genus is represented by a few additional species in Melanesia (Brown, 1958; Wilson, 1958). All of the New Caledonian species of *Rhytidoponera* are endemic to the island, and 17 of the 18 species can be diagnosed by a unique combination of characters (Ward, 1984), which suggests that they are more closely related to themselves than to any extant *Rhytidoponera* in Australia and New Guinea. The remaining species (*R. acanthoponeroides*) is taxonomically isolated and without clear affinities to any other taxa, due to a preponderance of unique (autapomorphous) features.

Using data sets based on morphology and allozymes, I compare the relative amounts of taxonomic congruence shown by rival cladograms and rival phenograms of the New Caledonian *Rhytidoponera*. To further examine the degree of uncertainty associated with estimates of the phylogeny of these ants, an attempt is made to assign confidence limits to the cladogram derived from the composite data set. These confidence limits are calculated using a bootstrap method advocated by Felsenstein (1985). Finally, a few biogeographic implications are presented, constrained by the limited resolution of phylogenetic relationships among the New Caledonian *Rhytidoponera*.

MATERIALS AND METHODS

Taxa and characters.—Of the 18 species of New Caledonian *Rhytidoponera*, one (*R. wilsoni*) has not been collected since its original description. This leaves 17 species, belonging to four, informal "species groups," for which complete morphological and allozyme data sets are available (Table 1). As an outgroup for cladistic analyses, I chose an Australian species, *Rhytidoponera confusa*, which is a member of the primitive *impressa* group (Ward, 1980). Relative to *R. confusa*, all of the New Caledonian *Rhytidoponera*, including *R. acanthoponeroides*, possess a number of apparently derived traits including: (i) a robust, ankylosed mesosoma; (ii) well-separated frontal carinae; and (iii) absence of winged queens. These traits are shared with most Australian species of *Rhytidoponera* (except the *impressa* group). While an Australian species or species group more closely similar to the New Caledonian *Rhytidoponera* might have served as a more appropriate outgroup, the isolated position of *R. acanthoponeroides* and uncertainty over the monophyly of the remaining New Caledonian species (which are diagnosed by a *combination* of characters rather than by a single unique feature) dictated a more conservative course in the choice of an outgroup.

TABLE 1. *Rhytidoponera* of New Caledonia. The "species groups" are informal taxonomic groupings which were recognized prior to detailed cladistic or phenetic studies (Ward, 1984).

Species group	Species
A (*acanthoponeroides* group)	*acanthoponeroides*
F (*fulgens* group)	*aquila*
	atropurpurea
	fulgens
	opaciventris
N (*numeensis* group)	*koumensis*
	numeensis
	wilsoni[a]
P (*pulchella* group)	*arborea*
	depilis
	insularis
	litoralis
	luteipes
	mimica
	nitidiventris
	pulchella
	terrestris
	versicolor

[a] *R. wilsoni* has been excluded from the present study due to lack of sufficient material.

Data set 1 (NC.ALLO) includes 46 binary characters, based on the presence (frequency > 0.05) or absence (frequency ≤ 0.05) of 46 electrophoretically detectable alleles from 11 loci (Appendix I). The justification for treating the allozyme data set in this manner (independent alleles model) is that in the *Rhytidoponera* species from New Caledonia most loci exhibit little or no intrapopulation polymorphism and most alleles are at or near fixation (Ward, 1984). Thus, there is not a great deal to be gained from a consideration of gene frequencies or allelic combinations.

Data set 2 (NC.MORPH) is comprised of 41 binary characters, derived from a num-