

# THE NEW ZEALAND PASSERINE LIST: WHAT IF SIBLEY & AHLQUIST ARE RIGHT?

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## INTRODUCTION

Application of the technique of DNA-DNA hybridization to avian systematics has provoked much discussion and controversy (e.g., Feduccia & Olson 1982; Cracraft 1987; Sibley *et al.* 1987). This discussion is topical for New Zealand workers because several papers published by the chief proponents of the technique in avian systematics, C. G. Sibley and J. E. Ahlquist, have dealt with New Zealand birds. Indeed, two of their calibration points for relating rate of nucleotide sequence evolution to time are based on presumed events in the histories of the ratites, including the kiwis (Apterygidae) (Sibley & Ahlquist 1981), and of the New Zealand wrens (Acanthisittidae) (Sibley *et al.* 1982; Sibley & Ahlquist 1983). Although the assumptions involved in using these groups to calibrate the technique are also examples of some of its weaknesses, results of DNA-DNA hybridization studies could have substantial implications for the systematics of New Zealand birds.

The DNA-DNA hybridization method as applied to avian systematics has been evaluated by Houde (1987), who pointed out several difficulties with the rationale and presentation of results, but concluded that the method had considerable promise for elucidating systematic relationships below the level of Order. This is the level at which conventional techniques have encountered most difficulties. The problems, including the assumption of constant rate of genome evolution between groups, and presentation of tables of linear comparisons rather than complete data matrices, should not be overstated to the extent that the potential value of the method, if used carefully, is not fully exploited.

The purpose of this paper is not to discuss the details of the method or its problems but to apply the results of Sibley & Ahlquist's work on passerines of the Australasian region to the New Zealand passerine list. The list presented here includes the introduced species to give an indication of the radical changes in passerine systematics proposed by the authors.

The 'conventional' higher classification of the passerines has many weaknesses, particularly in such 'hold-all' families as the Muscicapidae, and this has been recognised for many years (Mayr & Amadon 1951: 14; Wetmore 1960: 16). The classification of the Australo-Papuan passerines given by Sibley & Ahlquist (1985) represents a series of new hypotheses on the relationships of many species. At the very least, their results can provide the basis for more critical studies (using conventional comparative anatomy, behaviour, biochemistry, and cladistics) of the relationships of New Zealand passerines.

Apart from the early (and some very recent) work on anatomy, much avian taxonomy in Australasia has been based on external morphological characters and on the assumption (for example, by Mayr 1944) that most of the species in the Australian and New Zealand avifaunas resulted from repeated waves of colonisation from the north by groups which evolved in the Northern Hemisphere. Sibley & Ahlquist interpret their DNA-DNA hybridisation results as suggesting that some 'northern' groups had Australasian origins and that there has been considerable convergent evolution into similar niches. For example, the 'Australasian flycatchers' seem to be an artificial assemblage, none of which are particularly closely related to the Old World flycatchers with which they are placed in the New Zealand checklist. Some of Sibley & Ahlquist's (1987a) results suggest changes which may be necessary regardless of whether the classification itself is accepted; they include the submergence of *Finschia* in *Mohoua* and of *Bowdleria* in *Megalurus*.

The callaeatids, for which no data are yet available, and *Turnagra* are listed at the end as *incertae sedis*. Other departures from the 1970 Checklist (Kinsky 1970) are explained in footnotes.

The following list is not a formal checklist — it is an application of Sibley & Ahlquist's results to the New Zealand passerine fauna. All lists and classifications are explicit hypotheses on relationships within and between groups and must, perforce, be modified as knowledge increases. Stability of nomenclature is important, but the quest of stability should not become an obsession which inhibits the healthy questioning of opinion and dogma or the legitimate testing of hypotheses. If the list stimulates discussion of, and serious work on, the relationships, origins, and evolution of New Zealand passerines, it will have served its purpose.

LIST OF THE NEW ZEALAND PASSERINES, BASED ON THE RESULTS OF  
SIBLEY & AHLQUIST'S WORK ON AUSTRALO-PAPUAN AND NEW ZEALAND  
BIRDS

Order Passeriformes

Suborder \*Tyranni (Suboscines)

  Infraorder Acanthisittides

    Family Acanthisittidae

*Acanthisitta chloris* (Sparrman, 1787)

*Xenicus longipes* (Gmelin, 1789)

*Xenicus gilviventris* Pelzeln, 1867

*Traversia lyalli* Rothschild, 1894<sup>1</sup>

Suborder Polymyodi (\*Passeri)

  Parvorder \*Corvida

    Superfamily Meliphagoidea

## Family Meliphagidae

- Notiomystis cincta (Du Bus, 1839)  
Anthonis melanura (Sparrman, 1786)  
Anthochaera carunculata (White, 1790)  
Prothemadera novaeseelandiae (Gmelin, 1788)

## Family \*Pardalotidae

## Subfamily Acanthizinae

- Gerygone igata (Quoy & Gaimard, 1830)  
Gerygone albofrontata Gray, 1844

## Superfamily Corvoidea

## Family Eopsaltriidae

- Petroica macrocephala (Gmelin, 1789)  
Petroica australis (Sparrman, 1788)  
Petroica traversi (Buller, 1872)

## Family Corvidae

## Subfamily Pachycephalinae

Tribe Mohouini<sup>2</sup>

- Mohoua ochrocephala (Gmelin, 1789)  
Mohoua albicilla (Lesson, 1830)  
Mohoua novaeseelandiae (Gmelin, 1789)

## Subfamily \*Dicurinae

## Tribe Rhipidurini

- Rhipidura fuliginosa (Sparrman, 1787)

## Tribe Monarchini

- Myiagra cyanoleuca Vicillot, 1818

## Subfamily Corvinae

## Tribe Corvini

- Corvus moriorum Forbes, 1892<sup>3</sup>  
Corvus frugilegus Linnaeus, 1758

## Tribe \*Artamini

- Artamus personatus (Gould, 1841)  
Artamus superciliosus (Gould, 1837)  
Gymnorhina tibicen (Latham, 1801)

## Tribe Orcolini

- Coracina novaehollandiae (Gmelin, 1789)  
Lalage sueurii (Vicillot, 1818)

Parvorder \*Passerida

Superfamily \*Muscicapoidea

Family \*Muscicapidae

Subfamily Turdinac

Turdus philomelos Brchm, 1831

Turdus merula Linnacus, 1758

Family Sturnidae

Tribe Sturnini

Sturnus vulgaris Linnacus, 1758

Acridotheres tristis (Linnacus, 1766)

Superfamily Sylvioidca

Family Hirundinidae

Hylochelidon nigricans (Vicillot, 1817)

Hirundo tahitica Gmelin, 1789

Cecropis ariel (Gould, 1843)

Family Pycnonotidae

Pycnonotus cafer (Linnacus, 1766)

Family Zosteropidae

Zosterops lateralis (Latham, 1801)

Family Sylviidae

Subfamily Megalurinae

Megalurus punctatus (Quoy & Gaimard, 1830)

Superfamily \*Passeroidea

Family Alaudidae

Alauda arvensis Linnacus, 1758

Family \*Passeridae

Subfamily Passerinae

Passer domesticus (Linnacus, 1758)

Subfamily Motacillinae

Anthus novaeseelandiae (Gmelin, 1789)

Subfamily Prunellinae

Prunella modularis (Linnacus, 1758)

## Family Fringillidae

## Subfamily Fringillinae

## Tribe Fringillini

Fringilla caelebs Linnaeus, 1758

## Tribe Carduelini

Carduelis chloris (Linnaeus, 1758)Carduelis carduelis Linnaeus, 1758Carduelis flamma (Linnaeus, 1758)

## Subfamily Emberizinae

Emberiza citrinella Linnaeus, 1758Emberiza cirlus Linnaeus, 1766

## Incertae sedis

## 'Callaeatidae'

Philesturnus carunculatus (Gmelin, 1789)<sup>4</sup>Heteralocha acutirostris (Gould, 1837)Callaeas cinerea (Gmelin, 1788)

## 'Turnagridae'

Turnagra capensis (Sparrman, 1787)Turnagra tanaora (Schlegel, 1865)<sup>5</sup>

\*Sibley & Ahlquist (1987b) list several changes to category names used in Sibley & Ahlquist (1985). For convenience, the changes relevant to the above list are (1985 names in parenthesis): Tyranni (Oligomyodi); Passeri (Passeres); Corvida (Corvi); Pardalotidae (Acanthizidae); Dicrurinae (Monarchinae); Artamini (Cracticini); Passerida (Muscicapae); Muscicapoidae (Turdoidea); Muscicapidae (Turdidae); Passeroidea (Fringilloidea); Passeridae (Ploceidae).

<sup>1</sup>*Traversia* was in general use before 1950 — e.g. Oliver (1930), Marples (1946), Mathews (1946), but not Buller (e.g. 1896), who persisted with his own nomenclature. The 1953 Checklist (Fleming 1953) lumped *Traversia* with *Xenicus* without comment or justification of the change other than a general statement in the preamble that the "list reflects the contemporary tendency to use broad genera". This policy seems to have been applied somewhat arbitrarily because "... the committee decided by majority vote to retain certain endemic monotypic genera in spite of their affinity with extralimital genera." The 1970 Checklist retained *Xenicus*, again without comment. The last systematic treatment (Oliver 1955) retained *Traversia*; this usage is followed here. Mayr (1979) followed the New Zealand Checklist, without comment.

<sup>2</sup>Sibley & Ahlquist (1987a).

<sup>3</sup>As originally described by Forbes. Further study is necessary before *Palaeocorax* Forbes, 1893 can be accepted as a valid taxon.

<sup>4</sup>Amadon (1962) used *Creadion*. The synonymy given suggests that the New Zealand Checklist is in error in retaining *Philesturnus*.

<sup>5</sup>I follow Olson *et al.* (1983) in recognising two species of *Turnagra*; their evidence for this is convincing, but their reasons for placing the genus in the Ptilonorhynchidae are less so. Similarly, the differences between the palates of the two forms of *Callaeas* (Oliver 1945) also argue for their separation as species.

## COMPARISON WITH THE 1970 CHECKLIST

The main differences between the classification proposed by Sibley & Ahlquist and that followed by the 1970 Checklist are summarised below.

The Acanthisittidae is placed in its own infraorder of suborder Tyranni. This family has usually been placed with the suboscines. The latest morphological study, that by Raikow (1987) of the hindlimb myology, suggests that the Acanthisittidae was a very early branch of the oscines. This is, itself, at variance with results of studies of other single morphological features, such as the syrinx.

The Alaudidae retains familial status but is grouped with what are regarded as more 'advanced' groups in the Checklist order, the silvereyes (Zosteropidae) and sparrows (Ploceidae, now Passeridae), among others. The passerids *sensu* Sibley & Ahlquist are an amalgam of the Motacillidae (pipits), Prunellidae (accentors), and Ploceidae (sparrows and weavers). The Hirundinidae remains intact, but it too moves to near the more 'advanced' groups, in parvorder Passerida. Three families, the Campephagidae, Cracticidae, and Corvidae, represented here principally by vagrants and introduced species, are reduced to tribes of the new, very broad, family Corvidae. The Pycnonotidae, Zosteropidae, and Sturnidae retain their family rank, in parvorder Passerida; the Meliphagidae becomes a family of parvorder Corvida.

The remaining Checklist families are treated rather harshly by Sibley & Ahlquist's analysis. For example, the Muscicapidae is rent asunder, the Sylviinae and Turdinae being elevated to family rank in the Passerida (as Sylviidae and a newly defined Muscicapidae, respectively) and the Malurinae and Muscicapinae vanishing entirely. Part of the present Malurinae (*Gerygone*) is put in the family Pardalotidae, parvorder Corvida, while the remainder (*Mohoua*, with which *Finschia* is synonymised) is placed in subfamily Pachycephalinae of the new Corvidae. Similarly, *Petroica* becomes part of the new family Eopsaltriidae (Australian robins) while *Rhipidura* is placed with the monarch flycatchers in subfamily Dicururinae of the new Corvidae. The Emberizidae is reduced to a subfamily of the Fringillidae, and the Carduelidae drops to tribal rank. The callaeatids and *Turnagra* remain *incertae sedis*, but data from *Philesturnus* should allow at least the Callaeatidae to find a place in the system.

The major features of relevance to the New Zealand list are the dismemberment of the old Muscicapidae (and so recognising the southern radiations of flycatcher-like birds strongly convergent with, but unrelated to, the Northern Hemisphere flycatcher/thrush/warbler assemblage) and the broad conception of the family Corvidae (which suggests a wide radiation into many different niches by groups with a close phylogenetic history).

The Sibley & Ahlquist classification provides explicit hypotheses of relationships between the families of the Passeriformes. This feature is lacking in present classifications, in all but the broadest sense provided by proximity in a linear arrangement. Some of the new placements, such as *Rhipidura* in the Corvidae and *Anthus* with the sparrows (Passeridae),

are certain to raise eyebrows, and some scorn, but such hypotheses should be tested and not just rejected out of hand. Our present understanding of relationships is too meagre for us to be dogmatic. The suggestion of two major lines of oscine evolution is a radical departure from the status quo and is certain to arouse controversy; it should also provide a basis for further research.

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#### NOTE ADDED IN PROOF

In their Introduction to Vol. XI of the *Check-list of Birds of the World*, Mayr and Cottrell point out that "it had long been suspected that the Australian warblers and flycatchers had no relationship to the Sylviidae and Muscicapidae ... [but] ... in the absence of positive distinguishing characters and uncertainty as to their allocation, they were generally left with the Afro-Eurasian families. In recent years, however, the artificiality of this arrangement was so apparent that it became customary to recognize two indigenous families for the Australian warblers, Maluridae and Acanthizidae, one family for the monarch flycatchers (Monarchidae), a sub-taxon for the fantail flycatchers (Rhipidurinae), and a family for the Australasian robins (Eopsaltriidae)." In the apparent absence of diagnostic characters, but noting that "future modifications of this scheme are not precluded", Mayr and Cottrell have adopted "the scheme of branching pattern suggested by Sibley ... We regard it as a secure basis for future research."

The New Zealand species covered by this volume (Mayr, 1986) are the fernbird, the grey and Chatham Island warblers, the whitehead, yellowhead and brown creeper, the fantail, and the tomtits and robins. The fernbird is placed, as *Megalurus punctatus*, in the Sylviidae; the warblers as *Gerygone igata* and *G. albofrontata* in the subfamily Acanthizinae of the Acanthizidae. *Finschia* is retained and placed, with *Mohoua*, as subfamily Mohouinae of the Acanthizidae (*albicilla* is treated as a subspecies of *ochrocephala*); *Rhipidura* is placed in the subfamily Rhipidurinae of the Monarchidae; and the *Petroica*s are included in the Eopsaltriidae. [In a footnote, Mayr notes that Sibley (in MS, since published as Sibley *et al.*, see above) synonymises *Mohoua* and *Finschia* and considers them to be Pachycephalines.] Therefore, although the check-list editors express support for the DNA-DNA hybridization results, and the branching patterns in particular, their classification remains substantially the same as it would have been if recent custom had been followed. This was probably to avoid the considerable disruption that recognition of the revised families would have entailed, and the present treatment does, at least, express the independent evolutionary history of many Australasian passerines. After 55 years, the check-list series is complete; perhaps it is nearly time to start again.

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