

THE GENUS *ODONTOCYNIPS* KIEFFER, 1910 (HYMENOPTERA, CYNIPIDAE, CYNIPINI) IN PANAMA, WITH REDESCRIPTION OF *CYNIPS CHAMPIONI* CAMERON, 1883

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ABSTRACT

E. Medianero, J. L. Nieves-Aldrey & J. Pujade-Villar. 2011. The genus *Odontocynips* Kieffer, 1910 (Hymenoptera, Cynipidae, Cynipini) in Panama, with redescription of *Cynips championi* Cameron, 1883. *Graellsia*, 67(1): 35-46.

The genus *Odontocynips* Kieffer, 1910 (Hymenoptera, Cynipidae, Cynipini) is recorded for the first time in Panama, including two species, *O. championi* (Cameron) and *O. hansonii* Pujade-Villar, that induce galls on *Quercus bumelioides* Liebm. and *Q. lancifolia* Schledl & Cham. (Fagaceae, sect. *Quercus*, White Oaks), respectively. *Odontocynips championi* (Cameron, 1883), originally described as *Cynips championi* Cameron based solely on galls, is redescribed including the first description of the adults, a neotype is designated and a new combination is established. The known distribution and host range of *O. hansonii*, recorded earlier from Costa Rica, are also expanded upon.

Key words: Cynipidae, oak gall wasps, *Quercus*, Chiriquí, Panama, *Cynips championi*.

RESUMEN

E. Medianero, J. L. Nieves-Aldrey & J. Pujade-Villar. 2011. El género *Odontocynips* Kieffer, 1910 (Hymenoptera, Cynipidae, Cynipini) en Panamá, con la redescrpción de *Cynips championi* Cameron, 1883. *Graellsia*, 67(1): 35-46 (en inglés).

Se cita por primera vez para Panamá el género *Odontocynips* Kieffer, 1910 (Hymenoptera, Cynipidae, Cynipini), incluyendo dos especies: *Odontocynips championi* (Cameron) y *O. hansonii* Pujade-Villar, que inducen agallas en *Quercus bumelioides* Liebm. y *Q. lancifolia* Schledl & Cham. (Fagaceae, sect. *Quercus*, robles blancos), respectivamente. Se redescrbe *Odontocynips championi* (Cameron, 1883), descrita solo a partir de sus agallas como *Cynips championi* Cameron, se describen por primera vez los adultos, se designa un neotipo y se establece una nueva combinación taxonómica al transferirla al género *Odontocynips*. Por otra parte, se amplía la distribución geográfica y rango de hospedador de *O. hansonii*, previamente citada sólo de Costa Rica.

Palabras clave: Cynipidae; avispa galicolas; *Quercus*; Chiriquí; Panamá; *Cynips championi*.

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Introduction

Morphological and molecular analyses support the monophyly of the tribe Cynipini (oak gall wasps). This tribe, together with the Diplolepidini, Eschatocerini and Pediastidini, forms a large group of cynipid gall-inducers restricted to woody representatives of the eudicot subclass Rosidae (Kinsey, 1920; Liljeblad & Ronquist, 1998; Liljeblad *et al.*, 2008). The homoplasy, or the difficulty of detecting synapomorphic characters, in Cynipini is the most important problem in defining the correct limits between genera (Liljeblad & Ronquist, 1998; Melika & Abrahamsom, 2002). For instance, recent studies of neotropical Cynipini found species that share characters of the genera *Bassettia* Ashmead, 1887; *Loxaulus* Mayr, 1881; *Callirhytis* Foerster, 1869 and *Plagiotrochus* Mayr, 1881 (Medianero & Nieves-Aldrey, 2010); other species share characters of the genera *Cynips*, Linnaeus, 1758; *Dryocosmus* Giraud, 1859 and *Trigonaspis* Hartig, 1840 (Medianero & Nieves-Aldrey, unpublished data), and still other species could not be classified within any genus of this tribe. Thus, it can be very difficult to place a neotropical specimen within a particular genus of Cynipini.

Odontocynips Kieffer, 1910, is a peculiar genus of the Cynipini tribe confined to America. It was initially only described on the basis of adults captured in Georgia, USA (Kieffer, 1910). Later, Beutenmüller (1918) established the relationship between the adults and their galls on the roots of white oaks. The most important character defining this genus is the presence of a large blunt lobe or tooth on the distal half of its hind femur. The type species of this genus, *O. nebulosa* Kieffer, 1910, is also characterized as showing a conspicuous pubescence on all the metasomal tergites, a long projection of the hypopygial spine (approximately 5- to 6-times as long as broad in ventral view) (Fig. 4G), parallel lateral propodeal carinae, fore wings with infumate areas, antennae with 15 segments and simple metatarsal claws (Kieffer, 1910; Weld, 1952). Phylogenetically, *Odontocynips* is deeply nested within the *Andricus* lineage (Liljeblad *et al.*, 2008). Some biological aspects of *O. nebulosa* have been published by Wilson *et al.* (2000).

Odontocynips was a monotypic genus until 2008, when *O. hansonii* Pujade-Villar was described from Costa Rica. The inclusion of this species in *Odontocynips* is problematic because *O. hansonii* shares with *O. nebulosa* only the presence of the

large blunt lobe on the distal half of its hind femur but differs in most other morphological and biological characters (Pujade-Villar, 2008).

Andricus (Cynips) championi Cameron, 1883, was the only cynipid species described from Panama until recently. This species was described on the basis of galls collected on twigs of an unidentified oak by George Champion in Panama. The inducing gall wasp was unknown to the describer. According to Champion's itinerary, these galls were collected in 1882 in Chiriqui (Champion, 1907; Heckadon-Moreno, 2006). Since its determination, the taxonomic status of *Andricus (Cynips) championi* has been problematic (see Ashmead, 1899; Dalla Torre & Kieffer, 1910; Crawford, 1915; Weld, 1921; Pujade-Villar, 2008) and is considered to be *incertae sedis* (Pujade-Villar *et al.*, 2009).

This paper provides an accurate description of two species collected in Panama, belonging to *Odontocynips*. In addition, a redescription of *Andricus (Cynips) championi*, including the first description of the adults, and a new combination to *Odontocynips* genus are reported, and the neotype for this species is designated.

Materials and methods

STUDY MATERIAL. The adults studied were reared from galls collected on *Quercus bumelioides* Liebm and *Quercus lancifolia* Schledl & Cham. (Fagaceae, sect. *Quercus*). Samplings were conducted and material was collected from December 2007 to August 2010 at Volcan Baru and Boquete, Chiriqui Province, Panama. The adult insects emerged from the galls in rearing cages under laboratory conditions. Voucher adult specimens and their galls were deposited in the entomology collections of the Museo Nacional de Ciencias Naturales, Madrid (Spain) (MNCN) and Maestría en Entomología, Universidad de Panama (MEUP).

SPECIMEN PREPARATION. For observation under a scanning electron microscope (SEM), adult cynipids were dissected in 70% ethanol, air-dried, mounted on a stub and coated with gold. Micrographs were taken with an EVO 40 Zeiss microscope, using a high vacuum technique, for several standardized views. Forewings were mounted in Euparal on slides and later examined under a Wild MZ8 stereomicroscope. Images of the adult

habitus and gall dissections were taken with a NIKON Coolpix 4500 digital camera attached to a Wild MZ8 stereomicroscope. Measurements were made with a calibrated micrometer scale attached to an ocular of the light microscope. Terminology of morphological structures and abbreviations follow Ronquist & Nordlander (1989), Ronquist (1995), Nieves-Aldrey (2001) and Liljeblad *et al.* (2008).

Results

Odontocynips championi (Cameron, 1883) n. comb. (Figs. 1, 2 & 5A-D)

Cynips championi Cameron, 1883. *Biol. Cent.-Am.*, 1: 70

Andricus championi (Cameron): Ashmead, 1899. *Entomol. News*, 10: 193 (non Cameron, 1883)

Cynips championi Dalla Torre & Kieffer, 1910. *Cynipidae*: 446
Cynips championi Crawford, 1915. *Proc. U.S. Natl. Mus.*, 48: 580

Cynips championi Weld, 1921. *Proc. U.S. Natl. Mus.*, 59: 212

Andricus championi Pujade-Villar, 2008. *Dugesiana*, 15: 79

Andricus championi Pujade-Villar, 2009. *Neotrop. Entomol.*, 38: 809

STUDY MATERIAL. Neotype ♀ is designated here (Fig. 5A): PANAMA, Chiriquí, Volcan Baru, 8°46'36.08"N, 82°31'39.3"W, 3079 m; ex., gall on stems of *Quercus bumelioides* Liebm (Fagaceae), gall collected 22.xii.2008, insect emerged i.2009, E. Medianero leg. Deposited in Museo Nacional de Ciencias Naturales, Madrid, Spain (MNCN). Other material: 1 ♀, same data as the neotype; 2 ♀, same data but collected 27.i.2009, insect emerged ii.2009. One ♀ in Maestría en Entomología, Universidad de Panamá (MEUP); remaining 2 females in MNCN.

Additionally, 1 ♀ from the type series was dissected for SEM observation (in MNCN).

DIAGNOSIS AND COMMENTS. This species closely resembles *O. hansonii* Pujade-Villar from Costa Rica, being similar in color and a majority of morphological characters. The species differs mainly in the sculpture of the scutellum, the form of the lateral propodeal carinae, the relative length and width of F12 and the shape of the metatarsal claw. *Odontocynips hansonii* has a thoroughly and strongly reticulate-rugose scutellum that is slightly emarginate at the posterior margin and large and deep scutellar foveae clearly separated by a septum with their anterior and posterior margins marked (Fig. 3B); whereas in *O. championi*, the scutellum is slightly to moderately reticulate-rugose, anteriorly smooth, with a posterior margin that is not emarginate and scutellar foveae that are deep but not separated by a septum and with their posterior margins unmarked (Fig. 1D). Additionally, *O. championi* has

simple metatarsal claws (Fig. 2E), F12 is 2.2-times longer than broad and 1.8-times as long as F11, mesoscutum only weakly setose, and the median propodeal area is longer and narrow, with lateral propodeal carinae only moderately divergent. In *O. hansonii*, the metatarsal claws have one short but distinct lobe (Fig. 3E), F12 is only 1.6-times longer than broad and 1.7-times as long as F11 (Fig. 3C), the mesoscutum is strongly setose, and the median propodeal area is shorter and wider, with the lateral propodeal area strongly divergent (Fig. 3D).

REDESCRIPTION. Body length, 4.7 mm (range 4.33–5.00; N = 4) for females. Head, antenna and mesosoma black. Metasoma, mandibles, scape, and pedicel rufo-piceous; coxae, femora, tibiae and tarsi rufo-piceous to black in some individuals. Forewing almost entirely smoky-brown with veins dark brown.

Female. Head coriaceous, in dorsal view about 2.8-times wider than long. POL 0.9-times longer than OOL, posterior ocellus separated from inner orbit of eye by 1.67-times its longest diameter. Head in anterior view (Fig. 1A) transversely ovate, 1.48-times wider than high, moderately pubescent, with relatively long setae less abundant on frons and vertex; gena strongly broadened behind eye. Frons, face, vertex and occiput with piliferous punctures; frons with some medial rugae; facial striae radiating from clypeus reaching ventral margin of compound eye, medially absent. Clypeus 1.2-times wider than high, shiny and smooth, moderately pubescent; ventral margin convex but not projected over mandibles. Anterior tentorial pits easily visible; epistomal sulcus and clypeo-pleurostomal lines indistinct. Malar space 0.5-times height of compound eye. Toruli situated at mid-height of compound eye; distance between antennal rim and compound eye 0.9-times the width of antennal socket, including rim. Ocellar plate slightly raised. Occipital carina absent. Gula short; distance between occipital and oral foramina less than height of occipital foramen (Fig. 1B). Hypostomal sulci separate at oral fossa.

Mouthparts (Fig. 1B): mandibles strong, exposed, with long scattered setae at base; right mandible with three teeth, left with two. Cardo of maxilla visible, maxillary stipes approximately 1.7-times longer than wide. Maxillary palp five-segmented. Labial palp three-segmented.

Antenna (Fig. 2A-C) of moderate length, as long as 1/2 body length, with 14 antennomeres; flagellum not broadening towards apex, with relatively

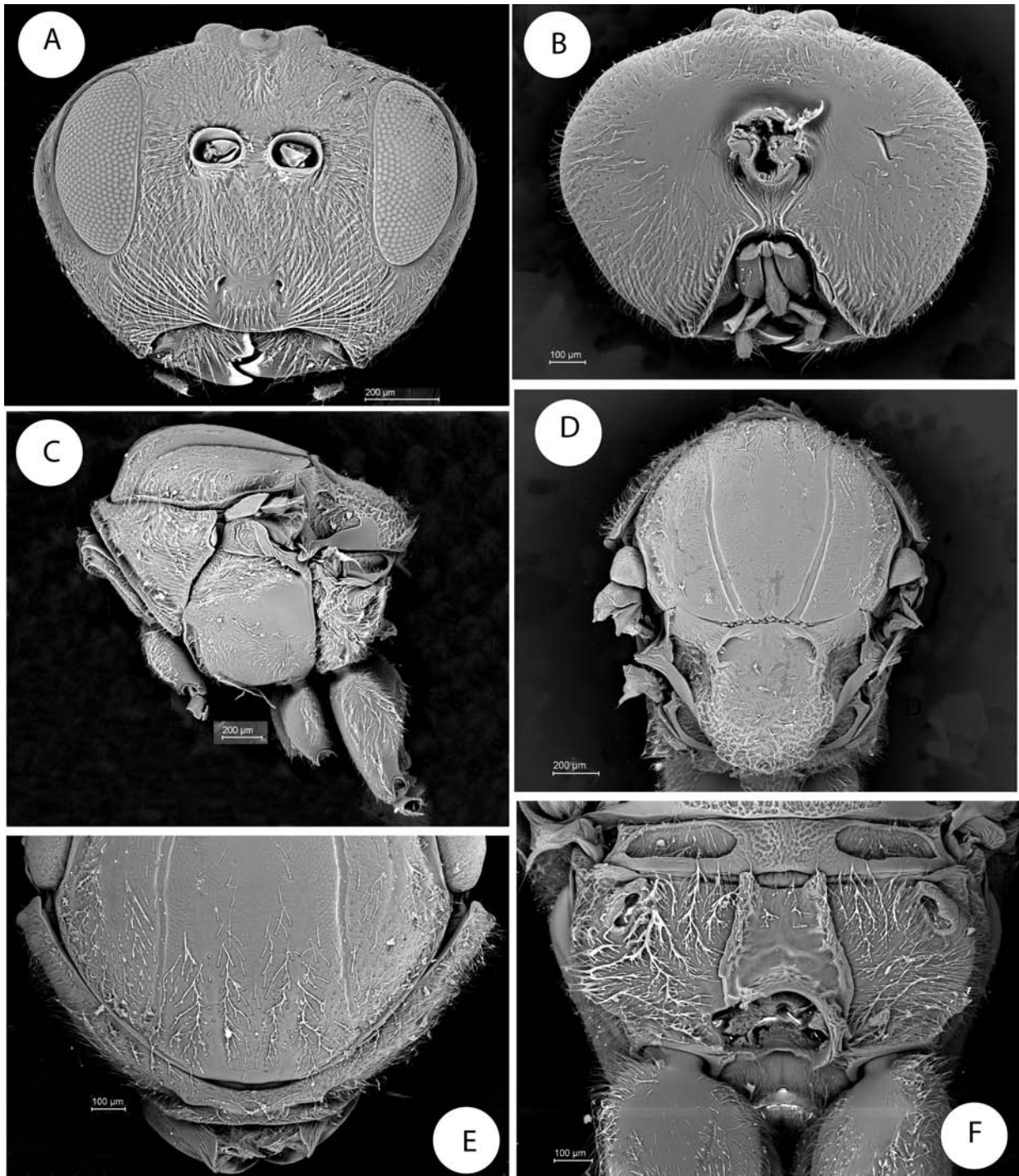


Fig. 1.— *Odontocynips championi*: (A) Head anterior view. (B) Head posterior view. (C) Mesosoma lateral view. (D) Mesosoma dorsal view. (E) Pronotum antero-dorsal view. (F) Propodeum.

Fig. 1.— *Odontocynips championi*: (A) Cabeza en visión anterior. (B) Cabeza en visión posterior. (C) Mesosoma en visión lateral. (D) Mesosoma en visión dorsal. (E) Pronoto en visión antero dorsal. (F) Propodeo.

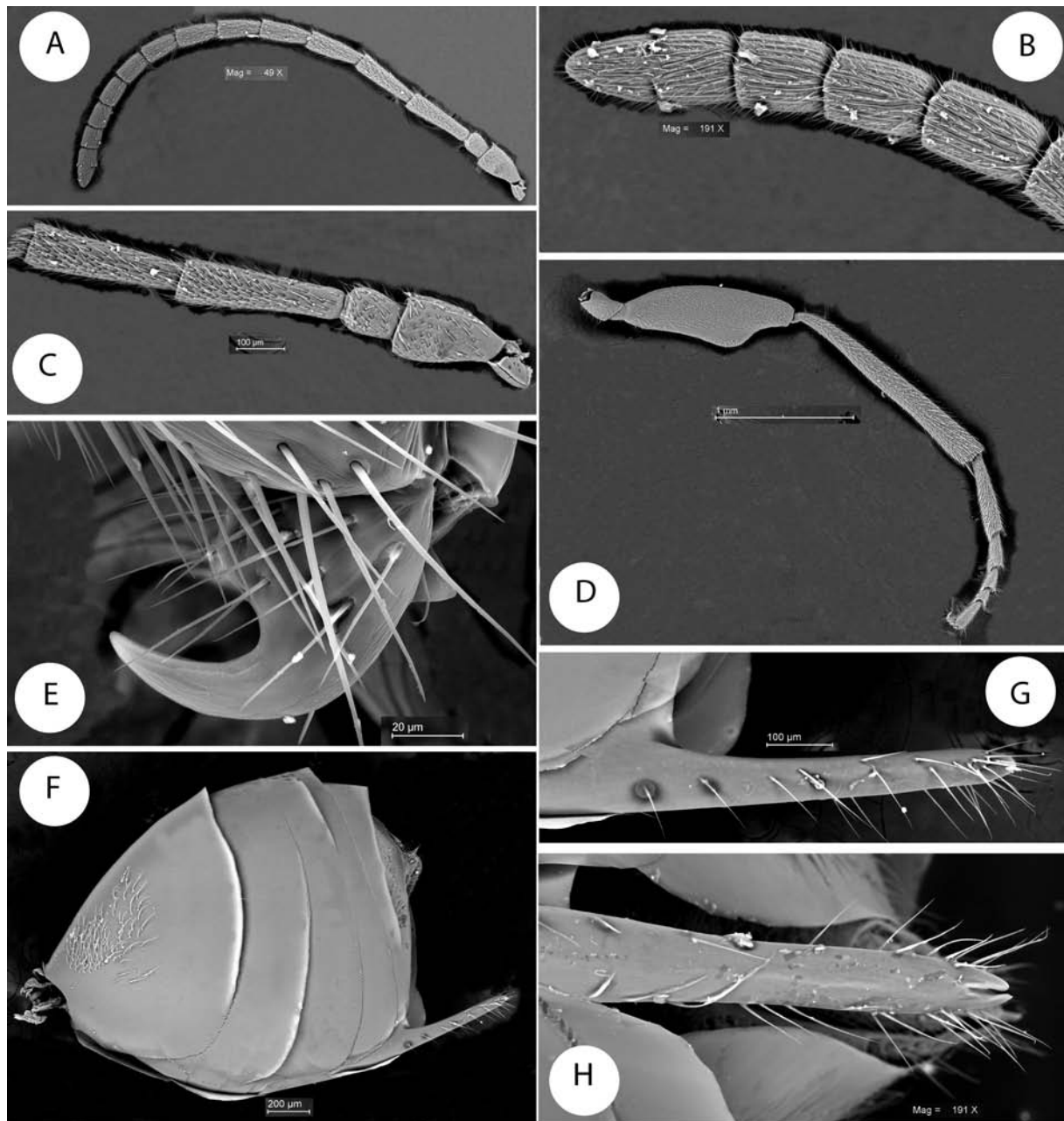


Fig. 2.— *Odontocynips championi*: (A) Female antenna. (B) Detail of last flagellomeres. (C) Detail of basal flagellomeres. (D) Hind leg. (E) Metatarsal claw. (F) Metasoma lateral view. (G) Spine of hypopygium lateral view. (H) Detail of ventral spine of hypopygium.

Fig. 2.— *Odontocynips championi*: (A) Antena de la hembra. (B) Detalle de los últimos flagelómeros. (C) Detalle de los flagelómeros basales. (D) Pata posterior. (E) Uña metatarsal. (F) Metasoma en visión lateral. (G) Espina ventral del hipopigio en visión lateral. (H) Detalle de la espina ventral de hipopigio.

long, erect setae, and elongate placodeal sensilla visible (Fig. 2B). Relative lengths of antennal segments: 24:13:38:35:31:29:24:24:20:18:17:15:12:22. Pedicel (Fig. 2C) small, 0.5-times as long as scape; F1 1.1-times as long as F2. F6-F12 longer than wide; F12 2.2-times longer than wide, 1.8-times as long as F11 (Fig. 2B). Placodeal sensillae on F4-F12 disposed in one row of 8-10 sensillae in half-dorsal area of each flagellomere.

Mesosoma in lateral view as high as long, slightly convex dorsally.

Pronotum moderately pubescent, with relatively long setae (Fig. 1C); lateral surface of pronotum with longitudinal striae. Ratio of length of pronotum medially/laterally = 0.09. Pronotal plate indistinct dorsally (Fig. 1E).

Mesonotum (Fig. 1D) Mesoscutum coriaceous, barely pubescent, with piliferous punctures present anteriorly. Notauli complete, deep, broad and convergent posteriorly; median mesoscutal impression indicated only posteriorly. Anteroadmedian signa clearly visible. Transscutal fissure narrow, visible, not deeply impressed. Scutellar foveae ellipsoidal, shallow, approximately 1/3 as long as scutellum, smooth; internally, the foveae not clearly separated by a septum, their inner and posterior margins indistinct. Scutellum (Fig. 1D) rounded from above, approximately 0.4-times as long as mesoscutum, slightly to moderately reticulate-rugose, almost smooth anteriorly, not emarginate at posterior margin, in lateral view extending posteriorly slightly over the dorsellum. Axillula moderately pubescent, their anterior margins marked and posterior margins indistinct. Mesopleuron smooth and moderately pubescent, excepting the speculum, which is almost bare (Fig. 1C).

Metanotum (Fig. 1F): metapectal-propodeal complex: metapectal sulcus reaching posterior margin of mesopectus at approximately mid-height of metapectal-propodeal complex (Fig. 1C). Lateral propodeal carinae strong, slightly divergent posteriorly; median propodeal area longer than broad, smooth, with some setae anteriorly; lateral propodeal area densely pubescent (Fig. 1F). Nucha rugose.

Legs moderately pubescent; femora and tibiae slender; metatarsal claws simple, with only a blunt basal lobe (Fig. 2E). Metafemur with one strong blunt lobe located in the apical third (Fig. 2D).

Forewing (Fig. 5C) as long as body; radial cell 3.3-times longer than wide, open along anterior margin; areolet ovoid, closed and distinct. R1, Rs and M

nearly straight, not reaching wing margin. Rs+M reaching basalis at its mid-height. First abscissa of radius (2r) curved and 2r-m straight. Apical margin with short-hair fringe. Distal part of Cu1b vein with a short projection to the basal margin.

Metasoma (Fig. 2F) as long as head and mesosoma combined, in lateral view 1.2 time as wide as high. Second metasomal tergite covering about one-third of metasoma; anterodorsal area of second metasomal tergite with one patch of dense setae. Projecting part of hypopygial spine length (Fig. 2G), about 5-times as long as wide in ventral view, laterally with long setae, longer than spine width but not forming an apical patch (Fig. 2H).

GALL (Figs. 5B & D). The galls are tuberous and are the largest oak galls of Panama, reaching in diameter 45 to 100 mm. They are strongly woody, irregular, often with large aggregates of clusters of smaller galls visible, polythalamous, with rugose surface, light grayish with light green tones similar to the color of the bark when fresh (Fig. 5B) and light brown when mature (Fig. 5D). When fresh, the galls are moderately hard, but they become very hard when mature, making them very difficult to dissect. The larval cells are rounded and are in the center of the hard parenchyma (Fig. 5D). The galls are formed in stems and twigs of *Quercus bumelioides* Liebm. One species of Tortricidae (Lepidoptera) that is a borer (Fig. 5B) often emerges from the galls. The gall resembles that of *O. hansonii* Pujade-Villar, 2008, known from Costa Rica, but the latter is more regular, small and less cluster-like, the larval cells being scattered by parenchyma (Fig. 5G-H).

DISTRIBUTION. *O. championi* is a common gall found between 1500-3000 m a.s.l. at Volcan Baru, Chiriqui, Panama.

BIOLOGY. Only the asexual generation is known, inducing galls on *Quercus bumelioides* (section *Quercus*). The galls are common and can be found throughout the year in different grades of maturation on the oak branches. The old galls remain on the trees for years. The wasps emerged from November to January.

TAXONOMIC COMMENTS. Type materials from the galls collected by Champion and described as *Cynips championi* by Cameron (1883) should be housed at the NHM (London), however, the material could be not located (D. Notton, *pers. comm.*). Adults had never been described. Species names based on gall

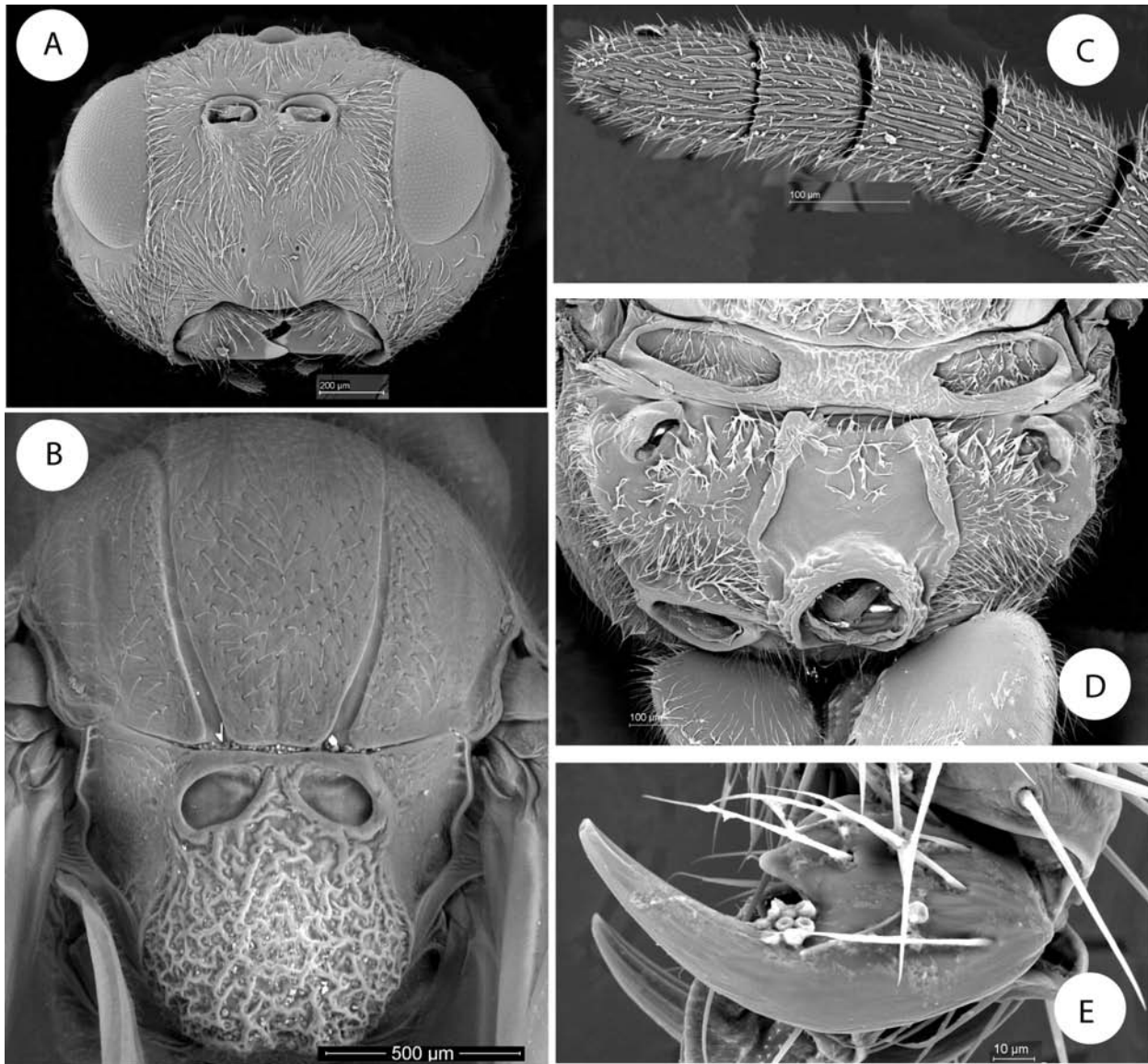


Fig. 3.— *Odontocynips hansonii*: (A) Head anterior view. (B) Mesosoma dorsal view. (C) Detail of last flagellomeres, female antenna. (D) Propodeum. (E) Metatarsal claw.

Fig. 3.— *Odontocynips hansonii*: (A) Cabeza en visión anterior. (B) Mesosoma en visión dorsal. (C) Detalle de los últimos flagelómeros de la antena de la hembra. (D) Propodeo. (E) Uña metatarsal.

descriptions before 1930 are valid according to ICZN, and thus the appropriate name combination for this species is *Odontocynips championi* (Cameron 1883), **comb. nov.**, but the galls found after 1930 cannot be type material. With the description above, and the adult here designated as a neotype we clarify the taxonomic position of this taxon. We further jus-

tify this nomenclatural act by the unequivocal resemblance of the gall of this species to the original, albeit somewhat short, description. Also, the collecting locality of the neotype material is the same as the original locality, and both the abundance of this gall and the common presence of a borer microlepidoptera on specimens of both collections, according

to Cameron's original description, provide additional evidence. However, adults reared from this gall collected on *Q. bumelioides* did not correspond to the genera *Andricus* or *Cynips* but more closely resembled the genus *Odontocynips*. The neotype is deposited in the Museo Nacional de Ciencias Naturales, Madrid, Spain (MNCN).

Odontocynips hansonii Pujade-Villar, 2008
(Figs. 3 & 5E-H)

STUDY MATERIAL. Nine ♀ (Fig. 5E) in the Museo Nacional de Ciencias Naturales, Madrid, Spain (MNCN). PANAMA, Chiriquí, Palmira, Boquete 8°43'49.6"N, 82°28'05.7"W, 1093 m; ex., gall on stems of *Quercus lancifolia* Schledl & Cham. (Fagaceae), gall collected 23.xii.2008, insect emerged 23.xii.2008, E. Medianero leg.

DIAGNOSIS AND COMMENTS. *Odontocynips hansonii* was the first cynipid described from Costa Rica and the second species in *Odontocynips* genus. The species was described from Cartago on *Q. insignis* (Pujade-Villar, 2008). Here, we expand the known distribution range of the species and its hosts. Furthermore, two morphological characters are added to the diagnosis of the species made in the original description as follows: scutellum slightly emarginate at posterior margin and medially rugose; F12 1.6-times longer than wide (Fig. 3C).

Galls of *O. hansonii* are irregular, large swellings of oak stems (Fig. 5G); internally there are a few scattered larval cells (Fig. 5H). They differ from the galls of *O. championi* in being more regular and much less cluster-like. Furthermore, according to our sampling data in Panama, while the galls of *O. championi* are very common the galls of *O. hansonii* are rare.

Differences between the *Odontocynips hansonii* populations from Costa Rica and Panama are as follows: (i) inner margins of scutellar foveae in contact along a longer extension in Costa Rican specimens, (ii) metanotal bar smooth in Panamanian specimens and sculptured in the specimens from Costa Rica, (iii) metascutellum slightly more constricted medially in

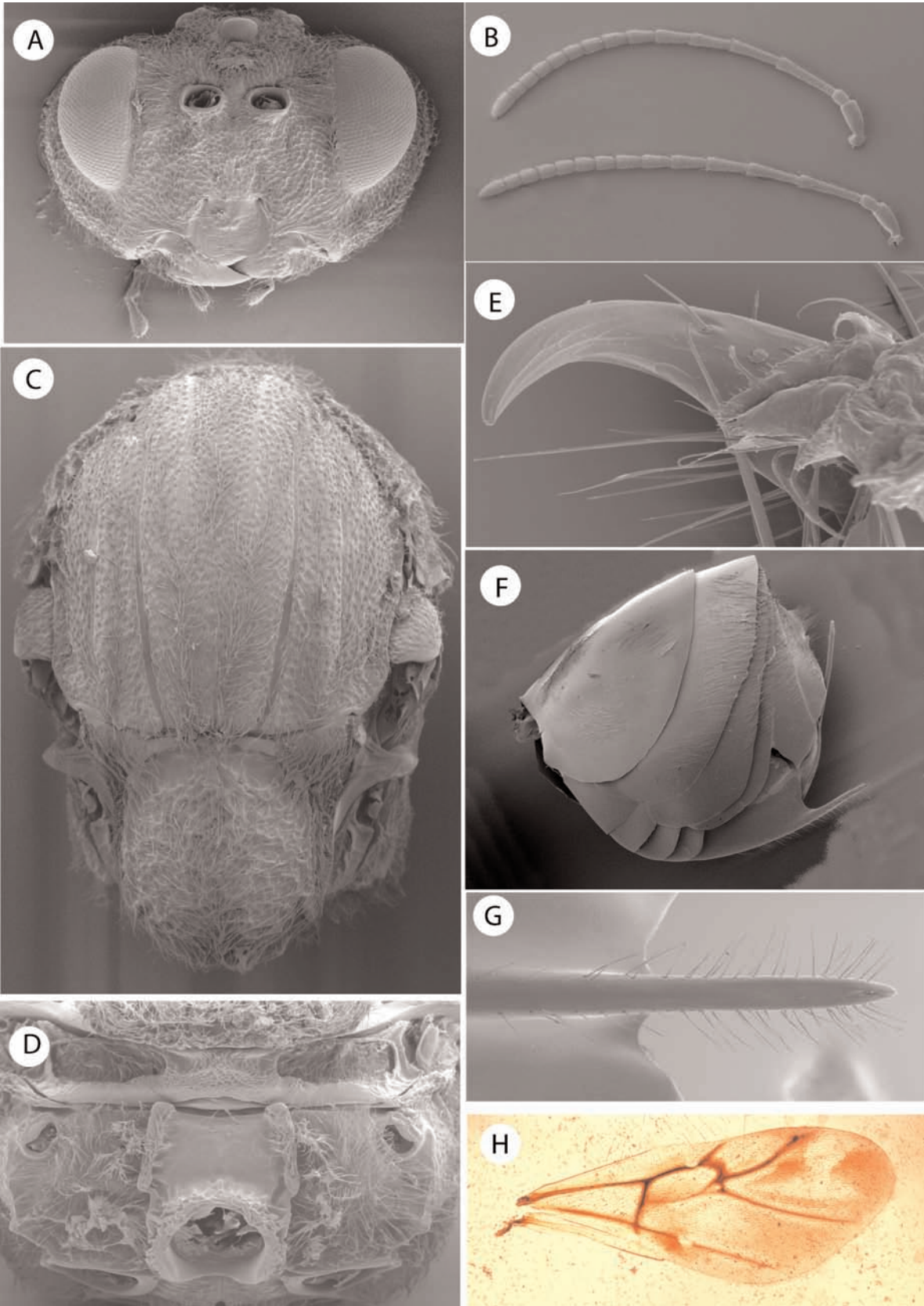
the specimens from Costa Rica, (iv) areolet slightly smaller in Costa Rican populations, and (v) the use of different hosts (*Q. lancifolia* in Panama population, *Q. insignis* in Costa Rica specimens). Despite the minor morphological features, we consider the two populations as belonging to the same species (*O. hansonii*) and highlight their differences in hopes that further studies will clarify their taxonomic positions because (i) morphologically, they are very similar in the main diagnostic characters, despite the differences mentioned; (ii) few specimens have been examined, so these differences may be intraspecific; and (iii) while the hosts are different, they are closely related because hybrids of the two species are known (http://oaks.of.the.world.free.fr/quercus_lancifolia.htm).

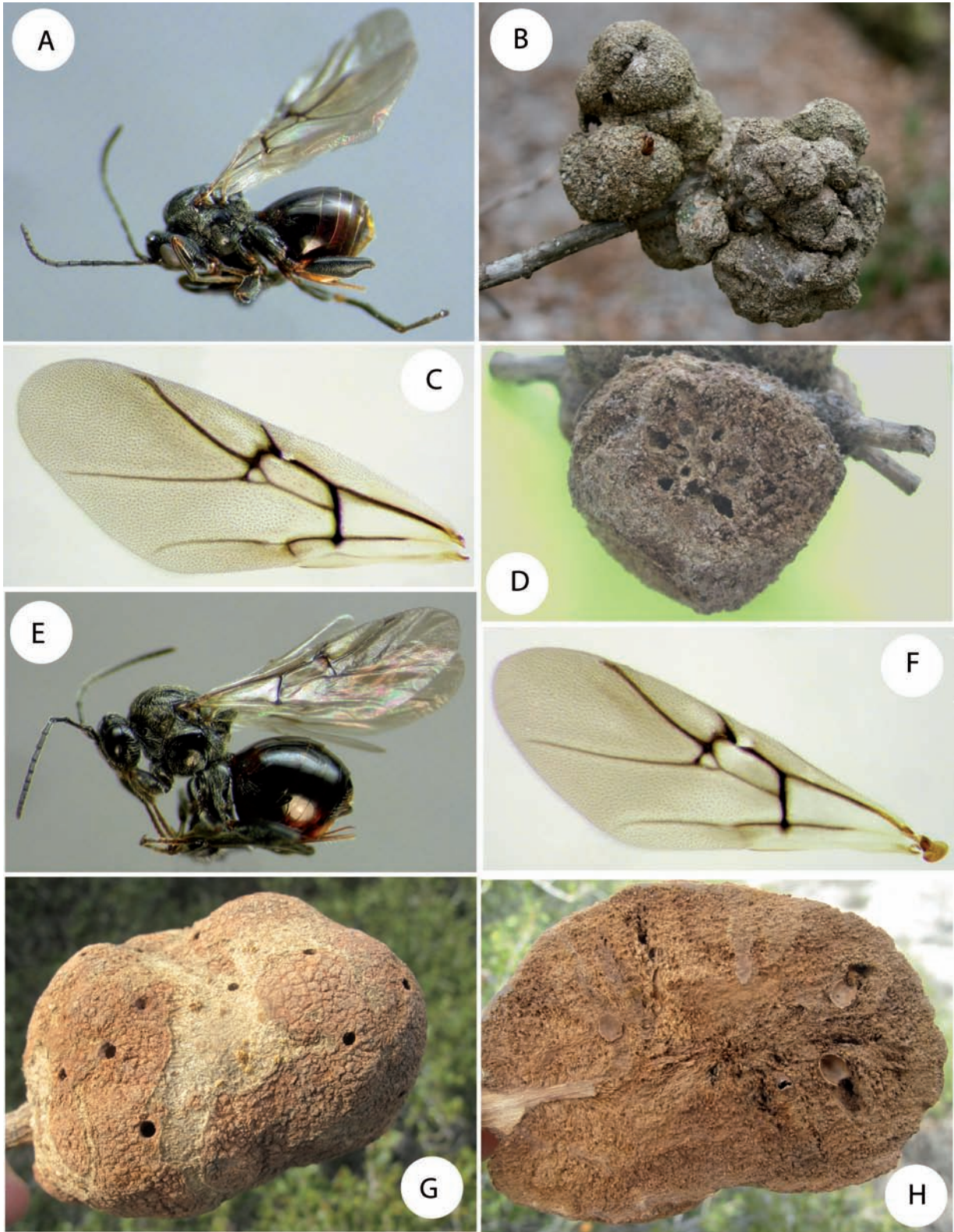
Key to *Odontocynips* species

1. Female antenna with 13 flagellomeres (Fig. 4B). Forewings with fuscous spots (Fig. 4H). Mesoscutum (Fig. 4C) and mesopleuron with conspicuous piliferous punctures and densely pubescent; notauli narrow. All metasomal tergites laterally pubescent (Fig. 4F). Ventral clypeal margin strongly projecting over mandibles (Fig. 4A). Lateral carinae of propodeum straight, only slightly divergent (Fig. 4D). Galls in roots. ***O. nebulosa***
- Female antenna with 12 flagellomeres. Forewing without fuscous spots. Mesoscutum and mesopleuron with sparse pilosity and piliferous punctures; notauli broader. Only T3 laterally pubescent (Fig. 2F). Ventral clypeal margin not projected over mandibles (Figs. 1A & 3A). Lateral propodeal carinae bending posteriorly, more strongly divergent. Galls on aerial stems. **2**
2. Metatarsal claw with an acute basal lobe or short tooth (Fig. 3E). Scutellar foveae with distinct margins and clearly separated (Fig. 3B); scutellar disc rugose (Fig. 3B). Median propodeal area wider than it is long; lateral propodeal carinae strongly divergent anteriorly (Fig. 3D); mesoscutum moderately pubescent (Fig. 3B). Distal part of Cu1b vein without a basal projection (Fig. 5F). ***O. hansonii***
- Metatarsal claw simple, with a blunt basal lobe (Fig. 2E). Scutellar foveae with indistinct posterior and inner margins, not clearly separated by a septum (Fig. 1D). Scutellar disc almost smooth anteriorly. Median propo-

Fig. 4.— *Odontocynips nebulosa*: (A) Head anterior view. (B) Female antenna. (C) Mesosoma dorsal view. (D) Propodeum. (E) Metatarsal claw. (F) Metasoma lateral view. (G) Detail of ventral spine of hypopygium. (H) Forewing of female [after Liljeblad *et al.* 2008 (<http://www.morphbank.net/>)].

Fig. 4.— *Odontocynips nebulosa*: (A) Cabeza en visión anterior. (B) Antena de la hembra. (C) Mesosoma en visión dorsal. (D) Propodeo. (E) Uña metatarsal. (F) Metasoma en visión lateral. (G) Detalle de la espina ventral de hipopigio. (H) Ala anterior de la hembra [tomado de Liljeblad *et al.* 2008 (<http://www.morphbank.net/>)].





deal area approximately as long as wide; median propodeal carinae less divergent anteriorly (Fig. 1F); mesoscutum only slightly pubescent (Fig. 1D). Distal part of Cu1b vein with a short projection to the basal margin (Fig. 5C). *O. championi*

Discussion

The inclusion of *C. championi* within the genus *Odontocynips* raised some doubts regarding its correct generic classification. *O. championi* Cameron and *O. hansonii* Pujade-Villar are significantly different from the type species of *Odontocynips*, *O. nebulosa*, in many morphological and biological characters (see the identification key). The three species share the presence of a large blunt lobe in the distal half of the hind femur, a character that Kieffer (1910) used to define the genus *Odontocynips*. However, because of the substantial differences between the species collected from Panama and Costa Rica and *O. nebulosa*, and as often occurs in Cynipini, this character could be homoplastic (Pujade-Villar, 2008). Thus, if the neotropical species belong to a different genus that also presents a lobe in the hind femur, a redefinition of the genus *Odontocynips* would be necessary, and a new genus comprising *O. championi* and *O. hansonii* could be established (Pujade-Villar, 2008). Conversely, if the large blunt lobe on the distal half of the hind femur is a true synapomorphy of the genus *Odontocynips*, the morphological variations observed in the three species, which include simple metatarsal claws (Fig. 4E), metatarsal claws simple but with a blunt basal lobe (Fig. 2E) and metatarsal claws with a short acute basal lobe (Fig. 3E), would be part of the generic variability of *Odontocynips*.

Aside from the large blunt lobe on the distal half of the hind femur, *O. championi* and *O. hansonii* resemble species of *Andricus* in most morphological characters. According to Liljeblad *et al.* (2008), *Odontocynips* is phylogenetically related to some

Nearctic species of *Andricus*, especially *Andricus kingi* Bassett, 1900. We reviewed the type material of the other six species than induce woody, tuberoso galls similar to the galls of *O. championi* and *O. hansonii*, and all are species of the genus *Andricus*: *A. tumeralis* Pujade-Villar, 2009; *A. montezumus* Beutenmüller, 1913; *A. dugesi* Beutenmüller, 1917; *A. peredurus* Kinsey, 1920; *A. furnaceus* Kinsey, 1920 and *A. durangensis* Beutenmüller, 1911. Thus, it is possible that the Central American species here studied are members of *Andricus* with a large blunt lobe on the distal half of the hind femur. Nevertheless, as the generic limits of *Andricus* are not clear, considering *Odontocynips* as part of the genus *Andricus* at this time would only further complicate the status of *Andricus* (Pujade-Villar, 2008). It is possible that the inducing of woody, tuberoso, large galls is an evolutive convergence in different genera within Cynipini, as additional evidence for this conclusion is found in the literature.

It is also reasonable to think that *O. championi* and *O. hansonii* comprise a new genus taxonomically intermediate between the genera *Andricus* and *Odontocynips*. However, the main problem in the erection of a new genus including *O. championi* and *O. hansonii* is the absence of a synapomorphy that clearly defines this new taxon because these species share characters of both *Odontocynips* and *Andricus*. Consequently, we prefer to be conservative at this stage and consider that the presence of a large blunt lobe on the distal half of the hind femur is a synapomorphy of the genus *Odontocynips* and that the capacity of inducing large, woody, tuberoso galls is an evolutionary convergence of some species of the genera *Andricus* and *Odontocynips*. According to Pujade-Villar (2008), until the neotropical fauna of Cynipini is better known and ongoing phylogenetic analyses are finished, the erection of new genera lacking clear morphological synapomorphies is undesirable and would increase the generic chaos within Cynipini.

◀ Fig. 5.— Habitus, forewings and galls of *Odontocynips* species: (A) *Odontocynips championi*, female. (B) Mature gall of *Odontocynips championi*. (C) Forewing of female. (D) Section of a mature gall. (E) *Odontocynips hansonii*, female. (F) Forewing of female. (G) Mature gall of *Odontocynips hansonii*. (H) Section of a mature gall.

Fig. 5.— Habitus, ala anterior y agallas de las especies de *Odontocynips*: (A) Hembra de *Odontocynips championi*. (B) Agalla madura de *Odontocynips championi*. (C) Ala anterior de la hembra. (D) Sección de una agalla madura. (E) Hembra de *Odontocynips hansonii*. (F) Ala anterior de la hembra. (G) Agalla madura de *Odontocynips hansonii*. (H) Sección de una agalla madura.

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