

OCCURRENCE OF INTERGRADES BETWEEN *ODONTOPSYLLUS QUIROSI QUIROSI* AND *ODONTOPSYLLUS QUIROSI EPISCOPALIS* (INSECTA, SIPHONAPTERA) ON NORTH-EAST OF SPAIN

GÓMEZ M.S.*, BLASCO J.** & BEAUCOURNU J.C.***

Summary:

The detection of 4 males and 1 female of *Odontopsyllus quirosi* which constitute intergrades between *quirosi* and *episcopalis* palaeartic subspecies are pointed out by the authors. The specimens were isolated from rabbit burrow, in an area known as "Retuerta de Pina" located in the Monegros (province of Zaragoza) on North-East of Spain. The prospected site could constitute one of the border limit points of sympatric distribution area of both palaeartic subspecies.

KEY WORDS: *Odontopsyllus quirosi quirosi*, *Odontopsyllus quirosi episcopalis*, intergradation, North-East of Spain.

Résumé: PRÉSENCE D'EXEMPLAIRES HYBRIDES D'*ODONTOPSYLLUS QUIROSI QUIROSI* ET D'*ODONTOPSYLLUS QUIROSI EPISCOPALIS* (INSECTA, SIPHONAPTERA) DANS LE NORD-EST DE L'ESPAGNE

Les auteurs signalent la capture de 4 mâles et 1 femelle de *Odontopsyllus quirosi* qui constitue une population dérivée du croisement entre *quirosi* et *episcopalis*, les deux sous-espèces paléarctiques du genre. Le matériel étudié a été isolé de terriers de lapin, dans « Retuerta de Pina », une région des Monegros (province de Saragosse, Nord-est de l'Espagne). L'endroit prospecté peut constituer un des points limites de l'aire de distribution sympatrique de deux sous-espèces paléarctiques.

MOTS CLÉS: *Odontopsyllus quirosi quirosi*, *Odontopsyllus quirosi episcopalis*, exemplaires hybrides, Nord-est de l'Espagne.

INTRODUCTION

Odontopsyllus quirosi, the only palaeartic representative of the genus (Hopkins & Rothschild, 1971), shows in Spain and France two morphologically well defined subspecies. *O. quirosi quirosi* (Gil Collado, 1934), the nominal subspecies, has been recorded in the Center and South of Spain (Beaucournu & Launay, 1990) and more recently in the North-East of Spain (Ebro's middle valley)¹ (Osacar-Jimenez *et al.*, 1993) and Continental Portugal (Ribeiro and Capela, 1989); *O. q. episcopalis* Beaucournu & Gilot, 1975, the other subspecies, has been detected by the previous authors, who described it, in the French "Midi".

There is a long geographic distance (more than 500 km) between the Spanish localities where the nominal subspecies has been found and the French area where *O. q. episcopalis* has been isolated; therefore both palaeartic subspecies seem to be geographically as well as morphologically well defined.

In the area known as "Retuerta de Pina" located in the

Monegros, next to Pina de Ebro (province of Zaragoza), one of us carried out a routine prospection on rabbit burrows to look for ectoparasites and other arthropodes living there. This area is an open *Juniperus thurifera* L. forest with an accompanying vegetation composed mainly of a dwarf scrub belonging to the *Ononidetum tridentatae* community and gramineous communities of *Stipa* spp., *Lygeo sparti-Stipetum lagascae* and *Agropyro cristati-Lygeetum sparti* (Braun-Blanquet & Bolos, 1957), 300 to 400 m above sea level with gypsum white soil. There is an arid continental climate (Ochoa, 1982) with annual temperatures ranging from -10° C to 40 °C, with a low average annual pluviometry (200-400 mm) and very dry NW and SE predominating wind. The closest inhabited area is 10 km away; nevertheless there is a breeding sheep area active all through the year 3 km far away.

The prospectations made on January 28th 1994, February 20th 1994 and April 10th 1994, provided the finding of five specimens (four males and one female) of *Odontopsyllus quirosi* which constitute the intergradation of both palaeartic subspecies.

* Laboratorio de Parasitología, Facultad de Farmacia, Universidad de Barcelona, Avda Diagonal s/n, 08028 Barcelona, España.

** C. Hispanidad, 8. 50750 Pina de Ebro, Zaragoza, España.

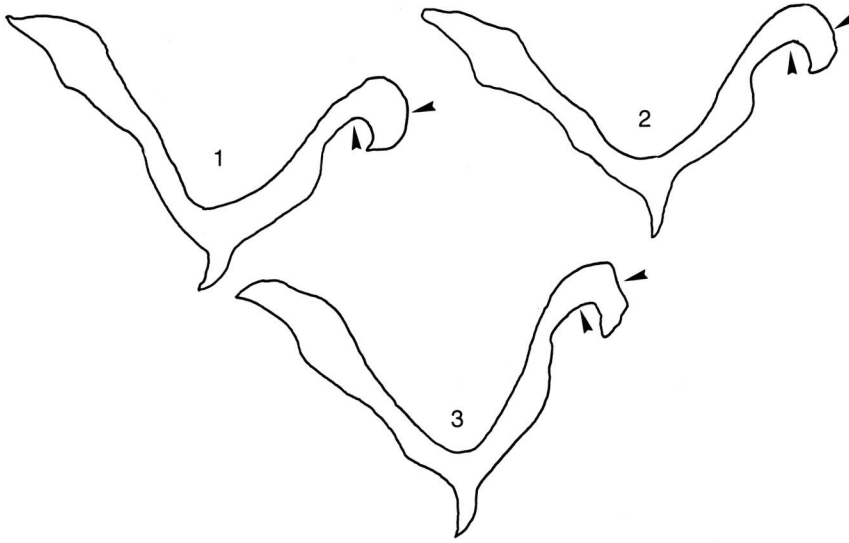
*** Parasitologie et Zoologie appliquée, Faculté de Médecine, Avenue du Prof. Léon Bernard, 35043 Rennes Cedex, France.

Correspondence: M.S. Gómez. Tel.: (3) 4024500. Fax: (3) 4024504.

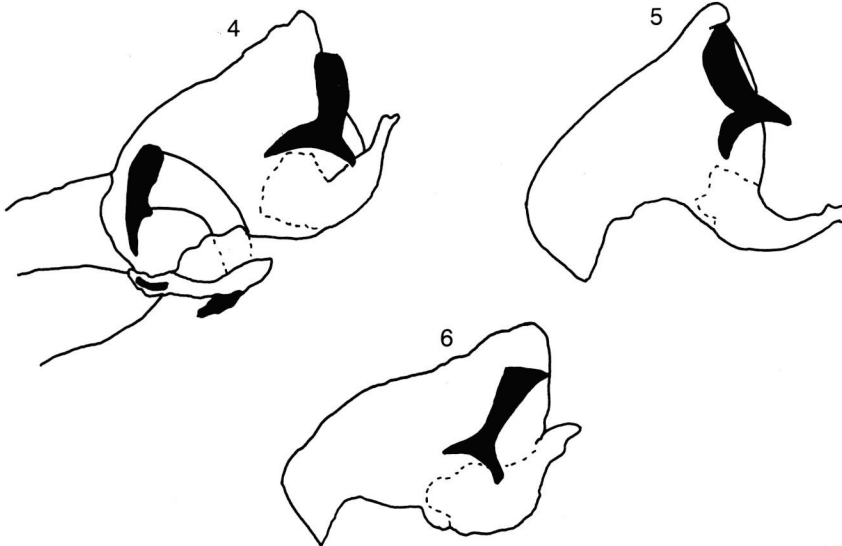
1. Only one specimen whose sex was not specified.

RESULTS

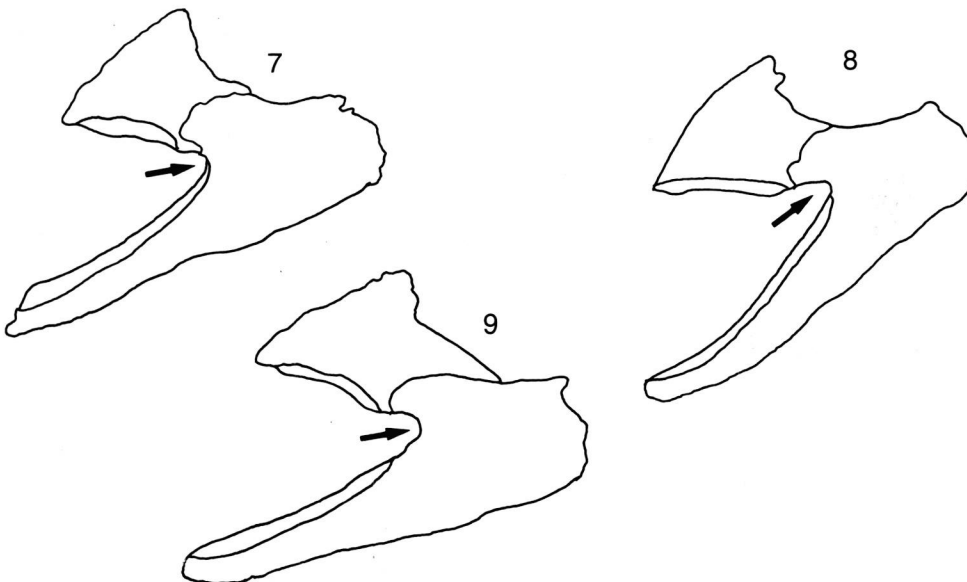
The specimens studied display the following intergrade features:



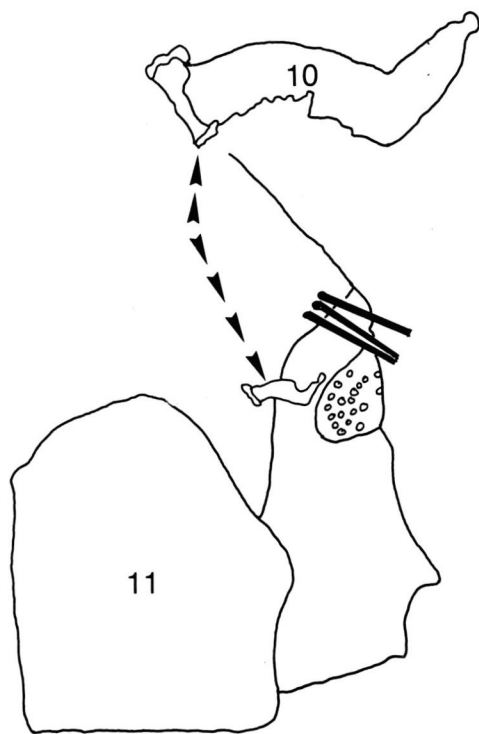
Figs. 1-3. — Variations of the apical portion of the distal arm of sternum IX of male. 1: "*quirosi* type". 2 and 3: "*episcopalis* type".



Figs. 4-6. — Apical part of the phallosome and crochet of male. 4: "*quirosi* type". 5 and 6: "*episcopalis* type".



Figs. 7-9. — Angle between manubrium and apodeme of tergum IX of male (see text).



Figs. 10-11. — 10: Spiracular fossa of tergum VIII of female. 11: Dorsal angle of sternum VII of female.

MALE

Apical portion of the distal arm of sternum IX, apical part of the phallosome and crochet “*quirosi*” type, (Figs 1 and 4 belong to the same flea specimen).

Apical portion of the distal arm of sternum IX, apical part of the phallosome and crochet “*episcopalis*” type, (Figs 2, 3, 5 and 6).

The angle between the manubrium and apodeme of tergum IX (Figs 7, 8 and 9) shows intermediate “*quirosi-episcopalis*” type shape.

FEMALE

The only isolated female displays dorsal angle of sternum VII and spiracular fossa of tergum VIII closer to the “*episcopalis*” type (Figs 10 and 11).

DISCUSSION

The detection of these intergrades provided us with an exceptional faunistic and geographical datum since *O. q. episcopalis* has only

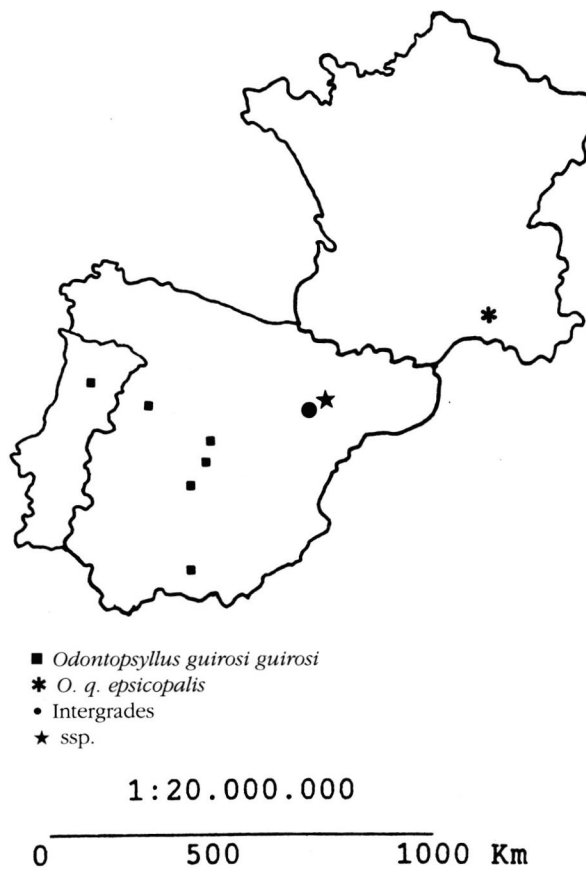


Fig. 12. — Map showing geographical distribution areas of *Odontopsyllus quirosi quirosi* and *O. quirosi episcopalis* in France and Iberic peninsula.

been found in the description site although the French territory, between this area and the Pyrenees, has been particularly well studied, especially regarding the rabbit fleas (Beaucournu & Launay, 1977; Launay, 1980).

Without any doubt, *O. q. episcopalis* has a meridional geographic distribution wider than that previously known. Thus, the distribution area of this subspecies would be from the French territory through the Spanish North-East until Zaragoza province (Fig. 12).

The cohabitation of two congeneric species in the same region is in general rare (Beaucournu, 1971; Beaucournu & Alcover, 1984). Nevertheless, in a more or less wide geographic area it would be normal to find intergrades when two nonisolated subspecies get in contact (Beaucournu *et al.*, 1982).

The site of the Monegros could constitute, according to facts previously exposed, one of the border limit points for *Odontopsyllus quirosi quirosi* and *O. q. episcopalis* geographic repartition; although we do not think that their sympatric distribution area is restricted to this biotope only.

REFERENCES

- BEAUCOURNU J.C. Répartition française des *Ctenophthalmus* s. str. (Siphonaptera, Hystrichopsyllidae). Apports à leur biogéographie et à leur éthologie. *Annales de Parasitologie Humaine et Comparée*, 1971, 46, 719-735.
- BEAUCOURNU J.C. & ALCOVER J.A. Siphonaptera from small terrestrial mammals in the Pityusic Islands. In: *Biogeography and Ecology of the Pityusic Islands*, 1984, 377-392.
- BEAUCOURNU J.C. & GILOT B. Description d'*Odontopsyllus quirosi episcopalis* n. subsp. parasite du Lapin en Basse Provence (Siphonaptera, Leptopsyllidae). *Bulletin de la Société Entomologique de France*, 1974 (1975), 79, 250-253.
- BEAUCOURNU J.C. & LAUNAY H. Présence en France d'une *Xenopsylla* selvatique *X. cunicularis* Smit, 1957 (Siphonaptera, Pulicidae) parasite du lapin de garenne. *Bulletin de la Société de Pathologie exotique*, 1977, 70, 299-301.
- BEAUCOURNU J.C. & LAUNAY H. Les puces de France et du bassin méditerranéen occidental. In: *Faune de France*, 76. *Fédération Française des Sociétés de Sciences Naturelles*, 1990. 548 p.
- BEAUCOURNU J.C., LAUNAY H. & VALLE M. Le genre *Hystrichopsylla* Taschenberg, 1880 dans l'Ouest du bassin méditerranéen (Siphonaptera, Hystrichopsyllidae). III. Nouveaux éléments pour la région alpine et les Apennins. *Revue Suisse de Zoologie*, 1982, 673-689.
- BRAUN-BLANQUET J. & BOLOS O. Les groupements végétaux du bassin moyen de l'Ebre et leur dynamisme. *Anales Estacion Experimental Aula Dei*, 1957, 5, 1-266.
- HOPKINS G.H.E. & ROTHSCHILD M. *An illustrated catalogue of the Rothschild collection of fleas (Siphonaptera) in the British Museum (Natural History)*. Vol. V: Leptopsyllidae and Ancistropsyllidae. British Museum, London, 1971, 530 p., 31 pl.
- LAUNAY H. Approche d'une prophylaxie de la myxomatose, écologie des puces du lapin de garenne. *Bulletin mensuel de l'office National de Chasse*, 1980, 213-241.
- OCHOA M.J. Relaciones entre el medio y comunidades vegetales del sabinar continental árido en el Valle del Ebro. *INIA*, 1982, Madrid, 52 p.
- OSACAR-JIMENEZ J.J., LUCIENTES-CURDI J., CALVETE-MARGOLLES C. & VILLAFUERTE-FERNANDEZ R. Notes on the ecology of rabbit fleas (Siphonaptera) parasiting wild rabbits (*Oryctolagus cuniculus*) in Ebro's middle valley (Northeast of Spain). *International Conference on Insect Pests in the Urban Environment*, 1993, Cambridge, June-July, 481.
- RIBEIRO H. & CAPELA R. Sifonapteros de Portugal (Insecta, Siphonaptera): IV. Um novo achado: *Odontopsyllus quirosi quirosi* (Gil Collado, 1934). *Boletim da Sociedade Portuguesa de Entomologia*, 1989, 110, 97-100.

Reçu le 14 juin 1995

Accepté le 20 septembre 1995