
LOS
ANGELES
COUNTY
MUSEUM

CONTRIBUTIONS IN SCIENCE

NUMBER 79

DECEMBER 30, 1963

MORPHOLOGICAL DATA ON TWO SIBLING SPECIES
OF SMALL HONEY-GUIDES

By HERBERT FRIEDMANN

CONTRIBUTIONS IN SCIENCE is a series of miscellaneous technical papers in the fields of Biology, Geology and Anthropology, published at irregular intervals by the Los Angeles County Museum. Issues are numbered separately, and numbers run consecutively regardless of subject matter. Number 1 was issued January 23, 1957. The series is available to scientists and scientific institutions on an exchange basis. Copies may also be purchased at a nominal price.

INSTRUCTIONS FOR AUTHORS

Manuscripts for the LOS ANGELES COUNTY MUSEUM CONTRIBUTIONS IN SCIENCE may be in any field of Life or Earth Sciences. Acceptance of papers will be determined by the amount and character of new information and the form in which it is presented. Priority will be given to manuscripts by staff members, or to papers dealing with specimens in the Museum's collections. Manuscripts must conform to CONTRIBUTIONS style and will be examined for suitability by an Editorial Committee. They may also be subject to critical review by competent specialists.

MANUSCRIPT FORM.—(1) The 1960 AIBS Style Manual for Biological Journals is highly recommended as a guide. (2) Typewrite material, using double spacing throughout and leaving ample margins, on only one side of 8½ x 11 inch standard weight paper. (3) Place tables on separate pages. (4) Footnotes should be avoided if possible. (5) Legends for figures and unavoidable footnotes should be typed on separate sheets. Several of one kind may be placed on a sheet. (6) Method of literature citation *must* conform to CONTRIBUTIONS style—see number 50 and later issues. Spell out in full the title of non-English serials and places of publication. (7) A factual summary is recommended for longer papers. (8) A brief abstract should be included for *all* papers. This will be published at the head of each paper.

ILLUSTRATIONS.—All illustrations, including maps and photographs, should be referred to as "figures." All illustrations should be of sufficient clarity and in the proper proportions for reduction to CONTRIBUTIONS page size. Permanent ink should be used in making line drawings and in lettering (do not type on drawings); photographs should be glossy prints of good contrast. Original illustrations will not be returned unless specifically requested when the manuscript is first submitted. Authors may also request their engravings at this time.

PROOF.—Authors will be sent galley proof which should be corrected and returned promptly. *Changes* after the paper is in galley will be billed to the author. Unless specially requested, page proof will not be sent to the author. 100 copies of each paper will be given free to a single author or divided equally among multiple authors. Orders for additional copies should be sent to the Editor at the time corrected galley proof is returned; appropriate forms for this will be included when galley is sent.

DAVID K. CALDWELL

Editor

MORPHOLOGICAL DATA ON TWO SIBLING SPECIES OF SMALL HONEY-GUIDES

By HERBERT FRIEDMANN¹

ABSTRACT: Trunk skeletons of two sibling species of *Indicator* reveal that in *exilis* the posterior sternal notches are deeper, the coracoids and clavicles proportionately slightly longer, and the entire rib "basket" laterally broader than in *pumilio*. These differences substantiate the distinctness of the two species but seem unlikely to have any value as isolating mechanisms.

It has been known to all students of African birds that a number of species of the genus *Indicator* are very similar in plumage coloration and differ chiefly in size. Chapin's discovery (1958) of the smallest of the group, *I. pumilio*, served to call further attention to the situation, and a few years later (1962) he published a useful review and commentary on *I. pumilio*, *I. exilis*, *I. willcocksii*, and *I. meliphilus*. He could, actually, have included *I. minor* as well, as the size difference between it and the largest race of *exilis* and of *meliphilus* is quite small. Aside from the discovery of *pumilio*, the most important clarification was the elucidation of the status of *willcocksii* as a species distinct from, and sympatric with, *exilis*.

One cannot help but wonder at the delicacy of the isolating mechanisms required to keep apart such closely similar organisms as *exilis*, *willcocksii* and *pumilio*, and, on the other hand, one cannot refrain from searching for possible additional differences between them. It is with the latter aspect of the situation that I here put on record some new morphological data.

Through the generosity of Dr. Chapin I have recently been given alcoholic bodies of a female *exilis* and of a female *pumilio*. The soft parts revealed nothing, but the cleaned trunk skeletons did show some differences; greater differences, in fact, than I had anticipated in two such very similar species. The accompanying sketches, kindly made for me by Mary Butler, staff illustrator of the Los Angeles County Museum, illustrate the points of difference.

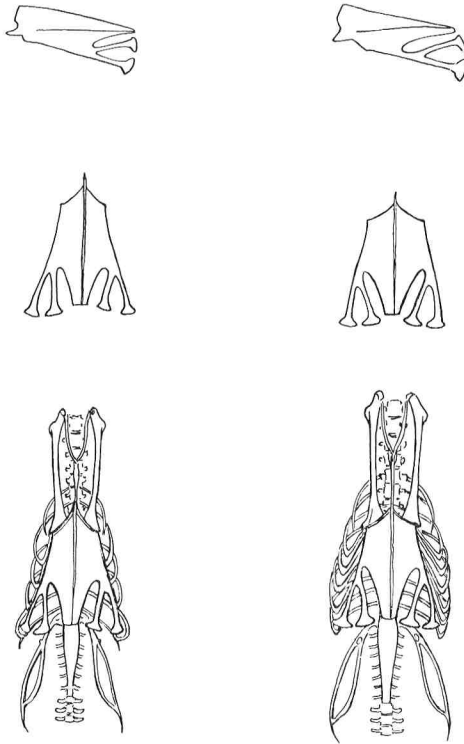
I. pumilio, besides being slightly smaller, as was already known from the original description, has the sternal notches, between the processus lateralis posterior and the processus intermedius and the metasternum somewhat shallower, less deeply incised, than in *I. exilis*. The coracoids and the clavicles are slightly shorter in *pumilio* than in *exilis* relative to the length of the sternum, and the entire body, as shown by the lateral curvature of the rib structure, is definitely more compressed in *pumilio* than in *exilis*. The two agree in the degree of development of the sternal keel, as indeed do all the African species of *Indicator*. The Himalayan *I. xanthonotus* has a lesser, more depressed keel,

¹Director, Los Angeles County Museum.

approaching that of *Melichneutes*, as I have shown elsewhere (Friedmann, 1955, pp. 11-12). Both *exilis* and *pumilio* agree very closely in the configuration and dimensions of their synsacral elements. In the illustration the species are drawn to the same size to emphasize the differences mentioned above.

It would have been particularly pertinent and appropriate to include comparisons with the body skeleton of *I. willcocksii*, but no museum seems to have any preserved anatomical material of that species.

While the differences here pointed out are real, if minor, they are obviously not such as could conceivably play any role as isolating mechanisms in the lives of the birds. They are of interest in suggesting that in the process of speciation in the small species of *Indicator* the already existing plumage mode was relatively unaffected while small internal changes were developed. What enabled these slightly divergent species to remain distinct must have been ethological rather than morphological characters. The smaller, stubbier bill



Left figures *Indicator pumilio*; right figures *Indicator exilis pachyrhynchus*.

Top row, sternum, lateral view.

Middle row, sternum, ventral view.

Bottom row, body skeleton, ventral view.

of *pumilio* and the absence of dark malar streaks in its adult plumage may, of course, be more apparent to the birds than to human observers. The relative importance of ethological characters seems always to be greater in sibling species than in morphologically diverse ones. Yet Chapin found *I. pumilio* and *I. exilis pachyrhynchus* in the same localities, even coming to feed on the exposed comb at the same wild beehives. In his experience at Tshibati, he found both species to be silent, so it was not possible to distinguish them by sound, and he found it difficult to tell them apart in life with a field glass, since the dusky malar stripe of adult *exilis* is lacking in the young of that species causing them to resemble adult or young *pumilio*. He noted little, if any, difference in behavior between the two.

Furthermore, as Chapin has pointed out, it seems most unlikely that *pumilio* would, or has a chance to, interbreed with *willcocksii*, as the former is a highland species and the latter a lowland one, although Prigogine secured examples of the latter at Kamituga, showing that it ranges eastward to the base of the mountains in the Kivu district, as well as to the Semliki Valley, a little farther north.

LITERATURE CITED

- Chapin, James P.
1958. A new honey-guide from the Kivu District, Belgian Congo. Bull. British Ornithologists Club, 78:46-48.
1962. Sibling species of small African honey-guides. Ibis, 104:40-44.
- Friedmann, Herbert
1955. The honey-guides. Bull. U.S. Natl. Museum, 208:1-292.