

rather small sample is lower than that reported by Hicks (Bird-banding, 5: 103-118, 1934), and by Odum and Pitelka (Auk, 56: 451-455, 1939), who stated that male Starlings exceeded females by almost two to one in birds taken at roosts.

It is interesting to compare sex ratios of Starlings with the secondary sex ratios of other birds, especially those established from banding records by McIlhenny (Auk, 57: 85-93, 1940). Among wild ducks, for example, the males usually outnumber females by anywhere from one up to three or more. The Mallard (*Anas platyrhynchos platyrhynchos*) is exceptional, however, since there are about equal numbers of males and females. Trapping records reveal that males are 1.9 times as abundant as female Cardinals (*Richmondia cardinalis cardinalis*). The preponderance of males to females of the Cowbird (*Molothrus ater ater*) is 2.82 to one. The greatest sex variation reported by McIlhenny is for the Gulf Coast Red-wing (*Agelaius phoeniceus littoralis*), in which he states there are 5.43 males to each female. Only in the Boat-tailed Grackle (*Cassidix mexicanus*) do females outnumber males by two to one.—JOHN B. LOEFER, *Berea College, Berea, Kentucky*, AND J. A. PATTEN, *University of Kentucky, Louisville, Kentucky*.

Myology of *Fregilupus varius* in relation to its systematic position.—*Fregilupus varius* was a starling that inhabited the island of Réunion and became extinct there about the middle of the last century. The last specimen was taken on Réunion in 1835 and two were taken on Mauritius in 1837 (Rothschild). The cause of its extinction is not certainly known, but it may have been due to the killing of the birds by natives when the birds were feeding on the coffee berries of the numerous coffee plantations or they may have succumbed in competition with introduced Indian Mynahs (Renshaw, *Zoologist*, (4) 9: 418, 1905).

Buffon was the first to describe the bird and in doing so he placed it among the Upupidae. Boddaert later named it *Upupa varia*. The bird had a crest which endowed it with a hoopoe-like appearance. However, the investigations of later workers, Levaillant, Vieillot, Hartlaub, and Schlegel, determined from external characteristics alone that this bird was a starling (Murie).

Murie (Proc. Zool. Soc. London, p. 474, 1874) made a study of the skeleton of *Fregilupus varius* from which he concluded that on the basis of its osteological characteristics, the bird was a starling closely related to the genera *Pastor*, *Sturnus*, and *Gracula*. He states further that the osteology does not relate it to the hoopoes, the fregiline section of the crows, nor to the bee-eaters or the paradise birds. In the 'Catalogue of the Birds in the British Museum' (vol. 13, 1890), *Fregilupus* is listed as one of 41 genera of the subfamily Sturninae. Rothschild ('Extinct Birds,' 1907) lists eighteen known specimens of *Fregilupus varius*.

A direct comparison was made between a preserved specimen of *Fregilupus varius* in the Museum of Comparative Zoology and *Sturnus vulgaris*. The dissection of the former was done so that the specimen is still intact, a separation of the muscles being sufficient to determine their gross morphology. Unfortunately, both legs had been cut off at the knees and both fore limbs at the elbows in making it into a study skin, hence a comparison of only the thigh, femoral, shoulder, and humeral muscles was possible. The muscles of this specimen after having been in alcohol for one hundred years have been considerably shrunken and consequently a comparison of muscle size between *Fregilupus* and *Sturnus* was impossible. The only warranted comparison was of the gross morphology of the muscles.

A study of the muscles in this specimen of *Fregilupus varius* revealed an almost

exact similarity in form to those of the pelvic and pectoral girdles and the syrinx of *Sturnus vulgaris*.

From a taxonomic standpoint, the myological similarity of *Fregilupus varius* to *Sturnus vulgaris* does not necessarily indicate that *Fregilupus varius* is a starling, as the myological differences existing between such forms as *Sturnus* and *Corvus* are so slight that the myology alone is not sufficient to differentiate between such forms.

From a myological examination alone, then, there is nothing to indicate that *Fregilupus varius* is or is not a member of the family Sturnidae. However, such close myological similarity, together with the osteological and external structural evidence, serves to indicate that *Fregilupus varius* is in all probability a member of the subfamily Sturninae.—MALCOLM R. MILLER, 10630 Wilkins Ave., West Los Angeles, California.

Predation of Boat-tailed Grackles on feeding Glossy Ibises.—For the past five years the writer has had considerable experience with the only concentration of Eastern Glossy Ibis (*Plegadis f. falcinellus*) which occurs in this country, viz., certain of the 'reefs' and shoreline of Lake Okeechobee, Florida. Extensive investigations have been made of the bird in both its rookeries and its feeding grounds. The conduction of the Audubon Wildlife Tours in the Okeechobee region in 1940 and 1941 has resulted in dozens of trips by station-wagon, along the road which skirts the northern shore of the lake, and not one of these has failed to exhibit feeding groups of these ibis during the months of February and March. During the winter of 1941, while conducting these trips, the writer noted an occurrence which had hitherto escaped him completely, and apparently has not been noted by others. This has to do with the frequent predation by the inland form of the Boat-tailed Grackle (Weston's Grackle, *Cassidix mexicanus westoni*) on feeding Glossy Ibis. It was noted on at least five different occasions this past winter (February and March) and appears to deserve some comment.

The ibis of this region feed very largely on crayfish, which they secure by probing the holes made by these creatures. Flocks of as many as three to five hundred birds may be watched within a few yards to one hundred and more, from the roadside. More often than not, Snowy Herons are mixed with the feeding ibis, and, as noted this season, many of the grackles. These latter would swarm about the ibis, and no sooner would one of the latter seize a crayfish, than it would immediately tower into the air with it, only to be instantly beset by from one to three or four grackles. A series of aerial gyrations would follow, with the almost inevitable result of the ibis losing the crayfish to one of its sable tormentors. Sometimes, these battles would take place a few feet above ground, sometimes as much as fifty, sixty or a hundred, but only in the rarest instances did the ibis succeed in getting away with its catch!

On one occasion, with a station-wagon full of observers, a full half-hour was spent in watching this performance. Scores of ibis secured crayfish and rose into the air, but only on five occasions, did the grackles fail literally to take the creature out of an ibis's bill. The picture presented was a unique one. In unobstructed short marsh grass, was a black and white blanket-like mass of feeding ibises and Snowy Egrets, with smaller black attendants (grackles). Every now and then, a black form would shoot into the air, instantly followed by several smaller black forms. It looked like huge flakes of black corn popping over an invisible fire. Up they would go, down they would come, while another would spring