 2 km of the Reservation.
- MARSH HAWK, *Circus cyaneus*. Formerly an uncommon visitant, especially in winter, recorded in all but two years between 1938 and 1952. Only three records since 1953, all in Dec.
- OSPREY, *Pandion haliaetus*. Visitant. Four records: 21 Apr 1938 (Linsdale); 16 Sep 1951 (Miller); 9 Mar 1970 (Verbeek); and 15 May 1977 (N. and E. Collias).
- PRAIRIE FALCON, *Falco mexicanus*. Formerly an uncommon visitant with 19 records between 1937 and 1942. Since 1942 only four records: 7 Dec 1951 (Tomich); 28 Apr and 31 Aug 1977 (Koenig); 9 Jul 1979 (Joste).
- PEREGRINE FALCON, *F. peregrinus*. Nine records; none since 1950.
- MERLIN, *F. columbarius*. Rare and irregular winter resident. Observed in eight winters between 1937 and 1954; only two subsequent records, 18 Nov 1976 and 13 Oct 1979 (Koenig).
- *AMERICAN KESTREL, *F. sparverius*. Common resident.
- *CALIFORNIA QUAIL, *Lophortyx californicus*. Common resident.
- *MOUNTAIN QUAIL, *Oreortyx pictus*. Common resident.
- *TURKEY, *Meleagris gallopavo*. Introduced into the area by the California Department of Fish and Game in 1968. Present at the Reservation since 1970. After an initial increase in numbers the population has steadily declined and birds are seldom seen.
- VIRGINIA RAIL, *Rallus limicola*. Accidental. One record, a bird caught in a mist net 11 Nov 1973 (Koenig, specimen, MVZ).
- KILLDEER, *Charadrius vociferus*. Now accidental. Formerly rare visitant: 28 records between 1937 and 1954. Only two subsequent records: winter 1975 and 25 Mar 1980.
- COMMON SNIPE, *Capella gallinago*. Winter visitant. Ten records between 1938 and 1959; only one subsequently, 13 Jan 1976 (Koenig).
- SOLITARY SANDPIPER, *Tringa solitaria*. Rare migrant. Four records of a single individual at a stock pond adjacent to the Reservation: 29 Apr 1976; 21 Apr 1977; 21 Apr 1978 (all Koenig); 2 May 1979 (Hanks).
- RED PHALAROPE, *Phalaropus fulicarius*. Accidental. A mummified carcass was found 7 Apr 1947 (Linsdale, specimen, Hastings Reservation).
- BONAPARTE'S GULL, *Larus philadelphia*. Accidental. One bird seen flying over on 26 Dec 1968 (Verbeek).

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- CASPIAN TERN, *Sterna caspia*. Accidental. Three seen flying over on 21 Jul 1957 (Davis, van Iersel).
- BAND-TAILED PIGEON, *Columba fasciata*. Irregular winter resident; common in some years.
- ROCK DOVE, *C. livia*. Visitant; seven records.
- *MOURNING DOVE, *Zenaida macroura*. Common resident, irregular in winter.
- ROADRUNNER, *Geococcyx californianus*. Formerly a common resident, now rare. Records for four decades are as follows: 1938-47, 90; 1948-57, 52; 1958-67, 0; 1968-77, 2. Single records in 1978 and 1979. One male calling persistently in the spring of 1980. Possibly bred at one time but no definite record.
- *BARN OWL, *Tyto alba*. Common resident.
- *SCREECH OWL, *Otus asio*. Common resident.
- *GREAT HORNED OWL, *Bubo virginianus*. Common resident.
- *PYGMY OWL, *Glaucidium gnoma*. Uncommon resident.
- *LONG-EARED OWL, *Asio otus*. Rare resident, apparently less common in later years. Recorded in 1938, 1939, 1940, 1948, 1951, 1975 and 1980.
- *SAW-WHET OWL, *Aegolius acadicus*. Rare resident.
- *POOR-WILL, *Phalaenoptilus nuttallii*. Uncommon summer resident. Records fall between 6 Feb and 30 Nov, suggesting that some individuals may overwinter.
- BLACK SWIFT, *Cypseloides niger*. Rare migrant. Two records, both of three individuals flying overhead, 31 Aug 1954 and 7 Jul 1956 (Davis).
- VAUX'S SWIFT, *Chaetura vauxi*. Rare spring migrant. Ten records in six different years of small groups flying over. All records fall between 19 Apr and 19 May.
- WHITE-THROATED SWIFT, *Aeronautes saxatalis*. Uncommon visitant, but resident within several km of the Reservation. Seventeen records of birds flying overhead are distributed throughout all seasons.
- *BLACK-CHINNED HUMMINGBIRD, *Archilochus alexandri*. Uncommon summer resident. Recorded 18 Mar 1946 (Linsdale 1947) through 29 Sep. Subsequent earliest record is 2 Apr 1978 (P. Williams).
- *ANNA'S HUMMINGBIRD, *Calypte anna*. Common resident; numbers typically reduced in winter.
- RUFOUS HUMMINGBIRD, *Selasphorus rufus*. Uncommon spring migrant; rare summer migrant. Recorded 13 Feb-4 May; two summer records, 23 Jul 1942 (Durham) and 7 Sep 1950 (Tomich).
- *ALLEN'S HUMMINGBIRD, *S. sasin*. Uncommon summer resident. Recorded 22 Feb-13 Aug.
- CALLIOPE HUMMINGBIRD, *Stellula calliope*. Rare spring migrant. Three records: 25-26 Apr 1951 (Tomich); 2 May 1955 (Davis); and 8 Apr 1969 (Verbeek).
- BELTED KINGFISHER, *Megaceryle alcyon*. Uncommon permanent resident along Finch Creek. No breeding records for the Reservation but breeds nearby.
- *COMMON FLICKER, *Colaptes auratus*. Common resident, more numerous in winter. Hybrids with the "Yellow-shafted" form are rare winter residents recorded in six years.
- *ACORN WOODPECKER, *Melanerpes formicivorus*. Common resident.
- LEWIS' WOODPECKER, *M. lewis*. Presently a rare winter resident. Formerly occurred more commonly, recorded in 7 of 10 winters between 1937-38 and 1946-47, 4 of 10 in next decade, only twice subsequently (1 each in Sep and Oct 1972, M. MacRoberts). Records fall between 13 Sep and 16 May.
- RED-BREASTED SAPSUCKER, *Sphyrapicus ruber*. An uncommon winter resident, recorded from 18 Sep to 16 Apr.
- RED-NAPED SAPSUCKER, *S. nuchalis*. Visitant; recorded four times: 19-21 May 1958 (Davis); 15 Oct 1972 and 24 Nov 1973 (M. MacRoberts); and 15 Mar 1976 (Koenig).
- *HAIRY WOODPECKER, *Picoides villosus*. Uncommon resident.

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- *DOWNY WOODPECKER, *P. pubescens*. Uncommon resident.
- *NUTTALL'S WOODPECKER, *P. nuttallii*. Common resident.
- *WESTERN KINGBIRD, *Tyrannus verticalis*. Uncommon summer resident.
- *ASH-THROATED FLYCATCHER, *Myiarchus cinerascens*. Common summer resident.
- *BLACK PHOEBE, *Sayornis nigricans*. Common resident.
- SAY'S PHOEBE, *S. saya*. Uncommon winter resident. Single birds were recorded on 17 Jun and 4 Jul 1976 (Koenig).
- WILLOW FLYCATCHER, *Empidonax traillii*. Recorded in fall migration, few certain records.
- HAMMOND'S FLYCATCHER, *E. hammondii*. Recorded each year since 1978 when noted as common (Johnson). Probably a more regular spring migrant than indicated by these records.
- *WESTERN FLYCATCHER, *E. difficilis*. Common summer resident.
- *WESTERN WOOD PEWEE, *Contopus sordidulus*. Uncommon summer resident.
- *OLIVE-SIDED FLYCATCHER, *Nuttallornis borealis*. Uncommon summer resident.
- HORNED LARK, *Eremophila alpestris*. Present from 6 Nov to 10 Jan 1937-38, as many as 35 in one flock (Linsdale, Miller). "About 60" seen 12 Jan 1948, not present two days later (Tomich). Not recorded subsequently.
- *VIOLET-GREEN SWALLOW, *Tachycineta thalassina*. Common summer resident.
- TREE SWALLOW, *Idoprocne bicolor*. Accidental, small groups flying over, moving N, 21 Feb 1970 (Verbeek).
- ROUGH-WINGED SWALLOW, *Stelgidopteryx ruficollis*. Visitant. Two, 12 Apr 1943 (Linsdale); three, 4 May, and one, 5 May 1975 (Koenig); six, 29 Jun, and one, 30 Jun, 1 Jul 1978 (P. Williams).
- *BARN SWALLOW, *Hirundo rustica*. One pair bred in 1980; only two prior records: 10 May 1938, 1 Jul 1979.
- *CLIFF SWALLOW, *Petrochelidon pyrrhonota*. Nested regularly in small numbers from 1938 to 1941. Small numbers recorded between Apr and Aug in ten years between 1942 and 1954, but no nesting observed. One nest in 1955. Next recorded 19 May 1977, when six were seen prospecting for nest sites; then 24 and 29 May 1980 (Nishimura).
- *PURPLE MARTIN, *Progne subis*. Seen every year but one between 1938 and 1955. Nested in 1942, 1948 and 1951. Last recorded 30 Jun 1958.
- *STELLER'S JAY, *Cyanocitta stelleri*. Common resident.
- *SCRUB JAY, *Aphelocoma coerulescens*. Common resident.
- *YELLOW-BILLED MAGPIE, *Pica nuttalli*. Common resident.
- COMMON RAVEN, *Corvus corax*. Accidental. Single birds seen flying over the Reservation 30 Sep 1953, 18 Feb 1956, and 9 May 1957 (Davis).
- *COMMON CROW, *C. brachyrhynchos*. Common resident.
- CLARK'S NUTCRACKER, *Nucifraga columbiana*. Single birds seen 4, 5 and 8 Nov 1950 (Koford, Tomich), 15 Oct 1972 (M. MacRoberts) and 20 Oct 1972 (Davis). One collected near Reservation boundary 26 Oct 1955 (Davis, specimen, MVZ). Widespread invasions occurred in California in 1950, 1955 and 1972 (Davis and L. Williams 1957, DeSante and Remsen 1973).
- *CHESTNUT-BACKED CHICKADEE, *Parus rufescens*. Uncommon resident.
- *PLAIN TITMOUSE, *P. inornatus*. Common resident.
- *BUSHTIT, *Psaltriparus minimus*. Common resident.
- *WHITE-BREASTED NUTHATCH, *Sitta carolinensis*. Common resident.
- RED-BREASTED NUTHATCH, *S. canadensis*. Irregular and uncommon migrant. Single records for Apr and May 1976. The remainder fall between 15 Jul and 27 Nov.
- *BROWN CREEPER, *Certhia familiaris*. Uncommon resident.
- *WRENTIT, *Chamaea fasciata*. Common resident.

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- *DIPPER, *Cinclus mexicanus*. One nesting pair recorded in 1942, 1943, 1944 and 1946 on Finch Creek. Single birds recorded in 1938, 1948 and 1952. No subsequent record.
- *HOUSE WREN, *Troglodytes aedon*. Common summer resident.
- WINTER WREN, *T. troglodytes*. Rare winter resident.
- *BEWICK'S WREN, *Thryomanes bewickii*. Common resident.
- CAÑON WREN, *Catherpes mexicanus*. Rare, irregular visitant. All records but one are for Jul and Aug.
- ROCK WREN, *Salpinctes obsoletus*. Visitant. Three records: 12 Sep 1951 (Tomich); 31 May 1970 (Verbeek); 28 Aug 1970 (Davis).
- MOCKINGBIRD, *Mimus polyglottos*. Visitant. Two records in Mar; all others fall between 7 Aug and 8 Jan.
- BROWN THRASHER, *Toxostoma rufum*. Accidental. A first-year female collected 3 Nov 1966 (specimen, MVZ) pertains to the race *longicauda* (Davis 1968).
- *CALIFORNIA THRASHER, *T. redivivum*. Uncommon resident.
- *AMERICAN ROBIN, *Turdus migratorius*. Common late summer to spring resident until recently, when some individuals remained throughout the summer. Breeding was established in 1979 when three nests were found (Koenig, P. Williams). Some individuals now apparently permanent residents.
- VARIED THRUSH, *Ixoreus naevius*. Irregular winter resident; common in some years.
- HERMIT THRUSH, *Catharus guttatus*. Common winter resident.
- SWAINSON'S THRUSH, *C. ustulatus*. Common spring migrant. Recorded Apr-Aug, with most records in May. A singing male recorded 18 Jun 1944 (Miller) suggests occasional breeding but no definite record.
- *WESTERN BLUEBIRD, *Sialia mexicana*. Common resident.
- TOWNSEND'S SOLITAIRE, *Myadestes townsendi*. Accidental. One record, 10 Oct 1951 (Tomich).
- *BLUE-GRAY GNATCATCHER, *Polioptila caerulea*. Common summer resident.
- GOLDEN-CROWNED KINGLET, *Regulus satrapa*. Rare winter resident.
- RUBY-CROWNED KINGLET, *R. calendula*. Common winter resident.
- WATER PIPIT, *Anthus spinoletta*. Flocks noted 12 Nov-10 Dec 1937 (Fitch, Linsdale) and 1 Dec-12 Jan 1939-40 (Linsdale, Tevis). A lone bird noted 14 Feb 1940 (Tevis) was the last record at the Reservation.
- CEDAR WAXWING, *Bombycilla cedrorum*. Common winter resident, recorded in all months except Jul (extreme spring and late summer dates 2 Jun and 30 Aug).
- PHAINOPEPLA, *Phainopepla nitens*. Visitant. Seen in 13 of 42 years with most sightings in Oct and Nov, none in Jan, Mar, Jul and Dec.
- LOGGERHEAD SHRIKE, *Lanius ludovicianus*. Rare winter resident and spring migrant; seen in all months except Apr. One or two birds present Jul 1939-Mar 1940. Sighted in eight years since then.
- *STARLING, *Sturnus vulgaris*. Uncommon resident, increasing in numbers. First seen Nov 1964. Next recorded Jan 1968 and first nesting noted in the spring of that year.
- *HUTTON'S VIREO, *Vireo huttoni*. Common resident.
- *SOLITARY VIREO, *V. solitarius*. Uncommon summer resident.
- *WARBLING VIREO, *V. gilvus*. Common summer resident.
- *ORANGE-CROWNED WARBLER, *Vermivora celata*. Common summer resident.
- NASHVILLE WARBLER, *V. ruficapilla*. Uncommon spring migrant.
- NORTHERN PARULA, *Parula americana*. Accidental; one record, a singing male 22 Jul 1979 (Mumme; also seen by us).
- *YELLOW WARBLER, *Dendroica petechia*. Uncommon summer resident.
- YELLOW-RUMPED WARBLER, *D. coronata*. Both "Audubon's" and "Myrtle" warblers are common winter residents. Audubon's Warbler nests within 3 km of the Reservation.

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- *BLACK-THROATED GRAY WARBLER, *D. nigrescens*. Common summer resident; has occurred in every month but Jan.
- TOWNSEND'S WARBLER, *D. townsendi*. Uncommon winter resident. Numbers increase in fall and during spring migration. Recorded in all months but Jun and Jul.
- HERMIT WARBLER, *D. occidentalis*. Uncommon spring and fall migrant.
- *MACGILLIVRAY'S WARBLER, *Oporornis tolmiei*. A breeding bird in the early years. Recorded infrequently since 1954, it is now an uncommon spring migrant.
- YELLOWTHROAT, *Geothlypis trichas*. Uncommon visitant; records in Mar-Jul, Oct.
- YELLOW-BREASTED CHAT, *Icteria virens*. Uncommon spring and rare fall migrant, Apr-May and Aug-Sep.
- WILSON'S WARBLER, *Wilsonia pusilla*. Common migrant and visitant, Mar-Oct. Nests in vicinity.
- HOUSE SPARROW, *Passer domesticus*. Visitant. Recorded in 1939, 1962 and in seven years from 1967 to 1979.
- *WESTERN MEADOWLARK, *Sturnella neglecta*. Common resident.
- RED-WINGED BLACKBIRD, *Agelaius phoeniceus*. Visitant. Breeds at stock ponds adjacent to the Reservation.
- TRICOLORED BLACKBIRD, *A. tricolor*. Formerly an uncommon winter visitant; last seen in 1949.
- HOODED ORIOLE, *Icterus cucullatus*. Accidental. Recorded in two years; 27 Apr 1968 (Hurlbert) and 12, 15 May 1980 (P. Williams).
- SCOTT'S ORIOLE, *I. parisorum*. Accidental. One record, 26 Nov 1955 (Miller, specimen, MVZ).
- *NORTHERN ORIOLE, *I. galbula*. Common summer resident.
- BREWER'S BLACKBIRD, *Euphagus cyanocephalus*. Uncommon summer resident. Breeds adjacent to the Reservation.
- *BROWN-HEADED COWBIRD, *Molothrus ater*. Rare summer resident, first recorded in 1952, seen in five years subsequently. Has parasitized nests of the Blue-gray Gnatcatcher (Root, specimen, Hastings Reservation).
- WESTERN Tanager, *Piranga ludoviciana*. Common migrant. Migration period is long, with spring and fall migrations almost overlapping, although mid-June records are few. Breeds in vicinity.
- *BLACK-HEADED GROSBEAK, *Pheucticus melanocephalus*. Common summer resident.
- BLUE GROSBEAK, *Guiraca caerulea*. Accidental. One record, 31 Aug 1938 (Linsdale).
- *LAZULI BUNTING, *Passerina amoena*. Uncommon summer resident.
- *PURPLE FINCH, *Carpodacus purpureus*. Common resident.
- *HOUSE FINCH, *C. mexicanus*. Common resident, with marked reduction of numbers in winter.
- PINE SISKIN, *Carduelis pinus*. Common winter resident. Recorded in every month but Jun and Jul.
- AMERICAN GOLDFINCH, *C. tristis*. Uncommon winter resident.
- *LESSER GOLDFINCH, *C. psaltria*. Common resident.
- *LAWRENCE'S GOLDFINCH, *C. lawrencei*. Common resident; uncommon in winter.
- GREEN-TAILED TOWHEE, *Pipilo chlorurus*. Rare fall migrant, recorded three times in Sep (1953, 1954, 1964) and once in Oct (1947). Two of these birds were trapped and banded.
- *RUFUS-SIDED TOWHEE, *P. erythrophthalmus*. Common resident. Specimens (MVZ) are *P. e. megalonyx*.
- *BROWN TOWHEE, *P. fuscus*. Common resident. Specimens (Hastings Reservation) are *P. f. crissalis*.
- SAVANNAH SPARROW, *Passerculus sandwichensis*. Uncommon winter resident.

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- GRASSHOPPER SPARROW, *Ammodramus savannarum*. Two records, 22 Nov 1964 (Miller) and 16 Nov 1976 (Koenig).
- VESPER SPARROW, *Pooecetes gramineus*. Three records: 26 Jan 1946 (Finley); two, 24 Mar 1954 (Davis); and 13 Oct 1969 (one trapped, Davis).
- *LARK SPARROW, *Chondestes grammacus*. Uncommon resident.
- *RUFIOUS-CROWNED SPARROW, *Aimophila ruficeps*. Rare resident.
- *SAGE SPARROW, *Amphispiza belli*. Rare resident.
- *DARK-EYED JUNCO, *Junco hyemalis*. Common resident. Numbers increase in fall as winter residents arrive, decrease in spring as they leave. One record of the "Gray-headed" Junco (*J. h. caniceps*), 5 Jan 1967 (Davis, specimen, MVZ).
- *CHIPPING SPARROW, *Spizella passerina*. Common summer resident.
- BLACK-CHINNED SPARROW, *S. atrogularis*. Accidental. Three records: 8 Jun 1938 (Sibley); 30 Aug 1939 (Linsdale); and one circa 1970 (Pitelka).
- HARRIS' SPARROW, *Zonotrichia querula*. Accidental. One record, 18 Nov 1944 (Weston, bird trapped and banded).
- WHITE-CROWNED SPARROW, *Z. leucophrys*. Common winter resident. A single tailless bird seen 17, 25, 27 Jul 1957 appeared to be of the coastal race, *nuttalli* (Davis).
- GOLDEN-CROWNED SPARROW, *Z. atricapilla*. Common winter resident. A male collected 25 Jul 1961 (Davis, specimen, MVZ) had a testis 2 mm long and slight fat and had apparently failed to migrate.
- WHITE-THROATED SPARROW, *Z. albicollis*. Irregular and rare winter resident.
- FOX SPARROW, *Passerella iliaca*. Irregular winter resident; common in some years.
- LINCOLN'S SPARROW, *Melospiza lincolnii*. Uncommon winter resident.
- *SONG SPARROW, *M. melodia*. Uncommon resident.

CHANGES IN THE AVIFAUNA

Our search of the records of bird occurrence at Hastings reveals many changes in the bird community from the founding of the Reservation in 1937 to the present. The following species have increased or been added to the breeding community: Red-shouldered Hawk, Turkey, Barn Swallow, American Robin, Starling and Brown-headed Cowbird. Two of these, the Turkey and Starling, are exotics which have spread into the area in recent years. Both Red-shouldered Hawks and Brown-headed Cowbirds have increased in other parts of California in the same period. We know of no obvious environmental change which might correlate with the addition of American Robins or Barn Swallows, both of which have occurred as breeding birds since 1979.

Sixteen species appear to have decreased significantly or disappeared almost entirely from the community: Marsh Hawk, Prairie Falcon, Peregrine Falcon, Merlin, Killdeer, Roadrunner, Long-eared Owl, Lewis' Woodpecker, Horned Lark, Cliff Swallow, Purple Martin, Dipper, Mockingbird, Water Pipit, MacGillivray's Warbler and Tricolored Blackbird.

Two wintering species which prefer short grass, the Horned Lark and Water Pipit, quickly disappeared with the return of tall, dense grass to the Reservation after the cessation of grazing. The three

falcons and the Marsh Hawk have decreased markedly throughout much of California and elsewhere, presumably in part due to pesticide contamination (e.g., Hickey 1969, Temple 1972, Fyfe et al. 1976), robbing of nests for falconry (Small 1974) and/or habitat destruction (Arbib 1979). Purple Martins and Lewis' Woodpeckers have similarly declined throughout their ranges in recent years (Arbib 1979), while Roadrunners have declined in northern California generally (Small 1974). The Dipper nested in the period 1942-46, when the Reservation's major creeks flowed continuously. After 1946 all three creeks became intermittent and the Dipper soon disappeared except for an occasional visitant. Concurrent with this change in rainfall patterns has been that of a gradual decline in the riparian thickets along the watercourses, well documented by comparison of early photographs with the same areas today. This decline probably accounts for the present rarity of the MacGillivray's Warbler, Killdeer and Tricolored Blackbird, species which prefer mesic environments. We can offer no unambiguous reasons for the decline of the remaining two species, the Cliff Swallow and Mockingbird; the latter is particularly surprising given its recent increase in the nearby Monterey Peninsula (Davis pers. obs.)

COMPARISON WITH A "SEMIURBAN" AVIFAUNA

Raunkiaer's Law of Frequency, originally used by botanists, was used by Linsdale (1928) and several subsequent authors to census birds. Basically, this method does not yield information on relative abundance but rather on the relative frequency of occurrence of the individual species comprising an avifauna. Species are ranked according to the percentage of standard censuses on which they were recorded. Linsdale suggested that this method would afford a satisfactory basis for comparing different avifaunas at a given point of time and for assessing changes in a given avifauna over a period of time. Although the technique was used in several early studies (Linsdale 1928, 1932, 1936; Linsdale and Rodgers 1937; Rodgers and Sibley 1940), none of these workers tested the method by making any comparisons.

Linsdale (unpubl. data on file at Hastings Reservation) established the frequency of occurrence for a total of 123 species recorded on 689 censuses at Hastings Reservation from November 1937 through December 1940. Here we compare these results with those obtained by Rodgers and Sibley (1940), who established frequency of occurrence for a total of 65 species recorded on 120 censuses (10 per month) made on parts of the campus of the University of California, Berkeley, in 1938 and 1939. The two census periods are almost directly comparable chronologically.

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Table 1. The 20 most frequently recorded species on the University of California, Berkeley, campus and at the Hastings Reservation.

Rank	Campus ¹	Hastings Rank	Hastings ²	Campus Rank
1	American Robin	33	Scrub Jay ³	12
2	Brown Towhee ³	3	Rufous-sided Towhee ³	11
3	Song Sparrow	37	Brown Towhee ³	2
4	White-crowned Sparrow	32	Plain Titmouse ³	15
5	Bushtit	23	Dark-eyed Junco ³	7
6	Brewer's Blackbird	44	Common Crow	—
7	Dark-eyed Junco ³	5	House Finch ³	9
8	Anna's Hummingbird	27	Yellow-billed Magpie	—
9	House Finch ³	7	Acorn Woodpecker	—
10	House Sparrow	—	California Quail ³	17
11	Rufous-sided Towhee ³	2	Common Flicker ³	18
12	Scrub Jay ³	1	Black Phoebe	26
13	Purple Finch	22	Wrentit	46
14	Lesser Goldfinch ³	17	Western Bluebird	65
15	Plain Titmouse ³	4	White-breasted Nuthatch	—
16	Pine Siskin	91	Western Meadowlark	—
17	California Quail ³	10	Lesser Goldfinch ³	14
18	Common Flicker ³	11	Lark Sparrow	—
19	Swainson's Thrush	95	California Thrasher	63
20	"Audubon's" Warbler	52	Nuttall's Woodpecker	—

¹All species permanent residents except Swainson's Thrush (summer resident) and "Audubon's" Warbler (winter resident).

²All species permanent residents.

³Common to both lists.

The campus area was 34.4 ha in extent and included 11 buildings, extensive lawns, scattered deciduous trees, conifers and eucalyptus, a large eucalyptus grove, two creeks which flowed until late summer, and shrubbery around the buildings and along the creeks. We have compared the composition of the 20 most frequently recorded species on each list (Table 1), as these would be the most important in indicating similarities and differences between the two avifaunas.

The greater diversity of habitats and reduced human disturbance at Hastings is suggested by the fact that 7 of the first 20 species (35%) on the Hastings list were not recorded at all at Berkeley whereas only one of the Berkeley top 20 (5%) was not recorded at Hastings (the House Sparrow).

Nine species (45%) are common to both lists (Table 1). All are birds commonly found in both natural areas and in city parks, gardens and suburban areas wherever suitable vegetation, native or introduced, is present.

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Of the 11 species present at Berkeley but not in the first 20 at Hastings, the White-crowned Sparrow is represented on the campus by a resident race (*nuttalli*) and by winter residents of other races, but only by wintering birds at Hastings, where the species is absent from early May to mid- or late September. The House Sparrow is primarily an urban species closely tied to human habitation (Witherby et al. 1948, Summers-Smith 1963), and tends to drop out in undisturbed natural situations as at Hastings.

The Brewer's Blackbird, like the House Sparrow, has established successfully in suburban situations. At Hastings, nearly all records of the blackbird are of transients flying over, although some nesting occurs on the grazed savannas immediately adjacent to the Reservation. Thus the tall, ungrazed grass would appear to be limiting this species at Hastings.

The Anna's Hummingbird is much reduced in numbers at Hastings in late fall and winter but no such reduction is evident in Berkeley (F. Pitelka pers. comm.). Grinnell and Miller (1944) noted the importance of introduced flowering shrubs and trees in providing food for this species from October to January, allowing a much larger population to overwinter. In this period virtually no plants flower at Hastings. The greater frequency of this species at Berkeley most likely depends on winter food provided by garden flowers and ornamental plantings.

The higher frequency of American Robins at Berkeley, where they are a common permanent resident, correlates with the presence of extensive campus lawns which provide ideal foraging sites. The Pine Siskin, also a common breeder in Berkeley but not at Hastings, may be more frequent because of the extensive plantings of conifers on campus. Only two mature native pine trees occur at Hastings. The Purple Finch is better adapted physiologically to more mesic habitat (Salt 1952). The cooler, more humid climate at Berkeley probably accounts for its greater frequency there. At Hastings, this species is confined almost entirely to mesic canyon bottom sites from June to October.

The greater frequency of the Song Sparrow and Swainson's Thrush at Berkeley probably results from the presence of creeks flowing at least through the breeding and immediate postbreeding seasons, and the higher humidity and presence of green vegetation along these watercourses.

Only two species are difficult to account for, the Bushtit and Yellow-rumped (Audubon's) Warbler. The problem is not why these two species were so common at Berkeley but why they were recorded so infrequently at Hastings. Linsdale (1947) suggested that Bushtits may have declined markedly during the severe winter of 1936-37; this special circumstance may in part be the cause of the lowered

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ranking of this species at Hastings. We do not know why the Audubon's Warbler, which winters in a wide variety of habitats, is relatively less common at Hastings, although the wider variety of flowering exotics in Berkeley may make this area more suitable than Hastings.

Of the 11 Hastings species not in the Berkeley first 20, most can be accounted for by obvious habitat preferences: Acorn Woodpeckers, Nuttall's Woodpeckers and White-breasted Nuthatches are absent from most of the humid coastal environment of Berkeley; Yellow-billed Magpies, Common Crows, Western Bluebirds, Western Meadowlarks, and Lark Sparrows typically occur in grassland and/or oak savanna with a grassy understory; California Thrashers and Wrentits are most typical of chaparral. The only remaining species in this list is the Black Phoebe, which was 26th on the campus list. This species bred on the upper campus but strayed only rarely to the lower campus where the censuses were done (Rodgers and Sibley 1940).

Nearly all differences in relative frequency between Hastings and Berkeley are consistent with known habitat or climatic differences, and the similarities between the two areas involve species which are known to occur commonly in both natural and suburban areas. Thus, although there are far more refined methods which may be used to analyze the species composition of an avifauna, the Raunkiaer method is useful, and may be particularly valuable as a means to recover information from carefully kept records made by competent observers over an appreciable period of time.

ACKNOWLEDGMENTS

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THE LEAST BELL'S VIREO IN BAJA CALIFORNIA, MEXICO

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The Least Bell's Vireo (*Vireo bellii pusillus*) has been recorded as a breeding species in California and in Baja California, Mexico, south to about latitude 30° N (AOU 1957). Recent field work has shown this vireo to be rare or absent from about two-thirds of its former breeding range in California (Goldwasser et al. 1980), so it seemed desirable to make a preliminary survey of its status in Mexico.

Review of literature and museum records and consultation with ornithologists resulted in the identification of 14 Mexican locations where Least Bell's Vireos had been seen or collected during the breeding season (April-July), and that probably represented breeding localities (Figure 1 and Appendix). During 19-23 June 1980, Keith Axelson and I visited eight of those localities to see if vireos were present. We also checked for vireos in potential habitat enroute. Because habitat loss and degradation and brood parasitism by Brown-headed Cowbirds (*Molothrus ater*) are implicated in the decline of the Bell's Vireo in California (Goldwasser et al. 1980), we made a preliminary assessment of these factors.

RESULTS

Bell's Vireos were found at five of the eight historical locations checked, as described below.

San Fernando Mission, 20-21 June. The habitat at San Fernando is apparently much as Anthony (1895) described it, consisting of about 1.5 km of dense Catclaw (*Acacia greggii*) and related species along an open stream bed. We located at least eight singing male Bell's Vireos in about 0.5 km of habitat downstream from the Mission site, and two more at the Mission. Habitat between the two points was similar and presumably supported similar densities of vireos.

Valladares, 21 June. We were not at the exact location visited by other observers, but we did see and hear a male Bell's Vireo in the vicinity. The habitat was atypical—the bird was singing from a lone dense bush near an open stream bed—and there did not seem to be other vireos nearby.

Rancho San José (Meling Ranch), 21-22 June. Altogether, riparian woodland extends for about 10 km along Arroyo San José in the vicinity of the Meling Ranch (Short and Crossin 1967). We surveyed about 0.75 km at the north end adjacent to the San Telmo-Observatory road, and located at least 10 singing males. Most were in the younger denser growth of willows (*Salix* sp.) near the road.

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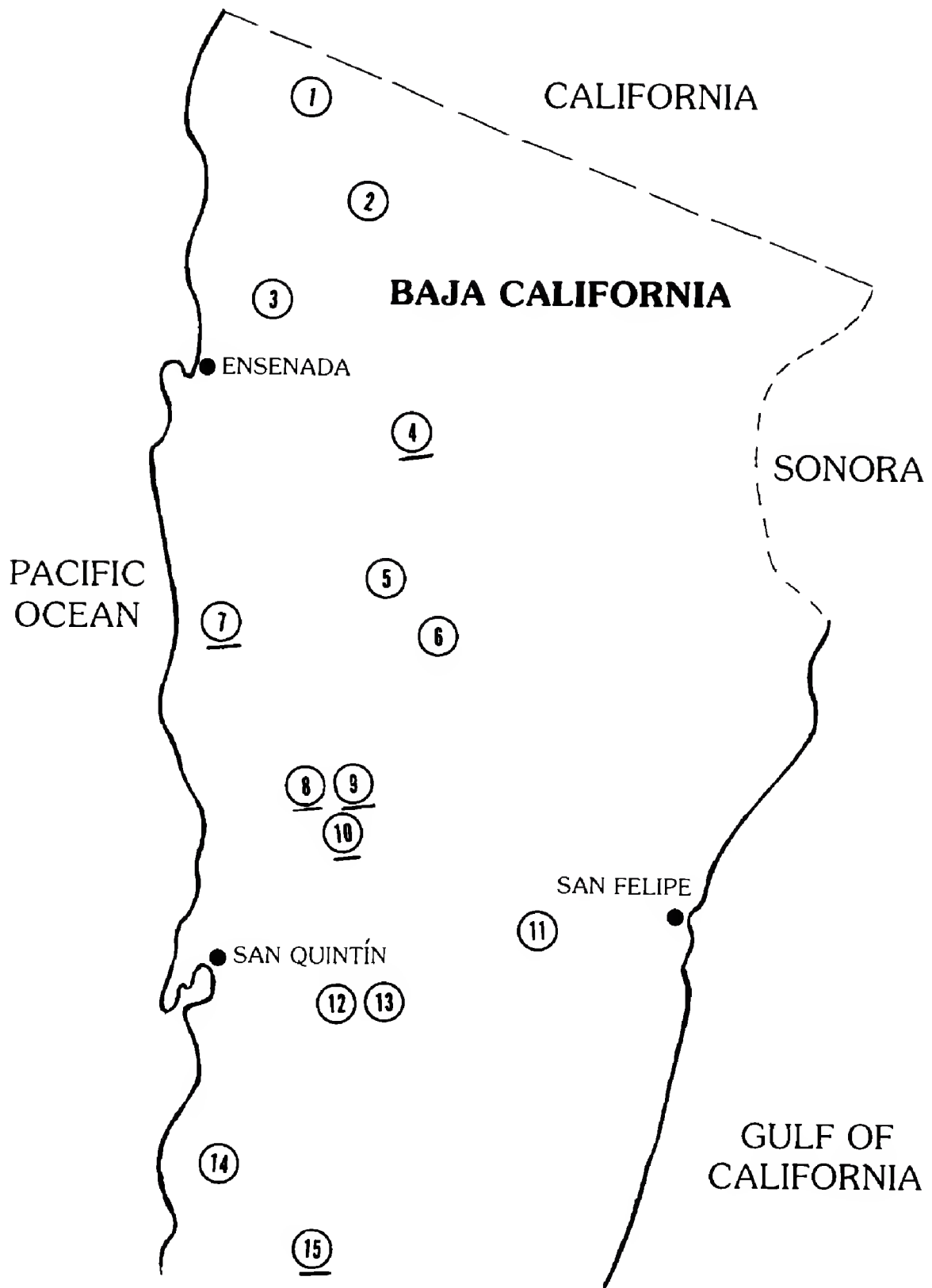


Figure 1. Northern Baja California, Mexico, showing locations where Bell's Vireos have been recorded during the breeding season. Locations where vireos were recorded in 1980 are underlined. 1. Carrizo Valley. 2. Valle de las Palmas. 3. Guadalupe Valley. 4. El Gato. 5. San Ysidro. 6. Cerro Prieto. 7. Erendira. 8. Las Cabras. 9. Rancho San José. 10. Valladares. 11. Cañon El Cajón. 12. El Salto. 13. Rancho Rosarito. 14. El Rosario. 15. San Fernando.

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where several could be heard at one time within 20 m of one another, but some were found in the older, more open woods downstream.

Las Cabras, 22 June. Riparian woodland formerly occurred along the Río San Telmo at this point (Short and Crossin 1967). Now the only dense vegetation in the vicinity is just upstream from Rancho Cortez, and consists of about 500 m² of 3-4 m tall Tree Tobacco (*Nicotiana glauca*) and tamarisk (*Tamarix* sp.). We found a pair of Bell's Vireos at that site, apparently the only ones in the otherwise open river bottom.

El Gato, 22-23 June. About 22 km SE of Ojos Negros, a spring-fed stream flows from the Sierra Juárez and is lined with willows, cottonwoods (*Populus* sp.), and Catclaw for about 1.5 km (Short and Crossin 1967). In about 0.5 km of this habitat, we located 10 singing males. Most of the birds were in Catclaw rather than the more open willow or cottonwood growth. At one point four males were singing simultaneously within 15 m of one other.

We also found Bell's Vireos at one location where they had not been reported previously:

"*Erendira*," 8.8 km SW of Highway 1 at El Descanso, 19-20 June. About 1.5 km of dense willows grow along a tributary to Río San Isidro. We accounted for six singing males in about one-third of the available habitat.

We were unable to find any suitable habitat for Bell's Vireos in Guadalupe Valley, Valle de las Palmas or at El Rosario, the other historical locations checked. In fact, the only other location we found on the entire trip that looked suitable for Bell's Vireos was a 0.5 km stretch of dense willow growth along a stream at Santa Rosa on Highway 1, 20 km south of La Misión. No Bell's Vireos were seen or heard there. Agricultural development has resulted in the elimination of river bottom vegetation in the Guadalupe Valley, at El Rosario and elsewhere. More importantly, the severe floods of 1978-1979 eradicated major areas of riparian growth, leaving virtually all streams in northern Baja California denuded from the coast far back into the mountains.

Cowbirds were seen at San Fernando (7 birds), Rancho San José (7), Erendira (1), and in agricultural areas around Ensenada (3).

DISCUSSION

No firm conclusions can be drawn about the status of the Least Bell's Vireo in Mexico from such a brief survey, but a few observations seem appropriate.

1. The populations found at San Fernando, Rancho San José, El Gato and Erendira are probably healthy and relatively secure at pre-

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sent. Breeding densities (8 to 20 pairs per km of habitat) are greater than any found in California recently (Goldwasser et al. 1980), and rival the greatest densities reported in California historically (Grinnell and Storer 1924). The habitat is not immediately threatened with destruction or modification. Cowbirds are present in some areas, but apparently not in numbers likely to be a serious detriment to the vireo population.

2. While we certainly did not find all the Bell's Vireos in Baja California, it is obvious that habitat of the "classic" type is limited both naturally and (more recently) as a result of agricultural development and floods. It seems likely that the number of breeding pairs is measurable in hundreds rather than thousands.

3. Bell's Vireos will probably be adversely affected by the continuing development of Baja California. Mexican Highway 1 has recently been paved and improved the length of the peninsula, as has Highway 3 from Ensenada to San Felipe. Concurrently, the Mexican Government has been working to improve water distribution for irrigation and other uses. Together, these improvements are making agriculture in Baja California much more feasible and profitable. Farm crops will continue to replace bottomland vegetation. Brown-headed Cowbirds can be expected to increase in numbers as agriculture provides more attractive habitat for them, and they may eventually reach levels of significance for vireos. As in California, only the larger and more isolated populations of Bell's Vireos can be expected to remain unaffected.

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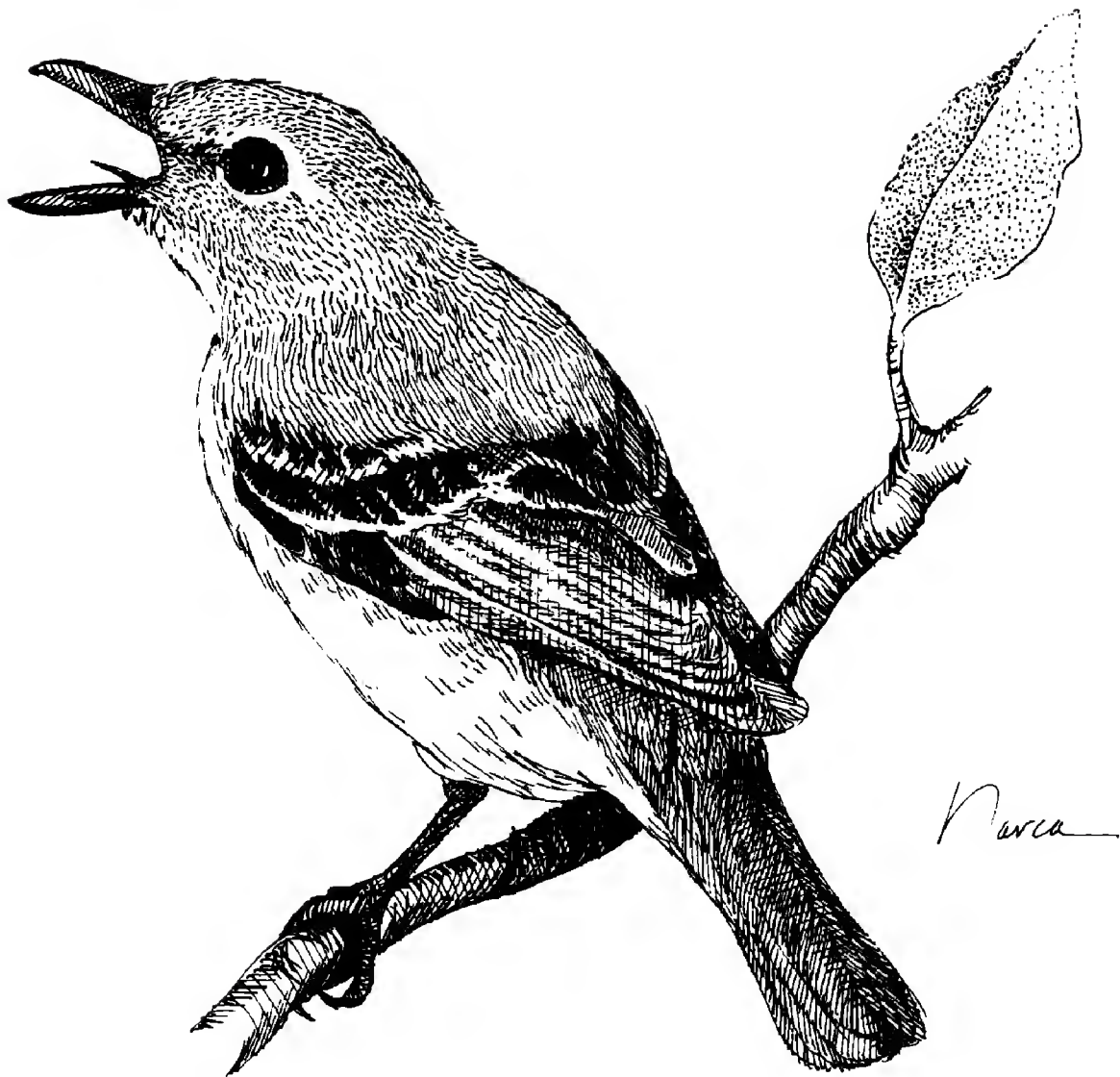
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APPENDIX

Previous breeding season records of Least Bell's Vireos in Baja California. Locations are shown in Figure 1.

CARRIZO VALLEY: specimens 20-21 April (year?) (Grinnell 1928). GUADALUPE VALLEY: specimens 28 April and 2 June (year?) (Grinnell 1928). VALLE DE LAS PALMAS: specimens 5-6 April (year?) (Grinnell 1928), 22 KM SE OF OJOS NEGROS: up to 10 birds, 4-15 April 1967 (Short and Crossin 1967). SAN YSIDRO (ISIDRO?): 2 egg sets 1936, Western Foundation of Vertebrate Zoology (WFVZ), 11 KM E OF CERRO PRIETO: 2 collected June 1928, Museum of Vertebrate Zoology (MVZ). LAS CABRAS: 1 collected 4 June 1923, San Diego Natural History Museum (SDNHM). RANCHO SAN JOSÉ (MELING RANCH): common 20-28 April 1967 (Short and Crossin 1967); 1 pair seen 5 May 1975 (S. Wilbur field notes); 1 pair seen 3 August 1977 (Wilbur field notes). VALLADARES: 2 collected April 1925 (MVZ); 6 seen 24-25 April 1967 (Short and Crossin 1967). CAÑON EL CAJÓN: 15 collected May 1926 (MVZ). EL SALTO, 48 km E of San Quintín: several seen 28 April 1964 (Short and Banks 1965). RANCHO ROSARITO, 54 km E of San Quintín: "common," 2 collected 27 April 1964 (Short and Banks 1965). EL ROSARIO: 5 collected May 1925 (SDNHM); 3 egg sets 1925 (WFVZ); 3 collected April 1926 (Los Angeles County Museum of Natural History). SAN FERNANDO: "quite common" 1894 (Anthony 1895); 2 collected 28 April 1928 (SDNHM).

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Narca

Bell's Vireo

Sketch by Narca Moore

DISTRIBUTION AND POPULATION STATUS OF WHISKERED AUKLET IN THE ALEUTIAN ISLANDS, ALASKA

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The little known Whiskered Auklet (*Aethia pygmaea*) occurs only in the Aleutian (Figure 1), Commander and Kuril islands of the North Pacific. In the Aleutian Islands it occurs from Unimak Pass to the Near Islands (Kessel and Gibson 1978), but the only documented nesting records are from Umnak Island (R.J. Gordon in litt.), Chagulak Island (Murie 1959), Atka Island (Turner 1886), and Buldir Island (Knudtson and Byrd in press).

This paper summarizes new information on the distribution of Whiskered Auklet in the Aleutian Islands, and provides a significantly higher estimate of the minimum population.

METHODS

During the period 1972-1974 we were aboard the R/V Aleutian Tern as it traveled to every major island in the Aleutians. In 1972 and 1974 nearly the entire island chain was traversed. In 1972 the trip was made during the breeding season, but in 1974 observations were made in April, prior to nesting. In 1973 observations were confined to the eastern Aleutians. Travel was generally confined to daylight hours so that continuous observations could be made. One or two observers counted birds within approximately 300 m of both sides of the ship. The Aleutian Tern traveled at 16 km/h except when near islands when the speed was reduced to as low as 8 km/h.

Island groups within the Aleutians are identified as follows: 1) Fox Islands - Unimak Pass to Umnak Island (the area of each island group ends 16 km west of the westernmost island, to include birds associated with nesting colonies); 2) Islands of Four Mountains - Umnak Island to Amukta Island; 3) Andreanof Islands - Amukta Island to Unalga Island; 4) Rat Islands - Unalga Island to Buldir Island; 5) Near Islands - Buldir Island to Attu Island.

RESULTS AND DISCUSSION

The largest numbers of Whiskered Auklets were found in the Fox Islands prior to (April 1974) and during (24-27 May 1972 and 3 July 1973) the breeding season (Table 1). Nearly 60% of 13,118 birds (approximate density 1000/km²) recorded in this area in 1974 were near Baby Pass, where Spindler (in litt.) estimated 265 Whiskered

WHISKERED AUKLET

Table 1. The distribution of Whiskered Auklets observed in the Aleutian Islands, Alaska, 1972 to 1974.

YEAR	ISLAND GROUP					TOTAL
	Fox	Is. of 4 Mt.	Andreanof	Rat	Near	
1972 (24 May to 7 July)	1702	12,100	771	527	— ¹	15,010
1973 (3 July)	7780	—	—	—	—	
1974 (4 to 30 April)	13,118	2519	9196	14	0	24,847

¹No data

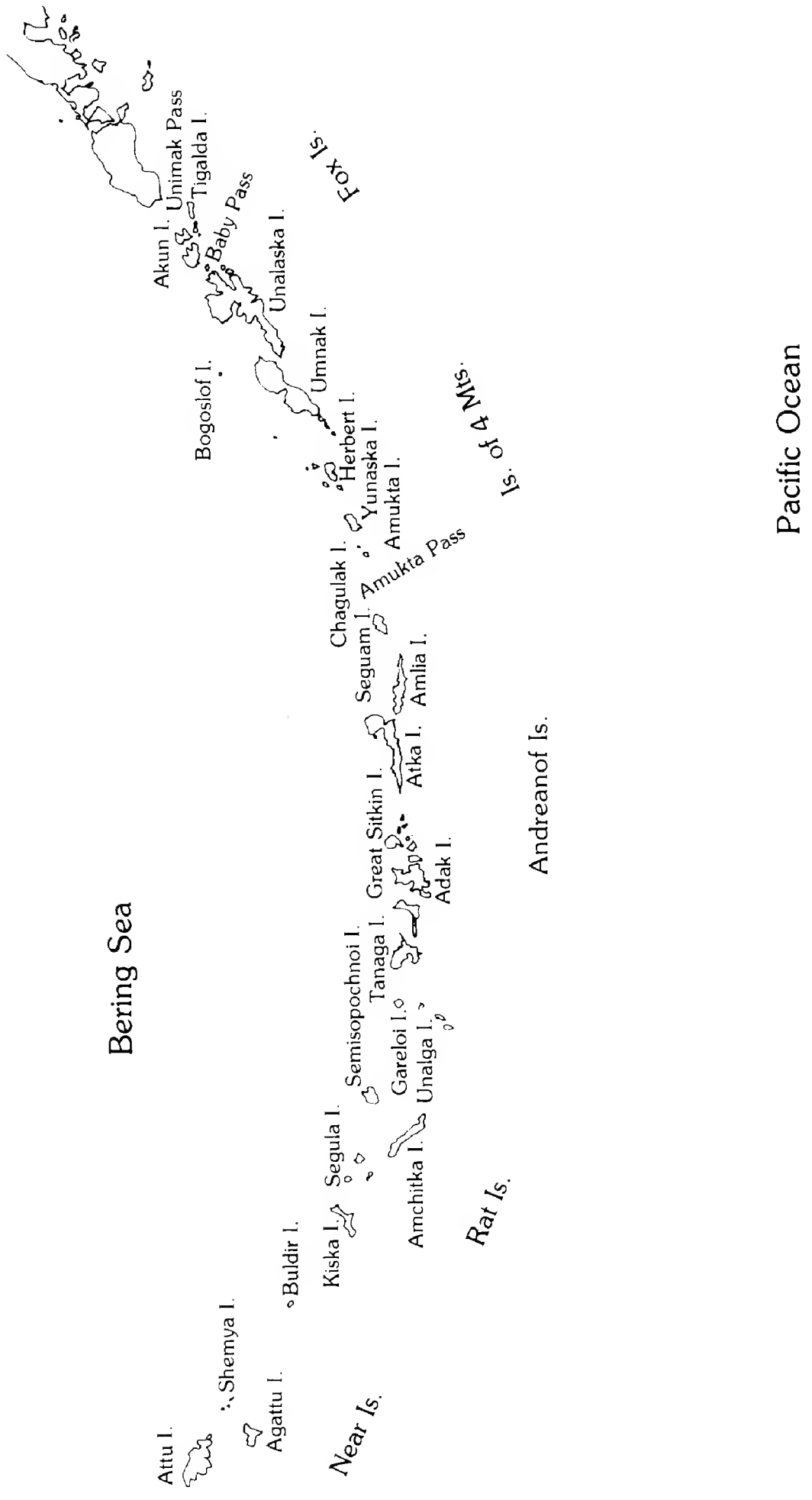
Auklets per km² in April 1976. During the 1973 breeding season, nearly 7800 auklets were counted on 3 July at a time when one member of many breeding pairs was probably at the nest. As in the April counts in this area, birds were concentrated in Baby Pass. In 1972 the count was low because Baby Pass was not reached until after dark, so only birds in the less densely populated east end of the Fox Islands were tallied. Few Whiskered Auklets were seen west of Baby Pass in the Fox Islands during late winter or summer.

The largest single flock of Whiskered Auklets (an estimated 10,000) we found was in the Islands of Four Mountains near the west side of Yunaska Island on 30 May 1972 (Kessel and Gibson 1978). Smaller flocks were encountered near Herbert and Chagulak islands during the breeding season. In April 1974 only 21% as many Whiskered Auklets were found in the Islands of Four Mountains during the breeding season, and the late winter distribution of birds within this area was slightly more westerly than the summer distribution.

The reverse situation occurred in the Andreanof Islands, where we found over 9000 auklets prior to, but fewer than 800 during, the breeding season. Nearly 70% of the auklets seen prior to the breeding season were near the southwest side of Great Sitkin Island. Great Sitkin Island and all islands around it were intensively surveyed for birds in July 1971 by Gibson and P.C. Sekora, and Whiskered Auklets were not present. Therefore, the birds seen in the area in April 1974 bred elsewhere, probably in the Islands of Four Mountains.

Of the 527 Whiskered Auklets counted in the Rat Islands in 1972, about 200 were at Segula Island, and 300 at Buldir Island. The 14 birds identified in April 1974 were scattered over the entire area.

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137 Figure 1. Map of the Aleutian Islands, Alaska, showing five major island groups.

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During our study, Whiskered Auklets were scarce in the Near Islands: four near Attu Island 12 June (1975) (E.P. Hoberg pers. comm.) and two near Agattu Island 1 July 1975 (Byrd). Apparently the species was formerly more common in this area, since Turner (1886) considered Whiskered Auklet abundant in the Near Islands.

Nearly all the Whiskered Auklets we saw in the Aleutian Islands were associated with tide rips where they were presumably feeding, usually within 16 km of land. Although the species was recorded throughout the island chain, its distribution was distinctly clumped. This phenomenon was particularly pronounced prior to the breeding season; 97% of the Whiskered Auklets in the Fox Islands were between the west side of Tigalda Island and the west side of Baby Pass, 98% of the birds in the Islands of Four Mountains were between Herbert and Yunaska islands, and 95% of the total in the Andreanof Islands were in two locations (30% near Seguam Island, and 65% near Great Sitkin Island). These three concentrations combined accounted for 85% of the Whiskered Auklets we saw in the Aleutians in April 1974.

The breeding season distribution is generally less clumped, with smaller flocks scattered over broader areas. The exception was the flock of 10,000 birds in the Islands of Four Mountains.

Little is known about the distribution of Whiskered Auklets after they complete nesting activities in August. The birds apparently winter near their breeding area (AOU 1957). J.L. Trapp (pers. comm.) saw 2000 auklets near the east end of the Islands of Four Mountains 21-22 September 1974, and on 27 September 1974 he counted 638 birds at the east end of the Fox Islands. Only 39% and 31% of the auklets were identified to species in the Islands of Four Mountains and Fox Islands respectively, but all those whose identity was known were Whiskered Auklets.

Although it is impossible to determine what percentage of the total Whiskered Auklets in the Aleutian Islands we actually observed in 1972 and 1974 (the two years when the entire area was censused), it is apparent that Murie's (1959:201) estimate of "at least 2000" in the Aleutians was low. We counted 15,000 Whiskered Auklets on the sea in 1972 when one bird of many pairs was probably in a nest crevice. The 1974 total of 25,000 birds counted prior to the nesting season is considered more representative of the population, and we use this as the minimum population estimate of Whiskered Auklets in the Aleutian Islands.

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Whiskered Auklets, Buldir Island, Alaska, 25 May 1976

Photo by G. Vernon Byrd

WHISKERED AUKLET

ACKNOWLEDGMENTS

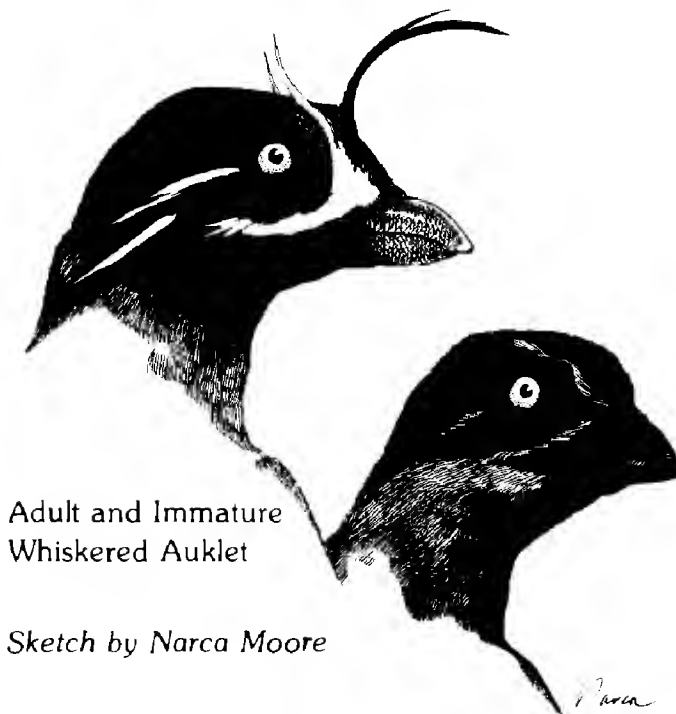
We gratefully acknowledge the following U.S. Fish and Wildlife Service personnel who contributed observations: Edgar P. Bailey, George J. Divoky, Eric P. Hoberg, Palmer C. Sekora, John L. Trapp and Gordon W. Watson. Michael A. Spindler made his unpublished manuscript, "Pelagic and near-shore seabird densities in the western Aleutian Islands as determined by transect counts in 1975 and 1976," available to us.

Captain George A. Putney and deckhands Lazlo Hanko, Christian Anderson and Dave Clemens provided invaluable logistic support. Robert H. Day, Brina Kessel and John L. Trapp critically reviewed the manuscript. Heidi Russell prepared the figure.

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Adult and Immature
Whiskered Auklet

Sketch by Narca Moore

FLAMMULATED OWLS IN NORTHWESTERN CALIFORNIA

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Habitat selection and distribution of the Flammulated Owl (*Otus flammeolus*) in California is incompletely known. Grinnell and Miller (1944) noted only two locations in the northeastern part of the state. Johnson and Russell (1962) provided records of at least 33 individuals in seven additional northeastern California locations. The most comprehensive survey to date has been by Winter (1974), reporting 59 specimen and 89 sight records since 1860 in California. Two of the records Winter reported for the northwestern portion of the state are from Humboldt County and five are from Trinity County.

We collected records (visual or aural) in these two counties and conducted springtime, nocturnal surveys of Flammulated Owls, mostly on the Six Rivers National Forest, during 1976-1980 (see Appendix). The surveys were made primarily in potential timber sale areas. We elicited Flammulated Owl responses with recorded calls or vocal imitations of this and other owl species, at half-mile intervals along trails or roads. Flammulated Owls responded readily to Spotted Owl calls, which we often used. The surveys were made in conjunction with a study of Spotted Owls, and were conducted April to June under varying lunar phases and times of the night. Most surveys were conducted on fairly calm, clear nights.

To date, we have compiled previously unreported records of 75 territorial male Flammulated Owls. No territories have been located in either Del Norte County or western Siskiyou County, but lack of records probably reflects inadequate field surveys rather than an absence of the species. Thirty-eight territories were located in Humboldt County and 37 in Trinity County, generally in the southern portions along the common boundary (Figure 1), in the Northern Coast and Trinity Faunal Districts (Miller 1951, Winter 1974).

High, local concentrations of territorial pairs, as noted by Marshall (1939), Winter (1974) and Johnson and Russell (1962), suggest a propensity for forming loose breeding colonies. Similarly, we found "quasi-colonies" containing 2,3,4,5,6,7 and 10 territorial males, in areas ranging from 8 to 2400 ha in size. Crude densities (defined as number of birds per unit area, including areas of suboptimal habitat) ranged from 0.03 to 1.09 males/40 ha. These estimates are lower densities than found elsewhere (Table 1). The minimum density estimate (0.03 males/40 ha) from the present study may indicate

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suboptimal habitat, but may also reflect the high variation in calling responsiveness that Flammulated Owls exhibit. We found that the "quasi-coloniality" of the Flammulated Owl leaves some apparently optimal habitat vacant, as suggested by Tyler and Phillips (1978).

Breeding habitat of the Flammulated Owl in California has been described as open or broken conifer woodlands, containing various mixes of true firs (*Abies* spp.), pines (*Pinus* spp.), Douglas-fir (*Pseudotsuga menziesii*), Oregon White Oak (*Quercus garryana*) and California Black Oak (*Q. kelloggii*) (Grinnell and Miller 1944, Johnson and Russell 1962, Marshall 1939). Winter (1974) reported that Flammulated Owls have a high affinity for yellow pine (*Pinus ponderosa* or *P. jeffreyi*) dominant habitat throughout their range. Upon intensively analyzing the vegetation composition of seven territory sites and extensively surveying many more, we found that California Black Oak was as ubiquitous in the sites examined (67% presence in study sites) as yellow pine (50% presence). At least one of these two tree species was present at all sites. Winter (1979) recognized the potential importance of California Black Oak for nesting to Flammulated Owls and other wildlife species. We speculate that Flammulated Owls may use the many natural cavities for nesting sites that California Black Oak provides. Other tree species present included Douglas-fir, Incense Cedar (*Calocedrus decurrens*), Jeffrey Pine (*Pinus jeffreyi*), and White Fir (*Abies concolor*).

Table 1. Crude density† of Flammulated Owl males in northwestern California, compared with that found in four other studies.

AREA	NO. MALES PER 40 HA	INVESTIGATOR
Northwestern California	0.03 to 1.09	Marcot and Hill (present study)
Placer Co., California	2.1	Winter (1974)
Tulare Co., California	1.4	Marshall (1939)
Chiricahua Mtns., southern Arizona	4	Balda (1977)
White Mtns., southern Arizona	5.1 to 5.3‡	Franzreb and Ohmart (1978)

†Crude density computations include areas of unsuitable habitat.

‡Inferred from a reported 10.2 to 10.6 Flammulated Owls per 40 ha, but Franzreb and Ohmart (1978) did not clarify how this density estimate was made.

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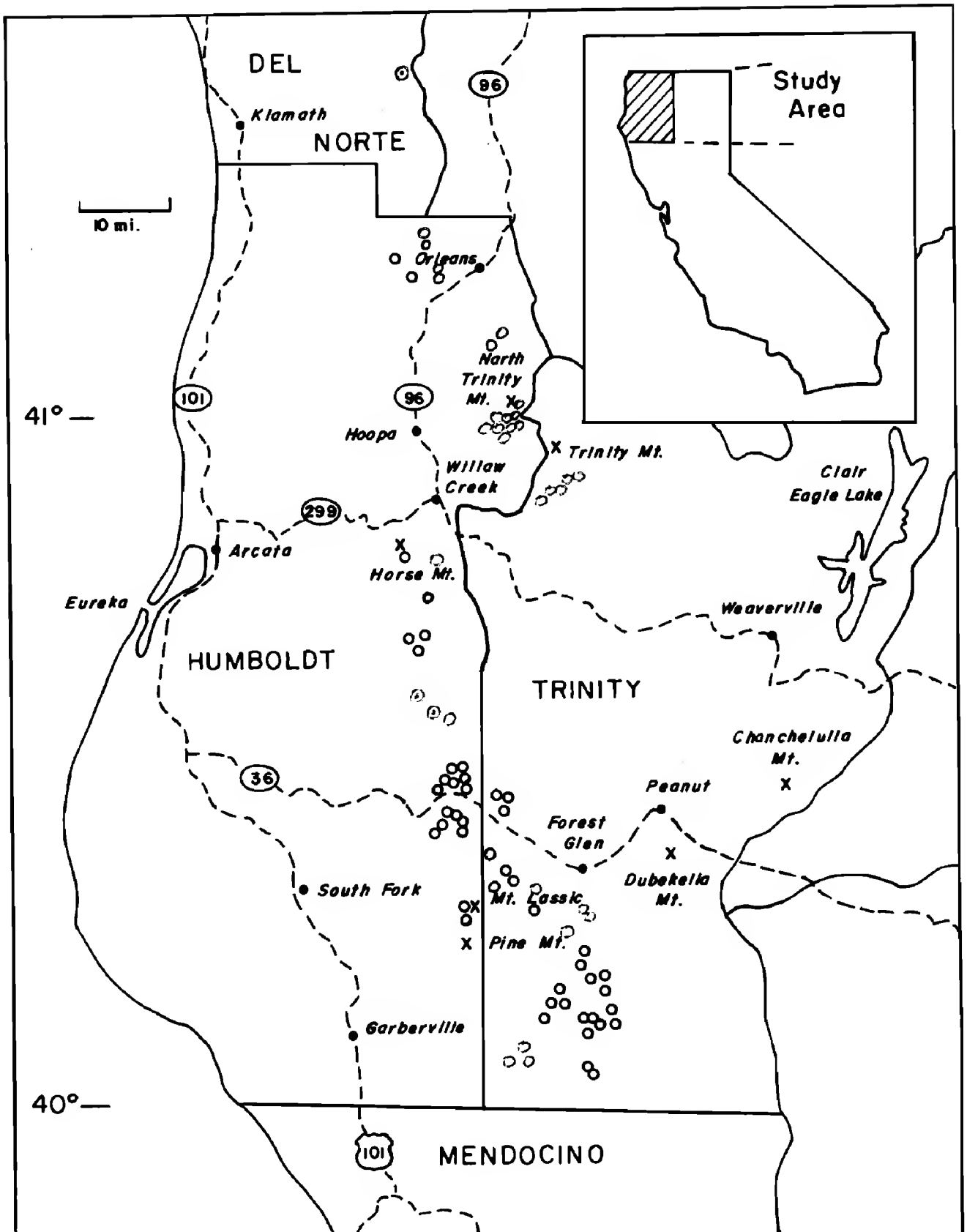


Figure 1. Location of 78 records of Flammulated Owl in northwestern California. Open circles denote encounters with territorial males; open circles with central dots denote non-territorial males; black dots represent towns; X's represent mountains.

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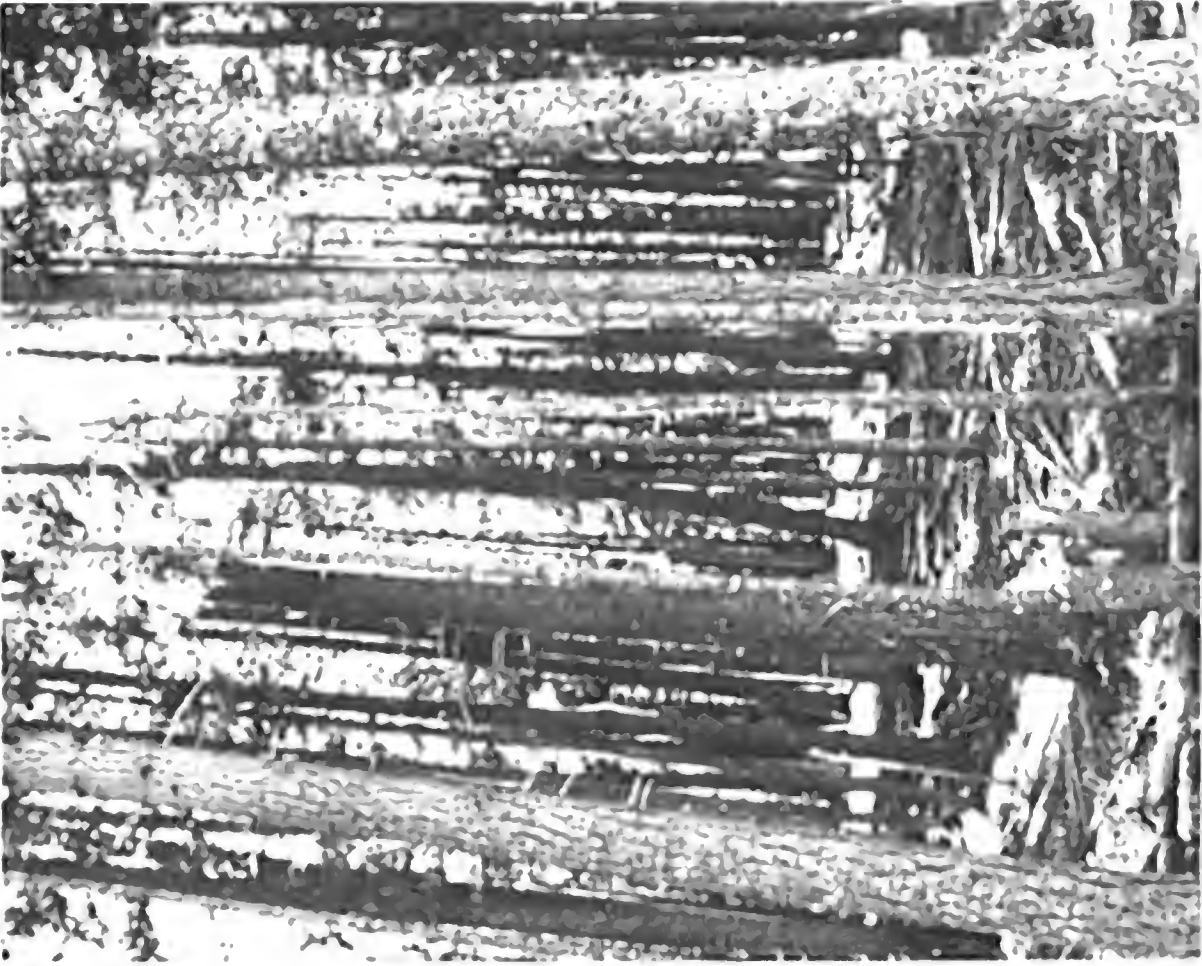


Figure 2. Two territory sites of the Flammulated Owl in Humboldt County, northwestern California, showing a locally dense clump of tall trees with a high percent canopy closure. Both are also adjacent to a break in vegetation type and denser brush and understory components.

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Slope at territory sites varied from 0 to 55%. We found no correlation with slope aspect, as sites occurred on slopes facing all compass points. Elevations ranged from 830 to 1310 m. All territory sites surveyed were on xeric mid-slopes or near ridge tops. Canopy cover varied considerably, from 20 to 80%. Typically, two canopy layers were present in each territory core. Adjacent to or within this core stand was brush of 10 to 80% cover. Within the territory core, tree density averaged 1270 trees/ha (range 148 to 2473 trees/ha) and tree basal area averaged 58 sq m/ha (range 47 to 73 sq m/ha).

These stand characteristics closely correspond to those measured by Bull and Anderson (1978) at four Flammulated Owl nest trees in northeastern Oregon. Of special note is the presence in most territories of a locally dense clump of tall, mature trees located near a break in canopy closure and vegetation type (Figure 2). A Flammulated Owl territory site in the Klamath National Forest in Trinity County, that we did not survey, also had similar characteristics: California Black Oak and Ponderosa Pine, with Douglas-fir, Incense Cedar and Oregon White Oak; and nest tree, a mature dying oak located on a ridge and near a break in vegetation type (dense firs and pines to the north, and more open stands with oaks to the south) (D. Claypole pers. comm.). We found Flammulated Owls calling from the dense foliage of mature trees, but the owls may need brush cover as habitat for additional insect prey and feeding cover when foraging is done near the ground. Edges and broken woodlands seemed to offer both high dense canopies and low dense brush.

On the night of 23 March 1978 J. Gardetto and C. Cox (pers. comm.), while playing a recorded tape of Spotted Owl calls, heard two male Flammulated Owls in a dense, mature stand of Douglas-fir along Bluff Creek in Humboldt County. Prior to this discovery, the earliest spring record in California was 19 April in Monterey County (Winter 1974); and the earliest spring record north of Mexico was 26 March in Arizona (Phillips et al. 1964). Flammulated Owls are thought to be highly migratory (Winter 1974, Balda et al. 1975). Johnson (1962) hypothesized that they may remain torpid near the breeding grounds during winter, but Winter (1974) presented circumstantial evidence against this notion. To test the conjecture that some individuals are overwintering in the North Coast area, Marcot spent the evening of 1 February 1979 playing a recorded tape of Flammulated Owl calls at five known territory sites in southern Trinity County and received no response, but snowy, subfreezing weather conditions may have biased the results. More surveys are planned for future winter seasons.

Based on our surveys, we recommend the following for management of Flammulated Owls in northwestern California: 1) More noc-

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turnal surveys, using tape recorded calls or vocal imitations, are needed to locate addition "quasi-colonies," especially in broken coniferous woodlands with yellow pine or California Black Oak. 2) Identify and preserve the locally dense stand of mature trees that forms the core of each territory. Such stands may vary roughly from 0.8 to 4 ha in size and often occur on mid-slopes or ridge tops, near breaks in vegetation type and canopy closure. 3) Maintain brush adjacent to the core stand. 4) Leave undisturbed all conifers and hardwoods, especially yellow pine and California Black Oak, having natural cavities or cavities excavated by woodpeckers, in and adjacent to the stand. Importantly, allow for snag recruitment within and adjacent to the core stand by continually retaining the larger, over-mature trees. Franzreb (1977), Balda (1977) and many others have described the importance to secondary-cavity nesters of snag retention and recruitment. Management for Flammulated Owls may in part involve a more general, multi-species, habitat approach by establishing criteria for managing snags and hardwoods. Although we have found Flammulated Owls calling from dense stands next to roads and clear-cuts, more information is needed about the effects of disturbance on the long-term viability of breeding pairs and "quasi-colonies."

We thank William Brock, Alan Craig, Gordon Gould and Jon Winter for reviewing the manuscript. We also thank Hamilton Tyler for his stimulating discussions; Greg Leisten for furnishing records and conducting field surveys; Stan Harris for compiling and allowing us to publish some of the records; and the numerous biologists and technicians of the Six Rivers National Forest involved in the field surveys.

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APPENDIX

Flammulated Owl records listed below are of birds heard calling in Humboldt and Trinity counties, California, 1975 through 1980. All are believed to have been territorial males except the two birds west of Grouse Creek on 30 June 1978 and one bird in Elk Valley on 24 July 1979. Additionally, eight specimen records (all in Trinity County) and six non-specimen records (four in Humboldt County and two in Trinity County) are listed by Winter (1974, 1979). Township and range data refer to Humboldt Base Line and Meridian, except as noted.

LOCATION	DATE	NO. BIRDS	OBSERVER
HUMBOLDT COUNTY			
Horse Mt. T6N, R4E, Sec 33	15 Jun 1975	1	S. Harris, T. Harris
Bluff Ck. T11N, R4E, Sec 29,33	23 Mar 1978	2	J. Gardetto, C. Cox
West of Sims Mt. T4N, R5E, Sec 8	13 Jun 1978	3	B. Marcot, J. Brack
West of Grouse Ck. T3N, R4E, Sec 1 T3N, R5E, Sec 18	30 Jun 1978	2	B. Marcot, R. Escano
Nelson Flat T2N, R5E, Sec 35 T1N, R5E, Sec 1,2	24 May 1976	7	R. Hill
North of Buck Mt. T1N, R5E, Sec 22, 23	9 Aug 1976	6	R. Hill
West of Mt. Lassie T1S, R5E, Sec 36	18 May 1978	2	C. Hohenberger, D. Rudholm
Slate Ck. Butte T11N, R4E, Sec 13	2 May 1979	1	M. Delamore

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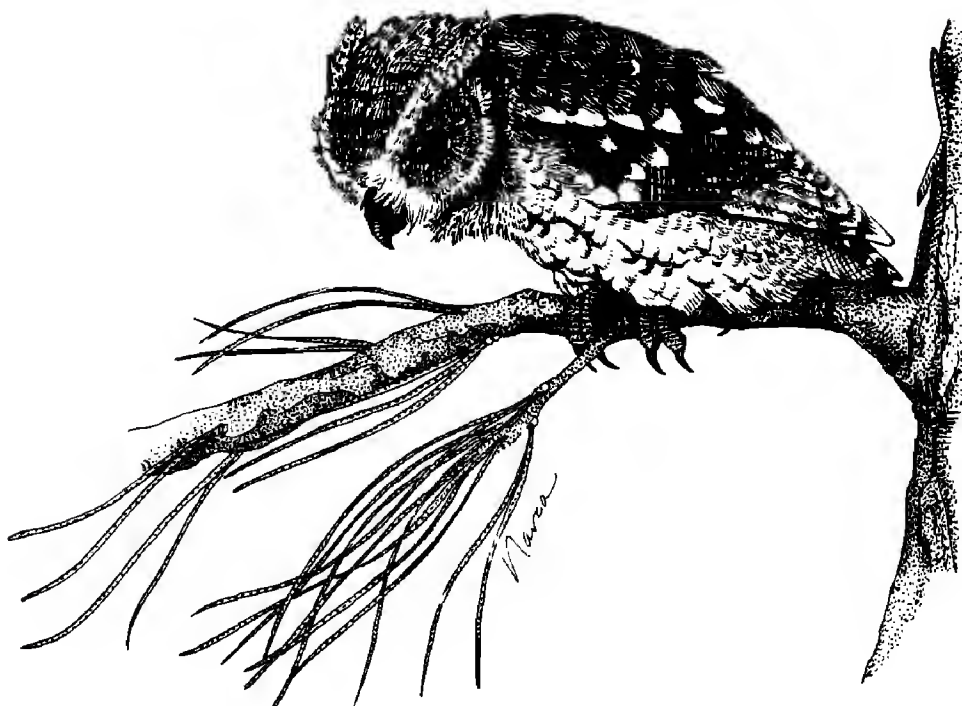
Ammon Station T5N, R5E, Sec 16	16 May 1979	1	M. Delamore
Corral Ck. T8N, R6E, Sec 21	15 Jul 1979	2	W. Brock
Oak Knob T6N, R5E, Sec 33	8 Apr 1980	1	G. Leisten, J. Mattison
So. of No. Trinity Mt. T8N, R6E, Sec 11, 15, 22	10 Jun 1980	4	M. Stohl, J. Mattison, J. Shipman
Mt. Lassic T1S, R6E, Sec 31	7 Jun 1980	2	L. Doerflinger, R. LeValley, G. Friedrichson, H. Genger
Bret Hold T8N, R6E, Sec 22	10 Jun 1980	2	J. Mattison, M. Stohl
Grogan Hole T8N, R6E, Sec 11	10 Jun 1980	1	J. Mattison, M. Stohl, J. Shipman
Twin Lakes T11N, R4E, Sec 25, 36	24 Mar 1978	2	J. Gardetto
Le Perron Pk. T10N, R6E, Sec 29,32	12 May 1980	2	J. Miller
TRINITY COUNTY			
Hasting Ck. T1N, R6E, Sec 5,8	17 May 1978	3	B. Clow
Mad River Rock T1S, R6E, Sec 14	10-14 May 1978	1	E. Payne
Mad River Rock T1S, R6E, Sec 14	24-28 May 1978	2	R. Hill
Van Duzen River T1S, R6E, Sec 8,22	7 June 1979	2	B. Marcot
Long Ridge T4S, R7E, Sec 11,14,15	14 Apr 1980	3	K. O'Halloran, Hadley
Ruth Lake Campground T1S, R7E, corner Sec 28, 29,32,33	15 May 1974	1	R. Wilmarth
Hetten Ck. T2S, R7E, Sec 9	26 May 1978	1	J. Gardetto, C. Cox
Swim Ridge* T3S, R12W, Sec 13,24 T3S, R11W, Sec 30	28-30 Jun 1976	5	R. Hill
Jones Ridge and Mad River* T3S, R12W, Sec 34 T4S, R12W, Sec 9,10,11,12,14 T4S, R11W, Sec 7	28-30 Jun 1976	10	R. Hill

FLAMMULATED OWLS

Mikes Rock* T4S, R12W, Sec 26	28-30 Jun 1976	2	R. Hill
Lone Pine Ridge T7N, R6E, Sec 22	27 May 1980	2	M. Stohl, J. Mattison, K. Baker
Lone Pine Ridge T7N, R6E, Sec 22	28 May 1980	1	M. Stohl, J. Brack
Lone Pine Ridge T7N, R6E, Sec 23	29 May 1980	1	M. Stohl, J. Brack
Lone Pine Ridge T7N, R6E, Sec 21,22	5 Jun 1980	2	B. Marcot, M. Stohl, C. Sakai
SE of Hettenshaw Pk. T2S, R7E, Sec 34	30 Apr 1980	1	G. Leisten, K. O'Halloran
Blue Slide Ck. T2S, R7E, Sec 12	29 Apr 1980	2	G. Leisten, K. O'Halloran
DEL NORTE COUNTY			
Elk Valley T14N, R4E, Sec 23	24 Jul 1979	1	B. Marcot

*Mount Diablo Meridian.

Accepted 14 August 1980



Flammulated Owl

Sketch by Narca Moore

**WESTERN FIELD ORNITHOLOGISTS'
SIXTH ANNUAL CONVENTION
ESTES PARK, COLORADO, 26 - 28 JUNE 1981**

The sixth annual WFO convention is being held jointly with the Colorado Field Ornithologists at Estes Park, Colorado.

BOARD NOMINATIONS. There will be three vacancies on the WFO Board of Directors. If you wish to submit a nomination for consideration, please submit the name, address and phone number of the nominee to Jeanne Conry (address below).

CALL FOR PAPERS. If you have a presentation that would be of interest to the general membership (particularly bird identification, distribution or field observations), please submit an abstract for consideration to: Bruce E. Webb, EPO Biology Dept., University of Colorado, Boulder, CO 80309.

LOCATION AND TRANSPORTATION. Mt. Ypsilon Lodge at YMCA of the Rockies will be the convention headquarters. YMCA of the Rockies borders Rocky Mt. National Park, and is located 70 miles NW of Denver and 5 miles SW of Estes Park off spur 66. Bus service is available from Denver by Gray Line of Colorado. However for birding flexibility, vehicle rental at Stapleton International Airport in Denver is recommended. Early registrants will be provided with local maps. The YMCA offers lodging, meals, conference accommodations, and a variety of activities.

Registration will take place in the Mt. Ypsilon lobby from 2-8 pm on 26 June and from 8 am to noon on 27 June. Registration will be \$5.00 per person. **PREREGISTRATION BY 15 MAY 1981** is requested.

LODGING AND MEALS. Rates quoted for participants staying at YMCA include lodging, grounds fee and three meals per day, including banquet dinner. See enclosed registration details.

A group campground in RMNP will be available for campers and tents. No showers are available; meals and banquet dinner must be arranged upon arrival. Campers are charged a YMCA grounds fee for daily use.

CLIMATE. Participants will encounter temperature extremes from very hot on the Pawnee to cold on the alpine tundra. Mornings and evenings are always cool at this altitude, but daytime temperatures are pleasant. Afternoon thundershowers are common.

FIELD TRIPS. Planned field trips to RMNP and PNG will be led by CFO members familiar with the birds and best areas for birding. We intend to have many of the Colorado specialities pinpointed. Multi-passenger vans will probably be available for persons who have not arranged their own transportation at a charge of \$10.00 for the PNG trip and \$5.00 for RMNP (prices subject to increase). **PREREGISTRATION FOR SCHEDULED FIELD TRIP VEHICLES IS NECESSARY.**

June 29-30: A 2 day post convention CFO field trip to parts of eastern Colorado. Special arrangements can be made at the convention. Likely eastern species are Mississippi Kites, Red-bellied Woodpecker, Dickcissels and Bobolinks, possibly Black-billed Cuckoos, Scissor-tailed and Great Crested flycatchers to name but a few.

RESERVATIONS for the convention may be made immediately by sending the enclosed registration form and a check or money order payable to Western Field Ornithologists, C/O Dr. Jeanne Conry, Biology Dept., University of Colorado, 1100 14th St., Denver, CO 80202. The full name of each person for whom you are making the reservation and a **STAMPED, SELF-ADDRESSED ENVELOPE** must accompany each request. For further information call Jeanne Conry 303-629-2657. Persons preregistering will receive a packet containing an updated Colorado checklist, daily field cards of RMNP and PNG, and detailed maps for locating several species of interest.

NOTES

FIRST RECORDS OF THE WHITE-TAILED KITE IN WASHINGTON

BILL HARRINGTON-TWEIT, 900 N Wilson, Olympia, Washington 98506

The range and population size of the White-tailed Kite (*Elanus leucurus*) have been increasing in western North America and Central America since the late 1940s (Eisenmann 1971). This expansion was evident in Oregon in the 1970s, as kites became established residents at several Rogue and Willamette valley locations (*American Birds* Regional Editor's files) and the first breeding record for the state was obtained at Finley National Wildlife Refuge, Benton Co., in 1977 (Henny and Annear 1978).



Figure 1. White-tailed Kite (*Elanus leucurus*) 6 km west of Raymond, Pacific Co., Washington, on 23 February 1978.

Photo by J. Davis

NOTES

The first sighting of a White-tailed Kite in Washington was on 10 July 1975, at the Nisqually National Wildlife Refuge, Thurston Co. Stephanie Mason, Ellen Ratajak, Pam Searles and I observed the bird for 4 minutes in good light. I recorded the following details immediately after the observation:

At 1340 I saw a light colored bird approximately 100 m away being mobbed by swallows. The bird was harrier sized with a white head, underparts and tail, medium gray mantle, and black on the upper wing coverts creating a sharply defined black patch on the shoulder. As I watched, it veered away and flew higher, heading in a southerly direction and keeping its wingtips pointed as it flapped or soared. In contrast to two gulls soaring near it, its wings appeared much longer and slenderer, and its tail longer. I did not see the shape or color of the soft parts.

Notes from the others present indicate that they saw a dark, decurved beak, white tail, wings on top "lightish gray blue with darker shoulder patches," and the resemblance of the bird to a gull and a harrier. I was the only observer with previous experience with this species. Identification was unanimous. The bird could not be relocated subsequently, though we were in the area for several weeks after the sighting.

The Nisqually National Wildlife Refuge is located at the mouth of the Nisqually River on southern Puget Sound. The refuge lands were formerly salt marsh which was diked and converted to agricultural land. The extensive meadows are no longer grazed, but were hayed regularly through 1975. The area supports a high microtine population (Bowman and Dobos 1975).

The second substantiated sighting in Washington was on 27 November 1977, when I located a single kite 6 km west of Raymond, Pacific Co. This bird was not seen again, despite several searches, until 29 January 1978 when Phil Mattocks and Gene Hunn found it at the same location. Subsequently it was readily found by many observers through 9 April 1978 and was photographed (Figure 1). On one occasion, 17 March 1978, two kites were present (*American Birds* Regional Editor's files). A single bird was noted there in late July 1978 (Harrington-Tweit et al. 1978) and on 29 April 1979, a kite was seen 1.5 km northwest of South Bend, Pacific Co. (Hunn and Mattocks 1979). This site is only 2 km west of the Raymond airport. All of these sightings were from diked pasture land in the Willapa River estuary. Abundant runways and droppings throughout the many *Juncus* tussocks and patches of short grasses indicate the presence of a large microtine population.

Two additional sightings have been recorded from Clark Co., just north of the Columbia River and the areas where kites were first reported from Oregon almost 50 years ago (Gabrielson and Jewett 1940). On 17 September 1978, a single bird was reported from Ridgefield National Wildlife Refuge, diked bottomland along the Columbia River (*American Birds* Regional Editor's files) and a pair was seen on 8 March 1979 near Vancouver (Hunn and Mattocks 1979). The most recent sighting in the state was of a single kite flying south over the sand dunes, 1 km east of the ocean beach, at Ocean Shores, Grays Harbor Co., on 17 August 1979 (Mattocks and Hunn 1980).

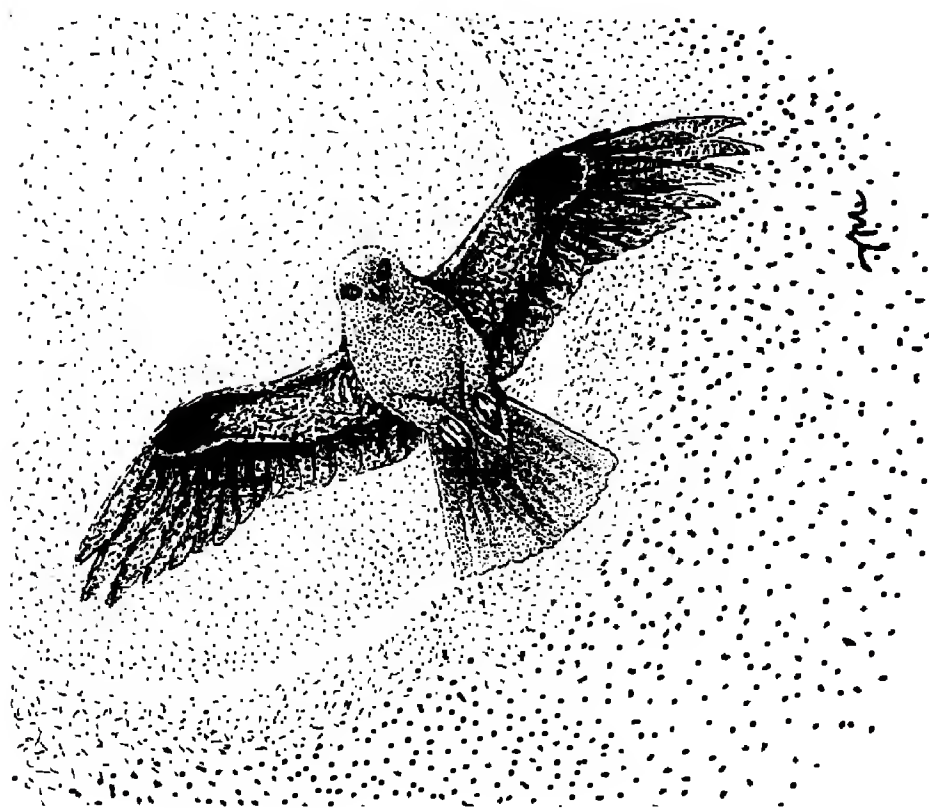
I thank Jack and Ada Davis for providing photographs, and Phil Mattocks for providing additional information on sightings.

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White-tailed Kite

Sketch by Tim Manolis

DIURNAL LAND VISITATIONS BY RHINOCEROS AUKLETS

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Scott et al. (*Western Birds* 5:13-20, 1974) reported the range expansion and diurnal activity of Rhinoceros Auklets (*Cerorhinca monocerata*) on the coasts of Oregon and California in recent years. Diurnal activity has been noted on the Farallon Islands, California, and at Sea Lion Caves, Oregon. In this latter location they have been seen carrying fish into the cave indicating that they were feeding young during daytime.

My ornithology students from Walla Walla College Marine Biological Station, Anacortes, Washington, and I observed a Rhinoceros Auklet associating on rocks, and flying circles, with Tufted Puffins (*Lunda cirrhata*). On 23 June 1977 a single auklet came to Williamson Rocks, Rosario Strait, Washington, while our boat was anchored close to shore. It entered a burrow and remained there for at least 10 minutes. The auklet then emerged to rest on the rocks for another 30 minutes or more until a Glaucous-winged Gull (*Larus glaucescens*) landed nearby.

Visits to the location were made at least three times a week after the first sighting. The single auklet was always present and usually came to land while I observed other alcids.

On 31 July two Rhinoceros Auklets landed on the rocks in association with Pigeon Guillemots (*Cephus columba*) and Tufted Puffins.

On one occasion the two auklets disappeared into a rock crevice for several minutes during which time I could plainly hear their growls and fricative wheezings. Since I had no permit to land on Williamson Rocks, I could not determine if an actual nest attempt had been made by the pair.

On 3 August I noticed that a Tufted Puffin kept edging towards a Rhinoceros Auklet. The auklet moved to maintain distance until it had been displaced approximately 15 m and then, apparently tired of the threat, it flew to the sea.

Additional diurnal activity was seen on an islet in Mackaye Harbor, Lopez Island, in mid-July. Two auklets flushed from the turf as my boat approached at about mid morning.

These observations show that Rhinoceros Auklets do occasionally come to land during daylight hours and may do so over a wide extent of their range.

Accepted 9 September 1980



Rhinoceros Auklet

Sketch by Narca Moore

PYGMY NUTHATCH FEEDS MOUNTAIN BLUEBIRD NESTLINGS

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Instances of adults of one avian species unilaterally feeding the young of another species have been reported for a variety of passerines (Powell 1946, Logan 1951, Eddinger 1970, Moore 1973). This unusual behavior sometimes occurs following a recent nesting failure by the feeding adults (Lack 1946:87, Norris 1958, Skutch 1976:370), but there are also reported nest failures caused by errors in feeding (Williams 1942). Documentation of whether a nest failure precedes or follows a feeding error requires knowledge of the nesting histories of all birds involved in an interspecific feeding, and these histories are often unknown.

At 1045 on 4 July 1979 I found a nest containing four young Mountain Bluebirds (*Sialia currucoides*) about 12 days old. The nest was in an abandoned woodpecker cavity in the main trunk of a Quaking Aspen (*Populus tremuloides*) near Wilkerson Pass, Park County, Colorado (elev. 2600 m). The cavity opening was 1.9 m above ground and faced a compass direction of 224°. The young bluebirds were being fed by adult male and female bluebirds as well as an adult-plumaged Pygmy Nuthatch (*Sitta pygmaea*). During the following 2 hours I observed 14 feedings by the bluebirds and 19 by the nuthatch. The nuthatch also removed excreta by leaning into the cavity; it did not enter the cavity but did utter alarm notes in response to my presence near the nest tree. Both adult bluebirds briefly chased the nuthatch when both species arrived at the nest cavity with food, in which case the nuthatch fed the nestlings after the adult bluebirds departed. The young bluebirds always gaped vigorously in response to the arrival of the nuthatch at the nest entrance. A second adult-plumaged nuthatch was also in the area but it did not feed the bluebirds. It soon became apparent that this second nuthatch was attending a nest in another cavity in the main trunk of the same tree; this cavity opening was 2.4 m above the ground and faced a compass direction of 249°, so the entrances to the two cavities were not far apart and had similar orientations. At 1230 I checked the second cavity with a mirror and found that it contained 7 nuthatch eggs.

I revisited the nest tree at 1800 on 7 July and recorded 8 bluebird feedings and 15 nuthatch feedings at the bluebird nest in the following 1.5 hours. The second nuthatch accompanied the feeding nuthatch in searching for food, but it did not approach either cavity. At 1930 I checked the nuthatch nest and found six dead young about 24 hours old. Inasmuch as both male and female nuthatches feed the young and the male sometimes feeds the female while she incubates (Bent 1948, Norris 1958), the feeding bird was evidently the male of the pair nesting above the bluebird cavity. On neither occasion did the male nuthatch approach the nuthatch nest. Thus it seems that the male's unusual behavior led to the nest failure because the young nuthatches were insufficiently fed, although the female may have deserted the nest or stayed off the nest for excessively long periods while searching for food.

Two other instances of Pygmy Nuthatch and Mountain Bluebird nests in a same tree were found in the general area of these observations. No abnormal feeding behavior was observed though in one case the nuthatch and bluebird young hatched at about the same time in cavities having opening heights and compass directions more similar (2.5 m, 355° and 2.1 m, 3°, respectively) than was the case for the nests at which interspecific feeding occurred. Thus, although the proximity of the nests may have contributed to the error that resulted in failure of the nuthatch nest, a greater influence may have been the timing of the nestings, which allowed the calling bluebirds to stimulate the nuthatch to feed them at a time when the nuthatch's own nest did not contain young. Such errors that result in nest failures appear uncommon among the

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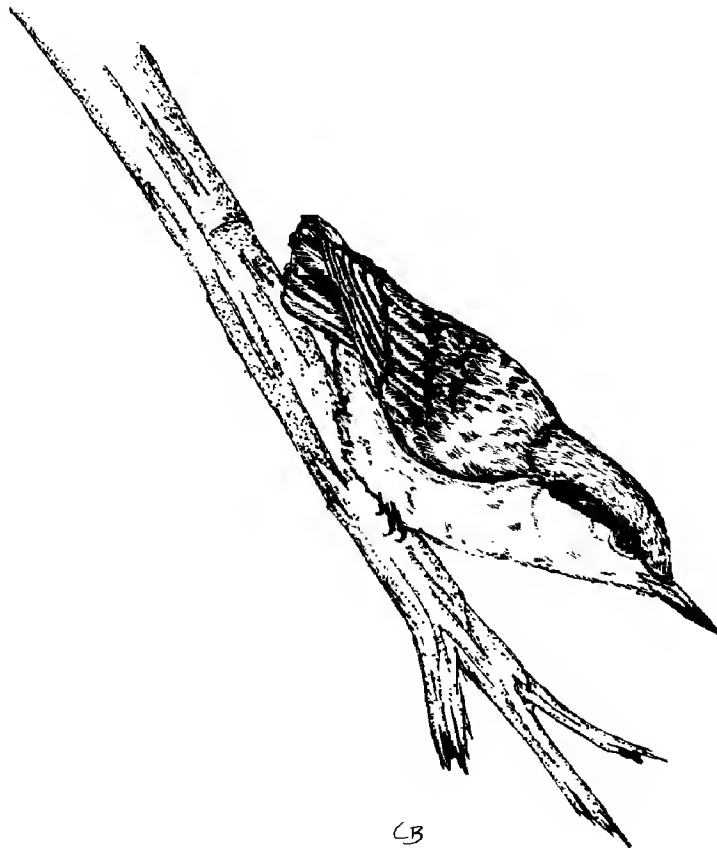
large number of instances of interspecific feeding that have been summarized for many species by Skutch (1976).

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Pygmy Nuthatch

Sketch by Cameron Barrows

SONGS OF MACGILLIVRAY'S AND TOWNSEND'S WARBLERS IN COASTAL BRITISH COLUMBIA

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Intraspecific variation in bird song has received considerable investigation in recent years (e.g. Borror 1961, Armstrong 1973, Falls and Brooks 1975, Adkisson and Conner 1978, Lein 1978). In this note, I comment on the use of two distinct song types by each of two species of wood warbler (Parulidae) on Vancouver Island and adjacent mainland British Columbia, and discuss these song types in relation to known types of intraspecific variation. Individual variation within a particular song type has been demonstrated for many species and appears to be important in facilitating individual recognition (see references in Falls and McNicholl 1979). Such variation within a given type of song will not be addressed in this note.

I spent the summers of 1971 to 1974 inclusive studying Blue Grouse (*Dendragapus obscurus*) on the Comox Burn study area on Vancouver Island, British Columbia (Zwickel and Bendell 1972). These studies involved frequent visits and often prolonged time in the territories of particular male grouse. While on these territories, I noticed that MacGillivray's Warblers (*Oporornis tolmiei*) sang two distinct types of song. The first was that depicted by Robbins et al. (1966), resembling the song of the Mourning Warbler (*O. philadelphia*), including both variations on the record by Kellogg et al. (1962). Bondesen (1977) described this song in detail, and correctly noted that segments of it may be reversed. This song type was sung by most birds encountered on Comox Burn and surrounding areas. Two birds, however, consistently sang a song resembling that of the Yellow-rumped (Audubon's) Warbler (*Dendroica coronata auduboni*), another common species in the area. These birds, presumed to be consistently the same by their territorial behavior, were never heard singing the more common song, and no others were heard singing the Audubon-like song. However, when J. Bruce Falls and I played an Audubon-like song to a bird with the common song, the latter flew to the speaker aggressively, indicating recognition of some aspect of the unusual song as a conspecific song. The subject of the experiment was not likely familiar with the song of either Audubon-like singer, as his territory was not within hearing distance of either bird which sang the unusual song. His reaction cannot be considered as one of interspecific aggression, as an Audubon's Warbler sang regularly within his territory without stimulating an attack.

Townsend's and Black-throated Gray warblers (*Dendroica townsendi* and *D. nigrescens*) were both present in small numbers (three to five pairs) each year at our camp on Piercy Creek, about 5 km downslope from Comox Burn. Although the songs of these two species are often said to be similar (e.g. Pough 1957, Peterson 1961), the song of the Townsend's Warblers in camp bore no resemblance to that of the Black-throated Gray Warblers, nor to the song of the Black-throated Green Warbler (*D. virens*), with which it has also been compared (e.g. Stein 1962). Rather, the Townsend's Warblers in camp invariably sang three rising notes, unlike the recordings in Kellogg et al. (1962), or any written description or sonagram I have seen for this species. In conducting Breeding Bird Surveys near Port Alberni on Vancouver Island and Gibson's Landing on the adjacent mainland, I noted that the more typical song of this species was sung at stops where Black-throated Gray Warblers were not heard, whereas the three-note song was heard where both species occurred (Table 1).

NOTES

Table 1. Song types of Townsend's Warblers heard on two Breeding Bird Surveys in British Columbia, 1974.*

	TYPE A	TYPE B	TYPES A&B
Port Alberni, Vancouver Island:			
Stops at which only Townsend's was singing	10	0	2
Stops at which Townsend's and Black-throated Gray were both singing	0	7	0
Gibson's Landing, mainland B.C.:			
Stops at which only Townsend's was singing	3	0	0
Stops at which Townsend's and Black-throated Gray were both singing	0	5	0

*Type A = Black-throated Gray Warbler-like song; type B = three note song commonly heard in Piercy Creek camp.

In both the MacGillivray's and Townsend's warblers the apparently atypical songs were sung throughout the breeding season, and different songs were not sung with time of day, as evidenced by my almost daily visits to their territories at varying times of day and always hearing the same song type. Thus, seasonal and diurnal variation does not account for these different songs (Borror 1961). Similarly geographic variation does not apply, as all observations were in the same general area, although the songs could have been learned in different places. Borror (1961) and James (1976) noted that several species usually not known to mimic other birds do so occasionally. The two MacGillivray's Warblers that sang Audubon-like songs may have learned the song from the latter species, although our brief experiment showed that some component of this song enabled other MacGillivray's to recognize it as a conspecific song. As mentioned above, the two species frequently sang and foraged in close proximity on Comox Burn with no sign of interspecific hostility. Thus, if this case represented mimicry, the mimicry apparently was not used in territorial defense against the model species, as reported in some cases (Adkisson and Conner 1978). Different song types may convey different messages or more precise messages (Craig 1943, Lein 1978), but as these song types were specific to particular males, rather than behavioral contexts, the Audubon-type song did not appear to convey a different meaning than the more typical song. I did hear variation within the more typical song and suspect that this may have been due to a graded series of song types of the sort described by Lein (1978), but I have no direct evidence for this. Verner (1975) described another case in which different song types did not appear to convey different meanings.

Armstrong (1973) has noted that character displacement of song takes place in some species with similar songs, with these songs being less similar where both species come together. The limited data in Table 1 suggest this as a possible explanation for the two song types of Townsend's Warblers. However, I have heard Townsend's Warblers sing Black-throated Gray-like songs in Stanley Park, Vancouver, in close proximity to Black-throated Gray Warblers. Thus, character displacement, which could take place at a much more subtle level, does not seem to be a total explanation. Perhaps habitat has some influence on this situation.

NOTES

In both cases, the less common song types warrant further investigation.

Alan M. Craig and Narca Moore offered several useful editorial comments, and the perceptive questions asked by Thomas L. Rodgers proved very helpful in improving the manuscript.

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