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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.

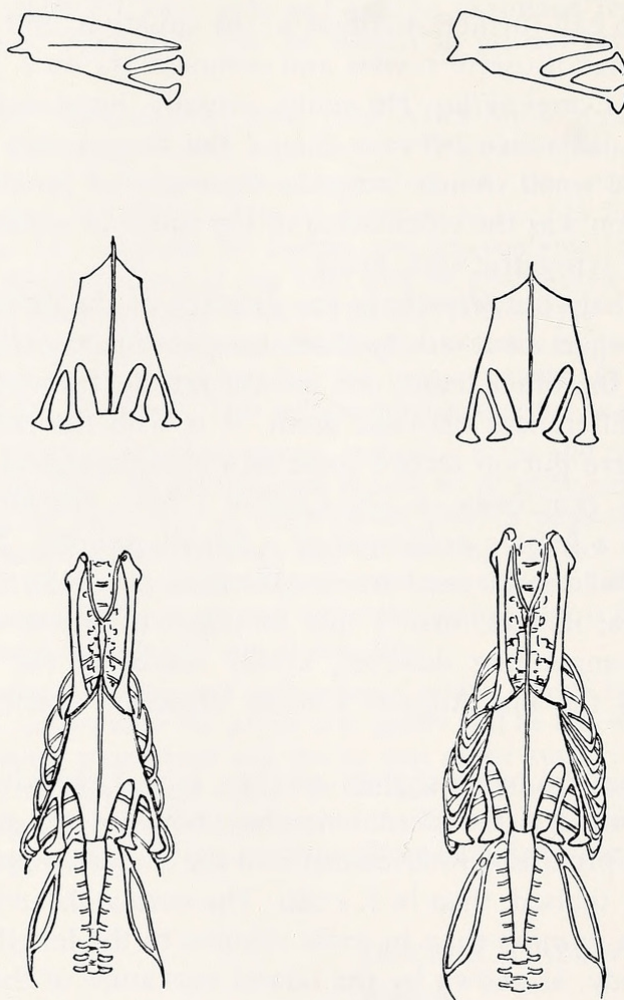
I. pumilio, besides being slightly smaller, as was already known from the original description, has the sternal notches, between the processus lateralis posterior and the processus intermedius and the metasternum somewhat shallower, less deeply incised, than in *I. exilis*. The coracoids and the clavicles 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,

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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. willcocksi*, 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.



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