NOTES ON TWO UNUSUAL SPECIES OF SYMPHYTA (HYMENOPTERA: PERGIDAE, XIPHYDRIIDAE) FROM CHILE, WITH THE FIRST REPORT OF A GALL-INDUCING SAWFLY FROM THE NEOTROPICAL REGION

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Abstract: We report the southernmost record (Huinay Scientific Field Station: 42°22′ S, 72°24′ W, Comau, chilean Patagonia) for the sawfly *Philoperra obscura* Smith (Pergidae) and add new morphological and biological data on this poorly known species. The individuals of *P. obscura* known so far appear to morphologically differ in the number of antennomeres, forewing anal cell shape, and color of the first abdominal tergum and of the hind tibia. The individual at Huinay was collected from inside a gall on *Nothofagus betuloides* Mirb. (Oerst.) (Nothofagaceae), thus resulting in the first report of a gall-forming sawfly from the Neotropical Region. An individual of a second sawfly species, *Derecyrta beechei* Smith (Xiphydriidae), was also collected at Huinay and presented some differences with the previously known individuals in forewing venation and color of the mandibles.

Key words: Hymenoptera, Pergidae, Xiphydriidae, Philoperra obscura, Derecyrta beechei, Nothofagus galls, Chile.

Sobre dos especies inusuales de Symphyta (Hymenoptera: Pergidae, Xiphydriidae) de Chile, y primera cita de una avispa porta-sierra inductora de agallas en la Región Neotropical.

Resumen: Se cita el registro más al sur (Estación Científica Huinay: 42°22′ S, 72°24′ W, Patagonia chilena) de la avispa portasierra *Philoperra obscura* Smith (Pergidae) y se aportan nuevos datos morfológicos y biológicos sobre esta poco conocida especie.
Los individuos de *P. obscura* conocidos hasta ahora difieren en algunos rasgos morfológicos, como el número de antenómeros, forma de la celda anal del ala anterior, y en el color del primer terguito abdominal y de la tibia posterior. El ejemplar de Huinay fue extraido de una agalla en *Nothofagus betuloides* Mirb. (Oerst.) (Nothofagaceae), lo que representa el primer registro de una avispa porta-sierra inductora de agallas en la Región Neotropical. Se colectó también en Huinay un ejemplar de una segunda especie de avispas porta-sierra, *Derecyrta beechei* Smith (Xiphydriidae), que también presenta algunas diferencias morfológicas con los escasos ejemplares conocidos hasta ahora, en caracteres de la venación alar y color de las mandíbulas.

Palabras clave: Hymenoptera, Pergidae, Xiphydriidae, Philoperra obscura, Derecyrta beechei, agallas en Nothofagus, Chile.

The Neotropical sawfly fauna is not as well-known as those from some other regions of the world. Individuals are generally poorly collected, and the subsequent taxonomic knowledge for many species is based on only one or a few individuals. The biology for many taxa is even less known (Smith, 1988, 1990, 1992; Schmidt & Smith, 2006). This contrasts with the greater diversity of some sawfly families, such as Pergidae and Argidae, in the Neotropics compared to regions from the Northern Hemisphere (Smith, 1990, 1992; Schmidt & Smith, 2006).

Here we present new distributional, morphological, and biological data for *Philoperra obscura* Smith (Pergidae) and new morphological data for *Derecyrta beechei* Smith (Xiphydriidae) based on specimens collected in southern Chile. Both species were described from single specimens (Smith, 1995 a, b). Subsequently, several additional specimens have been discovered, including a specimen of each collected by JLNA during an inventory of gall-inducing Hymenoptera associated with *Nothofagus* at the Fundación San Ignacio de Huinay (42°22'S, 72°42'W) (Comau fiord, Region X, Los Lagos, southern Chile) during January 2012 and November 2013.

Acronyms for depositories are: MNCN (Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain); MNHN (Museo Nacional de Historia Natural, Santiago, Chile); USNM (National Museum of Natural History, Smithsonian

Institution, Washington, D.C., U.S.A.); ZSM (Zoologische Staatssammlung, Munich, Germany). Images of adult habitus of *P. obscura* were taken by JLNA with and NIKON Coolpix 4500 digital camera attached to a Wild MZ8 microscope. Photos of the galls and the habitat were taken by JLNA in the field. The habitus photos of *D. beechei* are available on internet (Taeger 2013).

Philoperra obscura was described from a female from "Nuble, Las Trancas, 10.1:1987, S. Roitman" (holotype in NMHN) (Smith 1995a). Additional records are: "Chile, Las Trancas, Shangri-la, MT1, 1-15.xii.2006, Sugio" (1 ♀, USNM); Huinay, X Region, Península Hueuqui, ex gall Nothofagus betuloides, 15.xi.2013, JLNA (1 ♀, MNCN) (Figs. 1A, 1B).

Three specimens are now known, each differing to some degree. With only three specimens, it is difficult to determine if these are variations in a single species or represent characteristics of more than one species. Because of the lack of specimens and variation that can occur in sawflies, we consider them as one species. Color variation, wing venation anomalies, and variation in number of antennomeres are commonly encountered within species. In the holotype, the antenna has 21-22 antennomeres and is about 2X the head width, whereas in the other two specimens the antenna has about 26 antennomeres and is about 2.5X the head width. In

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the holotype, the petiolate anal cell of the forewing is open apically, whereas in the other two specimens the anal cell is closed. The color is very similar in all three specimens, but the first abdominal tergum is completely black in the specimen from Huinay, and mostly orange and only laterally black in the holotype and specimen from Shangri-la. The hind tibia of the specimen from Huinay is black with the basal third orange, but completely black in the holotype and specimen from Shangri-la. The ovipositors and sheaths of the holotype (Smith 1995a, figs. 12, 13) and the specimen from Shangri-la are identical, which lends to justification that these are the same species.

Nothing was known of the biology or habits of this species. While looking for gall-inducing insects on Nothofagus (1C; collection habitat, Fig. 2B), one female was found inside a gall collected from Nothofagus betuloides Mirb. (Oerst.) (Nothofagaceae) (Fig. 1D, 1E). This information is novel from different points of view. It is the first report of a gall-forming sawfly from the Neotropical Region and it is the first observation of a gall-forming life style in Pergidae, since the ability to induce galls was previously only reported for sawflies of the families Xyelidae and Tenthredinidae for a total of six to ten evolutionary appearances (Roininen et al. 2005). Our data thus provide evidence for a further independent evolution of gall-inducing behavior within Symphyta. The gall of *P. obscura* was induced in a stem of the plant. Within Symphyta this gall resembles in morphology the one induced by some *Euura* species (Tenthredinidae) (Roininen et al. 2005).

Derecyrta beechei was described from a single female from "Chile – 10^{th} Region, Los Alterzales, Feb. 1984, coll. M. Beeche" (Smith 1995b). Region X is also known as Región de Los Lagos (holotype in MNHN). Additional records are: "Chile: Huinay, Cerro Tambor, 1900-1950 m, collected on snowfield, 19.II.2005, R. Relzer (1 ♀, USNM; 1 ♀, ZSM); Huinay, Estación Biológica, 24.i.2012, JLNA(1 ♀, MNCN) (Fig. 2A).

Most species of *Derecyrta* lack vein 2r in the forewing, but other characters justified the placement of this species in *Derecyrta* (Smith 1995b). The specimens collected in 2005 have 2r present, as in the holotype, but in the specimen from 2012, 2r is present in the left forewing and absent in the right forewing (Smith, 1995b, Fig. 7). The only other difference is the color of the mandibles, which were described as reddish brown by Smith (1995b) but are black in the subsequent specimens.

All specimens so far known are from Región de Los Lagos. Xiphydriidae are wood borers, usually in dead or dying small limbs of trees and shrubs. The specimen by JLNA was hand collected in flight. With the abundance of *Nothofagus* in the region, it is possibly the host of the species.

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[►] Fig. 1: *Philoperra obscura*. A. Habitus dorsal. B. Habitus, lateroventral. C. Host plant, *Nothofagus betuloides*. D. Closed gall on *N. betuloides*. E. Gall showing exit hole.

[▶] Fig. 1: A. Hábitus dorsal. B. Hábitus lateroventral. C. Planta huésped, Nothofagus betuloides. D. Agalla cerrada en N. betuloides. E. Agalla, en la que se aprecia el agujero de salida.

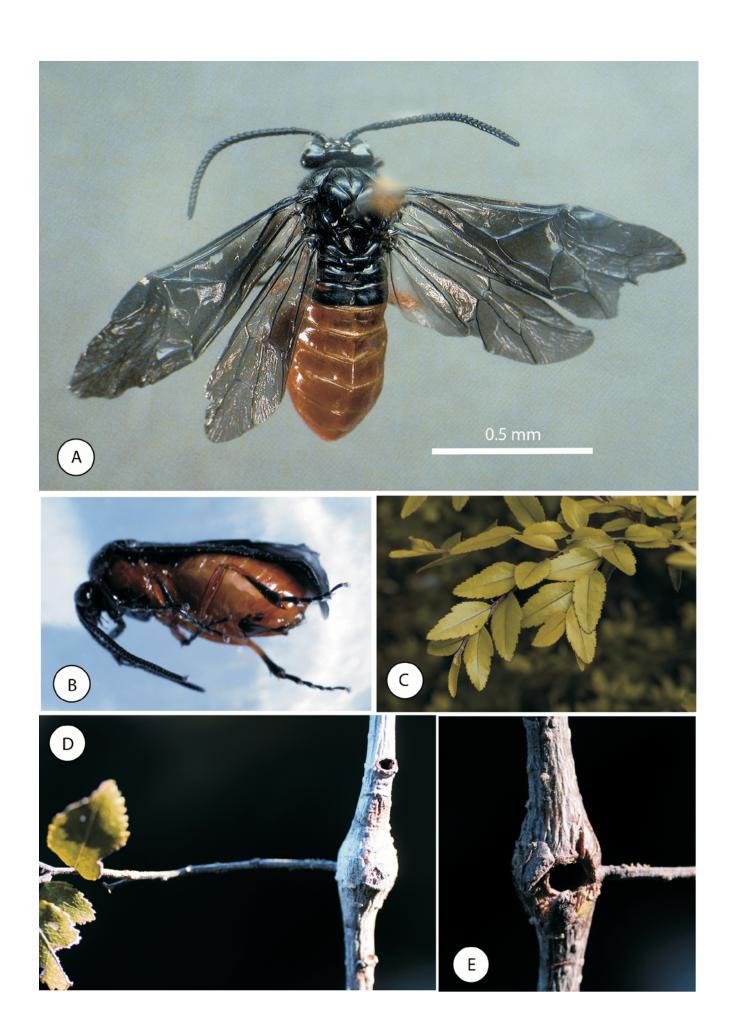






Fig. 2: A. Derecyrta beechei, habitus dorsal and lateral. B. Collecting site habitat, Huinay, Comau Fiord. Fig. 2: A. Derecyrta beechei, hábitus dorsal y lateral. B. Hábitat del lugar de recogida, Huinay, fiordo de Comau.