

# The family Heteroceridae MacLeay, 1825 (Coleoptera, Dryopoidea) in the Iberian peninsula and the Balearic Islands

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*The family Heteroceridae MacLeay, 1825 (Coleoptera, Dryopoidea) in the Iberian peninsula and the Balearic Islands.*— The information available on the family Heteroceridae in the Iberian peninsula and the Balearic Islands is revised, based on published sources and on the study of unpublished material from the authors and museum collections. The male genitalia of the 17 studied species, eight *Augyles* and nine *Heterocerus*, is illustrated, and a brief description is included. *Augyles hispidulus* Kiesenwetter is recorded for the first time in the Iberian peninsula, in Spain, and *Heterocerus fossor* Kiesenwetter for the first time in Portugal. A key to the European genus and the Iberian and Balearic species of Heteroceridae is provided. Brief ecological notes and distribution maps of all species are also included. While the known number of species in Spain, eight *Augyles* and eight *Heterocerus*, is similar to other nearby geographical areas, the fauna of Portugal, with only seven species, and that of the Balearic Islands, with three, is considered to be still poorly known. The possible unrecorded presence of central European and north African species in Spain is discussed.

Key words: Coleoptera, Heteroceridae, Distribution, Iberian peninsula, Balearic Islands.

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## Introduction

According to CROWSON (1960) the family Heteroceridae is included in Dryopoidea, together with Dryopidae, Elmidae, Limnichidae, and Lutrochidae (the latter present only in the American continent). This is the systematic arrangement with the widest acceptance at the moment (see e.g. MASCAGNI, in press), although LAWRENCE & NEWTON (1995) have recently proposed a new ordination, including all families of Dryopoidea, together with Psephenoidea and family Byrrhidae, in the same superfamily Byrrhoidea. According to these authors, the family is divided in two subfamilies: Elythomerinae Pacheco, 1964, exclusively from Australia, and Heterocerinae MacLeay, 1825, with an almost cosmopolitan distribution (LAWRENCE & NEWTON, 1995). In this paper the classification used by MASCAGNI (in press), in which Heteroceridae are separated in five tribes (Micilini, Augyliini, Heterocerini, Tropicini and Elythomerini), is followed.

Three tribes of Heterocerinae are found in Europe, with three genera: *Augyles* (Augyliini), *Heterocerus* (Heterocerini) and *Micilus* (Micilini) (the latter apparently not present in the Iberian peninsula). All three (and in general the whole family) have a very similar morphology, with a small to medium size (approximately from 1.3 to 7.6 mm), and an elongated, parallel-sided body, covered with dense pubescence. The antennae have between nine and 11 segments, with the last six or seven forming an elongated club (except in *Micilus*, in which only the last segment is enlarged). The mandibles are prominent, and the anterior legs are modified for digging: they are robust, with numerous spines, and with an enlarged tibia. All species have a series of stridulatory striae at both sides of the first abdominal segment, with a different arrangement depending on the genus.

The species of Heteroceridae are semi-aquatic, and are usually found in sandy or muddy shores or river banks, in which they dig colonial galleries. More than one species may coexist in the same habitat. They can also be found in inter-tidal marshes, forming colonies in the sand. They do not occur habitually in mountain areas, in very stony shores, or in areas frequented by cattle (probably due to the mechanical perturbation of the soil).

For more details on the biology and the morphology of the species of the family see CLARKE (1973) or MASCAGNI (in press).

Information on the family Heteroceridae in the Iberian peninsula is scarce, with only isolated references in general works, most previous to the catalogue by FUENTE (1929). The only recent records are in more general papers about the aquatic Coleoptera of Aragón (RIBERA et al., 1996), Catalonia (RIBERA & AGUILERA, 1996), or papers including records from the Iberian peninsula and the Balearic Islands (MASCAGNI, 1985a, now partially updated, and MASCAGNI, 1991). A revision of the taxonomy of the European species of Heteroceridae is about to be published (MASCAGNI, in press) but it does not include detailed information on the distribution of the Iberian species.

This paper gathers the information available on this group of Coleoptera in the Iberian peninsula and the Balearic Islands, including all published references together with unpublished information from museums and private collections. The aedeagus of all species is illustrated, and a brief description is provided, together with a classification key (for a more complete description of the morphology of all European species see MASCAGNI, in press).

## Material and methods

Because of their occurrence on the interface between the aquatic and the terrestrial environments, heterocerids are frequently ignored by specialists of both faunas. They are only occasionally captured by usual methods for collecting aquatic Coleoptera, and when this happens they are frequently overlooked due to the extraordinary velocity with which they may fly. There are two basic methods to collect heterocerids: to search visually on the banks and the shores of the water bodies, or to "wash" these banks and shores, collecting the washed material on the water surface with a net. Water poured over the shore floods the galleries in which heterocerids live, forcing the beetles to emerge. They are then swept to the water surface. Due to the dense hydrophobic pubescence covering their entire bodies the heterocerids float on the surface of the water, from where they can take off directly.

The distributional areas of the species were defined according to the typology proposed by VIGNA TAGLIANTI et al. (1992). The records of "Pirineos orientales" (eastern Pyrenees) and "Pirineos occidentales" (western Pyrenees) by FUENTE (1929) have been included, although most probably these refer to the north side, in France. Descriptions of species, figures of aedeagus, and keys follow MASCAGNI (in press).

Acronyms used in the text: CARB. Coll. P. Aguilera & I. Ribera, Barcelona; CFA. Coll. G. N. Foster, Ayr; CHB. Coll. C. Hernando, Barcelona; CMM. Coll. A. Millán, Murcia; CMS. Coll. A. Mascagni, Scandicci; CSCR. Coll. Skalicky, Ceska Republic; MCG. Museo Civico di Storia Naturale di Genova; MCM. Museo Civico di Storia Naturale di Milano; MCR. Museo Civico di Zoologia, Roma; MCT. Museo Civico di Storia Naturale di Trieste; MCVN. Museo Civico di Storia Naturale di Venezia; MCVR. Museo Civico di Storia Naturale di Verona; MNB. Museum für Naturkunde, Universität Berlin; MNCN. Museo Nacional de Ciencias Naturales, Madrid; MZB. Museo de Zoologia, Barcelona; MZF. Museo Zoologico della Università di Firenze; NMW. Naturhistorisches Museum Wien.

## Results

### Tribu Augyliini

*Augyles* Schiödte, 1866  
Subgenus *Littorimus* Gozis, 1885

*Augyles (Littorimus) curtus* (Rosenhauer)  
*Heterocerus curtus* Rosenhauer, *Thiere Andal.* 1856: 116  
*gravidus* Kiesenwetter, 1850  
*curtulus* Fairmaire, 1868  
*curtus curtinigrupes* Kuwert, 1890  
*andalusiacus* Breit, 1916

Aedeagus as in figure 1. Total length 3.0-3.5 mm. Head black, whitish pubescence with longer setae; mandibles dentate, rather short; clypeus with fine copious setae, antennae with 11 segments and 7-segmented club. Pronotum black or dark brown sometimes with light brown border and middle line; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; coarsely and densely punctured. Elytra brown or reddish brown with ochre

markings; copious pubescence interposed with longer setae; coarsely and densely punctured; striations faint. Legs ochre with whitish setae; tibiae with numerous spines. Abdomen black or dark brown with ochre border; stridulatory ridge marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence interposed with longer setae. Similar species: *A. hispidulus* (Kiesenwetter) and *A. pruinus* (Kiesenwetter).

### Distribution

#### Western Mediterranean.

European distribution: western Mediterranean (WINKLER, 1924); Spain, southern France, Morocco (ZAITZEV, 1924); France (BARTHE, 1926); Italy (MASCAGNI & CALAMANDREI, 1992).

Iberian records (fig. 18): Spain (BARTHE, 1926); Sevilla: Castillejo, Guadajoz (KIESENWETTER, 1865); Andalucía (KUWERT, 1890); Cádiz: salinas (ROSENHAUER, 1856); Badajoz, Ciudad Real, Madrid, Sevilla (FUENTE, 1929). Portugal. Estremadura: Azambuja (PAULINO DE OLIVEIRA, 1882, as *curtulus*; FUENTE, 1929; MASCAGNI, 1992).

### Studied material (fig. 18)

Spain. Cádiz: 3 exs. 4 V 1994, Algeciras, leg. W. Liedman (MCM), 1 ex. same (CMS). Castellón: 1 ex., Fuente la Reina (MNCN). Madrid: 3 exs. (MNCN); 1 ex., coll. Pérez Arcas (MNCN). Málaga: 1 ex. 5 V 1991, Sierra de Ronda (Puerto del Viento 1.100-1.300 m.), leg. F. Hieke (MNB). Oviedo: 1 ex. 10 IV 1929 (MNCN); 2 exs., Villaviciosa (MNCN). Sevilla: 1 ex., leg. Snizek (CSK); 1 ex. IV 1917 (MNCN); 2 exs. 11 V 1991, Lebrija, leg. Snizek (CSK), 1 ex. same (CMS).

Portugal. Algarve: 1 ex. V 1910, Monchique, leg. Schatzmayr (CMS). Alto Alentejo: 3 exs. V 1910, Évora (MCG), 1 ex. idem (CMS), 1 ex. idem (MCM); Estremadura: 1 ex., Queluz, leg. Schatzmayr (MCT).

According to BARTHE (1926) and MASCAGNI (1992) this species is found on sandy substratum.

### *Augyles (Littorimus) flavidus* (Rossi)

*Heterocerus flavidus* Rossi, *Mant. Ins. Etr.* II, 1794: 79  
*minutus* Kiesenwetter, 1835  
*minimus* Kiesenwetter, 1843  
*campestris* Motschulsky, 1853  
*flavescens* Schaufuss, 1862

*pallescens* Schaufuss, 1862  
*albipennis* Kuwert, 1890

Aedeagus as in figure 2. Total length 2.0–3.0 mm. Head brown, whitish pubescence with some longer setae especially on the sides; mandibles dentate with an acute apex; clypeus with fine copious setae; antennae with 10 segments and 6-segmented club. Pronotum brown with light brown border and occasionally a light-brown middle line; narrowing anteriorly and bordered posteriorly; whitish pubescence with some longer setae especially on the sides; finely and densely punctured. Elytra light brown with ochre markings; copious pubescence interposed with longer setae; finely and densely punctured. Legs ochre with whitish setae; tibiae with numerous spines. Abdomen brown with ochre border of varying width; stridulatory ridge marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence with some longer setae. Some males are hypermandibulated. Similar species: *A. sericans* (Kiesenwetter).

#### Distribution

Central Asia-Europe-Mediterranean region.

European distribution: southern Europe (WINKLER, 1924; ZAITZEV, 1924; CHARPENTIER, 1965; MASCAGNI, 1991); Transcaspia, Transcaucasia (ZAITZEV, 1924); Corsica, Sardinia, Sicily (MASCAGNI, 1985a); France, ex-Yugoslavia, Albania, Greece (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Germany, Switzerland, Austria, Hungary, Bulgaria, Turkey (MASCAGNI, in press).

Iberian records (fig. 19): Spain. Spain (KUWERT, 1890; BARTHE, 1926); Catalunya (KIESENWETTER, 1851, as *minutus*); Castellón: River Mijares (MASCAGNI, 1991); Sevilla (KIESENWETTER, 1865; FUENTE, 1929).

#### Studied material (fig. 19)

Spain. Southern Spain, 1 ex., leg. Schaufuss (MNCN); Castellón: 2 exs. 26 VII 1954, River Mijares, leg. A. Giordani Soika (MCVN), 1 ex. same (CMS); Córdoba: 2 exs., coll. Pérez Arcas (MNCN); 5 exs., Posadas, coll. Bolívar (MNCN); Toledo: 8 exs., leg. Martínez (MNCN); 1 ex., coll. Pérez Arcas (MNCN).

According to BARTHE (1926) it is found in the sandy shores of running waters, al-

though MASCAGNI (1992) also recorded it from muddy substratum.

*Augyles (Littorimus) hispidulus* (Kiesenwetter)  
*Heterocerus hispidulus* Kiesenwetter, Germ.  
 Zeitschr. IV, 1843: 211, t. 3, f. 7

Aedeagus as in figure 6. Total length 2.9–3.6 mm. Head black, whitish pubescence interposed with longer setae; mandibles dentate, rather short, with rounded apex; clypeus with fine copious setae; antennae with 10 segments and 6-segmented club. Pronotum black, sometimes with reddish border and middle line; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; coarsely and densely punctured. Elytra black or dark brown with ochre markings of varying size; copious pubescence interposed with longer setae; with micropunctuation, and a coarser irregular punctuation; striations evident. Legs: femora and tibiae black, tarsi ochre; tibiae with numerous spines. Abdomen black or dark brown with ochre border; stridulatory ridge marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence interposed with longer setae. Similar species: *A. pruinosis* and *A. curtus*.

#### Distribution

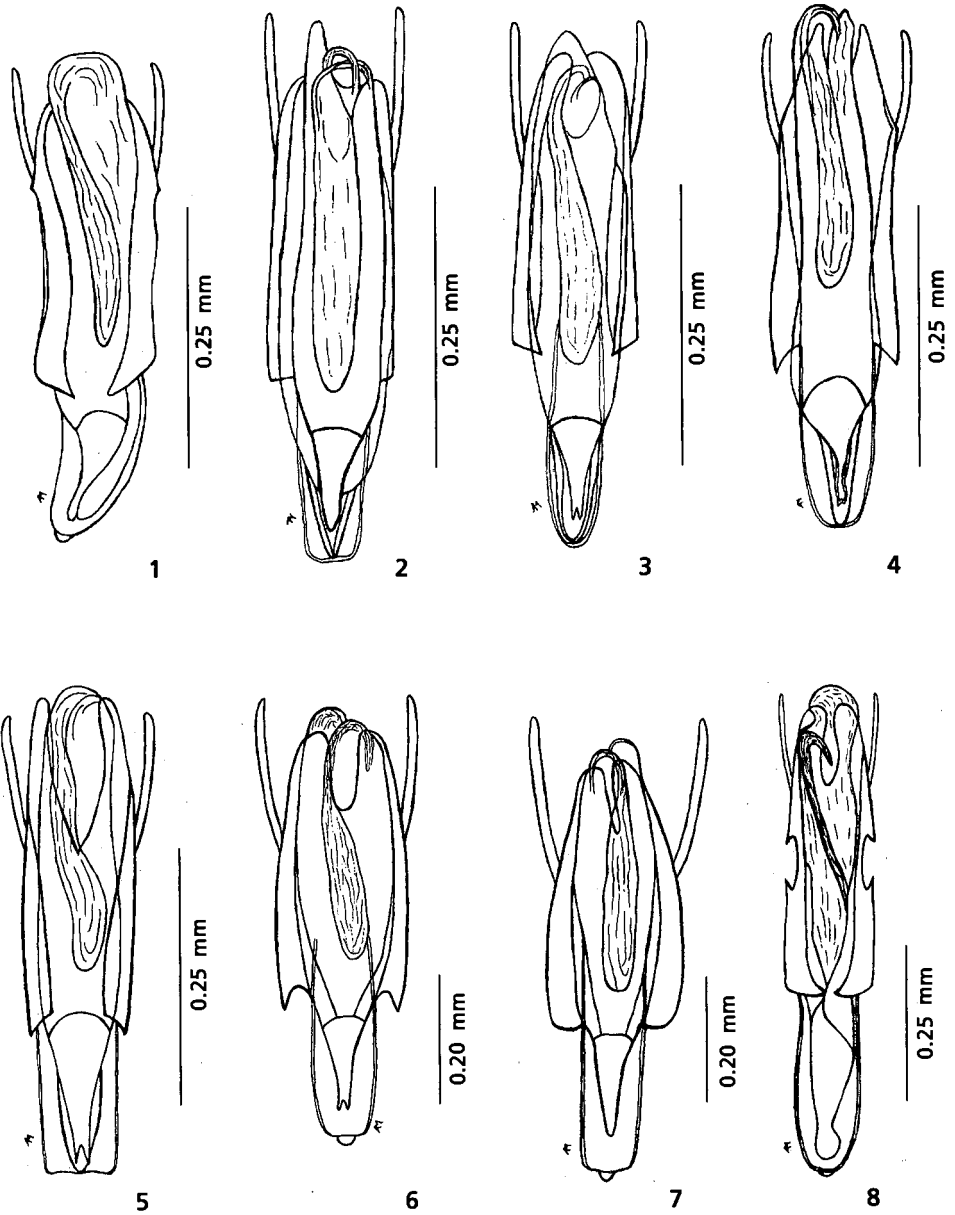
European distribution: central and north Europe (ZAITZEV, 1924); France (BARTHE, 1926); Italy (PORTA, 1929; MASCAGNI & CALAMANDREI, 1992); United Kingdom (CLARKE, 1973); Europe (STRIEN, 1980); Germany (MASCAGNI, 1991).

#### Studied material (fig. 19)

Spain. Madrid: 1 ex., leg. Arias (MNCN); 1 ex., El Pardo, leg. Bolívar (MNCN); 1 ex., Aranjuez, coll. Pérez Arcas (MNCN).

The species was not recorded from the Iberian peninsula. According to BARTHE (1926), it is found in sandy substratum, both in coastal areas and inland rivers. MASCAGNI (1992, 1993) associated this species to the sandy or muddy shores of running waters.

*Augyles (Littorimus) maritimus* (Guérin-Méneville)  
*Heterocerus maritimus* Guérin-Méneville, Icon.  
 Règne anim. 1844: 69



Figs. 1-8. Male genitalia of the studied species of genus *Augyles*: 1. *A. curtus*; 2. *A. flavidus*; 3. *A. sericans*; 4. *A. marmota*; 5. *A. maritimus*; 6. *A. hispidulus*; 7. *A. pruinosis*; 8. *A. senescens*.

*Genitalia masculina de las especies estudiadas del género Augyles*:. 1. *A. curtus*; 2. *A. flavidus*; 3. *A. sericans*; 4. *A. marmota*; 5. *A. maritimus*; 6. *A. hispidulus*; 7. *A. pruinosis*; 8. *A. senescens*.

*nanus* Gené, 1836

*britannicus* Kuwert, 1890

*burchanensis* Schneider, 1896

*basalis* Mamitza, 1929

*melitensis* Reitter, *nomen nudum* (Midsuf & Mascagni, 1997)

Aedeagus as in figure 5. Total length 2.2-3.4 mm. Head black, whitish pubescence interposed with longer setae especially on the sides; mandibles dentate with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum dark brown with reddish brown border and middle line; narrower anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; densely and finely punctured. Elytra black or dark brown with reddish markings of varying size; copious pubescence interposed with longer setae; micropunctured and coarsely and irregularly punctured. Legs reddish brown; tibiae with numerous spines. Abdomen black or dark brown sometimes with an ochre border; stridulatory ridge marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence interposed with longer setae. Similar species: *A. marmota* (Kiesenwetter).

#### Distribution

Europe - Mediterranean.

European distribution: western and central Europe (ZAITZEV, 1924); France (BARTHE, 1926); United Kingdom (CLARKE, 1973); Sardinia, Sicily (MASCAGNI, 1985a); Mediterranean area (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Holland, Germany, Greece, Malta (MASCAGNI, in press).

Iberian records (fig. 20): Spain. Spain (KUWERT, 1890); Andalucía (BARTHE, 1926); Valencia: Albufera (MORODER, 1924); Huesca: Barbastro, Fraga, Pallaruelo de Monegros (RIBERA et al., 1996).

#### Studied material (fig. 20)

Spain. Albacete: 1 ex. 16 III 1997, Paterna de Madera, Arroyo de la Fuenfría, leg. I. Ribera & P. Aguilera (CARB). Almería: 8 exs. 13 III 1997, 3 exs. 15 III 1997, Molinos de Río Aguas, River Aguas, leg. I. Ribera (CARB); 10 exs. 6 IV 1996, Turre, River Aguas, leg. P. Aguilera (CARB). Cádiz: 1 ex. 7 V 1991, Alcalá de los Gazules (9 Km. SO), River Alberite-

Ufer, leg. F. Hieke (MNB). Huesca: 2 exs. 9 IV 1995, Barbastro, Cregenzán, River Ariño, leg. I. Ribera, G. Foster & P. Aguilera (CARB), 1 ex. same (CMS); 7 exs. 25 VI 1994, Fraga, Barranco de Valcuerna, leg. I. Ribera & P. Aguilera (CARB); 1 ex. 5 III 1994, 15 exs. 25 VI 1994, Pallaruelo de Monegros, Barranco de Lafarda, leg. P. Aguilera & I. Ribera (CARB), 1 ex. same (CMS). Murcia: 10 exs. 19 III 1997, Lorca, Rambla de Torrealvilla, leg. I. Ribera & C. Hernando (CARB). Tarragona: 1 ex. IX 1933, Ampolla, leg. Museu (MZB); 6 exs. 24 VII 1994, Corbera d'Ebre, CN-420, leg. I. Ribera & P. Aguilera (CARB), 1 ex. same (CMS); 2 exs. 24 VI 1995, Delta del Ebro, La Marquesa, leg. P. Aguilera & I. Ribera (CARB), 1 ex. same (CMS); 1 ex. 27 V 1994, Delta del Ebro, La Tancada, leg. P. Aguilera (CARB); 4 exs., Vallis, leg. Español (MZB). Valencia: 1 ex. 6 IV 1995, Quesa, leg. D. Lott & G. Foster (CARB), 1 ex. same (CFA). Zaragoza: 3 exs. 29 X 1996, Villafranca de Ebro, leg. P. Aguilera (CARB).

*Augyles maritimus* is the most abundant and frequent species of the genus in the Iberian peninsula. It is mostly found in non-vegetated shores of streams, or in the residual pools left when temporary streams dry out. We have also found it in retro-dunal ponds and irrigation channels in the Ebro Delta, in coexistence with *Heterocerus flexuosus* Stephens. It seems to tolerate a wide range of salinity, being frequent in freshwater (e.g. in the head-waters of the River Aguas, or in a residual pool in Corbera de Ebre), as well as in relatively mineralised waters (e.g. in Rambla de Torrealvilla, Barranco de Lafarda, or the retro-dunal pool in La Tancada, in the Ebro Delta). It has not been found in the hypersaline Ramblas in southeastern Spain. Despite its presence in inland localities in France and the UK, it is considered a coastal species, associated to edges of rivers with tidal influence, retro-dunal ponds, or salt water (BARTHE, 1926; CLARKE, 1973). The occurrence in the inland regions of the Iberian peninsula (habitually in semi-arid areas with mineralised waters) of species that are considered to be exclusively coastal is a common pattern present in many groups, as noted for aquatic Coleoptera by RIBERA & AGUILERA (1995).

*Augyles (Littorimus) marmota* (Kiesenwetter)  
*Heterocerus marmota* Kiesenwetter, Stett. Ent.  
 Zeitg. XI, 1850: 224  
*unicolor* Dufour, 1851  
*funebri* Schauffuss, 1862  
*maritimus* Kuwert, 1890

Aedeagus as in figure 4. Total length 2.2-3.0 mm. Head black or dark brown, whitish pubescence with longer setae especially on the sides; mandibles dentate, rather short, with fairly acute apex; clypeus with fine copious setae; antennae with 10 segments and 6-segmented club. Pronotum dark brown with reddish brown border and middle line; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; densely and finely punctured. Elytra dark brown with reddish markings of varying size; copious pubescence interposed with longer setae; with micropuncturation, and a coarser and irregular puncturation. Legs: femurs and tibiae reddish brown, tarsi ochre, tibiae with numerous spines. Abdomen dark brown, sometimes with an ochre border; stridulatory ridge marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence interposed with longer setae. Similar species: *A. maritimus*.

#### Distribution

Europe-Mediterranean.

European distribution: southern Europe (WINKLER, 1924; ZAITZEV, 1924); France (BARTHE, 1926); Sardinia, Sicily (MASCAGNI, 1985a); southern Europe, Greece (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Romania, Turkey (MASCAGNI, in press).

Iberian records (fig. 21): Girona (KIESENWETTER, 1850, 1851); western Pyrenees (FUENTE, 1929). Spain. Spain (BARTHE, 1926); central Spain (as *funebri*, KUWERT, 1890; FUENTE, 1929); Málaga: Cártama (ROSENHAUER, 1856); Jaén, Sevilla (HEYDEN, 1870; FUENTE, 1929); Valencia: Albufera (MORODER, 1924), La Dehesa (TORRES SALA, 1962); Alicante: El Llano (TORRES SALA, 1962).

#### Studied material (fig. 21)

Spain. Andalucía: 1 ex., coll. Pérez Arcas (MNCN). Cuenca: 1 ex. VII 1906, leg. Arias (MNCN). Madrid: 3 exs., coll. Pérez Arcas (MNCN); 1 ex., Aranjuez (MNCN); 2 exs., El Pardo, leg. Bolívar (MNCN).

According to BARTHE (1926) and MASCAGNI (1985b, 1992, 1993) it is associated to sandy or muddy shores.

*Augyles (Littorimus) pruinosus* (Kiesenwetter)  
*Heterocerus pruinosus* Kiesenwetter, Linnaea Ent.  
 V, 1851: 286

Aedeagus as in figure 7. Total length 3.1-4.0 mm. Head black, whitish pubescence interposed with longer setae; mandibles dentate, rather short, with a fairly acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum dark brown with reddish or reddish brown border and middle line; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; densely and irregularly punctured. Elytra black with ochre markings of varying size; copious pubescence interposed with longer setae; coarsely and irregularly punctured; striations evident. Legs: femurs and tibiae brown or reddish brown, tarsi ochre; tibiae with numerous spines. Abdomen black or dark brown with ochre border; stridulatory ridge very marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence interposed with longer setae. Similar species: *A. hispidulus* and *A. curtus*.

#### Distribution

Europe.

European distribution: central Europe (ZAITZEV, 1924); France (BARTHE, 1926); Italy (PORTA, 1929; MASCAGNI & CALAMANDREI, 1992); central and southern Europe, western Siberia (STRIEN, 1980); Turkey (MASCAGNI, 1991).

Iberian records (fig. 21): eastern Pyrenees (FUENTE, 1929). Spain. Girona (FUENTE, 1929); Huesca: Fiscal (RIBERA et al., 1996).

#### Studied material (fig. 21)

Eastern Pyrenees, 1 ex., leg. J. Duval, coll. P. Arcas (MNCN). Spain. Girona: 1 ex. 21 V 1932, Pirineus, Sant Pau de Seguries, leg. Villarrubia (MZB). Granada: 1 ex. (MNCN). Huesca: 2 exs. 13 V 1995, Fiscal, River Ara, leg. P. Aguilera & I. Ribera (CARB).

The locality in Huesca in the central pre-Pyrenees was a permanent river with gravel

and boulders. The specimens were found by washing the edges, among gravel and vegetation. In this station it coexisted with *Heterocerus holosericeus* Rosenhauer. It seems to be a species preferentially found in mountains in the Iberian peninsula, so far only known from the Pyrenees and probably Sierra Nevada (the studied example in the MNCN had no details about the locality in which it was collected), although in Italy it has been collected in a wider range of habitats (MASCAGNI, 1992, 1993).

*Augyles (Littorimus) senescens* (Kiesenwetter)  
*Heterocerus senescens* Kiesenwetter, Berl. Entom.  
 Zeitschr. IX, 1865: 368, note  
*punctatus* Ch. Brisout de Barneville, 1866

Aedeagus as in figure 8. Total length 3.5–5.0 mm. Head black, whitish pubescence interposed with very long setae; mandibles dentate, rather short, with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black, narrowing anteriorly and bordered posteriorly; whitish pubescence with copious longer setae; coarsely and densely punctured. Elytra black with ochre markings of varying size; copious pubescence interposed with longer setae; micropunctured and coarsely and irregularly punctured; striations faint. Legs: femurs and tibiae black and ochre, tarsi ochre; tibiae with numerous spines. Abdomen black with ochre border; stridulatory ridge marked; post-metacoxal ridge complete; copious whitish pubescence interposed with longer copious setae.

#### Distribution

Western Europe.

European distribution: Spain, Portugal (ZAITZEV, 1924); France (BARTHE, 1926); Sweden (GUILLEFORS, 1982); Norway (MASCAGNI, in press).

Iberian records (fig. 22): Spain. Sevilla: Castillejo (KIESENWETTER, 1865); Spain (KUWERT, 1890; ZAITZEV, 1924; BARTHE, 1926); Santander: Reinosa (BRISOUT DE BARNEVILLE, 1866 as *H. punctatus*); Ciudad Real: Almuradiel, Sevilla: Castillejo (HEYDEN, 1870); Badajoz, Ciudad Real, Sevilla, Teruel (FUENTE, 1929); Huesca: Candanos, Pallaruelo de Monegros (RIBERA et al., 1996). Portugal. Douro, Estremadura: Azambuja, Espinho (PAULINO DE OLIVEIRA, 1882, as *punctatus*; Zaitzev, 1924; FUENTE, 1929).

Studied material (fig. 22)

Spain. Almería: 1 ex. 5 IV 1996, River Almanzora, leg. P. Aguilera (CARB). Badajoz: 4 exs., leg. Uhagón (MNCN). Barcelona: 1 ex. 11 VIII 1971, Balenyà, leg. Villarrubia (MZB). Guadalajara: 9 exs. 25 IX 94, El Pobo de Dueñas, leg. P. Aguilera & I. Ribera (CARB), 1 ex. same (CMS). Huesca: 2 exs. 25 VI 1994, Pallaruelo de Monegros, Barranco de Lafarda, leg. P. Aguilera & I. Ribera (CARB), 1 ex. same (CMS); 8 exs. 23 X 1994, Candanos, leg. P. Aguilera (CARB), 1 ex. same (CMS). Jaén: 1 ex. 14 IV 1985, 1 km N Venta de la Nava, Puerto Zegrí, leg. G. N. Foster (CFA). Lleida: 1 ex. 23 VI 1990, Sanaüja, leg. I. Ribera (CARB). Madrid: 4 exs. (MNCN); 1 ex., Escorial (MNCN); 2 exs., Cercedilla (MNCN). Málaga: 2 exs. 16 IV 1985, 1 km S Río Grande and Tolox, leg. G. N. Foster (CFA). León: 1 ex., Ponferrada, leg. Paganetti (CSCR). Sevilla: 1 ex. IV 1917 (MNCN); 6 exs., Lebrija, leg. Snizek (CSCR), 1 ex. same (CMS); 4 exs. 11 V 1991, leg. Snizek (CSCR), 2 exs. same (CMS).

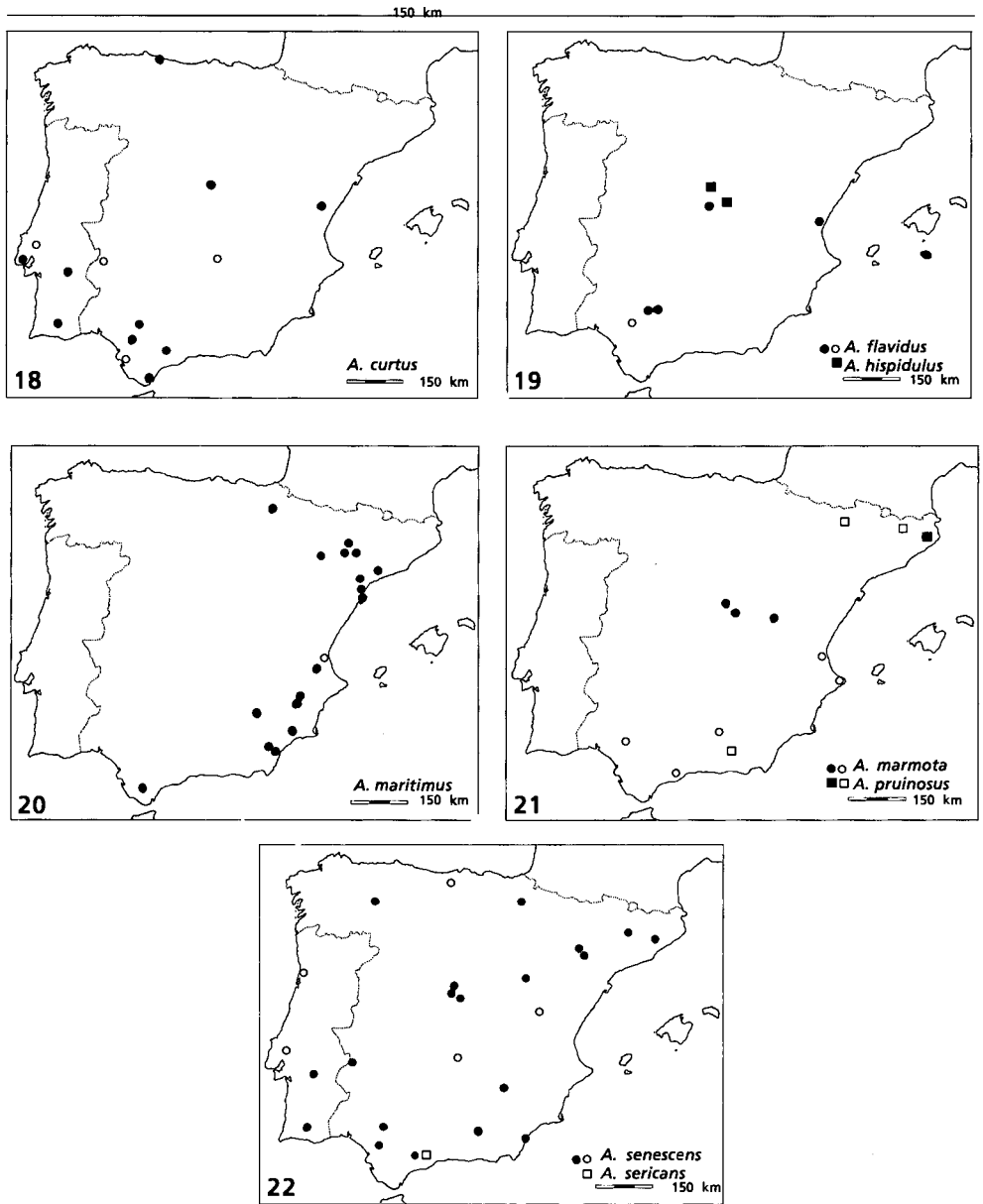
Portugal. Algarve: 1 ex. V 1910, Monchique, leg. Schatzmayr (CMS). Alto Alentejo: 1 ex., Évora (MCM).

It is habitually found in current waters, usually not mineralised (although it can occasionally occur in more salty waters, as in Barranco de Lafarda in Huesca), of varied flow and substratum. It has also been found in very recent ponds of rain water, in which it was the only macroinvertebrate (e.g. El Pobo de Dueñas, in Guadalajara), or coexisted with *Helophorus* spp (Hydrophilidae) (e.g. Candanos, Huesca). It seems thus to be a species with good colonising abilities.

*Augyles (Littorimus) sericans* (Kiesenwetter)  
*Heterocerus sericans* Kiesenwetter, Germ. Zeitschr. IV,  
 1843: 212, t. 3, f. 8  
*pusillus* Stephens, 1835

Aedeagus as in figure 3. Total length 2.8–3.6 mm. Head dark brown, whitish pubescence with long setae especially on the sides; mandibles dentate with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum dark brown with dark orange border and frequently a middle line; narrowing anteriorly





Figs. 18-22. Distribution maps of the species of genus *Augyles* studied: ■ ● Studied material; □ ○ Bibliographic data. (Records of wide geographical areas are not included. Provincial records of which the detailed locality is unknown are located above the capital of the province.)

*Mapas de distribución de las especies del género Augyles estudiadas: ■ ● Material estudiado; □ ○ Datos bibliográficos. (No se incluyen citas de ámbito geográfico general. Las citas provinciales de las que no se conoce la localidad precisa se sitúan sobre la capital de la provincia.)*

and bordered posteriorly; whitish pubescence with some long setae especially on the sides; finely and densely punctured. Legs dark orange with whitish setae; tibiae with numerous spines. Abdomen dark brown, frequently with an ochre border; stridulatory ridge marked, striae evident; post-metacoxal ridge complete; copious whitish pubescence with some longer setae. Similar species: *A. flavidus*.

#### Distribution Europe.

European distribution: central and eastern Europe, Transcaucasia (ZAITZEV, 1924); France (BARTHE, 1926); Yugoslavia, Euro-turanian region (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Great Britain, Sweden, Holland (MASCAGNI, in press).

Iberian records (fig. 22): Spain. Spain (FUENTE, 1929); Málaga: Cártama (ROSENHAUER, 1856, as *minutus*).

The Iberian examples of this species were not studied. According to BARTHE (1926) and MASCAGNI (1992) it is associated to sandy substratum.

#### Tribu Heterocerini

##### *Heterocerus* Fabricius, 1792

##### *Heterocerus aragonicus* Kiesenwetter

*Heterocerus aragonicus* Kiesenwetter, Stett. Ent.

Zeitg. XI, 1850: 223

*pictus* Mulsant & Rey, 1873

*coxaepilus* Kuwert, 1890

*mendax* Kuwert, 1890

Aedeagus as in figure 15. Total length 3.5-5.0 mm. Head black, whitish pubescence with longer setae especially on the sides; mandibles dentate with a fairly acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black with ochre border; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; finely and densely punctured. Elytra black or dark brown with ochre markings of varying size; copious pubescence interposed with longer setae; micropunctures mixed with fine dense punctures. Legs: femurs and tibiae

black and ochre, tarsi ochre; tibiae with numerous spines. Abdomen black with ochre border of varying width; stridulatory ridge marked, with very evident striae; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae. Similar species: *H. fenestratus* Thunberg, *H. fuscus* Kiesenwetter.

#### Distribution

Western Mediterranean.

European distribution: western Mediterranean (WINKLER, 1924; ZAITZEV, 1924; MASCAGNI, 1991); France (BARTHE, 1926); Sardinia, Sicily (MASCAGNI, 1985a); Italy (MASCAGNI & CALAMANDREI, 1992); Germany (MASCAGNI, in press).

Iberian records (fig. 23): Girona (KIESENWETTER, 1850, 1851); eastern Pyrenees (FUENTE, 1929). Spain. Spain (KUWERT, 1890, as *mendax*, as *coxaepilus*); Aragón (KUWERT, 1890; FUENTE, 1929); Badajoz, Barcelona, Ciudad Real (FUENTE, 1929); Madrid: Escorial (KUWERT, 1890 as *mendax*; FUENTE, 1929); Huesca: Barbastro (RIBERA et al., 1996); Girona: Capmany (RIBERA & AGUILERA, 1996). Portugal. Portugal: "Amasia" (KUWERT, 1890, as var. *pictus*; FUENTE, 1929), Alto Alentejo: Évora (MASCAGNI, 1992).

#### Studied material (fig. 23)

Spain. Cataluña: 1 ex., coll. Bolívar (MNCN). Galicia: 8 exs. (MNCN). Ávila: 2 exs. V 1934, Candeleda, River Tietar, leg. J. Baum (CSCR), 1 ex. same (CMS); 3 exs., Gredos, Valle de Iruelas, coll. Bolívar (MNCN); 1 ex., Navalperal (MNCN). Cádiz: 8 exs. 6 VIII 1995, Jimena de la Frontera, River Hozgarganta, leg. P. Aguilera (CARB), 1 ex. same (CMS). Castellón: 2 exs. 6 IX 1897, 14 exs. 17 IX 1897, 8 exs. VI 1898, 4 exs. 3 IV 1899, Fuente la Reina (MNCN). Córdoba: 4 exs., Posadas, coll. Bolívar (MNCN). A Coruña: 2 exs., Malpica (MNCN). Girona: 8 exs. 19 IX 1994, Bàscara, River Fluvià, leg. P. Aguilera & I. Ribera (CARB), 3 exs. same (CMS); 81 exs. 9 VII 1994, 67 exs. 10 IX 1994, Capmany, Riera de Torrelles, leg. I. Ribera & P. Aguilera (CARB), 9 exs. same (CMS); 11 exs. 23 V 1991, La Janguera [La Jonquera?], leg. Snizek (CSCR), 1 ex. same (CMS). Huesca: 2 exs. 9 IV 1995, Cregenzán, River Ariño, leg. I. Ribera, P. Aguilera, G. Foster & D. Lott (CARB), 1 ex. same (CMS); 1 ex., Valle de Ordesa, leg. Bolívar (MNCN). Huelva: 8 exs. 9 V 1991, Santa Olalla del Cala (5 Km. N., 450 m.), leg.

F. Hieke (MNB), 1 ex. same (CMS). Lleida: 1 ex. 26 V 1990, Oliana, River Segre, leg. I. Ribera (CARB). Madrid: 1 ex. (MCG); 2 exs. (MCR); 2 exs. (MZF); 1 ex. VI 1995 (MNCN); 1 ex., leg. G. Carrasco (MNCN); 1 ex. (MNCN); 6 exs., Aranjuez (MNCN); 1 ex., Escorial, leg. Cazorro (MNCN); 1 ex., Escorial (MNCN); 10 exs., El Pardo, 610 m., coll. Sauffer (MNCN); 12 exs., El Pardo, coll. Sauffer (MNCN); 3 exs., El Pardo, leg. Arias (MNCN); 1 ex., El Pardo (MNCN); 1 ex., Navacerrada, leg. Uragón (MNCN); 5 exs. V 1925, River Alberche, leg. M. Escalera (MNCN); 3 exs. 20 VI 1926, River Alberche (MNCN); 7 exs., Sierra de Guadarrama, leg. J. Sauffer (MNCN). Oviedo: 2 exs. VI 1927, Villaviciosa, leg. M. Escalera (MNCN), 4 exs. 10 VI 1927, Villaviciosa (MNCN), 4 exs. 20 VI 1897, Villaviciosa (MNCN). Tarragona: 3 exs. 30 VII 1931, Sant Viçens de Calders (MZB). Valencia: 1 ex. 6 IV 1995, Millares, River Júcar, leg. D. Lott & G. Foster (CARB).

Portugal. "Lusitania": 1 ex., coll. G. Hauser, leg. Hummler (MNB); Algarve: 2 exs. IV 1996, Ribeira da Boia, Pto. de Lagos, leg. C. Hernando (CHB); Alto Alentejo: 5 exs., Évora, leg. A. Schatzmayr (MCM), 2 exs. same (MCT), 1 ex. same (CMS); Estremadura: 2 exs. IV 1996, Portalegre, River Caia, leg. C. Hernando (CHB).

It is the most frequent and abundant species of the Iberian *Heterocerus*. In the Iberian peninsula it has been mostly found in poorly mineralised running waters with varied substratum and vegetation, or in residual pools in temporary rivers or streams (in agreement with BARTHE, 1926 and MASCAGNI, 1985b, 1992, although the latter also found the species in salt water). It can sometimes form very populated colonies, e.g. in sandy shores or residual pools without vegetation in a temporary stream in Girona (Riera de Torrellas), where it was found with abundant larvae. The life cycle and the immature stages of the species were studied in detail by PIERRE (1946).

#### *Heterocerus fenestratus* (Thunberg)

*Dermestes fenestratus* Thunberg, Nov. Acta Ups. IV, 1784: 3

*laevigatus* Panzer, 1794

*marshami* Stephens, 1828

*pusillus* Waltl, 1839

*tristis* Mannerheim, 1853

*multimaculatus* Motschulsky, 1854

*fausti* Reitter, 1879

var. *croaticus* Kuwert, 1890

*siculus* Kuwert, 1890

var. *corsicus* Kuwert, 1890

*fenestratus confinis* Rey, 1890

*fenestratus lanatus* Rey, 1890

*fenestratus obscurus* Rey, 1890

*tonkinensis* Grouvelle, 1896

*latus* Grouvelle, 1915

*asiaticus* Nomura, 1958

*completus* Hatch, 1965

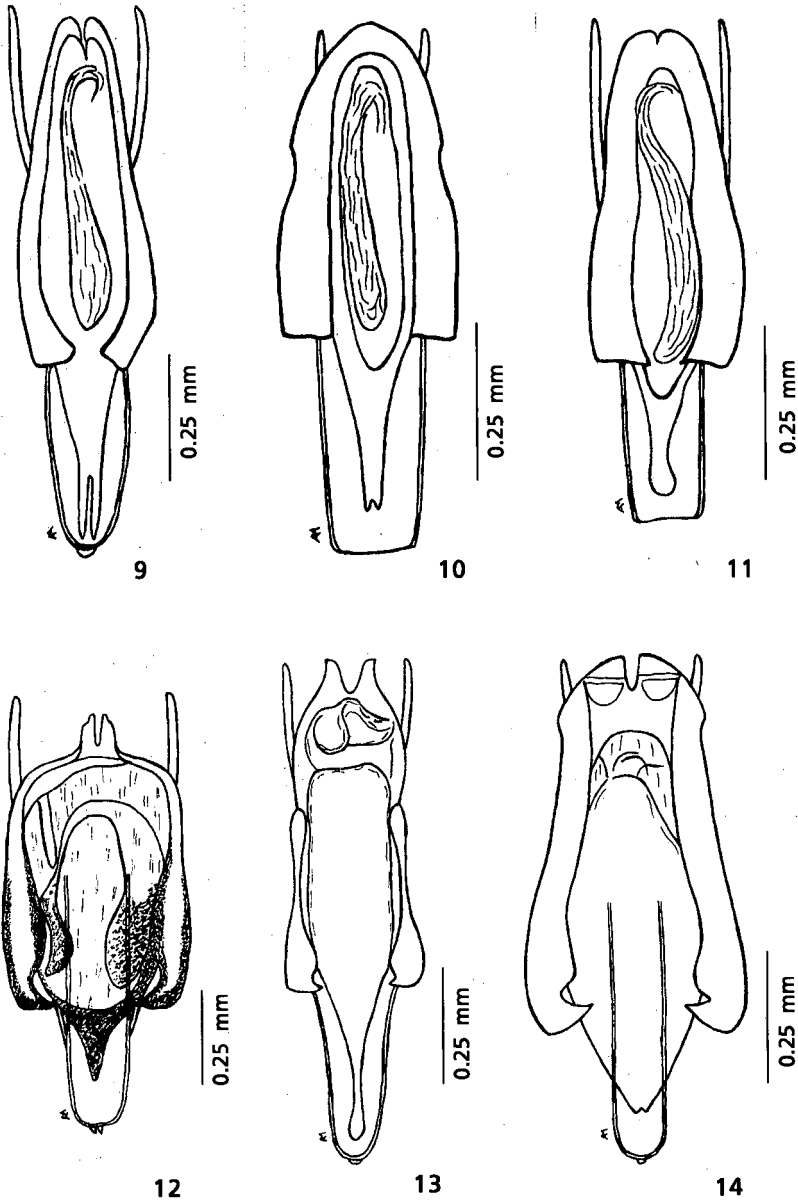
Aedeagus as in figure 6. Total length 2.5-5.2 mm. Head black, whitish pubescence with longer setae especially on the sides; mandibles dentate, sometimes robust with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black or dark brown with ochre border of varying width; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; finely and densely punctured. Elytra black or dark brown with ochre markings varying greatly in size; copious pubescence interposed with longer setae; micropunctures mixed with fine dense punctures; striations faint. Legs: femurs and tibiae black and ochre, tarsi ochre; tibiae with numerous spines. Abdomen black or dark brown with ochre border of varying width; stridulatory ridge marked, striae evident; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae. Some of the males are hypermandibulated. Similar species: *H. fuscus* and *H. aragonicus*.

#### Distribution

Holarctic.

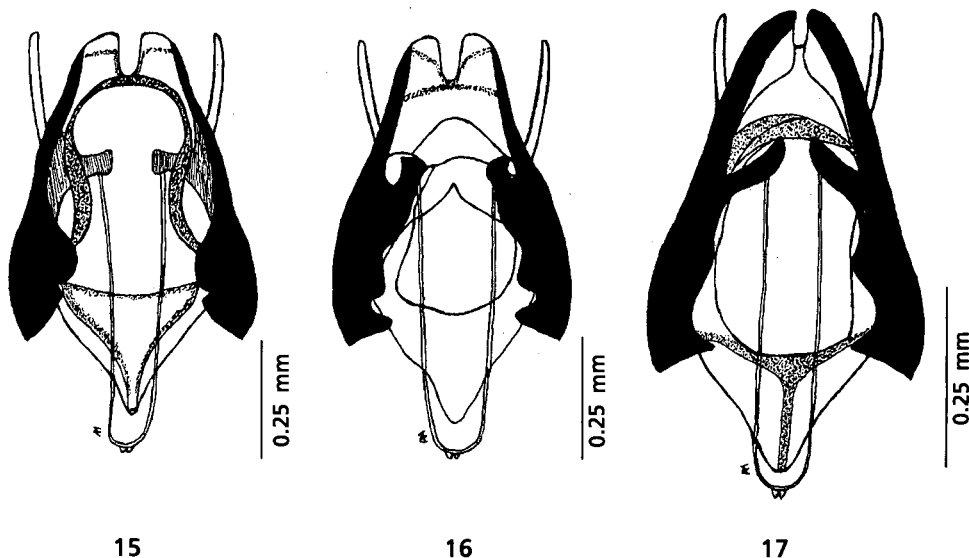
European distribution: the whole Palaearctic region (WINKLER, 1924; ZAITZEV, 1924); France (BARTHE, 1926); England (CLARKE, 1973); Corsica, Sardinia, Sicily (MASCAGNI, 1985a); Germany, ex-Yugoslavia, Hungary, Greece, Turkey (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992).

Iberian records (fig. 24): Spain. Girona: Rosas (CUNÍ, 1885); Logroño (FUENTE, 1929); Teruel: Calaceite (RIBERA et al., 1996). Portugal. Alto Alentejo: Évora (MASCAGNI, 1992).



Figs. 9-17. Male genitalia of the studied species of genus *Heterocerus*: 9. *H. parallelus*; 10. *H. flexuosus*; 11. *H. fossor*; 12. *H. obsoletus*; 13. *H. holosericeus*; 14. *H. marginatus*; 15. *H. aragonicus*; 16. *H. fenestratus*; 17. *H. fuscus*.

Genitalia masculina de las especies estudiadas del género *Heterocerus*: 9. *H. parallelus*; 10. *H. flexuosus*; 11. *H. fossor*; 12. *H. obsoletus*; 13. *H. holosericeus*; 14. *H. marginatus*; 15. *H. aragonicus*; 16. *H. fenestratus*; 17. *H. fuscus*.



## Studied material (fig. 24)

Spain. Almería: 7 exs. 6 IV 1996, Turre, River Aguas, leg. P. Aguilera (CARB). Ávila: 5 exs., Navalperal (MNCN). Burgos: 15 exs. 15 VIII 1994, Villasandino, River Odra, leg. P. Aguilera (CARB), 1 ex. same (CMS). Cáceres: 1 ex. 19 IV 1985, Abadía Largo, leg. G. N. Foster (CFA), Girona: 6 exs. 15 VI 1996, Aiguamolls de l'Empordà, leg. P. Aguilera & C. Hernando (CARB), 6 exs. same (CHB); 1 ex. 28 VIII 1988, Aiguamolls de Sils, leg. De Gregorio (MZB); 4 exs. V 1934, Ciurana, leg. Museu (MZB). Granada: 2 exs. 15 V 1989, Cubillas, leg. U. Gollner (MNB), 1 ex. same (CMS); 3 exs. 23 V 1991; Girona: La Janguera [La Jonquera?], leg. Snizek (CSCR), 1 ex. same (CMS). Madrid: 4 exs., Escorial (MNCN); 3 exs., Sierra de Guadarrama, leg. Sauffer (MNCN). Oviedo: 1 ex. 20 VI 1897, Villaviciosa (MNCN). Tarragona: 30 exs. 1 V 1995, Caseres, River Algars, leg. P. Aguilera (CARB), 1 ex. same (CMS). Teruel: 2 exs. 24 VII 1994, Calaceite, River Matarraña, leg. P. Aguilera & I. Ribera (CARB), 1 ex. same (CMS).

Portugal. Algarve: 1 ex. IV 1996, Ribeira da Boia, Puerto de Lagos, leg. C. Hernando (CHB). Alto Alentejo: 1 ex., Évora, leg. A. Schatzmayr (MCM), 4 exs. same (MCT).

It is preferentially found in running waters, although it may occur in pools or in ponds with abundant vegetation (e.g. in Aiguamolls de l'Empordà, or Aiguamolls de Sils, in Girona). In the Iberian peninsula it has not been found in highly mineralized waters, although according to BARTHE (1926), CLARKE (1973) and MASCAGNI (1991) they constitute a typical habitat of this species.

*Heterocerus flexuosus* Stephens

*Heterocerus flexuosus* Stephens, Ill. Brit. II, 1828: 101

*marginatus* Gyllenhal, 1808

*femoralis* Krynický, 1832

*hamifer* Gené, 1836

*arenarius* Kiesenwetter, 1851

*maculosus* Fairmaire, 1868

*fausti* Reitter, 1879

*dentifasciatus* Kuwert, 1890

*damryi* Kuwert, 1890

*heydeni* Kuwert, 1890

*apfelbecki* Kuwert, 1890

*corsicus* Rey, 1890

*senegalensis* Fairmaire, 1894

Aedeagus as in figure 10. Total length 3.5-5.6 mm. Head black, whitish pubescence with

longer setae especially on the sides; mandibles dentate, with acute apex; clypeus with fine copious setae; male without clypeal horns; antennae with 11 segments and 7-segmented club. Pronotum black with brown or ochre border, narrowing anteriorly and feebly bordered posteriorly; whitish pubescence with longer setae especially on the sides; finely and densely punctured. Elytra black with ochre markings; copious pubescence interposed with longer setae; micropunctures mixed with fine dense punctures. Legs ochre with whitish setae; tibiae with numerous spines and sometimes with fine black external border. Abdomen black with ochre border of varying width; stridulatory ridge marked, with slight striae; post-metacoxal ridge incomplete; copious whitish setae with longer setae. Some of the males are hypermandibulated. Similar species: *H. fossor* Kiesenwetter and *H. parallelus* Gebler.

#### Distribution

Palearctic.

European distribution: central Europe (ZAITZEV, 1924); France (BARTHE, 1926); United Kingdom, Ireland (CLARKE, 1973); Corsica, Sardinia, Sicily, ex-Yugoslavia; Cyclad Islands (Greece) (MASCAGNI, 1985a); Greece, Ural mountains, Caucasus (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Norway, Sweden, Finland, Denmark, Holland, Germany, Czech Republic, Switzerland, Austria, Hungary, Romania, Bulgaria, Albania, Cyprus, Turkey (MASCAGNI, in press).

Iberian records (fig. 25): eastern Pyrenees (FUENTE, 1929). Spain. Spain (KUWERT, 1890, as *femoralis*); southern Spain (KUWERT, 1890, as *dentifasciatus*; FUENTE, 1929); Alicante: Calpe (MORODER, 1924; Torres Sala, 1962); Valencia: Godelleta (MORODER, 1924); Murcia: Mar Menor, Málaga: Cártama (MASCAGNI, 1991).

Balearic Islands: Ibiza. Salinas (ESPAÑOL, 1943). Mallorca (MASCAGNI, 1985a; MASCAGNI, 1991).

#### Studied material (fig. 25)

Spain. Alicante: 1 ex. 23 VIII 1994, Santa Pola, Salinas, leg. P. Aguilera & I. Ribera (CARB), 1 ex. same (CMS); 1 ex. 29 II 1992, El Hondo, leg. J.J. Sanchez Meca (CMM). Barcelona: 2 exs. VI 1931, Llobregat (MZB). Castellón: 10 exs. 27 VIII 1981, Oropesa de Mar, leg. M. Rizzotti (MCVR), 2 exs. same (CMS); 5 exs. 12 I 1997, Torreblanca, Plà de Cabanes, leg.

P. Aguilera (CARB). Córdoba: 2 exs., leg. Stempelmann (NMW), 1 ex. same (CMS). Málaga: 1 ex., Cártama, leg. Rosenhauer (MCVN). Murcia: 1 ex. 24 VII 1994, Mar Menor, S. Javier, leg. A. Giordani Soika (MCVN); 1 ex. 26 IV 1996, Salinas de San Pedro, leg. I. Ribera & A. Millán (CMM); 1 ex. 10 VII 1992, Cartagena, Marina de lo Poyo, leg. J.J. Sánchez Meca (CMM); 2 exs. 10 VII 1992, Cartagena, Lo Poyo, Los Nietos, leg. J. J. Sánchez Meca (CMM). Sevilla: 1 ex. 11 V 1991, Lebrija (CSCR). Tarragona: 1 ex. VI 1934, Alfacs, leg. Museu (MZB); 2 exs. 17 V 1994, Delta del Ebro, La Tancada, leg. I. Ribera, G. Foster & D. Bilton (CARB), 2 ex. same (CFA), 1 ex. same (CMS); 3 exs. 24 VI 1995, Delta Ebro, La Marquesa, leg. P. Aguilera & I. Ribera (CARB); 8 exs. 24 VI 1995, Delta del Ebro, L'Alfacada, leg. P. Aguilera & I. Ribera (CARB); 1 ex. VI 1934, Sant Carles de la Rapita, leg. Museu (MZB). Balears: 3 exs., Mallorca, Rabassa, leg. Breit (MCM); 2 exs., Mallorca, leg. W. Pepp, ex coll. Winkler (MCG), 3 exs. same (MCVN), 1 ex. same (CMS).

The species is habitually found in salt marshes with sand or muddy substratum (BARTHE, 1926; CLARKE, 1973; MASCAGNI, 1985b, 1992). In the Iberian peninsula it is also frequently found in coastal lagoons with different degrees of salinity, sometimes directly connected to the sea (e.g. l'Alfacada, Tarragona, in a retrodunal pond with infiltrated sea water, with a fauna formed mostly by marine macro-invertebrates). The species is usually found in sandy substratum, although it also occurs in gravel or coarse sand (e.g. in Torreblanca, Castellón). It has sometimes been found in coexistence with *Augyles maritimus*.

#### *Heterocerus fossor* Kiesenwetter

*Heterocerus fossor* Kiesenwetter, Germ. Zeitschr.

IV, 1843: 204, t. 3, f. 3

*bifasciatus* Kuster, 1849

*parallelus* Dufour, 1852

*rectus* Waterhouse, 1859

*fossor* ab. *cincticollis* Rey, 1890

Aedeagus as in figure 11. Total length 4.5-6.2 mm. Head black, whitish pubescence with longer setae especially on the sides; mandibles dentate, very robust with acute apex; male with clypeal horns; clypeus with fine

copious setae; antennae with 11 segments and 7-segmented club. Pronotum black with ochre border, narrowing anteriorly and feebly bordered posteriorly; whitish pubescence with longer setae especially on the sides; finely and densely punctured. Elytra black with ochre markings of varying size; copious pubescence interposed with longer setae; finely and densely punctured; striations evident. Legs ochre with whitish setae; tibiae with numerous spines and with black external border. Abdomen black with ochre border of varying widths; stridulatory ridge marked, striae evident; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae. Some of the males are hypermandibulated. Similar species: *H. flexuosus* and *H. parallelus*.

#### Distribution

Euro-Siberian.

European distribution: central and southern Europe, south-western Siberia (ZAITZEV, 1924); France (BARTHE, 1926); Sardinia (PORTA, 1929); England, Ireland (CLARKE, 1973); Europe, southern Siberia (STRIEN, 1980); Germany, Turkey (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Sweden, Finland, Holland, Belgium, Czech Republic, Austria, Hungary, Romania, Bulgaria, Greece (MASCAGNI, in press).

Iberian records: Spain (FUENTE, 1929).

Balearic Islands (fig. 26): Mallorca, La Puebla, Pollensa (TENENBAUM, 1915).

#### Studied material (fig. 26)

Portugal. Alto Alentejo: 2 exs., Évora, leg. A. Schatzmayr (MCM).

These are the first Portuguese records of the species. In Britain it is always associated with salt water areas of clay and mud (CLARKE, 1973), although in other geographical areas it can also be found in the shores of freshwater rivers (BARTHE, 1926; MASCAGNI, 1985b, 1992).

#### *Heterocerus fusculus* Kiesenwetter

*Heterocerus fusculus* Kiesenwetter, Germ. Zeitschr.

IV, 1843: 220, t. 3, f. 11

*oblongulus* Kuwert, 1890

*pulchellus* Kuwert, 1890

*similis* Kuwert, 1890

*fuscus* var. *opacus* Rey, 1890

Aedeagus as in figure 17. Total length 2.4-3.8 mm. Head black, whitish pubescence with longer setae especially on the sides; mandibles dentate with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black or dark brown with dark orange border; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; finely and densely punctured. Elytra black or dark brown with orange markings of varying size; copious pubescence interposed with longer setae; micropunctures mixed with fine dense punctures; striations very faint. Legs dark brown with brown tarsi; tibiae with numerous spines. Abdomen black or dark brown with orange border of varying width; stridulatory ridge marked, striae evident; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae. Similar species: *H. fenestratus*.

#### Distribution

Euro-Siberian.

European distribution: Europe, western Siberia (WINKLER, 1924; ZAITZEV, 1924); France (BARTHE, 1926); Italy (PORTA, 1929; MASCAGNI & CALAMANDREI, 1992); England (CLARKE, 1973); Germany, ex-Yugoslavia (MASCAGNI, 1991); Sweden, Finland, Holland, Belgium, Poland, Czech Republic, Switzerland, Austria, Romania (MASCAGNI, in press).

Iberian records (fig. 26): Portugal. Beira Litoral: Estarreja (PAULINO DE OLIVEIRA, 1882; FUENTE, 1929).

It is a European species, whose presence in the Iberian peninsula is in need of confirmation. The only Iberian record was published in a general catalogue, not in a specialized work (PAULINO DE OLIVEIRA, 1882). According to CLARKE (1973), in England it is exclusively found on the south coast, at the base of sea-cliffs in muddy ground. In France and Italy it frequently occurs in sandy river banks, although it can also be found in more mineralized waters (BARTHE, 1926; MASCAGNI, 1992).

#### *Heterocerus holosericeus* Rosenhauer

*Heterocerus holosericeus* Rosenhauer, Thier. Andal.

1856: 114

*panormitanus* Kuwert, 1890

*ragusae* Kuwert, 1890  
*ragusae* var. *lineatus* Kuwert, 1890  
*holosericeus* var. *pustulatus* Schilsky, 1890  
*pustulatus* Schilsky, 1892  
*villiger* Fiori, 1906  
*fluviatilis* Fiori, 1906  
*subfossor* Fiori, 1906  
*villosus* Fiori, 1908

Aedeagus as in figure 13. Total length 4.0-5.0 mm. Head black, whitish pubescence with numerous and longer setae; mandibles dentate, rather short, with a fairly round apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black, with reddish border; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; fine dense punctures. Elytra black with reddish markings of varying size; copious pubescence interposed with longer setae; micropunctures mixed with fine dense punctures; striations evident. Legs reddish brown, tarsi ochre; tibiae with numerous spines. Abdomen black with reddish border of varying width; stridulatory ridge marked, striae evident; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae.

#### Distribution

Europe-Mediterranean.

European distribution: western Mediterranean region (WINKLER, 1924; CHARPENTIER, 1965); Spain, North Africa (ZAITZEV, 1924); Sicily (ZAITZEV, 1924; MASCAGNI, 1985a); France (BARTHE, 1926); Europe, western Siberia (STRIEN, 1980); Italy (ZAITZEV, 1924; PORTA, 1929; MASCAGNI & CALAMANDREI, 1992); Turkey (MASCAGNI, 1991).

Iberian records (fig. 27): Spain. Spain (KUWERT, 1890; ZAITZEV, 1924; BARTHE, 1926); Málaga: Cártama, Guadalhorce (ROSENHAUER, 1856; FUENTE, 1929; MASCAGNI, 1991); Córdoba, Sevilla: Guadajoz (KIESENWETTER, 1865; HEYDEN, 1870; FUENTE, 1929); Valencia: River Júcar, Carcaixent, La Parrilla (MORODER, 1924), La Dehesa, Carcaixent (TORRES SALA, 1962); Alicante: El Llano (TORRES SALA, 1962); Huesca: Fiscal (RIBERA et al., 1996). Portugal. "Felgueira", Beira Litoral: Coimbra, Douro, Douro Litoral: River Vizela (PAULINO DE Oliveira, 1882; FUENTE, 1929).

Balearic Islands: Mallorca, Col d'en Rabasa (TENENBAUM, 1915).

#### Studied material (fig. 27)

Spain. Southern Spain: 1 ex. (MNCN). Andalucía: 2 exs. (MNCN). Almería: 8 exs. 15 VIII 1994, Mojacar, River Aguas, leg. P. Aguilera (CARB), 1 ex. same (CMS); 2 exs. 13 III 1997, Molinos de Río Aguas, River Aguas, leg. I. Ribera (CARB). Barcelona: 1 ex. 9 IV 1932, Balenyà, leg. Villarrubia (MZB). Cádiz: 3 exs., Chiclana, coll. Pérez Arcas (MNCN). Granada: 1 ex. 18 VII 1945, Puerto Camacho, leg. E. Zaico (MNCN). Huesca: 2 exs. 13 V 1995, Fiscal, River Ara, leg. P. Aguilera & I. Ribera (CARB). Málaga: 1 ex., Cártama, leg. Rosenhauer (MCVN). Tarragona: 2 exs., Valls, leg. Español (MZB).

In coincidence with BARTHE (1926) and MASCAGNI (1985b, 1992), the species has been found in the shores of running waters, both in the head-waters (e.g. River Aguas en Molinos, Almería, or River Ara in Fiscal, Huesca) and areas next to the coast (e.g. River Aguas in Mojacar). It has been found in coexistence with *Augyles pruinus* and *A. maritimus*. It is also habitually found in flood detritus (MASCAGNI, 1985b).

#### *Heteroceris marginatus* (Fabricius)

*Apathe marginatus* Fabricius, Mant. Ins. I, 1787: 33  
*scultellaris* Kuwert, 1890  
*scutellaris* Guillebeau, 1897

Aedeagus as in figure 14. Total length 3.5-4.2 mm. Head black, whitish pubescence with longer setae especially on the sides; mandibles dentate, rather short with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black, sometimes with a reddish border; narrowing anteriorly and bordered posteriorly; whitish pubescence with longer setae especially on the sides; micropunctures mixed with fine dense punctures. Elytra black with reddish markings of varying size; copious pubescence interposed with longer setae; micropunctures mixed with fine dense punctures; striations evident. Legs reddish brown, tarsi ochre; tibiae with numerous spines. Abdomen black or dark brown with ochre border of varying widths; stridulatory ridge marked, striae evident; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae.



## Disitribution

## Palaeartic.

European distribution: Europe, south-western Siberia (ZAITZEV, 1924); France (BARTHE, 1926); England (CLARKE, 1973); Sardinia, Sicily (MASCAGNI, 1985a); Euro-turanian region, Austria (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Norway, Sweden, Denmark, Holland, Belgium, Germany, Poland, Czech Republic, Ucraina, Switzerland, Romania, ex-Yugoslavia, Bulgaria, Greece (MASCAGNI, in press).

Iberian records (fig. 28): Spain. Southern Spain (KUWERT, 1890; as *sulcatus*; BARTHE, 1926); Valencia: Albufera (MORODER, 1924); Barcelona: Hospitalet (CUNI & MARTORELL, 1876), Ciudad Real (FUENTE, 1929).

Iberian examples of this species were not found. It seems to occur habitually in water bodies associated to freshwater rivers (BARTHE, 1926; CLARKE, 1973), although in MASCAGNI (1992) it is also recorded from salt water. According to DAJOZ (1965), it flies readily to UV light.

*Heterocerus obsoletus* Curtis

*Heterocerus obsoletus* Curtis, Brit. Entom. V, 1828: 224  
*marginatus* Marsham, 1802

*obsoletus* var. *quadrimaculatus* Hochhuth, 1873

Aedeagus as in figure 12. Total length 4.2-5.8 mm. Head black, whitish pubescence with numerous and longer setae; mandibles dentate and robust with acute apex; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black, with reddish border; narrowing anteriorly and bordered posteriorly; whitish pubescence with very longer setae especially on the sides; micropunctures mixed with fine dense punctures. Elytra black or dark brown with reddish markings of varying size; copious pubescence interposed with very long setae; micropunctures mixed with fine dense punctures; striations evident. Legs brown; tibiae with numerous spines. Abdomen brown with reddish border of varying width; stridulatory ridge marked, without evident striae; post-metacoxal ridge incomplete; copious whitish pubescence with longer setae.

## Distribution

## Euro-Siberian.

European distribution: central and southern Europe, south-western Siberia (ZAITZEV, 1924); France (BARTHE, 1926); England (CLARKE, 1973); Corsica, Sicily (MASCAGNI, 1985a); from Siberia to the Turkestan, Italy, Austria (MASCAGNI, 1991); Sweden, Finland, Denmark, Holland, Belgium, Germany, Hungary, Greece, Turkey (MASCAGNI, in press).

Iberian records: Spain (KUWERT, 1890; FUENTE, 1929) (without detailed localities).

Iberian examples of this species were not studied. In Britain and France it is found in salt water (BARTHE, 1926; CLARKE, 1973).

*Heterocerus parallelus* Gebler

*Heterocerus parallelus* Gebler, Bemerk. Ins. Sib. in  
Ledeb. Reise II, 1830, App. III: 101

*salinus* Kiesenwetter, 1843

*maxillosus* Motschulsky, 1854

*cornutus* Motschulsky, 1854

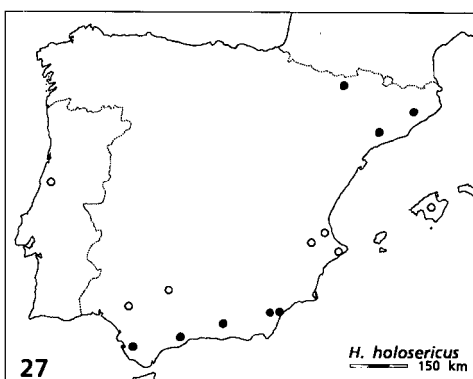
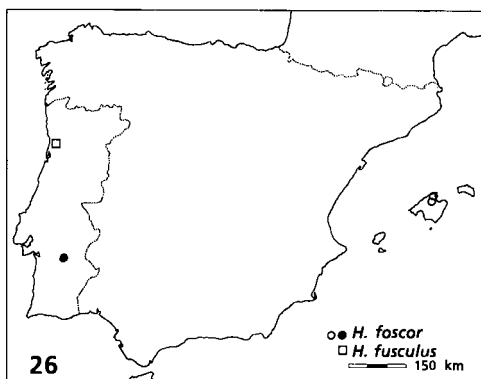
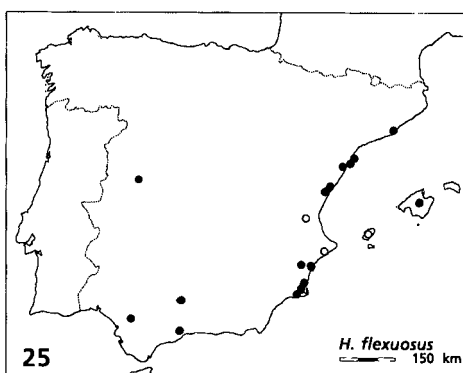
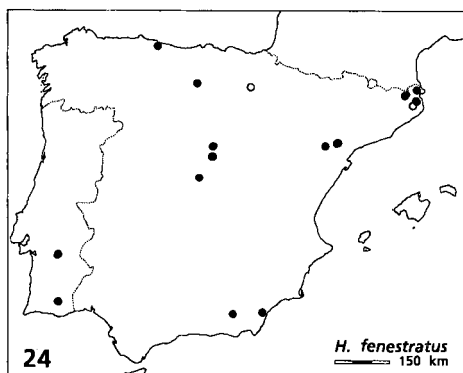
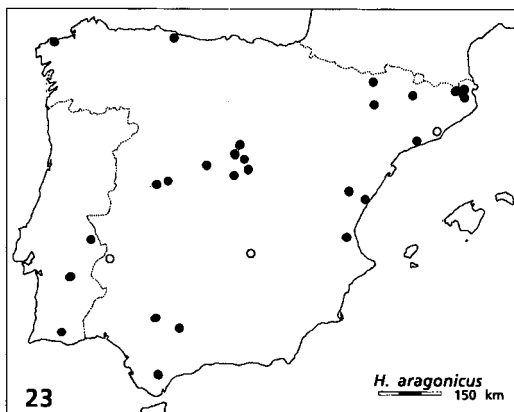
*hauseri* Kuwert, 1893

Aedeagus as in figure 9. Total length 4.8-7.6 mm. Head black, whitish pubescence with longer setae especially on the sides; mandibles dentate, very robust, with a fairly acute apex, dorsal projection and no clypeal horns in males; smaller, with a fairly acute apex, and no dorsal projections in females; clypeus with fine copious setae; antennae with 11 segments and 7-segmented club. Pronotum black with ochre border of varying width, narrowing anteriorly and feebly bordered posteriorly; whitish pubescence with longer setae especially on the sides; finely and densely punctured. Elytra black with ochre markings of varying size; copious pubescence interposed with longer setae; finely and densely punctured. Legs ochre with whitish setae; tibiae with numerous spines. Abdomen black with faintly ochre border; stridulatory ridge marked, without evident striae; post-metacoxal ridge incomplete; with copious whitish pubescence with longer setae. Some males are hypermandibulated. Similar species: *H. fossor* and *H. flexuosus*.

## Distribution

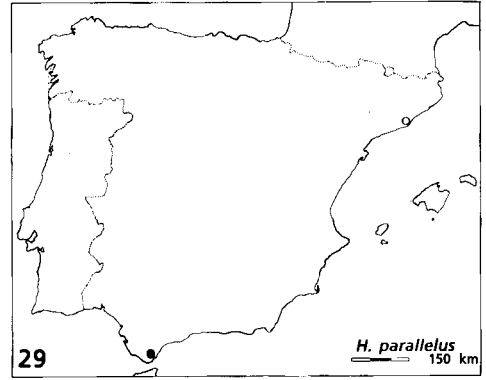
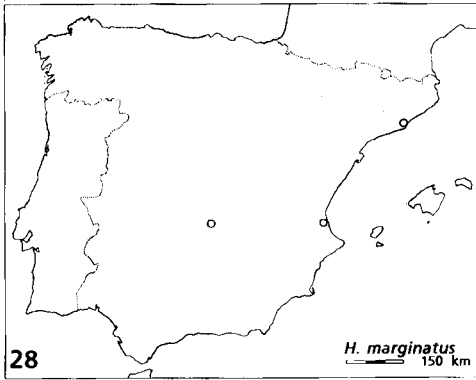
## Euro-Siberian.

European distribution: southern Europe,



Figs. 23-29. Distribution maps of the species studied: ● Studied material; □ ○ Bibliographic data. (Records of wide geographical areas are not included. Provincial records of which the detailed locality is unknown are located above the capital of the province.)

Mapas de distribución de las especies estudiadas: ● Material estudiado; □ ○ Datos bibliográficos. (No se incluyen citas de ámbito geográfico general. Las citas provinciales de las que no se conoce la localidad precisa se sitúan sobre la capital de la provincia.)



South-western Siberia (ZAITZEV, 1924); France (BARTHE, 1926); Austria, ex-USSR (MASCAGNI, 1991); Italy (MASCAGNI & CALAMANDREI, 1992); Germany, Poland, Hungary, Bulgaria, Greece (MASCAGNI, in press).

Iberian records (fig. 29): Spain. Southern Spain (KUWERT, 1890; FUENTE, 1929); Barcelona: Casa Antúñez, Hospitalet, Bordeta (CUNÍ & MARTORELL, 1876; CUNÍ, 1888; FUENTE, 1929).

#### Studied material (fig. 29)

Spain. Spain: 1 ex., leg. G. Carrasco (MNCN). Cádiz: 3 exs., Algeciras (MNB), 1 ex. same (CMS).

According to BARTHE (1926) it is associated to salt waters.

### Discussion

Of the 17 species of Heteroceridae present in the Iberian peninsula and the Balearic Islands (eight *Augyles* and nine *Heterocerus*), 16 occur in Spain (the only missing species is *H. fuscus*, whose presence in Iberia is in need of confirmation), seven in Portugal (two *Augyles* and seven *Heterocerus*), and only three in the Balearic Islands (three in Mallorca and one in Ibiza) (table 1). In comparison with nearby faunas, Italy, despite being better studied, has the same number of species of *Augyles* and *Heterocerus*, with the only difference being the absence of *A. senescens*, and the presence of *A. crinitus* (Kiesenwetter, 1850). In Italy the only European species of

*Micilus* (*M. murinus* Kiesenwetter, 1843) is also present (MASCAGNI, 1992). France, with 10 *Heterocerus*, 11 *Augyles* and *Micilus murinus* (ZAITZEV, 1924; BARTHE, 1926; MASCAGNI, in press) apparently has a richer fauna, with all Iberian species plus *A. aureolus* Schiödte, 1866, *A. humilis* Rey, 1890 (with a dubious taxonomic validity), *A. intermedius* (Kiesenwetter, 1843), one subspecies, *H. fuscus* ssp. *pulchellus* Kiesenwetter, 1843, and *M. murinus*.

In Morocco 13 species have so far been recorded, six *Augyles* (one, *A. humilis*, not present in the Iberian peninsula, although the record is considered to be dubious by KOCHER, 1956) and seven *Heterocerus* (two of them not found in Iberia, *H. biskrensis* Fairmaire, 1879 and *H. dayremi* Peyerimhoff, 1921) (KOCHER, 1956). Two additional species are known from Algeria, *H. pallidivestis* Guillebeau, 1893 and *H. humilis* Guillebeau, 1896 (= *H. guillebeaudi* Zaitzev, 1908) (ZAITZEV, 1924).

As regards the fauna of the Balearic Islands, and in comparison with other Mediterranean Islands, four species are known from Corsica, eight from Sardinia (two pending confirmation), and 11 from Sicily (one of them dubious) (MASCAGNI, 1985a) (note the synonymisation of *A. gravidus*, *H. hamifer* and *H. siculus* by MASCAGNI, in press).

The number of species and the composition of the heterocerid fauna in Spain, despite the scarcity of data, is very similar to that of nearby geographical areas. Both in Portugal and the Balearic Islands it is most likely that additional species would be found if properly

Table 1. Species of Heteroceridae known to occur in the Iberian peninsula and the Balearic islands: Ref. Bibliographic references; Cf. Confirmed with the study of specimens.  
*Especies de Heteroceridae presentes en la península Ibérica e islas Baleares: Ref. Referencia bibliográfica; Cf. Confirmada con el estudio de material.*

Species	Iberian peninsula				Balearic Islands			
	Spain		Portugal		Mallorca		Ibiza	
	Ref.	Cf.	Ref.	Cf.	Ref.	Cf.	Ref.	Cf.
<i>A. curtus</i> (Rosenhauer, 1856)	+	+	+	+				
<i>A. flavidus</i> (Rossi, 1794)	+	+						
<i>A. hispidulus</i> (Kiesenwetter, 1843)		+						
<i>A. maritimus</i> (Guérin-Ménéville, 1844)	+	+						
<i>A. marmota</i> (Kiesenwetter, 1850)	+	+						
<i>A. pruinosis</i> (Kiesenwetter, 1851)	+	+						
<i>A. senescens</i> (Kiesenwetter, 1865)	+	+	+	+				
<i>A. sericans</i> (Kiesenwetter, 1843)	+							
<i>H. aragonicus</i> Kiesenwetter, 1850	+	+	+	+				
<i>H. fenestratus</i> Thunberg, 1784	+	+	+	+				
<i>H. flexuosus</i> Stephens, 1828	+	+			+	+	+	
<i>H. fossor</i> Kiesenwetter, 1843	+			+	+			
<i>H. fuscus</i> Kiesenwetter, 1843			+					
<i>H. holosericeus</i> Rosenhauer, 1856	+	+	+		+			
<i>H. marginatus</i> Fabricius, 1787	+							
<i>H. obsoletus</i> Curtis, 1828	+							
<i>H. parallelus</i> Gebler, 1830	+	+						
Number of species	15	12	5	5	3	1	1	0
Total number of species	16		7		3		1	

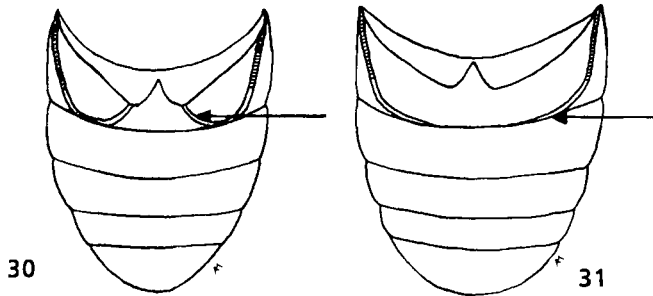
searched, specially taking into account the wide distribution of most European species. The absence of endemic species of this family in western Europe stands out, in coincidence with what happens in family Dryopidae (OLMI, 1976). There are only two known endemic Iberian species of this family, *Dryops hispanus* Olmi, 1973 (of a more than dubious taxonomic validity, Eugenio Rico, personal communication, 1996), and *D. championi* Doderó, 1918. The latter species is only known from

the holotype and one recent record from a nearby locality (RIBERA et al., 1977). Its general distribution is therefore still uncertain. However, in family Elmidae there are some endemic species with restricted distributions, in particular in the genus *Oulimnius* (OLMI, 1976; BERTHÉLEMY, 1979). Knowledge of the fourth Iberian family of Dryopoidea, Limnichidae, is almost non-existent, being reduced to the few records included in FUENTE (1929). All the known species of western European heterocerids have

a wide distribution. This could be partly due to their high dispersal abilities (although in other groups there are flying species with very restricted distributions, see e.g. NOONAN, 1990).

Possible species to be searched in the Iberian peninsula are those with a more northern European distribution, in particular *A.*

*humilis*, known from southern France, and *Micilus murinus*, widely distributed in Europe, and present in Grenoble and Lyon (BARTHE, 1926). Some of the north African species are also likely present in the south-east of Spain, due to the close biogeographical links between these two areas.



Figs. 30-31. 30. Abdomen of *Augyles* sp., with the post-metacoxal ridge complete; 31. *Heterocerus* sp., with the post-metacoxal ridge incomplete.

30. Abdomen de *Augyles* sp., con la carena post-metacoxal completa; 31. *Heterocerus* sp., con la carena post-metacoxal incompleta.

Key to the Iberian and Balearic species of the genera *Augyles* and *Heterocerus*.

Clave de las especies iberobaleares de los géneros *Augyles* y *Heterocerus*.

1. Antennal club formed by the last segment only	<i>Micilus</i>
Antennal club formed by more than one segment	2
2. Post-metacoxal ridge complete (fig. 30)	<i>Augyles</i> (3)
Post-metacoxal ridge incomplete (fig. 31)	<i>Heterocerus</i> (10)
3. Antennae with 10 segments, club with 6 segments	4
Antennae with 11 segments, club with 7 segments	6
4. Head brown. Pronotum brown with a middle line light brown or dark orange. Elytra brown or light brown, finely and densely punctured. Femora and tibiae ochre or dark orange. Total length 2.0-3.0 mm. Aedeagus as in figure 2	<i>flavidus</i>
Head black or dark brown. Pronotum black or dark brown with middle line reddish or reddish brown. Elytra black or dark brown, micropunctured, with and additional coarse and irregular puncturation. Femora and tibiae black or reddish brown	5

5. Mandibles with a rather rounded apex. Pronotum black, sometimes with the border and a middle line reddish, coarsely and densely puncturated. Elytra black or dark brown with ochre markings, striations evident. Femora and tibiae black. Total length 2.9-3.6 mm. Aedeagus as in figure 6	<i>hispidulus</i>
Mandibles with a rather acute apex. Pronotum dark brown, with the border and a middle line reddish brown, densely and finely puncturated. Elytra dark brown with reddish markings, without striae. Femora and tibiae reddish brown. Total length 2.2-3.0 mm. Aedeagus as in figure 4	<i>marmota</i>
6. Mandibles fairly straight and developed, with an acute apex. Pronotum densely and finely puncturated. Elytra without striations	7
Mandibles rather short and curved, with a less acute apex. Pronotum densely and coarsely (sometimes irregularly) puncturated. Elytra with evident striations	8
7. Head dark brown. Pronotum with the border and a middle line dark orange. Elytra dark brown with ochre markings, finely and densely puncturated. Legs dark orange. Total length 2.8-3.6 mm. Aedeagus as in figure 3	<i>sericans</i>
Head black. Pronotum with the border and a middle line reddish brown. Elytra black or dark brown with reddish markings, coarsely and irregularly puncturated. Legs reddish brown. Total length 2.2-3.4 mm. Aedeagus as in figure 5	<i>maritimus</i>
8. Elytra brown or reddish brown. Legs ochre. Total length 3.0-3.5 mm. Aedeagus as in figure 1	<i>curtus</i>
Elytra black or dark brown. Legs brown or black and ochre	9
9. Pronotum dark brown, with the border and a middle line reddish or reddish brown, densely and irregularly puncturated. Elytra with evident striations. Total length 3.1-4.0 mm. Aedeagus as in figure 7	<i>pruinosis</i>
Pronotum black, coarsely and densely puncturated. Elytra with faint striations. Femora and tibiae black and ochre, tarsi ochre. Abdomen black with an ochre border. Total length 3.5-5.0 mm. Aedeagus as in figure 8	<i>senescens</i>
10. Pronotum black or dark brown, with an ochre border. Elytra with ochre or orange markings. Legs brown, black, or black and ochre	11
Pronotum black with reddish border. Elytra with reddish markings. Legs reddish brown	16

11. Pronotum strongly bordered posteriorly	12
Pronotum feebly bordered posteriorly	14
12. Pronotum with a dark orange border. Elytra with orange markings. Legs dark brown with brown tarsi. Abdomen black or dark brown with orange border. Total length 2.4-3.8 mm. Aedeagus as in figure 17	<i>fusculus</i>
Pronotum with an ochre border. Elytra with ochre markings. Legs with black and ochre femurs and tibiae, ochre tarsi. Abdomen black or dark brown with ochre border	13
13. Elytra with a double apical spot and a double central spot, often not confluent with the marginal spots (in which case they form a band with "S" shape). Total length 2.5-5.2 mm. Aedeagus as in figure 16	<i>fenestratus</i>
Elytra always with a single apical spot and a central spot generally confluent with the marginal spot, forming a band with "S" shape. Total length 3.5-5.0 mm. Aedeagus as in figure 15	<i>aragonicus</i>
14. Male with clypeal horns. Total length 4.5-6.2 mm. Aedeagus as in figure 11	<i>fossor</i>
Male without clypeal horns	15
15. Mandibles of the males with an evident dorsal projection. Elytra without micropuncturation. Total length 4.8-7.6 mm. Aedeagus as in figure 9	<i>parallelus</i>
Mandibles of the males without dorsal projection, with pronounced tooth. Elytra micropunctured. Total length 3.5-5.6 mm. Aedeagus as in figure 10	<i>flexuosus</i>
16. Mandibles robust. Legs brown. Abdomen brown with a reddish border, stridulatory ridge without evident striae. Total length 4.2-5.8 mm. Aedeagus as in figure 12	<i>obsoletus</i>
Mandibles shorter. Legs reddish brown with ochre tarsi. Abdomen black or dark brown with a reddish or ochre border, stridulatory ridge with evident striae	17
17. Mandibles with rounded apex. Pronotum without micropuncturation. Abdomen black with a reddish border. Total length 4.0-5.0 mm. Aedeagus as in figure 13	<i>holosericeus</i>
Mandibles with a more acute apex. Pronotum with micropuncturation. Abdomen black or dark brown, with an ochre border. Total length 3.5-4.2 mm. Aedeagus as in figure 14	<i>marginatus</i>

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## Resumen

*La familia Heteroceridae MacLeay, 1825 (Coleoptera, Dryopoidea) en la península Ibérica e islas Baleares*

En este trabajo se revisa toda la información disponible sobre la familia Heteroceridae en la península Ibérica e islas Baleares, basándose en datos publicados y en el estudio de material de colecciones o el recolectado por los autores. Se figuran los edeagos de las 17 especies estudiadas (figs. 1-17), ocho *Augyles* y nueve *Heterocerus*, y se incluye una breve descripción de todas ellas. Se cita *Augyles hispidulus* Kiesenwetter por primera vez en la península Ibérica, en España, y *Heterocerus fossor* Kiesenwetter por primera vez en Portugal. Se incluye una clave de los géneros europeos y las especies iberobaleares de la familia. Se incluyen algunas breves notas ecológicas, junto con los mapas de distribución en la Península y las Baleares (figs. 18-29). Aunque el número de especies hasta el momento citadas de España (ocho *Augyles* y ocho *Heterocerus*) es similar al de otras zonas geográficas próximas, la fauna de Portugal, con solo siete especies, y la de las islas Baleares, con solo tres, se pueden considerar todavía como escasamente conocidas. Se discute la posible presencia en España de especies de distribución europea o norteafricana.

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