FROM FIELD AND STUDY

Why is the Galápagos Lava Gull the Color of Lava?—"Lava Gull" is a suitable name for *Larus fuliginosus,* since the species not only resembles dark lava in color but also because it spends much of its time on the lava rocks adorning the shores of the Galápagos Islands. Even the bill of this endemic gull is nearly black, the extensive distal red coloration found on bills of most gull species having been reduced to a median line less than 2 mm. wide and 8 mm. long (notwithstanding the erroneous description of "bill red," in W. B. Alexander, Birds of the Ocean, ed. 2, 1954:88). Charles Darwin (Voyage of the Beagle, Bantam ed., 1958:329) noted the dark color of the Lava Gull and of other Galápagos animals and ended his discussion with a carefully worded speculation hinting that coloration is related "perhaps to the conditions of existence being generally favourable to life."

Today most biologists would agree that dark coloration has probably been evolved through natural selection, although the selective advantage of such coloration is still a matter for speculation in most cases. Bowman (Univ. Calif. Publ. Zool., 58, 1961) has provided a convincing interpretation of evidence that predation pressure has caused the cryptic coloration in Darwin's finches (Geospizinae). It wou'd be natural to suggest that all dark animals in the Galápagos have evolved melanism to escape predators. However, I wish to propose an alternative explanation for the Lava Gull's color and thereby introduce caution concerning attempts to ascribe the dark coloration of all Galápagos animals to an identical cause.

Gifford (Prcc. Calif. Acad. Sci., 2, 1913:44) described the Graceful Petrel (*Oceanites gracilis*) and the Man-o'-War Birds (presumably both *Fregata magnificens* and *F. minor*) as competitors of the Lava Gull, since all these species eat refuse. Twice, on Tower Island in the Galápagos in November, 1962, I noted individuals of *Fregata minor* swooping down on pieces of fish we had cast on the sand beach in order to attract Lava Gulls; each time the Man-o'-Wars routed the gulls present. A perusal of the literature and of field notes by others would probably multiply such observations. My suggestion, then, is that the Lava Gull is cryptically colored in order to hide its presence on lava shorelines, not from predators (as it appears to have none), but, rather, from competing scavengers.

My thanks go to Mr. Jeremy J. Hatch and Dr. Robert Risebrough who accompanied me in the field and shared ideas. Dr. A. Brosset, then Director of the Charles Darwin Scientific Station, graciously made available the Station's facilities, including the arrangements of field trips. Helpful comments by Alden H. Miller prevented an erroneous interpretation from appearing in the manuscript. The research trip to the Galápagos was sponsored by National Science Foundation, grant no. GB 98 to Dr. Peter H. Klopfer, to whom I am grateful for many kinds of help.—JACK P. HAILMAN, *Department of Zoology, Duke University, Durham, North Carolina, March 26, 1963.*

Notes on the Feeding Behavior, Metabolism, and Weight of the Saw-whet Owl.—In a recent article Graber (Condor, 64, 1962:473–487) presented data on the feeding habits and food consumption of three species of owls including the Saw-whet Owl (*Aegolius acadicus*). During the winters of 1960–61 and 1962–63 I observed three Saw-whets (1 ♂, 1 ♀, 1 ♀ ?) in captivity and similarly recorded information on their food and feeding habits. As this information differs somewhat from that of Graber I present it here.

The owls were maintained on a diet of laboratory mice (*Mus musculus*) which usually weighed between 25 and 35 grams. In feeding, these owls tore the mouse into pieces starting anteriorly by ripping through the brain case and gradually working posteriorly. In no case was a food item observed to be swallowed whole as has been frequently noted in larger owls and recorded on one occasion for a Saw-whet (Bent, U.S. Nat. Mus. Bull., 170, 1938:234). In most instances the head and one or both forelegs of the mouse were eaten at first. This event was followed by a pause of four to five hours until a pellet was cast, after which the rest of the mouse was consumed. The second pellet was cast sometime during the next nine hours. The stomach and occasionally portions of the intestines were usually rejected as being distasteful, this being indicated by head shaking, bill snapping, and vigorous wiping of the bill on the perch. Bill wiping was routinely observed at the conclusion of feeding.

Smaller mice weighing about 10 to 15 grams were also torn apart but often completely consumed at one time. These feeding procedures explain the earlier observation by Randle and Austing (Ecology,

33, 1952:422–426) that "skulls contained in saw-whet pellets were badly broken, whereas skulls taken from pellets of long-eared, barn, and barred owls are usually whole or very nearly so." Pellets from owls feeding in this manner could contain complete skeletons of small prey items, while the bones of larger prey items would often be divided between two pellets, one containing the skull and some foreleg bones while the other would contain bones mostly from the posterior portion of the animal. If the prey was caught before midnight the first of these pellets would be cast before dawn and thus not be recovered at a daytime roost. Graber (*op. cit.*, table 1) found that in pellets recovered from daytime roosting sites the bones of small animals were recovered with nearly equal frequency while for the larger prey items, as *Microtus,* there was a decrease in the per cent occurrence of skulls and the bones of the forelegs.

Eight oxygen consumption determinations were made for a female Saw-whet, weighing between 74.1 and 113.5 grams (average, 105.9 gm.), by means of a Beckman G–2 paramagnetic oxygen analyzer used in conjunction with a recording potentiometer as described by Dawson (Physiol. Zool., 31, 1958:38). These values, obtained at six environmental temperatures between 12° and 26°C., corrected to STP, averaged 1.33 cc. O_2/gm./hr. (15.8 kcal./day), range, 0.81–1.53 cc. O_2/gm./hr., which is somewhat less than those obtained by Graber (1.52–2.0 cc. O_2/gm./hr.; 19.0 kcal./day) for another female Saw-whet. The bird I studied was maintained at slightly higher environmental temperatures 21°–25° C.) than those of Graber (18°–19° C.). King and Farner (*in* Marshall, Biology and Comparative Physiology of Birds, vol. 2, 1961:215–288) recently reanalyzed the relationship between standard metabolism and body weight. The values for metabolism of my Saw-whet Owl fall for the most part slightly above the curve drawn by King and Farner (*op. cit.*: 230, equation 6, fig. 1) but separated from it by less than a 20 per cent deviation. Graber's value is slightly higher still and more closely approximates the curve of the Brody-Proctor equation (King and Farner, *op. cit.*:229, equation 5). The only other metabolic data on a bird of similar size, *Zenaidura macroura* (121–126 gm.; King and Farner, *op. cit.*:223, table 2) also more closely conforms to the King-Farner equation than to the Brody-Proctor equation. The bird I worked with was extremely quiet and inactive, having been in captivity for about a month at the start of the experiments. It is perhaps possible that the wildness of Graber's newly caught birds contributed to the higher metabolic values he obtained.

Over a 12-day period an 80 gram male and a 108 gram female (?) Saw-whet, kept at nearly outdoor temperatures (−0.5°−+16.6° C.), consumed 23.9 and 31.8 grams per day of mouse tissue with a resultant 3.0 gram (3.7 per cent) and 16.5 gram (15.3 per cent) increase in weight, respectively. Using the caloric value for *Mus musculus* determined by Graber (3945 gram-calories per gram) this would give a gross energy intake of 94.3 kcal. per day for the male and 125.5 kcal. per day for the female(?). Even allowing for the fact that this consumption was greater than necessary for maintenance of weight, the figures are substantially greater than the estimated gross energy intake for Saw-whets under natural conditions presented by Graber (*op. cit.*:485).

The metabolic cycle of two Saw-whets studied by Graber indicated periods of peak activity in the evening and also just before dawn. If Saw-whets forage during these periods of activity it seems possible that they could feed early in the evening and cast the pellet or pellets prior to their period of pre-dawn activity. Thus the pellets found at the daytime roost would often represent only prey items caught in their dawn foraging and which were digested during the day. Larger prey items caught near dawn which could not be consumed at one time would be taken to the roost and consumed later. In support of this view there have been frequent observations of wild and captive Saw-whets holding prey items, sometimes partially eaten, at the daytime roost (Randle and Austing, *loc. cit.*; Mumford and Zusi, Wilson Bull., 70, 1958:188–191; Collins, two personal observations). Also, Randle and Austing noticed that a captive Saw-whet often consumed two mice per day which would mean a gross intake nearer that which I have recorded than that estimated from pellets. If two foragings per night is true for Saw-whets, the remains of all food items would not be recovered from the roost area and thus caloric intake values estimated from the pellets would be lower than the actual values.

The body weight of Saw-whet Owls seems to be particularly labile as indicated by variations of up to 56 per cent of body weight observed in captives. A wide range of body weights for this species has also been recorded from wild caught individuals: 11 specimens (6 ♂♂, 3 ♀♀, 1 jv., 1 unsexed) in the collections of The University of Michigan Museum of Zoology, average 81.8 grams,

range 54.2–123.5; 7 birds of unknown sex banded and released (W. P. Nickell, and L. H. Walkinshaw, personal communication), average 82.7 grams, range 67.5–112.6.

I would like to thank Susan H. Hubbard and Dr. William R. Dawson for their assistance with the oxygen consumption determinations, Dr. Lawrence H. Walkinshaw for providing two of the owls used in this study, and Drs. Pierce Brodkorb and Robert C. Lasiewski for critically examining the manuscript. This work was carried out while attending The University of Michigan.—CHARLES T. COLLINS, *Department of Biology, University of Florida, Gainesville, Florida, January 12, 1963.*

The Trumpeter Swan in San Joaquin County, California.—On January 21, 1963, while censusing waterfowl on the Empire tract, approximately fourteen miles northwest of Stockton, San Joaquin County, California, three swans passed closely overhead. Although Whistling Swans (*Olor columbianus*) had been seen regularly throughout the afternoon, our attention was immediately drawn to these birds as one of them repeatedly gave the deep, resonant flight call of the Trumpeter Swan (*Olor buccinator*) which contrasted sharply with the Whistling Swans calling in company. One of the birds appeared larger than the others. It could not be determined which bird was giving the sonorous call. Morton had recently heard the Trumpeter Swan in The Grand Tetons National Park in August, 1962. The Trumpeter Swan was recently reported from Marin County, California (Williams and Miller, Condor, 65, 1963:69), approximately eighty-five miles from this locality.—EUGENE S. MORTON and JAMES L. TATE, *Department of Biological Sciences, University of the Pacific, Stockton, California, February 20, 1963.*

Occurrence of the Starling in Baja California, México.—On December 19, 1962, we saw three Starlings (*Sturnus vulgaris*) perched on a television antenna on the grounds of the Estero Beach Hotel approximately six miles south of Ensenada in Baja California, México. A short while later on the same morning we saw three Starlings flying over the hotel grounds, proceeding in a southeasterly direction. Apparently the species has not been reported from Baja California previously, although it has been known for some years in other northern parts of México.—ERNEST P. EDWARDS and EUGENE S. MORTON, *University of the Pacific, Stockton, California, March 13, 1963.*

Common Crow Nesting in Utah.—In his treatise on "The Biosystematics of American Crows," Johnston (Univ. Wash. Press, 1961:11) indicated that the distribution of nesting Common Crows (*Corvus brachyrhynchos*) within the Great Basin was basically unknown. He further stated in personal correspondence that not a single breeding crow from Utah was examined in the course of his study. This crow has long been known to winter in Utah, but little has been published concerning its nesting activities in the state.

Crows were recorded as summer residents of Utah by Henshaw (Ann. Lyc. Nat. Hist., 11, 1874:7), Tanner (Condor, 29, 1927:198), Woodbury, Cottom and Sugden (Bull. Univ. Utah, Biol. Ser. 39, 1949:23), and Behle (Condor, 46, 1944:78; Univ. Utah Biol. Ser., 11, 1955:24; *op. cit.*, 11, 1958:25; *op. cit.*, 12, 1960:37), but none of them reported on nesting activities. The only records of crows nesting in Utah were by Bee and Hutchings (Great Basin Nat., 3, 1942:76) who reported them from Hobble Creek (west of Springville) in May, and at Wallsburg River Bridge (Provo Canyon, now under water) on April 26 and May 10, 1931, and by Twomey (Ann. Carnegie Mus., 28, 1942:420) who reported them from the vicinity of Ashley Creek Marsh in Green River Valley.

In addition to the two published records, Merlin L. Killpack banded three nestlings on May 20, 1953, seven miles south of White Rocks, Uintah County. John Gilbert observed a pair building a nest in June, on the hill west of Petersburgh, Cache County. Stephen L. Wood observed nestling crows in July, 1955, between River Heights and Logan in Cache County. Andrew H. Barnum observed three young in a nest at Bloomington in Washington County approximately four miles south of St. George. One of these was collected on June 8, 1962, and placed in the museum at Dixie College in St. George.

The authors have observed a small colony of crows nesting in a dense stand of willows about five miles northeast of Croydon, in Lost Creek Canyon, Morgan County, for several years. The colony consists of about four pairs of breeding birds. Another record was obtained on June 30, 1962, three-fourths of a mile east of Wahsatch Railroad Station (Summit County) in Echo Canyon. The largest