THE BIRDS OF GUADALUPE ISLAND IN 1953

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Guadalupe Island has been of great interest to biologists ever since the first members of its endemic fauna and flora were described over 75 years ago (Ridgway, 1876; Watson, 1875). The history of its avifauna, however, is a sad one of reduction and extermination through destruction of habitat by feral goats, predation by introduced house cats, and, regrettably, some excess of zeal by collectors. Today, even though only a remnant of its former biota remains, the island is still an attraction to anyone concerned with ecology and conservation.

We were given an opportunity to visit Guadalupe Island in June of 1953 with a party from the Scripps Institution of Oceanography, La Jolla, California. The Institution's vessel, the *E. W. Scripps,* left San Diego at noon on June 6 and arrived at the northeast anchorage of the island about 24 hours later. We stayed on the island from June 7 until the morning of June 12, when we boarded the *Scripps* for the return trip. Shelter while ashore was provided by abandoned adobe huts that once housed a detachment of Mexican soldiers. We were able to visit only the north and north-central parts of the island during our stay.

PHYSICAL FEATURES OF THE ISLAND

Guadalupe Island lies about 250 miles south-southwest of San Diego, California, and about 135 miles west of the coast of Baja California, México. It is about 22 miles long and from four to seven miles wide (see fig. 1). It is a true oceanic island, volcanic in origin, surrounded by depths of 12,000 feet, and reaches an elevation of about 4500 feet above sea level. The northern and north-central portions are highest, and it is there that almost all the remaining native trees are found. The northern portion of the island rises to a rather sharp ridge that drops off abruptly on the west side; the eastern slope is less steep. The ridge widens into a plateau in the north-central portion, and the elevation gradually declines from there to the southern end. Deep canyons leading to the sea are found on both east and west slopes. The surface of the island is covered with innumerable rock fragments of every shape and size, and walking is often difficult. Off the southern tip of the main island are two islets known as Inner and Outer Islet; they were not visited by us.

ECOLOGICAL CONDITIONS

Little remains of the once abundant vegetation that covered much of the island. Virtually all the native shrubs are gone, and those that remain are found only on vertical cliffs inaccessible to goats. However, several kinds of introduced annual grasses which can withstand heavy grazing are abundant over most of the island. On the northern ridge and its west slope there is a sparse grove of pines, *Pinus radiata,* and a few oaks, *Quercus tomentella*; most of these are magnificent old trees (fig. 2). Some fan palms, *Erythea edulis,* are found at lower elevations on the west slope. On the north-central plateau of the island is an extensive pure stand of cypress, *Cupressus guadalupensis* (fig. 3). No seedlings of any of the three species of trees are to be found as those that come up are eaten by goats. At present the cypresses are far more abundant than all of the other trees combined. The cypresses too are all old trees, and they have attained a variety of growth forms—low and gnarled, tall and straight, broad and spreading—so that from a distance the grove appears to be a mixed rather than a pure stand. On a plateau below and to the east of the main one, another grove of cypresses formerly ex-

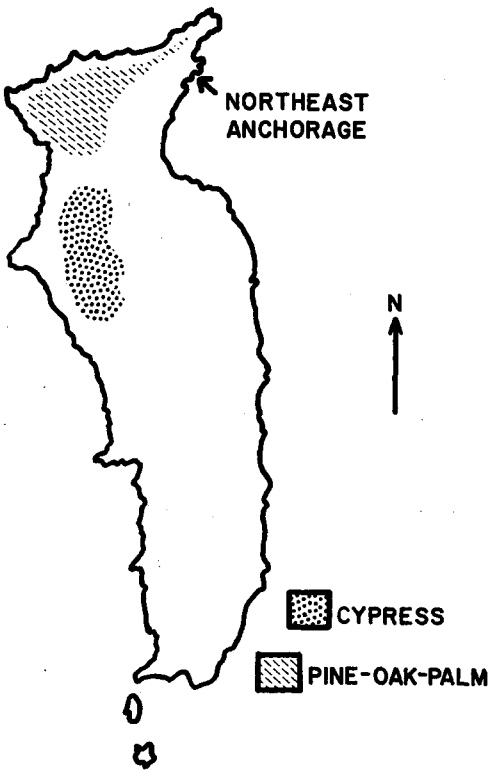

Fig. 1. Outline map of Guadalupe Island, showing forested areas.

isted by a spring (fig. 4); it was there that W. E. Bryant camped and collected in 1886 (Bryant, 1887). No trace of this grove remains today.

At the northeast anchorage the large shrub *Nicotiana glauca* has been introduced since 1932 and has multiplied and spread rapidly in this area (fig. 5). This plant is not eaten by goats, and clumps of *Nicotiana* now provide food and cover for several species of small birds.

There are no native terrestrial mammals on the island. No reptiles or amphibians have ever been recorded from it, and we did not find any despite diligent searching.

As at the time of Bryant's visit in 1886, the abundant blow flies are a constant nuisance to all the larger mammals on the island—goats, elephant seals, and men—during the daylight hours. The only other conspicuous flying insects noticed by us were small moths which were seen in the cypress grove and among the *Nicotiana* plants. These moths were not very numerous even about our lantern at night. High winds and scarcity of leafy vegetation on which larvae could feed may account for this. We did not see any insects that would have larvae large enough to be a major source of food for the caracara, *Caracara lutosus,* although caterpillars were once important in the diet of that extinct species (Bryant, 1887).

Under flat stones and pieces of wood we found numerous small spiders, pill bugs, centipedes, millipedes, beetles, roaches, crickets, and termites, the latter only under wood. We were surprised to find hymenopterans extremely scarce. One wasp was seen

on open ground, and one large black ant of the *Camponotus* type was seen in the cypress grove.

We did not see any land snails or any trace of them although they were once abundant on the island.

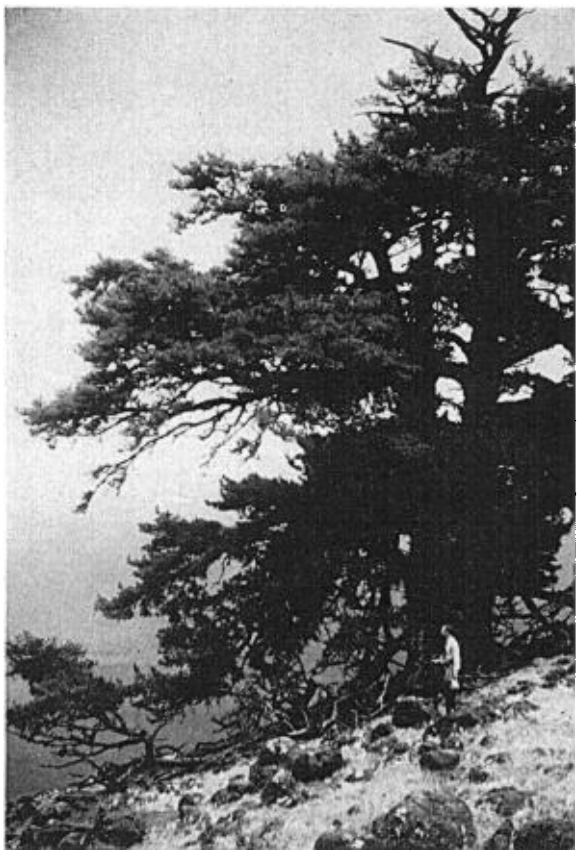

Fig. 2. An old pine (*Pinus radiata*) on northern ridge; note man at lower right.

At present only two springs on the island are known to be still flowing. These are the one mentioned above, where a small cypress grove formerly grew, and a smaller one about one-quarter mile to the east. Rain pools are a transient source of fresh water, especially in the winter months. On the northern portion of the island, wind-driven fog condenses as it strikes the trees and water pours down from them as though a heavy rain were falling. As winds and fog occur at almost all times of year, the pools which form under the trees are undoubtedly an important source of drinking water for birds.

OBSERVATIONS OF BIRDS

The trees at the top of the island can be reached from the northeast anchorage only after two or three hours of strenuous climbing, and conditions may be alternately hot and parched or cold, wet, and wind-swept. We spent one day in the pine-oak area, one in the cypress grove, and the rest of the time around the northeast anchorage, particu-

larly along the shore and among the *Nicotiana* plants. An annotated list of the birds we observed is given below. Species not seen by us but obtained by personnel of the *E. W. Scripps* are also included.

From January 27 to February 1, 1950, John R. Hendrickson visited the island as a member of a group on J. W. Sefton's research ship *Orca*. Hendrickson collected specimens at several points on the periphery of the island and at Outer Islet; most of these

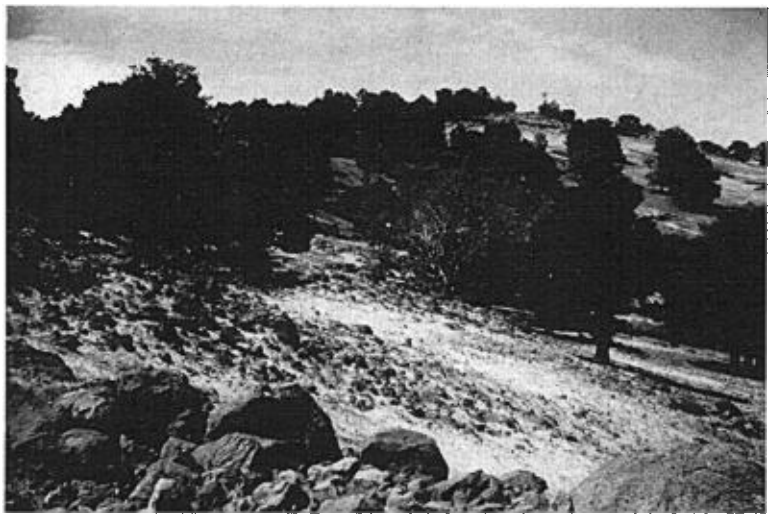

Fig. 3. Part of grove of cypresses (*Cupressus guadalupensis*) on north-central plateau.

specimens and all of Hendrickson's notes are at the Museum of Vertebrate Zoology, University of California, Berkeley. Some specimens went to the San Diego Natural History Museum, San Diego, California, and the most unusual ones have been reported by Huey (1952). As no other of Hendrickson's records from the island have been published, those of particular interest have been included here.

Puffinus puffinus opisthomelas. Black-vented Shearwater. A female of this species struck a light on the *Scripps* on the night of June 11 at the south end of the island. Some of the secondaries are worn but otherwise the plumage appears fresh. The ovary was not enlarged.

Oceanodroma leucorhoa socorroensis. Leach Petrel. Seven of these petrels, four males and three females, struck the lighted ship during the nights of June 7 to 12. As is usual with petrels the secondaries of all these birds are worn, and the rectrices of two show conspicuous wear. Testis measurements varied from 2 × 1 mm. to 3 × 2.5 mm., and the ovaries of two of the females had follicles as large as 2 mm. in diameter.

On January 27, 1950, Hendrickson found two petrel nests, presumably of this species, on Outer Islet. Each nest was at the end of a burrow under a large rock, and each contained a single downy young. No adults were found in these nests. On January 31, Hendrickson visited a small, unnamed rock islet between Inner Islet and the southern tip of the main island. Here he found at least seven nests, some with eggs, but most containing large downy young that "looked larger than the parent." Adults were usually present, incubating or brooding. The nests were located six to 36 inches back in crevices and gas pockets in the volcanic rock. In one of these crevices the specimen of *Oceanodroma tethys tethys* reported by Huey (1952) was collected.

Austin (1952) is the most recent reviser of the systematics of this difficult species group. He states (p. 401) that *socorroensis* almost always has some white in the rump, but never as much as typical *beali*. Two of our Guadalupe Island birds have as much if not more white in the rump than any

examples of *beali* in a series of 24 in the Dickey Collection taken on the Pacific Coast from southern Alaska to California. One of our seven birds does not have a single white feather in the rump, and another has only grayish-white edgings to a few of the rump feathers. Our other birds and six adults taken by Hendrickson show an intermediate condition. Our specimens suggest that this population is even more variable than Austin's series of 23 birds would indicate.

Falco sparverius sparverius. Sparrow Hawk. These falcons were seen daily during our stay. A pair had evidently nested on a cliff overlooking the sea at the northeast anchorage, for we saw a pair of

Fig. 4. Northeast slope of island seen from north-central plateau; a cypress grove formerly existed at left-center of this area. This barren terrain is typical of most of the island.

adults with three juveniles—two males and a female—at this spot. The young were fully able to fly, but we saw the adult male feed one of them. Another pair was seen in copulation on a cliff in the north-central section, and two other single individuals were seen in the forested areas.

The Guadalupe Island population has been described as an endemic race, *guadalupensis*, by Bond (1943). We were unable to obtain specimens, and thus we are not prepared to comment on the validity of this form.

Heteroscelus incanus. Wandering Tattler. One was collected on June 12 at the edge of a cobble beach at the northeast anchorage; its plumage is moderately worn. Single individuals were seen at this same locality on June 7 and June 11, and a second bird was seen on June 12. Hendrickson noted three of these birds at the south end of the island on January 31, 1950.

Arenaria melanocephala. Black Turnstone. Hendrickson collected two of these birds at the south end of the island on January 31, 1950. This species has been recorded only once before from Guadalupe Island, and these are the first specimens from this locality.

Capella gallinago delicata. Wilson Snipe. A single snipe was seen at close range on June 8 as it flew by at the top of the northern ridge. This species has not previously been reported from Guadalupe Island.

Larus argentatus. Herring Gull. Hendrickson mentions in his notes for January 27, 1950, that this species was repeatedly seen by all members of the *Orca* party. Carl L. Hubbs, who was one of this group, informs us (personal communication) that he agrees with Hendrickson's identification. This is the first report of this species from Guadalupe Island; no specimens were collected.

Larus occidentalis wymani. Western Gull. This gull is not abundant on or around Guadalupe Island. We saw no more than three at the northeast anchorage, and the *Scripps* personnel said that even when garbage was thrown overboard, no more than 10 of these gulls were seen at the south end

of the island. Only adults were seen by us, and one male was collected on June 9. The testes measured 10 × 7 mm.

Carl L. Hubbs and George A. Bartholomew asked us to take particular notice of the color of the legs and feet of Guadalupe Island examples of *Larus occidentalis,* stating that these parts were white or almost white in contrast to the pink or flesh color found in populations on the nearest islands or the mainland. The legs and feet of our specimen were definitely whitish with only a faint pinkish cast. This color, possibly caused by blood in the capillaries, faded out within an hour and left the legs and feet ivory white. On comparing this specimen five months later with examples of *L. o. occidentalis, L. o. wymani,* and *L. o. livens* from California and Mexico, we find that the legs and feet appear paler and more translucent in our specimen than in any of the others; in other respects it seems identical with examples of *wymani.* However, the legs and feet of two adults taken by Hubbs and Bartholomew on February 1 and 2, 1950, although white in life, are now deep yellow-brown and identical in color with mainland specimens of *wymani.* The Guadalupe Island birds do not differ from *wymani* in size.

It is possible that the Guadalupe Island population represents an undescribed endemic race which differs on the basis of leg and foot color, but present information is not sufficient to justify a formal description.

Endomychura hypoleuca hypoleuca. Xantus Murrelet. A male flew aboard the *Scripps* on the night of June 8 and was collected. The primaries, primary coverts, and distal secondaries are worn, but otherwise the plumage appears fresh. The testes measured 5 × 3 mm.

Zenaida asiatica mearnsi. White-winged Dove. An adult female collected on June 10 in the *Nicotiana* grove at the northeast anchorage represents the first record of this species from the island. The bird was not fat but appeared in good condition, and the plumage is not worn. The largest follicles were 2 mm. in diameter. The subspecific identification has been checked by Alden H. Miller.

Speotyto cunicularia hypugaea. Burrowing Owl. Two of these owls, presumably a pair, were seen on June 11 on a barren plateau below and to the east of the cypress grove. Hendrickson saw three Burrowing Owls in a canyon on the southwest side of the island on January 31, 1950.

Calypte anna. Anna Hummingbird. This species, previously very rare on the island, appears to have become established in the *Nicotiana* grove at the northeast anchorage where it was seen daily during our stay. We estimated the size of the population as 15 to 20 individuals. Of five specimens collected, two were young of the year with clear, soft skulls. It is probable that these and several other immatures seen were hatched from island nests. Both adults and immatures were in various stages of plumage ranging from fresh immature plumage with a few metallic gorget feathers through extensive molt and replacement of all feathers to almost complete post-breeding adult plumage. The testes of three adult males were very slightly enlarged, measuring 2 × 1 mm., 2.5 × 2 mm., and 3 × 2 mm.; no adult females were obtained.

We noted that the calls of both adults and immatures sounded different from those of mainland individuals. The characteristic buzzing song or call of the latter was never heard; the island birds produced more of a rapid chirping or twittering. Comparison of our five island specimens with a series from California revealed no detectable differences in color or size. It is possible that the small insular population does have an established vocal difference, but future observation will be needed to substantiate this. As the *Nicotiana* provides food, perches, and nesting sites, it is likely that the Anna Hummingbird population will increase as the shrub spreads more widely over the island.

Sitta canadensis. Red-breasted Nuthatch. An isolated population of nuthatches still breeds on Guadalupe Island, for a bird of the year with a clear, single-layered skull was collected in the cypress grove on June 11. One other was seen and a third was heard calling on the same day in different parts of the grove. The single specimen, a female, is indistinguishable from birds of similar age from northern United States. New rufous feathers with the sheaths still intact at the base are appearing on the throat and breast of this individual; no other feather replacement is evident.

Salpinctes obsoletus guadeloupensis. Rock Wren. The Rock Wren is presently the most abundant bird on the island, being found in all situations from the cobble beaches to the forests. Across even the most barren-looking open stretches we encountered a Rock Wren about every 300 yards, and they were much more numerous than that among the trees, in canyons, and in other favorable situations such as at the northeast anchorage. Young were numerous, sometimes still being fed by adults. We estimated that at least one out of every three birds seen was immature. Although these wren were not

wary, they never alighted on us or on objects held in the hand as has been reported by previous observers. Two adults, one male and one female, were collected; the male had partly enlarged testes, 5 × 2.5 mm. Both specimens are in very worn plumage with molt just beginning; some adults were seen in more advanced molt. One immature male was also collected.

From January 27 to February 1, 1950, Hendrickson collected six specimens at the southwest side of the island. Two females had already layed, and another had an ovum 10 mm. in diameter. The testes of one male measured 7 mm. in diameter. Data on the reproductive condition of the other two birds is inconclusive or lacking.

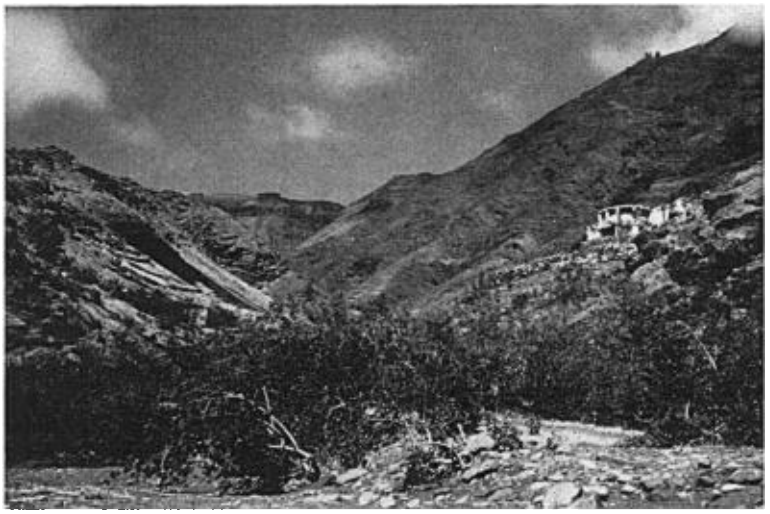

Fig. 5. Looking west from northeast anchorage, showing clumps of *Nicotiana glauca* and part of abandoned barracks.

Regulus calendula obscurus. Ruby-crowned Kinglet. This endemic race is still extant, at least in the cypress grove, where we observed about five singing males on June 11. As we could not visit all parts of the cypress grove, and as only singing males were likely to be detected, no accurate estimate of the population size could be made. One male, with enlarged testes measuring 6 × 4 mm., was collected. Its plumage is only slightly worn, and it is not in molt.

Seiurus aurocapillus aurocapillus. Oven-bird. The presence of this species on the island at any time would be remarkable, and finding a bird typical of the northeastern subspecies on June 9 was totally unexpected. The specimen, collected at the northeast anchorage, proved to be a male in good condition, plumage unworn, with enlarged testes measuring 9.5 × 6 mm. The subspecific identification was checked by Alden H. Miller. This represents the first record of this species from Guadalupe Island.

Carpodacus mexicanus amplus. House Finch. This species is second only to the Rock Wren in abundance and is found commonly wherever there is vegetation other than pure grass; even in grassy and rocky areas these finches are not rare. This is the most abundant species in the *Nicotiana* grove at the northeast anchorage and in the cypress grove, especially the latter. We estimated that about 40 per cent of the birds we saw were immature; a few of these, although large, still had traces of down on their heads and were occasionally fed by adults. Two adult males and one adult female were collected; the gonads were not enlarged. Six males collected by Hendrickson on January 27 and 29, 1950, had testes 5 to 6 mm. in diameter; a female taken on January 29 had already layed.

The only readily apparent difference between this insular form and the House Finches of the mainland is the larger bill and slightly larger general size of the island birds. In all other aspects of appearance and in voice and behavior, the island form seems identical with the species *mexicanus*. We feel, therefore, that *amplus* should be accorded only subspecific status.

Junco insularis. Guadalupe Junco. The junco is nearly as abundant as the House Finch and is found in the same situations, although usually near the ground. They were more abundant in the pines and oaks than any other species on the day we visited that area. We noted that the juncos fed extensively on insects as well as seeds, often using their relatively long bills to probe into crevices in fallen logs. Many streaked immatures were seen, particularly in the cypress grove, where we estimated their numbers as 40 to 50 per cent of total. In the *Nicotiana* grove, however, only about one in ten birds was a streaked immature. We did not see any birds in plumage intermediate between that of streaked immatures and adults, but adults were seen in all stages of molt. Three adults, two males and a female, were collected. The testes of one male not yet in molt were enlarged and measured 6 × 6 mm.; the other two birds, in molt, did not have enlarged gonads. One streaked immature was also collected. Juncos sang frequently, and the song, as rendered in our notes, was usually *wheep'-whit-whit-whit-wheep.'* We did not hear the slow trilling song characteristic of populations of *Junco oreganus* on the mainland.

The Guadalupe Junco, in contrast to the House Finch, differs from related mainland populations in several points of voice, morphology, and coloration. These differences include some (color pattern, song) which, in general, operate to prevent interbreeding between populations. In our opinion, *insularis* is sufficiently distinct to merit specific status.

DISCUSSION AND CONCLUSIONS

Each visitor to Guadalupe Island since the first has commented on the progressive decline of the flora and fauna, and we are obliged, regrettably, to continue this tradition. We found no trace, of course, of any of the endemics considered extinct. Indeed, the complete absence today of shrubs or understory of any kind in the forests of the island makes it difficult to realize that the towhee, *Pipilo erythrophthalmus consobrinus,* and the wren, *Thryomanes bewickii brevicauda,* once existed there, and this utter lack of suitable habitat should convince even the most hopeful skeptic that these forms are totally extinct. Two nonendemic birds which were once reported to be resident on the island were not found by us; these are *Buteo jamaicenses calurus and Loxia curvirostra bendirei.* The former was almost always seen by previous visitors, and it is unlikely that we could have missed seeing such a conspicuous soaring hawk if any were present on the northern half of the island where they have always been reported before. The crossbill could have been overlooked by us, but there have been no published records of its occurrence since 1903 (Kaeding, 1905). It is thus doubtful that either of these species resides now on the island.

The crossbills collected on the island by Bryant in 1886 were destroyed in the San Francisco earthquake and fire of 1906. Six specimens collected by A. W. Anthony on September 20, 1896, are in the Carnegie Museum, and we know of no others from Guadalupe Island that are still extant. We have recently examined and measured this series, which consists of two immature males, two immature females, and two subadult females, and find that these six resemble *bendirei* in all respects. This is in accord with the decision of Griscom (1937) as stated on page 173 of his monograph on the crossbills. On page 133 of the same work, however, Griscom assigned the Guadalupe Island birds to *grinnelli,* and Blake (1953) followed this determination in his recent field guide. Griscom has kindly informed us (*in litt.*) that he believes that the statement on page 133 of his monograph must have been an editorial mistake. Thus, unless specimens not known to us indicate otherwise, the crossbills of Guadalupe Island should be referred to the race *bendirei.* There are no breeding records for this species from the island, and it may never have been a true resident.

Introduced mammals which have greatly damaged the fauna and flora are house mice, house cats, and goats. The mice, of which we saw a few, are probably not important in relation to the birds except as possible food for the Sparrow Hawks and Burrow-

ing Owls. We saw no cats, but at the northeast anchorage we found a few cat droppings that contained feathers of passerine birds and bones and hair of mice. Earlier accounts mention that the top of the island was often littered with the remains of petrels eaten by cats. We did not find any remains of cat-eaten birds, but we cannot say whether this was because of an absence of cats or lack of petrels.

The goats continue to be the greatest threat to the biota of the island through their destruction of vegetation. They number in the thousands and are found in even the most rugged and—for human beings—inaccessible parts of the island. We do not think it possible to reduce their numbers seriously for long duration by methods such as shooting or poisoning, for the goats are too numerous in areas difficult or almost impossible to reach.

The introduction of large predators might reduce but not remove the goat population but would probably create serious problems for the few human inhabitants. Introduction of a disease would also be dangerous and might be effective only in bringing about a short term reduction in numbers of goats. Fencing off portions of the forest so that seedlings could develop would improve the present situation, but maintenance problems would be severe and many years of protected growth would be necessary before the young trees would be safe from goats. In any case, final responsibility for any such conservation program rests with the Mexican government, since the island is Mexican territory.

The presence of *Nicotiana glauca* on the island is cause for some hope, for as this "goat-proof" plant achieves a wider distribution it will provide an extensive habitat for small birds. Quite possibly some additional species, especially passerines, will become resident in the future.

As for the present resident land birds, at least three—the Rock Wren, House Finch, and Guadalupe Junco—appear to be thriving and in no danger of extinction. The Sparrow Hawk and probably the Burrowing Owl seem about as well established as they would be on a mainland area of similar size. The Anna Hummingbird will probably increase as the flowering *Nicotiana* increases. The status of the kinglet and the nuthatch is less certain, for they are dependent on the presence of the large trees. The cypress grove at least will remain extensive for many years to come, and we feel that the kinglet and nuthatch will also persist for many years unless an unforeseen catastrophe occurs.

CHECK-LIST OF GUADALUPE ISLAND BIRDS

The following check-list is presented for the use of future investigators who wish to have a brief summary of all the birds recorded from Guadalupe Island. Off-shore records of birds collected or seen "near" the island are omitted; only records from along the shore or on the island itself are included. Records unsupported by a specimen are marked with an asterisk. A single occurrence of a species is considered accidental; species for which there is more than one record but not enough to be considered regular are listed as casual. Some of these may have been of regular occurrence before most of the island vegetation was destroyed. Most of the casual and accidental records are those of Bryant (1887). In some cases taxonomic revisions since that date make the subspecific status of his specimens uncertain, but all of Bryant's Guadalupe Island collection except the type and co-type of *Oceanodroma macrodactyla* was destroyed in 1906 and reexamination is thus impossible. No subspecific name is given in these indeterminate cases.

All pertinent references up to 1927 regarding the birds of the island are given by Grinnell (1928). Publications since 1927 containing new information about the island avifauna that are not mentioned in this paper are listed after the "Literature Cited" section of the present work.

Gavia arctica pacifica.—Accidental.
Puffinus puffinus opisthomelas.—Breeding.
Oceanodroma leucorhoa socorroensis.—Breeding.
[*Oceanodroma homochroa.*—Gaylord (1897) reported finding a wing of this species on the island; he did not save the "specimen." As it is extremely doubtful that specific identity could be determined from a wing alone, this species should be dropped from the list of Guadalupe Island birds.]
Oceanodroma macrodactyla.—Formerly breeding; unreported since 1919, and probably extinct.
Oceanodroma tethys tethys.—Accidental.
Phalacrocorax auritus albociliatus.—Casual.
Phalacrocorax penicillatus.—About five pairs, presumably breeding, on Outer Islet in 1925; not recorded before or since.
**Pelecanus occidentalis californicus.*—Accidental.
**Ardea herodias.*—Casual.
**Anser albifrons.*—Accidental.
Buteo jamaicensis calurus.—Apparently resident at least until 1932; no definite breeding records.
Caracara lutosus.—Formerly breeding, now extinct; last reported seen in 1903.
Falco sparverius sparverius.—Breeding.
**Falco mexicanus.*—Accidental.
Pandion haliaetus carolinensis.—Accidental.
Heteroscelus incanus.—Regular visitor.
Arenaria melanocephala.—Casual.
**Capella gallinago delicata.*—Accidental.
**Larus argentatus.*—Accidental.
Larus occidentalis wymani.—Breeding.
**Larus glaucescens.*—Accidental.
Endomychura hypoleuca hypoleuca.—Breeding.
Ptychoramphus aleuticus.—Regular visitor.
Cerorhinca monocerata.—Accidental.
**Zenaidura macroura.*—Accidental.
Zenaida asiatica mearnsi.—Accidental.
Speotyto cunicularia hypugaea.—Breeding.
Aëronautes saxatalis.—Regular visitor, at least formerly. Reported nesting in 1892; unreported since 1922.
Calypte anna.—Apparently breeding, 1953.
Colaptes cafer rufipileus.—Formerly breeding, now extinct; unreported since 1906.
Sitta canadensis.—Breeding.
Salpinctes obsoletus guadeloupensis.—Breeding.
Thryomanes bewickii brevicauda.—Formerly breeding, now extinct; last reported seen, 1903.
Mimus polyglottos leucopterus.—Accidental.
Oreoscoptes montanus.—Accidental.
Turdus migratorius propinquus.—Casual.
Ixoreus naevius.—Accidental.
Hylocichla guttata.—Casual.
Sialia currucoides.—Casual.
**Myadestes townsendi.*—Accidental.
Regulus calendula obscurus.—Breeding.
Anthus spinoletta.—Accidental.
Bombycilla cedrorum.—Accidental.
Lanius ludovicianus.—Accidental.
Dendroica auduboni auduboni.—Casual.
Seiurus aurocapillus aurocapillus.—Accidental.
Geothlypis trichas occidentalis.—Accidental.
**Sturnella neglecta.*—Accidental.
Piranga rubra rubra.—Accidental.
Carpodacus mexicanus amplus.—Breeding.

Loxia curvirostra bendirei.—Formerly "resident"; no definite breeding record; unreported since 1903.
Pipilo erythrophthalmus consobrinus.—Formerly breeding, now extinct; unreported since 1897.
Junco oreganus.—Accidental.
Junco insularis.—Breeding.
Spizella passerina arizonae.—Accidental.
Zonotrichia atricapilla.—Casual.
Zonotrichia albicollis.—Accidental.
Passerella iliaca.—Accidental.
Melospiza lincolnii lincolnii.—Casual.

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LITERATURE CITED

Austin, O. L., Jr.
1952. Notes on some petrels of the north Pacific. Bull. Mus. Comp. Zool., 107:391-407.
Blake, E. R.
1953. Birds of Mexico (Chicago, Ill., Univ. Chicago Press).
Bond, R. M.
1943. Variation in western sparrow hawks. Condor, 45:168-185.
Bryant, W. E.
1887. Additions to the ornithology of Guadalupe Island. Bull. Calif. Acad. Sci., 2:269-318.
Gaylord, H. A.
1897. Notes from Guadalupe Island. Nidologist, 4:41-43.
Grinnell, J.
1928. A distributional summation of the ornithology of Lower California. Univ. Calif. Publ. Zool., 32:1-300.
Griscom, L.
1937. A monographic study of the red crossbill. Proc. Boston Soc. Nat. Hist., 41:77-210.
Huey, L. M.
1952. *Oceanodroma tethys tethys*, a petrel new to the North American avifauna. Auk, 69:460-461.
Kaeding, H. B.
1905. Birds from the west coast of Lower California and adjacent islands. Condor, 7:105-111; 134-138.
Ridgway, R.
1876. Ornithology of Guadalupe Island. U. S. Geol. and Geog. Surv. Terr., 2:183-195.
Watson, S.
1875. On the flora of Guadalupe Island, Lower California. Proc. Amer. Acad. Arts and Sci., 11:105-119.

PERTINENT REFERENCES ON GUADALUPE ISLAND BIRDS PUBLISHED SINCE 1927

Abbott, C. G.
1933. Closing history of the Guadalupe caracara. Condor, 35:10-14.
Green, J. E., and Arnold, L. W.
1939. An unrecognized race of murrelet on the Pacific coast of North America. Condor, 41:25-29.

Huey, L. M.
1954. Notes from southern California and Baja California, Mexico. Condor, 56:51-52.
Miller, A. H.
1941. Speciation in the avian genus *Junco*. Univ. Calif. Publ. Zool., 44:173-434.
Swarth, H. S.
1933. Off-shore migrants over the Pacific. Condor, 35:39-41.
Van Rossem, A. J.
1942. Preliminary comment on some Pacific coast petrels. Proc. Biol. Soc. Wash., 55:9-12.
Wetmore, A.
1933. A skeleton of the Guadeloupe (*sic*) caracara. Condor, 35:206.

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