SHORT COMMUNICATION

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THE RELATIONSHIP OF EURYPYGIDAE (GRUIFORMES : AVES) ON THE BASIS OF THE CHEWING-LICE (PHTHIRAPTERA : INSECTA)

Recently, while going through a paper of Hendrickson (1969) on the egg white proteins of the Order Gruiformes, it was found that certain remarks made by that author are quite interesting in the light of the present authors' work. Hendrickson (1969) stated that "It is surprising that no one has ever proposed a close relationship between the Eurypygidae and Rallidae in view of the large number of characters shared in common. Garrod (1876) thought *Eurypyga* not distant from *Aramus*". He further added "Thus, with the possible exception of the Eurypygidae, we find a reasonable amount of support from 'classical' sources for a close relationship among the families of the 'rail-like complex' as defined by the egg white proteins". He concludes "I believe that the Eurypygidae, Heliornithidae, Rallidae, Turnicidae, and Psophiidae form a natural group with common ancestry. The Gruidae are a divergent family having ancestors from the same stock as the rail-like complex. These two groups appear to be linked by the Aramidae. The Cariamidae and Rhynochetidae may or may not have arisen from the same ancestral stock. Their present characters make it impossible to be certain of their origin. The Otididae are most probably of independent origin and their closest relatives are unknown'.

It is well known that parasites serve as good biological indicators of their host relationships. Hendrickson (1969) was aware of the papers of Hopkins (1942) and Clay (1950) and quoted their observations of the inter-family relationships of Gruiformes on the basis of their chewing-lice. The present author unaware of Hendrickson's paper, while discussing the trends in evolution of *Laemobothrion*-complex (Lakshminarayana, 1970 *a*) remarked that "The discovery of *E. eurypygae* by Carriker (1963) is very important. It clearly indicates the relationship of Eurypygidae with Gruiformes contrary to the view of Chandler (1916). Clay (1950) suggested that Lowe's Ralloidea should include Aramidae, Psophiidae, Heliornithidae, Rhynochetidae, Jacanidae, and Rallidae ; they appear more nearly related to each other on the basis of Mallophagan relationship. To this Eurypygidae should also be added".

Lakshminarayana (1970 *b*) further stated that "*Rallicola sens. str.*, occurs chiefly on Rallidae, and on the monogenic families Aramidae, Psophiidae, Rhynochaetidae and possibly Eurypygidae suggesting that perhaps these families acquired the species from a common ancestor". While discussing the inter-family relationships of the order Gruiformes, Lakshminarayana (1970 *b*) stated with reference to Eurypygidae "that this family possesses three genera, *Rallicola* (Eichler, 1943), *Eulaemobothrion*, (Carriker, 1963) characteristic of Rallidae and *Quadraceps* (Timmermann, 1955) found on Charadriiformes. The last named genus has been reported besides the latter, on Heliornithidae amongst Grui-

formes and on Ciconiiformes. *Eulaemobothrion* reported from *Eurypyga* undoubtedly belongs to the group present on Rallidae, Aramidae and Psophiidae, but not to *Ciconiicola* group present on Ciconiiformes".

Lakshminarayana (1970 *b*) concluded that "Applying the *Hopkins' principle* to the families it is evident that the families Rallidae, Heliornithidae, Aramidae, Psophiidae, Eurypygidae, also Jacanidae, and Rostratulidae are more closely related than Gruidae, Otididae, Turnicidae, Mesonaetidae, and Cariamidae. The Jacanidae and Rostratulidae though included under Charadriiformes possess only a single parasite genus usually occurring on Charadriiformes and so is the case with Gruidae. The genera found on Otididae, Mesonaetidae, Turnicidae, and Cariamidae do not show any affinities to those on Gruiformes or Charadriiformes". On the inter family relationships of Gruiformes and Charadriformes, attention is also invited to a recent paper on another genus of chewing-lice, viz., *Pseudomenopon* (Lakshminarayna, 1977).

Thus, the chewing-lice also support the contentions drawn by Hendrickson (1969) on the basis of the egg-white proteins that Eurypygidae, Heliorni hidae, Rallidae, Psophiidae (except Turnicidae) are closely related, connected to Gruidae through the Aramidae, while Cariamidae, and Rhynochaetidae may or may not be related to the common stock, and Otididae is probably of an independent origin. Lakshminarayana (1977) and Clay (1950) considered Jacanidae also closely related to Rallidae, although Sibley *et al.* (1974) quoting from Gysels, contend that Jacanidae belongs to Charadriiformes on the basis of protein biochemistry.

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