

The Taxonomic Position of an Asiatic Species of *Otus* (Aves: Strigiformes) as Indicated by the Mallophaga¹

ROBERT E. ELBEL, Department of Zoology, University of
Oklahoma, Norman and K. C. EMERSON, Stillwater

During the course of a current study on the Mallophaga of Thailand, an interesting host relationship was discovered. It is believed that this observation provides an excellent example of a way in which mallophagan taxonomy can help to clarify questionable relationships among certain closely related birds.

Mr. H. G. Deignan informed us in August of 1957 that he had changed his view on the scientific name of the Scops Owl of Thailand. Because of relationships shown by mallophagan taxonomy (Emerson, 1955 and Emerson and Elbel, 1957), the scientific name should be *Otus bakkamoena lettia* instead of *Otus asio lettia* as he had first thought. He accordingly altered his Checklist of the Birds of Thailand (Deignan, in press). Previously, Deignan (1945) had followed Ridgway (in Baird, Brewer, and Ridgway, 1874) in thinking that the Asiatic Scops Owls and the North American Screech Owls were only subspecifically distinct.

The host relationships are that *Otus asio* of America is host to *Kurodaia painei* (McGregor), 1912 and *Strigiphilus otus* Emerson, 1955. The Thai *Otus*, on the other hand, is host to two related but different species of Mallophaga, *Kurodaia sp. nov.* and *Strigiphilus heterogenitalis* Emerson and Elbel, 1957. Since the Mallophaga are different species, this suggests that the hosts are different species but that they shared a common ancestor of *Otus*. When the different populations of *Otus* became isolated so that they could not interbreed, the Mallophaga were isolated on the host population and were unable to interbreed with lice of different host populations. As mentioned by Kellogg (1896), Mallophaga pass their entire life on the host and are linked therefore very closely with it. With time and isolation, both host and Mallophaga would separate into different species. Mallophaga would appear to evolve more slowly than do their hosts because the environment of the Mallophaga is influenced by the physical and chemical composition of the feathers and blood of the host and until this environment changes, the Mallophaga would remain unchanged. The physical and chemical composition of the feathers and blood change more slowly than do other factors leading toward speciation

¹ The taxonomic study of Thai Mallophaga from which this relationship developed was supported by Research Grant E-1722 from the National Institute of Allergy and Infectious Diseases, National Institutes of Health, Public Health Service.

of the bird. For example, Kellogg (1896), who first mentioned this interpretation, stated that while the first *Larus* species became differentiated into a dozen or more specific forms, often distinguished only by superficial differences in color, etc., the mallophagan parasite remained the same; continued isolation and change in the host would call for change in the parasite.

Dr. Theresa Clay suggested to us that there was always the possibility that the two species of Mallophaga on *Otus* represented relicts of sympatric species. As previously shown (Clay, 1949), for the relationship:

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|-------------------|---------|-----------|-------------------|
| HOST SPECIES | X | Y | - in same genus. |
| PARASITIC SPECIES | a' (b') | (a'') b'' | ---in same genus. |

where a' b' are sympatric species on host X and a'' b'' are sympatric species on host Y; a' and a'' are closely related allopatric species; b' and b'' are closely related allopatric species; and the species in brackets are now extinct or unknown; then from a consideration of the parasites, the hosts would appear more different than they really are. Thus the Mallophaga are not infallible evidence of phylogenetic relationships of the hosts, but only contributory evidence to the morphological and biological evidence from the birds themselves. For example, Clay (1958) in discussing the *Degeeriella* from the Falconiformes, showed that in the Accipitridae, most of the Milvinae are parasitized by *D. r. regalis* (Giebel). If *regalis* represents a relict of a sympatric pair of species, formerly found on both the Milvinae and the Accipitrinae, it is possible that these two groups are closer to each other than their Mallophaga indicate. Similarly, if the *Strigiphilus* and *Kurodaia* species from the two populations of *Otus* represent relicts of two pairs of sympatric species, then the two forms of *Otus* would be closer to each other than their Mallophaga indicate.

Since two genera are involved necessitating two distinct pairs of sympatric species, it would seem more likely that the distinctive species of Mallophaga on each of the two populations of *Otus* instead must have shared a common ancestor of *Otus*; the Mallophaga separated into different species when the host populations became isolated. This would suggest, but not definitely prove, that the two hosts were reproductively isolated and thus specifically different. Deignan, using this suggestion together with the morphological differences between the two *Otus* populations, decided that there were enough differences to warrant specific rather than subspecific designation.

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