

PAST AND PRESENT PREVALENCE OF *PHLEBOTOMUS PAPTASI* (DIPTERA: PSYCHODIDAE) IN ITALY

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Summary :

The authors list all data reporting the presence and density of *Phlebotomus papatasi* (Diptera: Psychodidae) in Italy. The general conclusion is that *P. papatasi* is widespread and at times abundant in urban areas. Exceptional collections were made in Apulia (in old stables) and Latium (in bedrooms). In localities near Rome (Rocca Priora and Collevocchio Sabino) and in the city of Rome as well, *P. papatasi* may be a nuisance, with many people suffering severe irritation from multiple bites. Two laboratory colonies of *P. papatasi* have been established from naturally-engorged females collected in Latium (Rocca Priora and Rome) with the aim of studying the ability of laboratory-bred females to incubate and transmit *Leishmania* and phleboviruses.

KEY WORDS : *Phlebotomus papatasi*, distribution, abundance, Italy.

Résumé : LA DISTRIBUTION DE *PHLEBOTOMUS PAPTASI* IN ITALY

Les auteurs passent en revue les données relatives à la présence et à l'abondance de *P. papatasi* en Italie qui montrent sa large répartition et parfois son abondance en zone urbaine. Des récoltes exceptionnelles sont rapportées de Puglia (vieilles étables) et du Latium (chambres à coucher). En périphérie de Rome et même à Rome, *P. papatasi* peut constituer une nuisance à l'origine d'irritations étendues consécutives à des piqûres multiples. Deux colonies sont actuellement entretenues au laboratoire à partir de femelles gorgées piégées dans le Latium dans le but d'étudier la capacité des femelles d'élevage à transmettre des leishmanies et des virus.

MOTS CLÉS : *Phlebotomus papatasi*, distribution, densité, Italie.

INTRODUCTION

Phlebotomus papatasi Scopoli, 1786 is probably the first-known sandfly in the World (Bonanni, 1691)¹. Its biology and behaviour in north-eastern Europe were described by Perfil'ev (1968) and Ashford & Bettini (1987). The distribution of *P. papatasi* extends from West Europe to India, where it transmits *Leishmania major*, the agent of zoonotic cutaneous leishmaniasis. Various authors have also associated *P. papatasi* with the transmission of phleboviruses, including the agent of « pappataci fever » (Lewis, 1982; Tesh *et al.*, 1976). There is a strong evidence that *P. papatasi* from the Mediterranean area does not transmit *L. infantum*, the causative agent of human leishmaniasis, both visceral and cutaneous (Gramiccia *et al.*, 1987; Maroli *et al.*, 1987, 1988).

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1. Lewis (1982) writes that « P. Bonanni published the first description of a (male) *Phlebotomus* but the species is unknown and it may not be *papatasi* ».

REPORTS OF *P. PAPTASI* IN ITALY

PAST (BEFORE 1948)

The species seems to be widespread in Italy and in the past has been recorded in Milan area (Scopoli, 1786), in the territory of Naples (Rondani, 1843), around Otranto (Costa, 1843, reported by Conci, 1975), in Rome (Grassi, 1907). Early records of this species are often suspect because the specific, internal characters that distinguish the females of *P. papatasi*, *P. perniciosus*, *P. perfiliewi* and *P. mascittii* were unknown (see Lewis, 1982). Grassi (1907) described the larval stages of *P. papatasi* collected in cellars of Via Panisperna in Rome; this was the first description of the pre-imaginal stages of a phlebotomine sandfly. As for the abundance of the species in urban areas, we were unable to find any evidence in the literature showing that prior to the '50 s *P. papatasi* was more abundant than it is at present. The only two records reporting high densities of *P. papatasi* in urban areas are those of Castelli (1905) and D'Alessandro *et al.* (1947). In 1905, Grassi, in an interview by the newspaper *Il Messaggero* (Castelli, 1905) called the sandflies « New invaders of Rome » since many people were forced to leave their homes in the centre of Rome because of the nuisance caused by *P. papatasi*.

tasi. D'Alessandro *et al.* (1947) also reported a « recrudescence » of *P. papatasi* density in the city of Palermo (> 3,000 specimens were caught inside houses), which was probably due to new breeding and resting sites in the ruins caused by bombing.

RECENT TIMES (1948-74)

In a survey in houses and stables of several Italian regions during 1948-60, a total of 8,205 sandflies, of which only 86 (1.04 %) were *P. papatasi*, were collected by Corradetti (1962). In 1953-54 through a more intensive survey in the area of Monte Argentario (Tuscany) Corradetti & Neri (1955) captured 1,554 sandflies, only six (0.38 %) of which were *P. papatasi*. Using sticky traps in domestic and peri-domestic resting sites throughout Italy, Biocca *et al.* (1977) collected 42,242 sandflies in the four-year-period 1971-74, but only 108 (0.25 %) of them were *P. papatasi*; the low density of this species was attributed by the authors to the insecticides employed during the anti-malaria campaigns. In Italy, *P. papatasi* is often more closely associated with man and old buildings than are the other *Phlebotomus* species and, therefore, its larval sites and adult resting places are susceptible to human interference in the form of insecticides and hygiene. The above surveys seem to show that *P. papatasi* was widespread but rarely abundant in Italy during the period 1948-1974.

PRESENT TIMES (1975-96)

Considering only the entomological surveys aimed to identify the leishmaniasis vectors in Italy, low numbers of *P. papatasi* (eight specimens), have been collected during the period 1975-96 (Aquino *et al.*, 1985; Ascione *et al.*, 1996; Gradoni, *et al.*, 1983; Maroli & Bettini, 1977; Maroli *et al.*, 1995). Maroli *et al.* (1994), in reviewing the data of sandfly collections carried out by their group in Italy over a period of 18 years, reported that *P. papatasi* was present in only six regions without any defined geographical distribution: 281 (0.3 %) *P. papatasi* were identified among 81,915 phlebotomine sandflies. Nevertheless, during the last ten years, significant numbers of *P. papatasi* have at times been collected in bedrooms by one of the authors (M.M.), following the complaints by the population suffering from multiple bites. For example, in 1995, an exceptional collection was made in a bedroom in Via Panisperna (in the centre of Rome), in the very same street where Grassi in 1907 collected the immature stages of *P. papatasi*.

The above findings led us to analyse published and unpublished data on *P. papatasi* in Italy during the last 20 years. In Table I are given the numbers of *P. papatasi* collected by different methods of catch (CDC light traps, hand collections and sticky traps) during entomological studies carried out in Italian

Locality (Province)	Date of catch and Collecting methods	N.	References
Abruzzi			
Vasto (CH)	1996, August, hand collection, in bedroom	5	Unpublished data
Apulia			
Parabita (LE)	1983, August, 4 CDC traps 1 night in stable	106	Maroli <i>et al.</i> , 1983
Parabita (LE)	1986, August, 12 CDC traps, 1 night in stable	56	Maroli <i>et al.</i> , 1988
Calabria			
Mandatoriccio (CZ)	1985, July-August, 17 sticky traps, 3 times	1	Aquino <i>et al.</i> , 1986
Pietrapaola (CZ)	1985, July-August, 19 sticky traps, 4 times	1	Unpublished data
Trebisacce (CZ)	1986 August, 18 CDC traps 1 night	1	Maroli <i>et al.</i> , 1988
Campania			
Praiano (SA)	1983, September, hand collection in bedroom	1	Maroli, Guandalini 1985
Ercolano (NA)	1994, June-October, sticky traps	5	Ascione <i>et al.</i> , 1996
Latium			
Collecchio (RI)	1981, August, hand collection in bedroom	7	Unpublished data
Collecchio (RI)	1986, August, 2 CDC traps, 1 night	2	Unpublished data
Collecchio (RI)	1987, July, hand collection in bedroom,	72	Unpublished data
Rocca Priora (RM)	1987, July, hand collection in bedroom,	65	Unpublished data
Rome	1995, July, CDC trap, in bedroom, Via Panisperna*	74	Unpublished data
Rome	1996, July, hand collection in bedroom, Via Sabelli	10	Unpublished data
Tuscany			
Cipressino (GR)	1975, 1 CDC trap, weekly	6	Maroli & Bettini 1977
Baccinello (GR)	1979, August, 2 Disney traps, twice	1	Gradoni <i>et al.</i> , 1983
Veneto			
Verona	1994, July-August, sticky traps	8	Maroli <i>et al.</i> , 1995
Total		421	

* The same street where Grassi in 1907 collected the immature stages of *P. papatasi*.

Table I. — Number of *Phlebotomus papatasi* collected in some regions of central and south Italy since 1975.

leishmaniasis foci in the period 1975-96 and the data of occasional collections performed in bedrooms in urban areas.

As shown in Table I in only some occasions *P. papatasi* seems to be abundant. Unusual collections were made in an old stable (built with calcareous tufaceous rock) in the commune of Parabita in Apulia where a high number of *P. papatasi* was collected by using CDC light traps: 106 in 1983 (Maroli *et al.*, 1983) and 56 in 1986 (Maroli *et al.*, 1988). In sites near Rome, significant numbers of *P. papatasi* were hand collected in bedrooms; in Collevocchio (Rieti) 72 flies were caught in 1987 whereas only seven in 1981 and two in 1986; in Rocca Priora a rather high number of flies (65) were hand collected in a bedroom also in 1987. It thus appears that in some localities the number of *P. papatasi* varies greatly according to the year of collection. Also, in the centre of Rome, during the early sandfly season (June-July), it is possible to find many specimens in bedrooms. In 1995, 74 *P. papatasi* (two thirds of which females) were collected with CDC traps in a bedroom in the above mentioned Via Panisperna and in 1996, ten *P. papatasi* females were caught in the bedroom of a flat located at the fourth floor of a building in Via dei Sabelli.

CONCLUSION

In conclusion, following the observations reported in the present note, it appears that this highly endophilic and anthropophilic species seems to be abundant, especially in the domestic resting sites of urban areas. Thus, it would be of some interest to ascertain its role in the transmission of human pathogens. At present, two laboratory colonies of *P. papatasi* have been established from naturally engorged females collected in bedrooms in Rocca Priora (Rome) and in the city of Rome (Via dei Sabelli) with the aim of studying the ability of females to sustain and transmit *Leishmania* and phleboviruses.

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Reçu le 22 janvier 1997
Accepté le 29 avril 1997