

to keep the rope in one hand as it would otherwise have hung out several feet from the mouth of the cavity, and this of course made matters still more difficult. This was my first set of eggs for 1901 and the only one of this species I had ever taken, so I was much pleased and the thought of getting back to my partner did not worry me in the least. I placed the roll of shirt between my teeth and after twenty-five feet or so of hard climbing came to a resting place, where I took the roll of shirt in one hand and gave myself a chance to

breathe.

The rest of the way to the top was not so hard as the cliff was more broken and not quite perpendicular. My partner looked rather anxious as I scrambled over the edge of the cliff, for I had been out of his sight at least twenty minutes. He cracked a smile when I tried to tell him (without removing the roll from between my teeth) that "I got 'em," while I packed the eggs in a larger can which I had left on top of the cliff. He coiled up the rope and we were soon in camp once more.

Notes on a Small Collection of Birds From the Island of Maui, Hawaii.

RICHARD C. MC GREGOR.

DURING the winter of 1899 and 1900 it was my fortune to spend several months among the Hawaiian Islands and a considerable part of that time at various points on Maui. This island is the second in size of the group, being about 48 miles long by 30 miles wide and covering some 760 square miles. It appears to have been, until recently, geologically speaking, two circular islands which are now connected by a strip of low coral sand-hills, either raised from the ocean or drifted in by the wind.

East Maui rises to 10,000 feet elevation with the volcano of Haleakala, now extinct, at its top. West Maui is but little over half as high, but its sides are far more precipitous, and deeply water-worn. The sand dunes bear but scant vegetation, except where cane fields, through the all-powerful agency of artificial irrigation, have been pushed out in green patches. Save for a few doves and occasional bunches of golden plover or a wandering troupe of weaver birds there is nothing in the sand-hills of interest to the bird-man.

From near the town of Kahului, one may follow up the beautiful Iao valley into the mountains of West Maui. From the desert-like sand dunes to the deep forests of the highlands the change is remarkable. In a short distance from the beach one is confined to the road by the high, thick brush on either side. Here there are a few of our old California friends, the house finches, but nothing else. My impressions of the woods were jotted down at the time I was there and are here transcribed: "As we get up the canyon the brush thins out and trees of fair size, thirty to fifty feet high, occur in bunches. The ground is moist and one can walk absolutely noiselessly. There are no flies and no mosquitoes, and no sound except a chirping, as of some cricket. Birds are scarce. The common introduced species do not get up here."

I will not attempt to describe the plants as they are all unknown to me. Collecting was very unsatisfactory, there being but little open country and but few birds so far as I could see. A number of interesting earth-worms were taken. One species, over seven inches long, found under stones in the sandy soil was as quick as a young eel, which it greatly resembled in its movements. Some small mollusks and a shrimp inhabit the streams. Several rats were seen and a specimen shot was identified by Dr. Merriam as the common *Mus rattus* which he says

has been previously known from Hilo. Three species of lizards are fairly common on Maui.

Sea birds are almost totally absent from about the islands, a stray gull or albatross and a few flocks of noddies being the only species seen. Bird song is a scarce article on the islands, at least among native species, the greater part of the avian choir being recruited from the exotics. One author speaks of "the music of the minas, the plaintive note of the ring dove" (*Musick; Hawaii, Our New Possessions*; 1898, p. 20). On these points I must dissent. The dove supplies but an imitation of cooing and for harsh, jarring noises the vocalization of a flock of minas discounts the house sparrow and bluejay combined.

To those unfamiliar with the avifauna of the islands it is right to say that the following notes by no means fairly represent what is to be found on Maui. I have had some doubt as to their being worth printing. However, as a few of the species are but little known, I trust the older ornithologists will pardon my prolixity. I wish to express my thanks to Assistant Frank Walley Perkins of the United States Coast Survey, then commanding the U. S. S. *Pathfinder*, for his kindly interest and aid in my collecting. All measurements are in inches and hundredths. The islands are blessed with an uncommonly large number of introduced species. *Passer domesticus* is common at Honolulu but I saw it nowhere else. The most conspicuous species is the mina (*Acridotheres tristis*).

This introduced species is the most abundant bird on all the islands visited. At Kahului it was always to be seen about the streets and yards, or when not feeding large flocks were to be found in the dense shade trees about the houses. Their note is harsh and anything but entertaining to the person whose trees they frequent. The flesh of this bird is dark and is considered excellent by the natives.

The Chinese dove (*Turtur chinensis*) holds second place for abundance and is always found in flocks among the trees and bushes near the beach. In habits it is much like our mourning dove. Old nests were seen in the mimosa bushes of the lowlands. On December 27 I saw a nest and two fresh eggs. The note is easily recognized as that of a dove but is harsh compared with the soft cooing of our *Zenaidura*.

House finches (*Carpodacus m. frontalis*) were abundant wherever we landed on Maui, but were so wild as to not be obtained easily. Of five males secured but one was in the red plumage, the others having orange and yellow. The species was common at Kaunakakai on Molokai, where I found heavily incubated eggs March 25. The nests were lined with goat hair. At Hilo they were kept in cages.

An odd little weaver bird (*Munia punctata nisoria*) is common in flocks of fifteen to thirty individuals about the rice, taro and cane fields. California Quail (*Lophortyx c. vallicolus*) have been introduced on Molokai and two partridges seen on Maui were probably of this same species.

Mr. Henshaw records *Larus glaucescens* as an irregular though rare visitor to the island of Hawaii (*Auk* XVII, p. 201). An immature bird seen between Kehai and Lahaina was probably of this species. Albatross, possibly *Diomedea chinensis*, were frequently seen in the passes between Maui, Molokai and Lanai. On the ponds at Kahului were several large flocks of ducks which I took to be the Hawaiian duck (*Anous wyvilliana*), but the record is open to doubt. Many migratory species of the shore and water birds find a resting place on the various islands. The following four species belong in this class:

Arenaria interpres. Turnstone. Seen but once among a flock of golden plover.

Spatula clypeata. Shoveller. This species was shot on the Kahului pond while I was there.

Heteractitis incanus. Wandering Tattler. Rather common along shore alone, or with the golden plover. A specimen taken near Hilo had a dextral deflection in the sternal keel, such as is often observed in heavy domestic fowls.

Locality	Date	Sex	Wing	Tail	Ex. Culmen	Nasal Groove	Middle Toe & Claw
Hilo Hawaii	1-7-1900	♂	6.48	3.05	1.46	.89	1.23
"	1-16-1900	♂	6.00*	2.96	1.48	.86	1.20

* Wing badly worn. Both specimens are in unbarred plumage.

Charadrius dominicus fulvus. Pacific Golden Plover. Golden plovers were abundant among the sand dunes of the low central neck of Maui. Ordinarily they were found in pairs or fours. The stomach of one was filled with seeds and stomachs of four others contained wing cases of small coleoptera, larvae and a few small bivalve shells.

MEASUREMENTS OF CHARADRIUS.

Field Number	Date	Sex	Wing	Tail	Exp. Culmen	Tarsus	Middle toe with Claw
185	Dec. 15, '99	♂	6.63	2.56	.95	1.86	1.25
200	Dec. 23, '99	♀	6.28	2.16	.93	1.65	1.11
201	Dec. 25, '99	♂	6.55	2.45	.98	1.77	1.21
202	"	♂	6.70	2.47	1.00	1.75	1.26
203	"	♀	6.78	2.52	.95	1.78	1.19
204	"	♀	6.56	2.46	.95	1.68	1.23

The black-crowned night heron (*Nycticorax nycticorax naevius*) is probably resident on the island. A single example was seen on two occasions in Iao Valley. Coots (*Fulica alai*) were abundant on the ponds near Kahului. Five specimens were secured on New Year's Day.

Gallinules (*Gallinula galeata sandvicensis*) were observed in a marsh on the outskirts of Lahaina, Maui, where a male was taken Feb. 8. Colors in life: Frontal shield and bill, deep red; end of bill, green; legs, greenish-yellow except half an inch below feathers which was red like the bill; part of toes yellowish. Measurements: Wing, 6.74; tail, 2.60; bill, including shield, 1.83; tarsus, 2.37; middle toe with claw, 3.24 inches.

Anous hawaiiensis? Near Kahakaloa Point, about eight miles west of Kahului, a number of these birds were feeding in the breakers off the rocky shores. But few were seen over the smooth water and one of these was shot as he crossed the bow of our boat. The specimen, a male, was collected December 18. The throat was filled with small worms and the stomach contained three small fish, badly decomposed. This bird measures as follows: wing, 8:20; tail, 4.32; exposed culmen, 1.48; depth of bill at base, .28; tarsus, .80; middle toe with claw, 1.22. On March 3 one was seen about a mile from Kaunakakai. Two addled eggs were found in the recesses of the rocks on Kahoolawe but the identification is somewhat doubtful.

A single male owl (*Asio accipitrinus*) was shot in Iao Valley, December 27. The stomach was empty. Two large parasitic Diptera flew off as the bird was

picked up. The coloration is not materially different from California specimens. The wing measures 11.25 and the tail 5.15 inches.

Chlorodrepanis wilsoni (Rothschild).

Himatione chloris Wilson. Proc Zool. Soc. 1889. p. 447 (portion).

Himatione wilsoni Rothschild. Bull. Brit. Orn. Club. i, p. xlii, (1883). Wilson and Evans. Aves Hawaiensis. desc. and pl. July, 1896.

Chlorodrepanis wilsoni Wilson and Evans. Aves Hawaiensis. p. xxi (introduction).

ROTHSCHILD, Bds. of Laysan. p. 137, pl. LIX, fig. 3.

The bird of West Maui is undoubtedly separable from *virens* of Hawaii. The coloration of *wilsoni* is much the lighter and the dimensions are different, the tail especially being longer and the tarsus shorter in *wilsoni*. The characterizations in Wilson and Evans' work are far from satisfactory. The measurements being given in inches and tenths are scarcely of value in this day of fine discrimination among insular forms. Neither is the difference in size between male and female given, which is considerable in specimens examined by me. The following table of measurements is of two specimens (*virens*) from near Hilo, Hawaii and four (*wilsoni*) from Iao Valley, West Maui.

MEASUREMENTS OF *Chlorodrepanis* FROM HAWAII AND MAUI.

	Date	Sex	Wing	Tail	Ex. Culmen	Tarsus
<i>C. virens.</i>	1-2-99	♂	2.50	1.50	.58	.88
" "	12-24-99	♀	2.42	1.44	.52	.85
<i>C. wilsoni.</i>	12-27-99	♂	2.55	1.74	.62	.81
" "	"	♂	2.61	1.79	.62	.80
" "	12-21-99	♂	2.52	1.71	.60	.85
" "	"	♀	2.45	1.63	.54	.82

The only land bird obtained peculiar to the Hawaiian Islands was this species. Near the head of Iao valley it was found to be common, where nine specimens were secured. My field notes on it are here given: "Dec. 27, 1899. Numerous *Himatione* were seen to-day; at least many more than before. In one female the ovaries were active. One male with well developed testes has a plumage like the female. The stomach contained insect larvæ. Their call-note is very like that of our *Polioptila*, the song being a sustained and rapid repetition of a single note, repeated five to seven times. Most of the birds were seen about thirty feet from the ground, where the color of their feathers made it a difficult matter to distinguish them from the foliage. One male was shot in the lower branches of a tree twelve feet up and another lit in the lower part of a small guava bush only two feet from the ground." They do not come below an elevation of about 900 feet. In a specimen taken Dec. 12 the testes were .34 in length. Iris, dark; feet, very dark, almost black; tip of bill and base of lower mandible, light brown; rest of bill, dark brown.

Unprotected Breeding Grounds.

BY VERNON BAILEY.

THE large island lakes of the Great Basin country in eastern California and Oregon, Nevada and western Utah are the most extensive and important breeding grounds of inland water birds in the United States. A glance at any good map of the region

will give some idea of the number and size of these lakes and their position in the bottoms of inclosed valleys. In most cases they are comparatively shallow, with no outlet and more or less alkaline or saline water; but the most important feature, so far as bird life is con-