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From BOLETIM DO MUSEU MUNICIPAL DO FUNCHAL
No. XXI, Art. 97, pp. 24-32, December 1967

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Report No. 51 from the Lund University Expedition in 1957
to the Azores and Madeira

ON THE FORMICIDAE OF THE AZORES

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Several entomological expeditions to the Azores have collected ants. Wheeler (1908), Santschi (1933), Donisthorpe (1936), Wellenius (1949) and Carthy (1955a) have published on these collections and have demonstrated how very poor the ant fauna is in species if not in actual number of individuals. The present collection, made by Per Brinck and E. Dahl of the Lund University Expedition, is no exception for despite the large number of specimens obtained—567 individuals mounted, 45 samples in spirit and 15 in sawdust, more than 1000 in all—they represent no more than 9 species, only one of which (*Ponera punctatissima* Roger) is a new record for these islands. Three species recorded from earlier expeditions were not encountered. Perhaps the most interesting feature of the ant-fauna is its paucity. With the exception of the honeybee all Hymenoptera in the Azores must be accidental introductions and so far as the ants are concerned, there seems no reason why all but one of these should not have been carried along with the many trees and plants shipped to the islands from Portugal. Tutin (1953) writing of the flora notes that of the 500 established plant species, more than 200 are accidental or deliberate introductions, mostly from Europe. Traffic between Madeira and the Azores must be responsible for the presence of *Monomorium carbonarium* (Smith) in both, but otherwise there seems no good reason to think of Madeira rather than Portugal as the source of the Azores antfauna. Indeed one species, *Aphaenogaster senilis* (Mayr) occurs commonly in Portugal but is unknown in Madeira. Carthy (1955), referring to Hymenoptera generally, suggested that islands with jetties and quaysides to which trading ships

1) Report No. 51 from the Lund University Expedition in 1957 to the Azores and Madeira.

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can tie up may acquire a greater variety of insect introductions than those without such facilities. This may be so but it is amazing that so many of the usual «tramp» species of ants have never become established—*Monomorium pharaonis*, *M. salomonis*, *M. destructor*, *Cardioconyla emeryi*, *Plagiolepis barbata* and *M. schmitzi*, to mention only a few which could have come in from Madeira. The Argentine ant, *Iridomyrmex humilis*, which so rapidly overran Madeira seems for the time being to be no more than «well established» in the Azores.

***The Formicidae of the Azores*¹**

PONERINAE

***Ponera eduardi* Forel**

Ponera eduardi Forel 1894, Wheeler 1908 [Mi], 1927 [Azores], Santschi 1933 [Mi], Donisthorpe 1936 [Mi, P], Wellenius 1949, Carthy 1955a.

Faial: Horta, Ribeira dos Flamengos, 31.III.57, loc. 71.

Flores: Central Plateau, S and SE of Caldeira Comprida, 14.IV.57, loc. 109; Ribeira d'Além da Fazenda, 14.IV.57, loc. 108.

Pico: São João, 9.IV.57, loc. 103.

São Miguel: Lagoa do Fogo, 23.III.57, loc. 54; Caldeira das Sete Cidades; Lagoa Azul, 21.III.57, loc. 50; Ribeira Seca, W. of Ribeira Grande, 18.III.57, loc. 37; Lagoa do Congo, 16.III.57, loc. 34; Caldeiras, 5 km. SE of Ribeira Grande, 14.III.57, loc. 28; Relva, Tanque da Rocha Quebrada, 15.III.57, loc. 31; 1.5 km. S of Maia, 25.III.57, loc. 62; 1 km. S of Povoação, Ribeira dos Lagos, 24.III.57, loc. 60; São Pópulo, 7.5 km. E. of Ponta Delgada, 1.III.57, loc. 3; 1 km. N of Feteiras, 2.III.57, loc. 5; Fonte da Rocha near Relva, 4.5 km. W of Ponta Delgada, 5.III.57, loc. 11; River 5 km. SSE of Ribeira Grande, 14.III.57, loc. 29; River NW of Água Retorta, 23.III.57, loc. 57; Caldeira das Sete Cidades, 8.III.57, loc. 18; 3 km. W of Porto Formoso, 9.III.57, loc. 20; Ribeira da Praia, 3 km. W of Vila Franca do Campo, 13.III.57, loc. 27.

P. eduardi is a fairly common ant in the Canary Isles, Madeira and throughout the Mediterranean region. It was found mostly under stones but also under bark and among ground vegetation.

1) Distributional records from earlier collections are placed in [] and the island names abbreviated thus: — C=Corvo, Fa=Faial, Fl=Flores, G=Graciosa, Jo=S. Jorge, Ma=Sta. Maria, Mi=S. Miguel, P=Pico, T=Terceira.

***Ponera punctatissima* Roger**

Ponera punctatissima Roger 1859.

São Miguel: Ribeira Seca, 18.III.57, 2 workers.

This is a widely distributed 'tramp' species which is well established in most of the warmer parts of the world and in many of the colder parts too but there it can survive only under artificially heated conditions. Its rareness in the Azores may imply that it is a fairly recent arrival which finds it difficult to compete with the very abundant *P. eduardi*.

MYRMICINAE

***Aphaenogaster senilis* (Mayr)**

Aphaenogaster testaceopilosa (Lucas 1846), Emery 1908 [G], Wheeler 1927 [Azores], nec Lucas.

Aphaenogaster senilis var. *acoreensis* Santschi 1933 [Fa, T], Donisthorpe 1936.

Aphaenogaster testaceopilosa var. *acoreensis* Santschi 1933, Wellenius 1949 [Fa, P, T], Carthy 1955 a [Fa, P].

Aphaenogaster testaceopilosa var. *gemella* (Roger 1862), Donisthorpe 1936 [P], nec Roger.

Faial: Praia do Almoxarife, 31.III.57, loc. 72; Horta, Ribeira dos Flamengos, 31.III.57, loc. 71; Flamengo Bay, 31.III.57.

This is by far the largest and most striking ant species in the Azores if one excludes the gross females of *Lasius niger*. It is a fast moving underground nesting, ant, abundant in Portugal, Spain and along the north side of the Mediterranean. As well as from Faial it has been recorded in earlier collections from Pico, Graciosa and Terceira. Apparently neither *senilis* nor any of the North African species of which there are several has become established in Madeira. Santschi's variety *acoreensis* seems to be covered by the variation found in any European population and does not, I think, indicate any evolutionary trend peculiar to the Azores. Although I have not been able to trace the specimen from Pico treated by Donisthorpe as var. *gemella* I have little doubt that this was no more than an individual aberrant from the *senilis* population of this Island. *A. gemella* is a species in its own right, occurring in Majorca and in North Africa. Its male has a short broad head crowned with three enormous ocelli quite unlike that of the *senilis* male whose head is long and narrow and with normal ocelli. According to Bernard (1958) *gemella* is entirely vegetarian whereas *senilis* and the North African *testaceopilosa* are at least largely carnivorous.

Monomorium carbonarium (Smith)

Monomorium carbonarium (Smith 1858) Wheeler 1927 [Azores], Santschi 1933 [Mi], Wellenius 1949 [C, Fa, Fl, G, Jo, Mi, P, T], Carthy 1955a [Fa, P].

Monomorium carbonarium ebeninum Forel 1891, Wheeler 1908 [Mi], Donisthorpe 1936 [Jo, P] *nec* Forel.

Faial: Porto da Boca da Ribeira, 1 km. E of Ribeirinha, 1.IV.57, loc. 74; Praia do Almoxarife, 31.III.57, loc. 72; Flamengo Bay, 31.III.57; Horta, Ribeira dos Flamengos, 31.III.57, loc. 71; Costa da Nau, 3 km. NW of Capelo, 4.IV.57, loc. 88.

Flores: Ribeira d'Além da Fazenda, 14.IV.57, loc. 108.

São Miguel: 3 km. S of Pico da Pedra, 25.III.57, loc. 64; Fonte Grande, SE of Feteiras, 6.III.57, loc. 12.

This is perhaps the most interesting ant species in the Azores for it occurs abundantly on eight of the nine islands yet is known from nowhere else except Madeira. The neotropic *ebeninum* has a quite differently shaped epinotum and its reported occurrence in the Azores by Wheeler and Donisthorpe was perhaps due to over-enthusiasm. At any rate I have seen no specimen in this or in any other Azores collection answering the description of *ebeninum*. *M. carbonarium* was found mostly under stones.

Pheidole megacephala (Fabricius)

Pheidole megacephala (Fabricius 1793), Donisthorpe 1936 [Fa].

Pico: 1 km. S of Areia Larga, 11.IV.57, 10 workers from under a stone, loc. 107.

This species seems to be extremely rare and has been recorded only once before when in 1929 it was found in the Consulate on Faial. In Madeira this ant was at one time a real domestic menace until it was driven from this position at the end of the last century by the arrival of the 'Argentine Ant', *Iridomyrmex humilis* (Mayr). It is surprising that the same situation has not arisen in the Azores.

Leptothorax unifasciatus (Latreille)

Leptothorax unifasciatus (Latreille 1798), Santschi 1933 [Mi].

Leptothorax tuberum (Fabricius 1775), Donisthorpe 1936 [P, T], *nec* Fabricius. *Leptothorax tuberum unifasciatus* (Latreille 1798), Donisthorpe 1936, Wellenius 1949 [P], Carthy 1955a [P].

Faial: Porto do Boca da Ribeira, 1 km. E of Ribeirinha 1.IV.57, one worker, loc. 74; Pool 1 km. ESE of Cabeço do Fogo, 4.IV.57, one worker, loc. 90; Horta, Ribeira dos Flamengos, 31.III.57, one female, loc. 71.

This is a common S. European ant which could be transported very easily in soil protecting the roots of plants. Nevertheless it seems to be very uncommon in the Azores judging by the small number of individuals which have been captured. Santschi noted from Pico de Ferro on São Miguel a variety rather darker and more coarsely sculptured than the typical form. The species nests in dead wood and under bark or on the ground beneath moss and stones.

***Tetramorium caespitum* (Linnaeus)**

Tetramorium caespitum (Linnaeus 1758), Wheeler 1908 [Mi], 1927 [Azores], Santschi 1933 [Mi], Donisthorpe 1936 [Mi], Wellenius 1949 [Fa, G, Mi], Carthy 1955a [Fa, P].

Faial: Costa da Náu, 3 km. NW of Capelo, 4.IV.57, loc. 88; Porto da Boca da Ribeira, 1 km. E of Ribeirinha, 1.IV.57, loc. 74; Faial, 31.IV.57.

Pico: 1 km. S of Areia Larga, 11.IV.57, loc. 107.

São Miguel: Ribeira da Praia, 3 km. W of Vila Franca do Campo, 13.III.57, loc. 27; Vila Franca do Campo, 28.II.57, loc. 2; Relva, tanque da Rocha Quebrada, 15.III.57, loc. 31.

T. caespitum is a species distributed over the whole of Europe and a large part of Asia. Its occurrence in North Africa seems likely to be due to accidental introduction. Wheeler refers to two varieties on São Miguel near Ponta Delgada, one smaller and redder, the other larger and darker. Such variation can be detected in most nest samples of this species and apparently has no geographical significance. I have seen this species from São Jorge, collected in 1965 during the Chelsea College Azores Expedition.

***Tetramorium guineense* (Fabricius)**

Tetramorium guineense (Fabricius 1793), Santschi 1933 [Mi], Wellenius 1949 [C, Fa].

This is a 'tramp' species originating in Africa and now well established all over the world. It is not present in the Brinck and Dahl Collection.

***Tetramorium simillimum* Smith**

Tetramorium simillimum Smith 1851 var. *insulare* Santschi 1928, Santschi 1933 [Mi], Donisthorpe 1936, Wellenius 1949.

Santschi described his variety from Fiji, stating that it differed from the typical *simillimum* by its darker reddish colour, its yellow appendages.

brownish gaster, more definite reticulate-punctate sculpture and its longer epinotal spines. Nothing answering such a description has been seen in the Azores since Santschi's record from São Miguel. *T. simillimum* itself is a not uncommon tropicopolitan 'tramp' which is well established in Madeira,

DOLICHODERINAE

Iridomyrmex humilis (Mayr)

Iridomyrmex humilis (Mayr 1868), Santschi 1933 [Jo, Mi, T], Donisthorpe 1936, Wellenius 1949 [Fl, Jo, Mi, T].

Santa Maria: Praia, 20.III.57, loc. 47; 3 km. NE of Vila do Porto. Fonte do Mourato, 19.III.57, loc. 38; Aeroporto Alto, 590m., 20.III.57, locs. 44, 45.

São Miguel: Lagoa das Furnas, 10.III.57, loc. 22; Fonte da Rocha near Relva, 4.5 km. W of Ponta Delgada, 5.III.57, loc. 11; Fonte Grande, SE of Feteiras, 6.III.57, loc. 12; São Pópulo, 7.5 km. E of Ponta Delgada, 1.III.57, loc. 3 and 4.III.57, loc. 10; São Pópulo 7.5 km. E of Ponta Delgada, 12.III.57, loc. 26; 2 km. N of Ponta Delgada, 5.III.57; Casas Lelhas-João Ramos, 18.III.57.

The notorious 'Argentine Ant', *I. humilis*, has spread from S. America over most of the warmer parts of the world. By 1893 it had replaced *Pheidole megacephala* as the 'house-ant' in Madeira but its establishment in the Azores seems likely to have come much more recently and none of the specimens collected seem to have come from domestic premises. Santschi (1933) has suggested that the poverty of the ant fauna of the Azores may be due to its activities but I feel it would need to be present in considerably greater numbers than it apparently is for this to be so. This may happen yet.

FORMICINAE

Paratrechina longicornis (Latreille)

Paratrechina longicornis (Latreille 1802), Donisthorpe 1936 [Jo].

This is a cosmopolitan 'tramp' which once established might be expected to become abundant but this evidently has not happened and there has been no further record since it was found on São Jorge in 1929.

Lasius niger (Linnaeus)

Lasius niger (Linnaeus 1758), Wheeler 1908 [Mi], 1927 [Azores], Santschi 1933 [Mi, T], Wellenius 1949 [Fa, Fl, G, Jo, Mi, P, T], Carthy 1955a [Fa, P].
Acanthomyops niger (Linnaeus 1758), Donisthorpe 1936 [Jo, P].
Lasius niger var. *grandis* Forel 1909, Santschi 1933 [Jo, Mi, T], *nec* Forel.
Acanthomyops niger var. *grandis* (Forel 1909), Donisthorpe 1936, *nec* Forel.

Faial: Costa da Nau, 4.IV.57, loc. 88; 0.5 km. WNW of Ribeirinha, 1.IV.57, loc. 73; Porto do Boca da Ribeira, 1 km. E of Ribeirinha, 1.IV.57, loc. 74; Praia do Almoxarife, 31.III.57, loc. 72; Horta, Ribeira dos Flamengos, 31.III.57, loc. 71; Baía Arcia das Fontes, 2.IV.57; Cabeço do Fogo, 4.IV.57, loc. 90; Porto do Salão, 1.IV.57, loc. 75.

Flores: Ribeira d'Além da Fazenda, 14.IV.57, loc. 108.

Pico: 4 km. WNW of Lajes, 5 IV.57, loc. 101; Volcano Pico, west side, c.350m., 8.IV.57, loc. 99.

Sta. Maria: 2 km. ENE of Almagreira. Mirador dos Picos, 440m., 19.III.57, loc. 39; Pico Alto, 19.III.57, locs. 40, 41.

São Miguel: 3 km. of Pico da Pedra, 23.III.57, loc. 64; Caldeira das Sete Cidades, 8.III.57, loc. 18; Lagoa do Fogo, 23.III.57, loc. 54; Sete Cidades, 2.III.57, loc. 7; Charco de Madeira, 1.III.57, loc. 4; Lagoa Azul, 21.III.57, loc. 50; Relva, Tanque da Rocha Quebrada, 15.III.57, loc. 31; Lagoa de Fumas, 10.III.57, loc. 22; Caldeiras, 5 km. SE of Ribeira Grande, 14.III.57, loc. 28; Valley of Ribeira Quente, 2 km. SE of Fumas, 11.III.57, loc. 23; 1 km. N of Povoação, 24.III.57, loc. 60; River NW of Água Retorta, 23. III.57, loc. 57; Lagoa do Congo, 16.III.57, loc. 34; Ribeira da Praia, 3 km. W of Vila Franca do Campo, 13.III.57, loc. 27; Vila Franca do Campo, 28.II.57, loc. 2.

Terceira: Caldeira de G. Moniz, 27.III.57, loc. 65; Lagoa do Ginjal, 27.III.57, loc. 66.

L. niger is unquestionably the most widely spread ant in these islands and it is probably also the most numerous. It has been found on every island except Corvo, where it will almost certainly yet be found and it has been present in every collection reported. A rather striking feature, previously noted by Wellenius is the high proportion of workers which have the thorax and scale noticeably paler than the head and gaster. Such individuals, which occur in samples with perfectly normal ones, strongly resemble another species, *L. emarginatus* Olivier but the antennal scapes and tibiae have many more erect hairs than in that species. Specimens in

alcohol become even paler and I have seen individuals which are almost entirely yellow.

Santschi's record of *var. grandis* probably refers only to a large aberration of *niger* although the variety has been synonymized under *L. alienus* (Foerster) (Wilson 1955), a species rather unlikely to be present in the Azores. I have seen two dealate females from Faial named by Donisthorpe as *var. grandis* both of which are quite normal *L. niger*. The great fat females of this species are no doubt a familiar sight when they drift around on their mating flight.

Summary of the distribution of ants in the Azores

	Corvo	Flores	Faial	Graciosa	Pico	S. Jorge	Terceira	S. Maria	S. Miguel
1. <i>Ponera eduardi</i> Forel		+	+		+				+
2. <i>Ponera punctatissima</i> Roger									+
3. <i>Aphaenogaster senilis</i> (Mayr)			+	+	+		+		
4. <i>Monomorium carbonarium</i> Smith	+	+	+	+	+	+	+		+
5. <i>Pheidole megacephala</i> (Fabricius)			+		+				
6. <i>Leptothorax unifasciatus</i> (Latreille)			+		+		+		+
7. <i>Tetramorium caespitum</i> (Linnaeus)			+	+	+	+			+
8. <i>Tetramorium guineense</i> (Fabricius)	+		+						+
9. <i>Tetramorium simillimum</i> Smith									+
10. <i>Iridomyrmex humilis</i> (Mayr)		+				+	+	+	+
11. <i>Paratrechina longicornis</i> (Latreille)						+			
12. <i>Lasius niger</i> Linnaeus		+	+	+	+	+	+	+	+
	2	4	8	4	7	5	5	2	9

REFERENCES

- Bernard, F.:
 1958. Résultats de la concurrence naturelle chez les Fourmis terricoles de France et de l'Afrique du Nord. *Bull. Soc. Hist. nat. Afr. N.* **89**:300-356.
- Carthy, J. D.:
 1955. Aspects of the Fauna and Flora of the Azores. VII. Notes on the Land Environment. *Ann. Mag. nat. Hist. Ser.* **12** (8): 828-830.
 1955a. Same Title, IX. Hymenoptera. *Ibid.* 834-839.

- Donisthorpe, H.:
1936. The Ants of the Azores. *Entomologist's mon. Mag.* **72**:130-133.
- Emery, C.:
1908. Beiträge zur Monographie der Formiciden des Paläarktischen Faunengebiets. *Dt. ent. Z.* **3**:305-338.
- Forel, A.:
1891. Histoire Naturelle des Hymenoptera; Pt. 2. Les Formicides. In Grandidier, Hist. Phys. Madagascar. **20**:1-280.
1899. Formicidae. *Biologia cent.-am.* Insecta. Hymenoptera. **3**:1-169.
1909. Fourmis d'Espagne. *Annls. Soc. ent. Belg.* **53**:103-106.
- Mayr, G.:
1853. Beiträge zur Kenntnis der Ameisen. *Vehr. zool.-bot. Ges. Wien.* **3**:100-114.
- Roger, J.:
1862. Beiträge zur Kenntnis der Ameisen-Fauna der Mittelmeerländer. Pt. 2. *Berl. ent. Z.* **6**:255-262.
- Santschi, F.:
1928. Fourmis des Iles Fidji. *Revue suisse Zool.* **35**:67-74.
1933. Etude sur le sous-genre *Aphaenogaster* Mayr. *Ibid.* **40**:389-408.
1933. Insectes des Açores: Fourmis. *Annls. Soc. ent. Fr.* **102**:21-22.
- Tutin, T. G.:
1953. The Vegetation of the Azores. *J. Ecol.* **41**:53-61.
- Wellenius, O. H.:
1949. Die Formiciden von den Azoren und Madeira *Commentat. biol.* **8** (19): 1-4.
- Wheeler, W. M.:
1908. Ants from the Azores. *Bull. Amer. Mus. nat. Hist.* **24**:169-170.
1927. The Ants of the Canary Islands. *Proc. Am. Acad. Arts Sci.* **62**(3):93-120.
- Wilson, E. O.:
1955. A Monographic Revision of the Ant Genus *Lasius* *Bull. Mus. comp Zool. Harv.* **113**:1-119.

SYNOPSIS

The ants collected in the Azores by the Lund University Expedition to the Azores and Madeira are catalogued and discussed in relation to those obtained by previous collectors, with notes on their occurrence elsewhere.