

Cynipidae associated with *Quercus* collected in Corsica with the description of a new *Plagiotrochus* species (Hymenoptera, Cynipoidea)

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ABSTRACT

The Cynipidae material studied in this work was collected using Malaise and yellow pan traps in various Corsican oak stands, some of them consisting of *Quercus suber* and others of *Quercus ilex*. Six *Plagiotrochus* species *P. quercusilicis*, *P. australis*, *P. britaniae*, *P. amenti*, *P. cardiguensis*, and *P. vilageliui* Pujade-Villar n. sp., one *Andricus* and eight inquiline species (*Ceropres cerri*, *C. clavicornis*, *Saphonecrus lusitanicus*, *Saphonecrus barbotini*, *Saphonecrus haimi*, *Synergus ilicinus*, *Synergus crassicornis*, and *Synergus apicalis*) have been collected. All are recorded for the first time from Corsica. Different nomenclatorial problems in *Andricus niger* and *Plagiotrochus amenti* denominations are commented upon. *Plagiotrochus amenti* Tavares, 1902 is presented as a new synonym of *Plagiotrochus amenti* Kieffer, 1901. Some specimens of undetermined *Andricus* were obtained in floral galls of *Q. suber*; they are closely related to *Andricus niger* and *A. burgundus*. Some specimens obtained from twig galls are morphologically related to *Plagiotrochus cardiguensis* and are probably conspecific with this species.

KEY WORDS

Corsica,
Cynipidae,
Quercus suber,
Quercus ilex,
Plagiotrochus,
Andricus,
Ceropres,
Saphonecrus,
Synergus.

RÉSUMÉ

Les Cynipides associés aux Quercus capturés en Corse et description d'une nouvelle espèce de Plagiotrochus (Hymenoptera, Cynipoidea).

Des Cynipidae ont été collectés en Corse, dans différents peuplements de chêne-liège *Quercus suber* et de chêne vert *Quercus ilex*, à l'aide de pièges Malaise et de pièges jaunes. Six espèces cécidogènes du genre *Plagiotrochus* (*P. quercusilicis*, *P. australis*, *P. britaniae*, *P. amenti*, *P. cardiguensis* et *P. vilageliui* Pujade-Villar n. sp.) et une espèce d'*Andricus*, ainsi que huit espèces commensales (*Ceropres cerri*, *C. clavicornis*, *Saphonecrus lusitanicus*, *Saphonecrus barbotini*, *Saphonecrus haimi*, *Synergus ilicinus*, *Synergus crassicornis*, and *Synergus apicalis*) ont été récoltées. Toutes sont signalées pour la première fois de Corse. Plusieurs problèmes nomenclaturaux concernant *Andricus niger* et *Plagiotrochus amenti* Tavares sont discutés. *Plagiotrochus amenti* Tavares, 1902 est mis en synonymie avec *Plagiotrochus amenti* Kieffer, 1901. Un certain nombre des spécimens d'*Andricus* collectés demeure indéterminé ; ils ont d'étroites affinités avec *Andricus niger* et *A. burgundus*. D'autres spécimens obtenus de galles des rameaux sont proches morphologiquement de *Plagiotrochus cardiguensis* et appartiennent probablement à cette espèce.

MOTS CLÉS

Corse,
Cynipidae,
Quercus suber,
Quercus ilex,
Plagiotrochus,
Andricus,
Ceropres,
Saphonecrus,
Synergus.

INTRODUCTION

The hymenopteran family Cynipidae includes species forming galls on different host plants as well as inquiline. The tribe Cynipini is composed of gall-forming species almost exclusively associated with oaks, and the tribe Synergini contains their inquilines.

The Cynipidae are poorly known in the Tirrenic Islands. Even though 25 species have been quoted on *Quercus* in Sicily, only one was mentioned on this tree genus in Sardinia and none in Corsica (Dalla Torre & Kieffer 1910). All the species presented here are new records from Corsica. They were caught using different capture methods: Malaise traps, emergence and yellow pan traps as well as gall collections.

Nieves-Aldrey (1996) and Ros-Farré & Pujade-Villar (1998) attested to the importance of cynipid captures obtained by using Malaise traps in Spain and Andorra respectively. In both cases, the Malaise traps were maintained during more than one year at the study site so that the material caught gave a rough estimation of the richness and the biodiversity of the cynipid fauna. In Corsica, because Malaise traps were set for short

duration (one month in 1996 in a cork oak stand and two months in 1997 in a green oak stand), a large number of species which do not fly during this period are not represented.

Emergence and yellow pan traps have not previously been used to capture this group, except in one study the results of which were never published (Blasco-Zumeta in Pina de Ebro, Spain, pers. comm.). For this reason, in spite of the short duration of the catching period, the results in the present paper partially amplify the knowledge obtained by using Malaise traps. In addition, several data obtained by occasional collections of galls made on *Quercus* are added.

ABBREVIATIONS

EME Essig Museum of Entomology, Berkeley (California);
MNHN Muséum national d'Histoire naturelle, Paris (France);
UB Universitat de Barcelona (Spain).

MATERIAL AND METHODS

The material studied here was collected in Corsica in spring, between 1993 and 1997, in various

green (*Q. ilex*) and cork (*Q. suber*) oak stands. These two evergreen trees are the most abundant *Quercus* species present in Corsica. Four other caducifolious species (*Q. petraea*, *Q. humilis*, *Q. robur* and *Q. virgiliana*) are scarce while *Q. coccifera* is absent.

Q. suber, which only grows on siliceous soils, dominates near the coast and in low mountains (up to an altitude of 400-500 m) in the southern half of the island. The widest cork oak stands are located in the South-East, in the interland of Porto-Vecchio, whereas several other stands are scattered in the South-West, notably between Sartène and Ajaccio. *Q. ilex* is present all over Corsica but is mostly represented in the western part of the island from the North to the South and from coast level to high altitude. Even though the high maquis has replaced the forest in most of the sites, wide crowded green oak stands are already present locally, notably in the North-West, in the Man and Biosphere Reserve of the Fango Valley (Gamisans 1999).

Most of the Cynipidae specimens were collected with yellow pan traps placed in the green oak forest of the Fango valley (Fig. 1). In 1993, collections were made every week from the 1st May to the 2nd July (R1 to R9 samplings) in four study sites, two of them being located in crowded oak stands (DN and DA) and two others in clear senescent oak stands (SW and SE). In each site, three yellow pan traps were put on the ground (S) and three others in the tree crown (C) using an original system of pulleys developed by Andreï-Ruiz (1996). In 1994, yellow pan traps were placed in a crowded green oak stand near the forest station of Pirio. Traps were placed following a transect from the ground (CS1 to CS17 traps) up to 3 m (CI to CVI) and 14 m (CH1 to CH6) above the ground. Collections were made from the 4th to the 12th June (R1) and 12th to the 19th June (R2) (Villemant & Andreï-Ruiz 1999). In 1997, a Malaise trap was placed in the same oak stand and insects were collected weekly from the 27th May to the 5th August.

The cork oak forest of Bastiliccacia is located at about 10 km East of Ajaccio (Fig. 1). In 1996, cynipids were caught with two Malaise traps, one

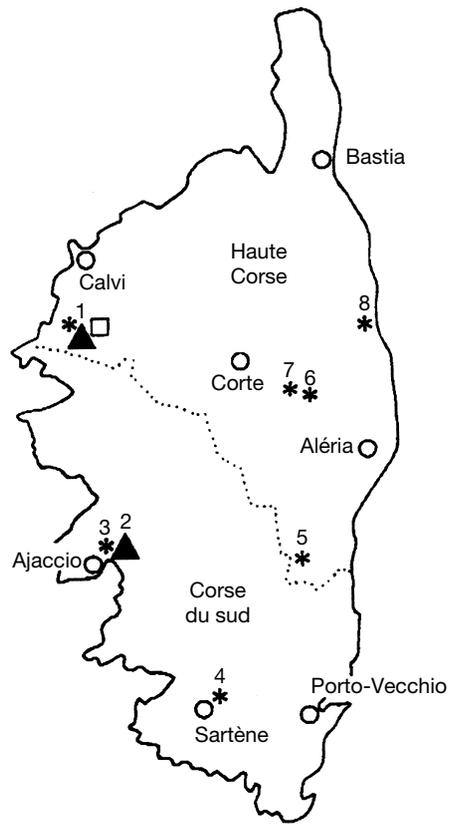


FIG. 1. — Location of the study sites and capture methods utilised; 1, green oak forest of the Fango Valley; 2, cork oak forest of Bastiliccacia; 3, Sualralta; 4, Granace; 5, Corli Vignola; 6, Pont Génôis; 7, Suartha; 8, Ponte Luccia. Black triangle, Malaise traps and emergence traps; white square, yellow pan traps; asterisk, gall collections.

placed on the ground (MS) and the other in the crown of a tree at 3 m above the ground (MH). Emergence traps were also placed on the ground of the cork oak stand. Collections were performed weekly from the 31st May to the 21st June (R1 to R4 samplings).

In 1995, galls collections on *Q. suber* or *Q. ilex* were occasionally made in various sites throughout Corsica: near Ajaccio (Sualralta) and Sartène (Granace), in the Castagniccia region (Ponte Luccia), along the road connecting Corte to Aléria (Pont Génôis, Suartha), and near Chisa (Corli Vignola) (Fig. 1).

All specimens, mounted on cardboard, have been studied with a stereomicroscope. Drawings were

made using a camera-lucida. The SEM photographs of the type material (paratype), collected in El Toscar (Spain), were taken without any coating. The voltage used ranged from 500 to about 600 V.

Terminology used is the habitual in this group according Ronquist & Nordlander (1989). Abbreviations are specified here: pol, distance between lateral ocelli; ool, distance between lateral ocelli and eye margin; lol, distance between lateral and frontal ocelli.

RESULTS

A total of 166 specimens of Cynipidae belonging to eight Synergini and seven Cynipini species was collected. One of them is a new species of *Platigotrochus*. The results suggest that during the same period, the number of collected specimens and their species richness are lower in yellow pan traps than in Malaise traps. Whereas with yellow pan traps more cynipids were caught in the crown of the trees than near ground of the green oak stands, the Malaise trap put at 3 m above the ground collected less specimens than the one placed on the ground in the cork oak stand of Bastilicaccia.

Tribe CYNIPINI Ashmeal, 1903

Andricus niger Tavares, 1902

Andricus niger Tavares, 1902 in Tavares 1916: 84-86. — Nieves-Aldrey 1982: 70; 1989: 148 [Mistake in the description's year].

Andricus luteicornis Kieffer, 1900.

var. *niger* Kieffer, 1901: 453 [Indisponible name].

Andricus luteicornis var. *niger* Tavares, 1902: 10-11. — Kieffer 1902: 559. — Tavares 1905: 56 [according Tavares 1916: 86].

Andricus luteicornis niger Kieffer, 1901. — Dalla Torre & Kieffer 1910: 516 [Mistake in the author's name].

MATERIAL EXAMINED. — Vallée du Fango. Yellow pan trap (R3/DN/C 3), 14-21.V.1993, 1 ♀ (UB).

Corli Vignola. *Q. suber* floral galls 26.V.1995(No. 4), 1 ♀ (UB).

REMARKS

This species is recorded from Spain and Portugal (Tavares 1916; Nieves-Aldrey 1982, 1989).

The correct name, the author and the year's description of this species have been unsettled until now. *Andricus luteicornis* var. *niger* was originally described on the basis of their galls which are indistinguishable from those of *Andricus luteicornis* (Kieffer 1901: 453). This name was probably given according to Tavares' personal communication because Kieffer named this new variety as "*Andricus luteicornis* var. *niger* Tav". According to the *Nomenclatural Code*: 1) the author of this variety name is Kieffer because in his work no mention of Tavares was indicated; 2) this name is not valid because it is impossible to distinguish this variety from the typical form. Tavares (1902) published the last part of the study "As Zooecidias Portuguesas" that had not been published in 1900 (according to their notes) and gave a short description of the adults of the new variety named *Andricus luteicornis* var. *niger*. As the name "*niger*" is not preoccupied by Kieffer (1901), the Tavares' "*niger*" name is correct. This variety was transferred to subspecies by Dalla Torre & Kieffer (1910) but the author's name was incorrect. Posteriorly, Tavares (1916) considered that this variety was a valid species, redescribed it, and in different Nieves-Aldrey's papers the year of description of this species is incorrect probably because Tavares (1916) considered erroneously that all previous denominations were synonymic names of *A. niger* Tavares. *Andricus niger* Tavares is a species closely related to *A. luteicornis* Kieffer, 1899 and *A. burgundus* Giraud, 1859. According to Tavares (1916), it is impossible to differentiate the galls of *Andricus niger* from those of *Andricus luteicornis*. Both are smooth, in contrast to those of *A. burgundus* which present a small longitudinal carina. These galls develop on *Q. suber* axillary buds (rarely in floral buds), each bud bearing one to eight yellow galls (usually two for the "*niger*" form).

The sexual adults of *Andricus niger* Tavares are morphologically similar to *A. burgundus* and *A. luteicornis*, but the black coloration of the head and thorax is typical of this species (Kieffer 1902;

Tavares 1916). This last author accurately characterised *A. niger*. The agamic form of this species is unknown.

Andricus sp.

MATERIAL EXAMINED. — **Corli Vignola**. *Q. suber* floral galls (No. 5), 26.V.95, 2 ♂ ♂, 8 ♀ ♀ (UB).

REMARKS

The specimens of this unidentified species have been collected in catkins of *Q. suber*. They are similar to *Andricus burgundus* Giraud, 1859 and *A. niger* but, among the males, the oculo-ocular distance ool is wide, similar to the ool of *A. burgundus*, and the radial cell short (shorter than in *A. niger*). Among the females, the first flagellomeres are longer than the second one (as in *A. niger*) but the radial cell is shorter than in *A. niger*. The coloration is not black. The specimens cannot be *A. luteicornis* because their second antennomere is less than twice as long as the width.

This material, which probably represents a new species, is not described, because *A. luteicornis*, *A. niger* and *A. burgundus* constitute a morphologically conflictive group.

Plagiotrochus quercusilicis (Fabricius, 1798)

P. fusifex Mayr in Pujade-Villar & Ros-Farré, 1998: 120.

MATERIAL EXAMINED. — **Vallée du Fango**. Yellow pan trap, 21-28.V.1993 (R4/SE/C 2), 1 ♂; (R4/DN/C 1) 1 ♀; 28.V-4.VI.1993 (R5/DN/C 3), 1 ♀; 12-19.VI.1994 (CS5/R2/94), 1 ♂ (MNHN). — *Q. ilex* gall, 27.VI.96, 1 ♂ (MNHN).

REMARKS

This circummediterranean species is probably the most common in this area. It has been collected in Algeria, Andorra, Spain, France, Greece, Israel, Italy, Morocco, Palestine, Portugal, (Dalla Torre & Kieffer 1910; Mimeur 1949; Ceballos 1956; Sternlicht 1968a, b; Pujade-Villar 1994).

The galls, red and plurilocular, are present in *Q. ilex* and *Q. coccifera* leaves and catkins. The adults show a large chromatic variability (Dalla Torre & Kieffer 1910; Tavares 1926). This poly-

morphism generated the description of many subspecies or varieties whose names were all recently synonymized with *P. quercusilicis* (Pujade-Villar & Ros-Farré 1998).

The agamic form is unknown but might be *P. kiefferianus*. This assumption which was first stated by Tavares (1926) and then followed by other authors (Sternlicht 1968a; Pujade-Villar & Ros-Farré 1998) has never been confirmed by experimental rearing.

Plagiotrochus australis (Mayr, 1882)

MATERIAL EXAMINED. — **Sartène**. *Q. ilex* galls (No. 12), (25.V.1995) 7.VI.1995, 1 ♂ (MNHN).

REMARKS

This species probably has a circummediterranean distribution. It has been collected in Andorra, France, Italy, Portugal, Spain and North Africa (Dalla Torre & Kieffer 1910; Pujade-Villar 1996). The sexual generation develop on the leaves of *Q. ilex* and *Q. coccifera*, and the agamic one on the branches of *Q. ilex*. The life cycle of the species was described by Barbotin (1975).

Plagiotrochus britaniae Barbotin, 1985

MATERIAL EXAMINED. — **Vallée du Fango**. Yellow pan trap, 7-14.V.1993 (R2/DA/S 3), 1 ♀ (UB); (R2/DA/C 2), 1 ♀ (MNHN); (R2/DN/C 2), 1 ♀ (MNHN); (R2/SE/C 3), 1 ♀ (MNHN); 14-21.V. 1993 (R3/DA/S 3), 1 ♀ (MNHN); (R3/SW/C 2), 1 ♀ (MNHN); 21-28.V.1993 (R4/SE/C 1), 1 ♀ (MNHN); (R4/SW/C 1), 1 ♀ (MNHN); 4-11.VI.1993 (R6/DN/C 32), 1 ♀ (MNHN).

REMARKS

Although this species probably has a circummediterranean distribution, it has thus far only been collected in Andorra, Algeria, Spain and France (Barbotin 1985; Nieves-Aldrey 1989; Pujade-Villar 1997).

The galls, 1 mm in length, are formed in *Q. ilex* and *Q. coccifera* buds and are partially covered with the bud's scales, or can be regrouped in more visible and sometimes coalescent clusters of two to four galls in the aborted acorn cups of *Q. coccifera*.

Information concerning the biology of this species is contradictory. Barbotin (1985) reports that in Bretagne (France), where *Q. ilex* was introduced, two successive thelytokous generations occur; in this case the agamic form is absent. Barbotin reared males from Algeria where *Q. ilex* is aboriginal. A similar feature resulting from the moving of cynipid populations was recently described for *Plagiotrochus* species on *Q. suber* in North and South America (Pujade-Villar 1998). The agamic form is unknown but could be *P. coriaceus* (Mayr, 1882), according to Pujade-Villar & Ros-Farré (1998) because the females are morphologically very similar and the two forms may only be distinguished by their gall (Nieves-Aldrey & Pujade-Villar in press). As for the other *Plagiotrochus* species it seems impossible to determine without experiment which is the alternating form. The Barbotin's results in Bretagne make such experimentation indispensable in the case of *P. britaniae*.

Plagiotrochus amenti Kieffer, 1901

Plagiotrochus amenti Kieffer, 1901: 447. — Dalla Torre & Kieffer 1910: 390.

Plagiotrochus amenti Tavares, 1902: 17 & 18 [New homonymy and synonym].

Plagiotrochus amenti Tavares, 1902. — Kieffer, 1902: 586-587. — Tavares 1922: 117; 1926: 76-78. — Nieves-Aldrey 1982: 67. — Pujade-Villar 1998: 118.

Plagiotrochus amenti – Tavares 1926 in Nieves-Aldrey 1985: 106-108. — Nieves-Aldrey 1989: 142; 1995: 119 [Mistake in the description's year].

MATERIAL EXAMINED. — **Corse Bastilicaccia**. Malaise trap, 31.V-7.VI.1996 (R2/MH), 1 ♀ (deposited in UB); (R2/MS), 4 ♀ ♀; 7-14.VI.1996 (R3/MS), 2 ♀ ♀ (1 ♀ deposited in EME, K. Shick col.); 14-21.VI.1996 (R4/MS), 2 ♂ ♂ & 3 ♀ ♀ (1 ♂ deposited in UB; 1 ♂ deposited in EME, K. Shick col.).

Vallée du Fango. Yellow pan trap, 21-28.V.1993 (R4/DA/S1), 1 ♂; 4-12.VI.1994 (CS11/R1/94), 1 ♀ (deposited in UB).

Suaralta. *Q. suber* galls (No. 9), 29.V.1995, 1 ♀. The rest of the material deposited in MNHN.

REMARKS

The galls of this species on *Q. suber* catkins were described by Kieffer (1901), probably after

Tavares' personal communication because it was named "*Plagiotrochus amenti* Tav.". According to the *Nomenclatural Code*, the author of this species is Kieffer because in his work no mention of Tavares was indicated. Posteriorly, Tavares (1902) described this species (adults and galls) and he finished the "As Zoocecidias Portuguesas" study. Then, *Plagiotrochus amenti* Tavares was homonymic and synonymic with *Plagiotrochus amenti* Kieffer. Later, Tavares published re-descriptions of the gall and the adults, and from here inexplicable changes in the year of description of this species ocured.

This European species has a circummediterranean distribution. It was collected in Spain, Italy, Portugal and Switzerland (Tavares 1902; Bailey & Stange 1966; Nieves-Aldrey 1985).

The gall is undifferentiated on annual branches or is visible on catkins of *Q. suber*. The branch galls and the morphological characters of the sexual form are very similar to those of the asexual *P. suberi* leading us to suppose, like Nieves-Aldrey (1985), that these forms belong to the same species (Pujade-Villar & Ros-Farré 1998), even though no experimentation has yet demonstrated it.

Plagiotrochus cardiguensis (Tavares, 1928)

MATERIAL EXAMINED. — **Pirio Vallée du Fango**. Malaise trap, 27.V-3.VI.1997, 4 ♂ ♂, 1 ♀ (material deposited in MNHN).

REMARKS

Only recorded from Andorra, Portugal and Spain (Tavares 1928; Nieves-Aldrey 1989; Pujade-Villar 1994).

The galls are small, located on catkins of *Q. ilex* or rarely *Q. coccifera* (Pujade-Villar & Ros-Farré, 1998). The agamic form is unknown.

Plagiotrochus nr. *cardiguensis* (Tavares, 1928)

MATERIAL EXAMINED. — **Corse Bastilicaccia**. Malaise trap, 24-31.V.1992 (R1/MS), 1 ♀; 31.V-7.VI.1996 (R2/MH), 1 ♀; 7-14.VI.1996 (R3/MS), 1 agamic ♀; twig gall, *Q. suber*, (29.V.96) 5.VI.1996, 1 agamic ♀.

Pont Génôis. (*Q. suber*), gall No. 15, 30.V.1995, 2 ♂ ♂ & 2 ♀ ♀; (8): 1 ♀.

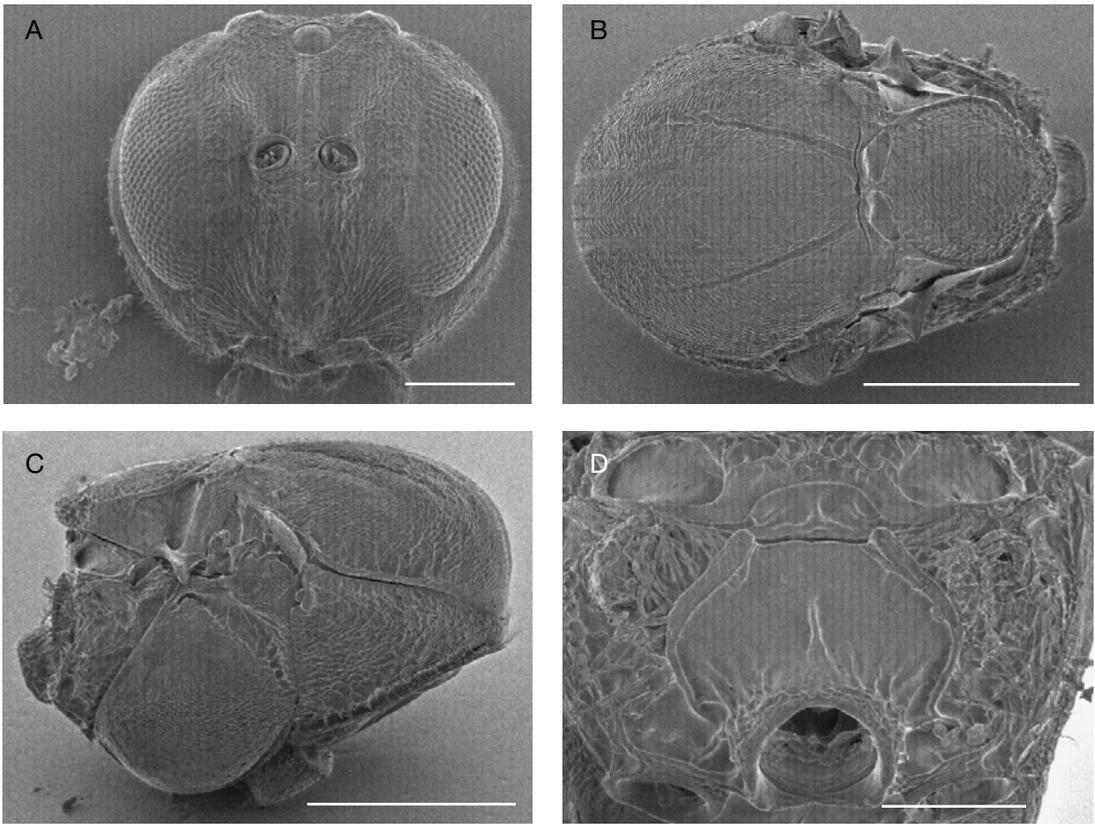


FIG. 2. — SEM pictures of *Plagiotrochus vilageliui* n. sp. agamic form; **A**, head, frontal view; **B**, dorsal view; **C-D**, mesosoma; **C**, lateral view; **D**, propodeum. Scale bars: A, D, 200 μ m; B, C, 500 μ m.

Suarte. (*Q. suber*), 30.V.95, 1 ♀.

Sartène-Granace. gall No. 3, 28.V.95, 1 ♀. Material deposited in UB.

REMARKS

These specimens are more robust than typical *P. cardiguensis*, but we have not found any significant morphological differences and therefore we consider them conspecific with *P. cardiguensis* even though the galls are located in a different place and on a different host (on thin branches of *Q. suber* rather than on catkins of *Q. ilex*) than those of typical *P. cardiguensis*.

Plagiotrochus vilageliui n. sp.
Pujade-Villar (agamic form)
(Figs 2; 3)

TYPE MATERIAL. — **El Toscar.** Tarragona, Spain, holotype agamic ♀, captured 3.IV.1988 (UB). Paratypes, same data as holotype, 12 agamic ♀♀ (ref. C3-41).

Matadepera. Barcelona, Spain, ex. *Q. coccifera*, (6.IV.1987) 20.IV.1987: 1 agamic ♀ (ref. C4-18) (UB); *idem* (11.IV.1987) 13.IV.1987: 1 agamic ♀ (ref. C4-24) (UB); *idem* (2.IV.1987) 12.IV.1987, 1 agamic ♀ (ref. C4-21) (UB); *idem* 19.IV.1987, captured, 1 agamic ♀ (ref. C4-25) (UB).

Ctra de Santa Fe del Montseny. Barcelona, Spain, captured 29.IV.1987, 1 agamic ♀ (ref. C10-58).

Corella. Navarra, Spain, ex. *Q. ilex* (X-1997) extr. 3.XI.97, 1 agamic ♀ (Iguñiz leg.) (UB).

Vallée du Fango. Corsica, France, yellow pan trap (1-7.V.1993), 1 ♂ (ref. R1/DA/C, Andrei-Ruiz leg.) (MNHN).

ETYMOLOGY. — This name was chosen to honour the mother of my daughters, Roser Vilageliu i Grau.

DIMENSIONS. — Length 2.5-3 mm.

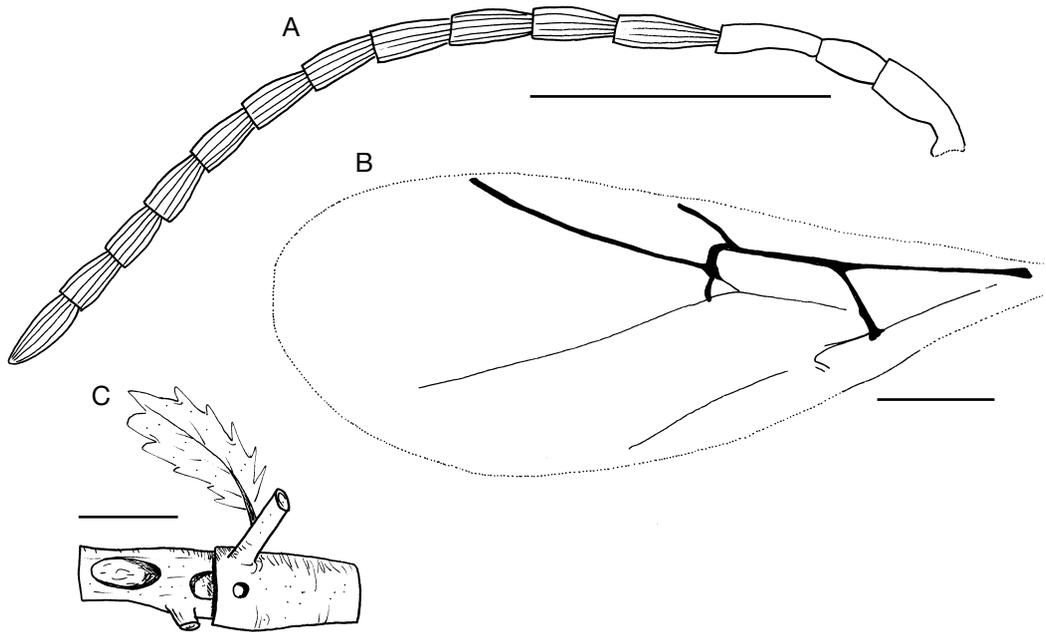


FIG. 3. — Some morphological details of *Plagiotrochus vilageliui* n. sp (agamic form); **A**, antenna; **B**, forewing without pubescence; **C**, gall. Scale bars: 0.5 mm.

COLORATION. — Body amber or reddish brown, but some zones of the thorax, mainly the basal part of mesopleura and propodeum, dark brown. Dorso-posterior part of metasoma with a more or less expanded black mark. Legs with the same coloration as the thorax. Antenna brown, except for the two first antennomeres which are light brown. Wings translucent, with brown veins.

DESCRIPTION

Head (Fig. 2A)

With short, sparse and flat pubescence. In frontal view, 1.2 time wider than high. Ventral margin of clypeus slightly incised. Face with weak radiating carinae (Fig. 2A). Distance between compound eyes similar to their height. Distance between toruli and compound eyes 2.5 times distance between toruli. Genae with coriaceous sculpture. Frons weakly depressed, with a conspicuous median ridge (Fig. 2A) and 2.3 times wider than long in dorsal view. Vertex and occiput with coriaceous-alutaceous sculpture. In dorsal view, genae clearly expanded behind the eyes. Pol:ool:lol are 17:8:7; diameter of lateral ocellus: 5, smaller to lol distance.

Antenna (Fig. 3A)

Fourteen antennomeres, pedicel twice as long as wide, first flagellomere 1 curved and more than three times longer than the width; the fourth segment as long as or longer than the third one, but conspicuously wider; length of the remaining segments gradually decreasing, the 13th one at least 1.5 time longer than the width. Sensillae from second flagellomere very conspicuous.

Mesosoma (Fig. 2B-D)

Sparsely pubescent. In lateral view (Fig. 2C), relatively short and high, nearly 1.5 time as long as high; in the same view, the mesonotum is quite humped, forming a straight angle with the pronotum. Mesoscutum in dorsal view (Fig. 2B) clearly longer than wide and 1.4 time as long as the scutellum. Pronotum in lateral view (Fig. 2C) with a coriaceous-rugulose sculpture and with several longitudinal carinae. Scutum weakly sculptured, coriaceous-alutaceous and in lateral view with several carinae running perpendicularly over the pronotum margin (Fig. 2B, C). Notauli

weakly marked, not reaching one-third of the length of the mesoscutum (Fig. 2B, C). Median mesoscutal impression missing (Fig. 2B). Scutellar sculpture similar to that of the mesoscutum, scutellum trapezoidal and margined in dorsal view (Fig. 2B), flat in lateral view (Fig. 2C). Scutellar foveae well set off, oval and smooth. Metanotal trough smooth and glabrous without carinae. Propodeum (Fig. 2D) with two curved submedial carinae and with an incomplete median carina. Mesopleura almost wholly sculptured, with a small, smooth area in its basal part.

Wings (Fig. 3B)

Forewing with radial cell open at the margin and four times longer than wide. R1 and Rs veins do not reach the margin of the wing; R1 weakly angled and 2r vein strongly angled. Areolet present.

Legs

Tarsal claws simple.

Metasoma

Oval, as long as high. Nearly bare. Third and following terga punctured laterally. Hypopygial spine short; in lateral view twice as long as the height; in ventral view 2.5 to 3 times as long as the breadth, with short and sparse pubescence.

Gall (Fig. 3C)

Collected in the northeastern Iberian Peninsula on *Quercus coccifera* and in the North Iberian Peninsula on *Q. ilex*. Larval chambers isolated from each other, in twigs with a diameter of less than 0.5 cm. The galls are not visible externally, so they are easily overlooked. In Corsica, they are also present on *Q. ilex* because the *Plagiotrochus vilageliui* adults are found on both hosts (*Q. ilex* and *Q. coccifera*) and *Q. coccifera* is absent from Corsica.

REMARKS

The colour and the presence of a margined scutellum with trapezoidal form relate this new species to *P. kiefferianus*. However, morphological characters of *P. kiefferianus* Tavares, 1901 greatly differ according to the host-plant bearing the galls (*Quercus*

ilex or *Q. coccifera*) (Pujade-Villar 1991). *P. vilageliui* n. sp. forms a completely different gall. Moreover it is easily distinguished by its antennal segments, which are longer (1.7 to 2 times longer than wide), the presence of a conspicuous frontal carina and the humped mesonotum, both absent in *P. kiefferianus*. Another agamic form, *Plagiotrochus australis* (Mayr, 1882), also makes galls on *Q. ilex*, but its adults differ from *P. vilageliui*. *P. vilageliui* differs from *P. australis* in lacking percurrent notauli, lacking the median mesoscutal impression, having a quadrangular thorax and the sculpture as well as the relative length of the first antennomeres are different shape.

Tribe SYNERGINI Ashmead, 1896

Ceroptes cerri Mayr, 1872

MATERIAL EXAMINED. — **Corse Bastilicaccia**. Malaise trap, 31.V-7.VI.1996, 1 agamic ♀ (R2/MH) (MNHN); 7-14.VI.1996, 1 agamic ♀ (R3/MS) (MNHN). — Emergence trap, 21.VI.96, 1 agamic ♀ (R4/I 1) (MNHN).

REMARKS

This species is known from Austria, Andorra, Italy, Sicily, Hungary, Poland, Portugal and Spain (Dalla Torre & Kieffer 1910; Nieves-Aldrey & Pujade-Villar in press).

This species occurs in the mediterranean area and found in larval chambers galls in branches of evergreen *Quercus* spp. *Ceroptes cerri* has been reared from galls of *Plagiotrochus amenti* male, *P. australis* male, *P. suberi* (= *pardoii*) male and *P. coriaceus* male (Pujade-Villar & Ros-Farré 1998). It has also been observed in galls on *Q. cerris* in the center and South-East of Europe (Pujade-Villar & Nieves-Aldrey 1993; Nieves-Aldrey & Pujade-Villar in press). Judging from the above-mentioned data, *Ceroptes cerri* is probably an inquiline species of *P. amenti* agamic female in Corsica.

Ceroptes clavicornis Hartig, 1840

MATERIAL EXAMINED. — **Corse Bastilicaccia**. Emergence trap, 21.VI.1996, 1 ♀ (R4/I 1) (MNHN).

REMARKS

European species collected in Austria, Bulgaria, Germany, Denmark, France, Great Britain, Hungary, The Netherlands, Poland, Romania and Ukraine (Nieves-Aldrey & Pujade-Villar in press).

Its biology is unknown; some authors consider it to be a parasite and others an inquiline (Pujade-Villar & Nieves-Aldrey 1993). It is usually reared from various *Andricus* species galls and occasionally from other cynipid galls (Nieves-Aldrey & Pujade-Villar in press).

Saphonecrus lusitanicus (Tavares, 1902)

MATERIAL EXAMINED. — **Corse Bastilicaccia**. Malaise trap, 31.V-7.VI.1996 (R2/MH), 1 ♀; 24-31.V.1996 (R1/MS): 1 ♂ & 9 ♀♀ (1 ♂ & 1 ♀ deposited in UB); 7-14.VI.1996 (R3/MS), 17 ♀♀ (3 ♀♀ deposited in UB); 14-24.VI (R3/MS), 3 ♀♀.

Vallée du Fango. Yellow pan trap, 14-21.V.1993 (R3/SW/C 1), 1 ♂ (deposited in UB); (R3/SW/C 2), 1 ♂; 21-28.V.1993 (R5/DA/C 3), 1 ♀ (deposited in UB); (R5/DN/C 1), 1 ♀; (R5/DN/C 2), 1 ♂; (R5/DN/C 2/3), 1 ♂ & 1 ♀; (R5/SW/C 3), 1 ♀; 4-11.VI.1993 (R6/DN/C 1), 1 ♀; (R6/DN/C 2/3), 1 ♀; (R6/DN/C 32), 2 ♀♀; (R6/SE/C 1), 2 ♂♂ & 1 ♀; (R6/SE/S 3), 2 ♀♀; (R6/SW/C 2), 2 ♂♂ & 1 ♀; (R6/SW/C 3), 1 ♀; 11-18.VI.1993 (R7/DN/C 2), 2 ♀♀; (R7/SW/C 1), 2 ♀♀; (R7/SW/C 2), 3 ♀♀; (R7/SW/C 3), 1 ♀; (R7/SW/S 1), 1 ♀; (R7/SW/S 3), 1 ♀; 18-25.VI.1993 (R8/SW/C 2), 5 ♂♂ & 1 ♀; (R8/SW/C 3), 2 ♂♂ & 1 ♀; (R8/SW/S 1), 1 ♀; (R8/SW/S 2), 1 ♀; (R8/DN/C 1), 1 ♀; 25.VI-2.VII.1993 (R9/SW/S 1), 1 ♀; 4-12.VI.1994 (CI/R1/94), 1 ♀; 12-19.VI.1994 (CI/R2/94), 1 ♀; (CS5/R2/94), 1 agamic ♀; (CI/R2/94), 1 ♀; (CH5/R1/94), 1 agamic ♀.

Pirio. Malaise trap, 15-22.VII.1997, 1 ♀.

The rest of the material deposited in MNHN.

REMARKS

Species known from Andorra, Spain, France and Portugal (Nieves-Aldrey & Pujade-Villar in press). This species is a common inquiline found in the larval chamber of *Plagiotrochus suberi* male and *P. amenti* agamic female galls (on *Q. suber*) and *P. kiefferianus* male (on *Q. coccifera* and *Q. ilex*), nevertheless it might be reared in other types of *Plagiotrochus* galls (Pujade-Villar & Ros-Farré 1998).

It is interesting to note that the specimens collected in the South-West of Corsica in a coastal *Q. suber* stand are very dark (sometimes nearly black) while the specimens collected in a north-western mountain *Q. ilex* stand are yellowish and very similar to the original description.

Saphonecrus barbotini

Pujade-Villar & Nieves-Aldrey, 1986

MATERIAL EXAMINED. — **Pirio**. Malaise trap, 22-29.VII.1997, 2 agamic ♀♀ (MNHN).

REMARKS

Species known from Andorra, Spain, France and Portugal (Nieves-Aldrey & Pujade-Villar in press).

This species is associated with *Plagiotrochus* galls on *Q. ilex* and *Q. coccifera*; it is usually reared from unilocular short galls developed on leaves and buds induced by *Plagiotrochus coriaceus* male and *P. britaniae* agamic female (Pujade-Villar & Ros-Farré 1998).

Saphonecrus haimi (Mayr, 1873)

MATERIAL EXAMINED. — **Ponte Luccia**. Ex. *Neuroterus lanuginosus*, (23.V.95) VI.1995, 2 ♀♀ (1 ♀ deposited in UB and 1 ♀ in MNHN).

REMARKS

Species known from central Europe and Israel (Nieves-Aldrey & Pujade-Villar in press) from *Neuroterus* and *Chilaspis* galls produced on *Q. cerris* (Pujade-Villar & Nieves-Aldrey 1990), and rarely on other *Quercus* species.

Synergus ilicinus (Barbotin, 1972)

MATERIAL EXAMINED. — **Vallée du Fango**. Yellow tray trap, 12-19.VI.1994 (CH1 R2 94), 2 agamic ♀♀ (UB).

REMARKS

Species known from France and Spain (Pujade-Villar 1992) from galls of *Plagiotrochus australis* (= *cabreræ* Kieffer, 1901) male.

Synergus crassicornis (Curtis, 1838)

MATERIAL EXAMINED. — Vallée du Fango. Yellow pan trap, 7-14.V.1993 (R2/DN/C 2), 1 ♀ (deposited in UB); (R2/SE/C 3), 2 ♀ ♀; 14-21.V.1993 (R3/DN/C 1), 2 ♀ ♀ (1 ♀ deposited in UB); 21-28.V.1993 (R4/DN/C 2), 2 ♀ ♀; (R4/DN/C 3) 1 ♀.
The rest of material deposited in MNHN.

REMARKS

European species recorded from Andorra, Austria, France, Germany, Great Britain, Hungary, Marrocco, Poland, Portugal, Spain and Ukraine (Nieves-Aldrey & Pujade-Villar in press).

Synergus crassicornis, *S. clandestinus* and *S. dacianus* form a group of closely related species named “*evanescens*” by Kierych (1985). While the morphological characters used are not satisfactory, the biological data enable separation of these species (Pujade-Villar in press). *Synergus crassicornis* was reared from cynipids galls collected on deciduous and evergreen *Quercus*. However the specimens reared from *Q. ilex* and *Q. coccifera* probably do not belong to the same species as those obtained from deciduous *Quercus* (Nieves-Aldrey & Pujade-Villar 1986; Pujade-Villar 1992), but it is difficult to morphologically differentiate these populations from adult morphology. For this reason we cannot determine whether the Corsican species are likely to have come from deciduous or evergreen *Quercus* species.

Synergus apicalis Hartig, 1941

MATERIAL EXAMINED. — Pirió Vallée du Frango. Yellow pan trap, 4-12.VI.1994 (CH3/R1/94), 1 agamic ♀ (UB); (C VI/R1/94), 1 agamic ♀ (UB).

REMARKS

European species recorded from Austria, Germany, Denmark, Israel, Great Britain, The Netherlands, Poland, Spain and Ukraine (Nieves-Aldrey & Pujade-Villar in press).

This species has been reared from 12 gall forms (Nieves-Aldrey & Pujade-Villar in press) but it is usually present in branch galls (*A. quercusradicis* female agamic, *Callirhytis* female agamic and *Plat-*

giotrochus amenti female agamic). In some cases, it is very difficult to differentiate this species from *S. rotundiventris* because the intraspecific variability of both species is very large (Pujade-Villar in press).

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