

# Observations on Coleoptera of Mallorca, Balearic Islands

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SOCIETAT D'HISTÒRIA  
NATURAL DE LES BALEARS

Whitehead, P.F., 1993. Observations on Coleoptera of Mallorca, Balearic Islands. *Boll. Soc. Hist. Nat. Balears*, 36:45-56 ISSN 0212-260X. Palma de Mallorca.

In the spring of 1987 and autumn of 1990 the writer amassed a large databank on the Coleoptera of Mallorca, as a result of intensive fieldwork. The particular concern of the author lies with the conservation and historical development of invertebrate faunas, understanding of which is largely dependant on the exact taxonomic knowledge of the specialist entomologist. The findings presented herewith are significant in a number of ways. Not only do they underline the potential biological richness of Mallorca, but they also begin to portray the quality of the fauna. Records for hygrophilous, amphibious, and aquatic general such as *Paragaeus*, *Oodes*, *Polistichus*, *Cercyon*, *Paracymus*, *Limnoxenus* and *Cymbiodyta* demonstrate the advanced state of development of the fauna of the north coast wetlands. This will undoubtedly be confirmed by further work, and the evidence from other authors, as yet unpublished. New records provided here support faunistic links with both Europe and Africa (*Zonitis fernancastroi* Pardo, *Psylliodes laticollis* Kutschera), Corsica and Sardinia (*Crioceris asparagi* var. *campestris* Linnaeus) and Macaronesia (*Dactylotrypes longicollis* (Wollaston)), although scolytids such as *Dactylotrypes* are prime contenders for assuming dissemination by man.

**Keywords:** Mallorca, Coleoptera, conservation.

OBSERVACIONS SOBRE ELS COLEOPTERS DE MALLORCA, ILLES BALEARS. En el decurs de la primavera de 1987 i la tardor de 1990, com a resultat d'una intensa tasca de camp, es va reunir una considerable base de dades sobre coleopters de Mallorca. L'autor s'interessa especialment per la conservació i desenvolupament històric de les faunes invertebrades, el qual ha de basar-se en un coneixement taxonòmic precís i acurat per part dels entomòlegs. Les troballes presentades en aquest treball són significativament importants. A més a més de destacar la riquesa biològica potencial de Mallorca, es comença a posar de relleu la qualitat d'aquesta fauna. Les troballes de gèneres higròfils, amfíbis i aquàtics com: *Panagaeus*, *Oodes*, *Polistichus*, *Cercyon*, *Paracymus*, *Limnoxenus* i *Cymbiodyta* demostren l'elevat grau de desenvolupament de les faunes de zones humides de la costa nord de Mallorca. Això serà indubtablement confirmat per posteriors estudis. Les noves citacions presentades recolzen els lligans faunístics entre Àfrica i Europa (*Zonitis fernoncastroi* Pardo, *Psylliodes laticollis* Kustchera), així

com amb Còrsega i Sardenya (*Crioceris*) i amb Macaronèsia (*Doctylotrypes locjicollis* (Wollas Toug), malgrat aquest sigui un cas d'antropocòria.

**Keywords:** Mallorca, Coleoptera, Conservació.

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*Recepció del manuscrit*, 03-feb-93. *Revisió acceptada*, 01-juny-93

## Introduction

Although the Coleoptera of Mallorca and the Balearic archipelago has been relatively well documented (Jordá 1922, 1923, 1923a, 1927; Español 1951, 1954, 1955, 1959, 1976, 1977; Compte, 1953, 1963, 1966, 1968; Joliver 1953; Blas, 1977, 1981; Jeanne & Zaballos, 1986; Montes & Soler 1986; Garcia-Aviles, 1990; Valladares & Montes 1991), no faunal overview appears to have been published since that of Tenenbaum (1915). Because of the large amount of new data yet to be uncovered, this may well remain some way off.

This account utilises my own original observations, and provides limited discussion on important biocoenoses, in the hope that they will contribute, albeit in a rather minor sense, to such a future endeavour. The general approach to conservation on Mallorca, has however, progressed with encouraging speed. Between my visit of 1987 and 1990 the *S'albufera de Mallorca* was formally declared a "Parc Natural" and the Govern Balear through its *Direcció General del Medi Ambient* has declared a number of new *Àrea Natural d'Especial Interès*, backed up by informative brochures. In 1992 the whole archipe-

lago received the "Tourism for Tomorrow" award in direct recognition of new conservation legislation.

My visit of 1987 acquainted me with the biotopes of Mallorca and its entomofauna, although throughout there is bias towards the north coast of the island. In 1990, our arrival on Mallorca coincided with rather dramatic events; during 5 days, mostly on the 8th-10th October, up to 200 litres of rain per m<sup>2</sup> fell in the north of the island, creating a disaster area, especially in the settlements Llubí, Muro, and Sa Pobla (*Badia d'Alcúdia*, 28 oct. 1990; *Mallorca Daily Bulletin*, 816, 27-10-1990. The issue of *Badia d'Alcúdia* makes illuminating reading on the anthropogenic contribution to the subsequent flooding).

This rain had a tremendous scouring and dispersive effect on the wetland and riparian entomofaunas, large communities of which were swept into the sea in the northern bays. We found *Nepa cinerea* Linnaeus (Hemiptera, Nepidae) surviving on the edge of the sea in the Badia de Pollensa up to 7 after the flood. The October visit was therefore dominated by study of these flood-dispersed insects, and this is reflected in the following lists.

### **Selected observations on Coleoptera**

Although species new to the Balearic Archipelago should have prominence in this list, it also contains information of biological interest as well as observations of a more routine nature. Because there is no up-to-date overview of the Coleoptera of Mallorca, I have experienced difficulty in assessing the status of a number of species on the island. Examples of these species include *Myrmecopora laesa* (Erichson) (found in numbers on the littoral of the Badia de Pollença), *Otiorhynchus juvenicus* Gyllenhal (in flood drift, mouth of Torrent de S'Albufereta, October 1990) perhaps not seen since the early years of this century on Mallorca and principally a French species (M.L. Cox, in litt.) and *Otiorhynchus trophonius* Reitter (a population in the general area of Alcúdia evidently somewhat "culture-favoured") with a holo-mediterranean distribution. None of these were cited by Tenenbaum (1915); I request the tolerance of readers for apparent shortcomings in this regard.

Many records are omitted from this account. I surveyed many of the salines of Mallorca in detail, observing extensive faunas of halophilous species generally distributed in the Mediterranean Sea area.

### **Carabidae**

*Macrothorax morbillosus balearicus* (Lapong). Widespread malacophagous species. Adult eating *Rumina decollata* (Linnaeus), Vall de Bóquer, 17-4-1987. During April 1987, a last instar larva

consumed a fully-grown *Eobania vermiculata* (Müller), whilst living inside the shell for a number of days. The habits of *M. morbillosus* (Fabricius) were documented by the malacologist Boettger (1921).

*Dyschirius chalybaeus* Putzeys. Salines de S'Albufera, 19-4-1987.

*Bem-bidion laetum* Brullé. One record; on evaporite-rich mud near lake at S'Albufereta, 15-4-1987.

*Tachys (Porotachys) bisulcatus* (Nicolai). 6 amongst flood debris on beach at mouth of Torrent de S'Albufereta, 25-10-1990. Not listed for Mallorca by Jeanne & Zaballos (1986).

*Tachys dimidiatus* (Motschulsky). Originally described by Motschulsky as a variety of *Tachys scutellaris* Stephens, not specifically cited for the Balearics by Jeanne & Zaballos (1986). 5, with 160 *Tachys scutellaris* Stephens, amongst flood debris, mouth of Torrent de S'Albufera, October 1990.

*Olisthopus elongatus* Wollaston and *Olisthopus fuscatus* Dejean. Although these two species are sometimes confused, the evidence on Mallorca is that they occupy distinct biotopes. *O. elongatus* occurs from sea-level to at least 740m. altitude (breeding populations on limestone (pupae), Fornalutx, April 1987), whilst *O. fuscatus* is evidently halophilous; under seaweed on beach Badia de Pollença, October 1990, salines de S'Albufera, April 1987.

*Zabrus ignavus* Cziki. Fairly common granivorous species of cultivated areas in the north of the island. One, under seaweed on shingle, Badia de Pollença, 22-10-1990.

*Harpalus fulvus* Dejean. On cement-waste tip, El Tucan, near Alcúdia, April 1987, normally psammophilous.

*Anisodactylus virens* (Dejean). April 1987: Salines de S'Albufera and S'Albufereta, saline mud. Halophilous species recently found in large numbers, Parc de S'Albufera (Palmer & Vives, 1993).

*Scybalicus oblongiusculus* (Dejean). One site, males under seaweed, Badia de Pollença, 22-10-1990. Not specified for Balearic archipelago by Jeanne & Zaballos (1986). Principally a West Palearctic species, reaching Africa.

*Acupalpus brunnipes* (Sturm). One under flood debris on beach by Torrent de S'Albufereta, 21-10-1990, with *Acupalpus elegans* (Dejean). Not cited for Mallorca by Jeanne & Zaballos (1986).

*Panagaeus cruxmajor* (Linnaeus). An important species with a high conservation value, declining in many parts of its range. A primary wetland indicator, usually amongst helophytes. 3 in flood debris, Parc de S'Albufera, 23-10-1990.

*Oodes gracilis* Villa. An important species with a high conservation value, in established freshwater wetlands. Pair in flood debris, Parc de S'Albufera, 23-10-1990. New to the Balearic archipelago and very localised in Spain. J. Vives (Barcelona) is aware of records from Valencia, Teruel, Zaragoza and Prat de Llobregat, Barcelona (Vives, in litt., 25-2-1991). Jeanne & Zaballos (1986) record *O. gracilis* only from Gerona. This species highlights the importance of the freshwater habitat in the Mediterranean basin.

*Polistichus connexus* (Fourcroy). Generally widespread and sporadic in the Iberian peninsula (Vives & Vives, 1978), with previous records for Mallorca. One in flood debris, Parc de S'Albufera, 23-10-1990. The fact that *P. cruxmajor*, *O. gracilis* and *P. connexus*

coexist at a single site, provides a strong optimistic assessment of its ecological vigour. *P. connexus* flies at night and can cover long distances in optimal conditions (Whitehead, 1992).

## Dytiscidae

*Potamonectes ceresyi* (Aubé). Very localised on Mallorca, presently known from two sites (Garcia-Aviles, 1990). In saline drains, Salines de Llevant, 22-4-1987.

*Copelatus haemorrhoidalis* (Fabricius). One in flood debris, Parc de S'Albufera, 23-10-1990.

*Dytiscus circumflexus* Fabricius. Rare in the archipelago, known only from north-east Mallorca in clean, unpolluted rivers and streams (Garcia-Aviles, 1990). Dead on road, Alcúdia, 15-4-1987.

## Hydrophilidae

*Cercyon* sp. A *Cercyon* of the aquatic *convexiusculus*-group was found in flood debris at the Parc de S'Albufera on 23-10-1990. The specimen is extremely like *Cercyon sternalis* Sharp, but with slightly less strongly microsculptured elytra. It may prove to be an undescribed sibling.

*Paracymus aeneus* (Germar). Parc de S'Albufera, 25-10-1990.

*Limnoxenus niger* (Zschach). Parc de S'Albufera, 23-10-1990.

*Cymbiodyta marginella* (Fabricius). Parc de S'Albufera, 23-10-1990. Although the *Cercyon* has so far resisted attempts to identify it, these four hydrophilids make a strong positive conservation statement, admirably underlining

the biological value of rich fen in warm-temperate climates.

### Histeridae

*Kissister minimus* (Aubé). One, under seaweed on fine beach-gravel, Badia de Pollença, 23-10-1990. Whitehead (1990) recorded *K. minimus* breeding in large numbers in Somerset, England, in a similar situation.

### Ptiliidae

*Ptenidium nitidum* (Heer). Under logs with ants *Iridomyrmex humilis* Mayr, Parc de S'Albufera, 23-10-1990.

### Staphylinidae

*Dropephylla devillei* (Bernhauer) (*D. grandiloqua* Luze). One on wall under *Pinus halepensis* Miller, Alcanada, 27-10-1990. This is thought to be a new species for the archipelago. It is a very southern record for *D. devillei*, although the species has occurred in the French Alpes-Maritimes. The identification was confirmed by Mr. P.M. Hammond, London.

*Carpelimus anthracinus* (Rey). Salines de S'Albufera, April 1987; on beach Badia de Pollença, October 1990.

*Anotylus nitidulus* (Gravenhorst). A few amongst flood debris on beach by Torrent de S'Albufereta, 25-10-1990; on wall Alcanada, 27-10-1990.

*Stenus ater* Mannerheim. Amongst cement waste, Lago Esperanza, Port d'Alcúdia, 19-10-1990.

*Ochtheophilum fracticorne* (Paykull).

One, flood debris on beach by Torrent de S'Albufereta, 25-10-1990.

*Ochtheophilum jacquelinei* (Boieldieu). 9, flood debris on beach by Torrent de S'Albufereta, 25-10-1990.

*Staphylinus ater* Gravenhorst. Littoral; Badia de Pollença, Badia d'Alcúdia. Frequent, Parc de S'Albufera.

*Mycetoporus angularis* Mulsant & Rey. In flight, Port d'Alcúdia, 28-10-1990.

*Sepedophilus pedicularius* (Gravenhorst). Wetland species. Lago Esperanza, Port d'Alcúdia, 25-10-1990.

*Spedophilus testaceus* (Fabricius). During April 1987, specimens of *Sepedophilus* were taken from a huge seawashed trunk of *Pinus halepensis* Miller. I have compared them in detail with British *S. testaceus* and refer them to that species. The genus, however, is a difficult one, and until the Balearic *Sepedophilus* are thoroughly overhauled, it is best to regard the identification as provisional. The site is by the Illa d'Alcanada; the trunk has since been moved, and much of the softer heartwood removed, by wave action.

*Myrmecopora laesa* (Erichson). 70 in flood debris on beach, mouth of Torrent de S'Albufereta, 21/25-10-1990.

*Liogluta longiuscula* (Gravenhorst). In flight, Parc de S'Albufera, 16-4-1987.

*Atheta pittionii* Scheerpeltz. In basidiomycete fungus under *Pinus halepensis* Miller, S'Albufereta, 25-10-1990. The identity was confirmed by Herr V. Assing, Hanover.

*Atheta triangulum* (Kraatz). Probably fairly widespread, although not cited by Tenenbaum (1915). October 1990: in the Alcúdia area in fungi, under flood debris on beaches, and in grass tussocks, Atalaia de la Victòria, 450 m altitude.

### ***Pselaphidae***

*Brachygluta globulicollis aubei* Tournier. 80 in flood debris on beach by Torrent de S'Albufereta, 21/25-10-1990; a few, Parc de S'Albufera, 23-10-1990. Examples of both species have been seen by Dr. C. Besuchet, Geneva.

### ***Scarabaeidae***

*Pleurophorus mediterranicus* Pittino & Mariani 1986. Although *P. caesus* (Creutzer) is widespread on Mallorca, Dr. E. Piattella (Rome) has, with customary expertise, identified one example of *P. mediterranicus* collected on the strandline at Port d'Alcúdia on 27-4-1987. This is the first record for Mallorca, although unrecognised *P. mediterranicus* may exist in collections.

*Rhizotrogus lepidus* Schaufuss. On beach near Pont des Anglesos, Parc de S'Albufera, 16-4-1987. Endemic to the archipelago.

### ***Clambidae***

*Clambus minutus complicans* Wollaston. 2 in flood debris on beach at mouth of Torrent de S'Albufereta, 25-10-1990. Examples have been authenticated by Mr. C. Johnson, Manchester.

### ***Limnichidae (sometimes assimilated within Byrrhidae)***

*Bothriopterus atomus* Mulsant. 4 in flood debris on beach, mouth of Torrent de S'Albufereta, 25-10-1990.

### ***Buprestidae***

*Acmaeodera cylindria* Fabricius. April 1987: breeding population in *Pinus halepensis* Miller, Alcanada.

### ***Elateridae***

*Lacon punctatus* (Herbst). 1987, 1990: breeding population in *Pinus halepensis* Miller, Cap de Menorca area, west of Alcúdia.

*Agriotes sordibus* (Illiger) var. *scutellatus* Schnaufuss. Frequently encountered in the north coast freshwater wetlands.

### ***Nitidulidae***

*Haptoncus luteolus* (Erichson). 2 in flood drift on beach, by Torrent de S'Albufereta, 25-10-1990. A specimen has been authenticated by Mr. C. Johnson.

### ***Cryptophagidae***

*Atomaria godarti* Guillebeau. Mr. C. Johnson has identified one example from flood debris, Badia de Pollença, October, 1990.

### ***Corylophidae***

*Corylophus cassidoides* (Marsham). A few in sedge litter, Parc de S'Albufera, October 1990.

### ***Latridiidae***

*Corticarina fulvipes* (Comolli). Fairly

general in sandy places at the coast. Also inland, south of Alcúdia, 1987.

### **Nycetophagidae**

*Litargus balteatus* LeConte. Widespread, normally corticolous species e.g. under bark of olive *Olea europaea* Linnaeus, Port de Pollensa, October 1990; in flight, Parc de S'Albufera, 19-4-1987.

### **Tenebrionidae**

*Tentyria schauini* Kraatz. Endemic to Arxipelago, widespread on Mallorca. Dredating dipterous larvae (with *saprinus georgius* Marseul, *Hypocaccus brasiliensis* (Paykull), *Hypocaccus climidiatus* (Illiger) at dead *gavina* (*barus cachinnans seu su tato*), Es Trenc, 22-4-1987; eating other *T. schauini* immobilised on Road, near Alcúdia, October 1990; eating *Apis mellifera* L., Parc de s'Albufera, April 1987.

*Asida moraguesi* Schafuss. Mallorcan endemic. Generally an upland species (Español, 1954), but one at Roman forum, Alcúdia, April 1987. Vall de Bóquer; Atalaia de la Victòria, Alcúdia.

*Misolampus goudoti erichsoni* Vauloger. Español (1954) touched on the habitat of this species in the trunks of trees, where they may be saprophagous. On two occasions I found groups of this species between the annual rings of dead trees (*Pinus halepensis* Miller) in active colonies of ants. Their potential relationships remain unclear, and the association with ants appears not to be obligate. The ants involved were *Monomorium bicolor* Mayr at Cap

de Menorca, near Alcúdia, and *Messor* sp. at Atalaia de la Victòria.

### **Meloidae**

*Meloe violaceus* Marsham. In *Cyclamini-Quercetum ilicis* association Cala de Sant Vicent, April 1987.

*Meloe mediterraneus* Müller. Alcúdia town, 25-10-1990. This species is easily confused with *Meloe rugosus* Marsham.

*Zonitis fernancastroi* Pardo. In flight, Parc de S'Albufera, 16-4-1987. This specimen has been identified by Professor M. Bologna, L'Aquila, to whom it has been presented. *Z. fernancastroi* was described from Morocco and evidently remains a very scarce west Palearctic species known from Barcelona and recently from France. New to the Balearic archipelago.

### **Arthricidae**

*Spiniferes longipilis* (Brisout) and *Leptaleus rodriguessi* (Latreille). Of the many species of arthricids noted under flood debris, Badia de Pollença, October 1990, these were the least abundant, with 2 specimens of each.

### **Cerambycidae**

*Arhopalus rusticus* (Linnaeus). Relatively scarce in the Balearics (Compte 1963). Breeding in sea-washed trunk of *Pinus halepensis* Miller, Illa d'Alcanada, April 1987.

**Chrysomelidae**

*Crioceris asparagi* var. *campestris* Linnaeus. One in orchard, foothills behind Alcúdia port, 20-10-1990. The name given, rather than *C. campestris*, is employed on the recommendation of Dr. M.L. Cox, London. New to the Balearic archipelago. The distribution is centred on Corsica, Sardinia and Sicily, with a citation from the Florence region of Italy (Dr. M.L. Cox, pers. comm.).

*Cyrtonus majoricensis* Breit. An example of this endemic species was found in the pellet of a raptor, *Falco tinnunculus* Linnaeus, at 480 m altitude, Atalaia de la Victòria, Alcúdia, 24-10-1990.

*Chrysolina banksi* (Fabricius). An interesting discussion on the hostplants of this species (Alexander 1984; Foster 1984; Morris 1984; Petitpierre 1985) provides clear agreement that Labiatae and Plantaginaceae both provide hosts. Imagines on *Plantago*, near Alcúdia, 15-4-1987.

*Longitarsus ochroleucus* (Marsham) In flight, Port d'Alcúdia, 28-10-1990.

*Psylliodes laticollis* Kutschera. One in flood debris on beach, Badia de Pollença, 25-10-1990. New to the Balearic archipelago. Species doubtfully recorded from Pollença (Heikertinger, com. pers.; in Jolivet, 1953) (but see Petitpierre, E. & Palmer, M., this volume). Populations extend from the Ionian Island group through Dalmatia and Italy, with a further population in North Africa (Dr. M.L. Cox, pers. comm.). A pre-Holocene Balearic population satisfies the need for a biogeographical link in the known range; *P. laticollis* should be sought on other west Mediterranean islands.

**Bruchidae**

*Bruchidius caninus* (Kraatz) and *Bruchidius nanus* (Germar) were frequently encountered in the hinterland, especially on flowers of *Papaver* in cultivated areas. *Bruchidius varipictus* (Motschulsky) was frequently observed in the northern coastal zone, especially on flowers of *Chrysanthemum coronarium* Linnaeus. *Bruchidius trifolii* (Motschulsky) was taken in flight, Salines de Llevant, 22-4-1987.

**Curculionidae**

*Sitona discoideus* Gyllenhal. One example on whitewashed wall, Alcanda, 26-10-1990; it has been authenticated by Mr. R.T. Thompson, London, and presented to the Natural History Museum, London. *S. discoideus* is a largely western species extending from the Atlantic Islands north to Jersey; the easternmost record appears to be from Italy. Evidently new to the Balearic archipelago.

*Sitona intermedius* Küster. Dry xeric microsites, Vall de Bóquer, October 1990. Host plant *Genista* (Velazquez et al., 1990).

*Brachycerus plicatus* (Gyllenhal). Fairly widespread in the northern coastal zone. On the coast of the Badia de Pollença, *Pancratium maritimum* Linnaeus is a host plant.

*Brachycerus barbarus barbarus* (Linnaeus). I found this only at one site in small numbers, Atalaia de la Victòria, Alcúdia, (470-490m. altitude) October 1990, where *Urginea maritima* (Linnaeus) Baker is a likely host plant. An example of *B. barbarus barbarus* has



been authenticated by Mr. R.T. Thompson.

*Coniatus tamarisci* (Fabricius). During October 1990, as an example of passive dispersion, we found this species in logs of *Tamarix* swept up by the sea on the north coast beaches.

*Pselactus spadix* (Herbst). Breeding population in large sea-washed trunk of *Pinus halepensis* Miller, near Cap de Menorca, April 1987.

*Rhyncolus strangulatus* Perris. Breeding population on slopes of Atalaia de la Victòria, Alcúdia, October 1990, in *Pinus halapensis* Miller. The oft-quoted view that *R. strangulatus* is monophagous on *Picea* is untenable.

*Brachytemnus porcatus* (Germar). Breeding in sea-washed trunk *Pinus halepensis* Miller, Illa d'Alcanada, April 1987.

*Sitophilus zeamais* Motschulsky. 32 on whitewashed wall, 10m. long, 1 m high, Alcanada, 27-10-1990. Although a much longer run of unwhitewashed wall was available, the weevils were concentrated in a small area (several square feet) of whitewashed wall only. There was nothing to indicate source. Assemblages of beetles on walls, difficult to rationalise, have been mentioned by Allen (1989).

## **Scolytidae**

*Dactylotrypes longicollis* (Wollaston). The host plant, *Phoenix canariensis* Chabaud, and beetle are indigenous to the Canary Islands. A few assembled on whitewashed wall, Alcanada, 27-10-1990.

*D. longicollis* was not cited by Tenenbaum (1915), but is presumably not now rare on Mallorca.

## **Conservation and the beetle fauna**

Effective conservation stems from a wide range of primary objectives some of which overlap, but all of which ultimately converge for the benefit of all life, human culture and spirit. The conservation of habitat and niche benefits from effective scale, whereby many species, including endemics, may flourish.

Without this the conservation of organisms at species level becomes increasingly difficult, although there are numerous successes which combine rigorous legislation and advanced technology. What has been achieved on Mallorca in recent years gives clear grounds for optimism, but not complacency. The management and conservation of the north-coast wetlands sets a high standard for other Mediterranean countries. At the same time, much of the foredune system of the Badia d'Alcúdia has been lost to coastal development.

Effects on invertebrate assemblages have been particularly marked; the situation with regard to Hemiptera: Cydidae is of particular concern. Such widespread Palearctic species as *Calathus mollis* (Marsham) have suffered fragmentation and isolation of populations. In 1987, a small dune relic was identified as the only remaining area of open foredune between Alcúdia and Can Picafort.

Situated near Port d'Alcúdia, its beetle fauna included *Cicindela flexuosa* Fabricius, *Macrothorax morbillosus* (Fabricius), *Amara ingenua* Duftschmid, *Harpalus distinguendus* Duftschmid, *Bradycellus verbasci* (Duftschmid), *Philonthus dimidiatipennis* Erichson, (at damp spots) *Quedius pallipes* Lucas (*Q. his-*

*panicus* Bernhauer, *Scarabaeus semipunctatus* Fabricius, *Blaps lusitanica* Herbst, *Stenosis intricata* Reitter, *Gonocephalum rusticum* Olivier and *Psyllodes pallidipennis* Rosenhauer. Cydnids included *Aethus flavicornis* (Faabricius), *Geotomus* sp. and *Microscylus brunneus* (Fabricius).

By the time of our second visit in 1990 the dunes had been removed totally and replaced by a villa, the entomofauna having no nearby sites to disperse to.

Valladares & Montes (1991) have reviewed the endemic *Hydraena balearica* D'Orchymont on Mallorca. They say: "Fuentes, manantiales generalmente encauzados o pequeños cursos fluviales como el de Algendar, constituyen el reducido hábitat de la especie. Estos medios suelen presentar sustrato de arenas y grava, siendo los parámetros físico-químicos del agua bastante variables: 10-20°C de temperatura, pH 7.6-7.9 y 500-1240 de conductividad. La necesidad de una drástica política de conservación para estos frágiles y reducidos ecosistemas dulceacuícolas es evidente. De su preservación depende la pervivencia de esta y otras especies de insectos acuáticos endémicos o de distribución muy restringida".

I found a somewhat isolated population of *Hydraena balearica* D'Orchymont in the Vall de Bóquer near Port de Pollença in an area of great landscape value. It occurs at a freshwater trickle descending the valley side on basic clay; adults of *H. balearica* were sometimes found amongst the saturated stems of *Adiantum capillus-veneris* Linnaeus.

The associated fauna includes *Chlaenius vestitus* (Paykull), *Hydroporus*

*tessellatus* Drapiez, *Agabus biguttatus* (Olivier), *Laccobius atrocephalus* Reitter, *Platystethus nitens* (Sahlberg) (large form), *Stenus guttula* Müller, *Nephus redtenbacheri* (Mulsant) as well as the orthopteran *Tetrix ceperoi* (Bolívar). Such spatially restricted pure-water associations are fragile, vulnerable and important. The frequent habit on Mallorca of impounding the hill streams on the terraced slopes of the sierras has effectively conserved and enhanced their aquatic fauna.

### Acknowledgements

I thank all those named in the text, many friends and eminent specialists for encouragement, in particular Dr. L. Borowiec (Wroclaw), Dr. M.L. Cox, M. Palmer (Mallorca), J. Vives (Barcelona) and Dr. T. Yelamos (Barcelona). I thank the appointed referees of the first draft for their constructive and meticulous attention to detail, which enabled numerous improvements to be made.

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