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Transferred ants in the Iberian Peninsula (Hymenoptera, Formicidae)

Xavier ESPADALER* and Cedric A. COLLINGWOOD**

* C.R.E.A.F. Universitat Autònoma de Barcelona. E-08193 Bellaterra.

** City Museum, Municipal Buildings, GB-Leeds LS1 3AA.

Summary. — We update the knowledge of non-native ants in the Iberian Peninsula. Eleven species have been introduced and established both in natural and human-made habitats. *Leptothorax longispinosus* is new for Europe; *Paratrechina flavipes* and *Paratrechina jaegerskioeldi* are new for the Iberian Peninsula. *Pheidole megacephala* should be deleted from the Iberian myrmecofauna.

Résumé. — Ce travail est une mise au jour des espèces de fourmis introduites dans la Péninsule Ibérique, tant dans les habitats naturels que dans les endroits anthropisés. *Leptothorax longispinosus* est une nouvelle fourmi pour l'Europe; *Paratrechina flavipes* et *Paratrechina jaegerskioeldi* sont nouvelles pour la Péninsule Ibérique. *Pheidole megacephala* devrait être éliminée de la liste de la myrmécofaune ibérique.

Key words. — Ants, Formicidae, non-native, Portugal, Spain.

Introduction

Non-native ants are a group of species with a diverse array of biological characteristics. Some well known tramp species such as the argentine ant or the fire ants, constitute enormous colonies and have a huge impact on local faunas (VANDER MEER *et al.* 1990); other species coexist with native faunas, without any apparent disturbance (WILLIAMS 1994). Usually, non-native ants establish only in urban or in human disturbed habitats.

Here we report on the present knowledge about non-native ant species in the Iberian Peninsula. Our aim is to contribute to a recent effort to build a world data base of distribution of non-native ants (<http://www.acusd.edu/~tmcglynn/exotic.htm>) by updating the Iberian non-native picture on those species, in the way of COLLINGWOOD *et al.* (1997). Specifically, we intend to increase public awareness of their presence and to signal those species to local agencies. Some species, such as the argentine ant, are well known invaders. Others are potential threats to Iberian ecosystems. Finally, a group of species do not have probably any biological significance. One species is recorded for the first time in Europe and two are new records for the Iberian Peninsula. We use the word “transferred” in the sense of MCGLYNN (1999): ants that have been collected in habitats — urban or natural — not native to the species. This implies usually that ants have established a nest that shows biological activity, not merely that ants have been detected in

routine inspections at quarantine. For this survey we have used our own collections and have also critically checked published literature.

Results

On Table 1 are indicated the twelve ant species that we consider non-native in the Iberian Peninsula. Those exotic ants represent roughly a 5% of the Iberian myrmecofauna. It should be stressed that the potential importance as a pest refers exclusively to the

Table 1

Non-native ants in the Iberian Peninsula. Functional groups are according to ANDERSEN (1997) and BESTELMEYER & WEINS (1996). Habitat : indicates if the ant has been recorded from natural habitats or under human influence. Polymorphic : whether the species shows polymorphism. Potential threat : indicates our opinion on its possible damage to native species or ecosystems. Asterisks indicate a new record for the Iberian peninsula (*) or Europe (**).

Species	Functional group	Habitat	Polymorphic	Potential threat
<i>Hypoponera punctatissima</i> (Roger)	Cryptic	Natural, human	No	Nil
<i>Lasius neglectus</i> Van Loon, Boomsma & Andrásfalvy	Cold climate specialist	Human	No	Very high
<i>Leptothorax longispinosus</i> Roger **	Cryptic	Natural	No	Nil
<i>Linepithema humile</i> (Mayr)	Dominant Dolichoderine	Natural, human	No	Very high
<i>Monomorium carbonarium</i> (F. Smith)	Generalized Myrmicine	Human ? Natural ?	No	Nil
<i>Monomorium pharaonis</i> (L.)	Generalized Myrmicine	Human	No	Nil
<i>Paratrechina flavipes</i> (F. Smith)*	Opportunist	Human	No	Low
<i>Paratrechina jaegerskioeldi</i> (Mayr)*	Opportunist	Human	No	Low
<i>Paratrechina longicornis</i> (Latreille)	Opportunist	Human	No	Low
<i>Pheidole megacephala</i> (Fabricius) (unconfirmed presence ; probably absent)	Generalized Myrmicine	Human	Yes	Low
<i>Pheidole teneriffana</i> Forel	Generalized Myrmicine	Natural, human	Yes	Low
<i>Pyramica membranifera</i> (Emery)	Cryptic	Human	No	Nil

ecological conditions in the Iberian Peninsula. A given species may be an invasive tramp in the Hawaii but qualify only as a tramp species in the Iberian Peninsula. We comment each one in turn because for some species there are taxonomical or biological considerations in order. For each species we expose first its status in the Iberian Peninsula. Its global distribution is then summarized, without the intention of being exhaustive.

***Hypoponera punctatissima* (Roger).** This cryptic ant has been recorded both in urban and in natural habitats and caves in Spain and Portugal (CEBALLOS 1956 ; ESPADALER 1983 ; COLLINGWOOD & PRINCE 1998).

This widely distributed tramp species is known from such different places as Finland (COLLINGWOOD 1979), Hawaii (REIMER 1994) and the Arabian Peninsula (COLLINGWOOD & AGOSTI 1996).

***Lasius neglectus* Van Loon, Boomsma & Andrásfalvy.** This ant has been reported recently in Spain (ESPADALER 1999). It colonizes degraded, human disturbed habitats and urban habitats. Preliminary studies indicate an extremely strong effect upon local ant faunas but those effects probably depend on external conditions (degree of irrigation and maximum summer temperatures). The altitudinal range is from 20 m a.s.l. up to 650 m. It inhabits from purely urban habitats (streets of Barcelona) to semi-natural spots with rubbish or uncontrolled construction refuse material. It thrives better at the higher altitudes.

The species seems to be native of Turkey (Seifert, per. comm.). In Budapest (Hungary), from where it was described, it shows the full complement typical of tramp invasive species (PASSERA 1994) : huge, highly polygynous unicolonial societies with reduced or absent nuptial flight. A similar profile applies for the Spanish populations from higher altitudes.

***Leptothorax longispinosus* Roger.** The sample was taken in a salt marsh next to Huelva (19-V-1994 ; C.A. Collingwood leg.). This brown species is not to confuse with any other European *Leptothorax* as it has 11-segmented antenna and very long spines, that are nearly in the same plane as the mesosoma. To the best of our knowledge this is the first time this species is reported in Europe.

This species is native to the south-east of Canada and north-east of the United States (MACKEY 2000).

***Linepithema humile* (Mayr).** As elsewhere, this ant in the Iberian Peninsula is a conspicuous nuisance in urban areas as well as in semi-natural and natural habitats (SILVA 1955 ; WAY *et al.* 1997). Its precise distribution in Spain remains to be established. It is cosmopolitan (MCGLYNN 1999).

***Monomorium carbonarium* (F. Smith).** We have a single Spanish sample for this species, taken filing down a rock outside the urban area NW of San Sebastián, Guipúzcoa (VII-1981, F. Acosta leg.). It was also found in a salt marsh in Portugal, next to Viana do

Castelo (COLLINGWOOD & PRINCE 1998). European localities for this species seem to be limited to the Atlantic coast.

The present distribution for this species is poorly known. Described from the Azores, we have recorded it also from Madeira and the French Atlantic coast (Charente Maritime ; J. L. Clément leg.). Caribbean identifications under this name (JAFFÉ & LATTKE 1994) belong probably in *M. ebeninum* Forel.

***Monomorium pharaonis* (L.)**. SANTSCHI (1925) and GOETSCH (1942) mentioned it from Madrid and Barcelona. Cádiz (MARTÍNEZ & ESPADALER 1986), Granada and Valencia (TINAUT & MARTÍNEZ 1998) are the other known localities in Spain. It has been reported from heated buildings in Portugal (COLLINGWOOD & PRINCE 1998). Overall, it seems to be very scarce in the Iberian Peninsula.

This is a widely distributed tramp species in warm regions, relegated to heated buildings in northern regions.

***Paratrechina flavipes* (F. Smith)**. A society of this species is well established in the small space round the base of a *Platanus* tree in a populated quartier in Barcelona. Isolated workers were captured in June 1999 (A. Nomdedéu leg.) and again in 19-VII-2000 (X. Espadaler leg.). Workers issued from a hole under the concrete and were foraging up to 2 m high on the tree where whitish coccids (*Planococcus* ; Homoptera, Coccoidea) were present in bark crevices. This ant species had never been recorded in the Iberian Peninsula.

It is native to temperate Asia in Japan and Korea and is beginning to be more common in other temperate regions (TRAGER 1984 ; COLLINGWOOD & AGOSTI 1996).

***Paratrechina jaegerskioeldi* (Mayr)**. Tens of workers were recovered foraging on a tree *Broussonetia papyrifera* in the small town of Nijar (Almería), in south Spain (20.08.2000, X. Espadaler leg.). It is a first record for the Iberian Peninsula.

The species is native to the Middle East (KUGLER 1988 ; COLLINGWOOD 1993 ; COLLINGWOOD & AGOSTI 1996).

***Paratrechina longicornis* (Latreille)**. This species has been recently found in Almería (TINAUT & AÑO 2000).

The species is one of the most widely distributed and successful cosmopolitan species.

***Pheidole megacephala* (Fabricius)**. Several authors mention this species in continental Spain or the Balearics. ROSENHAUER (1856) was the first to propose this name for two samples from Málaga and Cádiz ; other authors (refs. in CEBALLOS 1956) repeated those first citations. SAUNDERS (1888) identified it from Gibraltar and Tangier (Morocco) but lately (1890) refers to "race *pallidula*" under *P. megacephala* from Gibraltar. This author names it again as *P. megacephala* from Mallorca (1904a) and Catalonia (1904b). MEDINA (1891) refers to previous authors but states that he has *P. megacephala* from Portugal. We have

been able to check part of the material from Saunders at the Museo Nacional de Ciencias Naturales (Madrid) and it was plain *P. pallidula* (Nylander). During the revision of the Medina collection —also in this Museum— not a single *P. megacephala* was found but only *P. pallidula* (MARTÍNEZ & ESPADALER 1986). In the extensive collections that lead to Collingwood & Yarrow's faunistic survey (1969) this species was lacking and no author has mentioned this species from the Iberian Peninsula in the last hundred years. There is still the possibility that *P. megacephala* existed in the past in the Iberian Peninsula. In effect, FOREL (1895) identified it from Catalonia (no locality) ; as we interpret, he could not confuse it with *P. pallidula* as he mentions this last species in the same paper, nor with *P. teneriffana*, that he had described two years before. Our guess is that a majority of previous Iberian citations of *P. megacephala* refer to *P. pallidula* or to *P. teneriffana*. *P. megacephala* is a pest invasive (HOFFMANN 1998) whose presence could not have been missed by Iberian entomologists. Alternatively, taking into account the ubiquitous presence of the argentine ant on the Mediterranean coast, it could be a case of long-term negative influence —up to annihilation ?— of that ant on *P. megacephala*, such as has been described for Bermuda (HASKINS & HASKINS 1989).

***Pheidole teneriffana* Forel.** One Iberian locality was known for this species in the coast in the south-east of Spain (ACOSTA & MARTÍNEZ 1983). We add now its finding in the streets of Barcelona, where a first colony was first detected in 1999 (A. Nomdedéu leg.) ; a second colony, 300 m farther, was active on 5-XI-1999 (X. Espadaler leg.) and a third colony was detected in 19-VI-2000 (X. Espadaler leg.) nesting at the base of *Platanus x hybrida*.

The species is known from the type locality in the Canary Islands, Malta (BARONI URBANI 1968), Sicily (POLDI *et al.* 1994), California (SNELLING 1992), Israel, Turkey, Lebanon, Greece, Egypt (KUGLER 1988) and Saudi Arabia (COLLINGWOOD & AGOSTI 1996).

***Pyramica membranifera* (Emery).** Two Iberian records are known for this species, both from North-east Spain (ESPADALER 1979 ; ESPADALER & LÓPEZ-SORIA 1991). Complete societies have been found on a compost pile, on soil under stones and inside the shell of a dead snail *Rumina decollata*, under a stone.

This species is known from a large part of the tropics and temperate zones (WILSON & TAYLOR 1967 ; BOLTON 1983 ; MCGLYNN 1999) and has a wide ecological amplitude as it has been found both from dense woodland to dry, open fields.

Final comment

We do not know the ways those ants have used to enter the Iberian Peninsula. Quarantine regulations are probably ineffective to stop those tiny insects. From the eleven transferred ant species known at present in the Iberian Peninsula, only two (*Linepithema humile*, *Lasius neglectus*) are assumed to be a potential threat for the native entomofauna. The first species is widely distributed in Spain and Portugal, present in

modified and urban habitats. *Lasius neglectus* seems to be limited to the North-East. Their effect on native faunas remains to be tested. There is not a clear pattern of functional groups among those imported ants; they are found mainly in human modified biotopes.

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