

INSECTA MUNDI

A Journal of World Insect Systematics

0020

Habronyx Foerster (Hymenoptera: Ichneumonidae: Anomaloninae)
in Andean and Neantarctic South America
with description of new species from Bolivia and Chile

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Date of Issue: 2 November 2007

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Insecta Mundi 0020: 1-8

Published in 2007 by

Center for Systematic Entomology, Inc.
P. O. Box 147100
Gainesville, FL 326104-7100 U. S. A.
<http://www.centerforsystematicentomology.org/>

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As of 2007, **Insecta Mundi** is published irregularly throughout the year, not as a quarterly issues. As manuscripts are completed they are published and given an individual number. Manuscripts must be peer reviewed prior to submission, after which they are again reviewed by the editorial board to insure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

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ISSN 0749-6737

Habronyx Foerster (Hymenoptera: Ichneumonidae: Anomaloninae)
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Abstract. *Habronyx* Foerster occurs in all regions except the Afrotropical and parasitizes lepidopterous larvae (Geometridae, Noctuidae, Saturniidae, Sphingidae, Psychidae). *Habronyx albifrons* (Spinola) inhabits neantarctic Chile and southern Argentina. It is black with a white flagellar annulus and with a strong prepectal carina on the lower half of the mesopleuron. *Habronyx albifrons* is redescribed and descriptions are given of two new species which belong to a group of their own: *Habronyx citrinus* Porter, n. sp., from central Chile; and *Habronyx punensis* Porter, n. sp., from the high Andean steppe of Bolivia, where it attacks noctuid larvae on *Chenopodium quinoa* Willd. These differ from *H. albifrons* because the prepectal carina is absent on the mesopleuron, being developed only on the mesosternum, and because they have the flagellum uniformly black and the gaster extensively orange. *Habronyx punensis* differs from *H. citrinus* in having a sharp carina on the front, the mesopleural punctures not reticulately confluent, the discoidella weaker and in part desclerotized

Resumen. *Habronyx* Foerster se halla en todas las regiones biogeográficas excepto la afrotropical y parasita larvas de Lepidoptera (Geometridae, Noctuidae, Saturniidae, Sphingidae, Psychidae). *Habronyx albifrons* (Spinola) habita en la región neantártica de Chile y del suroeste de la Argentina. Es de color negro con un anillo blanco en la antena y tiene la carena prepectoral bien desarrollada en la mitad inferior de la mesopleura. Se describen dos especies nuevas, estrechamente emparentadas entre sí: *Habronyx citrinus* Porter de Chile central y *Habronyx punensis* Porter que habita en la puna altoandina de Bolivia. En donde parasita a larvas de un noctuido que se alimenta de *Chenopodium quinoa* Willd. Se diferencian estas dos de *H. albifrons* porque tienen la carena prepectoral desarrollada sólo en el mesoesterno, por carecer de un anillo antenal blanco, y por su gáster mayormente color naranja. *H. punensis* se distingue de *H. citrinus* por tener una carena en la frente, por los puntos de la mesopleura algo menos densos, no coalescentes, por tener la vena nervular (*nervulus*) inserta más próxima a la vena basal, y la vena discoidal del ala posterior (*discoidella*) bastante débil y en parte desesclerotizada.

Introduction

Habronyx Foerster is a rather small genus which occurs in all major biogeographic provinces except the Afrotropical, being especially well represented in the Nearctic (Dasch 1984) and Australian (Gauld 1984) regions. It has been reared from a variety of lepidopterous larvae, with the larger species attacking such hosts as Saturniidae and Sphingidae while the smaller species parasitize Geometridae, Noctuidae, Olethreutidae, and Pyralidae. Until now, the only described South American species has been *H. albifrons* (Spinola), which abounds throughout the Neantarctic Region in Chile and southwest Argentina and whose closest relative appears to be the Australian *H. (H.) australasiae* (Gauld 1984), although similar species of the same subgenus also are found in North America and Eurasia. Recently, two additional South American species of *Habronyx* have been collected, one in central Chile and the other at more than 3000 m altitude in the Bolivian puna near La Paz, and these represent a new species group unique in that the prepectal carina does not reach upward onto the mesopleuron but is confined to the mesosternum. As here recognized, *Habronyx* emerges as a rather heterogeneous assemblage. Nonetheless, it may easily be recognized by the following combination of characters:

- (1) Front without a median compressed tooth.
- (2) Eyes not conspicuously setose.
- (3) Ocelli not unusually large.
- (4) Apex of clypeus with a median tooth.
- (5) Lower front margin of pronotum without a tooth.
- (6) Mesoscutum without a concavity just before its anterior end.
- (7) Notaulus distinct, often strong, reaching to or well beyond middle of mesoscutum.

- (8) Intercubital vein meets cubitus at or basad of second recurrent vein.
- (9) Postnervulus meets discocubital cell at about its midlength, intercepted at or below middle.
- (10) Discoidella vein always present, strong or sometimes in part desclerotized.
- (11) Middle tibia with two apical spurs.
- (12) Tarsal claws usually not pectinate all the way to apex.
- (13) Epipleuron of second tergite narrow and separated by a crease.
- (14) Second tergite much longer than third tergite.

Materials Studied

Specimens studied are deposited in the following collections: **AEIC** American Entomological Institute, 3005 S.W. 56th Ave., Gainesville, Florida 32608; **FSCA** Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, P.O.Box 147100, Gainesville, Florida 32614-7100.

Key to the South American species of *Habronyx*

- 1. Flagellum with a white annulus, clypeus and face white, hind tibia with a broad white band subbasally, gaster black; flagellum about 0.8 times as long as body; hypostomal carina raised ventrally into a conspicuous flange; prepectal carina sharp, vertical, reaching dorsad to near mid height of mesopleuron; submetapleural carina weakly expanded near base; intercubitus inserted on cubitus at or only a little basad of second recurrent vein; nervellus vertical, broken below middle *Habronyx albifrons* (Spinola)
- Flagellum uniformly black, clypeus and face yellow with black markings, hind tibia without a white band, gaster extensively orange; flagellum less than 0.5 times as long as body; hypostomal carina weakly elevated; prepectal carina developed only on mesosternum, not reaching dorsad onto mesopleuron; submetapleural carina produced near base into a large subtriangular flange; intercubitus joins cubitus well basad of second recurrent; nervellus strongly reclivous and broken near middle **2**
- 2(1). Fourth gastric tergite of female blackish only near apex; hind tibia orange on basal 0.5 and black on apical 0.5; wings with very light brownish staining; front with a weak and irregular carina from mid ocellus to level of antennal sockets; mesopleural disc with strong and in part reticulately coalescent punctures; discoidella sclerotized throughout *Habronyx citrinus* Porter
- Fourth gastric tergite of female with black on much of its apical 0.5; hind tibia black with rather dull orange on its basal 0.3-0.4; wings hyaline; front with a fine sharp carina between mid ocellus and level of antennal sockets; mesopleural disc with strong and dense but not even in

Figures 1-8. **1)** *Habronyx citrinus*, female holotype. Lateral view of entire insect showing habitus, coloration and (1) antenna less than 0.5 length of body; (2) light brown staining on wings; (3) second recurrent inserted well distad of intercubital vein; (4) gaster orange on tergites 1-3 and on most of 4; (5) hind tibia orange on basal 0.5 and black on apical 0.5; **2)** *Habronyx citrinus*, male paratype. Lateral view of entire insect showing habitus and color pattern, note the extensively yellow to brownish yellow face and hind orbits; **3).** *Habronyx citrinus*, female holotype. Lateral view of head and mesosoma showing: (1) sculpture on mesopleuron; (2) reclivous nervellus broken near middle; (3) coloration; **4)** *Habronyx punensis*, female holotype. Dorsal view showing (1) strongly impressed notauli on mesoscutum; (2) wings hyaline; (3) nervellus reclivous and broken near middle; (4) intercubitus joining cubitus well basad of second recurrent vein; (5) discoidella weak, partly desclerotized; (6) nervulus postfurcal by less than 0.5 times its length; **5)** *Habronyx punensis*, female holotype. Lateral view of gaster, showing habitus and (1) extent of black coloration on fourth tergite; **6)** *Habronyx punensis*, female holotype. Lateral view of head and mesosoma showing (1) sculpture on mesopleuron and (2) coloration; **7)** *Habronyx albifrons*, female. Lateral view of whole insect showing habitus and (1) antenna about 0.8 times as long as body and with a broad postmedian white annulus; (2) hind tibia with subbasal white band; (3) extensive white markings on head; **8)** *Habronyx albifrons*, female. Dorsal view of wings showing (1) intercubitus interstitial with second recurrent vein; (2) nervulus postfurcal by more than 0.5 times its length; (3) discoidella sclerotized almost to apex of hind wing; (4) nervellus vertical, broken below middle by discoidella.



part reticulately coalescent punctures; discoidella weaker, traceable throughout but in part desclerotized *Habronyx punensis* Porter

***Habronyx citrinus* Porter, new species**
(Figure 1-3)

Description. Female Holotype. Color: antenna dull black with a yellow blotch below on scape; mandible yellow with apical teeth black; clypeus and face yellow with black on tentorial pits and with a large, ventrally narrowing black blotch which reaches from below each antennal socket for about 0.7 times the distance to tentorial pit; vertical orbit with a brownish yellow mark near top of eye, and hind orbit with a brownish yellow band that reaches from its dorsal 0.3 ventrad to and across malar space; head otherwise shining black; mesosoma shining black; gaster light orange with faint dusky staining on dorsum of second tergite and laterally on third tergite, more distinctly blackish toward apex on fourth tergite, and blackish almost throughout on fifth and following tergites and on last sternite; fore and mid legs with coxae shining black but otherwise pale orange with weak dusky staining on tarsi; hind leg with coxa and trochanter shining black, trochantellus pale orange, femur black with orange inconspicuously on base, tibia orange on basal 0.5 and black on apical 0.5, first tarsomere orange with black on apical 0.15, second to fourth tarsomeres mostly black, fifth tarsomere sordid brown; wings hyaline faint brownish staining.

Length of fore wing: 9.9 mm. Flagellum: short, 0.4-0.5 times as long as body, first segment 3.2 times as long as deep at apex. Median field of face and much of clypeus coarsely and densely punctate. Front: with a weak, median carina from mid ocellus to level of antennal sockets. Vertex: strongly wrinkled with stemmaticum elevated, ocello-ocular line 2.5 times as long as width of lateral ocellus and line from ocellus to occipital carina 0.7 times as long. Occipital carina: bent mesad dorso-laterally, so that it continues in an almost straight line across top of head. Hypostomal carina: weakly elevated, scarcely higher than adjoining occipital carina, not flange-like. Temple: with numerous strong medium sized punctures that are mostly separated by smooth interspaces and which emit very long and dense, strongly projecting white setae. Mesoscutum: highly polished, on median lobe with dense, sharp small to medium sized punctures and on lateral lobe with similar but sparser punctures. Mesopleuron: prepectal carina sharp on underside just behind the fore coxae but not projected dorsad onto lateral surface of mesopleuron; mesopleural disk on lower 0.5 with coarse, mostly differentiated, adjacent to slightly coalescent punctures; mesopleural suture not anteriorly carinate between speculum and base of mid coxae. Submetapleural carina: produced near base into a large subtriangular flange. Wing venation: intercubital vein joins cubitus well basad of second recurrent vein; nervulus postfurcal by about 0.4 times its length; nervellus strongly reclivous, broken near middle, discoidella sclerotized throughout. Hind leg: femur 6.7 times as long as deep; second tarsomere 3.6 times as long as deep. Gaster: postpetiole 1.6 times as long as wide from spiracle to apex; first sternite ends well distad of spiracles.

Male Allotype. Differs from female as follows. Color: black wedges on each side of face reach all the way to clypeal suture; yellowish band on hind orbit much narrowed below and partly interrupted in malar space; fourth tergite uniformly pale orange; fifth tergite orange with black on apical 0.3.

Length of fore wing: 9.1 mm. First flagellomere: 2.8 times as long as deep at apex. Ocello-ocular line 2.1 times as long as width of lateral ocellus, and line from ocellus to occipital carina 1.0 times as long. Hind leg: femur 6.8 times as long as deep, second tarsomere 3.3 times as long as deep.

Type material. Holotype female, CHILE, Región Metropolitana, Cajón de Maipo, El Manzano, XI-1989, Pérez de Arce [FSCA]. Allotype male, CHILE, Región Metropolitana, Cajón de Maipo, El Manzano, XII-1990, Pérez de Arce [FSCA]. Paratypes: 1 female and 3 males, CHILE, 1 male, Región Metropolitana, Santiago, Macul, XI-1989, Pérez de Arce [FSCA]; 1 female, Región Metropolitana, Cajón de Maipo, El Manzano, XII-1990, Pérez de Arce [AEIC]; 1 male, El Peumo, Río Maipo, I-1953, L.E. Peña [AEIC]; 1 male, Región O'Higgins, Las Nieves, Cordillera Rengo, 12-26-XI-1947, L.E. Peña [FSCA].

Variation. Color: mandible sometimes black on as much as its basal 0.5; apical margin of clypeus sometimes light brownish; face sometimes wholly yellow; hind orbital band sometimes dull brownish,

sometimes very broad above or in other specimens very narrow and not reaching below as far as malar space; tergites 2 and 3 sometimes with extensive but faint dusky staining; fore and mid trochanters may be blackish, fifth tergite and sternite sometimes stained with orange brown. Length of fore wing: up to 11.3 mm. First flagellomere: 3.0 times as long as deep at apex. Hind femur: 6.4-6.9 times as long as deep.

Relationships. Gauld (1997) divides the New World species of *Habronyx* into two subgenera: *Camposcopus* Foerster, in which the prepectal carina reaches inclivously upward to touch the anterior margin of the mesopleuron at about its mid height, and *Habronyx* (*s. str.*) in which the prepectal carina extends some distance dorsad but is nearly vertical so that its upper end does not approach the front margin of the mesopleuron. However, the present species, and the very similar *H. punensis* n. sp. represent a third character state, because they have the prepectal carina not at all prolonged upward onto the mesopleuron but developed *only* across the *mesosternum* just behind the fore coxae.

Habitat Notes. *Habronyx citrinus* occurs in the Mediterranean biotic province of central Chile, where it inhabits well watered ravines and valleys in the Andean foothills, whose sclerophyllous flora includes such characteristic trees and shrubs as *Lithraea* Miers and *Schinus* L. (Anacardiaceae), *Peumus* Molina (Monimiaceae), *Acacia* Mill and *Prosopis* L. (Leguminosae), *Maytenus* Molina (Celastraceae), *Quillaja* Molina (Rosaceae), *Porlieria* Ruiz and Pav. (Zygophyllaceae), and *Beilschmiedia* Nees and *Cryptocarya* R. Br. (Lauraceae).

Specific Name. From the Greek adjective 'kitrinos' (*citrus-colored, orange yellow*), latinized as *citrinus*.

***Habronyx punensis* Porter, new species (Figure 4-6)**

Description. Female Holotype. Similar to *H. citrinus* from which it differs as follows. Color: second gastric tergite faintly blackish on dorsum toward middle; fourth tergite with black on much of its apical 0.5; fore and mid trochanters largely black with some orange above and apically; hind leg with trochantellus blackish with obscure orange staining, tibia rather dull orange on about its basal 0.3 but otherwise black, and first tarsomere dull orange with black on its apical 0.3; wings hyaline.

Length of fore wing: 9.3 mm. First flagellomere 2.6 times as long as deep at apex. Front with a sharp carina running from median ocellus ventrad to between antennal scrobes. Vertex: line from hind ocellus to occipital carina about 0.4 times the width of ocellus. Mesopleural disc on its lower 0.5 with strong, medium sized to large not at all reticulately confluent punctures which are mostly subadjacent or a little sparser with smooth, shining interspaces. Wing venation: nervulus only 0.2 times its length postfurcal; discoidella traceable throughout but spectral, largely desclerotized. Hind leg with femur 5.8 times as long as deep, second tarsomere 2.6 times as long as deep. Gaster with postpetiole 1.4 times as long as wide at apex.

Male Allotype. Differs from female as follows: Color: fore and mid trochanters more largely orange than in female; hind tibia orange with dusky staining on basal 0.4 and black on distal 0.6.

Length of fore wing 8.6 mm. First flagellomere 3.0 times as long as deep at apex. Mesopleuron: lower 0.5 of disc with punctures a little larger and more crowded than in female but not reticulately coalescing. Wing venation: discoidella desclerotized and barely traceable on basal 0.5, a little better developed on distal 0.5. Second hind tarsomere 3.3 times as long as deep at apex.

Type material. Holotype female, BOLIVIA, La Paz, Huaraco-Aroma, 23-III-1994, colectado en cultivos de quinua, salió de larvas de Noctuidae [FSCA]. Allotype male, BOLIVIA, La Paz, Murillo, Laboratorio de Entomología en Cota Cota, 23-III-1994, colectado en cultivos de quinua, salió de larvas de Noctuidae [FSCA].

Relationships. This species is very similar to the Chilean *H. citrinus* but differs in its more nearly hyaline wings, more extensively black gaster and legs, presence of a sharp median carina on the front,

strongly but not reticulately punctate mesopleural disc, more briefly postfurcal nervulus, and more weakly sclerotized or even in part spectral nervellus.

Some of these characters may not hold up when more specimens are at hand to show a fuller range of variation. However it would be unusual for a single species to occur from central Chile all the way north into the Andean steppe of Bolivia, although many temperate South American genera are represented by closely related species in each area.

For example, as described by Porter (1967), the ichneumonid genus *Trachysphyrus* Haliday has the *Metallicus* species group at 3000-4000 m in the highlands of Bolivia and Perú, while its presumed sister taxon, the *Irinus* species group, occurs in Neantarctic central Chile from Atacama to Malleco (27th-37th parallel) and at altitudes of 300-3000 m, with most records from below 2300 m.

Hosts. These specimens were reared from an unidentified noctuid moth larvae on *Chenopodium quinoa* Willd. (Angiospermae: Chenopodiaceae).

Habitat Notes. The type series was collected near La Paz, Bolivia at more than 3000m in the high Andean steppe or *Puna Biogeographic Province* as defined by Cabrera and Willink (1973). *Chenopodium quinoa*, host plant of the noctuid larva from which *H. punensis* was reared, is a desertic halophyte, native to the Andean highlands of Bolivia and Perú, where it is cultivated for its edible seeds and leaves.

Specific Name. An adjective derived from the Quechua word *puna* by addition of the Latin locative suffix *-ensis*.

***Habronyx albifrons* (Spinola)**
(Figure 7-9)

Description. Female. Color: antenna black with a broad postmedian white annulus on flagellomeres 27-36; mandible white with black on teeth; head silky black with clypeus and face white, except brown on tentorial pits and for a short distance below antennal sockets, with a white blotch on vertical orbit at top of eye, and a very broad white band on lower 0.5 of hind orbit and in all of malar space; mesosoma black; gaster black with more or less light brown staining on sternites; fore leg with coxa black, trochanter brownish black with a little white on apex, trochantellus more extensively white, femur black with a broad white band on dorsum from near base almost to apex, tibia mostly white except for faint dusky staining below, and tarsus with first and second segments white with a little dusky on apices and segments 3-5 brownish black; mid leg with coxa, trochanters, and femur black, tibia white with dusky staining narrowly on base and a little more broadly on apex, tarsus with first segment white with a little blackish on apex, second segment whitish with diffuse dusky staining and segments 3-5 mostly blackish; hind leg black with a broad white band subbasally on tibia, narrowly white on apex of first tarsomere and white throughout on tarsomeres 2-4; wings hyaline with light, often faint, dusky staining.

Length of fore wing: 10.6-20.1 mm. Flagellum: very long, 0.7-0.8 times as long as body, first segment 4.3-5.5 times as long as deep at apex. Median field of face with numerous, well spaced, rather small shallow punctures, clypeus with even weaker and sparser punctures. Vertex: anteriorly wrinkled, smoother posteriorly, stemmaticum scarcely elevated, ocello-ocular line 1.3-1.5 times as long as width of lateral ocellus and line from ocellus to occipital carina 0.4 times as long. Occipital carina: dorso-laterally curved mesad, a little arched or sometimes almost straight across head behind eyes. Hypostomal carina: conspicuously raised and flange-like. Temple: with many small, sharp, well spaced punctures emitting comparatively short but dense brownish setae. Mesoscutum: silky shining, on most of central and lateral lobes with numerous small, sharp punctures separated by brief smooth interspaces. Mesopleuron: prepectal carina sharply defined, reaching dorsad on about lower 0.4-0.5 of mesopleuron, vertical, its upper end distant from front margin of mesopleuron; disc of mesopleuron on its lower 0.3 with complex reticulate wrinkling that obscures most punctures; mesopleural suture more or less carinate along its front margin between speculum and base of mid coxae. Submetapleural carina: only weakly produced near base into a low, rounded lobe. Wing venation: intercubital vein inserted on cubitus at or only a short distance basad of second recurrent vein; nervulus postfurcal by about 0.6 times its length; nervellus vertical, broken below middle, discoidella sclerotized throughout. Hind leg: femur 7.3-8.0 times as long as deep; second



Figure 9. *Habronyx albifrons*, female. Lateral view of head and mesosoma showing (1) sculpture and (2) coloration.

hind tarsomere 3.7 times as long as deep. Gaster: postpetiole 1.3-1.6 times as long as wide at apex; first sternite ends at or a little basad of spiracles.

Male. Differs from female as follows. Color: front leg with coxa largely white, trochanter white below, and tarsus white on segments 1-4; mid leg with tarsomeres 1-3 white, 4 white on base and black on its distal 0.7; hind leg with first tarsomere white, second black on basal 0.5 and white on distal 0.5.

Length of fore wing 9.8-18.0 mm. First flagellomere 4.0 times as long as deep at apex. Wing venation: nervulus about 0.7 times its length postfurcal. Second hind tarsomere 2.8 times as long as deep.

Material Examined. CHILE, 1 female, Región de Coquimbo: Pisco Elqui, 6-X-1987, Pérez de Arce; Región Metropolitana, 1 female, Santiago, 700-800 m, X-1984, L.E. Peña; 25 females and 12 males,

Cajón de Maipo, El Manzano, XI-1989, Pérez de Arce [FSCA].

Relationships. This elegant lustrous black species differs from the other known South American *Habronyx* in its white banded flagellum, prominently white marked head and legs, and in its vertical prepectal carina which extends well dorsad onto the mesopleuron. Gauld (1984) places it in *Habronyx s. str.* and suggests that it may be related to the Australian *H. (H.) australasiae* (Morley).

Habitat Notes. *Habronyx albifrons* occurs in all parts of the Neantarctic biogeographical province: in Chile from the 30th parallel south and in adjoining southwest Argentina below the 39th parallel. In central Chile it may be found in the same Mediterranean sclerophyll woodlands already described for *H. citrinus*. Indeed, it ranges north into the Coquimban Desert (Porter 1987) at least as far as the 30th parallel (Valle de Elqui) where a depauperate and presumably relict sclerophyll flora persists in a few fertile valleys permanently watered by rivers which descend from the snow capped Andes. On the south, it remains abundant in the humid Valdivian Forest (Porter 1987) which extends from the 35th to the 51st parallel and is dominated by several species of *Nothofagus* Blume (Fagaceae) along with other characteristic trees and shrubs including *Austrocedrus* Florin and Boutelje and *Fitzroya* Benth. and Hook (Cupressaceae), *Gevuina* Molina, *Embothrium* J. R. and G. Forst. and *Lomatia* R. Br. (Proteaceae), *Fuchsia* L. (Onagraceae), *Drimys* J. R. and G. Forst. (Winteraceae), *Berberis* L (Berberidaceae), *Myrceugenella* Kausel (Myrtaceae), and *Chusquea* Kunth (Bambusaceae). Even further south, *H. albifrons* reaches the 55th parallel in subantarctic *Nothofagus* woods on Tierra del Fuego and the adjacent mainland. So wide a geographic distribution, over 25 degrees of latitude and throughout a variety of subtropical desert and scrub communities, warm temperate wet forests, and cool to cold temperate rain forests, might seem remarkable if not unparalleled, but, in fact, is shared by many endemically Neantarctic taxa. For example, 14 other endemic ichneumonid species have the same geographical distribution as *H. albifrons*: *Tromatobia sponsa* (Haliday), *Echthrospis gayi* (Spinola), *Dotocryptus bellicosus* (Haliday), *Xiphonychidion cyanipennis* (Brullé), *Anacis rubripes* (Spinola), *Chilecryptus rhadinus* (Porter), *C. tetracanthus* (Spinola), *Neocryptopteryx metriuurus* (Spinola), *Hyposoter ater* (Brullé), *Alophosphion chilensis* (Spinola), *Mesochorus nequenensis* Dasch, *Syrphoctonus brevis* (Dasch), *S. chilensis* (Dasch), and *Chiloplites uncinatus* (Dalla Torre) (Porter 1987, 1997). In this way, it may be seen that the Neantarctic biota not only is remarkably distinctive but also shows a high degree of coherence from one extreme to another over its vast geographic area, suggesting that its diverse elements have evolved for some time in contact with one another and in isolation from the Neotropical biota that occupies most other parts of South America.

Acknowledgments

Drs. Lionel A. Stange and Julieta Brambila reviewed the manuscript. I also thank Dr. Gary Steck for his help in preparing the Automontage© illustrations.

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Accepted September 20, 2007