Cokendolpher, J. C. and D. Lanfranco L. 1985. Opiliones from the Cape Horn Archipelago: New southern records for harvestmen. J. Arachnol., 13:311-319.

# OPILIONES FROM THE CAPE HORN ARCHIPELAGO: NEW SOUTHERN RECORDS FOR HARVESTMEN

**James C. Cokendolpher**

The Museum
Texas Tech University
Lubbock, Texas 79409, U.S.A.

and

**Dolly Lanfranco L.**

Sección Entomología
Departamento de Recursos Naturales Terrestres
Instituto de la Patagonia
Casilla 102-D
Punta Arenas, Magallanes, Chile

ABSTRACT

Previous subantarctic and extreme southern cold temperate island localities for harvestmen are reviewed. The record of *Spinicrus tasmanicum* (Hogg) from South Georgia is questioned. *Thrasychirus dentichelis* Simon and *Thrasychirus modestus* Simon are now recorded from Isla Deceit (55°49′S latitude), and *T. dentichelis* alone from Isla Bayly (55°37′S) and Isla Wollaston (55°44′S), Cape Horn Archipelago.

RESUMEN

Se revisan las localidades ya conocidas de los Opiliones recolectados el las islas del extremo sur templado-frío e islas subantárticas. Se pone en duda la validez del registro de *Spinicrus tasmanicum* (Hogg) en Georgia del Sur. *Thrasychirus dentichelis* Simon y *Thrasychirus modestus* Simon se citan aquí por primera vez de la isla Deceit (55°49′S) y *T. dentichelis* se cita además de la isla de Bayly (55°37′S) e isla Wollaston (55°44′S), en el archipiélago del Cabo de Hornos.

## INTRODUCTION

Although Opiliones are reported (Marx 1892) as far north as 81°44′ (Fort Conger, Ellesmere Island, Canada), there are few reports from extreme southern latitudes. There are no reports of harvestmen from Antarctica proper and there

Table 1.—Opiliones reported from subantarctic and extreme southern cold temperate islands.

| Family/species | Occurrence | Latitude South | Climate | Literature |
|---|---|---|---|---|
| TRIAENONYCHIDAE | | | | |
| *Neonucia campbelli* Forster | Campbell Islands | 52°33′ | cold temperate | Forster 1954, 1964 |
| *Neonuncia eastoni* Forster | Auckland Islands | 50°32′ | cold temperate | Forster 1954, 1964 |
| *Neonuncia enderbyi* (Hogg) | Auckland & Campbell Islands | 50°32′, 50°33′ | cold temperate | Forster 1954, 1964 |
| *Nuncia unifalculata* (Enderlein) | Crozet Islands | 46°30′ | subantarctic | Tambs-Lyche 1954, Hickman 1939 |
| GONYLEPTIDAE | | | | |
| *Lycomedicus planiceps* (Guerin) | Isla Hoste | 55°10′ | cold temperate | Soares & Soares 1954 |
| *Haversia defensa* (Butler) | Islas Malvinas | 52° | cold temperate | Soares & Soares 1949 |
| *Hoggellula vallentini* (Hogg) | Islas Malvinas | 52° | cold temperate | Soares & Soares 1949 |
| MEGALOPSALIDIDAE | | | | |
| *Pantopsalis distincta* Forster | Auckland Islands | 50°32′ | cold temperate | Forster 1964 |
| *Pantopsalis johnsi* Forster | Auckland Islands | 50°32′ | cold temperate | Forster 1964 |
| *Pantopsalis mila* Forster | Auckland Islands | 50°32′ | cold temperate | Forster 1964 |
| *Pantopsalis rennelli* Forster | Campbell Island | 52°33′ | cold temperate | Forster 1964, Gressitt et al. 1964 |
| *Pantopsalis snaresensis* Forster | Snares Island | 48° | cold temperate | Forster 1964 |
| NEOPILIONIDAE | | | | |
| *Thrasychirus dentichelis* Simon | Isla de los Estados, Isla Hoste | 54°50′, 55°30′ | cold temperate | Ringuelet 1959 |
| | Cape Horn Archipelago | 55°37′-49′ | cold temperate | present paper |
| *Thrasychirus gulosus* Simon | Isla de los Estados, Isla Hoste | 54°50′, 55°30′ | cold temperate | Ringuelet 1959 |
| *Thrasychirus modestus* Simon | Isla Hoste, Isla Navarino | 55°10′-30′ | cold temperate | Cekalovic K. 1976 |
| | Isla Deceit | 55°49′ | cold temperate | present paper |

are only two species reported from true subantarctic habitats (one record of which is probably in error). The known records of Opiliones from subantarctic and southern cold temperate localities are listed in Table 1.

Roewer (1956) reported *Spinicrus tasmanicum* (Hogg), family Megalopsalididae, from "Süd-Georgien — 3♂, 3♀." Although South Georgia lies at 54°00′-50′, it is within the Antarctic Convergence and is a true subantarctic island. As the only other records of *S. tasmanicum* are from Tasmania (Roewer 1956, Hickman 1957), South Georgia is an unlikely locality for this species. We suspect the South Georgia collections are mislabeled. Further support for our suspicion comes from the knowledge that numerous specimens from the Roewer collection are believed to be mislabeled (see Cokendolpher and Cokendolpher 1984, Levi 1983, and citations contained therein). Furthermore, no other collections of Opiliones are known from South Georgia (Tambs-Lyche 1954, Gressitt 1970), making Roewer's collection of three pairs appear unrealistic.

Until now no harvestmen have been reported from the Cape Horn Archipelago. The most southern records from South America were previously reported from Isla Navarino and Isla Hoste by Simon (1884, 1902). We have two species of neopilionid harvestmen which were collected from the Cape Horn Archipelago: *Thrasychirus dentichelis* Simon and *Thrasychirus modestus* Simon. Our records not only extend the known ranges for these species, but also set a new southern latitude for the Order.

## THE STUDY AREA

The eight main islands making up the Cape Horn Archipelago are situated between 55°S-67°W and 56°S-68°W. Despite their extreme southern latitude they lie north of the Antarctic Convergence and have a relatively mild climate compared to other islands of similar latitudes (Figs. 1, 2). The Cape Horn Archipelago has been included in the Magellanic Tundra Complex because of its climatic, floristic and vegetational characteristics (Pisano V. 1977, 1983).

There are no meteorologic stations on this archipelago. The nearest stations are located at Isla Navarino (Puerto Williams) and at Islas Diego Ramírez (Isla Gonzalo). The climate of the Cape Horn Archipelago is similar to that of Diego Ramírez. However, the latter supports an Isothermic Tundra clime with a high oceanic influence, which is more moderate at the area studied (Zamora and Santana 1979, Pisano V. 1980). Nevertheless the most reliable data registered from nearby the Cape Horn Archipelago are those obtained from October 1882 to August 1883 by the French Scientific Mission to Cape Horn at Bahía Orange, Isla Hoste (Lephay 1887). From interpolation of these data, Pisano V. (1983) reported 1,357 mm of annual rain and 5.2°C of mean annual temperature for the area. The relative humidity fluctuates from 87 to 93%. Another important climatic factor is the wind, especially that from the SW. This element has a high constancy in the archipelago and a mean monthly speed of approximately 30km/hr, with maximal squalls of over 100km/hr during any season.

Because of these characteristics the area of Cape Horn can be included in the Isothermic Tundra type of climate, with the notation ETi(w′)k′c, from the Köppen classification (Llorente 1966). It is snowy during winter (E); supports a Tundra vegetation type (T); is isothermic with a difference between the warmest


Fig. 1.—Map of southern tip of South America, showing Cape Horn Archipelago and other localities where opilionids have been reported.

and the coldest month medium temperatures of 5°C (i): its rainiest season, although not so marked, is autumn (w′); it is very cold, with a mean monthly temperature lower than 18°C, but those of the coldest months are higher than -18°C (k′) and during the four warmest months the mean is lower than 10°C (c).

The distribution and floristic composition of the vegetational communities depends primarily on the edaphic characteristics, such as the low availability of organic nutrients, the differential capacities of the soils to retain water, and high organic acidity. In the study area, the dominant vegetational formations are moorlands and dwarf forests communities. Bogs can be found at low or high elevations, in flat or slightly undulating sites with poor drainages. There are three basic types of bogs based on floristic composition: cyperoideus, cushion and mossy. Intermediate forms are frequently encountered and were sampled on Bayly, Wollaston and Deceit islands. The cyperoideus bog develops mostly at low elevations, with dominant species such as *Schoenus andinus* (Phil.) Pfeiffer being associated with *Carpha alpina* R. Br. var. *shoenoides* (Banks & Sol. ex Hooker f.) Küken, *Schoenus antarcticus* (Hooker f.) Dusén and the Juncaceae *Marsippospermum grandiflorum* (L. f.) Hooker f. In the lower stratum cushion growing species predominate. They form large convex cushions of low height with caespitose species such as *Astelia pumila* (Forster f.) Gaudich. (which dominates), *Donatia fascicularis* Forster & Forster f., *Caltha dionaefolia* Hooker f., *Drapetes muscosus* Banks ex Lam., *Gunnera lobata* Hooker f., *Phyllachne uliginosa*

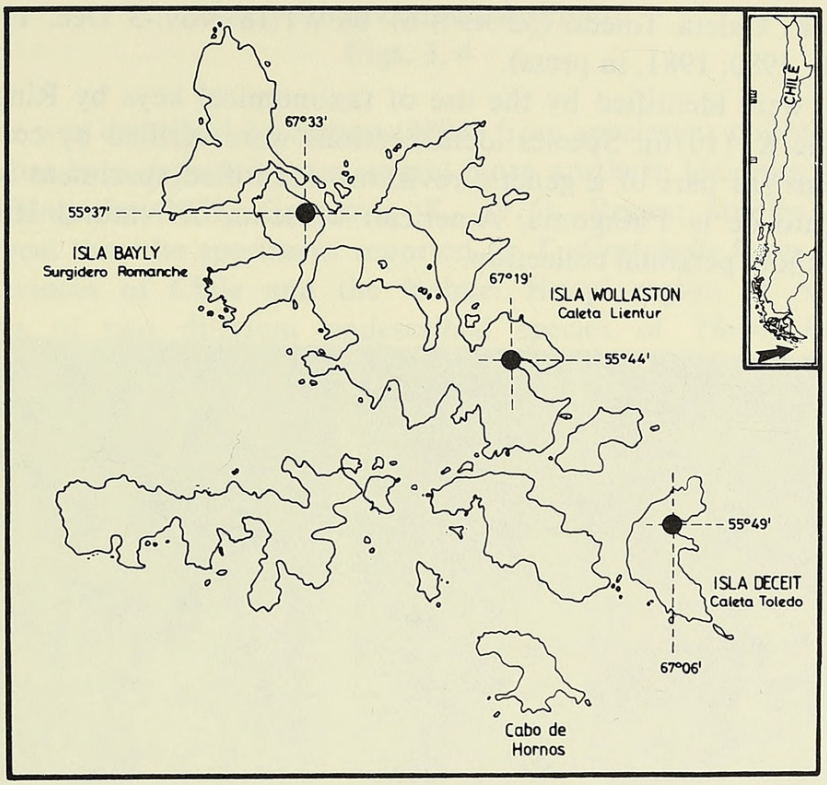


Fig. 2.—Map of Cape Horn Archipelago, showing collection sites of Opiliones.

Forster & Forster f., *Tetroncium magellanicum* Willd, *Tapeinia pumila* (Forster f.) Baillon, *Gaimardia australis* Gaudich and *Oreobolus obtusangulus* Gaudich. Mosses, ferns and liverworts form a very dense cover in moist areas with high humidities. At drier sites, herbaceous species (mostly cyperoideus) dominate.

The forest communities grow in wind protected places like gorges, hill slopes and the fringes of the valleys. The floristic composition and physiognomy changes depend upon the wind exposure (Pisano V. 1980). The arboreal level is formed almost exclusively by *Nothofagus betuloides* (Mirbel) Oersted, associated in some sectors with a few specimens of *Drimys winteri* Forster & Forster f. These species form a semidense stratum with tortuous trees of low height and flat treetops (due to effects of winds). The forest shrub layer is composed by *Berberis ilicifolia* L. f., *Pernettya mucronata* (L. f.) Gaudich. ex G. Don. and a few specimens of *Berberis buxifolia* Lam., *Chiliotrichium diffusum* (Forster f.) Kuntze, *Empetrum rubrum* Vahl ex Willd. and *Escallonia serrata* J. E. Sm. Several species of ferns, lichens, mosses and liverworts constitute the basal level. The ground cover of dead leaves does not exceed 7 cm in depth.

## THE OPILIONID FAUNA

Pitfall Barber traps with 7% formaldehyde, without attractive fats, were used. The traps, in each of the studied islands, were located in two sectors of forest and bog communities. All of the material captured was stored in 70% isopropyl alcohol. The localities and dates samples, and number of traps used were: (1) Isla Bayly, Surgidero Romanche (55°37'S-67°33'W) 28 Feb.-4 March 1980, 20 traps; (2) Isla Wollaston, Caleta Lientur (55°44'S-67°19'W) 15-25 Feb. 1980, 20 traps;

(3) Isla Deceit, Caleta Toledo (55°49'S-67°06'W) 18 Nov.-3 Dec. 1982, 80 traps (Lanfranco L. 1980, 1981, in press).

Specimens were identified by the use of taxonomical keys by Ringuelet (1959) and Cekalovic K. (1976). Species identifications were verified by comparisons to type specimens (as part of a generic revision). Identified specimens are deposited at the Instituto de la Patagonia, American Museum of Natural History and in the senior authors personal collection.

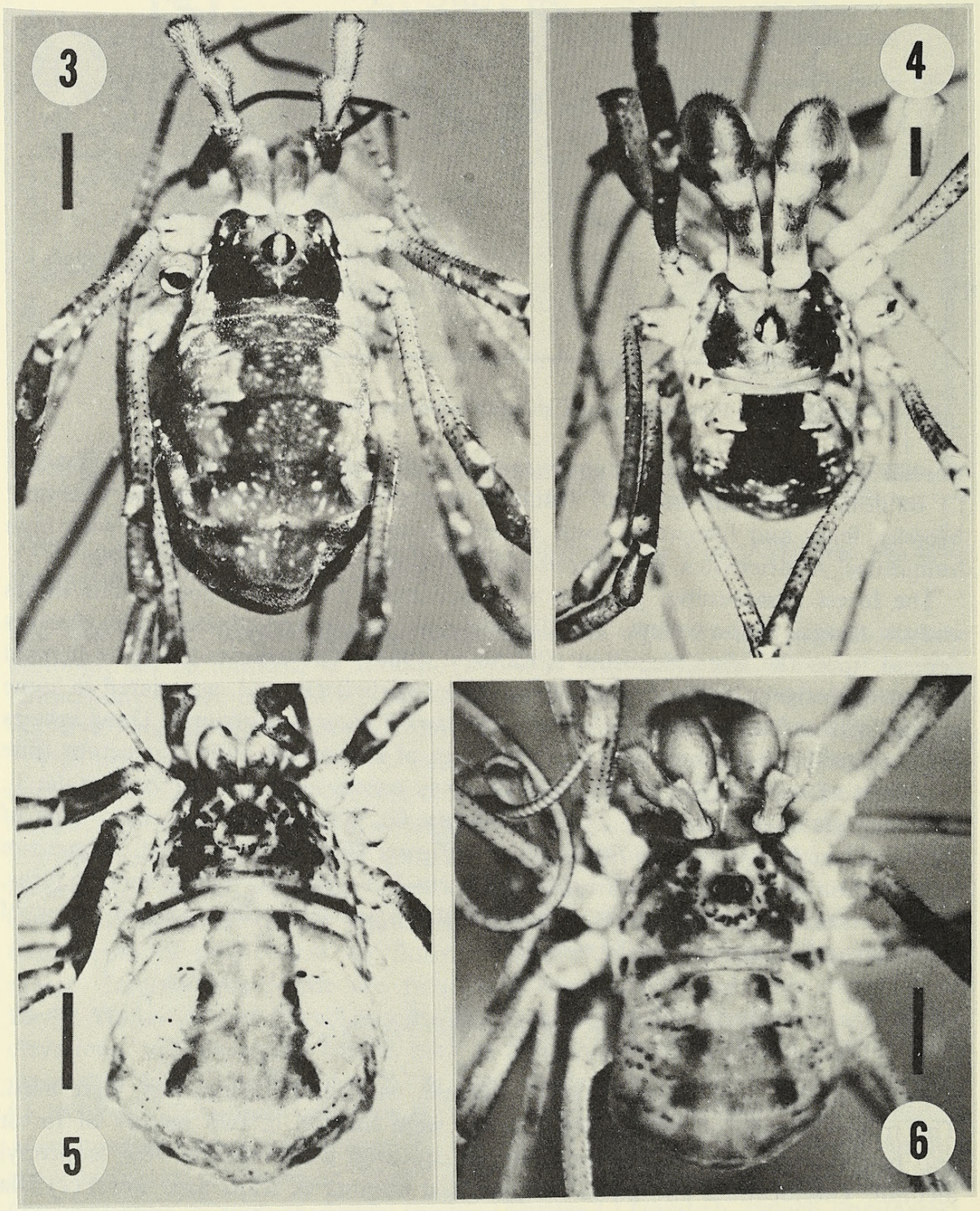


Fig. 3-6.—*Thrasychirus* spp.: 3, *T. dentichelis* female; 4, *T. dentichelis* male; 5, *T. modestus* female; 6, *T. modestus* male. Scale lines = 1 mm.

*Thrasychirus dentichelis* Simon
Figs. 3, 4

This species was described by Simon (1884) from specimens collected from Isla Hoste and it has been reported from several more northern localities in Argentina and Chile (Ringuelet 1959, Cekalovic K. 1976). Recent studies of museum specimens reveal that the specimens reported as *T. dentichelis* from Valdivia and Santiago provinces of Chile and the Nahuel Huapi region of Argentina are representatives of two different undescribed species of *Thrasychirus* Simon. *Thrasychirus dentichelis* is restricted to the cold forest of the Magallanes province (Chile), the Argentinean Territory of Tierra del Fuego and Islands of Cape Horn Archipelago. The northern limit for this species is from a specimen collected at about 50° 50'S.

*Thrasychirus dentichelis* can be separated from *T. modestus* (the only other species of harvestmen from Cape Horn Archipelago) by the differences in size and dorsal body color patterns. The dorsum of *T. dentichelis* is covered with numerous white spots which are absent on *T. modestus*. The wedge shaped pattern on the dorsum is generally sharply defined posteriorly on *T. modestus*. The pattern is weakly defined posteriorly or absent on *T. dentichelis* (compare figs. 3 and 6). Adults of *T. dentichelis* are noticeably larger than those of *T. modestus*. The males of *T. dentichelis* also differ from those of *T. modestus* by having enlarged chelicerae and a large apophysis on the mesal margin of each palpal tibia distally. The genitalia of these species differ greatly. Illustrations showing these differences will be published elsewhere in the context of a generic revision.

**New records.**—CHILE: *Magallanes,* Isla Wollaston, Caleta Lientur, from both bog and forest habitats (15-25 Feb. 1980, D. Lanfranco L.), 4 females, 25 juveniles. Isla Bayly, Surgidero Romanche, coastal mixed forest, transitional scrub and moorland communities (28 Feb.-4 March 1980, D. Lanfranco L.), 8 females, 19 juveniles. Isla Deceit, Caleta Toledo, from bog and forest communities (majority from forests) (18 Nov.-3 Dec. 1982, D. Lanfranco L.), 7 males, 22 females.

*Thrasychirus modestus* Simon
Figs. 5, 6

This species was described by Simon (1902) from specimens collected in southern Tierra del Fuego and Isla Navarino. Cekalovic K. (1976) reports other localities in southern Magallanes province. The northern record appears to be Punta Arenas at about 53° 10'S (Cekalovic K. 1976).

**New record.**—CHILE: *Magallanes,* Isla Deceit, Caleta Toledo, forest communities (single specimen from moorlands) (18 Nov.-3 Dec. 1982, D. Lanfranco L.), 4 males, 17 females.

*Thrasychirus* sp.

Among the collections already mentioned were numerous examples of early instar juveniles that could not be identified. The majority of these, if not all, probably represent examples of *T. dentichelis* as they lack the characteristic dark, sharply-defined pattern on the abdomen. As the lack of a pattern on the abdomen could also be due to the animal being recently molted we prefer not to attach specific names.

**New Records.**—CHILE: *Magallanes,* Isla Wollaston, Caleta Lientur, bog and forest habitats (15-25 Feb. 1980, D. Lanfranco L.), 2 juveniles. Isla Deceit, Caleta Toledo, forest and moorlands (18 Nov.-3 Dec. 1982, D. Lanfranco L.), 74 juveniles.

## ACKNOWLEDGMENTS

We thank Drs. Oscar F. Francke (Texas Tech University), Edmundo Pisano V. and Claudio Venegas C. (Instituto de la Patagonia) for their comments on the manuscript. Collections from the Cape Horn Archipelago were financed by SERPLAC XII Region Magallanes. Partial support for the senior author was provided by the Department of Biological Sciences, Texas Tech University.

## LITERATURE CITED

Cekalovic K., T. 1976. Catálogo de los Arachnida: Scorpiones, Pseudoscorpiones, Opiliones, Acari, Araneae y Solifugae de la XII Region de Chile, Magallanes incluyendo la Antártica chilena (Chile). Gayana, Zool., No. 37, 108 pp.

Cokendolpher, J. C. and J. E. Cokendolpher. 1984. A new genus of harvestmen from Costa Rica with comments on the status of the Neotropical Phalangiinae (Opiliones, Phalangiidae). Bull. British Arachnol. Soc., 6:167-172.

Forster, R. R. 1954. The New Zealand harvestmen (Sub-order Laniatores). Canterbury Mus. Bull., No. 2, 329 pp.

Forster, R. R. 1964. The Araneae and Opiliones of the subantarctic islands of New Zealand. Pacific Insects Monograph, 7:58-115.

Gressitt, J. L. 1970. Subantarctic Entomology and Biogeography. Pacific Insects Monograph, 23:295-374.

Gressitt, J. L., K. P. Rennell and K. A. J. Wise. 1964. Insects of Campbell Island, Ecology. Pacific Insects Monograph, 7:515-530.

Hickman, V. V. 1939. Opiliones and Araneae. B. A. N. Z. Antarctic Research Expedition 1929-1931. Reports Series B, 4(5):159-187.

Hickman, V. V. 1957. Some Tasmanian harvestmen of the sub-order Palpatores. Pap. Proc. Royal Soc. Tasmania, 91:65-79.

Lanfranco, L., D. 1980. Estudios entomofaunísticos en el archipiélago del Cabo de Hornos. 1. Prospección preliminar de suelo-superficie en Caleta Lientur (isla Wollaston). Ans. Inst. Patagonia, Punta Arenas (Chile), 11:281-291.

Lanfranco, L., D. 1981. Estudios entomofaunísticos en el archipiélago del Cabo de Hornos. 2. Prospección preliminar de suelo-superficie en Surgidero Romanche, (isla Bayly). Ans. Inst. Patagonia, Punta Arenas (Chile), 12:229-238.

Lanfranco, L., D. in press. Estudios entomofaunísticos en el archipiélago del Cabo de Hornos. 3. Composición y estructura de la entomofauna de suelo-superficie asociada a bosques y turbales en Caleta Toledo (isla Deceit: 55°49'S-67°06'0). Ans. Inst. Patagonia, Punta Arenas (Chile), 14.

Lephay, J. 1887. El clima de la Tierra del Fuego. Miss. Scient. du Cap Horn. Ans. Hidr. Marina de Chile, Año XXII, pp. 245-277.

Levi, H. W. 1983. The orb-weaver genera *Argiope, Gea,* and *Neogea* from the Western Pacific Region (Araneae: Araneidae, Argiopinae). Bull. Mus. Comp. Zool., 150:247-338.

Llorente, J. M 1966. Meteorologia. Ed. Labor. Barcelona, 286 pp.

Marx, G. 1892. A contribution to the study of the spider fauna of the Arctic regions. Proc. Entomol. Soc. Washington, 2:186-200.

Pisano, V., E. 1977. Fitogeografía de Fuego-Patagonia Chilena. I: Comunidades vegetales entre las latitudes 52° y 56°S. Ans. Inst. Patagonia, Punta Arenas (Chile), 8:121-250.

Pisano, V., E. 1980. Distribución y características de la vegetación del archipiélago del Cabo de Hornos. Ans. Inst. Patagonia, Punta Arenas (Chile), 11:191-224.

Pisano, V., E. 1983. Distribución y características de la vegetación en el archipiélago del Cabo de Hornos. En: Investigación de Recursos Naturales en el Archipiélago del Cabo de Hornos y Territorios al Sur del Canal Beagle. Informe Final. Primera Parte. Inf. Inst. Patagonia, 28:96-176.

Ringuelet, R. A. 1959. Los Aracnidos Argentinos del orden Opiliones. Rev. Mus. Argentino Cien. Nat. "B. Rivadavia", Zool., 5(2):127-439, pl. I-XX.

Roewer, C. F. 1956. Über Phalangiinae (Phalangiidae, Opiliones Palpatores). (Weitere Weberknechte XIX). Senckenberg. Biol., 37:247-318.

Simon, E. 1884. Arachnides recuellis par la Mission du Cap Horn en 1882-1883. Bull. Soc. Zool. France, 9:117-144, pl. III.

Simon, E. 1902. Arachnoideen, excl. Acariden und Gonyleptiden. Ergeb. Hamb. Magalh. Sammelr., 2:1-47.

Soares, B. A. M. and H. E. M. Soares. 1949. Monografia dos gêneros de Opiliões Neotrópicos II. Arquiv. Zool., São Paulo, 7:149-240.

Soares, B. A. M. and H. E. M. Soares. 1954. Monografia dos gêneros de Opiliões Neotrópicos. Arquiv. Zool., São Paulo, 8:225-302.

Tambs-Lyche, H. 1954. Arachnoidea from South Georgia and The Crozet Islands with remarks on the subfamily Masoninae. Scientific Results of teh Norwegian Antarctic Expeditions 1927-1928 et sqq., instituted and financed by Consul Lars Christensen. Norske Videnskaps-Akad., No. 35, pp. 5-19.

Zamora M., E. and A. Santana A. 1979. Características climáticas de la costa occidental de la Patagonia entre las latitudes 46°40′ y 56°30′S. Ans. Inst. Patagonia, Punta Arenas (Chile), 10:109-144.

*Manuscript received December 1984, revised February 1985.*