

examined 20 specimens that he may have borrowed for his study and none were molting flight feathers.

As a result of our study and the lack of evidence for a complete first prebasic molt we believe the Yellowthroat does in fact conform to the incomplete first prebasic pattern exhibited by most wood warblers.

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**Some taxonomic comments on the genus *Auriparus*.**—The Verdin of the genus *Auriparus* has long been believed to be related to the Penduline Tits of the genus *Remiz*. Both genera are placed in the same subfamily (Remizinae) or family (Remizidae), depending upon the system of classification followed. The original taxonomic basis for grouping these genera seems to have been on grounds of their superficial resemblance because of acrobatic habits and similarly shaped bills. Both characters suffer greatly from the convergence hazard, and in the past bill shape has been used with too much confidence as a taxonomic character. Yet no ornithologist has challenged the thinking of the early taxonomists who placed the two genera together. The purposes of this note are to reappraise the relationship between the genera *Auriparus* and *Remiz* using data based on distribution, morphology, and behavior, and to suggest a closer relative of *Auriparus*.

On the basis of present distributional patterns, the Verdin is not widespread and is found only in certain areas of the southwestern deserts of North America. Dixon (1959) suggests the species may have entered the deserts originally from arid subtropical scrub, a contention supported by the Verdin's geographic distribution in the southwestern United States and its occurrence in "tropical areas" of Sonora (van Rossem, 1945). The Verdin exhibits definite altitudinal limits in the mountains of the Southwest. Unlike *Auriparus*, the genus *Remiz* is widespread and has a Palearctic distribution.

Morphologically *Auriparus* and *Remiz* do not appear as close as might be expected. Ridgway (1904: 420), comparing *Auriparus* with *Remiz*, states: "*Auriparus* is very distinct, having the bill broader with tip less attenuate, the tail rounded instead of emarginate, the outermost (tenth) primary much larger (in *Remiza* [*sic*] it is almost rudimentary), and the style of coloration very different." The ground color of the eggs of *Auriparus* is green; in *Remiz* the eggs are white.

*Auriparus* differs from *Remiz* in many behavioral traits. The data presented on *Remiz* are taken largely from papers by Merkel (1932), Steinfatt (1934), and Burckhardt (1948). Both genera build covered nests, but the nests differ remarkably not only in superficial appearance but also in techniques of construction, materials utilized, and the roles of the building sexes. Mayr and Amadon (1951) describe the nest of *Remiz* as bag-like. The typical nest of *Auriparus* is globular. *Auriparus* starts its nest as a horizontal platform of sticks (Taylor, 1967). Hinde (1952: 12) describes *Remiz* as first covering a thin forked twig with material which is extended

into a vertical circle that forms the basis of the nest. Nests of *Remiz* are pendulous, whereas support from below is a prime requirement for *Auriparus* nests.

The male *Remiz* builds a number of unfinished nests, one of which is completed after he obtains a mate. Although Brandt (1940) suggested, based on an assumption, that this behavior occurs in *Auriparus*, evidence is lacking. *Auriparus*, unlike *Remiz*, constructs roosting nests that are utilized solely for the roosting function. Verdins build roosting nests throughout the calendar year, and first-year Verdins may build their own roosting nests. The female *Auriparus* roosts in the breeding nest from shortly before egg laying until the young are fledged. Adult Verdins never occupy a nest together. Kozlova (1933) remarks that the adult male *Remiz* roosts with the female in the breeding nest.

The male *Auriparus* plays a significant role in parental care of the young. In *Remiz* the female alone incubates and rears the young; the male leaves the nest and female shortly after eggs are laid and often starts the mating process over with different mates. Burckhardt (1948) remarks that the male's building vigor decreases after constructing the second nest.

The pair bond of *Remiz* is loosely formed, as mated pairs do not remain together through one brood. *Auriparus* has a transitional pair bond from breeding season to breeding season, and mated pairs remain together even when additional broods occur in the same year (Taylor, 1967).

Löhr (1967) remarks that climbing upside down along branches during feeding was believed to be found only in Penduline Tits, but recently he observed this behavior in *Cephalopyrus*. Although Verdins exhibit many acrobatic features, I have never seen them climb upside down along branches seeking food the way *Remiz* and *Cephalopyrus* do. Burckhardt (1948) states that the male Penduline Tit does not feed the incubating or brooding female, but Kozlova (1933) found that *R. pendulinus stoliczkae* males fed incubating females on the nest. During many hours of nest-watching I have never seen the male Verdin feed the incubating or brooding female on the nest. Birds of the genus *Remiz* form flocks outside the breeding season. The solitary *Auriparus* does not form large, ordered flocks even in the fall and winter.

The behavioral, morphological, and geographical data presented strongly indicate that *Auriparus* and *Remiz* are not so closely related as previously believed and suggest separating the two genera from the same family. Mayr and Amadon (1951) state that their *Remiz-Auriparus* group may be distantly related to the flowerpeckers (Dicaeidae). Vaurie (1957) agrees with Delacour's (see Vaurie, 1957) opinion that the Remizidae should be placed next to the family Dicaeidae, as Mayr and Amadon originally suggested. Perhaps Mayr and Amadon are correct in assuming that *Remiz* is a distant relative of the flowerpeckers, but I question strongly that this is the case for *Auriparus*. I agree with Coues' (1878) remarks that: "This remarkable genus [*Auriparus*] departs widely from ordinary parine characters, and I am far from satisfied with its reference to this family [Paridae], suspecting that Mr. Lawrence was nearer right in describing the type-species as a *Conirostrum*." Although opinions of the significance of using the bill as a taxonomic character have changed since the days of Coues, nevertheless the conclusion that *Auriparus* may represent a distant relationship to some *Coereba*-like form seems highly probable. The literature on *Auriparus* contains numerous references to the species' "warbler-like" traits.

Outstanding behavioral features indicate a relationship between *Auriparus* and *Coereba*. The data on *Coereba* are taken from Biaggi's (1955) and Gross's (1958) life history studies of *C. flaveola*.

The globular roosting and breeding nests of *Auriparus* and *Coereba* are similar

in superficial appearance, techniques of nest-construction, nest-site location, and roles of the building sexes. The nest entrance is located on the side with an overhanging "roof" of sticks above the opening. Both types of nests in both genera are built from a horizontal platform of materials. Unlike the breeding nests, roosting nests are not lined and are usually a product of one bird. A roosting nest may be converted into a breeding nest, in which case both sexes participate in lining the structure. Both sexes build the breeding nest and the behavior of the two sexes in both genera during construction is similar. Adult *Auriparus* and *Coereba* will move their nest piece by piece to a new location. Females use the breeding nest for roosting before egg laying, during incubation, and after the young hatch. Juveniles of both genera may build their own roosting nests. In neither *Auriparus* nor *Coereba* do adults roost together.

Song is mainly a function of the male. Both *Coereba* and *Auriparus* produce harsh chattering notes when disturbed. Biaggi (1955) states that birds of the genus *Coereba* uttered soft peeping notes as they hopped from branch to branch before entering the nest at night. The same behavior with similar notes occurs in *Auriparus*. In both genera males sing continuously while the females incubate.

Both sexes in the two genera participate in parental care of the young. The young of both genera are naked at hatching. Females of *Coereba* and *Auriparus* initially feed nestlings, but the male *Auriparus* performs a greater share of the chore than does the male *Coereba* (cf. Biaggi, 1955; Taylor, 1967). Both sexes of *Coereba* and *Auriparus* remove fecal sacs. Young birds of both genera are dependent on their parents for at least 10 days after hatching.

The role of sexes in defending the territory is similar in both genera. The female defends more strongly than the male a small area nearer the nest. Neither *Coereba* nor *Auriparus* form large, ordered flocks. In summary *Auriparus* and *Coereba* possess very similar behavioral features associated with each phase in their life histories.

On the basis of the data presented, I recommend that the genus *Auriparus* be associated with *Coereba* at the family level. This conclusion is admittedly tentative, as considerable uncertainty exists as to the relationships of and within the "family Coerebidae."

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**Further population growth in the Heard Island King Penguins.**—The current recolonization of Heard Island (53° S, 73° E) by the King Penguin (*Aptenodytes patagonica*) presents an interesting example of population growth under natural conditions, for the island is remote and rarely visited, and its native ecosystem has not been damaged by human activities. The King Penguin began regular breeding there at some time between 1955 and 1963 (Budd and Downes, *Emu*, 64: 302, 1965), and the breeding population more than doubled in the two years 1963-1965 (Budd, *Auk*, 85: 689, 1968). This note reports observations made in March 1969 by Warwick Deacock, Robin Miller, and myself, when as members of the Australian National Antarctic Research Expeditions (ANARE) we visited the island aboard the USCGC 'Southwind.' During our 7 days ashore we searched most of the coast-line on foot, but had to omit the southeast coast from the Spit to Long Beach. Two of us had taken part in the 1963 and 1965 counts, and we used the same methods as before.

TABLE 1  
KING PENGUINS AT HEARD ISLAND, 1963-1969<sup>1</sup>

Place	Date			Adults			Eggs and chicks		
	1963	1965	1969	1963	1965	1969	1963	1965	1969
Spit Bay north	20 Feb.	31 Jan.	14 Mar.	24	56	90	13	36	49
Spit Bay south	20 Feb.	31 Jan.	14 Mar.	10	25	63	5	9	37
Vahsel Moraine	3 Mar.	— <sup>2</sup>	17 Mar.	6	— <sup>2</sup>	40	1	— <sup>2</sup>	17
Skua Beach	6 Mar.	1 Feb.	14 Mar.	2	12	0	1	1	0
Fairchild Beach	7 Mar.	1 Feb.	15 Mar.	7	4	0	0	0	0
TOTAL				49		193	20		103

<sup>1</sup> Places not visited in 1969 (such as Long Beach) are omitted.

<sup>2</sup> Not visited.