

THE ANOBIIDAE (COLEOPTERA) OF ISRAEL AND NEAR EAST*

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A B S T R A C T

Thirty four species of Anobiidae (Coleoptera) are reported from Israel and neighbouring countries. Most of the species are known only from the Mediterranean basin; two are endemic. Eleven species have been found feeding on wood.

I N T R O D U C T I O N

The Anobiidae are minute beetles, 1.5-9 mm long, many of which occur only in scarce populations. Only comprehensive and long-term surveys can thus provide adequate data on their geographical distribution in different countries and continents .

No detailed research on the family has hitherto been conducted in Israel. Only two species, i.e. *Lasioderma serri-corne* and *Stegobium paniceum*, which cause considerable damage to stored food products, were investigated, and they are the only species mentioned by Avidov and Harpaz (1969) in their textbook.

The first local list of Anobiidae was compiled by Bodenheimer (1937), who recorded 17 species, of which only ten were found by us in this survey.

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The present review is based mainly on data obtained by the senior author during the years 1958-78 in a survey of insects feeding on, or associated with, trees and wood products. Data were also obtained by an inspection of the major entomological collections in this country viz. the Agricultural Research Organization, Bet Dagan; the Department of Zoology, Tel Aviv University; the Department of Zoology, The Hebrew University of Jerusalem; Bet Gordon, Deganya; the Teachers' College at Oranim; and the collection of Prof. H. Bytinski-Jalz, Tel Aviv. This provided a better basis for the present review, but in our view does not include all the species occurring in Israel.

Identifications were made by the second author (F.E.). Among the 24 identified species, one, *Clada halperini* Español, was new to science (Español, 1978). Ten additional species are known to occur in neighbouring countries, but so far have not been found in Israel.

ANOBIID FAUNA OF ISRAEL* and NEIGHBOURING COUNTRIES

H E D O B I I N A E

1. *Clada halperini* Español

So far known only from Israel (Español 1978).

ISRAEL. En Gedi (DS), 23.IX.69; En Gedi, bred from a dry branch of *Tamarix tetragyna* (previously infested by other xylophagous insects such as: *Kaloterms sinaicus* Kemner and *Buprestis hilaris* Klug), coll. 11.IV.71, em. (29 females and 22 males): 21.XI.-22.XII.71, 7.II.72, 19.VII.-22.X.72, 5.IX.-14.XI.73, 30.IX.-19.XI.74, 7.X.75, 17.X.76.

* Abbreviations used for the regions of Israel, are: CA, Carmel Ridge; CO, Coastal Plain; DS, Dead Sea area; GH, Golan Heights; JV, Jordan Valley; JU, Judea; LG, Lower Galilee; NE, Negev; SA, Samaria; UG, Upper Galilee; VY, Valley of Yezre'el; coll., collected or collector; em., emerged.

2. *Clada tricostata* Baudi

Synonym: *C. quinquecostata* Schilsky

Distribution: E. Mediterranean (Español, 1969b). Referred by Pic (1912) to the subgenus *Pseudoclada* Pic of *Hedobia* Latreille, but in our view cannot be separated from *Clada* Pascoe (Español, 1968, 1970). Listed as *Hedobia tricostata* Baudi by Bodenheimer (1937).

ISRAEL. Massada (J V) 20.VIII.44 (coll. J. Palmoni); Tel Aviv, I.1952, ex pine rafter (coll. H. Bytinski-Salz); Oranim (VY), 9.VIII.59; Ashdod (CP), em 1-6.VIII.75 from a dry branch of *Acacia albida* Delisle, coll. 7.X.74.

D R Y O P H I L I N A E

3. *Dryophilus forticornis* Abeille de Perrin

Recorded from Syria and Asia Minor (Reitter, 1901).

E R N O B I I N A E

4. *Xestobium plumbeum* (Illiger)

Synonym: *X. syriacum* Pic

Recorded from central and southern Europe, Caucasus and Syria (Español, 1964).

5. *Ernobius mollis* (L.)

Distribution: Europe, Canary Islands, Siberia, N. America, New Caledonia (Johnson, 1975). Develops in dead conifer wood and timber.

ISRAEL. Haifa, in board (with bark attached) of *Pinus sylvestris* L., imported from Sweden, coll. 23.III.59, em. 3.IV.-5.VII.59, 28.III.60; Ilanot (CP), dry stem of *P. maritima* Poiret, coll. 23.III.66, em. 2.V.66; Aleka (GH), dry stem of *P. brutia* Tenore, coll. 6.XI.67, em. 25.III.68; Ilanot, dry stem of *P. radiata* Don., coll. 1.IV.68, em. 1.II-13.V, 1.VIII, 10.XI.1968; Ashdod harbour (CP), intercepted 6.VI.71 from unbarked logs of *P. sylvestris* imported from Denmark; 'En Zetim (UG) 24.IV.78, ex dead stem of *P. brutia*, coll. 9.V.77.

6. *Ernobius oertzeni* Schilsky

Previously known only from Italy and Greece, from *Pinus halepensis* Miller (Johnson, 1975). Samples from Israel and a single male available from Greece showed similarity in the

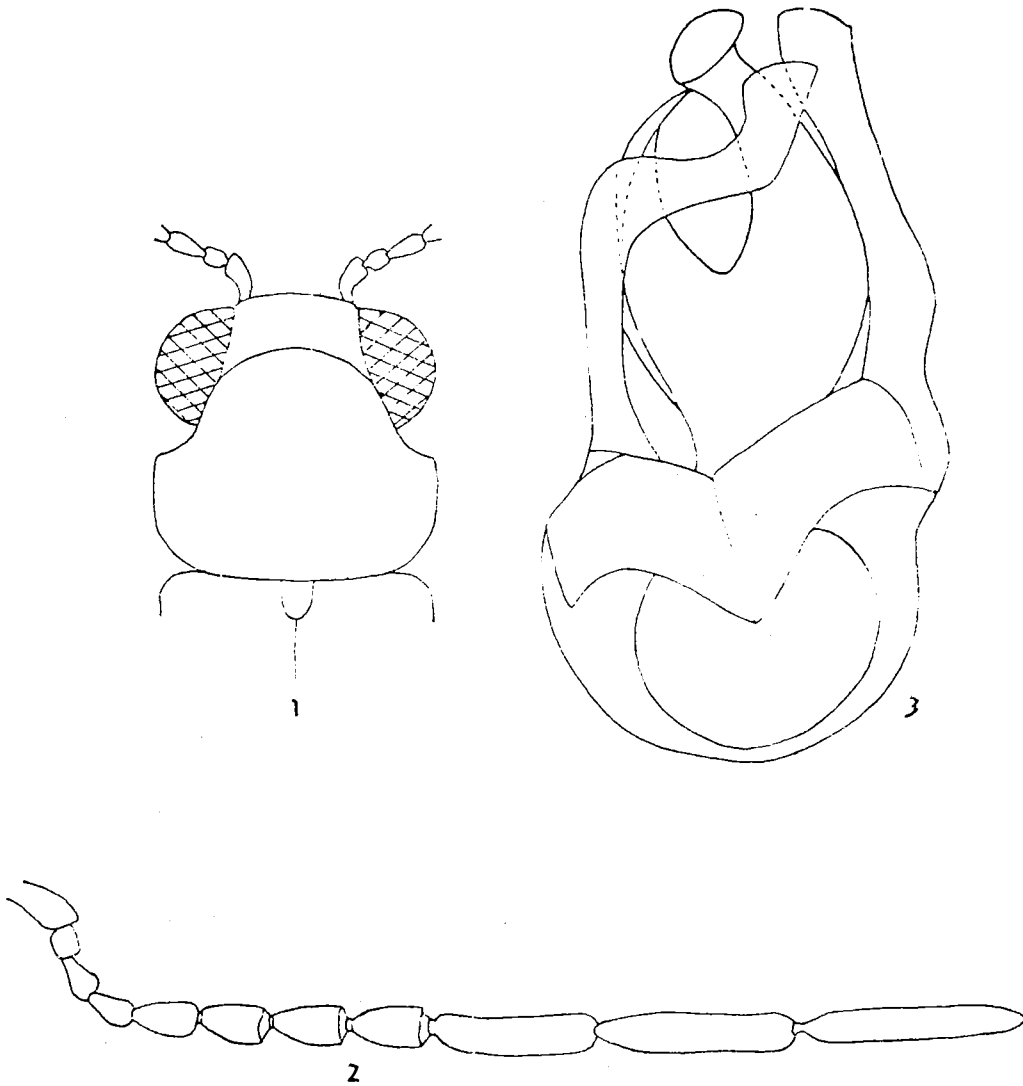


Fig. 1-3. *Ernobius oertzeni* Schilsky. 1. Head and prothorax.
2. antenna. 3. aedeagus.

shape of antennae, eyes, etc. (Figs. 1 and 2). There are only few, but discernible differences in the form of the genitalia (compare Fig. 3 with No. 33 of the revision of Johnson), but the significance of these differences is unknown due to lack of material from other countries.

ISRAEL. Biriyya (UG), 6.VIII.59; Yoqne'am (SA) 25.VIII.59; Damun (CA) 10.IX.59; Yirka (LG), 15.XII.59; Tsomet Golani (10 km E. of Tiberias) 19.4.71; Shahariya (6 km E. of Qiryat Gat), 24.4.71; many other forests close to these localities. In all cases the larvae developed in cones of *P. halepensis* and *P. brutia*, and the beetles emerged during the months V-IX, often after previous infestation by larvae of *Dioryctria* spp. (Lepidoptera). In two cases the beetles emerged not from cones but from dry branches of *Pinus halepensis*, coll. near Hebron, 15.III.68, and from an old log of *Cedrus* sp., coll. in Ma'alé haHamisha (JU), 4.IX.68, and left in the open, in Ilanot, as a trap tree, until 25.V.71, em. 18.VI.-20.VIII.71.

7. *Ernobius syriacus* Pic

Recorded from Syria and Turkey (Johnson 1975).

A N O B I I N A E

8. *Gastrallus corsicus* Schilsky

Synonym: *G. coarcticollis* Schilsky

Distribution: Holomediterranean (Español, 1963).

Bred in Israel in great numbers from stem and branches of different trees and shrubs: *Araucaria*, *Casuarina*, *Populus*, *Ulmus*, *Celtis*, *Morus*, *Ficus*, *Persea*, *Moringa*, *Cotoneaster*, *Acacia*, *Cercis*, *Ceratonia*, *Delonix*, *Robinia*, *Acer*, *Hibiscus*, *Elaeagnus*, and *Olea*, collected mainly on Mt. Carmel, Yezre'el Valley, Coastal Plain, and Dead Sea area. Most of the beetles emerged during the months V-VIII.

Observed by the second author in Costa Brava Catalana, Spain, in dry wood of *Lavatera arborea* L.

9. *Gastrallus pubens* Fairmaire

Synonyms: *G. striatus* Schilsky and *G. rollei* Reitter

Distribution: Arid areas of E. Mediterranean and N. Africa; exceptional along the European coasts of the Mediterranean Sea. Found by de Villers (in collection of Pic) in Dakar. In libraries, feeding on paper and binding of books (Español, 1963).

ISRAEL. Hadéra (CP) 27.V.31 (coll. unknown); Rehovot (CP) 5.V.48, Nahariya (CP) 15.IX.49, Herzliya (CP), 29.VIII.50 (coll. H. Bytinski-Salz); Deganya (JV) 27.VI.61 (coll. J. Palmoni); Ilanot (CP) 20.VII.64; Tel Aviv, 26.V.77. All these beetles developed in books. It has also been found at 'En Gedi (DS) in dry branches of *Moringa peregrina* Fiori, coll. 13.IV.76 (em.V.77) and 26.I.77 (em. V.78).

10. *Falsogatrallus unistriatus* (Zoufal)

Recorded from Syria, Greece and neighbouring countries (Español, 1963).

11. *Oligomerus ptilinoides* (Wollaston)

Occurs in the Mediterranean and Black Sea areas. Regarded as an important pest of dry wood (Cymorek, 1978; Nour, Hindy and Sidaros, 1962).

12. *Stegobium paniceum* (L.)

Distribution: Cosmopolitan.

Feeds mainly on baked cereal products but also on cereal grains, book bindings, dried plant and insect collections, and hides (Avidov and Harpaz, 1969). Constantly dispersed with commercial goods and may occur everywhere. In Israel found also outdoors, in tents of *Eriogaster philippsi* Bartel (Lasiocampidae), which feeds on *Quercus ithaburensis* Decaisne and *Q. calliprinos* Webb; in old boards of *Picea* and *Triplochiton*, and in dry stems and branches of different trees and shrubs, such as *Pinus*, *Populus*, *Prunus*, *Acacia*, *Cercis*, *Delonix*, *Pistacia*, *Vitis*, *Tamarix* and *Olea*. It has also been reared on seeds of *Sorghum halepense* Persoon (coll. D. Gerling). Beetles em. III-XII.

13. *Nicobium castaneum* Olivier

Its general distribution is unknown because until recently it was not clearly separable from *N. hirtum* Illiger. Recently, Cymorek (1975) showed that *N. castaneum* and *N. hirtum* are distinct species, although they are similar in general morphology

and biology; in *N. castaneum* the elytra are uniformly pubescent, whereas in *N. hirtum* the hairs are arranged in brighter and darker transverse bands. Damage from *N. castaneum* was recorded from libraries, mainly in Portugal, where the larvae feed on paper; *N. hirtum* was reported from S. Europe, Japan and U.S.A. in libraries and in wood, timber, furniture, etc. (Cymorek, 1977).

ISRAEL. Hebron 7.XII.36 "ex wooden shrine of a mosque" (coll. unknown); Nahalat Yehuda (CP) 13.IX.49, from wood of *Delonix*, Hulda (CP) 21.VI.50, ex telephone post (coll. H. Bytinski-Salz); Even Yehuda (CP), ex old pine board, coll. 7.IV.70, em. 25.V-10.VIII.1970, 5.VI-5.VII.71.

14. *Anobium punctatum* (De Geer)

Distribution: Cosmopolitan. In Europe this beetle is a serious pest of hardwood and softwood, damaging structural timber, joinery, fittings of buildings, objects of art, gate posts, fences, etc.

According to Bytinski-Salz (1966), it is constantly introduced into Israel with old furniture from Europe, but has, apparently, been unable to establish itself in the hot and dry climate.

ISRAEL. Hebron 7.XII.36 "ex wooden shrine of a mosque" (coll. unknown).

15. *Priobium dendrobiiforme* (Reitter)

Recorded from Syria, Asia Minor, SE. and E. Europe and Caucasus (Pic, 1912).

X Y L E T I N I N A E

16. *Plumilus grandicollis* (Ménétriés)

Distribution: From SE Europe to Caucasus (Reitter, 1901).

ISRAEL. Jerusalem 31.V.29 (coll. Y. Tapuchi).

17. *Metholcus cylindricus* (Germar)

Distribution: Mediterranean and E. Africa (Somalia and Ethiopia) (Español, 1972).

ISRAEL: Allonim (VY) 17.V.42, ex *Quercus* sp., Tel Aviv-Yafo, 17.VI.48 (coll. H. Bytinski-Salz) and 25.V.74 (coll. D. Furth);

Rehovot (CP) 10.VII.56; Miqwé Yisra'él (CP) 27.III.59 ex *Amygdalus communis* L. (coll. J. Kugler); 'Evron (CP) 2.III.70 ex *Ulmus* sp., em. 20.VII.71; 'Akko, 23.I.75, ex *Macadamia* nuts (as *Gastrallus* in Wysoki, 1977); Carmel, ex tents of *Eriogaster philippsi*, coll. 12.IV.77 on *Quercus calliprinos*, em. 22.VI.77.

18. *Metholcus rotundicollis* Schilsky

Distribution: E. Mediterranean. The type series is from Beirut (Español, 1972).

ISRAEL. Adullam (JU) 1.VIII.77, 11.VII.78, ex dry branch of *Pistacia atlantica* Desfontaines, coll. 22.VIII.75.

19. *Xyletinus bucephalus* (Illiger)

Distribution: Mediterranean. The collections from the E. Mediterranean are referred to by Gottwald (1977) as spp. *theanus* Reitter.

ISRAEL. Metulla (UG), 14.IX.31 (coll. A. Greenberg); Revivim, (NE), 13.VI.52; 'En Gedi (DS), 16.VIII.57 (coll. J. Wahrman); 'En Gedi, 12.X.69; Merom Golan (GH), 20.IV.73.

20. *Xyletinus laticollis* (Duftschmid)

Distribution: Europe and E. Mediterranean, to Iran (Gottwald, 1977). Gottwald (1977) considers *X. flavipes* v. *fulvicollis* Reitter, recorded from E. Mediterranean and Causasus, to be synonyms of *X. laticollis*. Reitter (1901), Pic (1912) and others, consider *X. fulvicollis* as separate species. Bodenheimer (1937) mentioned it as *X. flavicollis* Reitter.

ISRAEL. Jerusalem, 27.VI.29, Hadéra (CP) 21.III.30 (coll. unknown); Abu Ghosh (JU) 6.IV.48 (coll. A. Moscona); Yoqne'am (SA) 16.V.61 on twig of *Pinus halepensis*; Ma'alot-Tarshiha (UG) 12.V.72; Kerem Maharal (CP), 10.V.72; Meron and Biriya (UG) 5.VI.73; Netanya 24.IV.74, Biddu (JU), 31.V.74 (coll. D. Furth).

21. *Lasioderma bubalum* (Fairmaire)

Distribution: Mediterranean.

Morphologically very close to *L. kiesenwetteri* and *L. redtenbacheri*, but differs from both by much shorter metasternum marked by a deep, medial, triangular depression, widening posteriorly.

ISRAEL. Deganya (JV) 21.V.37 (coll. J. Palmoni); Yoqne'am (SA) 25.VIII.59, on branch of *Pinus halepensis*; Wadi Far'a (SA) 31.III.71, ex ripe fruits of *Prosopis farcta* Macbride (coll. A. Goldstein); Metulla (UG) 21.IV.73; Gevulot (NE) 12.III.74; Netanya, 21.IV.74.

22. *Lasioderma haemorrhoidale* (Illiger)

Distribution: Holomediterranean (Pic, 1912).

ISRAEL. Tiberias 2.V.31 (coll. A.Greenberg); Yoqne'am (SA) 28.VIII.60; Wadi Far'a (SA) 10.2.71 in ripe fruits of *Prosopis farcta* (coll. D. Gerling); Jericho, 30.III.73 and 18.IV.73; Yavne'él (LG) 31.III.73, Dishon (UG) 18.IV.73, Jenin (SA) 21.IV.73, Sharsheret (NE) 28.IV.73 (coll. D. Furth); Safad, 17.V.73 (coll. F. Nachbar).

23. *Lasioderma kiesenwetteri* Schilsky

Distribution: Europe, with penetration into palaeartic Asia (Logvinovskij, 1977). Might be confused with *L. redtenbacheri* but distinguished from it by the less serrated antennae with smaller segments and convex anterior margins.

ISRAEL. Deganya (JV) 4.V.39 and 6.VIII.39 (coll. J. Palmoni); Tel Aviv 5.IV.49 (coll. H. Bytinski-Salz); Dan (UG) 18.V.54; Elon (UG) 3.V.73.

24. *Lasioderma punctulatum* Reitter

Distribution: Syria and probably palaeartic Asia. Recently recorded also from E. Mongolia (Logvinovskij, 1977).

Closely related to *L. serricorne*, from which it differs by smaller size (1.2-2.1 mm as compared to 2-3 mm in *L. serricorne*) and by proportionally much longer antennae.

ISRAEL. Hartov (JU) 12.IX.71, from ripe fruits of *Prosopis farcta*, em. 16.I.72 (coll. A. Goldstein); Ne'ot haKikkar (DS) 23.XIII.71, from ripe fruits of *P. farcta*, em. 20.II.72 (coll. A. Goldstein); Kabri (CP), 1.VII.73, ex dry branch of *Pyracantha* sp., em. 5.VI.74; 'En Gedi, (DS) 9.V.74 (coll. D. Furth); Bizzaron (CP), 3.XI.76, ex ripe fruits of *Schinus molle* L., em. 26.VI.77; 'En Gedi, em. 22.VI.77, from dry branch of *Moringa peregrina*, coll. 26.I.77, and em. 1-18.VI.78 from material coll. 22.II.78; Ilanot (CP) 21.V.78 ex dry branch of *Fraxinus syriaca* Boissier, coll. 27.VII.77.

25. *Lasioderma redtenbacheri* (Bach)

Distribution: Central and S. Europe, palaeartic Asia to Mongolia (Logvinovskij, 1977). Develops in the inflorescences of Compositae.

ISRAEL. 'En Gév (JV), 23.V.49 (coll. H. Bytinski-Salz); 'En Gedi (DS), 9.V.74.

26. *Lasioderma serricorne* (F.)

One of the most common, best known and most widespread anobiids occurring in Israel. A native of tropical America, it was spread by international trade to all parts of the world.

Feeds on plant and animal matter. Prefers foods, various herbs, cotton, wool, biscuits, dried fish, dried insects, upholstery fabrics, silk, velvet (Avidov and Harpaz, 1969), leguminous grains and carob pods (Calderon and Binjamini, 1960).

In Israel it also develops in the field, e.g. in empty cynipid galls and flower heads of thistles and safflower (H. Bytinski-Salz, 1952), seeds of *Acacia cavenia* Bertero, etc.

T R I C O R Y N I N A E

27. *Mesotheres ferrugineus* Mulsant

Recorded from Mediterranean countries of Europe, E. of the Iberian Peninsula to Asia Minor (Español, 1967b).

28. *Mesocoelopus ingibbosus* Pic

Distribution: From Asia Minor, Egypt (type locality) to the Gulf of Aden (Español, 1967a). Closely related to *M. collaris* Mulsant, recorded by Bodenheimer (1937), which is Circum-mediterranean and reported also from the U.S.A., but distinguished from *M. ingibbosus* by having its pronotum convex backwards, without any prescutellar elevation (characteristic to *M. collaris*), by the double and ruffled elytral punctation and by the shape of the last segment of the palpi maxillari, which is narrow and elongated.

ISRAEL. 'En Gedi (DS), 12.V.74; 'En Gedi 15.XI.77, em. from dry branch of *Calotropis procera* Aiton f., coll. 2.10.77.

D O R C A T O M I N A E

29. *Petalium parmatum* (Baudi)

Distribution: Recorded from the E. Mediterranean (Cyprus, Syria, Israel and Egypt) but probably extends to the Ethiopian region (Español, 1975).

ISRAEL. From stems of *Cercis siliquastrum* L.: Allonim (VY), coll. 5.V.75, em. 6-31.VIII.75, and coll. 4.IV.76 em. 20.VI.77, haSolelim (LG), coll. 24.III.77, em. 1-8.VIII.77.

30. *Stagetus dorcatomoides* (Reitter)

Recorded from Cyprus and Syria (Español, 1969a).

31. *Stagetus ferrugineus* Español

Described (one male) from an unknown locality in "Palestine". Clearly distinguished from other Mediterranean species by the particular shape of the male genitalia.

32. *Stagetus franzi* Español

Distribution: Holomediterranean (Español, 1969a).

ISRAEL. Miqwé Yisra'él, 7.V.74.

33. *Stagetus latior* (Pic)

Synonym: *S. reitteri* Schilsky.

Recorded from Syria (Español, 1969a).

34. *Stagetus puncticollis* Reitter

Synonyms: *S. moreanus* Pic and *S. pilulus* var. *laterufus* Pic.

Recorded from the Mediterranean region, including Cyprus and Syria (Español, 1969a).

DISTRIBUTION AND FEEDING HABIT

Most of the species are restricted to the Mediterranean area. Some have a wider distribution: European (*Lasioderma kiesenwetteri*, *L. redtenbacheri*, *Xestobium plumbeum*, *Xyletinus laticollis*), Asiatic-palaeartic (*L. punctulatus*, *L. redtenbacheri*), Irano-Turanian (*X. laticollis*), Saharo-Arabian (*Mesocoelopus ingibbosus*), or Ethiopian (*Methololcus cylindricus*, *Petalium parmatum*). Several are cosmopolitan (*Anobium*

punctatum, *L. serricorne*, *S. paniceum*, and to some extent also *Ernobius mollis* and *Nicobium castaneum*). Two are probably endemic (*C. halperini* and *Stagetus ferrugineus*). Five seem to have been introduced to the area (*A. punctatum*, *E. mollis*, *N. castaneum*, *L. serricorne* and *S. paniceum*).

Eleven species have been found to be associated with wooden material; some are restricted to specific hosts such as *Pinus* (*E. mollis*, *E. oertzeni*), *Cercis* (*P. parmatum*), *Pistacia* (*Metholcus rotundicollis*), or *Tamarix* (*C. halperini*); some are polyphagous (*C. tricostata*, *Gastrallus corsicus*, *L. punctulatum*, *M. cylindricus*, *N. castaneum*), or develop in old furniture (*A. punctatum*). Two species are polyphagous and feed on various organic materials (*L. serricorne* and *S. paniceum*), and one feeds on paper (*G. pubens*).

Only five of the species are regarded as pests: *L. serricorne* and *S. paniceum* which develop in stored food products; *Gastrallus pubens* feeds on paper and book bindings and sometimes causes considerable damage in libraries; *Ernobius mollis* damage unbarked pine boards; and *E. oertzeni* destroys cones of pine.

Anobium punctatum, a well known pest of dry wooden objects, and *Nicobium castaneum*, injurious to paper and wooden material, are both of very exceptional occurrence here.

Gastrallus corsicus, although very common in Israel in dry stems and branches of many trees and shrubs, is not regarded as harmful. *Metholcus cylindricus* was found only once in *Macadamia* nuts.

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REFERENCES

- Avidov, Z. and Harpaz, I. 1969. Plant Pests of Israel. Israel Universities Press, Jerusalem. 549 pp.
- Bodenheimer, F.S. 1937. Prodrromus Faunae Palaestinae. *Mem. Inst. d'Egypte* 33: 1-286.
- Bytinsky-Salz, H. 1952. Safflower pests in Israel. *Trans. 9th Congr. Entomol.* 1: 745-750.
- Bytinsky-Salz, H. 1966. Annotated list of insects and mites introduced into Israel. *Israel J. Entomol.* 1: 15-48.
- Calderon, M. and Binjamini, N. 1960. Damage of the cigarette beetle in stored biscuits. *Teva vaArets* 2: 254-258 (in Hebrew).
- Cymorek, S. 1975. On the species problems in *Nicobium castaneum*. *J. Inst. Wood Sci.* 7(2): 58-59.
- Cymorek, S. 1977. Schadinsekten in Buechern. *Wolfenbuetteler Forschungen* 1: 33-59.
- Cymorek, S. 1978. Bemerkungen zu *Oligomerus ptilinoides* (Wollaston) (Col., Anobiidae): Über Lebensbeziehungen, Merkmale, Verbreitung und Einschleppungen noerdlich der Alpen. *Docum. IRG/WP/187*, 9 pp.
- Español, F. 1963. Los *Gastrallus mediterraneos* (Col. Anobiidae, Nota 8). *Publ. Inst. Biol. Apl.* 35: 5-21.
- Español, F. 1964. Los *Xestobium* Motsch. palearticos (Col. Anobiidae). *Eos* 40 (1-2): 123-137.
- Español, F. 1967a. Contribucion al conocimiento del género *Mesocoelopus* Duv. (Col. Anobiidae, nota 30). *Publ. Inst. Biol. Apl.* 43: 85-102.
- Español, F. 1967 b. Contribucion al conocimiento del género *Mesotheres* Muls. *Rey. EOS*, 43 (1-2): 49.
- Español, F. 1968. Nuevos datos sobre anobidos de las Islas Canarias (Col.). *Miscelanea Zoologica*, Barcelona, 2(3): 75-83.

- Español, F. 1969a. Dos nuevos *Stagetus* Woll. del Asia paleartica (Col. Anobiidae, nota 38). *Publ. Inst. Biol. Apl.* 46: 53-58.
- Español, F. 1969b. Contribucion al conocimiento de las *Clada* Pasc. africanas (Col. Anobiidae, nota 41). *Miscelanea Zoologica*, Barcelona 2(4): 39-46.
- Español, F. 1970. Contribucion al conocimiento de la subfam. *Hedobiinae* (Col. Anobiidae, nota 46). *Mem. R. Acad. Cienc. Art. Barcelona* 40(7): 457-482.
- Español, F. 1972. Contribucion al conocimiento del género *Metholcus* Duv. (Col. Anobiidae, nota 55). *Miscelanea Zoologica*, Barcelona 3 (2): 61-73.
- Español, F. 1975. Sobre los *Petalium* del grupo *parmatum* (Rhadine Baudi) (Col. Anobiidae, nota 67). *Entomol. Blaett.* 71 (2): 94-99.
- Espanol, F. 1978. A new species of *Clada* (Coleoptera: Anobiidae) from Israel. *Israel J. Entomol.* 12:1-4.
- Gottwald, J. 1977. Die palaearktischen *Xyletinus*-Arten (Col. Anobiidae). *Acta. Entomol. Bohemoslav.* 74: 158-177.
- Johnson, C. 1975. A review of the palearctic species of the genus *Ernobius* Thoms. *Entomol. Blaett.* 71 (2): 65-93.
- Logvinovskij, V.D. 1977. (Review of anobiid beetles of the genus *Lasioderma* Steph. (Col. Anobiidae) from the USSR and Mongolia). *Insect. Mongolia* 5: 284-285. Edit. Scienc., Leningrad (in Russian).
- Nour, H., Hindi, B. and Sidaros, F. 1962. Anobiidae attacking furniture. *Bull. Soc. Entomol. Egypte* 46 (1): 1-3.
- Pic, M. 1912. Anobiidae. In: Junk (edit.) *Coleopt. Cat.* 48: 3-92.
- Reitter, E. 1901. Bestimmungs-Tabellen Europ. Coleopt. 47 Byrrhidae (Anobiidae): 3-46.
- Wysocki, M. 1977. Insect pests of *Macadamia* in Israel. *Phytoparasitica* 5: 187-188.