

THE ANTS (HYM., FORMICIDAE) OF NIUE,
SOUTH WEST PACIFIC

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ABSTRACT

Ant material collected in Niue during April 1996 included 28 species, of which 14 are new records for the island. The total number of ant species known from Niue is now 35. Notes are given on the species, including information about biology, taxonomy and distribution.

INTRODUCTION

Niue, with a surface area of 258 sq km, is the world's largest uplifted coral island. It is situated in the south western part of the Pacific Ocean, between Tonga and the Cook Islands. As the island is only sparsely inhabited (present population about 2000), relatively large areas of rainforest and secondary forest regrowth have survived.

Wilson & Taylor (1967) discussed the ants of the Pacific region. No material from Niue was included in their study. However, in the same year Taylor recorded 19 species that had been collected in Niue by the New Zealand entomologists G.W. Ramsay and A.C. Eyles (Taylor, 1967). In 1994, Puzatchenko *et al.* published a list of 11 species collected on the island by biologists aboard the ship 'Kallisto'.

A.v.H. visited Niue from 16–24 April 1996 to assist the island authorities with their biological pest control programme. At that time he was working with the South Pacific Commission – German Biological Control Project, and used the opportunity to collect ants. Samples were taken from all parts of the island, with special emphasis on the Huvalu Forest. The ants were sent to C.A.C., who identified 28 species, 14 of which had not before been recorded from Niue (Table 1).

NOTES ON THE SPECIES

Subfamily Ponerinae

Ponera tenuis is one of the smaller species of the genus, with a head width of less than 0.5mm. It is widely distributed in the Samoan Island complex and in New Guinea, and has generally been collected in rain forest from rotten logs and in leaf litter.

Hypoponera punctatissima has an enormous range through the Old World tropics and has been recorded frequently from rubbish dumps in cool temperate zones and in heated premises as far north as the British Isles. Males are apterous, but winged females are regularly taken in water and light traps, and by general sweeping.

The single *Amblyopone* specimen was damaged, with the head and pronotum missing. It was dark brown in colour and could not be identified to species.

Odontomachus simillimus is a large predatory species found mostly on

TABLE 1. — LIST OF ANT SPECIES RECORDED FROM NIUE BY DIFFERENT AUTHORS.

P – Pacific, O – Oriental, C – Cosmopolitan (occurring over two or more continents).
Species followed by an asterisk are new to Niue.

	Taylor 1967	Puzatchenko <i>et al.</i> 1994	Present study
Subfamily Ponerinae			
P <i>Ponera tenuis</i> Emery*	–	–	x
C <i>Hypoponera punctatissima</i> (Roger)*	–	–	x
<i>Amblyopone</i> sp.*	–	–	x
O <i>Odontomachus simillimus</i> Smith	–	x	x
Subfamily Myrmicinae			
C <i>Pheidole megacephala</i> (Fabricius)	x	–	x
O <i>Pheidole mus</i> Forel*	–	–	x
P <i>Pheidole oceanica</i> Mayr	x	x	x
O <i>Pheidole sexspinoso</i> Mayr	x	–	–
P <i>Pheidole umbonata</i> Mayr	x	x	–
C <i>Cardiocondyla emeryi</i> Forel	x	x	x
C <i>Cardiocondyla nuda</i> (Mayr)	x	x	x
C <i>Monomorium destructor</i> (Jerdon)*	–	–	x
O <i>Monomorium floricola</i> (Jerdon)	x	–	x
C <i>Monomorium monomorium</i> Bolton*	–	–	x
P <i>Monomorium talpa</i> (Emery)*	–	–	x
C <i>Tetramorium bicarinatum</i> Nylander	–	x	–
O <i>Tetramorium insolens</i> Smith	x	–	–
O <i>Tetramorium pacificum</i> Mayr	x	–	x
C <i>Tetramorium simillimum</i> (Smith)	x	–	x
O <i>Tetramorium smithi</i> Mayr*	–	–	x
P <i>Tetramorium tonganum</i> Mayr	x	x	–
P <i>Rogeria stigmatica</i> Emery*	–	–	x
C <i>Strumigenys godeffroyi</i> Mayr*	–	–	x
C <i>Strumigenys lewisi</i> Cameron*	–	–	x
C <i>Strumigenys rogeri</i> Emery*	–	–	x
Subfamily Dolichoderinae			
C <i>Tapinoma melanocephalum</i> (Fabricius)	x	–	x
O <i>Tapinoma minutum</i> Mayr	x	–	–
C <i>Technomyrmex albipes</i> Smith	x	–	x
Subfamily Formicinae			
C <i>Anoplolepis gracilipes</i> (Smith)	x	x	x
C <i>Plagiolepis alluaudi</i> Emery	x	x	x
O <i>Paratrechina bourbonica</i> Forel*	–	–	x
C <i>Paratrechina flavipes</i> Forel*	–	–	x
C <i>Paratrechina longicornis</i> (Latreille)	x	–	–
O <i>Paratrechina vaga</i> Forel	x	x	x
O <i>Camponotus chloroticus</i> Emery	x	x	x

open ground among scattered trees. It is abundant on the Fiji and Solomon Islands and in New Guinea.

Subfamily Myrmicinae

Pheidole species are present in numbers on all Pacific Islands. In particular the very wide-ranging *P. megacephala* may develop large

populations and have considerable impact on the local arthropod fauna. It is often also a domestic pest, attracted to all types of unprotected food. *P. oceanica* has similar habits, but is so far restricted to the Pacific Islands and New Guinea. *P. mus* is one of the smallest species of the genus in the Orient. The identification is tentative, being based on two minor workers, length 1.4mm. The specimens correspond with the original description. The head and alitrunk have close punctulate sculpture; the pronotum is laterally expanded; colour brown.

Cardiocondyla emeryi and *C. nuda* are cosmopolitan species, abundant throughout the tropics and subtropics. They are small, both in individual body size and as pest populations, and they forage individually rather than in large groups, so they have little impact on the human environment.

Monomorium destructor is a worldwide opportunist species feeding on animal and sugary substances, and is also known to damage fabrics and cable insulations. The other species listed are also widely distributed but have little impact on the environment.

Tetramorium bicarinatum, formerly referred to as *T. guineense* (F.) (see Bolton 1977), is one of the most successful tramp species, a frequent denizen of glasshouse environments in Europe and America and even living in the open in temperate North America. In the present collection the similar *T. pacificum* was present. *T. simillimum*, a much smaller species, is also a very widely distributed tramp species throughout the subtropics and is common in glasshouses. *T. smithi* is a first record for the Pacific Islands, but occurs widely in the Oriental region, including the Philippines, Malaysia and China. It is illustrated in figs 1 and 2. *Tetramorium* species, though frequent in most environments, seem to have little economic importance and are not known as domestic pests.

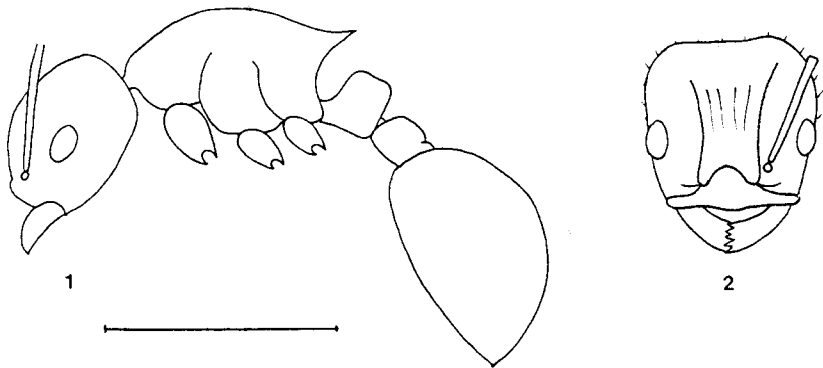


Fig. 1. — 1, *Tetramorium smithi* Mayr, worker, profile; 2, *T. smithi* Mayr, worker, head in frontal view. Scale line = 1mm.

Rogeria is an interesting, little-known genus with a curiously disjunct distribution. It has several species in tropical America, but only two or three in the Pacific Islands. *R. stigmatica*, previously recorded as *R. sublaevinodis* Emery in Wilson & Taylor (1967), is abundant in the Fiji island complex.

The three *Strumigenys* spp. are small Dacetine ants found in leaf litter. They are exclusively predatory, living on small arthropods such as mites and springtails in the soil.

Subfamily Dolichoderinae

Tapinoma melanocephalum is an extremely successful tramp species throughout the tropics, and is frequently a nuisance pest in warehouses and heated premises. *T. minutum* is Australian in origin but appears to be spreading through the Pacific islands.

Technomyrmex albipes is widespread through Africa as well as Asia and is frequently reported from glasshouses.

Subfamily Formicinae

Anoplolepis gracilipes, previously known as *A. longipes* (Jerdon), may become a dominant ant in disturbed habitats. It can reach epidemic proportions because of its ability to develop huge populations. In such situations, it can be damaging to poultry and livestock, as it has done in the Seychelles Islands (Haines & Haines 1978).

Plagiolepis alluaudi is a pan-tropical tramp known throughout the Pacific and, like *A. gracilipes*, is considered native to Africa.

Paratrechina species are found throughout agricultural habitats in the tropics and subtropics. *P. flavipes* in particular appears to be spreading rapidly westward from its origins in the temperate orient, with recent records in Central America as well as southern Arabia. *P. bourbonica* and *P. vaga* are more common and widely distributed oriental tropical species.

Camponotus chloroticus is common throughout the Pacific. This species, in common with other members of the genus, depends largely on the exudates of arboreal Homoptera.

DISCUSSION

Ants are widely used as indicator species for monitoring ecological variation (New, 1995). In addition, ants are among the most invasive exotic arthropods in terrestrial communities, especially on islands. The invasive species can cause a quick decline in native ant species, and they also have adverse influences on other taxa. A recent example in the Pacific is the introduction of the South American ant *Wasmannia auropunctata* (Roger) into New Caledonia (Fabres & Brown, 1978), which, after a few years, led to an ecological disaster (Dr P. Cochereau, pers. comm.). For these reasons, it seems worthwhile to use any opportunity for collecting ants on oceanic islands and to publish the results in order to provide a base for future comparisons.

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An important new site for Tapinoma erraticum (Latreille) (Hym., Formicidae) in Britain. — On 12.v.1994 Dave Boyce (DCB) found a small colony of *Tapinoma erraticum* near Minehead, South Somerset (VC5). He kept a voucher specimen, which is now in Tony Prince's (AJP) collection. AJP visited this site, at Alcombe Common (SS978436) three times in 1996, with no success in finding the ant. On the third occasion, on 30.viii.1996, DCB accompanied him and showed him the exact spot. The habitat was lowland heath referable to the H4 western gorse *Ulex gallii*—bristle bent *Agrostis curtisii* National Vegetation Classification (NVC) community. The area had been burnt a few years previously, but had now regenerated, resulting in the loss of the patches of bare ground required by *Tapinoma* (Falk, S., 1991, *A review of the scarce and threatened bees, wasps & ants of Great Britain*, Research and survey in Nature Conservation, no. 35, NCC, Peterborough). There were more recently burnt areas of heath, which still looked suitable for the ant, but no *Tapinoma* could be found here.

On 26.v.1999 and 23.vii.1999 AJP revisited Alcombe Common and was again unable to find *Tapinoma*. Given the very small area of suitable habitat, it seems likely that it may now be extinguished at this site. AJP decided to widen his search to a second block of lowland heath, at North Hill (SS958466), some 4km north of the original site. Several *Tapinoma* nests were found here, in a small patch of recently burnt H4 heathland, in which bell heather *Erica cinerea*, ling *Calluna vulgaris*, western gorse and bristle bent were the dominant plants. Areas of bare ground were still present between the regenerating dwarf shrubs.

On 22.iii.2000 we revisited North Hill where, in addition to the site described above, two further sub-populations were located. The first was a solitary nest at SS955468, on a small path amongst mature H4 heathland. The second was at SS957466, where a few foraging workers were seen in an area where bracken has recently been cleared, resulting in the creation of regenerating heathland with abundant bare ground.

Tapinoma erraticum is defined as a nationally scarce Notable B species (Falk, S., 1991, op. cit.; Hoy, S. & Roberts, S.M., 1999, Species profile of *Tapinoma erraticum* (Latreille, 1798) (Formicidae: Dolichoderinae), *BWARS Newsletter*, Autumn 1999: 19–20; 22). It has records from 42 ten-km squares of the National Grid (Hoy & Roberts, *idem.*). Almost all sites are on lowland heathland in southern England, from Cornwall to Kent. This is the first occasion on which *Tapinoma erraticum* has been recorded in Somerset, and is one of the most northerly records of the species in England. It appears to be very isolated from other colonies, with the nearest being in the Bovey valley, South Devon, some 69km to the south. — A.J. PRINCE, 6 Northgate, Wiveliscombe, Taunton, Somerset, TA4 2LE & D.C. BOYCE, 1 Rosemary Lane, Dulverton, Somerset, TA22 9DP: *November 11th, 2000.*