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THE ANTS OF CHILE *(HYMENOPTERA: FORMICIDAE)**

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ABSTRACT

This paper treats the 62 species of Formicidae now known or believed to occur in Chile. Keys are provided to separate the six subfamilies and all the genera. The species in those genera with three or more species are also separated by keys. Most species are represented by line drawings. Detailed distribution data are cited in the text and maps are also provided.

The following new species-group synonymy is proposed: *Ponera opaciceps chilensis* Forel = *Hypoponera opacior* (Forel); *Pogonomyrmex bispinosus intermedius* Menozzi = *P. b. semistriata* Emery = *P. b. spinolae* Emery = *P. vermiculatus* Emery; *Solenopsis germaini schedingi* Forel = *S. germaini* Emery; *S. latastei hoffmanni* Forel = *S. latastei* Emery; *Melophorus bruchi* Forel = *Lasiophanes picinus* (Roger); *Prenolepis bolivari* Santschi = *M. pilosulus* Emery = *M. uxorius* Emery = *L. valdiviensis* (Forel); *Myrmelachista rectinota* Forel = *M. hoffmanni* Forel; *M. mayri monticola* Mayr = *M. mayri* Forel; *Brachymyrmex giardii nitida* Santschi = *B. giardii* Emery; *Camponotus distinguendus tenuipubens* Santschi = *C. dist. denudatus* Emery = *C. distinguendus* (Spinola); *C. chilensis ruficornis* Emery = *C. spinolae* Roger.

The following new genus-group synonymy is proposed: *Psammomyrma* = *Spinimyrma* = *Dorymyrmex; Ammomyrma* = *Araucomyrmex; Neaphomus* = *Hincksidris* = *Myrmelachista.*

SUMARIO

En este trabajo el autor trata las 62 especies de *Formicidae* hasta hoy día conocidas de Chile. La clave las separa en seis subfamilias y se da para los géneros y especies. La gran mayoría de ellas están representadas en dibujos. Se da a la vez datos de distribución en mapas incluidos, y se sinonimizan varias especies.

INTRODUCTION

The ant fauna of Chile has never received a unified taxonomic treatment. The bulk of the earlier work, by such authors as Emery, Forel, Mayr, Menozzi and Spinola, has consisted largely of isolated descriptions of new taxa. Seldom were pertinent illustrations provided and keys were even rarer. Kempf (1970) briefly reviewed the history of myrmecology in Chile and provided a catalog of the known ant fauna of Chile. In this catalog 52 species were listed, several with a number of "subspecies" or varieties, with a total of 65 nominate forms included. One overlooked species was added by Kempf (1972).

Material collected in Chile by Hunt prompted this study when it became apparent that much of it could not be satisfactorily identified. The inadequacy of earlier descriptions was only partially the cause of these difficulties, for it was apparent that some species were undescribed and that other forms had been incorrectly treated as "subspecies" or "varieties". It is the purpose of this paper to review the taxonomy of the Chilean ant fauna by means of modern keys based on morphological characteristics.

REFERENCE COLLECTIONS

The bulk of the material used in this study consists of the collections made by Hunt and now deposited in the Natural History Museum of Los Angeles County (LACM). Substantial collections were received from the California Academy of Sciences (CAS) through the kindness of P. H. Arnaud, Jr. and the University of California, Berkeley (UCB) through E. I. Schlinger. The very important collection of Forel type material, now at the Museu d'Histoire Naturelle, Geneva (MHNG), was generously loaned by C. Besuchet. Smaller collections belonging to the following institutions were studied: Universidad de Concepción (UCON), through T. Cekalovic; Museum of Comparative Zoology (MCZ), through H. E. Evans; American Museum of Natural History (AMNH), through M. Favreau; Museo Nacional de His-

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toria Natural, Santiago (MSTO); Facultad de Agronomía, Universidad de Chile (UCH); United States National Museum (USNM).

METHODS AND TERMINOLOGY

HEAD (fig. 1-2).

Eye length (EL). The greatest length of the eye, with the head in full frontal view.

Head length (HL). With head in full frontal view, the maximum length along the midline, from the anterior clypeal margin to the occipital margin.

Head width (HW). With head in full frontal view, the maximum width along a line perpendicular to that of the head length, exclusive of the eyes.

Minimum ocular diameter (MOD). The minimum diameter of the compound eye.

Oculo-mandibular distance (OMD). With head in full frontal view, the maximum distance between the lower eye margin and the base of the mandible.

Mandibular teeth. The lower or outermost tooth is usually the longest and sharpest; it is termed the *apical tooth.* The upper or innermost tooth is termed the *basal tooth.* All teeth or denticles lying between these are the *middle teeth.*

Scape length (SL). The maximum length of the scape, exclusive of the basal condyle.

THORAX (fig. 3-5)

The thorax of the worker ant is divided into several more or less well defined regions. Visible in dorsal view are the *pronotum* (prn), *mesonotum* or *mesoscutum* (mes), *metanotum* (met) and *propodeum* (ppm). In lateral view, the profiles of these are visible, as well as the *mesopleura* (msp) and *metapleura* (mtp).

The thorax of female and male is divided into additional sclerites. In dorsal view, the following are usually visible: *pronotum* (prn), *mesoscutum* (mes), *scutellum* (sct), *postscutellum* or *metanotum* (met) and *propodeum* (ppm).

Pronotal width (PW). The maximum width of the pronotum in dorsal view.

Weber's length (WL). The length of the thoracic profile, *measured diagonally,* from the dorso-anterior portion of the mesonotum to the insertion of the petiole.

PETIOLE (fig. 4)

One-segmented in Cerapachyinae, Ponerinae, Dolichoderinae and Formicinae; two-segmented in Pseudomyrmecinae and Myrmicinae. When one segment is present, it is the *petiole.* When two segments are present, they are the *petiole* (pt) and *post-petiole* (ppt). The dorsal surface of the segment(s) is modified as an upward directed or diagonally directed *scale* or as a more or less rounded *node* when viewed in profile.

The petiole is, morphologically, the second abdominal setment (the morphological first abdominal segment is fused to the thorax as the *propodeum);* the postpetiole is the third abdominal segment.

GASTER

The remaining abdominal segments comprise the gaster; the dorsal segments are the terga, and the ventral segments are the sterna. The last visible sternum of the male is the *subgenital plate.* The terminology of the male genitalia is shown in fig. 88.

FIGURES

All species which we have seen are represented by one or more figures which we hope will assist in their recognition. Figures 7, 9, 11, 15, 17-21, 44-58 are the work of Ruth Ann DeNicola. The remainder of the ant figures are by Snelling. Most of the illustrations are simple line drawings; sculpture has been shown only when it is necessary for recognition of the species. Often, too, standing hairs are not shown, except when the pattern of distribution is important in aiding identification (e.g., *Araucomyrmex, Lasiophanes, Camponotus).*

DISTRIBUTION DATA

In the discussion following each taxon all known records for the species in Chile are cited. Those records taken from the literature and assumed to be correctly applied to the species concerned are enclosed in brackets, and the authority is cited. The records are listed by Province, from north to south. Maps that illustrate these records have been prepared. A few common species are cited only by Province in the text, but specific localities are indicated on the maps for these species. Most of the work in preparing the maps was done by Ann Kennedy.

INTRODUCED SPECIES

Each species that is known or reasonably assumed to be introduced into Chile within historic times is marked by an asterisk*.

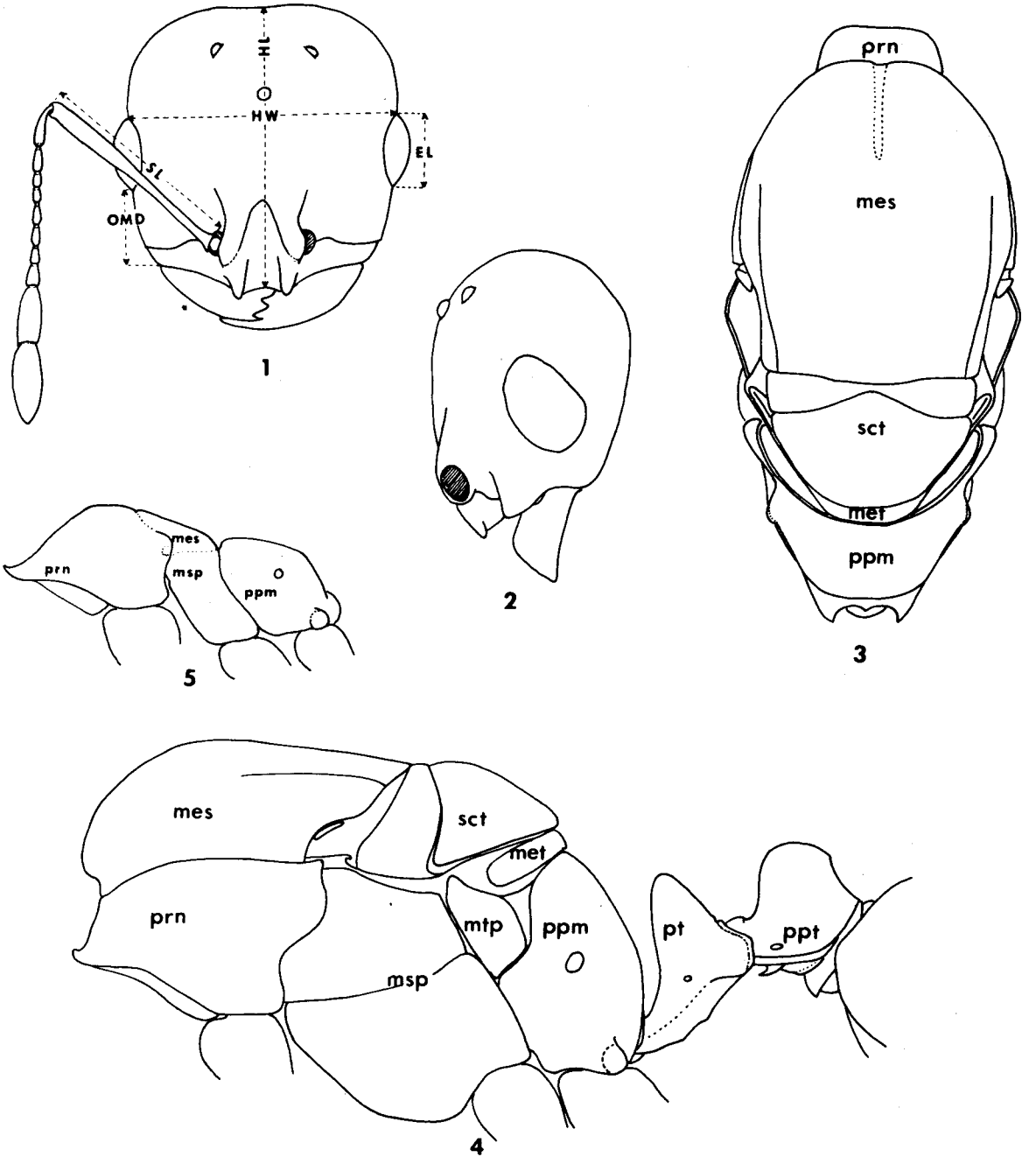


Plate 1. Figs. 1-5. *Solenopsis gayi*. 1, frontal view of head, female; 2, lateral view of same; 3, dorsal view of thorax, female; 4, lateral view of thorax and petiole, female; 5, lateral view of thorax, worker. See text for explanation of abbrevations.

KEY TO CHILEAN SUBFAMILIES OF FORMICIDAE, BASED ON WORKERS

1. Petiole consisting of two segments 2
   —Petiole consisting of a single segment 3
2. Body elongate, slender; eye large, elongate; frontal carinae close together, not covering antennal sockets; antenna, especially scape, short ..... *Pseudomyrmecinae*
   —Body often stout; eye, when large, not elongate; frontal carinae well separated, partially or wholly covering antennal insertions; scape elongate .... *Myrmicinae*
3. Gaster distinctly constricted between first and second segments 4
   —Gaster not constricted between first and second segments 5

4. Scape short, stout; antennal fossa partially enclosed by a carina; pygidium laterally marginate and with a row of stout spines ..... *Cerapachyinae*
— Scape elongate, slender; antennal fossa not partially enclosed; pygidium neither laterally marginate nor with a row of spines ..... *Ponerinae*
5. Opening at apex of gaster (acidopore) terminal, circular, usually surrounded by a fringe of hairs; petiole usually erect and scale-like ..... *Formicinae*
— Opening at apex of gaster (cloaca) usually ventral, slitlike, without fringe of hairs; petiole often strongly inclined ..... *Dolichoderinae*

SUBFAMILY PONERINAE

Amblyopone chilensis Mayr
(Fig. 6-7)

Amblyopone chilensis Mayr, 1887:547-548. ♀. Brown, 1960:183, 192. Kempf, 1970:19.

Stigmatomma chilense, Dalla Torre, 1893: 14.

Type locality. Valdivia, CHILE.

This species is easily separated from its only known Chilean congener, *monrosi,* by the dull, coarsely and closely punctate head.

Localities (Map. 1). CHILE. *Valdivia:* [Valdivia; type of *chilensis* Mayr, 1887]. *Osorno:* 10 km E Puyehue (CAS); 18 km W Purranque (CAS, MCZ); n. shore, Lago Llanquihue (CAS, MCZ).

Amblyopone monrosi Brown
(Fig. 8-9)

Amblyopone monrosi Brown, 1960:188-190, 192. ♀. Kempf, 1970:19.

Type locality. Pucón, CHILE.

In this ant the head is distinctly, though sparsely, punctate, with the interspaces smooth and shiny. The clypeal and mandibular armament also differ from those of *chilensis.*

Locality (Map 1). CHILE. *Cautín:* 10 mi NE Pucón, 12 Jan. 1951 (Ross & Michelbacher; holotype, paratype; CAS, MCZ).

Heteroponera carinifrons Mayr
(Fig. 10-11)

Heteroponera carinifrons Mayr, 1887:533-534. ♀; Brown, 1958:195, 197, 257. ♀; Kempf, 1962:45-46. ♀; Kempf, 1970:19.

Acanthoponera carinifrons, Emery, 1895a: 347; Emery, 1905:112-113. ♀.

Acanthoponera (Anacanthoponera) carinifrons, Wheeler, 1923a:186, 191.

Type locality. Valdivia, CHILE.

Among the Chilean ponerines this ant is easily recognized by the blackish or dark piceous color, the coarsely punctate head and thorax, and by the medially carinate clypeus.

Localities (Map 1). CHILE. *O'Higgins:* San Vicente (AMNH). Ñuble: 40 km E San Carlos (CAS, MCZ); 50 km E San Carlos (CAS). *Malleco:* 40 km E Parque Nac. Nahuelbuta, 1200 m. elev. (UCB); Parque Nac. Nahuelbuta (LACM); sierra de Nahuelbuta, 1200 m. elev. (CAS); Los Muermos (CAS); Angol (UCON). *Cautín:* 10 mi NE Pucón (CAS). *Valdivia:* [Valdivia; type of *carinifrons* Mayr, 1887]; Corral (AMNH, MCZ).

Hypoponera opacior (Forel)
(Fig. 12-13)

Ponera trigona var. *opacior* Forel, 1893: 363-364. ♀♀; Wheeler 1923b:317; Menozzi, 1935:320, 332; Smith, 1936:421, 423-424; Creighton, 1950:48, 49.

Ponera opaciceps chilensis Forel, 1914:264-265. ♀. NEW SYNONYMY.

Ponera opacior, Kempf. 1962:10.

Hypoponera opacior, Taylor, 1968:65.

Hypoponera opaciceps chilensis, Kempf, 1970:19.

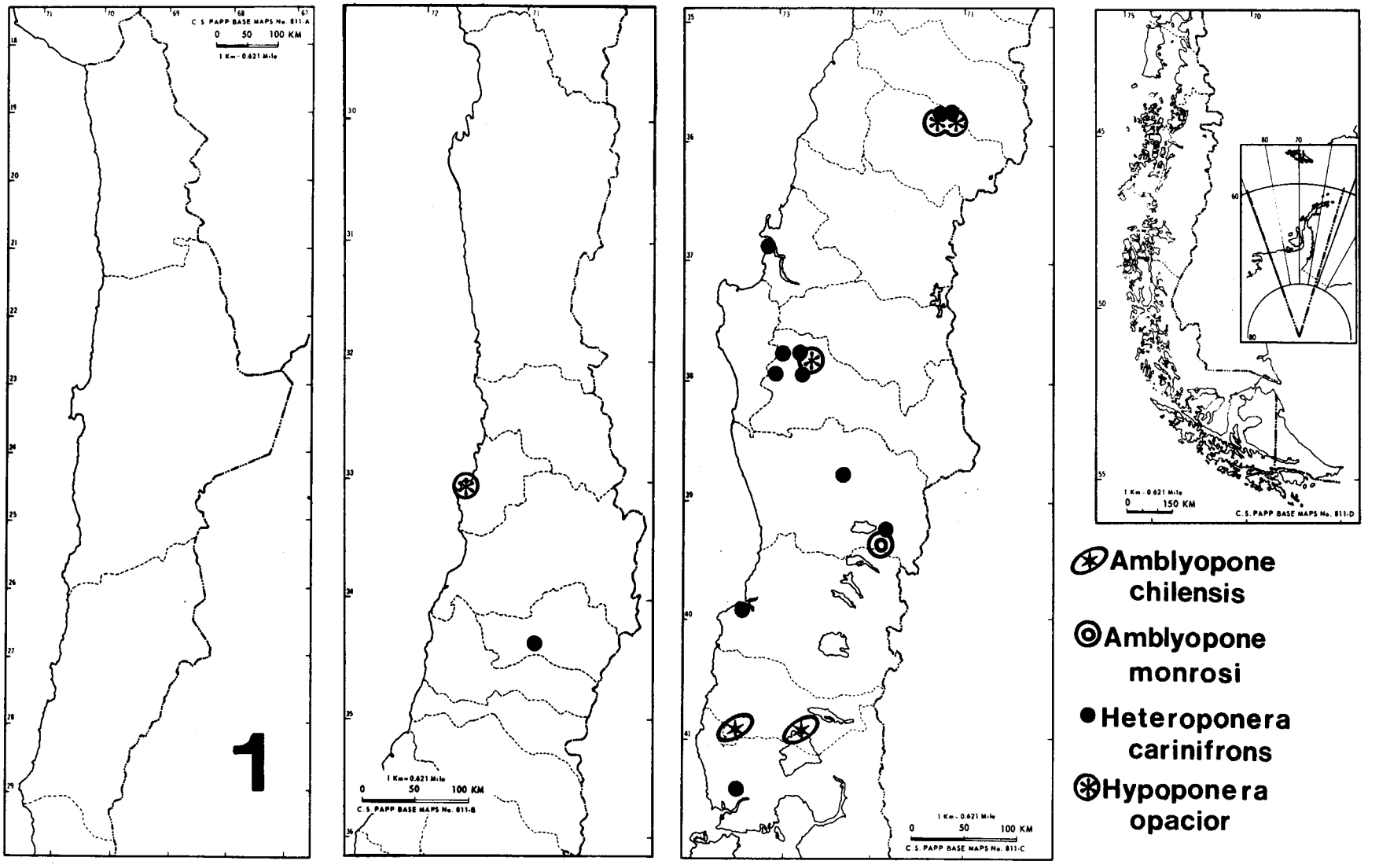
Hyponera trigona var. *opacior,* Kempf, 1970: 20.

Type locality. *opacior:* St. Vincent, West Indies. *chilensis:* Valparaíso, CHILE.

The three cotype workers of *opaciceps* var. *chilensis* have been examined. The node of the petiole has the shape characteristic of *opacior,* with which these specimens agree in characters of pilosity and sculpture. We must conclude that *chilensis* is a junior synonym of *opacior.*

Although described as a var. of *trigona, opacior* was elevated to species rank by Kempf (1962). Taylor (1968) transferred this species to *Hypoponera* and concurred with Kempf's treatment. The name is listed by Kempf (1970, 1972) as a variety of *trigona,* for unstated reasons. We have elected to follow the original conclusion by Kempf (1962) in treating this as an independent species.

Localities (Map 1). CHILE. *Valparaíso:* Valparaíso (cotypes of *chilensis;* MHNG). *Santiago:* [Los Leones; Menozzi, 1935]. *Talca:* [Coipué; Emery, 1905)]. *Ñuble:* 40 km E San Carlos (CAS); 50 km E San Carlos (CAS). *Concepción:* [Concepción; Wheeler, 1923b]. *Malleco:* Angol (CAS). *Cautín:* [Temuco, 24 Nov. 1967; W. W. Kempf 1970].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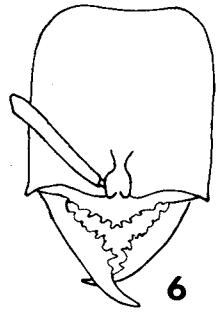
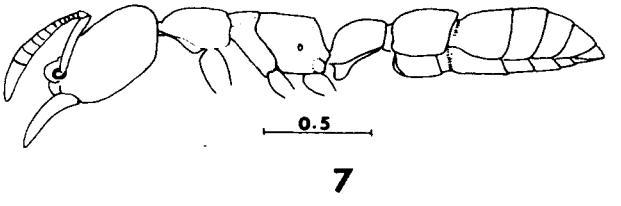
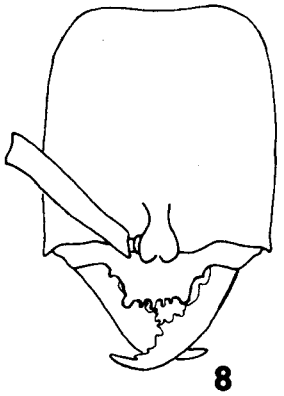
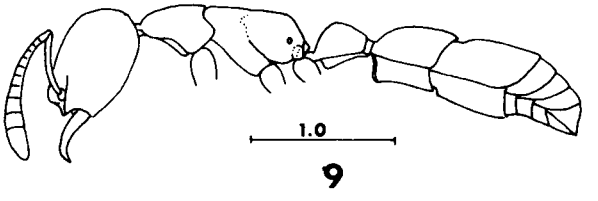
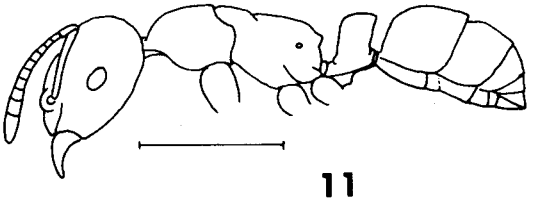
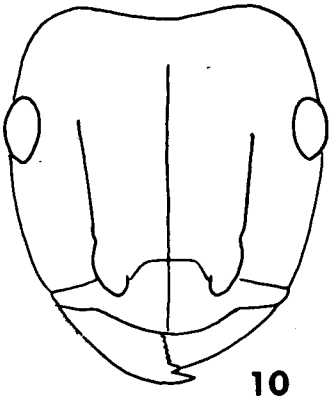


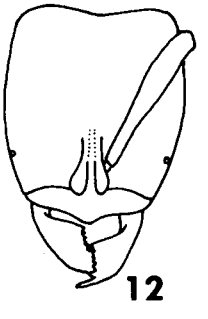












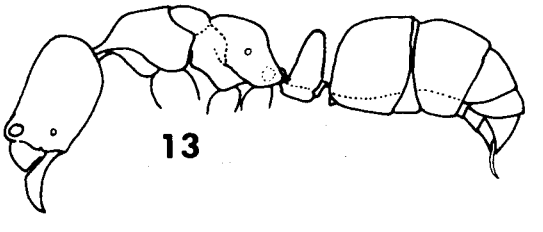


Plate 2. Figs. 6-13. Ponerinae workers. Front of head and lateral view of head, thorax and gaster of: 6, 7, *Amblyopone chilensis;* 8, 9, *A. monrosi;* 10, 11, *Heteroponera carinifrons;* 12, 13, *Hypoponera opacior.*

SUBFAMILY PSEUDOMYRMECINAE

Pseudomyrmex lynceus (Spinola)
(Fig. 14-18)

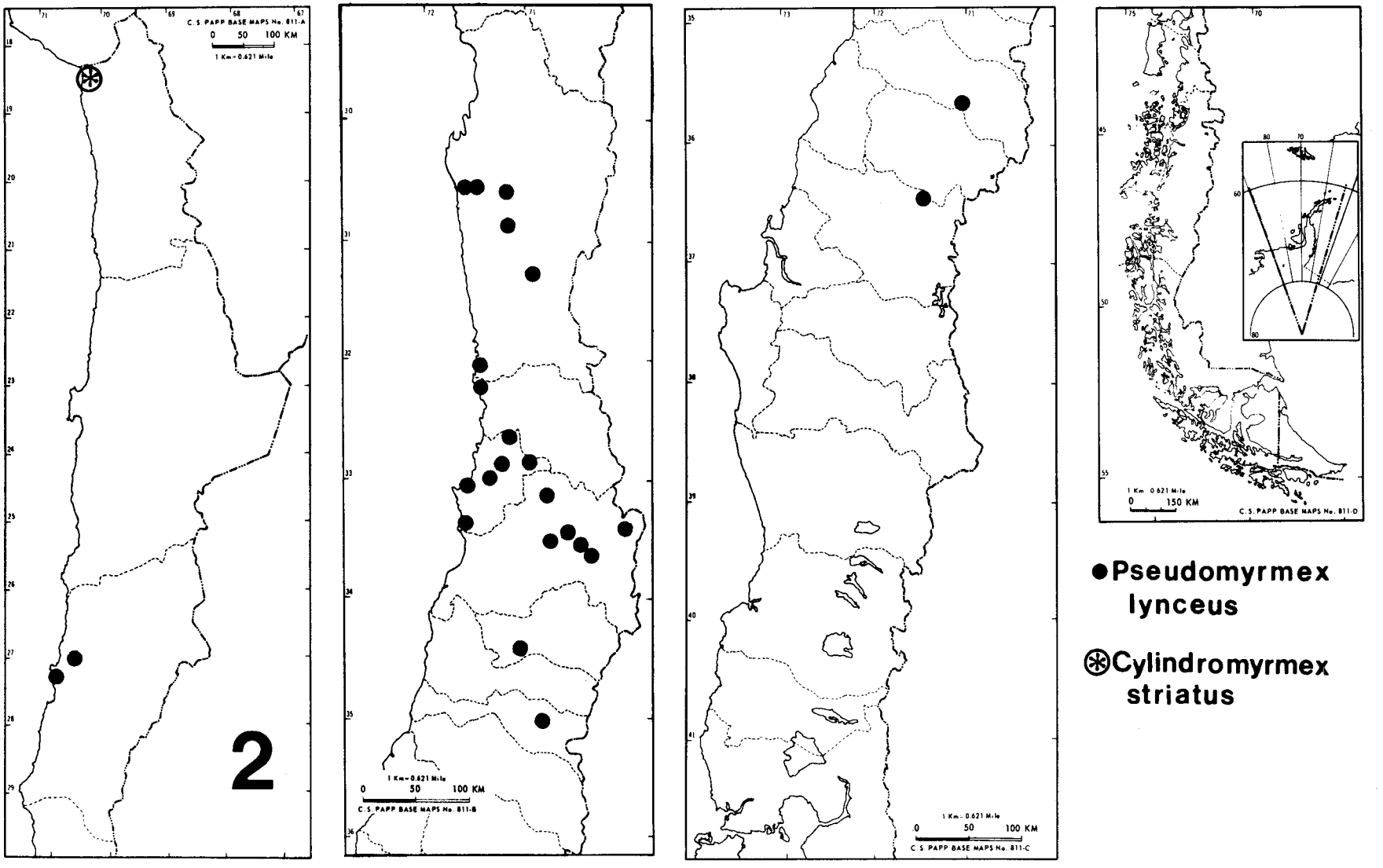
Myrmica lyncea Spinola *in:* Gay, 1851:241-242. ♀ ♀.

Pseudomyrma lyncea, Mayr, 1870:972.

Pseudomyrmex lynceus, Kempf, 1961:390-391, fig. 26, 30, 33; Kempf, 1970:20.

Type locality: Coquimbo, CHILE.

This is a widespread, arboreal species. The peculiar, elongate body form will inmediately separate *Pseudomyrmex* from other Chilean ant genera; the uniformly blackish color of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● Pseudomyrmex lynceus
⊛ Cylindromyrmex striatus

lynceus will distinguish between this and the following species.

Localities (Map 2). CHILE. *Atacama:* bahía Copiapó, 45 m. elev. (UCB); 20 km N Copiapó (UCH). *Coquimbo:* Parque Nac. Fray Jorge, 100-200 m. elev. (UCB); 10 km E Parque Nac. Fray Jorge (UCB); 50 km S La Serena (CAS); 15 km S Los Vilos (CAS); 35 mi S Ovalle (CAS); 30 km S Combarbalá (CAS); [Coquimbo; type series of *lyncea* Spinola, 1851]. *Aconcagua:* [Santa Rosa; type series of *lyncea* Spinola, 1851]; 90 km S Illapel (CAS); Los Molles *(ex* flower stalks of *Puya* sp; LACM). *Valparaíso:* cuesta Pucalan, 800 m. elev. (UCB); *Valparaíso,* (MCZ); Marga-Marga Valley (MCZ); Quillota (UCH); Llay-Llay (CAS); Algarrobo (MSTO). *Santiago:* Quebrada de la Plata Rinconada, 510 m. elev. (UCB); El Canelo (UCB, MCZ); Santiago (MCZ); cuesta La Dormida (LACM); San José de Maipo, 1000 m. elev. (MCZ, MSTO); El Manzano (MSTO); Río Colorado, km 8 (MSTO). *Colchagua:* San Vicente de Tagua-Tagua (MSTO). *Curicó:* cajón de Río Claro, 1000 m. elev. (UCB). *Talca:* quebrada Amarillo (UCH). *Ñuble:* 50 km E San Carlos (CAS). *Biobío:* Biobío (MCZ).

Pseudomyrmex sp.

A single worker specimen from Quebrada de la Plata Rinconada, Maipú, 510 m. elev., 26 Jan. 1966 (M. E. Irwin; UCB) cannot be identified. It is apparently a member of the *gracilis* group, wide-spread in tropical America. Mandibles, clypeus, frontal lobes, scape, pronotum and mesonotum are ferruginous, the remainder of the body and the appendages black.

SUBFAMILY CERAPACHYINAE

Cylindromyrmex striatus Mayr (Fig. 19-22)

Cylindromyrmex striatus Mayr, 1870:967. ♀; Mayr. 1887:546; Emery, 1901:53; Emery 1911:15; Wheeler, 1937:444; Kempf, 1972:91.

Holcoponera whymperi Cameron, *in* Whymper, 1891:92. ♀.

Cylindromyrmex whymperi, Forel, 1892: 255.

Type locality. *striatus*: DUTCH GUIANA. *whymperi*: ECUADOR.

This species was originally described from Dutch Guiana and subsequently recorded from French and British Guiana, Ecuador and Peru. The record from the Galapagos Islands cited by Wheeler (1919) and subsequently repeated by Kempf (1972) does not refer to *striatus*. Wheeler (1924) recognized that the insular form was distinct and described it as *williamsi*. This is the first record of the subfamily Cerapachyinae in Chile.

Locality (Map 2). CHILE. Tarapacá: Arica, 40 m. elev., 24 Sept. 1966 (M. E. Irwin; UCB).

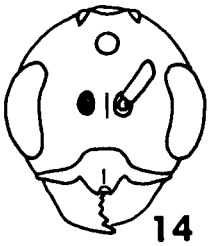
SUBFAMILY MYRMICINAE

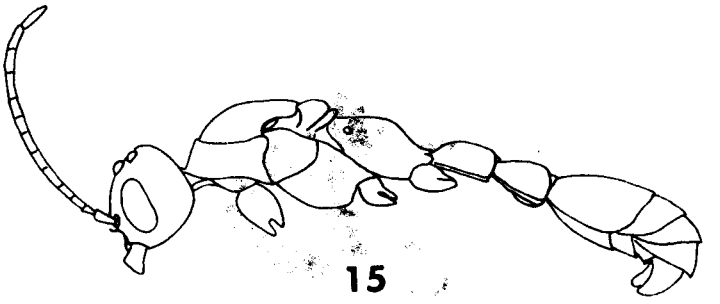
The subfamily Myrmicinae is the largest in Chile, with 21 recognized species. Four of these species are introduced and not definitely known to be established. The native component, 17 species, includes the only endemic Chilean genus, *Nothidris,* as well as the anomalous Patagonian genus *Antichthonidris*.

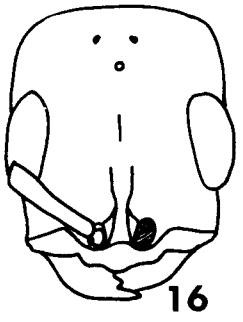
The two genera *Pogonomyrmex* and *Solenopsis* account for over half the myrmicine fauna. *Pogonomyrmex* is a moderate-sized genus of temperate regions of North and South America, well-represented in Argentina. *Solenopsis* is a large, complex cosmopolitan genus. There are many species in tropical and temperate South America.

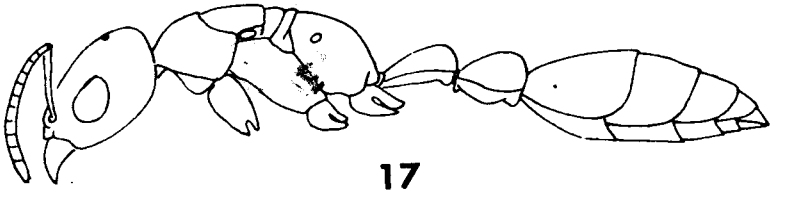
KEY TO CHILEAN GENERA OF MYRMICINAE BASED ON WORKERS

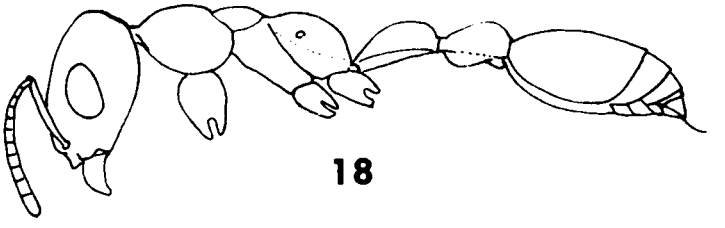
1. Antenna twelve-segmented, rarely with a distinct two-segmented club; head and/or thorax often conspicuously densely punctate and/or rugulose 2
— Antenna ten-segmented, last two forming a distince two-segmented club; head and thoracic dorsum smooth and shiny between widely spaced punctures (median lobe of clypeus with lateral carinae which terminate beyond apical margin as a pair of denticles ..... *Solenopsis*
2. Middle and hind tibial spurs, when present, simple, never pectinate 3
— Middle and hind tibial spurs finely pectinate (fig. 27) (dorsal thoracic sutures absent or obsolescent, no impression between mesonotum and propodeum; propodeum with a pair of spines or denticles) ..... *Pogonomyrmex*
3. Lateral lobe of clypeus flat along basal margin, not forming a sharp ridge between clypeus and antennal socket; body usually smooth 4
— Lateral lobe of clypeus along basal margin elevated into a sharp cariniform ridge which separates clypeus from antennal socket; head and thorax rugulose and punctulate ..... *Tetramorium*
4. Basal face of propodeum at least angulate at juncture with posterior face, usually with spines or short denticles; median lobe of clypeur bicarinate or simple; head and/or thorax often at least partially rugulose 5
— Basal face of propodeum fully rounded into posterior face; median lobe of clypeus with a pair of lateral carinae; body smooth and shiny or densely punctulate, but not rugulose ..... *monomorium*

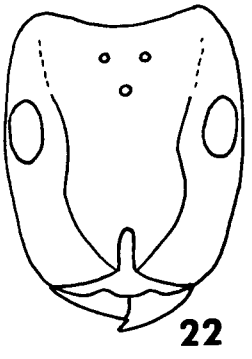


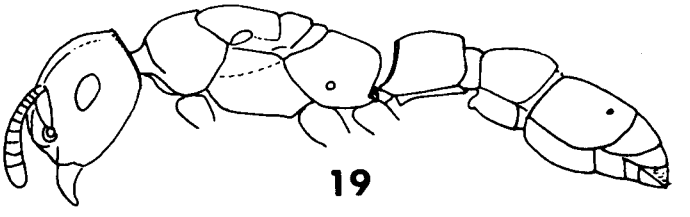


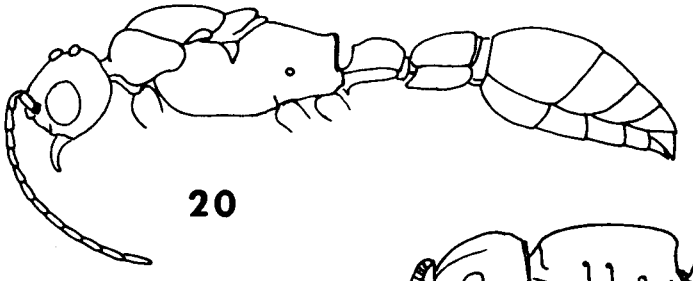












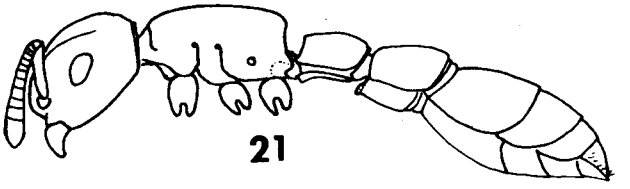


Plate 3. Figs. 14-22. Pseudomyrmecinae and Cerapachyinae. 14-18, *Pseudomyrmex lynceus:* 14, head of male, frontal view; 15, lateral view of male; 16, head of female, frontal view; 17, lateral view of female; 18, lateral view of worker. 19-22, *Cylindromyrmex striatus:* 19, lateral view of female; 20, lateral view of male; 21, lateral view of worker; 22, head of worker, frontal view.

5. Monomorphic; antennal scape usually not extending beyond occipital margin, and never by more than one-sixth its length; mesonotal profile uniform 6
— Dimorphic, major with head disproportionately large and with occiput cleft in middle (figs. 33, 36); scape of minor, but not of major, exceeding occipital margin by about one-third its length (fig. 36); mesonotum, in profile, with two distinct faces sharply angular to one another (fig. 34) ..... *Pheidole*
6. Mid and hind tibiae without apical spur; median lobe of clypeus large, extending beyond apical margin of clypeus (figs. 29, 31) ..... *Antichthonidris*
— Mid and hind tibia each with a distinct apical spur; median lobe of clypeus not extending beyond clypeal margin (figs. 38, 40, 42) ..... *Nothidris*

Pogonomyrmex

This genus includes several common and widely distributed species which may be locally abundant. One species, *vermiculatus,* is especially common. It is morphologically variable, and several of the more distinct forms have been named as varieties. The Chilean *Pogonomyrmex* all belong to the subgenus *Ephebomyrmex* as defined by Cole (1968). Two very distinct groups are represented. The two species which comprise the *bispinosus* group are large ants, the body abundantly marked with ferruginous, the head relatively large, and seeds form a prominent part of the diet. The smaller, brownish to blackish species, with relatively small heads, belong to the *angustus* group. Members of this group are general feeders which do not gather significant quantities of seeds.

KEY TO CHILEAN *POGONOMYRMEX*

1. Ventral surface of head with an arcuate row of long ammochetae which extend mesially over gular area; gular area smooth and shiny, sharply differentiated from lateral sculptured areas, larger species *(bispinosus* group) 2
— Ventral surface of head with scattered, irregularly spaced hairs over entire area; gular area not sharply differentiated from rest of ventral surface; smaller species *(angustus* group) 3
2. Scape, at base, strongly thickened, about as thick as apical width; postpetiole without transverse striae on dorsal surface; first gastric tergum never longitudinally striate ..... *bispinosus* (Spinola)
— Scape narrowed at base, its greatest thickness at bend no more than half apical width; dorsum of postpetiole conspicuously transversely striate; firts gastric tergum often longitudinally striate ..... *vermiculatus* Emery
3. Occiput and thoracic dorsum smooth and shiny 4
— Entire head, including occiput, longitudinally striate interspaces dull, closely punctulate; thorax coarsely rugulose, with dull, punctulate interspaces ..... *angustus* (Mayr)
4. Frontal striae moderately coarse; head, thorax and gaster black ..... *laevigatus* Santschi
— Frontal striae very fine; head and thorax reddish, gaster brownish apically ..... *odoratus* Kusnezov

Pogonomyrmex angustus Mayr
(Fig. 23)

Pogonomyrmex angustus Mayr, 1870:970. ♀; Mayr, 1887:609, 612-613. ♀ ♀ ♂; Berg. 1890:10, Emery, 1905:158; Forel, 1907:4.

Ephebomyrmex angustus, Kusnezov, 1959: 353-354 *(biology);* Kempf, 1970:21; Kempf, 1972:106.

Type locality. Valdivia, CHILE.

This is the only one of the small *Pogonomyrmex* that is at all common. It is easily recognized by its all black color, coarsely striate and punctulate head, and rugulose, closely punctulate thorax.

Localities (Map 3). CHILE. *Aconcagua:* 90 km S Illapel (CAS). *Valparaíso:* Los Perales, río Marga-Marga, 330 m. elev. (UCB). *Santiago:* cuesta La Dormida, 1000 m. elev. (UCB, LACM); cerro El Roble, ca 2000 m elev. (LACM); El Manzano (MSTO). *Colchagua:* 3 km N Callejones (UCB). *Curicó:* cajón de Río Claro, SE Los Queñes, 1000 m elev. (UCB). *Ñuble:* 50 km E San Carlos (CAS). *Arauco:* 20 km W Caramávida, 750 m elev. (UCB). *Malleco:* Parque Nac. Nahuelbuta (LACM). *Cautín:* 12.3 km N Loncoche, 280 m elev. (UCB); 20 km E Temuco (CAS); [cerro Ñielol, 23 Nov. 1967 (W. W. Kempf); Kempf, 1970]; 10 mi NE Pucón, (CAS). *Valdivia:* [Valdivia; type series, Mayr, 1870]; same locality (AMNH); [puerto Corral; Forel, 1907]. *Osorno:* Pucatrihue (UCB). *Llanquihue:* Petrohué, lago Todos los Santos (LACM). *Chiloé:* Dalcahue (MSTO).

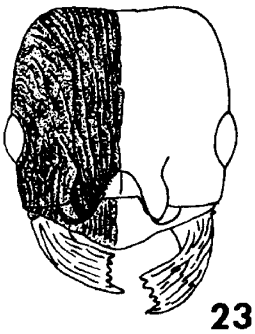
Pogonomyrmex bispinosus (Spinola)
(Fig. 24, 27, 28)

Atta bispinosa Spinola *in* Gay, 1851:244-246. ♀. (not ♀ ♂).

Pogonomyrmex bispinosus, Mayr, 1870: 971-972; Gallardo, 1932:133; Goetsch; 1933: 311-312 *(biology);* Menozzi, 1935:332; Cekalovic, 1964: s.p.; Kempf, 1970-20; Kempf, 1972: 207.

Type locality. Santa Rosa de Los Andes, CHILE.

This large species is easily recognized by the basally thickened scape and lack of transverse striae on the node of the postpetiole. Workers also differ from those of northern populations of *vermiculatus* by the lack of



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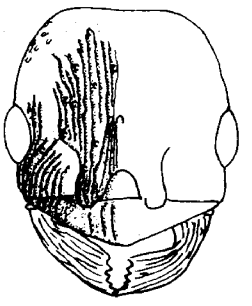

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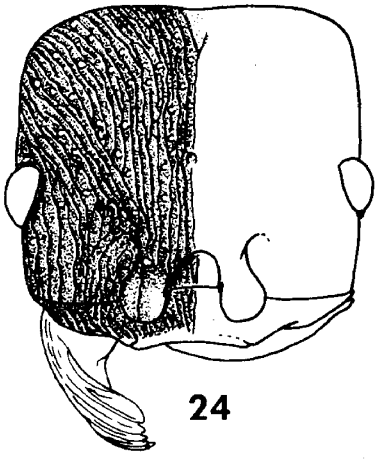

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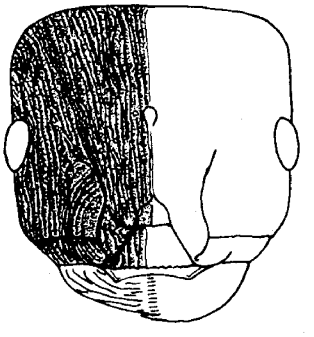

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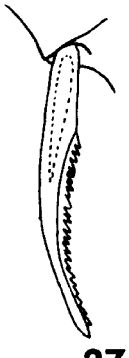

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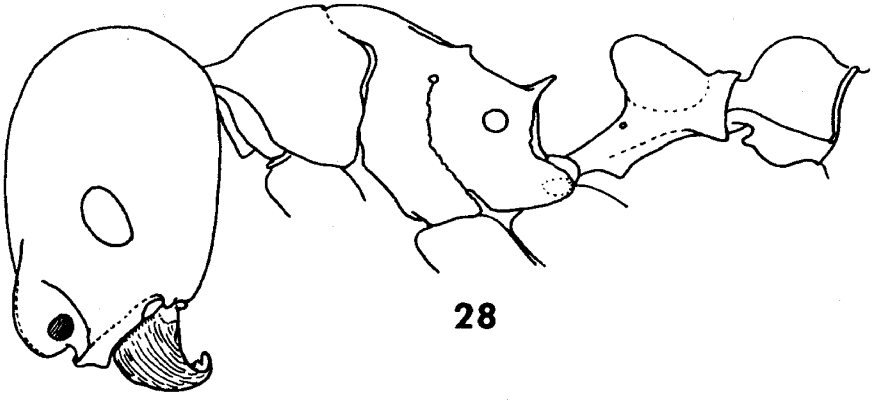

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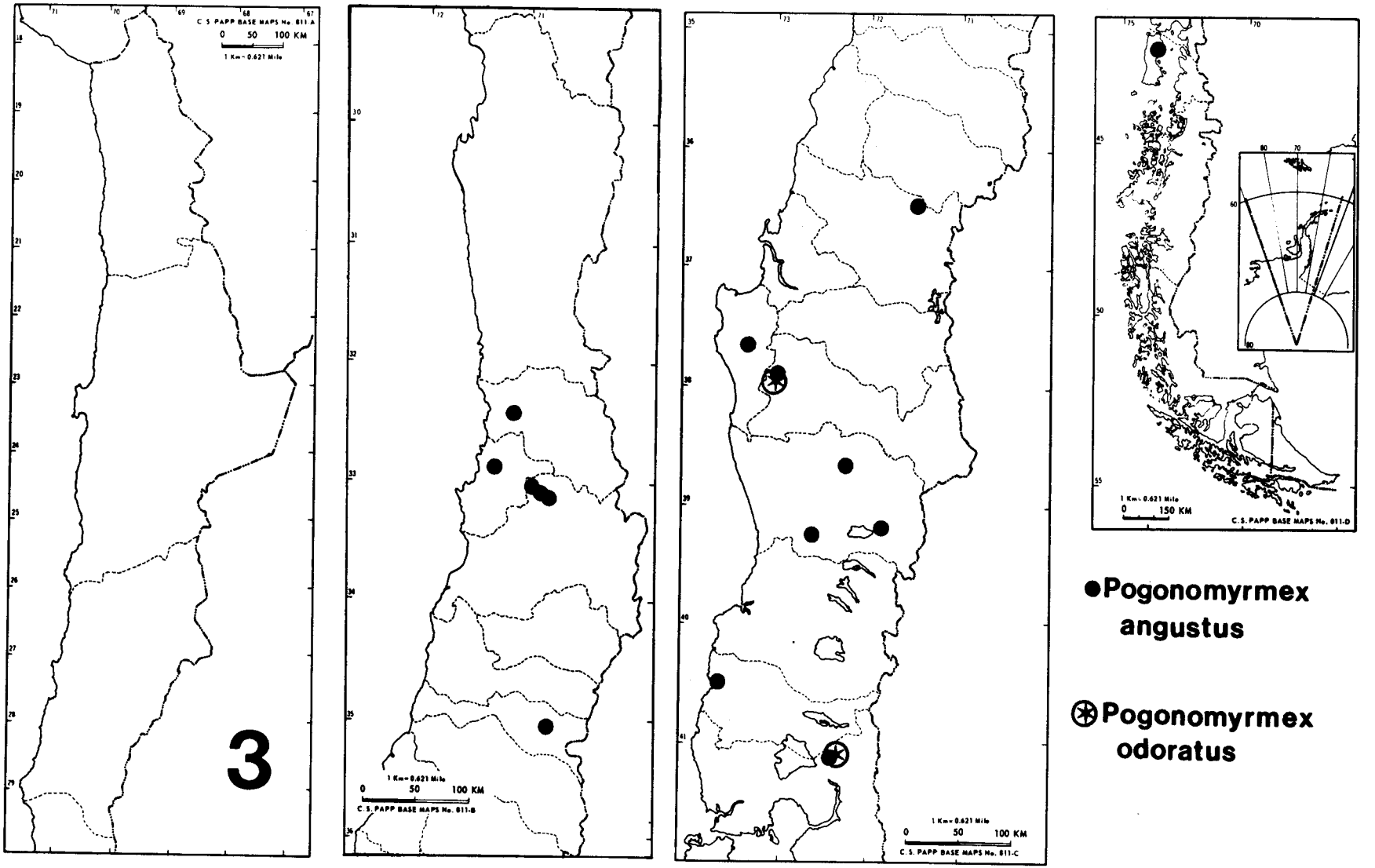
Plate 4. Figs. 23-28. Myrmicinae, *Pogonomyrmex* workers: 23, *P. angustus,* frontal view of head; 24, *P. bispinosus,* same; 25, *P. odoratus,* same; 26, *P. vermiculatus,* same; 27, *P. bispinosus,* hind tibial spur; 28, *P. bispinosus,* lateral view.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C. S. PAPP BASE MAPS No. 811-D
●Pogonomyrmex angustus
⊛Pogonomyrmex odoratus

dense punctulae and striae on the first gastric tergum.

The present ant accords more closely with Spinola's original description of the *bispinosus* worker than does the usual interpretation which was always vague. The difficulties begin with the type series, for Spinola had workers from Santa Rosa de Los Andes, Aconcagua, and females and males from Tucapel, Ñuble. Emery (1905), convinced that two different forms were represented in the type series, proposed to call the Tucapel specimens var. *spinolae,* thus automatically restricting the type locality to Santa Rosa de Los Andes and making the worker the type. The worker was described as all red, with the first gastric tergum smooth and shiny. Subsequent investigators saw various samples, some bicolored, some with the first tergum variously sculptured, but, apparently, none which were wholly red and with a smooth gaster. These were described as varieties of *bispinosus,* even though there was no clear idea of the identity of "typical" *bispinosus.*

A few samples from Aconcagua and Santiago are available which do meet the crucial criteria for *bispinosus:* they are from the right area, they are uniformly red, and the first gastric tergum is smooth and shiny. This species is, in our opinion, the true *bispinosus.* The several forms attributed to *bispinosus* (i.e., *intermedia, semistriata* and *spinolae)* are conspecific with one another, but not with *bispinosus.* They are much more closely related to *vermiculatus* and are here removed to the synonymy of that species.

Localities (Map 4). CHILE. *Aconcagua:* 10 km E Papudo (CAS); 3 km N Zapallar (LACM); [Santa Rosa de Los Andes; types of *bispinosus* Spinola, 1851]. *Santiago:* El Coipo (MSTO); El Peumo; río Maipo (MSTO); cuesta La Dormida (LACM).

Pogonomyrmex laevigatus Santschi

Pogonomyrmex (Ephebomyrmex) laevigatus Santschi, 1921:97 ♀; Goetsch, 1933:331-332 *(biology).*

Ephebomyrmex laevigatus, Kusnezov, 1959: 354 *(distr., biology);* Kempf, 1970:22; Kempf, 1972:106.

Type locality: Cayutué, CHILE.

No specimens of this ant have been seen. It is most similar to *odoratus* in that the head and thorax are largely smooth and shiny. The body, however, is wholly blackish and the striae on the lower part of the head are said to be coarser than is *odoratus.* All recorded localities are from *Llanquihue:* Cayatué, Puerto Montt, Puerto Varas.

Pogonomyrmex odoratus Kusnezov

(Fig. 25)

Pogonomyrmex (Ephebomyrmex) odoratus Kusnezov, 1949:298-299, 302-307. ♀ ♀ ♂.

Ephebomyrmex odoratus, Kusnezov, 1959: 354; Kempf, 1970:22; Kempf, 1972:106.

Type locality. None designated. Kusnezov (1949:299) lists six localities in northwestern Patagonia, ARGENTINA. Of these, we here select the first listed, Hua Hum, as the type locality.

The wholly ferruginous color and smooth head and thorax will readily separate this from other species of *Pogonomyrmex.*

Localities (Map 3). CHILE. *Malleco:* Parque Nac. Nahuelbuta (LACM). *Llanquihue:* Petrohué, lago Todos los Santos (LACM).

Pogonomyrmex vermiculatus Emery

(Fig. 26)

Pogonomyrmex vermiculatus Emery, 1905: 157-158. ♀; Cekalovic, 1964: s.p.; Kempf, 1970:21; Kempf, 1972:209.

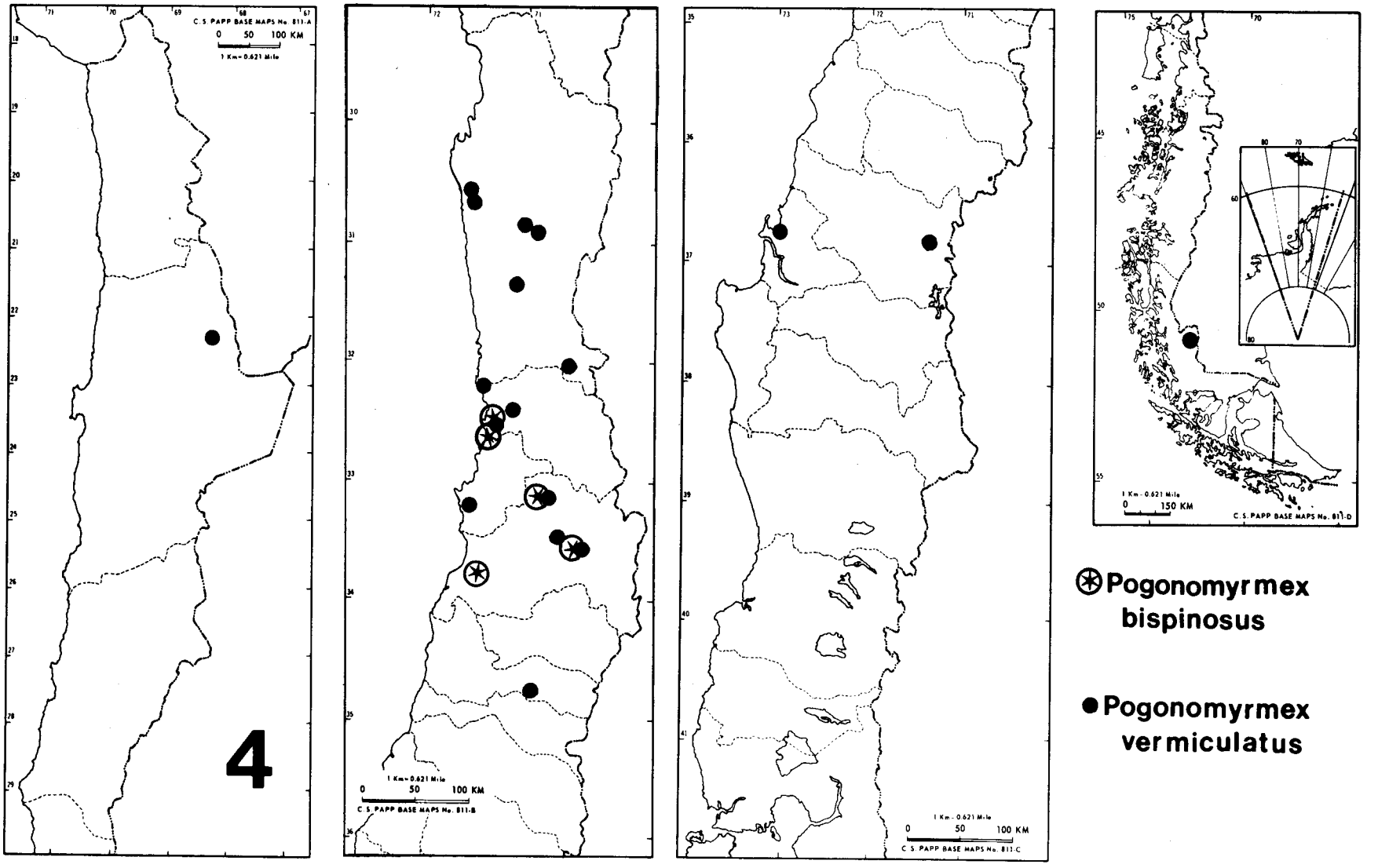
Pogonomyrmex bispinosus var. *semistriata* Emery, 1905:158: ♀; Forel, 1912:16; Gallardo, 1932:131, fig. 19; Goetsch, 1932:6-30; Kempf, 1970:21; Kempf, 1972:207. NEW SYNONYMY.

Pogonomyrmex bispinosus var. *spinolae* Emery, 1905:158. ♀ ♂; Santschi; 1925:223. ♀; Kempf, 1970:21; Kempf, 1972:207. NEW SYNONYMY.

Pogonomyrmex bispinosus var. *intermedia* Menozzi, 1935:320. ♀; Kempf, 1970:21; Kempf, 1972:207. NEW SYNONYMY.

Type locality. *vermiculatus:* Río Santa Cruz, ARGENTINA; *semistriata:* Talca, CHILE; *spinolae:* Tucapel, CHILE; *intermedia:* Volcán de Chillán, CHILE.

We are using *vermiculatus* as the name for the common, widely distributed species more usually called *bispinosus.* There are no appreciable differences between Patagonian *vermiculatus* and the several Chilean infraspecific forms usually assigned to *bispinosus.* There are so many populations of indeterminate status that recognition of any of these nominate forms is impossible, hence the above synonymy.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C. S. PAPP BASE MAPS No. 811-D
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Pogonomyrmex bispinosus
Pogonomyrmex vermiculatus

The true *bispinosus* is another matter, however. The types came from Santa Rosa de Los Andes, Prov. Aconcagua. For the most part, Spinola's description can be applied to *vermiculatus*. Spinola does, however, state that the first gastric tergum is smooth and shiny. All material of *vermiculatus,* as here understood, from Aconcagua, has the first gastric tergum closely covered with very fine longitudinal striations and the surface densely, finely punctulate. The resultant surface has a very characteristic dull, satiny sheen. There exists, in Aconcagua, another species of *Pogonomyrmex* which, in our opinion, better matches the description of *bispinosus,* and it is to that species that we assign Spinola's name.

Several Argentinian forms have been described as varieties of *vermiculatus: atratus* Santschi, *chubutensis* Forel, *joergenseni* Forel and *variabilis* Santschi. We have not seen sufficient material of any of these to form definite opinions about them, but we suspect that the last three, at least, will prove to be synonyms of *vermiculatus*.

Northern populations of *vermiculatus* usually are wholly ferruginous and most, or all, of the dorsum of the first gastric tergum is closely punctulate and striolate. Specimens from Prov. Ñuble have the thorax black. The sculpture of the first tergum is present over the basal one-third, or less, of the segment. In the few specimens seen from Prov. Magallanes, the thorax, gaster and appendages are blackish; only the head is ferruginous. The fine punctulae and striolae of the first tergum are usually confined to the basal one-fourth or less, but may cover half, or more, of the segment. There is so much variation within populations that we see no value to recognizing these populations as subspecies.

Males of this species have been taken between the period 21 November to 29 January, mostly in Prov. Santiago.

Localities (Map 4). CHILE. *Antofagasta:* Turi (MSTO). *Coquimbo*: Fray Jorge, 5 km W Pachingo, 550 m elev. (UCB); Parque Nac. Fray Jorge, 15 km SW Pachingo, 100-200 m elev. (UCB); Bosque Fray Jorge (CAS); 30 km N Illapel, 5000 ft. elev. (CAS); 28 mi N Combarbalá (CAS); 35 mi S Ovalle (CAS). *Aconcagua:* Los Molles (LACM); E entrance to tunnel, 90 km S Illapel (CAS); 10 km E Papudo (CAS). *Valparaíso:* [Valparaíso; Santschi, 1925; Gallardo, 1932; Goetsch, 1932]; [Viña del Mar; Goetsch, 1932]; 8 km SE Quintay, 150 m elev. (UCB). *Santiago*: [Santiago; Menozzi, 1935]; El Canelo (UCB, MSTO); Rinconada-Maipo (UCH); El Peumo-Río Maipo (MSTO); [cerro San Cristóbal; Maipo; Peñaflor; cuesta de Pudahuel; San Antonio; Goetsch, 1932]; El Manzano (MSTO); San José de Maipo (MSTO); cajón del Maipo (MSTO); quebrada El Peumo (MSTO). *Curicó:* Curicó, 1300 ft. elev. (USNM). *Talca*: Talca (Silvestri; cotypes of *semistriatus* Emery, 1905). *Ñuble*: Las Trancas rd., near Termas de Chillán, 1350 m elev. (UCB); [Volcán de Chillán, 1700 m elev.; types of *intermedia* Menozzi, 1935]; [Tucapel; types of *spinolae* Emery, 1905]. *Concepción*: Penco (USNM). *Magallanes*: Río Baguales, Estancia Cerro Guido (UCON).

Antichthonidris

The two species of *Antichthonidris* have been tradionally associated with the monomoriines. Described as species of *Monomorium,* they were assigned to the subgenus *Notomyrmex* by Emery (1915), accompanied by another Chilean species, *latastei.* These three species were removed from *Notomyrmex* to the new genus *Nothidris* by Ettershank (1966), which had as its type, *latastei.* Snelling (1975) proposed to remove *bidentatus* and *denticulatus* from *Nothidris,* based principally upon characteristics of the males which required their exclusion from *Nothidris;* the new genus *Antichthonidris* was proposed, with *bidentatus* as type species.

The affinities of *Antichthonidris* are uncertain, but the genus seems most closely allied to such pheidoline genera as *Stenamma*. Male thoracic structure and wing venation are suggestive of that genus as are worker clypeal structure and the lack of apical spurs on the middle and hind tibiae. The worker differs from that of *Stenamma* by the large, multifaceted eyes and the barely depressed metanotum.

Antichthonidris bidentatus (Mayr)
(Fig. 29-30)

Monomorium bidentatum Mayr, 1887:616. ♀ ♀ ; Berg, 1890:9.

Monomorium (Notomyrmex) bidentatum, Emery, 1915:190; Kusnezov, 1949:431-434.

Monomorium (Notomyrmex) bidentatum subsp. *piceonigrum* Borgmeier. 1949:468-469, figs. 16, 17. ♀ .

Notomyrmex bidentatus, Kusnezov, 1959: 345-347, fig. 2, 3b.

Nothidris bidentatus, Ettershank, 1966:106, 107; Kempf, 1970:22; Kempf, 1972:165.

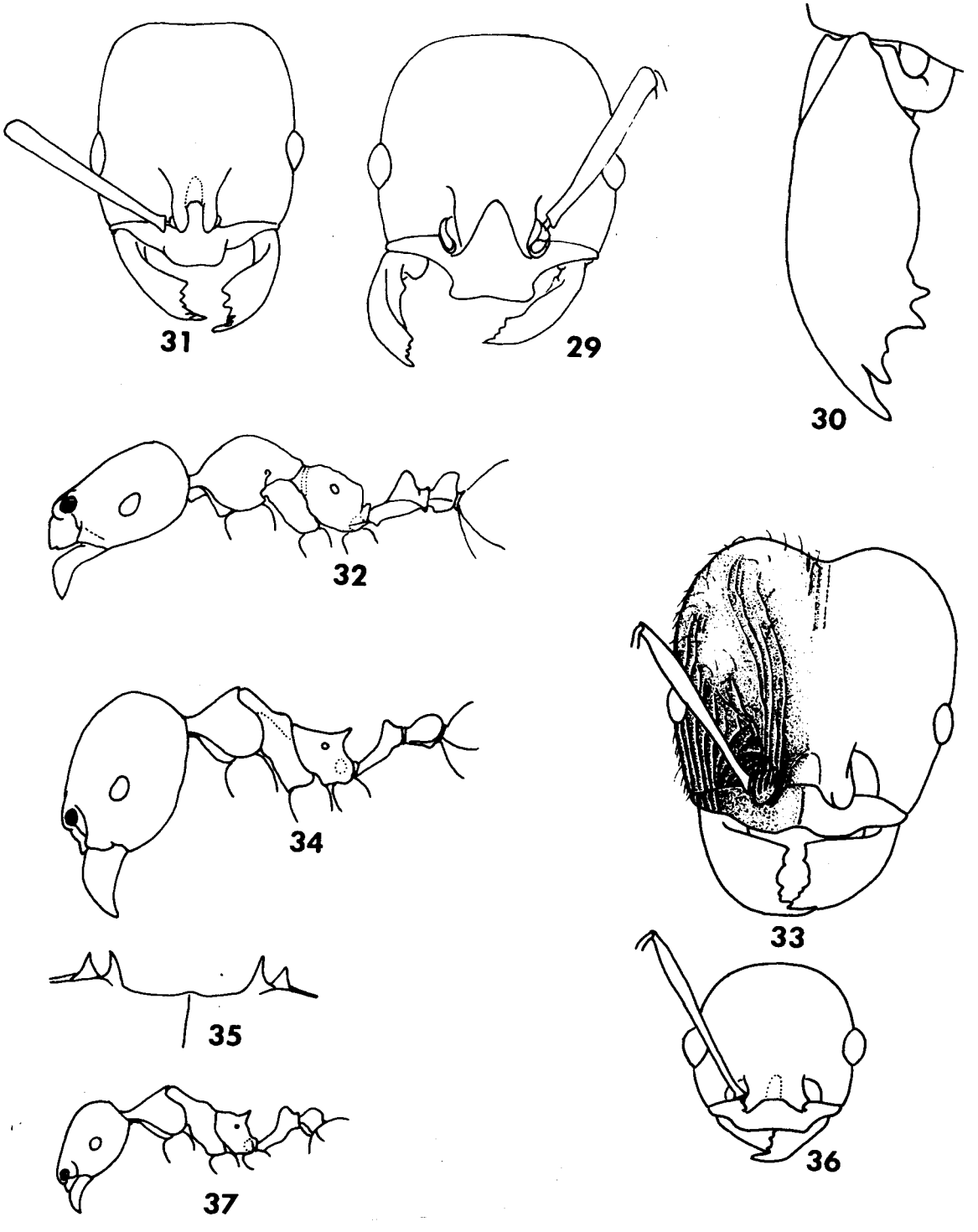


Plate 5. Figs. 29-37. Myrmicinae. 29, *Antichthonidris bidentatus*, worker, front of head; 30, same, mandible; 31, *A. denticulatus*, worker, front of head; 32, same, lateral view. 33-37, *Pheidole chilensis;* 33, soldier, front of head; 34, soldier, lateral view; 35, soldier, gular teeth; 36, worker, front of head; 37; worker, lateral view.

Antichthonidris bidentatus, Snelling, 1975.

Type locality. *bidentatum*: Valdivia, CHILE; *piceonigrum:* Hau Hum, ARGENTINA.

The configuration of the mandible, clypeus, thorax and petiole (figs. 31, 32) will readily separate this species from its congener.

Localities (Map 5). CHILE. *Valdivia:* [Valdivia; types of *bidentatus* Mayr, 1887]. *Osorno*: n. shore, lago Llanquihue (CAS); Puyehue (CAS); 18 km W Purranque (CAS). *Chiloé:* Chacao a Manao (UCON); 20 km E Temuco (CAS).

Antichthonidris denticulatus (Mayr)

(Fig. 31-32)

Monomorium denticulatum Mayr, 1887:614-615 ♀ ♀; Emery, 1905:120; Goetsch, 1933: 349.

Monomorium denticulatum var. *navarinensis* Forel, 1904b:7. ♀.

Monomorium denticulatum var. *picea* Emery, 1905:120. ♀.

Monomorium (Notomyrmex) denticulatum, Emery, 1915:190; Menozzi, 1935:320, 333; Kusnezov, 1949:432-434.

Monomorium (Notomyrmex) denticulatum, subsp. *inerme* Borgmeier, 1948:469-470, figs. 18, 19 ♀.

Notomyrmex denticulatus, Kusnezov, 1959: 347-350, fig. 3a.

Nothidris denticulatus, Ettershank, 1966: 106, 107; Kempf, 1970:23; Kempf, 1972:165.

Antichthonidris denticulatus, Snelling, 1975.

Type locality. *denticulatum:* Valdivia, CHILE; *navarinensis*: Isla Navarino, Pto. Toro, CHILE; *picea*: Temuco, CHILE; *inerme*: Hua Hum, ARGENTINA.

The varieties described by Forel and Emery are based on minor differences in color; that of Borgmeier on obsolescence of the propodeal spines. Kusnezov (1959) correctly recognized these to be unimportant variations which occur sporadically throughout the range of the species, and they were placed in synonymy.

This is a much more common species than *bidentatus*. The distribution and biology of both species are reported by Kusnezov (1959), who speculated that the mixed nests which contain both species may be proof that *bidentatus* is dulotic. Ettershank (1966) opined that *bidentatus* might be a social parasite. No new data are available.

Localities (Map 5). CHILE. *Santiago:* quebrada de la Plata Rinconada, 510 m elev. (UCB). *Ñuble*: 2.7 km Las Trancas, 1320 m elev. (UCB). *Concepción*: Concepción (UCON). *Cautín*: volcán Villarrica (LACM); [Temuco; type of *picea* Emery, 1905]. *Valdivia*: [Valdivia; type of *denticulatum* Mayr, 1887]; 30 km S Valdivia (CAS); Los Muermos (CAS). *Osorno*: 10 km E *Puyehué,* (CAS). *Llanquihue*: Peulla, lago Todos los Santos (LACM); Petrohué, 100 m elev. (UCB). *Chiloé*: Chacao a Manao (UCON). *Magallanes*: Mina Elena, seno Skyring, isla Riesco (UCON); [pto. Toro, isla Navarino, type of *navarinensis* Forel, 1904b].

Pheidole chilensis Mayr

(Fig. 33-37)

Pheidole chilensis Mayr, 1862:748-749. 4 ♀ ♀ ♂; Mayr, 1865: 94-96, fig. 27. 4 ♀ ♀ ♂; Mayr, 1887:585, 605: Kempf, 1970:22; Kempf, 1972:189.

Type locality. "Chile".

A single record from Chile is available. The species has also been taken at Lima, Peru (Kempf, 1970).

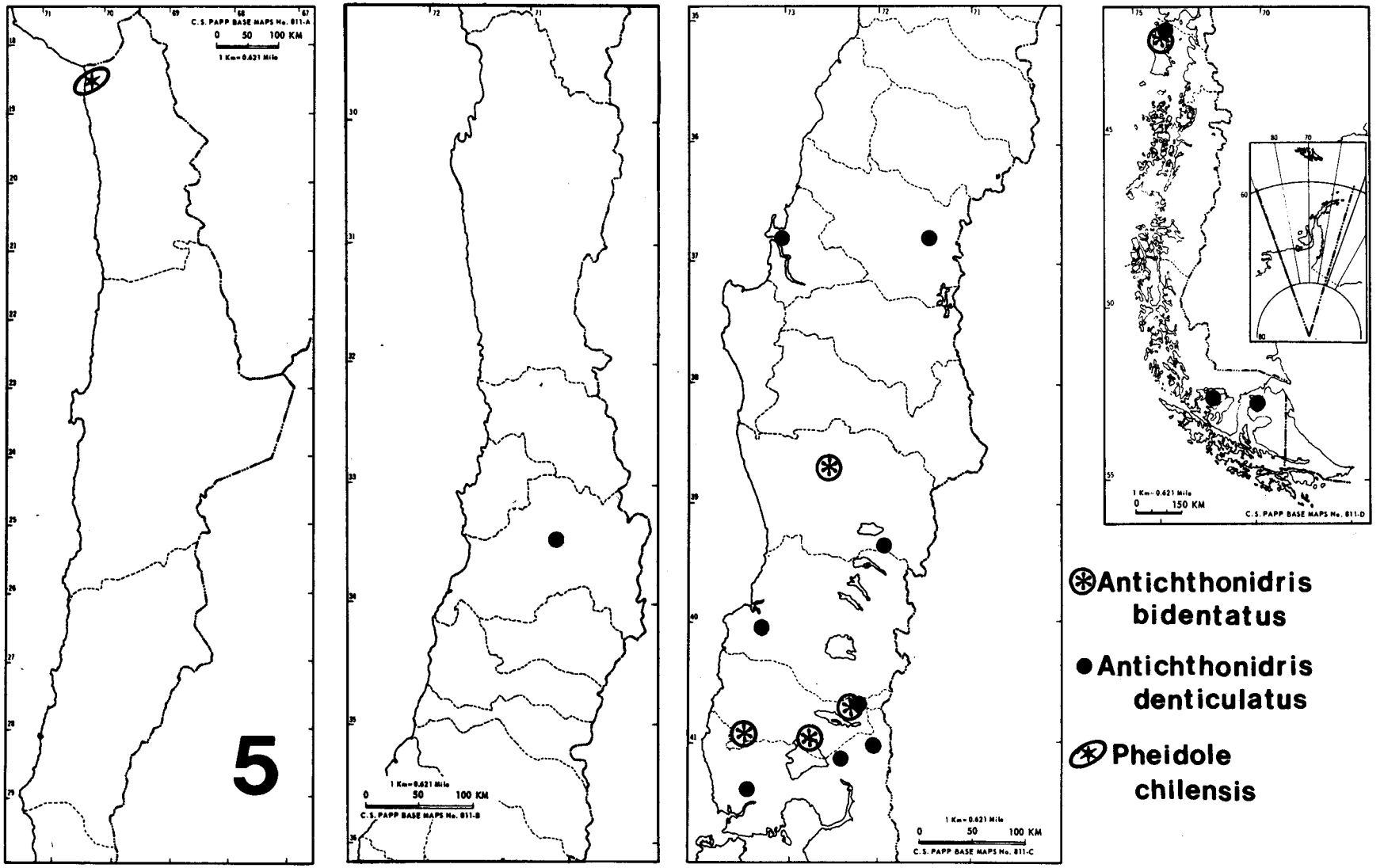
Locality (Map 5). CHILE. Prov. *Tarapacá*: Arica, 5 April, 1951 (E. S. Ross; CAS).

Nothidris Ettershank

This genus was proposed by Ettershank for the reception of *Monomorium latastei* Mayr and two other species. He placed *Nothidris* among those genera most closely related to *Megalomyrmex*. The association of the three species placed in *Nothidris* by Ettershank is one of long standing, dating back to Emery (1905). Nevertheless, the type species of *Nothidris* is quite different from the other two, as shown in the key above. These species, *bidentatus* and *denticulatus*, were removed from *Nothidris* by Snelling (1975) to the new genus *Antichthonidris*. At the same time, *Megalomyrmex bicolor* Ettershank was transferred to *Nothidris* and a new species, *cekalovici* was described.

KEY TO SPECIES OF NOTHIDRIS

1. Head concolorous with thorax; gaster darker (if head concolorous with gaster, malar area at least 1.10 × EL); propodeum distintly angulate or with sharp projections 2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C.S. PAPP BASE MAPS No. 811-D
150 KM
Antichthonidris bidentatus
Antichthonidris denticulatus
Pheidole chilensis

— Head concolorous with gaster; thorax lighter; malar area 0.79-1.00 × EL; propodeum rounded, not at all angulate at juncture of basal and posterior faces ..... *cekalovici* Snelling

2. Propodeum angulate, but without sharp projection penultimate antennomere 1.25-1.45 × longer than wide; malar area 1.2, or more, × EL .... *bicolor* (Ettershank)
— Propodeum at least sharply angulate, usually with distinct triangular projections; penultimate antennomere 0.77-1.20 × longer than wide; malar area usually less than 1.2 × EL .... *latastei* (Emery)

Nothidris bicolor (Ettershank)
(Fig. 38-39)

Megalomyrmex bicolor Ettershank, 1965:55-58, figs. 1-5 ♀; Ettershank, 1966:105; Kempf, 1970a:23(part); Kempf, 1970b:359; Kempf, 1972:139.

Nothidris bicolor, Snelling. 1975.

Type locality. Cerro Pachón, nr. La Serena, CHILE.

Although this was originally described as a *Megalomyrmex* we believe it must be included in *Nothidris* since it appears to be morphologically very similar to the type species of this genus.

Localities (Map 6). CHILE. *Coquimbo*: cerro Pachón, ca 8500 ft. elev., near La Serena (type series, MCZ). *Valparaíso*: Algarrobo (MSTO). *Santiago*: quebrada de la Plata Rinconada (UCB).

Nothidris cekalovici Snelling
(Fig. 40-41)

Nothidris cekalovici Snelling, 1975: 3. ♀.

Type locality. 10 km N Pichidangui, CHILE.

This small species is known only from the type series. The dark head and unarmed propodeum are characteristic of *cekalovici*.

Locality (Map 6). CHILE. *Prov. Aconcagua:* 10 km N Pichidangui, Carr. Panam. km 206, 23 Dec. 1963 (T. Cekalovic; type series, LACM, UCON).

Nothidris latastei (Emery)
(Fig. 42-43)

Monomorium latastei Emery, 1895b:10-11. ♀; Emery, 1905:119.

Nothidris latastei, Ettershank, 1966, 107, figs. 48-50; Kempf, 1970:23; Kempf, 1972: 165; Snelling, 1975.

Type locality. Cordillera de Chillán, CHILE.

This species is both common and widely distributed. The strongly polyphasic workers are usually easily separated from those of the other two species by the propodeal configuration, for short, triangular projections are usually present at the juncture of the basal and posterior faces.

Localities (Map 6). CHILE. *Santiago:* cerro Roble, ca. 2000 m elev. (LACM); cuesta La Dormida (LACM); *O'Higgins*: El Manzano (MSTO). *Curicó:* cajón del Río Claro, 100 m elev., SE of Los Queñes (UCB). *Linares*: Bullileo (UCON). *Talca*: Talca (UCH). *Ñuble*: El Coihueco, 650 m elev. (MSTO); cordillera de Chillán (cotypes of *latastei*; MNHG). *Concepción*: Fundo Pinares (UCON); Concepción, (AMNH, MCZ, UCON); Florida (UCON). *Biobío*: El Abanico (CAS); Mulchén (UCH). *Malleco*: Collipulli (UCON); Parque Nac. Nahuelbuta (LACM); Chiquaihue Hills, nr. Collipulli (MCZ). *Cautín*: Camino Villarrica-Pucón (UCON); Villarrica (Molco) (UCON); [Temuco; Emery, 1905].

Solenopsis Westwood

Most of the species of this cosmopolitan genus are small to minute cryptobionts. The few Chilean species are easily separated from one another, but until all the Neotropical species have been carefully studied there is no certainty that the nomenclature is stable. Most of the species in this genus are poorly known and inadequately described. Kempf (1972) lists almost 150 names available for the species other than the large "fire ants". Many, if not most, of these are doubtless synonymous forms, but there are likely numerous undescribed species also.

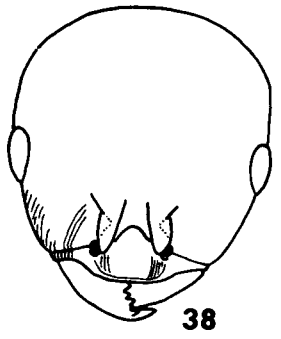
KEY TO CHILEAN *SOLENOPSIS* WORKERS

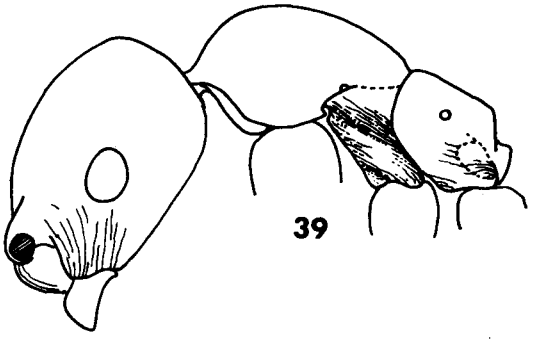
1. Eye composed of fewer than ten facets 2
— Eye composed of more than twenty facets .... *gayi* (Spinola)

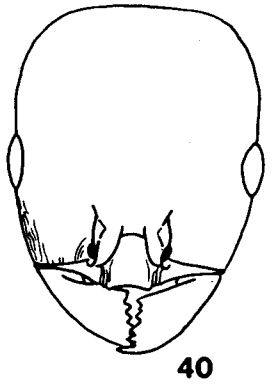
2. Lower half of mesopleura smooth and shiny, sometimes lightly punctulate along margins; propodeal side, below level of gland, with striae sparse or absent, surface shiny; cephalic punctures variable ... 3
— Lower half of mesopleura and of propodeal side slightly shiny, with fine, close longitudinal striae; front of head with scattered fine punctures .... *latastei* Emery

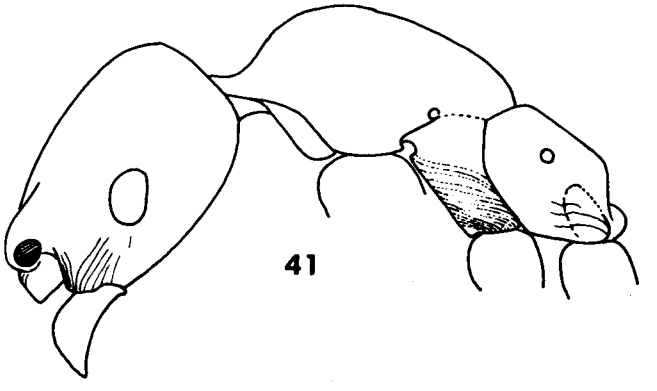
3. Last antennomere no longer than combined lengths of segments 2-8, usually shorter 4
— Last antennomere clearly longer than combined lengths of segments 2-8 5

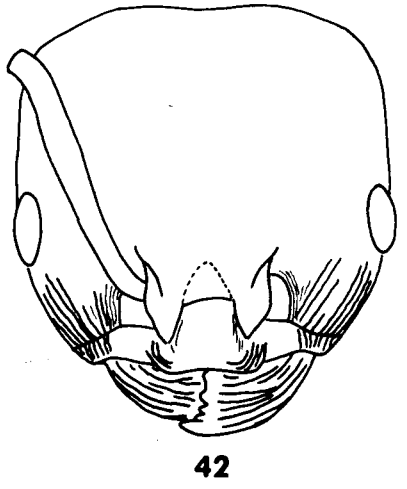
4. Eye larger, of 6-8 facets; scape short of occiput by about twice its maximun diameter ..... *germaini* Emery











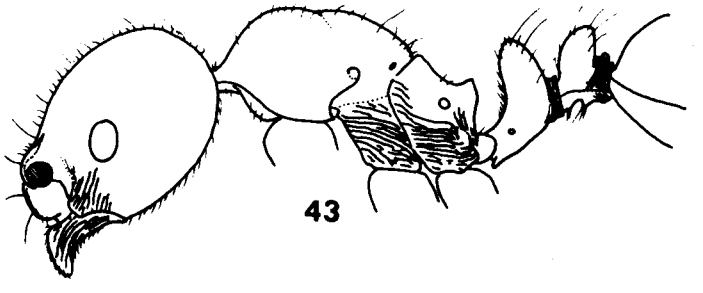
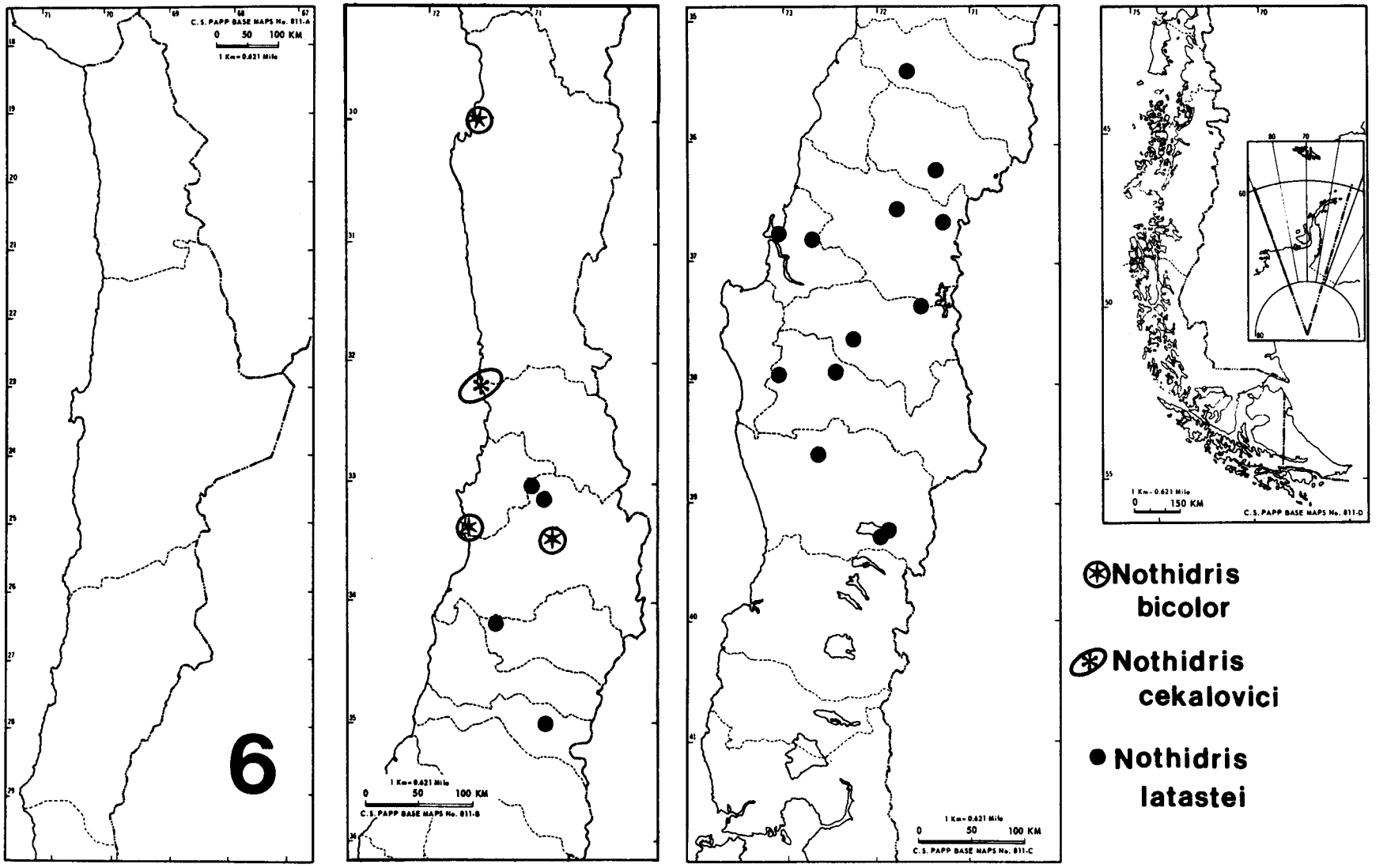


Plate 6. Figs. 38-43. Myrmicinae, *Nothidris* workers. 38, *N. bicolor*, front of head; 39, same, lateral view; 40, *N. cekalovici*, front of head; 41, same, lateral view; 42, *N. latastei*, front of head; 43, same, lateral view.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C.S. PAPP BASE MAPS No. 811-D
150 KM
Nothidris bicolor
Nothidris cekalovici
Nothidris latastei

— Eye smaller, of 2-4 facets; scape short of occiput by about three times its maximun diameter .... *patagonicus* Emery

5. Eye pigmented, composed of 3-4 facets; frontal punctures separated by 2-3 times a puncture's diameter, distinctly greater in diameter than hairs arising from them ..... *helena* Emery
— Eye unpigmented, consisting of a single facet; frontal punctures separated by four or more times a puncture diameter, hardly larger in diameter than hairs arising form them ..... *dysderces* Snelling

Solenopsis dysderces Snelling
(Fig. 44-45)

Solenopsis dysderces Snelling, 1975: 2. ♀.

Type locality. *Ca.* 3 km N Zapallar, CHILE.

This minute species is known only from type series. The elongate apical antennomere, sparce frontal punctures and single faceted eye are diagnostic.

Locality (Map 8). CHILE. *Aconcagua*: *ca.* 3 km N Zapallar, 28 Oct. 1972 (J. H. Hunt, # 958; LACM).

Solenopsis gayi (Spinola)
(Fig. 1-5, 46-51)

Myrmica Gayi Spinola, *in* Gay, 1851. ♀ ♀ ♂.
Pogonomyrmex gayi Mayr, 1868:170.

Solenopsis gayi Mayr, 1870:971-972; Forel, 1909:268-269; Wheeler, 1925:35; Creighton, 1930:48-51, pl. 4, fig. 6; Menozzi, 1935:320, 333; Brown, 1950:248; Kempf, 1970:24; Kempf, 1972:235.

Solenopsis geminata, Mayr, 1865:108-109; Berg, 1890:8 (*misident.*)

Solenopsis geminata gayi Emery, 1895b; Emery, 1905:121; Goetsch, 1933:322-324.

Solenopsis gayi var. *fazi* Santschi, 1923: 261. ♀; Creighton, 1930:51-52, pl. 4, fig. 3.

Type locality. Santa Rosa de Los Andes, CHILE.

This medium-sized "fire ant" is one of the commonest ants in Chile, and is the most widely distributed. The var. *fazi* was based on a minor color variant and was rightly synonymized by Brown (1950). The Peruvian form, *bruesi* Creighton, was described as a subspecies. When more material becomes available, this may prove to be an independent species.

Many records for this ant (Map 7) are available from Chilean localities. These range from the Province of Tarapacá in the north to the Province of Malleco in the south.

Solenopsis germaini Emery
(Fig. 52-54)

Solenopsis germaini Emery, 1895b:12, figs. ♀; Emery, 1896:51.

Solenopsis germaini schedingi Forel, 1907: 4-5. ♀ ♀ ♂. Kempf, 1970:25; Kempf, 1972-236. NEW SYNONYMY.

Solenopsis germaini Kempf, 1970:24; Kempf, 1972:236.

Type locality. *germaini*: cordillera de Chillán, CHILE; *schedingi*: puerto Corral, CHILE.

This is one of the commonest of the small, cryptobiotic *Solenopsis*. Because it is largely, if not wholly, subterranean, it is not often collected. Very likely the species is more abundant than present records would indicate.

Localities (Map 7). CHILE. *Coquimbo*: Bosque Fray Jorge (UCON). *Curicó*: Los Queñes, 1200 m elev. (UCB). *Talca*: Vegas del Flaco (LACM). *Nuble*: Las Trancas rd., 1350 m elev., nr. Termas de Chillán (UCB); [cordillera de Chillán; types of *germaini*]. *Concepción:* Concepción (AMNH). *Malleco*: Parque Nac. Nahuelbuta, 1100-1200 m elev. (LACM, UCB, UCON; cordillera Las Raíces (MSTO). *Cautín:* Llaima, lago Quepe (UCON); lago Quillehue (UCON). *Valdivia*: puerto Corral (types of *schedingi*; MNGH); same locality (AMNH, LACM). *Osorno*: n. shore, lago Llanquihue, (CAS); Pucatrihue, 1500 m elev. (MSTO); 10 km E Puyehue (CAS). *Llanquihue*: Peulla, lago Todos los Santos (LACM); Petrohué, lago Todos los Santos (LACM); Puerto Varas (AMNH). *Aisén:* 4.8 km W Chile Chico, 400 m elev. (UCB); Balmaceda (UCON). *Chiloé*: 6 km W Castro, isla Chiloé (UCON).

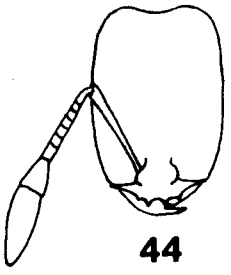
Solenopsis helena Emery
(Fig. 55-56)

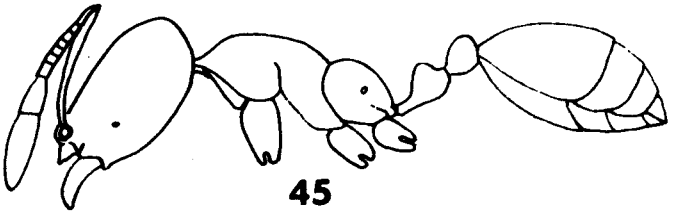
Solenopsis helena Emery, 1895b:14-15, figs. ♀ ♀; Emery, 1896:

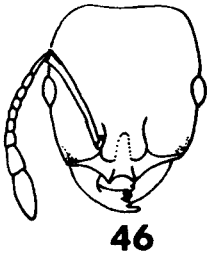
Solenopsis helena Kempf, 1970:25; Kempf, 1972:237.

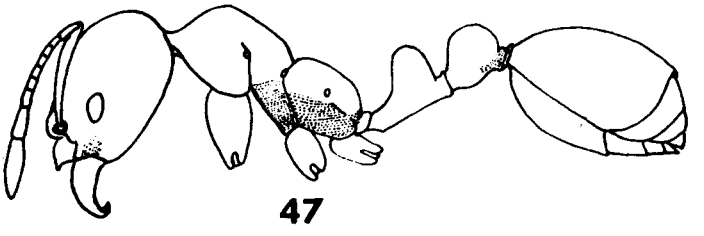
Type locality. Santa Rita, CHILE.

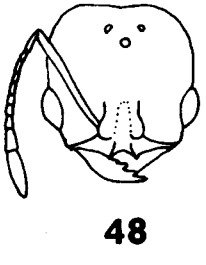
This small species appears to be uncommon. It may be recognized by the long apical antennomere, coarse frontal punctures, and pigmented, 3-4 faceted eye. Two subspecies (*hermione* Wheeler, *ultrix* Wheeler) have

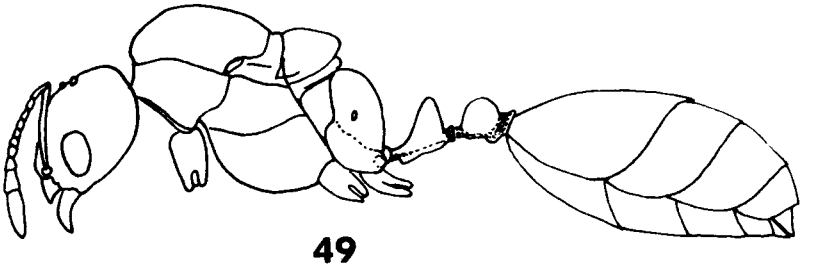


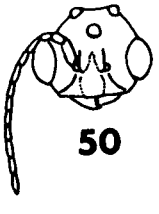












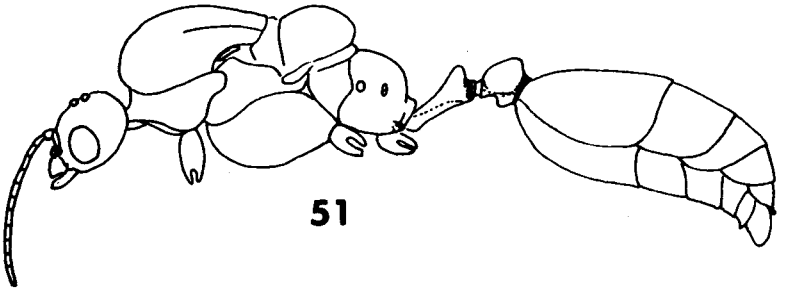
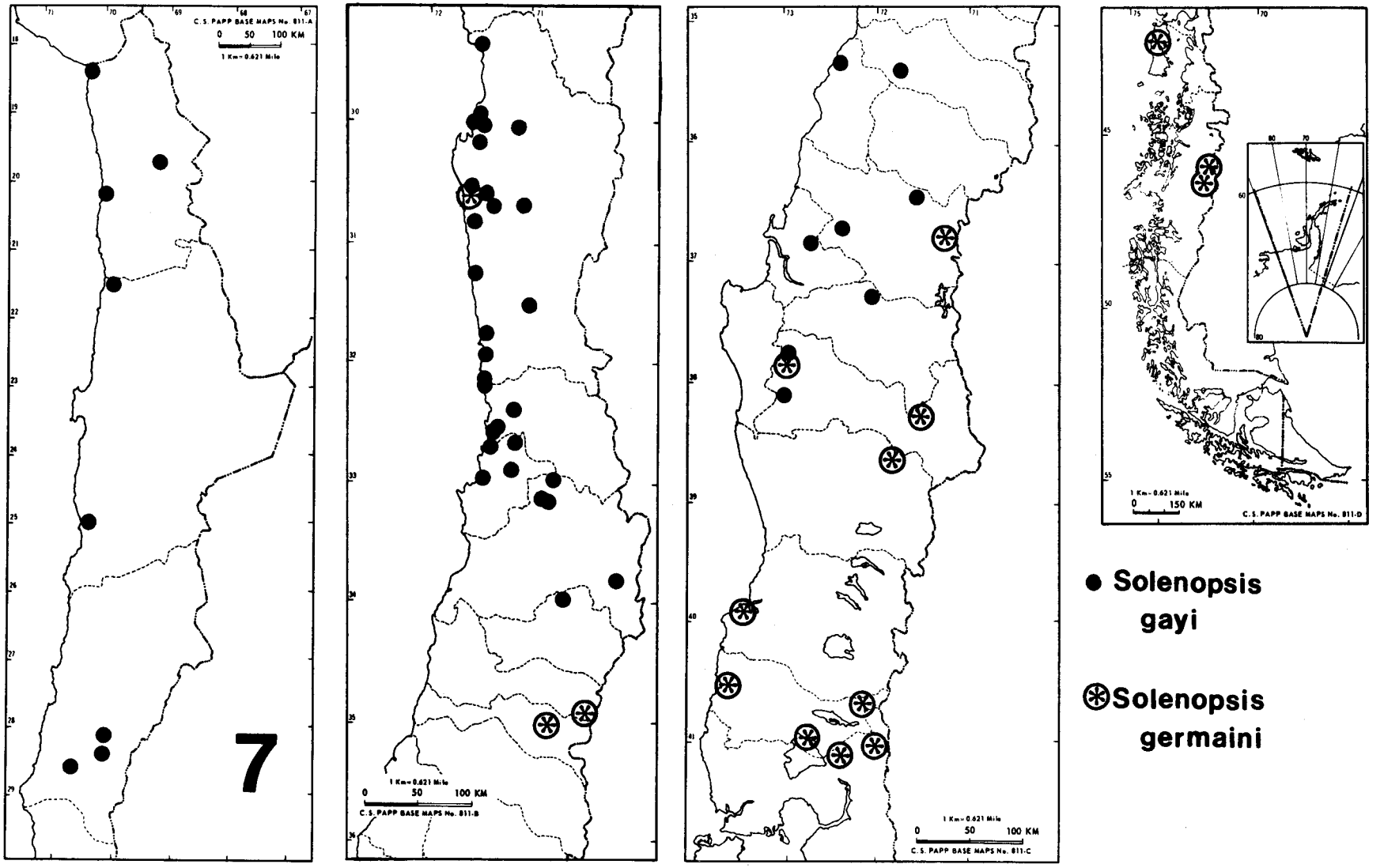


Plate 7. Figs. 44-51. Myrmicinae, *Solenopsis*, front view of head and lateral view, respectively, of: 44, 45, *S. dysderces*, worker; 46, 47, *S. gayi*, worker; 48, 49, same, female; 50, 51, same, male.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● Solenopsis gayi
⊛ Solenopsis germaini

been described from northern South America but apparently are not conspecific with *helena*.

Localities (Map 8). CHILE. *Santiago*: cerro Roble, ca. 2000 m elev. (LACM); [Santa Rita; types of *helena* Emery, 1895b]. *Ñuble*: 50 km E San Carlos (CAS).

Solenopsis latastei Emery

(Fig. 57-58)

Solenopsis latastei Emery, 1895b:13-14, figs. ♀ ♀; Emery, 1896-53; Emery, 1905:123.

Solenopsis latastei var. *hoffmanni* Forel, 1912:7. ♀. Kempf, 1970:25; Kempf, 1972: 237. NEW SYNONYMY.

Solenopsis latastei, Menozzi, 1935:320-321, 333; Kempf, 1970:25; Kempf, 1972:237.

Type locality. *latastei*: Santa Rita, CHILE; *hoffmanni*: Valparaíso, CHILE.

A moderately common and widely distributed species, *latastei* may be recognized by its small size, reduced eyes, and presence of fine longitudinal striae on the lower half of the mesopleura. The var. *hoffmanni* is a minor color variant not worthy of recognition.

Localities (Map 8). CHILE. *Atacama*: Huasco (LACM); [Copiapó; Menozzi, 1935]. *Coquimbo*: Ovalle, Bosque Fray Jorge (CAS). *Aconcagua*: 10 km E Papudo (CAS): *ca.* 3 km N Zapallar (LACM). *Valparaíso*: Valparaíso (cotypes of *hoffmanni* Forel, 1912; MHNG); Maitencillo, 30 m elev (LACM). *Santiago*: cerro Roble, 2000-2100 m elev. (LACM); cuesta La Dormida (LACM); Santiago (LACM); [Santiago, Emery, 1895b]; San José de Maipo (LACM); [Los Leones, Peñaflor, Viluco; Menozzi, 1935]; [Santa Rita; cotypes of *latastei* Emery, 1895b]. *Talca*: [Talca; Emery, 1905]. *Ñuble*: 18, 40, 50 km E San Carlos (CAS). *Cautín*: 10 mi NE Pucón (CAS); Pucón (LACM); 20 km E Temuco (CAS); [Temuco, 24 Nov. 1967 (W. W. Kempf) Kempf, 1970]. *Valdivia*: 30 km S Valdivia (CAS).

Solenopsis patagonica Emery

Solenopsis patagonica Emery, 1905:132-133, fig. 14 ♀; Kusnezov, 1959:338-342, fig. 1a; Kempf, 1970:25; Kempf, 1972:238.

Solenopsis thoracica Santschi, 1923a: 261-262. ♀ ♂; Santschi, 1936:198; Kempf, 1972:241.

Type locality. *patagonica*: Puerto Madryn, ARGENTINA; *thoracica*: Cayuté, lago Todos los Santos, CHILE.

No specimens of *patagonicus* have been available in the Chilean material studied. Kusnezov (1959) placed *thoracica* in synonymy with *patagonica*. The listing of *thoracica* as a separate species by Kempf (1972) appears to have been in error.

Monomorium floricola (Jerdon)*

Atta floricola Jerdon, 1851:107. ♀.

Monomorium floricola Forel, 1901:81.

Type locality. India.

Forel (1901) reported this cosmopolitan tramp species from Valparaíso. No specimens from Chile have been seen during this study.

Monomorium pharaonis (Linne)*

Formica pharaonis Linne, 1758:580.

Monomorium pharaonis Mayr, 1862: 752-753; Goetsch, 1933-349; Goetsch & Menozzi, 1935:96.

Type locality. India?

Although reported from Chile by several authors, no specimens have been available during this study.

Tetramorium caespitum (Linne)*

Formica caespitum Linne, 1758:581.

Tetramorium caespitum Santschi, 1922: 253, Kempf, 1970:25.

Type locality. Europe.

This widely distributed tramp species was reported from Valparaíso by Santschi (1922). No Chilean specimens have been seen during this study.

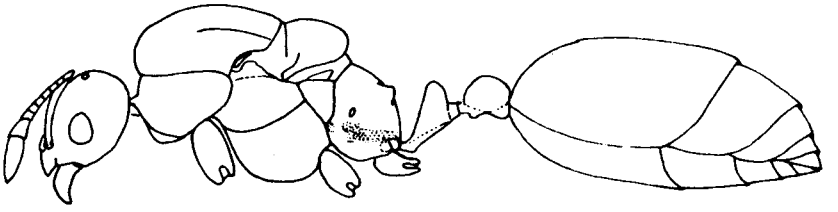
Tetramorium guineense (Fabricius)*

Formica guineensis Fabricius, 1793:357. ♀.

Tetramorium guineense Kempf, 1970:26.

Type locality. Guinea.

This ant was first recorded from Chile by Kempf (1970), who examined specimens from Algarrobo, Prov. Valparaíso, 21 July 1951 (Kuschel & Peña; (MSTO). No additional specimens of this cosmopolitan tramp species have been studied.



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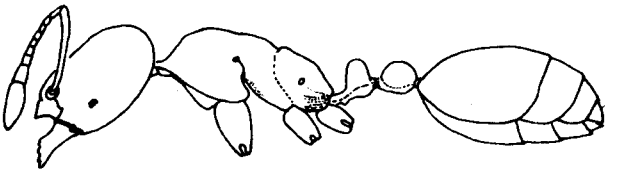

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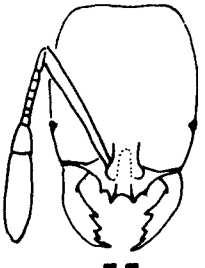

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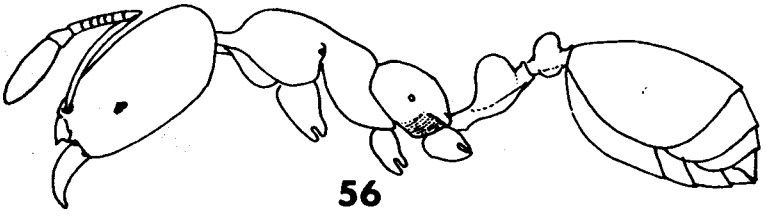

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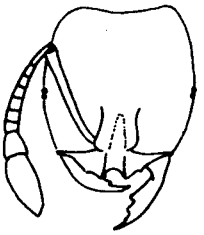

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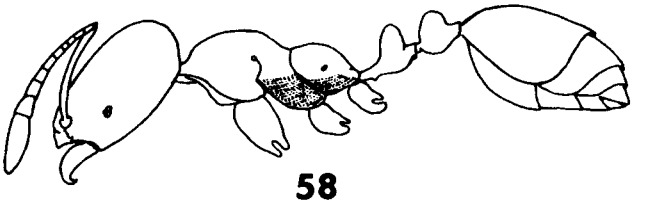

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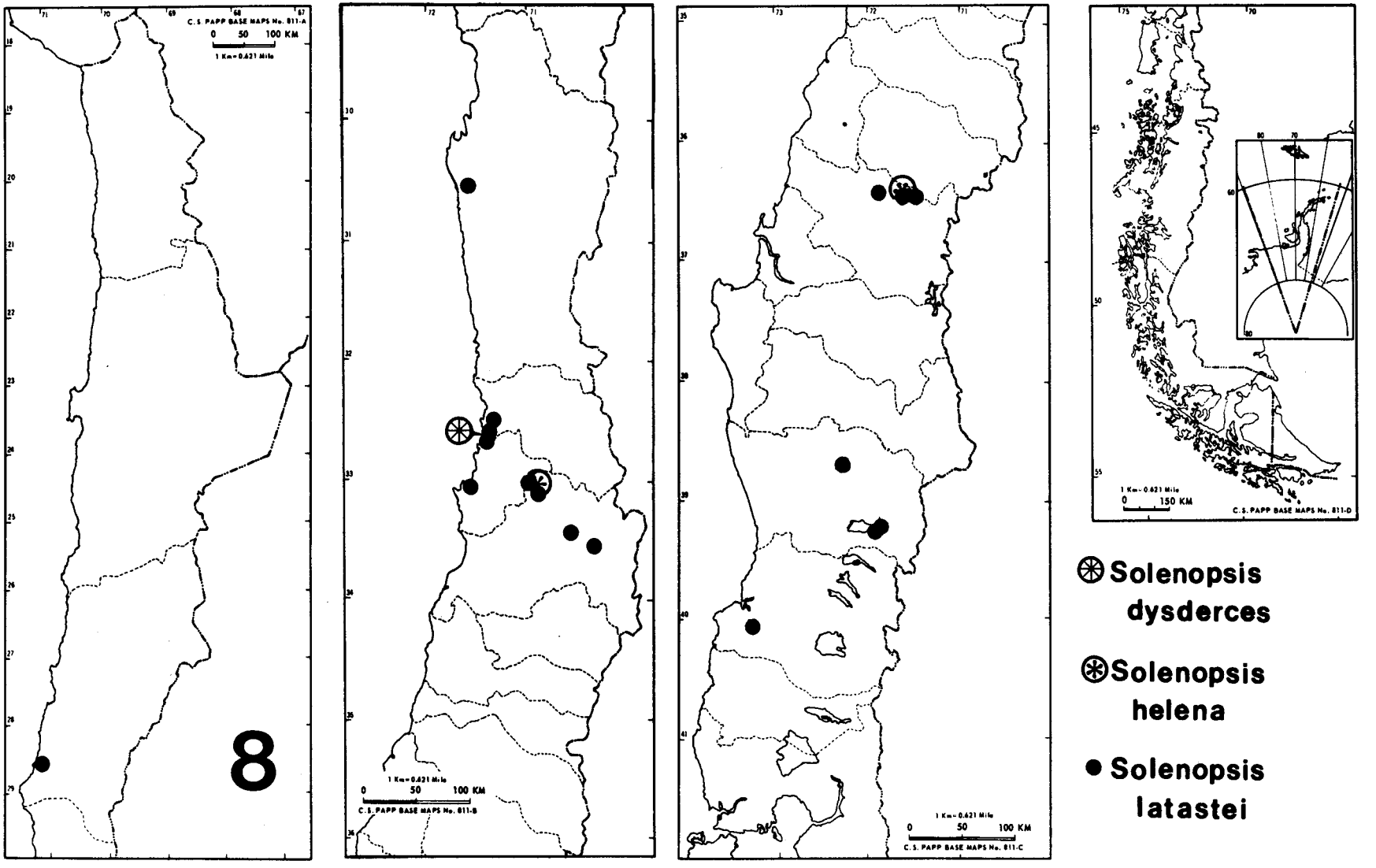
Plate 8. Figs. 52-58. Myrmicinae, *Solenopsis*. 52, *S. germaini*, lateral view of female; 53-58, front view of head and lateral view of workers, respectively, of: 53, 54, *S. germaini;* 55, 56, *S. helena;* 57, 58, *S. latastei.*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C.S. PAPP BASE MAPS No. 811-D
0 50 100 KM
1 Km = 0.621 Mile
0 150 KM
Solenopsis dysderces
Solenopsis helena
Solenopsis latastei

SUBFAMILY DOLICHODERINAE

All the Chilean dolichoderines belong to the tribe Tapinomini as defined by Emery (1912). The generic assignments made at that time do not appear to have always been correct. The New World species placed in *Iridomyrmex* apparently do not belong there, as noted by Brown (1958). This also appears to be true of some of the New World species presently placed in *Tapinoma*. Pending a world-wide review of the tapinomine genera, no changes are suggested here.

KEY TO CHILEAN GENERA OF DOLICHODERINAE BASED ON WORKERS

1. Propodeum, at juncture of basal and posterior faces, more or less produced upward as a conical or triangular tubercle (figs. 67, 69, 71); third segment of maxillary palp at least as long as eye; median setae of apical clypeal margin long, extending at least to apical tooth of closed mandible, flexuous 2
— Propodeum, at juncture of basal and posterior faces rounded in profile (figs. 60, 62); third segment of maxillary palp much shorter than eye; median setae of apical clypeal margin short, stiff, not extending to apical tooth of closed mandible 3
2. Petiole nodiform; fifth segment of maxillary palp preapically attached to fourth; meso- and metanota, viewed in profile, much depressed (figs. 66,67)..... ..... *Dorymyrmex*
— Petiole scaliform; fifth segment of maxillary palp apically attached to fourth; meso- and metanota not depressed ..... *Araucomyrmex*
3. Apex of scape extending beyond occipital margin by no more than its apical breadth; petiolar scale strongly reclinate; margins of head, in frontal view, slightly convergent below (figs. 61, 62) ... "*Tapinoma*"
— Apex of scape extending beyond occipital margin by much more than its apical breadth; petiolar scale fully erect; margins of head, in frontal view, strongly convergent below (Figs. 59, 60) ... "*Iridomyrmex*"

"Iridomyrmex" humilis (Mayr) (Fig. 59-60)

Hipocliniea humilis Mayr, 1868: 164. ♀.

Iridomyrmex humilis Forel, 1901:81; Kempf, 1970:26; Kempf, 1972:124.

Type locality. Buenos Aires, ARGENTINA.

This ant is widely distributed in Chile. The scarcity of earlier records suggest the possibility that it is adventive there.

Localities (Map. 9). CHILE. *Coquimbo:* Parque Nac. Fray Jorge, 16 km SW Pachingo (UCB); Termas Soco (LACM). *Valparaíso:* [Valparaíso?; Forel, 1901]. *Santiago:* quebrada de la Plata Rinconada, 510 m elev. (UCB); La Rinconada, Maipú, (UCB); Santiago (LACM). *Concepción:* isla Quiriquina (UCON); Concepción, (UCON). *Arauco:* Arauco (CAS). *Malleco:* sierra Nahuelbuta, 1000-2000 m elev. (CAS); Parque Nac. Nahuelbuta (CAS). *Cautín:* [Temuco, Dec. 1967 (A. Muenchen); Kempf, 1970]. *Aisén:* 8 km W Chile Chico, 540 m elev. (UCB). *Magallanes:* 4 km W Laguna Amarga (UCB); 11.8 km NW Russfin, 300 m elev. (UCB).

"Iridomyrmex" oblonga Santschi

Iridomyrmex humilis var. *oblonga* Santschi, 1929:306. ♀; Menozzi, 1935:321-334; Kempf, 1970:26; Kempf, 1972:125.

Type locality. Purmamarca, ARGENTINA.

This ant was recorded from Copiapó and Caldera in Prov. Atacama. No specimens have been seen during this study. It is possible that Menozzi's records are based on *humilis*.

"Tapinoma" antarcticum Forel (Fig. 61-64)

Tapinoma antarcticum Forel, 1904:17-18. ♀ ♀; Emery, 1905:177; Goetsch, 1953: 366-367 *(biology);* Menozzi, 1935:321-322, 334; Kempf, 1970:28; Kempf, 1972:247.

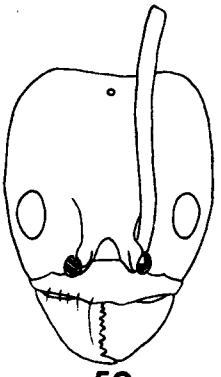
Tapinoma fazi Santschi, 1923a:270-271. ♀ ♂.

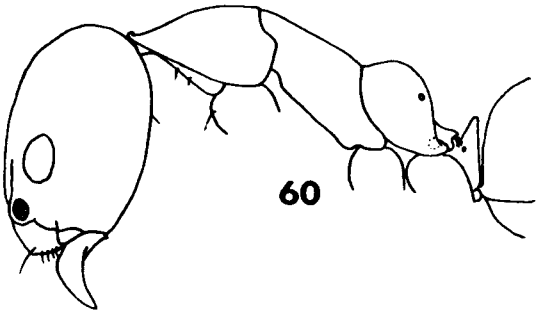
Forelius eidmanni (Menozzi *in litt.*).

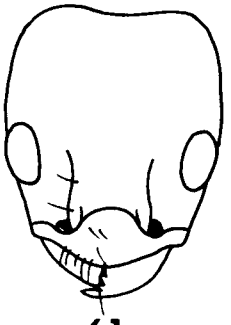
Type locality. *antarcticum:* Valparaíso, CHILE; *fazi:* Valparaíso, CHILE.

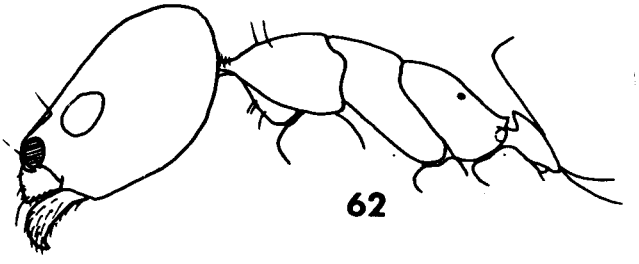
This is a common and widely distributed species which cannot be confused with any other in Chile. The workers forage during the day, often in dense trails.

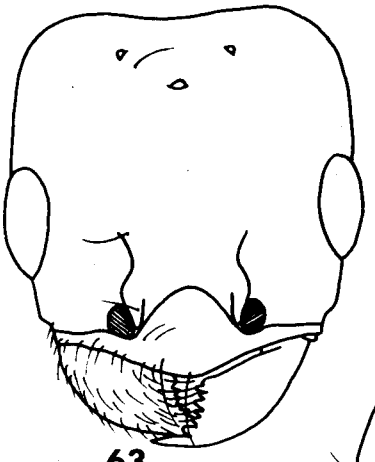
Localities (Map 9). CHILE. *Antofagasta: ca.* 2.5 km N Taltal, *ca.* 10 m elev. (LACM). *Atacama:* [Copiapó; Menozzi, 1935]. *Coquimbo:* [Punta Colorada; Menozzi, 1935]; cuesta Pajonales, 113.6 km N Coquimbo, 1125 m elev. (UCB); 5 mi W La Junta (CAS); cerro Tololo, *ca.* 10 km W, 3 km S Vicuña (LACM); valle El Molle, 10 km N El Tofo (LACM); valle El Molle, E of El Tofo (LACM). *Aconcagua:* [Zapallar; Menozzi, 1935]; same locality (CAS); 90 km S Illapel (CAS); Los Molles (LACM); quebrada El Tigre (UCB); "costa norte" (UCH). *Valparaíso:* Valparaíso (Hoffmann; type series of *antarcticum* Forel, 1904; MHNG, AMNH, MCZ); 5 ♂ 10 mi N Concón (CAS); Quintay, 10 m elev. (UCB); cuesta Pucalán (UCB); Algarrobo (MSTO); [same locality; Menozzi, 1935]. *Santiago:* [Santiago, Maipo, Cerro de la Provincia, Viluco, volcán San José;











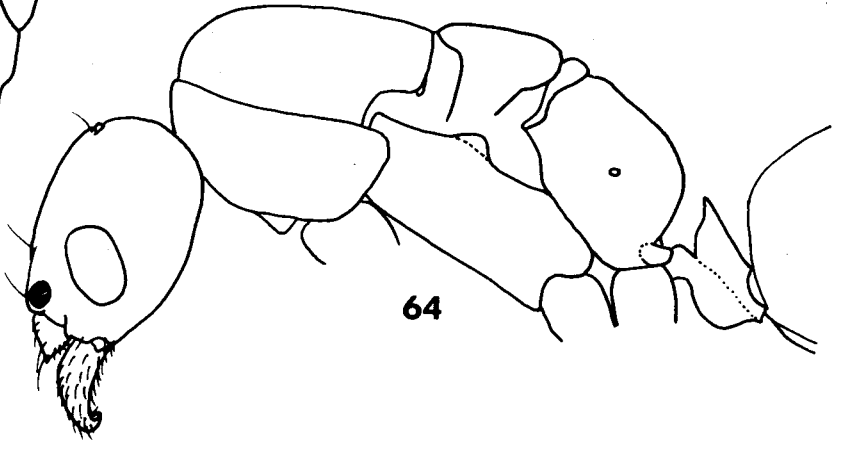
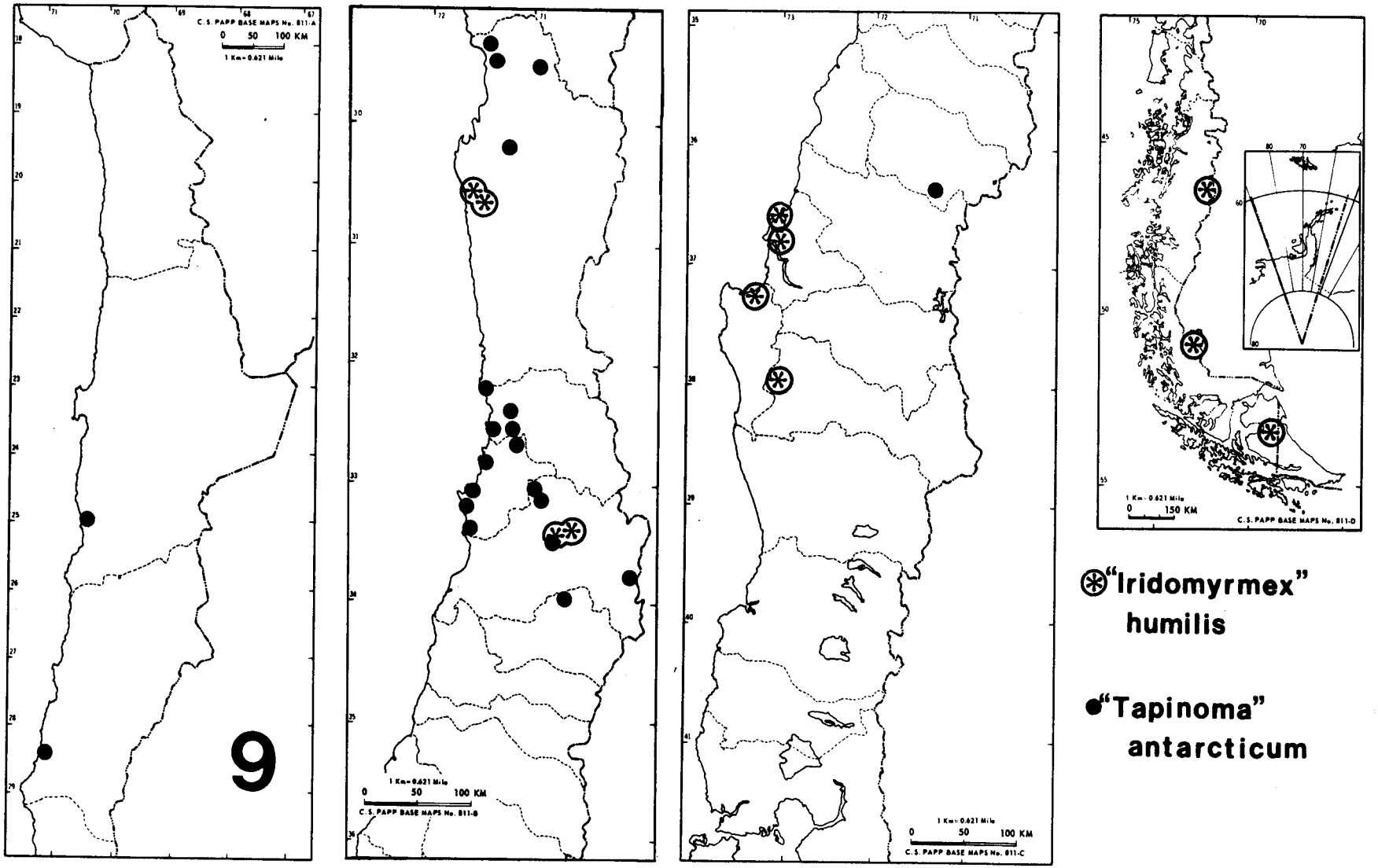


Plate 9. Figs. 59-64. Dolichoderinae. 59, *Iridomyrmex humilis,* worker, head in frontal view; 60, same, lateral view. 61, »*Tapinoma*« *antarcticum,* worker, head in frontal view; 62, same, lateral view; 63, same, female, head in frontal view; 64, same, female, lateral view.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C.S. PAPP BASE MAPS No. 811-D
0 150 KM
⊛"Iridomyrmex" humilis
●"Tapinoma" antarcticum

Menozzi, 1935]; quebrada de la Plata Rinconada, 510 m elev. (UCB); cerro Roble, 2000-2100 m elev. (LACM); La Yesera, 2150 m elev. (MSTO); cuesta La Dormida (LACM). *O'Higgins:* 23 km N Rancagua (CAS). *Maule:* [Constitución; Menozzi, 1935]. *Linares:* Bullileo (UCON).

Dorymyrmex Mayr

Dorymyrmex was established by Mayr (1866). The type species is *flaviceps* Mayr. The genus was subsequently divided into a series of subgenera by subsequent authors: *Ammomyrma* Santschi (1922), *Araucomyrmex* Gallardo (1919), *Biconomyrma* Kusnezov (1952), *Conomyrma* Forel (1913), *Psammomyrma* Forel (1912), and *Spinomyrma* Kusnezov (1952). These have all been regarded as subgenera of *Dorymyrmex* or as genera related to it. Kempf (1972) listed three genera: *Araucomyrmex, Conomyrma* (with its synonym *Biconomyrma*) and *Dorymyrmex* (with subgenera *Ammomyrma, Psammomyrma* and *Spinomyrma* as well as *Dorymyrmex,* s. str.).

The generic distinctness of *Conomyrma* was reaffirmed by Snelling (1974), and the synonymy of *Biconomyrma* was upheld. *Araucomyrmex* was then lumped under *Dorymyrmex*, but we now are certain this is incorrect. *Araucomyrmex* is very similar to *Conomyrma* and readily separable from *Dorymyrmex*. *Dorymyrmex,* as we understand that genus, may be recognized by the nodiform petiole, the preapical attachment of the fifth segment of the maxillary palp to the fourth, and by the thoracic profile of the worker which is deeply impressed at the level of the metathoracic spiracle. By this interpretation, *Dorymyrmex* includes all species listed by Kempf (1972) under *Dorymyrmex,* s. str., and those of the subgenera *Psammomyrma* and *Spinomyrma*. The subgenus *Ammomyrma* is a heterogeneous one, but the type species, *exsanguis* Forel, does not agree with *Dorymyrmex* in these characters, so this must be transferred to the genus *Araucomyrmex*. The Bolivian species, *emmaericaellus* Kusnezov, is a normal *Dorymyrmex,* not an *Ammomyrma*. We have not seen *coniculus* Santschi or *fusculus* Santschi, but by their descriptions judge them to belong in *Ammomyrma* along with *baeri* E. Andre, *exsanguis* and *minutus* Emery, and therefore to be transferred to *Araucomyrmex* (all NEW COMBINATIONS).

The subgenus *Psammomyrma* is based on the single species *planidens* Mayr. *Spinomyrma* includes two species: *alboniger* Forel (type species), *bruchi* Forel and its variety *ebininus* Forel. Both of these subgenera are founded upon very weak characters and are, in our opinion, species groups at best. Both are, therefore, here regarded as synonymous with *Dorymyrmex* (NEW SYNONYMIES).

One species of *Dorymyrmex* is known to occur in Chile.

Dorymyrmex agallardoi Snelling
(Fig. 65-67)

Dorymyrmex planidens, Berg. 1890:24; Emery, 1895b:15-16; Kempf, 1970:27 *(misidentification).*

Dorymyrmex agallardoi Snelling, 1975: 6.♀.

Type locality. El Alfalfal, CHILE.

Berg (1890) misidentified specimens from Chile as *planidens,* and the record has persisted in the literature. We are certain that this record is based on the present species which resembles *planidens*. In *agallardoi,* however, the occiput is closely punctulate, the propodeal spine is elongate, and the side of the propodeum is longitudinally rugulose.

Localities (Map 10). *Aconcagua:* [Santa Rosa de Los Andes; Berg, 1890]. *Santiago:* El Alfalfal, 25 Jan., 1968 (J. Moroni; holotype series; LACM, MSTO); San José de Maipo, 29 Nov., 1969 (L. Alfaro; paratypes; LACM, MSTO).

Araucomyrmex Gallardo

This genus is recognized to include those ants, formerly placed in *Dorymyrmex* which have a scaliform petiole, the metanotum, when viewed in prolife, is not deeply impressed, and the fifth segment of the maxillary palp is attached to the fourth at its apex. The juncture of the basal and posterior faces of the propodeum is usually surmounted by a low tubercule rather than a flattened spine as in *Dorymyrmex*. *Ammomyrma,* usually treated as a subgenus of *Dorymyrmex,* belongs here. Several Chilean species are intermediate between *Araucomyrmex,* s. str., and *Ammomyrma,* and we consider the latter a junior synonym of *Araucomyrmex* (NEW SYNONYMY).

Araucomyrmex is one of the dominant ant genera in Chile, with ten species present. In the key which follows, the sixth couplet may present some difficulties. The two small dark

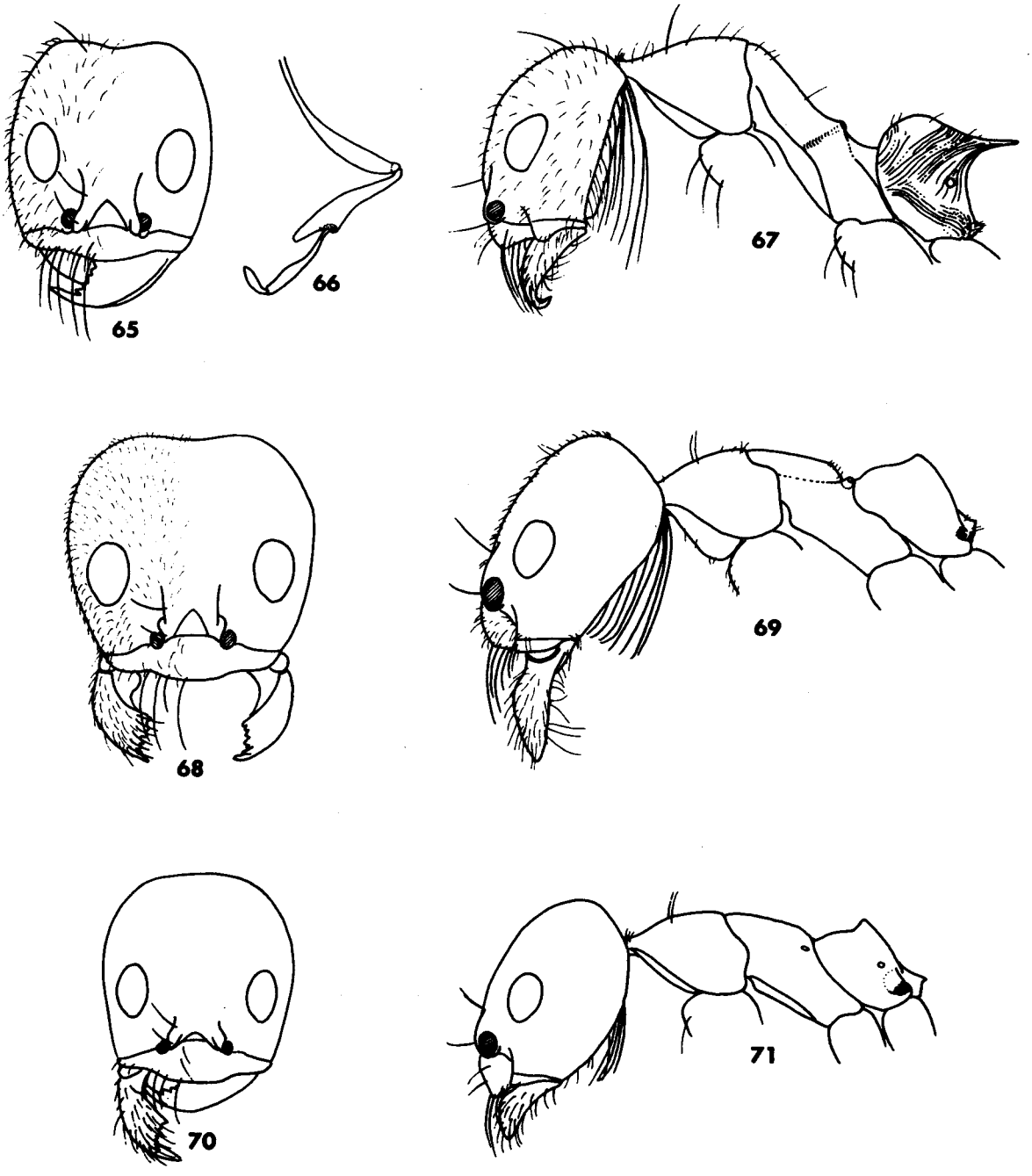
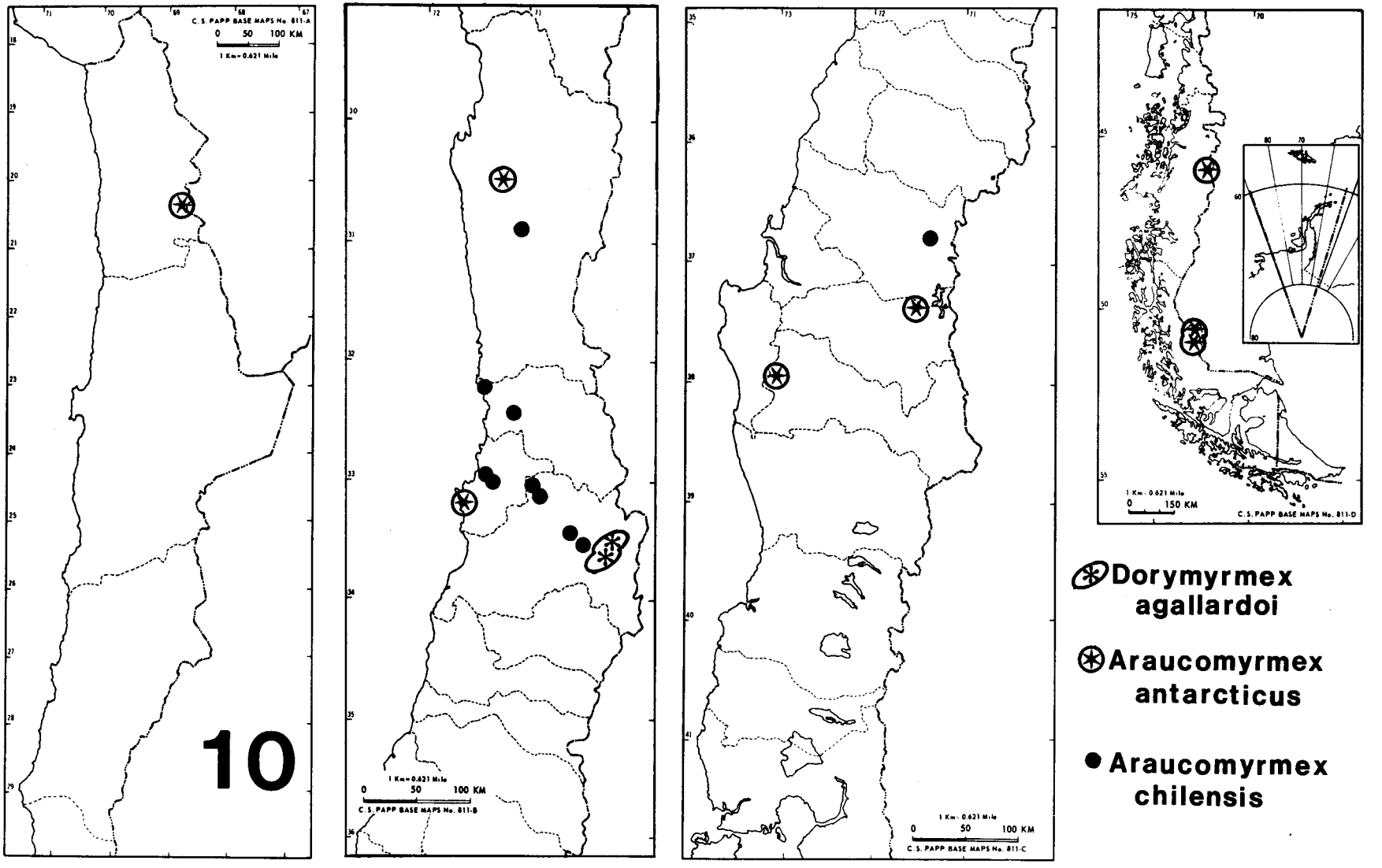


Plate 10. Figs. 65-71. Dolichoderinae. 65-67, *Dorymyrmex agallardoi,* worker; 65, head in frontal view; 66, apical segments of maxillary palp; 67, head and thorax in lateral view. 68-69, *Araucomyrmex antarcticus,* worker, head in frontal view and head and thorax in lateral view. 70-71, *A. chilensis,* worker, head in frontal view and head and thorax in lateral view.

species which should go to the seventh have a characteristic frontal sculpture. The frons and frontal lobes are distinctly shiny. These areas are lightly shagreened; punctures are small, obscure and irregularly spaced. The vertex and occiput, in contrast, are conspicuously duller, mainly due to the much denser and sharper punctation. The transition from the shiny frontal area to the dull vertex is abrupt and very distinctive. The frontal area of those species which go to the eighth couplet is very differently sculptured. In these species, the


10
Dorymyrmex agallardoi
Araucomyrmex antarcticus
Araucomyrmex chilensis

entire frontal area is dull or moderately shiny. The punctures are fine, usually sharp, and close. The vertex and occiput are a little duller and more closely punctate, but there is no abrupt transition from the frontal area to the vertex.

KEY TO CHILEAN SPECIES OF **ARAUCOMYRMEX**
Workers

1. Uppermost setae of psammophore arising from a point above lower margin of occipital foramen ... 2
— Uppermost setae of psammophore arising at or, usually, below level of occipital foramen 6
2. Frons and pronotum each with at least a single pair of long, erect setae; dorsal face of first tergum with scattered erect setae; HW at least 0.8 mm, usually much more 3
— Frons and pronotum without erect setae (fig. 81); dorsal face of first tergum without erect setae, even along posterior margin; HW no more than 0.7 mm, usually less ..... *minutus* Emery
3. Front of head with a single pair of setae on upper frons, or none, often with some subdecumbent pubescence; first tergum with transverse, preapical, asetose zone; lower margin of fore femur without erect setae beyond midpoint 4
— Front of head with setae of various lengths scattered over entire upper half; erect setae of first tergum uniformly scattered over entire dorsal surface; lower margin of fore femur with erect setae present beyond midpoint 5
4. Longest setae on pronotal disc about equal to MOD; frontal seta pair present or not; brownish, lower portion of head yellowish; head broader ..... *antarcticus* (Forel)
— Longest setae on pronotal disc about 0.5 × MOD; frontal seta pair consistently absent; at least head conspicuously reddish, often much of thorax also reddish ..... *pogonius* Snelling
5. Propodeal tubercule conspicuous, sharply elevated (fig. 83); margins of head, in frontal view, with numerous short, suberect to erect setae; scape with abundant suberect to erect fine setae; mostly blackish, lower half of head ferruginous .... *pappodes* Snelling
— Propodeal tubercule low, obtuse (fig. 91); margins of head, in frontal view, often with few or no suberect to erect setae, but some pubescence may be suberect; scape with scattered suberect setae; head and thorax ferruginous, appendages and gaster dark brownish ..... *tener* Mayr
6. Frons and frontal lobe shiny, indistinctly shagreened and with scattered, obscure micropunctures, vertex and occiput conspicuously duller, more sharply shagreened and with dense, distinct micropunctures; frontal seta pair absent; small, dark species ... 7
— Frons and frontal lobe slightly to moderately shiny, distinctly shagreened and closely micropunctate, punctures becoming progressively denser toward occiput where they are quite close; frontal seta pair usually present; distinctly bicolored, with head at least, mostly ferruginous, thorax usually ferruginous in part if not entirely 8
7. Basal face of propodeum, in profile, distinctly impressed in front of low, obtuse tubercule (fig. 79); CI more than 80; head extensively ferruginous ..... *incomptus* Snelling
— Basal face of propodeum, in profile, not impressed in front of high, acute tubercule (fig. 75); CI 77-84; head blackish, mandible, lower malar area and lower part of clypeus sometimes dull ferruginous ..... *hunti* Snelling
8. Mesonotum, in profile, either not angulate (fig. 77) or angulate at basal one-fourth (fig. 73); head ferruginous, thorax variable; first tergum conspicuously pubescent laterad 9
— Mesonotum, in profile, slightly but definitely angulate at posterior one-fourth (fig. 71); head and thorax usually ferruginous, but thorax may be extensively brownish; first tergum very sparsely pubescent laterad ..... *chilensis* Forel)
9. Thorax wholly ferruginous; mesonotum, in profile, evenly sloping; first tergum about as densely pubescent at side as in middle ..... *hypocritus* Snelling
— Thorax largely blackish, pronotum often partially or entirely ferruginous; mesonotum, in profile, usually angulate at basal one-fourth; pubescence of first tergum much sparser at side than in middle ..... *goetschi* (Menozzi)

Araucomyrmex antarcticus (Forel)
(Fig. 68-69)

Dorymyrmex antarcticus Forel, 1904b:6-7. ♀ ♀.

Dorymyrmex (Araucomyrmex) tener richteri, Menozzi, 1935:323-334.

Araucomyrmex antarcticus, Kusnezov, 1959: 369-370, fig. 5; Kempf, 1970:26; Kempf, 1972: 25 *(in part).*

Type locality: Punta Dungeness, ARGENTINA.

Three Argentinian forms have been listed as synonyms of *antarcticus: richteri* (Forel), *depilitibia* (Forel), and *pallidipes* (Brethés). We have seen types of *richteri* and consider this a good species; *depilitibia* may also prove to be good.

Localities (Map 10). CHILE. Tarapacá: laguna de Huasco, 60.2 km E Pica, 3670 m elev. (UCB). *Coquimbo:* 5 mi SW Ovalle (CAS). *Valparaíso:* Quintay (UCH). *Santiago:* [Santiago; Menozzi, 1935]; *Maule:* [Constitución; Menozzi, 1935]. *Biobío:* El Abanico (CAS). *Arauco:* San Alfonso, cord. Nahuelbuta (UCH). *Malleco:* sierra de Nahuelbuta, 1200 m elev. (CAS). *Aisén:* Balmaceda (UCON). *Magallanes:* [Punta Arenas, El Chingüe, Río de las Chinas, Ultima Esperanza; Kusnezov, 1959]; 4 km W Laguna Amarga (UCB); 47.5 km N Puerto Natales, 230 m elev. (UCB); Barranca Negra (UCON).

Araucomyrmex chilensis (Forel)
(Fig. 70-71)

Dorymyrmex tener var. *chilensis* Forel, 1911: 307. ♀ ♀ ; Forel, 1912:38.

Araucomyrmex tener var. *chilensis,* Kempf, 1970:27; Kempf, 1972:25. .

Type locality. Valparaíso, CHILE.

There can be no doubt that this is distinct from *tener,* as evidenced by size, cephalic sculpture, and position of the uppermost setae of the psammophore. This ant has previously been known only from the types; two females and nine workers of the original series were examined.

Localities (Map 10). CHILE. *Coquimbo:* 35 mi S Ovalle (CAS). *Aconcagua:* Los Molles (LACM); 90 km S Illapel (CAS). *Valparaíso:* Valparaíso (types of *chilensis;* MHNG); Marga-Marga Valley (MCZ); 20 km N Concón (CAS). *Santiago:* cuesta La Dormida (LACM, UCB); Santiago (MSTO): El Canelo (UCB); *Ñuble:* Las Trancas rd., near Termas de Chillán, 1270 m elev. (CB).

Araucomyrmex goetschi (Menozzi) (Fig. 72-73)

Dorymyrmex (Araucomyrmex) tener ssp. *goetschi* Menozzi, 1935; 322, 334. ♀ .

Dorymyrmex goetschi, Goetsch, 1932:2-6 *(biology);* Goetsch, 1933:365-366 *(biology);* Goetsch, 1935:238-242 *(biology).*

Araucomyrmex tener, Kusnezov, 1959; 370; Kempf, 1970:27 *(in part);* Kempf, 1972: 25 *(in part).*

Type locality. Punta Colorado, CHILE (restricted by Kusnezov, 1959).

Although no types of *goetschi* have been examined, the identity seems to be clear. Clues in the original description and in the comments and figures of Goetsch (1935) support the present interpretation. The behavior and biology have been reported by Goetsch (1932, 1933, 1935).

Localities (Map 11). CHILE. *Antofagasta:* Tal-Tal, Playa Ramada (UCON). Atacama: 25 km S Vallenar (LACM, MSTO); [Copiapó; Goetsch, 1932]; 20 km S Vallenar (UCB); *ca.* 45 km S Copiapó (LACM); 40-60 km S Copiapó (UCH); 50-60 km S Copiapó, 500-600 m elev. (UCB); 51.2 km S Copiapó (UCB); [Caldera; Menozzi, 1935]; SE of Caldera (UCH); 30 km S Caldera (UCB); Freirina (UCH). *Coquimbo:* [Punta Colorada; types of *goetschi* Menozzi, 1935]; [Tres Cruces; Goetsch, 1932]; [río Elqui; Menozzi, 1935]; El Tofo (MCZ); valle El Molle, 10 km N El Tofo (LACM): 10 mi W Vicuña (CAS); cerro Tololo, *ca.* 10 km W, 3 km S Vicuña (LACM); cerro Potrerillos, *ca.* 30 km S Coquimbo (LACM); 10 km N Incahuasi (LACM); 25 mi E La Serena (CAS); 50 km S La Serena (CAS); 5 mi N Laguna Dam, 8000 ft. elev. (CAS); 4 mi N Illapel (CAS); 5 mi W La Junta (CAS); 3 mi N Los Vilos (CAS); Bosque Fray Jorge (CAS); cuesta Pajonales, 113.6 km N Coquimbo (UCB); Puerto Oscuro (UCB). *Aconcagua* [Zapallar; Menozzi, 1935]; 3 km N Zapallar (LACM). *Santiago:* El Volcán, Cajón del Maipo (MSTO). *Talca:* Alto Vilche (UCH). *Ñuble:* Las Trancas rd., near Termas de Chillán, 1270-1350 m elev. (UCB). *Cautín:* volcán Villarrica, 1230 m elev. (UCON).

Araucomyrmex hunti Snelling (Fig. 74-75)

Araucomyrmex hunti Snelling, 1975: 10. ♀ .

Type locality. 2 km E Paposo, CHILE.

This small shiny black ant is one of the more distinct Chilean species of *Araucomyrmex.* The frontal area is shiny and sparsely punctate in contrast to the dull, closely punctate vertex and occiput. It is known only from northern Chile.

Localities (Map 11). CHILE. *Antofagasta:* 2 km E Paposo, 300 m elev., 16 Nov. 1972 (J. H. Hunt, # 994; type series; LACM); 25 km N Taltal, 10 m elev. (LACM). *Coquimbo:* Vicuña (UCH).

Araucomyrmex hypocritus Snelling (Fig. 76-77)

Araucomyrmex hypocritus Snelling, 1975: 12. ♀ .

Type locality. Cuesta La Dormida, CHILE.

Because the head and thorax are dull ferruginous, *hypocritus* closely resembles *tener.* It differs inmediately from that species in the placement of the setae of the psammophore, the basalmost of which lie below the level of the occipital foramen. The dull, closely punctate frontal area and unbroken mesonotal profile will separate *hypocritus* from those species with similar psammophores.

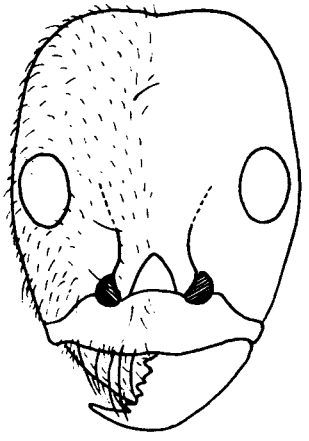
Locality (Map 11). CHILE. *Santiago:* Fundo Santa Laura, cuesta La Dormida, 20 Oct. 1971 (J. H. Hunt, # 453; LACM).

Araucomyrmex incomptus Snelling (Fig. 78-79)

Araucomyrmex incomtus Snelling, 1975: 13. ♀ .

Type locality. Cerro Tololo, CHILE.

This species resembles *hunti* in its small size and shiny black appearance. It differs by the low, obtuse propodeal tubercule and broader head. The lower half of the head is mostly reddish.



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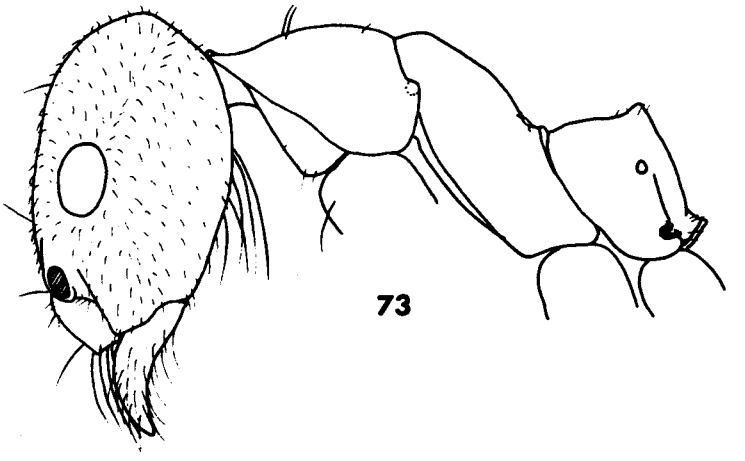

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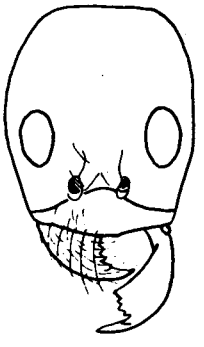

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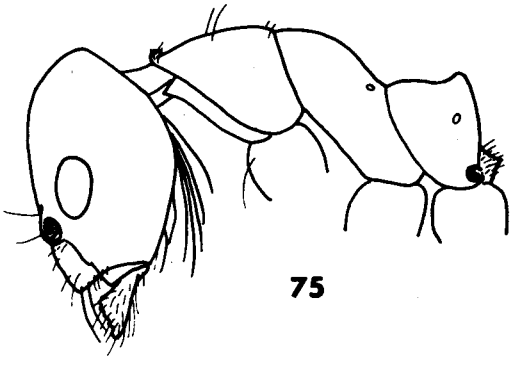

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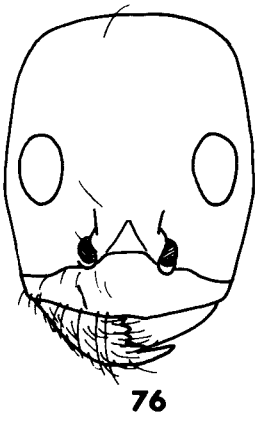

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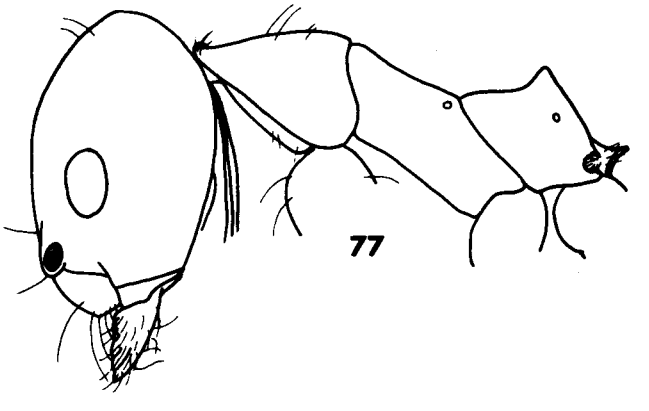

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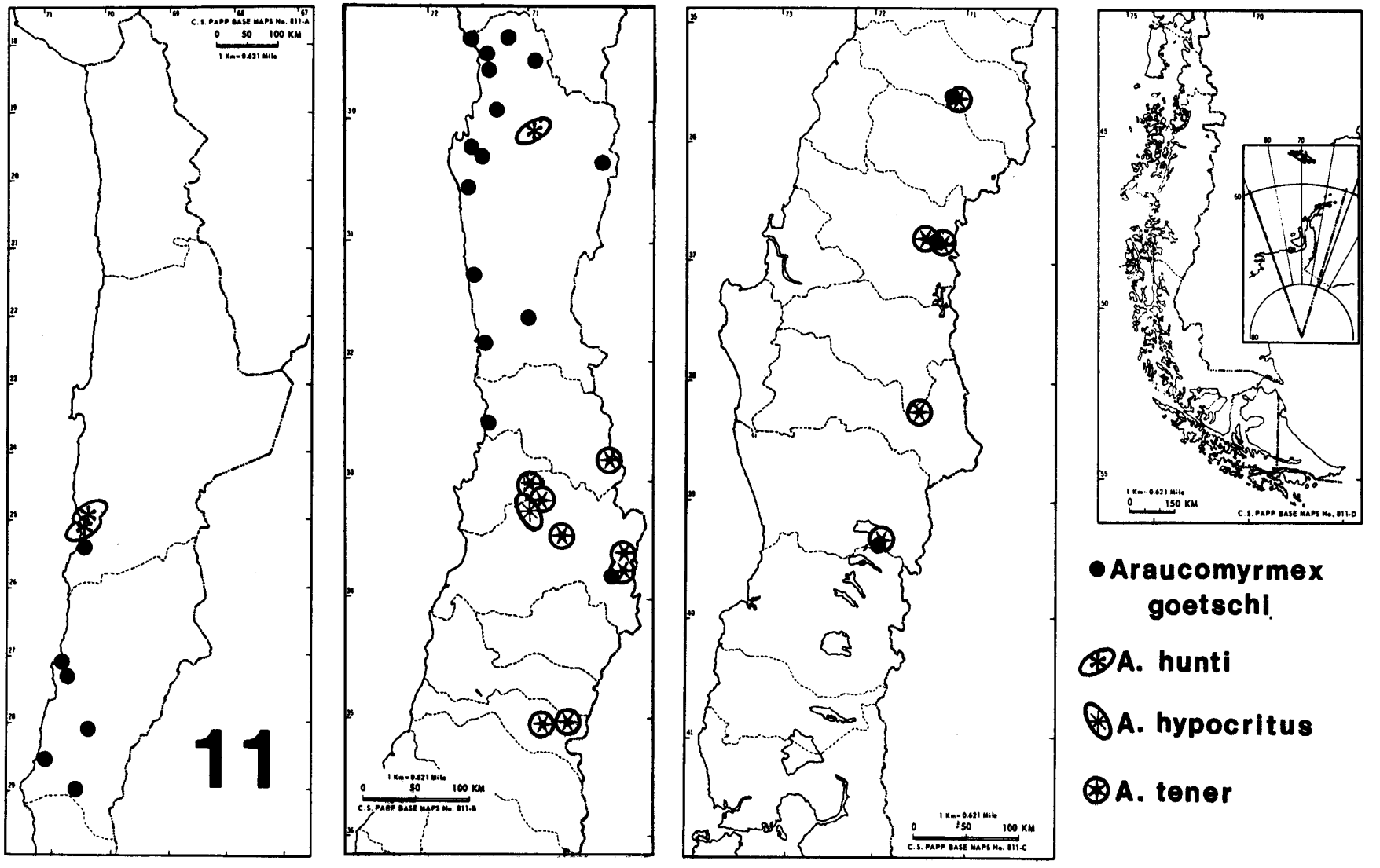
Plate 11. Figs. 72-77. Dolichoderinae, *Araucomyrmex* workers, head in frontal view and head and thorax in lateral view, respectively, of: 72, 73, *A. goetschi;* 74, 75, *A. hunti;* 76, 77, *A. hypocritus.*


11
● Araucomyrmex goetschi
A. hunti
A. hypocritus
A. tener

Locality (Map 12). CHILE. *Coquimbo:* cerro Tololo, 16 Oct. 1972 (J. H. Hunt, # 439; LACM).

Araucomyrmex minutus (Emery) (Fig. 80-81)

Dorymyrmex minutus Emery, 1895:15, fig. 4. ♀.

Dorymyrmex (Ammomyrma) minutus, Kusnezov, 1952:429; Kempf, 1977a:448; Kempf, 1972b:100.

Type locality. Cordillera de Chillán, CHILE.

The high placement of the psammophore, small size, and reduction of erect hairs make this an easily recognized species. This species appears to be uncommon.

Localities (Map 12). CHILE. *Santiago:* Cerro Roble, near Caleo, *ca.* 1600 m elev. (LACM); San Juan Maipo (LACM). *Ñuble:* [Cordillera de Chillán; type series, Emery, 1895]; 40 km E San Carlos (CAS).

Araucomyrmex pappodes Snelling (Fig. 82-83)

Araucomyrmex pappodes Snelling, 1975: 14. ♀.

Type locality. Maitencillo, CHILE.

This dark brownish species is one of the larger *Araucomyrmex* in Chile. It is superficially similar to *richteri* Forel of Argentina but is more pubescent. Fine pubescence is abundant on the head and thorax of *pappodes,* much of it subappressed to subdecumbent, and erect setae are numerous.

Localities (Map 12). CHILE. *Valparaíso:* Maitencillo, 30 m elev. (type series; LACM); 6 km SE Quintero (UCB). Biobío: 5 km W Tucapel (CAS); El Abanico (CAS).

Araucomyrmex pogonius Snelling (Fig. 84-89)

Araucomyrmex pogonius Snelling, 1975: 15. ♀.

Type locality. Termas de Chillán, CHILE.

This most nearly resembles *antarcticus* and may ultimately prove synonymous with it. At present *pogonius* is known only from a single series. All specimens in the series differ consistently from available material of *antarcticus* in lacking the seta pair on the upper frons, and the setae on the pronotal disc are much shorter. The male of *pogonius* is smaller than that of *antarcticus* and has a narrower head.

Locality (Map 12). CHILE. *Ñuble:* Termas de Chillán, 20 Sept. 1969 (T. Cekalovic; LACM, UCON).

Araucomyrmex tener (Mayr) (Fig. 90-91)

Dorymyrmex tener Mayr, 1868:166. ♀; Emery, 1895b:15; Emery 1905:175; Forel, 1907:8; Goetsch, 1932:3.

Dorymyrmex (Araucomyrmex) tener, Gallardo, 1919b:250; Menozzi, 1935:322, 334; Kusnevov, 1952:429.

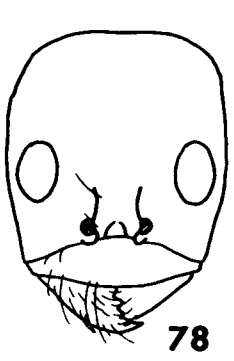
Araucomyrmex tener, Kusnevov, 1959:370-372, fig. 6 *(in part);* Kempf, 1970:26-27 *(in part);* Kempf, 1972:25 *(in part).*

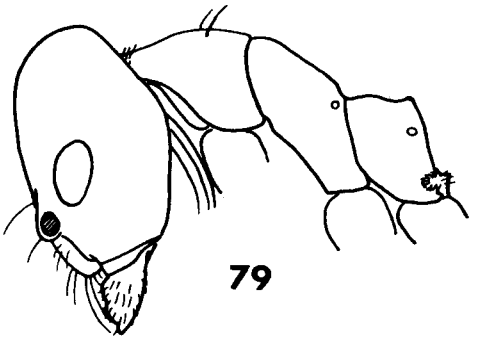
Type locality. Uspallata, ARGENTINA.

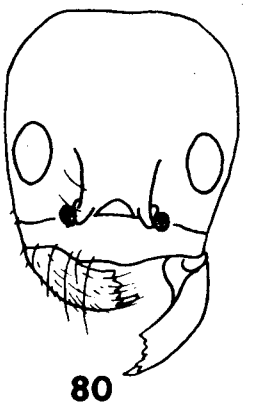
This is one of the more common species of *Araucomyrmex* in Chile. It has been confused with other species, such as *goetschi* and *chilensis,* and some of the records in the literature may be based on these species. Especially questionable are records below 1000 m elev.

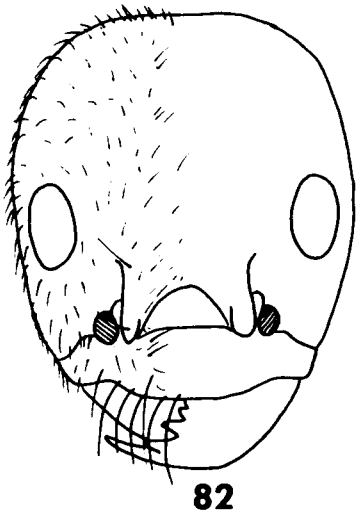
The propodeal tubercule is low and obtuse in *tener;* there are numerous short, erect setae on the front of the head; the fore femur has numerous erect hairs; and basalmost setae of the psammorphore are placed above the lower margin of the occipital foramen. The head and thorax are dull red.

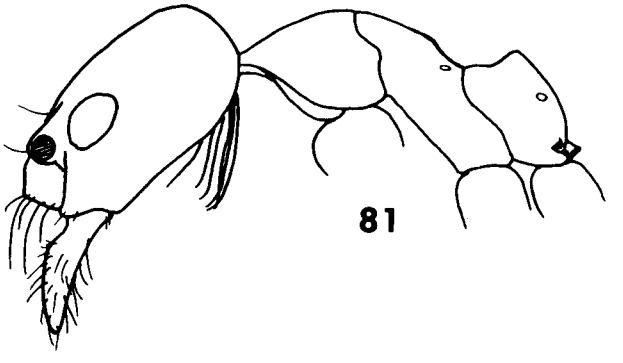
Localities (Map 11). CHILE. *Atacama:* [20 km N Copiapó. Aug. 1965 (R. M. González; MSTO); Kempf, 1970]. *Aconcagua:* [Juncal; Emery, 1905]; [Santa Rosa de Los Andes; Mayr, 1868]; [Zapallar; Goetsch, 1932; Portillo, 10,000 ft. elev. (CAS); Puente de Inca, 11,000 ft. elev. (MCZ). *Valparaíso:* [Valparaíso; Emery, 1895b]. *Santiago:* [Santiago; Peñaflor; Emery, 1895b]; [Cartagena; cerro Ramón; cerro San Cristóbal; Valle del Volcán; Goetsch, 1932]; [cerro del Morado; Menozzi, 1935]; cerro Roble, 1600-2100 m elev. (LACM); El Romeral, 2000 m elev. (MSTO); La Yesera (MSTO); Cajón del Yeso (MSTO); El Manzano, 2500 m elev. (MSTO). *Curicó:* cajón del Río Claro, SE of Los Queñes, 1000 m elev. (UCB). *Talca:* Vilches (LACM). *Maule:* [Constitución; Goetsch, 1932]. *Ñuble:* [cordillera de Chillán; Emery, 1895b] Pirigallo, Termas de Chillán, 2200 m elev. (MSTO); Ref. Las Cabras (MSTO); río Ñuble (UCON); Termas de Chillán, 1250 m elev. (UBC). *Biobío:* río Vergara, 2300 m elev. (MSTO). *Malleco:* Lonquimay, 1600 m elev. (UCH). *Cautín:* volcán Villarrica, 1230 m elev. (UCON). *Valdivia:* [volcán Villarrica; Goetsch, 1932].











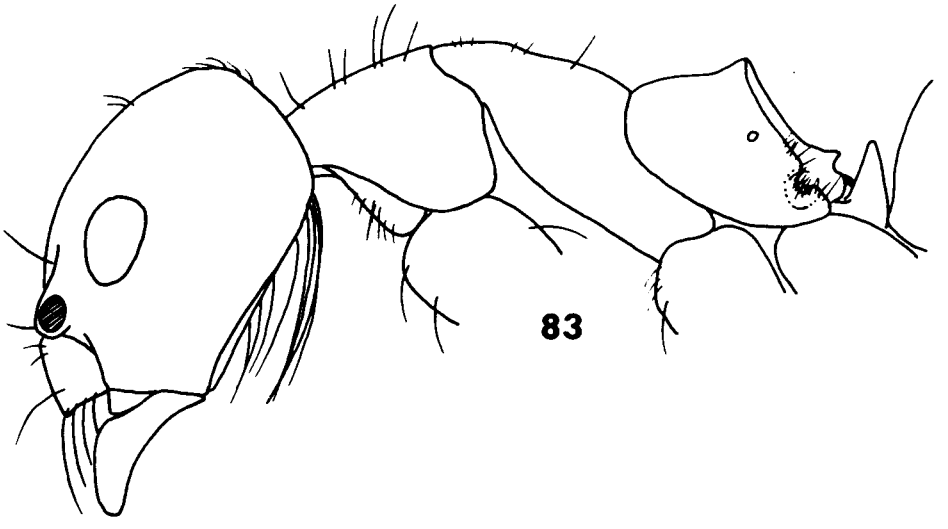


Plate 12. Figs. 78-83. Dolichoderinae, *Araucomyrmex* workers, head in frontal view and head and thorax in lateral view, respectively, of: 78, 79, *A. incomptus;* 80, 81, *A. minutus;* 82, 83, *A. pappodes.*

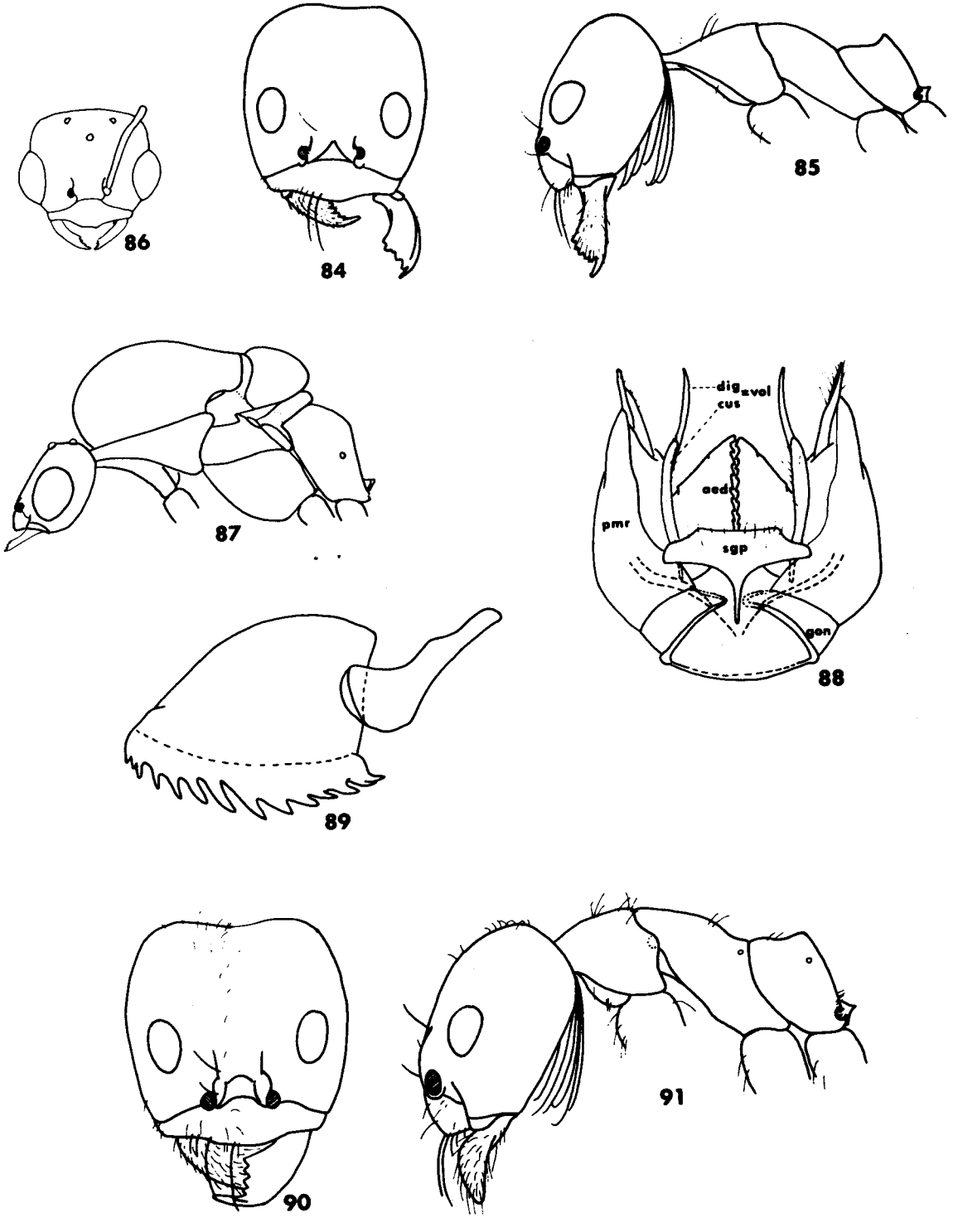
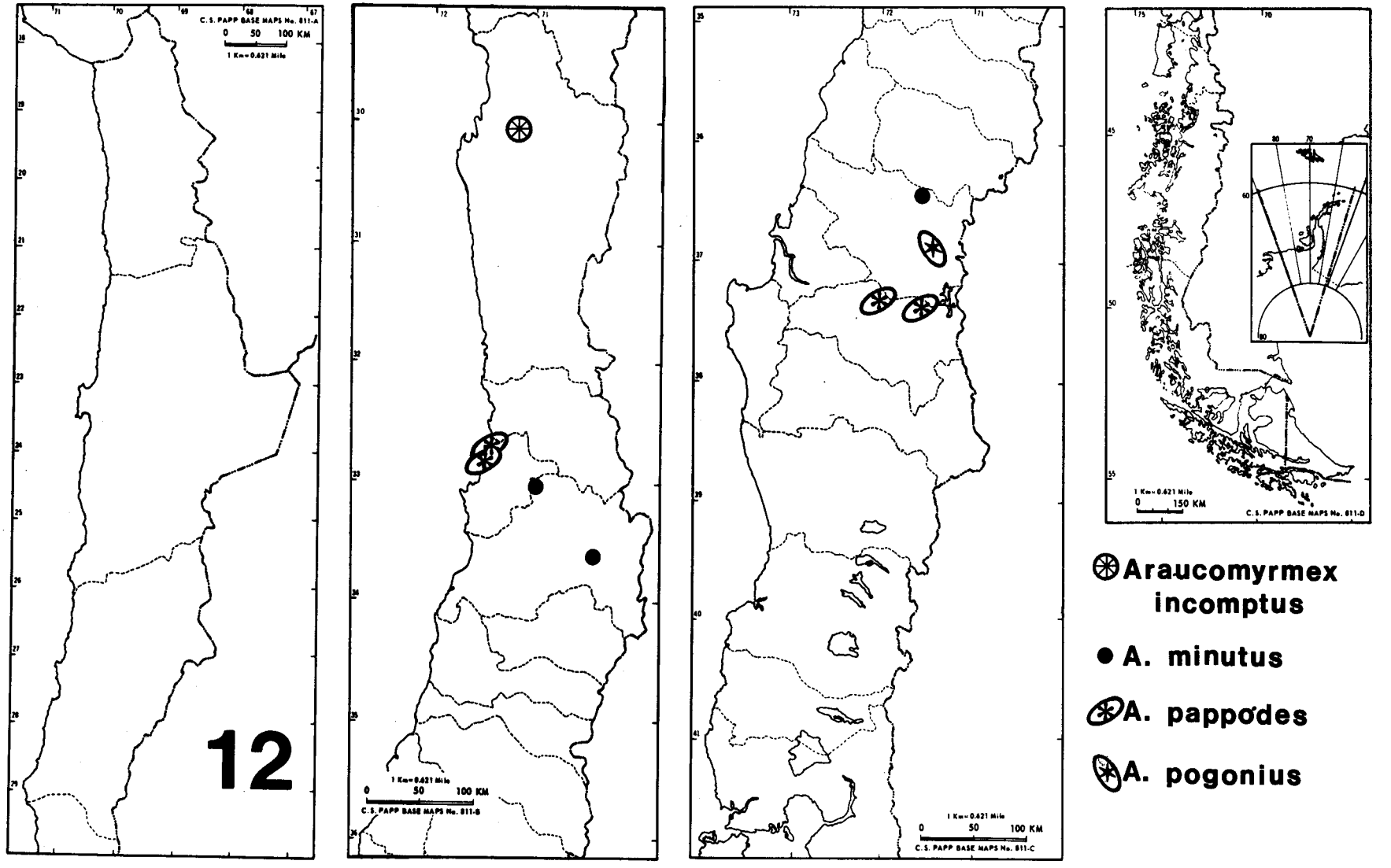


Plate 13. Figs. 84-91. Dolichoderinae, *Araucomyrmex*. 84, 85, *A. pogonius*, worker, head in frontal view and head and thorax in lateral view, respectively; 86-89, same, male, head in frontal view, head and thorax in lateral view, genital capsule in ventral view and aedeagus in lateral view. 90, 91, *A. tener*, worker, head in frontal view and head and thorax in lateral view, respectively. Abbreviations for 88: *aed* = aedeagus; *cus* = cupis; *dig* = digitus; *gon* = gonobase; *pmr* = paramere; *sgp* = subgenital plate (sternum 7); *vol* = volsella.


12
C. S. PAPP BASE MAPS No. 811-A
0 50 100 KM
1 Km = 0.621 Mile
C. S. PAPP BASE MAPS No. 811-B
C. S. PAPP BASE MAPS No. 811-C
C. S. PAPP BASE MAPS No. 811-D
0 150 KM
Araucomyrmex incomptus
A. minutus
A. pappodes
A. pogonius

SUBFAMALY FORMICINAE

Six genera of this subfamily occur in Chile, two of them introduced. Representatives of the genera *Lasiophanes* and *Camponotus* are among the most commonly encountered ants in this region. The species of *Camponotus* are the largest ants in Chile and probably the most conspicuous.

KEY TO CHILEAN GENERA OF FORMICINAE BASED ON WORKERS

1. Antenna nine or ten-segmented 2
   — Antenna eleven or twelve-segmented 3
2. Antenna nine-segmented; apical margin of mandible with four or five teeth; posterior face of propodeum oblique, much larger than basal face ..... *Brachymyrmex*
   — Antenna ten-segmented; apical margin of mandible with about eight teeth; posterior face of propodeum more or less vertical, little, if any, longer than basal face ..... *Myrmelachista*
3. Antenna twelve-segmented; scape usually much shorter than length of thorax 4
   — Antenna eleven-segmented; scape unusually elongate, longer than length of thorax ..... *Anoplolepis*
4. Clypeal and antennal fossae not confluent; lower rim of antennal socket distinctly separated from clypeal margin; metanotum not depressed 5
   — Clypeal and antennal fossae confluent; lower rim of antennal socket nearly touching clypeal margin; metanotum depressed ..... *Lasiophanes*
5. Large polymorphic ants, HW 1.0 mm or more; integument of head and thorar dull to slightly shiny; without unusually coarse erect setae ..... *Camponotus*
   — Small, monomorphic ants, HW less than 0.55 mm; integument of head and thorax smooth and shiny; with numerous unusually coarse setae on dorsa of head, thorax and gaster ..... *Paratrechina*

Lasiophanes

Lasiophanes is a small, primarily Patagonian, genus. It is apparently most closely related to the Australian genus *Melophorus,* of which it was long considered a subgenus. The taxonomy of *Lasiophanes* is poorly understood, and the group is in need of modern revision. There are currently 17 names applied to forms in this genus; Kempf (1972) lists most of these as synonyms of two species, *nigriventris* and *picinus*. Only three other species were believed to be valid. Most of the presumed synonymous forms have never been critically studied, however, and so their status is truly questionable.

KEY TO SPECIES OF LASIOPHANES

WORKERS AND FEMALES

1. Median lobe of clypeus neither angulate nor subcarinate in lower third, either flat or evenly rounded; apical margin of clypeus concave in middle in frontal view (figs. 94, 95) 2
   — Median lobe of clypeus sharply angulate or subcarinate in lower third or more, ending in a sharp point above apical margin (figs. 92, 96, 97) 3
2. Entire head shagreened, moderately shiny, shagreening weakest on frons; lower third of median clypeal lobe gently convex, median lobe without subbasal carina; eyes without conspicuous erect hairs (fig. 94) ..... *nigriventris* (Spinola)
   — Entire head smooth and polished; lower third of median clypeal lobe flat, median lobe with a low subbasal carina; eyes with numerous erect hairs (fig. 95) ..... *perpleuxus* (Santschi)
3. Front of head and thoracic dorsum with a few widely scattered erect hairs, usually one on pronotum; scape and tibiae without erect hairs 4
   — Front of head, thoracic dorsum and appendages with numerous erect hairs of variable length ..... *valdiviensis* (Forel)
4. Head, thorax and appendages reddish, gaster blackish; front of head with abundant, fine, piligerous punctures; propodeum transversely depressed in front so segment appears somewhat convex in profile (fig. 93) ..... *hoffmanni* (Forel)
   — Head and thorax distinctly brownish, gaster light to dark brownish; front of head with fine piligerous punctures separated by six diameters or more; propodeum not transversely impressed in front, appearing flat in profile ..... *picinus* (Roger)

Lasiophanes hoffmanni (Forel)

(Fig. 92-93)

Melophorus hoffmanni Forel, 1903:266. ♀; Forel, 1907:9.

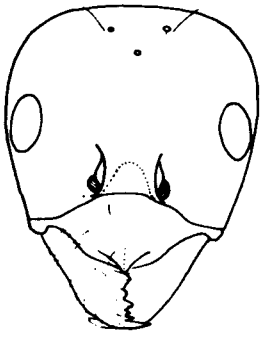
Melophorus (Lasiophanes) hoffmanni, Emery, 1905:185; Emery, 1922:90, 92; Menozzi, 1935:324.

Lasiophanes hoffmanni, Kempf, 1970:28; Kempf, 1972:129.

Type locality. Valparaíso, CHILE.

This is a poorly known species which seems to be most closely related to *picinus*. The distinctly reddish head, thorax and appendages, together with the characteristic propodeal profile, will separate *hoffmanni.*

Localities (Map 13). CHILE. *Aconcagua:* Zapallar (CAS). *Valparaíso*: Valparaíso (type series; MHNG); Los Perales, Río Marga-Marga, 330 m elev. (UCB). *Santiago:* cuesta La Dormida (LACM). *Ñuble*: 50 km E San Carlos (CAS). *Concepción*: Laguna Verde (UCON); Ramuntcho (UCON); [Concepción; Forel, 1907]. *Malleco*: Chiquoihue Hills, near Collipulli (MCZ). *Cautín*: Temuco (MCZ);



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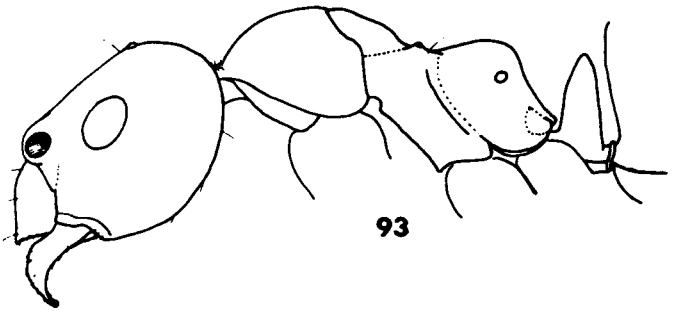

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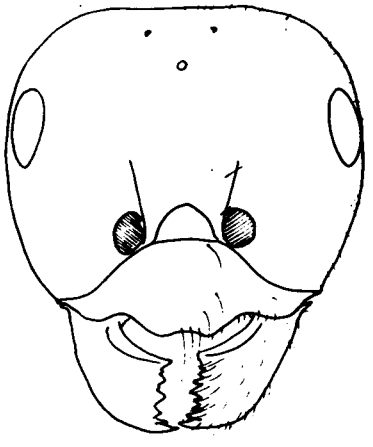

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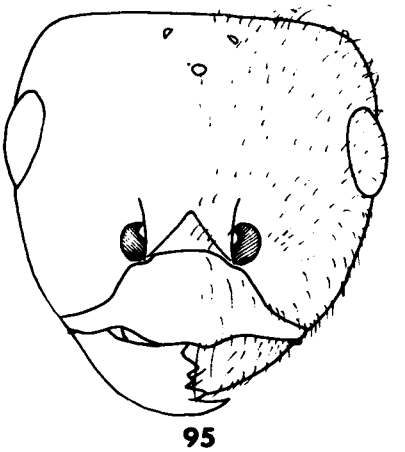

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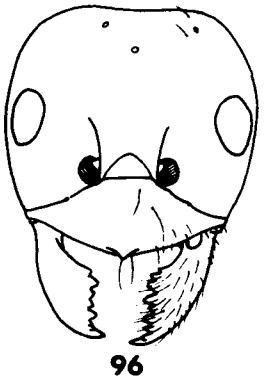

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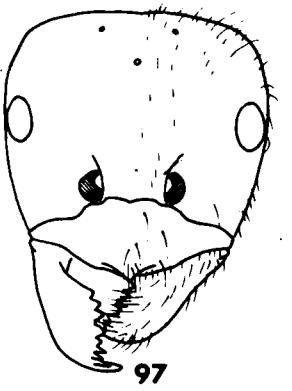

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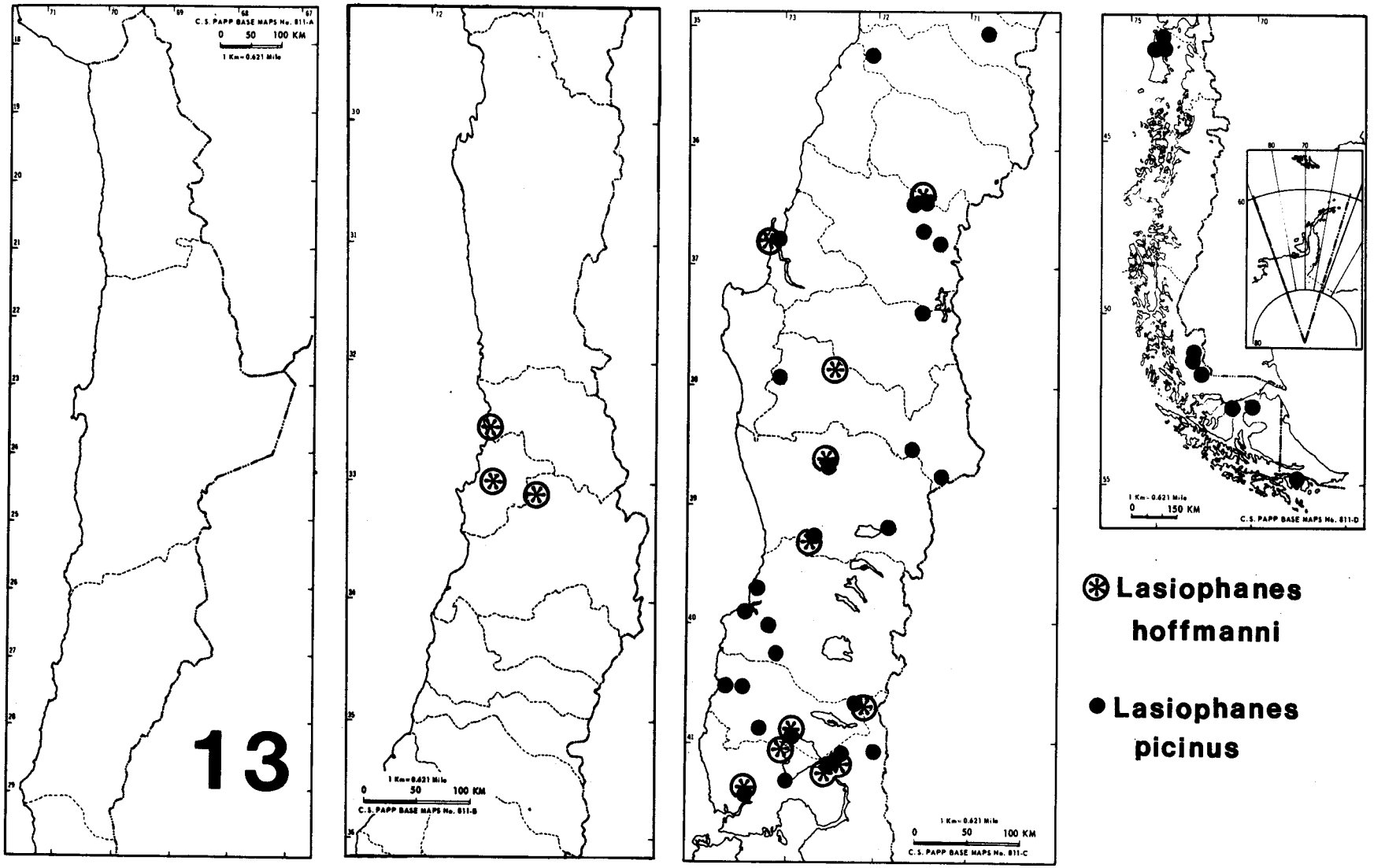
Plate 14. Figs. 92-97. Formicinae, *lasiophanes*. 92, 93, *L. hoffmanni,* worker, head in frontal view and head, thorax and petiole lateral view, respectively; 94-97, head, in frontal view, of: 94, *L. nigriventris,* worker; 95, *L. perplexus,* female (cotype); 96, *L. picinus;* 97, *L. valdiviensis.*


13
C.S. PAPP BASE MAPS No. 811-A
0 50 100 KM
1 Km = 0.621 Mile
C.S. PAPP BASE MAPS No. 811-B
C.S. PAPP BASE MAPS No. 811-C
0 150 KM
C.S. PAPP BASE MAPS No. 811-D
Lasiophanes hoffmanni
Lasiophanes picinus

12.3 km N Loncoche, 280 m (UCB). *Osorno*: 30 km E Purranque (CAS); 30 km E Puyehue (CAS). *Llanquihue*: Ensenada (USNM); n. shore, lago Llanquihue (CAS); [Puerto Varas; Menozzi, 1935]; 8 mi W Puerto Varas (CAS); Los Muermos (CAS).

Lasiophanes nigriventris (Spinola)
(Fig. 94)

Formica nigriventris Spinola, *in* Gay, 1851: 239-240. ♀ ♀ ♂.

Formica atriventris F. Smith, 1863:51.

Lasius dichrous Roger, 1863:164. ♀; Forel, 1886:208-209. ♀.

Melophorus (Lasiophanes) nigriventris, Emery, 1895b:16; Emery, 1905:184; Emery, 1922:3, 4; Goetsch, 1933:393-394; Menozzi, 1935:323, 335.

Lasiophanes nigriventris, Kusnezov, 1951: 94-95; Kusnezov, 1959:391, fig. 8; Kempf, 1970:28-29; Kempf, 1972:129.

Type locality. *nigriventris*: CHILE; "muy común en varias provincias"; *atriventris*: no locality; *dichrous*: CHILE, no further locality.

This species is moderately abundant in Chile and Argentina. In this species the median lobe of the clypeus lacks a median carina on the apical third. The entire head is superficially sculptured, and this species may thus be separated from the otherwise similar *perplexus*.

Localities (Map 14). CHILE. *Valparaíso*: [Algarrobo; Kempf, 1970]. *Curicó:* Los Queñes, 1200 m elev. (UCB). *Ñuble:* [cordillera de Chillán; Emery, 1895]; Las Trancas rd., near Termas de Chillán. 1270-1350 m elev. (UCB); 18 km E San Carlos (CAS). *Concepción:* Concepción (MCZ). *Biobío*: El Abanico (CAS). *Arauco*: Lebu (UCON). *Malleco*: lago Icalma (MSTO); Nahuelbuta, Angol (UCON); sierra de Nalhuelbuta, 1200 m elev. (CAS). *Cautín*: [Temuco; Emery, 1905; Menozzi, 1935]; 10 mi and 12 mi NE Pucón (CAS). *Valdivia*: [Valdivia; Berg, 1890]; same locality (LACM); Puerto Corral (MCZ). *Osorno*: Pucatrihue, 0 m elev. (UCB); volcán Osorno, 8 km W La Picada (UCB); 30 km E Purranque (CAS); 18 km W Purranque (CAS); 10 km E Puyehue (CAS). *Llanquihue*: [lago Llanquihue; Puerto Varas; Cayutué; Menozzi, 1935]; Petrohué, 100 m elev. (UCB); same locality (LACM); Los Muermos (CAS).

Lasiophanes perplexus (Santschi)
(Fig. 95)

Melophorus (Lasiophanes) perplexus Santschi, 1920:384. ♀.

Lasiophanes nigriventris, Kusnezov, 1959: 391 (*in part*); Kempf, 1970:28-29 (*in part*); Kempf, 1972:129 (*in part*).

Type locality. Lago Todos los Santos, CHILE.

Kusnezov (1959) placed this in the synonymy of *nigriventris*, with which it agrees it lacking a sharp clypeal carina. We have examined a cotype in the MCZ and believe *perplexus* to be a good species. The entire head is smooth and polished, not lightly shagreened as in *nigriventris;* there are numerous erect hairs on the eye, and there is an obtuse subbasal carina on the lower part of the median lobe of the clypeus. Many females of *nigriventris* have been seen; none of these approach the characteristics of *perplexus*.

Locality (Map 14). CHILE. *Llanquihue*: lago Todos los Santos (cotype ♀; MCZ).

Lasiophanes picinus (Roger)
(Fig. 96)

Lasius picinus Roger, 1863:163-164. ♀.

Melophorus (Lasiophanes) picinus, Emery, 1895b:17; Emery, 1905:184; Emery, 1922: 4, 5; Goetsch, 1933:393-394; Menozzi, 1935: 323, 334.

Melophorus (Lasiophanes) picinus var. *bidens* Emery, 1895b:17. ♀ ♀ ♂; Emery, 1905: 185.

Melophorus sauberi Forel, 1903:266:267. ♀; Forel, 1904b:4-6. ♀ ♀ ♂.

Prenolepis bruchi Forel, 1915:361-362. ♀. NEW SYNONYMY.

Melophorus bruchi, Santschi, 1920:383, fig. 14.

Melophorus (Lasiophanes) bruchi, Emery, 1922:4, 5.

Acanthomyops (Donisthorpea) edwardsi Donisthorpe, 1933:535. ♀ ♀ ♂.

Lasiophanes picinus, Kusnezov, 1951:92-99; Kusnezov, 1959:391-392; Kempf, 1970: 29; Kempf, 1972:129.

Lasiophanes picinus bruchi, Kempf, 1970: 29 (*in part*); Kempf, 1972:129 (*in part*).

Type locality. *picinus*: CHILE; *bidens*: cordillera de Chillán, CHILE; *sauberi*: Punta Arenas, CHILE; *bruchi*: lago Argentino, ARGENTINA; *edwardsi*:

Kusnezov (1959) listed *bolivari* (Santschi) and *pilosula* (Emery) as synonyms of *bruchi*. However, *bruchi* as he interpreted it, is the same as *valdiviensis*, a different species. The types of *sauberi* and *bruchi* have been examined and are in agreement with the traditional interpretation of *picinus*, the most widely distributed and most abundant *Lasiophanes* in Chile. This species is easily recognized by its sharply carinate clypeus, brown color, and virtual absence of erect hairs.

Localities (Map 13). CHILE. *Valparaíso*: [Algarrobo; Menozzi, 1935]. *Curicó*: cajón de Río Claro, SE of Los Queñes, 100 m elev. (UCB). *Talca*: Alto Vilches (UCH); Coipué (MCZ). *Ñuble*: [cordillera de Chillán; type series of *bidens* Emery, 1895b]; Las Trancas rd., near Termas de Chillán, 135 m elev. (UCB); Termas de Chillán (UCON); Las Cabras, 1500 m elev. (MCZ); 40, 50, 60 km E San Carlos (CAS). *Concepción*: Concepción (MCZ, USNM). *Biobío*: El Abanico (CAS). *Arauco:* [Contulmo; Menozzi, 1935]. *Malleco:* Parque Nac. Nahuelbuta, 1200 m elev. (UCB); same locality (LACM); lago Icalma (MSTO); Termas de Río Blanco, 1080 m elev. (UCB). *Cautín:* Temuco (MCZ); [same locality, 24 Nov. 1967; Kempf, 1970]; 12.3 km N Loncoche, 280 m elev. (UCB); 10 mi NE Pucón (CAS). *Valdivia*: [lago Puyehue; Menozzi, 1935]; 25 km NW Valdivia, 40 m elev. (UCB); 30 km S Valdivia (CAS); Cudioco, 40 m elev. (UCB); Puerto Corral (MCZ). *Osorno:* 10 km E Puyehue (MCZ); same locality (CAS); 35 km W Osorno, 100 m elev. (UCB); Pucatrihue (UCB); Puerto Octay (USNM); 18 km W Purranque (CAS). *Llanquihue*: [Ensenada; isla Tenglo; Menozzi, 1935]; Petrohué, 100 m elev. (UCB); same locality (LACM); Peulla (LACM); lago Llanquihue (LACM); Puerto Varas (USNM); 8 mi W Puerto Varas (CAS); Bosque Los Muermos (CAS). *Chiloé*: [Ancud; Menozzi, 1935]; same locality (UCON); R. Gamboa (UCON); Dalcahue (UCH). *Aisén*: [Puerto Aisén; Menozzi; 1935]. *Magallanes*: Punta Arenas (types of *sauberi*; MHNG); same locality (UCON); [La Turba, 23 Dec. 1950; Kempf, 1970]; Puerto Williams, isla Navarino (MCZ); río Chacabuco (UCON); seno Otway, río El Ganso (UCON); Silla del Diablo (UCON); Tres Brazos (USNM); Chabunco (USNM); cerro del Toro (UCON); puerto Santa María (UCON); río Rubens (MCZ); Ultima Esperanza (MCZ); Salto Chico del Pehoe, Parque Nac. del Paine (LACM); Llanuras de Diana, 150 km SE Pto. Natales (LACM).

Lasiophanes valdiviensis (Forel)

(Fig. 97)

Melophorus valdiviensis Forel, 1904b:6. ♀.

Prenolepis (Nylanderia) bolivari Santschi, 1916:512. ♀. NEW SYNONYMY.

Melophorus (Lasiophanes) bruchi, Santschi, 1919:383, *(misidentification).*

Melophorus (Lasiophanes) valdiviensis, Emery, 1922:91.

Melophorus (Lasiophanes) pilosulus Emery, 1922:91, 92, 93. ♀. NEW SYNONYMY.

Melophorus (Lasiophanes) uxorius Emery, 1922:91, 93-94. ♀. NEW SYNONYMY.

Melophorus (Lesiophanes) bolivari var. *pilosa* (sic), Santschi, 1922:259.

Melophorus (Lasiophanes) bolivari var. *pilosula*, Menozzi, 1935:324.

Lasiophanes picinus bruchi, Kusnezov, 1959: 392-395 (*in part*); Kempf, 1970:29 (*in part*); Kempf, 1972:129 (*in part*).

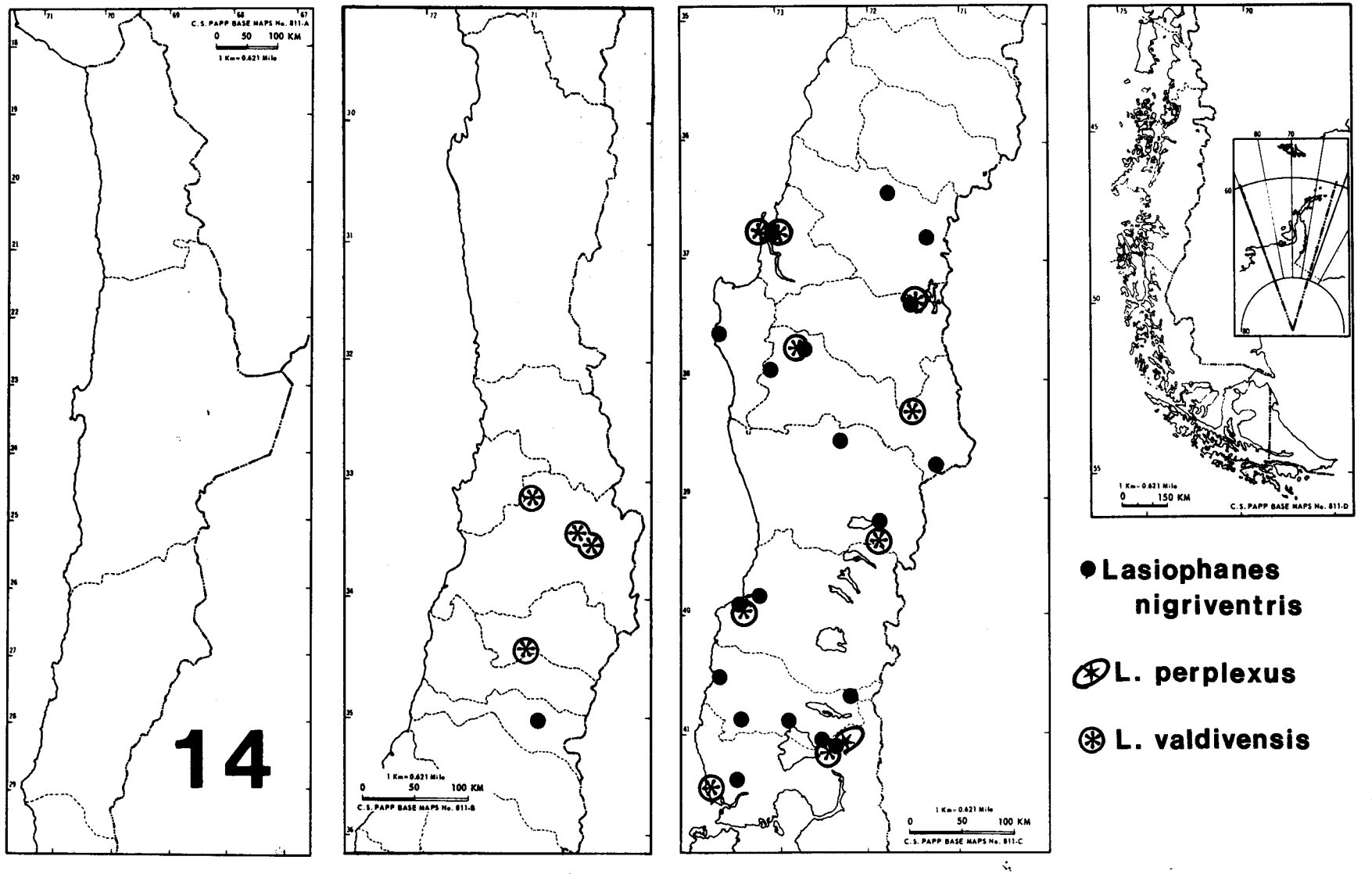
Lasiophanes uxorius, Kempf, 1970:30; Kempf, 1972:129.

Lasiophanes valdiviensis, Kempf, 1970:30; Kempf, 1972:129.

Type locality. *valdiviensis*: Valdivia, CHILE; *bolivari*; *pilosulus*: Quilicura, CHILE; *uxorius*: Santa Rita, CHILE.

This species has persistently been a source of difficulty. Emery (1922) recognized its similarity to *uxorius* and separated the two in his key by the small size of worker *valdiviensis* as compared to the female *uxorius*! The difficulties began earlier in the key, however, for he included both of these among those in which the clypeus is weakly carinate or ecarinate. The carina is present and as well developed as in *pilosula*, *picinus*, etc. This error may have been the reason for the description of *pilosulus*, since that form possessed a carinate clypeus. We have been able to compare material of *pilosulus, uxorius* and *valdiviensis* and are confident they are conspecific. Material determined and recorded as *bruchi* by Kusnezov (1959) is, in our opinion, also *valdiviensis* and the description of *bolivari* matches *valdiviensis* material quite well. The presence of numerous erect hairs on the body and appendages will readily separate *valdiviensis* from the other species with carinate clypeus.

Localities (Map 14). CHILE. *Santiago*: Quilicura (La Taste; types of *pilosulus* Emery, 1922; MHNG); Santa Rita (La Taste; types of *uxorius* Emery, 1922); San José de Maipo (MSTO); El Canelo (UCH); cuesta La Dormida (LACM).


14
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1 Km = 0.621 Mile
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C.S. PAPP BASE MAPS No. 811-C
C.S. PAPP BASE MAPS No. 811-D
0 150 KM
● Lasiophanes nigriventris
L. perplexus
L. valdivensis

Colchagua: San Vicente de Tagua-Tagua (MSTO). *Concepción*: Concepción (MCZ); Ramuntcho (UCON); *Biobío*: El Abanico (CAS). *Malleco*: Angol (MSTO); same locality (USNM); Lonquimay (UCON). *Cautín*: volcán Villarrica (LACM). *Valdivia*: Valdivia (types of *valdiviensis* Forel, 1904b: MHNG); [lago Puyehue; Menozzi, 1935, as *pilosula*]; Puerto Corral (MCZ). *Osorno*: río Pedregoso, 8 km N Villarrica (MCZ). *Llanquihue*: [Petrohué; Santschi, 1922]; Petrohué, lago Todos los Santos (LACM); Lepihue (CAS).

Myrmelachista Roger

This is a Neotropical genus of several dozen arboreal species. The taxonomy of the group is very confused and many of the currently recognized names probably are synonyms. Two subgenera have been recognized: *Myrmelachista*, s. str. and *Hincksidris* (=*Decamera*). *Hincksidris* species have ten-segmented antennae while those of the nominate subgenus possess nine-segmented antennae. *Hincksidris*, in particular, is a very heterogeneous assemblage of species, many of which are fully as distinct from "typical" *Hincksidris* as this group is from *Myrmelachista*, s. str. Also, some species in one subgenus appear to be most closely related to those of the other. No benefit is to be derived from what appears to be an unnatural arrangement, and we propose that *Hincksidris* be placed in synonymy with *Myrmelachista* (NEW SYNONYMY).

Menozzi (1935) proposed *Neaphomus* as a new subgenus of *Aphomomyrmex*. The type, and only known, species was the Chilean *goetschi* Menozzi. Type material of *goetschi* has not been available, but Menozzi's description and figures match almost perfectly the characteristics of *mayri* Forel, long placed in *Myrmelachista*, and correctly so, in our opinion. There appears to be little difference between *Myrmelachista* and *Aphomomyrmex* other than the presence of an antennal club in the former. Menozzi's figure of the antenna of the *goetchi* female shows a club about like that of *mayri*, and we feel that his species must be transferred to *Myrmelachista*. It is also necessary to place *Neaphomus* in the synonymy of *Myrmelachista* (NEW SYNONYMY). As a result of this change, *cooperi* (Gregg), from Central America, placed in *Aphomomyrmex* (*Neaphomus*) by Gregg (1953), must be transferred to *Myrmelachista* (NEW COMBINATION).

In the treatment wich follows we have adopted a very conservative approach. The available samples are limited and do not provide sufficient material to adequately understand limits of variation. The difficulties are especially complicated by the polymorphism of the species, and the specimens in two different samples may superficially seem to represent two species, unless they include individuals of the same size. Larger samples, especially of entire colonies, are needed in order to solve the problems.

KEY TO CHILEAN SPECIES OF MYRMELACHISTA

BASED ON WORKERS

1. Head and thorax distinctly shagreened, midline of head sometimes smooth and shiny; with or without erect hairs 2
— Head and thorax smooth, polished, with scattered minute punctures; long, erect hairs abundant on head, thorax and scape ..... *chilensis* Forel

2. Scape with three or more long, erect hairs; front of head with scattered long, erect hairs in addition to those of clypeus and pair on vertex; front of head with shiny midline ..... *mayri* Forel

— Scape withouth erect hairs; front of head with several long hairs on clypeus and a pair of shorter hairs; frons and frontal lobes without hairs; front of head often wholly dull ..... *hoffmanni* Forel

Myrmelachista chilensis Forel
(Fig. 98)

Myrmelachista chilensis Forel, 1904a:704-705, note 1. ♀; Forel, 1908:399. ♂.

Myrmelachista (Hincksidris) chilensis, Kempf, 1970:30; Kempf, 1972:149.

Type locality. Valparaíso, CHILE.

This species appears to be uncommon. It is easily recognized by its small size, smooth and shiny head, and thorax with abundant long, erect hairs.

Localities (Map 15). CHILE. *Aconcagua:* Punta Puquén, near Los Molles (UCB); 10 km E Papudo (CAS). *Valparaíso*: Valparaíso (Hoffmann; cotypes; MHNG).

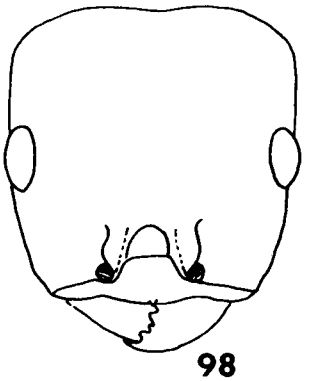
Myrmelachista goetschi (Menozzi)

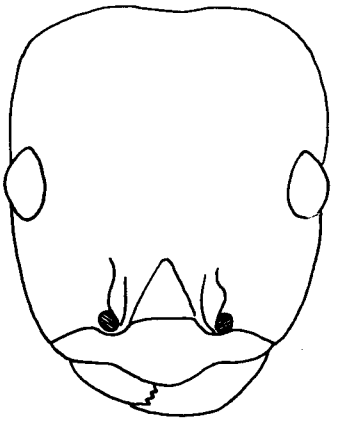
Aphomomyrmex (Neaphomus) goetschi Menozzi, 1935:324-328. ♀ ♂; Kempf, 1970:32.

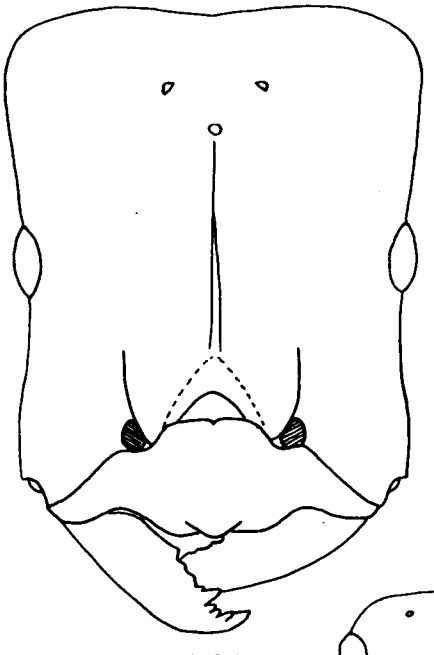
Neaphomus goetschi, Kempf, 1972:152.

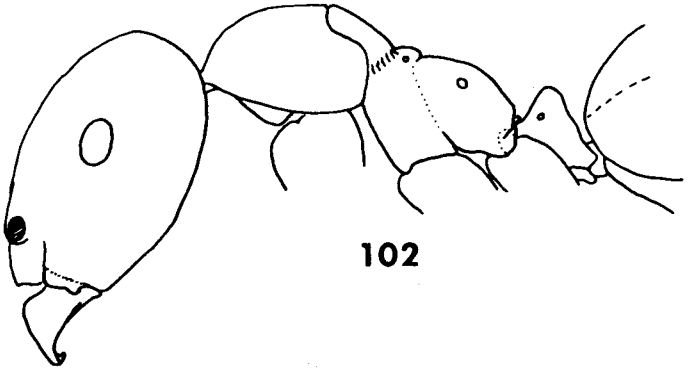
Type locality. Volcán de Chillán, CHILE.

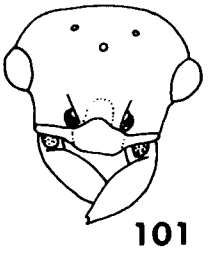
This species is known only from the type material, from Prov. Ñuble. It is very close to, if not a synonym of, *mayri*.











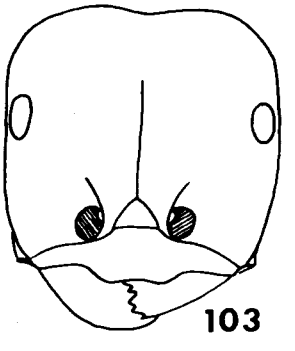
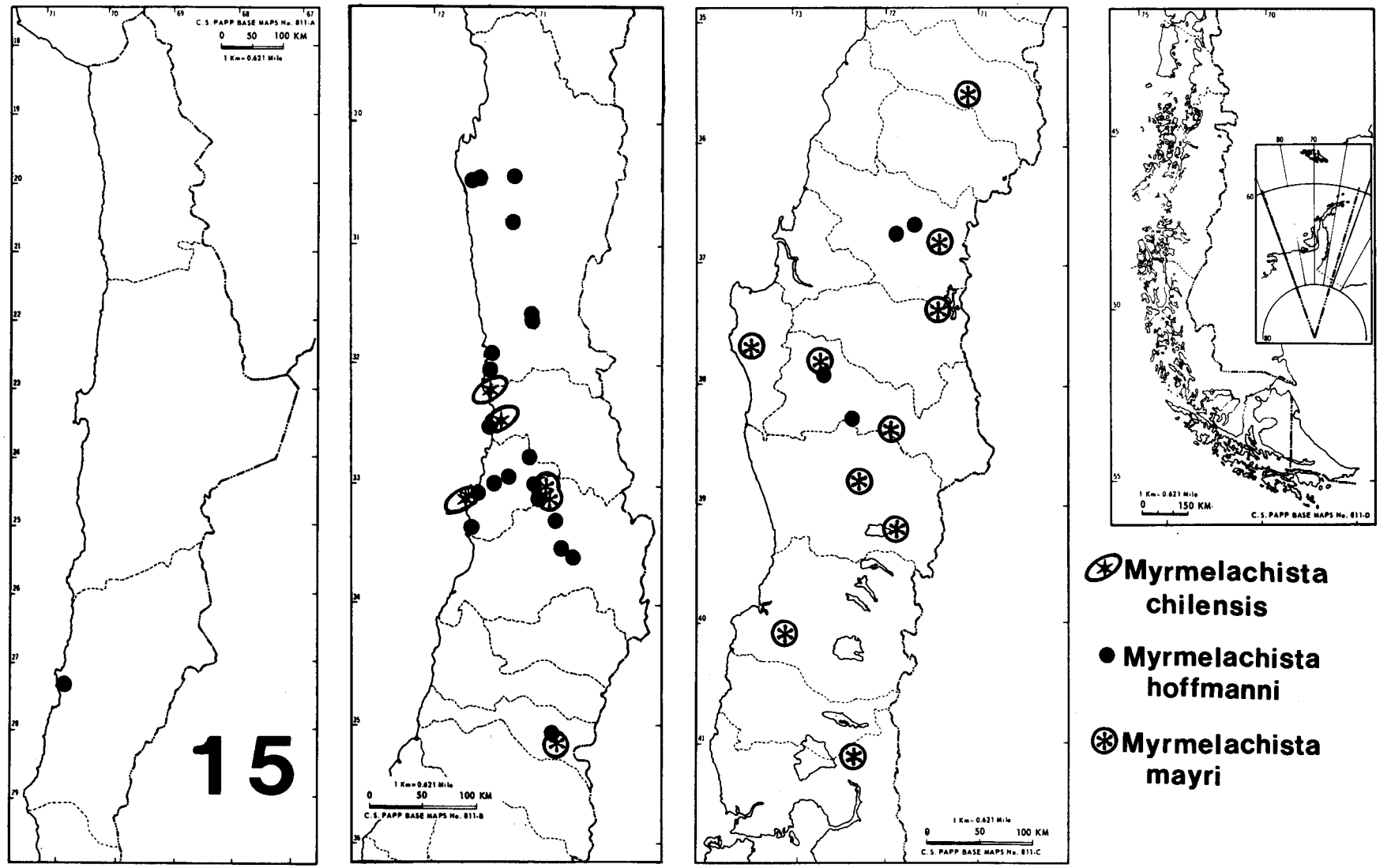


Plate 15. Figs. 98-103. Formicinae, *Myrmelachista.* 98, *M. chilensis,* worker (type), head in frontal view; 99, *M. hoffmanni,* worker, same; 100-103, *M. mayri;* 100, female, same; 101, male, same; 102, worker, head, thorax and petiole in lateral view; 103, worker, head in frontal view.


15
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C.S. PAPP BASE MAPS No. 811-B
C.S. PAPP BASE MAPS No. 811-C
C.S. PAPP BASE MAPS No. 811-D
0 150 KM
Myrmelachista chilensis
Myrmelachista hoffmanni
Myrmelachista mayri

Myrmelachista hoffmanni Forel
(Fig. 99)

Myrmelachista hoffmanni Forel, 1903:260, 265. ♀ ♀ ♂; Forel, 1908:399.

Myrmelachista rectinota Forel, 1904a:705, note, ♀. NEW SYNONYMY.

Myrmelachista (Hincksidris) hoffmanni, Kempf, 1970:30; Kempf, 1972:149.

Myrmelachista (Hincksidris) rectinota, Kempf, 1970:31; Kempf, 1972:150.

Type locality. *hoffmanni*: Valparaíso, CHILE; *rectinota*: Valparaíso, CHILE.

Both *hoffmanni* and *rectinota* were described from Valparaíso. The lightly shagreened and somewhat shiny head with conspicuous scattered punctures of *rectinota* made this ant easily separable from *hoffmanni,* with an opaque, densely shagreened and impunctate head. This is the most common *Myrmelachista* in Chile, and there are numerous samples. Small workers are as described for *hoffmanni*, while the largest specimens show the characteristics of *rectinota*. Specimens of an intermediate size possess cephalic sculpture of an intermediate character, hence the above synonymy.

Normally this ant is wholly black, but in samples from Prov. Santiago, the head and thorax are red. Some samples from Prov. Aconcagua have the head and thorax dark reddish or reddish brown.

Localities (Map 15). CHILE. *Atacama*: bahía Copiapó, 45 m elev. (UCB). *Coquimbo:* 5 mi N Illapel (CAS); Hda. Illapel, 600-900 m elev. (UCB); Los Vilos (UCB); 15 mi S Los Vilos (CAS); 5 mi N, and 35 mi S Ovalle (CAS); Bosque Fray Jorge, (CAS); Fray Jorge, 5 km W Pachingo, 550 m elev. (UCB). *Aconcagua*: Zapallar (CAS); 3 km N Zapallar (LACM). *Valparaíso:* Valparaíso (Hoffmann; types of *hoffmanni* and *rectinota;* MHNG); Algarrobo (MSTO); Llay-Llay (CAS); Marga-Marga, Colliguay, (AMNH); near San Pedro, cerro La Campana (LACM). *Santiago*: Quebrada la Pata, Maipú (MSTO, UCB); El Manzano (MSTO); cuesta la Dormida (LACM, UCB); cerro Roble, *ca.* 2.000 m elev. (LACM); same locality, *ca.* 1600 m elev. (LACM); Rinconada Maipú, 450 m elev. (UCB). *Curicó*: cajón de Río Claro, SE of Los Queñes, 1000 m elev. (UCB). *Ñuble*: 40 km E San Carlos (CAS); Las Trancas rd., near Termas de Chillán, 1.350 m elev. (UCB). *Malleco:* Angol (CAS); 10 mi N Perquenco (CAS).

Myrmelachista mayri Forel
(Fig. 100-103)

Myrmelachista (Decamera) mayri Forel, 1886: 214-215. ♀.

Myrmelachista mayri var. *monticola* Mayr, 1887:526-527. ♀; Berg, 1890:23. NEW SYNONYMY.

Myrmelachista (Hincksidris) mayri, Kempf, 1970:30; Kempf, 1972:149.

Myrmelachista (Hincksidris) mayri var. *monticola*, Kempf, 1970; Kempf, 1972:149.

Type locality. *mayri:* CHILE, without more definite locality, *monticola:* Valdivia, CHILE.

Forel based his description of *mayri* on a single female while Mayr's description of the variety *monticola* was based on worker specimens. The nominate form is from an unknown locality in Chile; *monticola* is from Valdivia. Since there are no valid grounds on which any comparisons can be made, the best solution is to synonymize *monticola*.

This is a widespread species, but one not often collected. No good series are available for study. It seems likely that what is here called *mayri* may prove to be two, or even three species. When all these forms become better known it may prove to be possible to resurrect *monticola* for one of them.

What we here interpret as true *mayri* is a wholly blackish or brownish-black form. There are scattered short hairs on the gular surfaces, and the hairs of the tibiae are decumbent. The pronontum bears numerous long, erect hairs.

A single series of workers collected by Hunt about 10 mi SSE Caleo, Prov. Santiago, may be a different species. The color is reddish brown with darker gaster. There are no erect hairs on the pronotum, and those of the tibiae are fully appressed.

A third form is represented by two small samples from localities in Prov. Santiago. These have the head and thorax red, the gaster blackish. It is very similar to the foregoing, but there are a few erect hairs on the pronotum.

There are, finally, a few specimens from scattered localities from Prov. Biobío to Prov. Valdivia. These are very similar to "typical" *mayri*, but the hairs on the tibiae are fully appressed. It is possible that the name *monticola* might available for this form if it can be shown that *monticola* is a good species. Larger series, with females, will be necessary in order to solve this dilema.

Localities (Map 15). CHILE. *Santiago*: cuesta La Dormida (LACM); La Ollita, Cantillana, 2000 m elev. (MSTO); *ca.* 10 km SSE Caleu (LACM). *Curicó:* Palos Negros (AMNH); El Coigual (AMNH). *Talca*: Alto de Vilches (UCH). *Ñuble*: Las Trancas (MSTO); "2.7 km Las Trancas" (UCB); Las Trancas rd., near Termas de Chillán, 1350 m elev. (UCB). *Biobío*: El Abanico (CAS). *Arauco*: 20 km W Caramávida, cord. Nahuelbuta, 750 m elev. (UCB); Pichinahuel (AMNH). *Malleco*: Angol (CAS); Hda. Dillo, Curacautín (MSTO); Fundo Sta. Felisa, Curacautín, (MSTO). *Cautín*: 10 mi NE Pucón (CAS); 20 km E Temuco (CAS). *Valdivia*: [Valdivia; type series of var. *monticola* Mayr, 1887]; 30 km S Valdivia (CAS). *Osorno*: "R. Auticena"? (UCON). *Llanquihue:* Petrohué, 100 m elev. (UCB).

Anoplolepis longipes (Jerdon)*.

Formica longipes Jerdon, 1851:122. ♀.

Formica gracilipes F. Smith, 1857:55; Mayr, 1865:50.

Prenolepis gracilipes, Berg. 1890:25.

Anoplolepis longipes, Kempf, 1970:30; Kempf, 1972:22.

Type locality. *longipes*: INDIA; *gracilipes*: SINGAPORE.

This widely distributed Old World species was reported from Chile by Mayr and Berg (Valparaíso?). No specimens have been studied, and there is presently no evidence that *longipes* is established there.

Brachymyrmex Mayr

This is an exclusively New World genus of small to minute hypogaeic ants. Most of the species occur in the tropics, but a few are found in temperate areas of North and South America. The genus was last revised by Santschi (1923b). Two species are known to occur in Chile.

Brachymyrmex giardii Emery

(Fig. 104-107)

Brachymyrmex giardii Emery, 1894: 215-216. ♀ ♀; Emery, 1895:16; Emery, 1905: 178, fig. 41b:663; Goetsch, 1933:380 *(biology);* Goetsch, 1935:254-255; Menozzi, 1935: 324, 335; Kempf, 1970:31; Kempf, 1972:39.

Brachymyrmex giardii var. *nitida* Santschi, 1922:261. ♀; Kempf, 1970:31; Kempf, 1972:39. NEW SYNONYMY.

Type locality. *giardii*: Santiago, CHILE; *nitida*: Petrohué, CHILE.

The var. *nitida* is a minor variant of this variable small species; individuals agreeing with the description of *nitida* are found in the same nests with "typical" *giardii*.

This species is light to medium brown in color, with some individuals darker brown. The integument is dull to slightly shiny, that of the head conspicuously punctate. Small workers, with HW less than 0.4 mm, usually are without erect setae on the pronotum; large workers, with HW in excess of 0.5 mm, possess about eight long setae on the pronotum and a variable number of short, fine setae. The species appears to be dimorphic, with clearly defined minor (fig. 105) and major workers. The latter often have the gaster greatly distended with stored food (fig. 107). Such individuals are superficially similar to the repletes of the North American genus *Myrmecocystus*.

Localities (Map. 16). CHILE. *Coquimbo*: Puerto Oscuro (UCB); Los Vilos (UCB); Carrizal Bajo (UCH). *Aconcagua*: 90 km S Illapel (CAS). *Valparaíso*: cuesta El Melón (UCB); Peñuelas (AMNH); cuesta Pucalán, 800 m elev. (UCB); 20 km N Concón (CAS). *Santiago*: Santiago (cotypes of *giardii* Emery; AMNH); cuesta La Dormida (LACM); [Santa Rita; Emery, 1895b]; Quebrada de la Plata, La Rinconada, Maipú (UCB). El Manzano (UCH). *Talca*: [Talca; Emery, 1905]. *Ñuble*: 18 km E San Carlos (CAS). *Biobío* El Abanico (CAS). *Malleco*: Angol (CAS). *Llanquihue*: [Petrohué; types of var. *nitida* Santschi, 1922].

Brachymyrmex laevis Emery

(Fig 108-112)

Brachymyrmex laevis Emery, 1894:216. ♀; Emery, 1895b:16. ♀ ♀ ♂; Goetsch, 1933: 380 (*biology*); Menozzi, 1935:324, 335; Kempf, 1972:39.

Brachymyrmex levis, Emery, 1905:178, fig. 41c; Forel, 1908:400; Forel, 1912:62; Santschi, 1923b:659, figs. 9, 60; Kempf, 1970:31.

Type locality. Valdivia, CHILE.

This species in a little smaller than *giardii*, the integument is usually dark brown to blackish brown, with that of the head

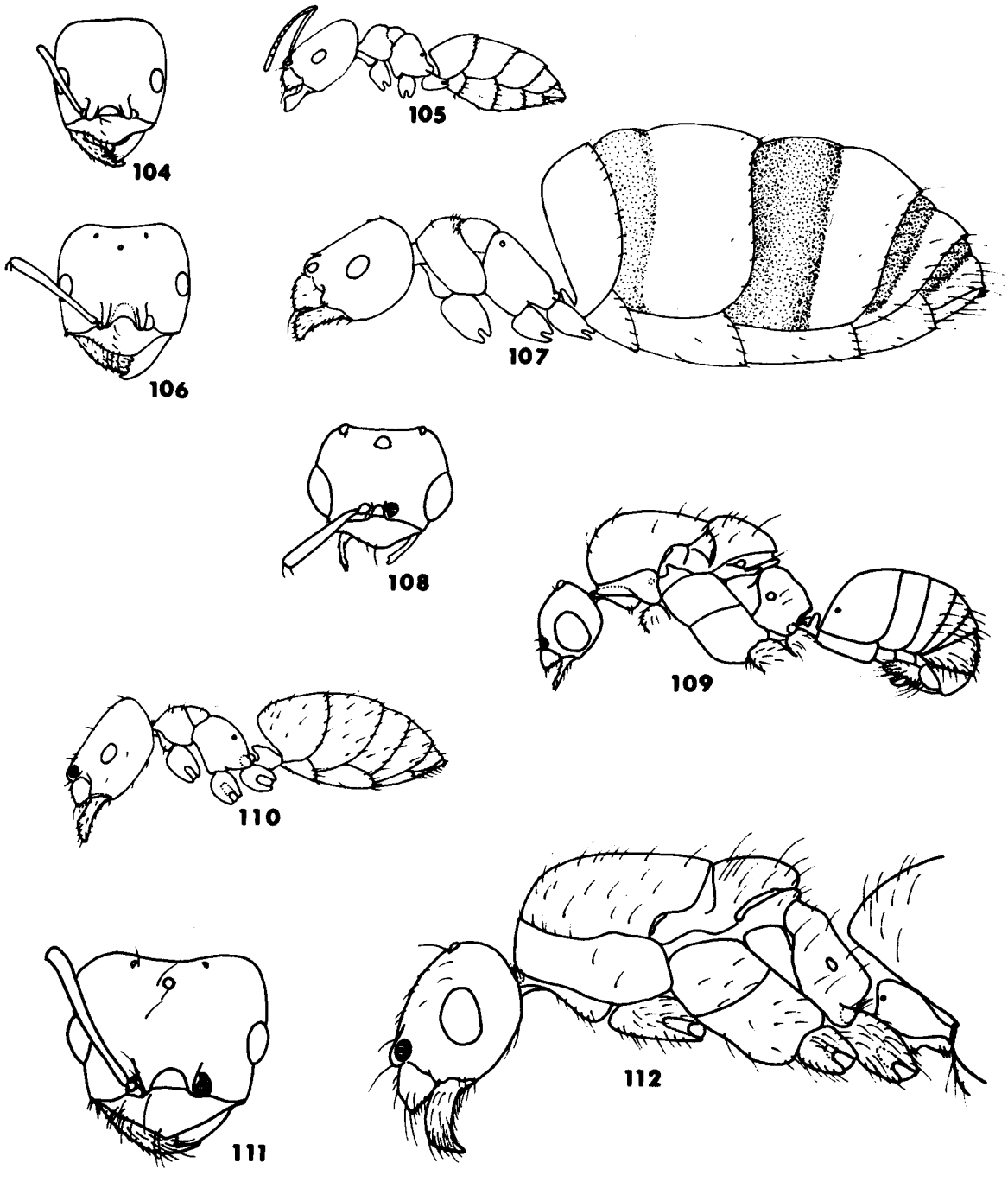
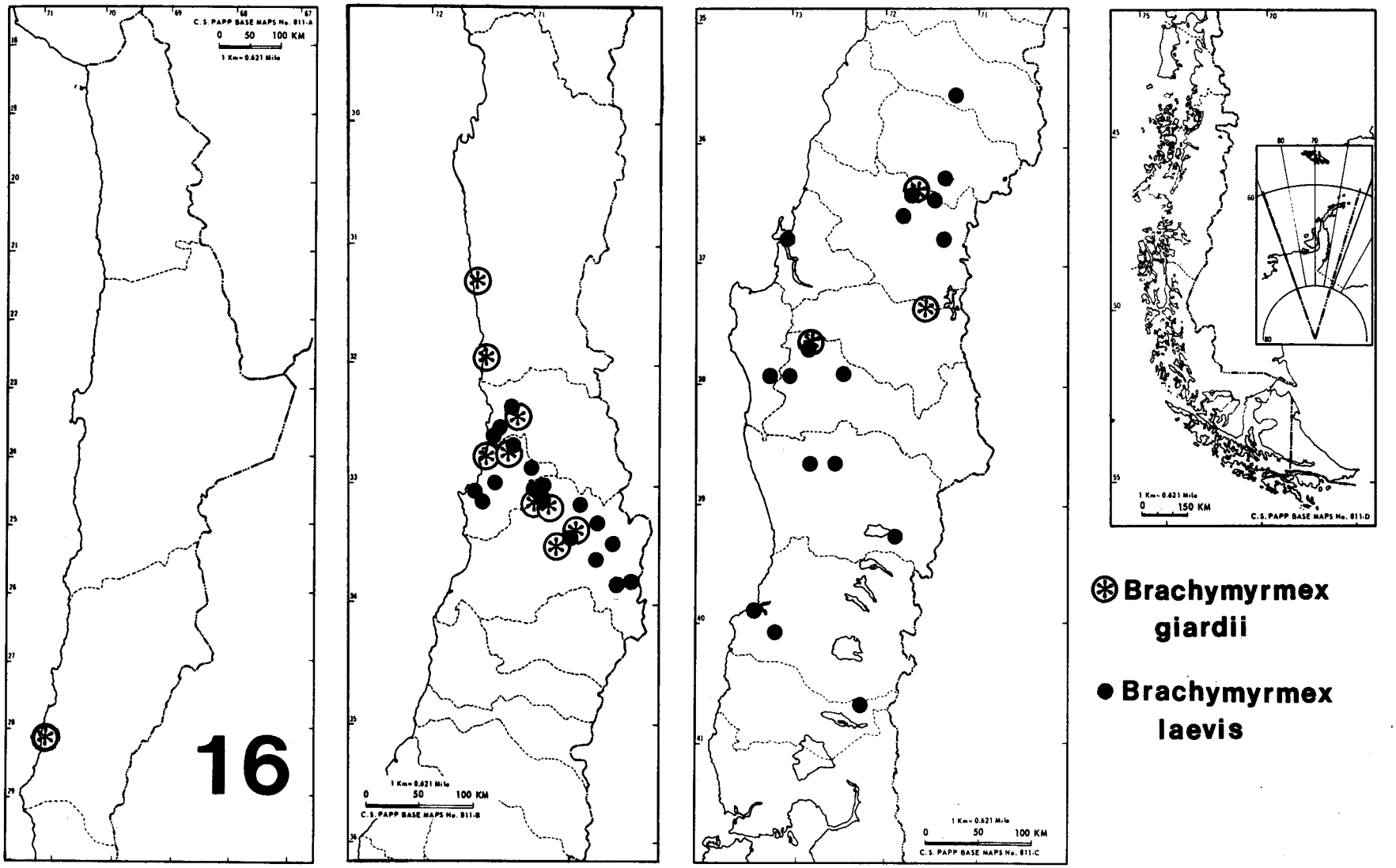


Plate 16. Figs. 104-112. Formicinae, *Brachymyrmex*. 104-107, *B. giardii*, workers, head in frontal view and head, thorax and gaster in lateral view, respectively of minor (104, 105) and major or replete (106, 107). 108-112, *B. laevis:* 108, 109, male, head and lateral view; 110, worker, lateral view; 111, 112. female, head and lateral view.

shiny, with very fine scattered punctures. Major workers apparently are not produced. There is usually a single pair of erect hairs on the disc of the pronotum and another pair on the mesoscutum. The species is widespread and common in Chile and occurs also in Argentina. It is apparently closely related to *patagonicus* Mayr of Argentina and may ultimately prove to be a synonym. Repletes are not known for this species.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C.S. PAPP BASE MAPS No. 811-D
0 150 KM
⊛ Brachymyrmex giardii
● Brachymyrmex laevis

Localities (Map 16). CHILE. *Aconcagua*: [Juncal; Emery, 1905]; [Zapallar; Menozzi, 1935]; same locality (CAS); 10 km E Papudo (CAS); 90 km S Illapel (CAS). *Valparaíso*: Valparaíso (AMNH, MCZ); cuesta Pucalán, 800 m elev. (UCB); Marga-Marga Valley (MCZ) Llay-Llay (CAS). *Santiago:* [Maipo, Valle de Volcán, cerros de Chena, cerro Morado, Apoquindo, Viluco; Menozzi, 1935]; [Rinconada-Maipú; Kempf, 1970]; [Santiago, Emery, 1905, Santschi, 1923b]; San Juan Maipo (LACM); same locality (MSTO); La Yesera, 2150 m elev. (MSTO); El Volcán, Cajón del Maipo (MSTO); 15 km E Las Condes (UCB); cuesta La Dormida (LACM, UBC); El Alfalfal (MCZ); Caleu (LACM); Farellones (LACM); Barranca (UCH); cerro Roble, 2000-2100 m elev. (LACM). *Talca*: 05 km W Vilches, 615 m elev. (UCB). *Linares*: Bullileo (UCON). *Ñuble*: [codillera de Chillán; Emery, 1895b]; [Volcán de Chillán; Menozzi, 1935]; Termas de Chillán (UCON); Fundo El Roble, 650 m elev. (MSTO); 18 km E, 50 km E San Carlos (CAS). *Concepción:* Concepción. MCZ). *Arauco*: San Alfonso, cord. Nahuelbuta (UCH); hostería Lapalhue (UCON). *Malleco*: Angol, 650 m elev. (MCZ); Chiquaihue Hills (MCZ); Parque Nac. Nahuelbuta (LACM). *Cautín*: [Temuco; Kempf, 1970]; same locality (MCZ); 20 km E Temuco (CAS); Pucón (LACM). *Valdivia*: [Valdivia; type series, Emery, 1894]; 30 km S Valdivia (CAS); Corral (MCZ). *Osorno*: Puyehue (UCH).

Camponotus Mayr

This cosmopolitan genus is one of the largest of ant genera and is represented in Chile by six species, all members of the subgenus *Tanaemyrmex*. Two species, *chilensis* (Spinola) and *distinguendus* (Spinola), are very common and widespread. The remaining forms have, at various times, been considered forms of one or the other of these. All are good species, in our opinion, since they are sympatric with these and show no evidence of hybridization with them.

KEY TO CHILEAN SPECIES OF CAMPONOTUS, BASED ON WORKERS

1. Side of head, in frontal view, either without visible erect or suberect hairs (fig. 113, 115) or with a few at occipital corner and near base of mandible only 2
— Side of head, in frontal view, with abundant erect or suberect hairs extending continuously from occipital corner to base of mandible (figs. 116-119) 5
2. Gastric dorsum densely covered by long, appressed golden to ferruginous pubescence which obscures surface of first three or four terga 3
— Gastric dorsum with very sparse, short, white appressed pubescence; which does not at all obscure surface 4
3. Occipital corner with scattered, appressed golden pubescence; appressed pubescence of first three terga extending to lateral margins of segments; flagellum ferruginous ..... *spinolae* Roger
— Occipital corner with scattered erect or suberect white hairs; appressed pubescence of first three terga limited to dorsum of each segment; flagellum brownish ..... *ovaticeps* (spinola)
4. Occipital corner and malar area near clypeus with a few erect hairs, gena densely punctulate, dull; flagellum ferruginous ..... *morosus* (F. Smith)
— Occipital corner and malar area without erect hairs; gena with scattered coarse punctures, interspaces lightly tessellate and shiny; flagellum brownish ..... *hellmichi* Menozzi
5. Gena dull, densely and finely micropunctate, with scattered fine, round punctures; mesopleura dull, densely micropunctate; occiput with abundant long, yellow appressed pubescence; gastric terga with long appressed yellowish pubescence which is usually sufficiently dense to obscure surface .... *chilensis* (Spinola)
— Gene moderately shiny, tessellate and with scattered coarse, elongate punctures; mesopleura moderately shiny, tessellate; occiput with widely scattered, short, white appressed pubescence; gastric terga with scattered, short, appresed whitish pubescence, surface never obscured .... *distinguendus* (spinola)

Camponotus (Tanaemyrmex) chilensis (Spinola) (Fig. 113-114)

Formica chilensis Spinola, *in* Gay, 1851:237-238. ♀ ♀.

Camponotus chilensis, Mayr, 1865:32; Berg, 1890:28; Emery, 1895b:18; Forel, 1907: 10; Goetsch, 1933:382-383; Kusnezov, 1951: 206-208.

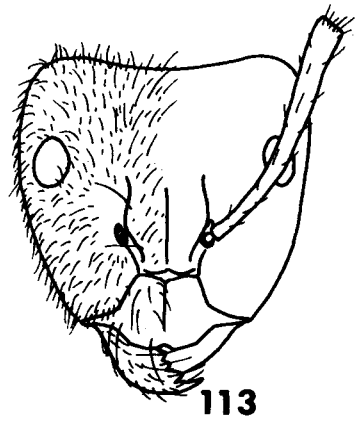
Camponotus "lssicheni" (!) Emery, 1905: 191.

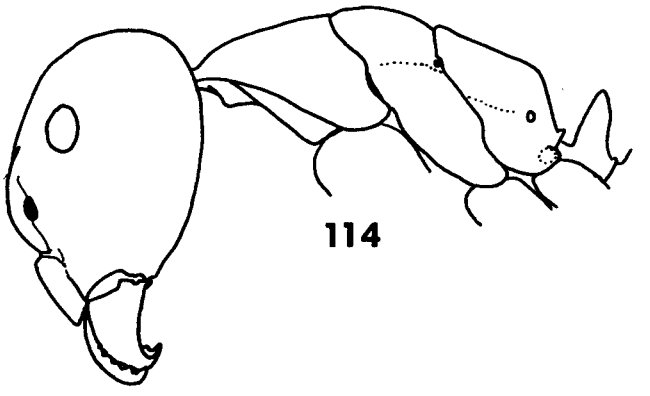
Camponotus (Myrmosericus) chilensis, Santschi, 1916a:396.

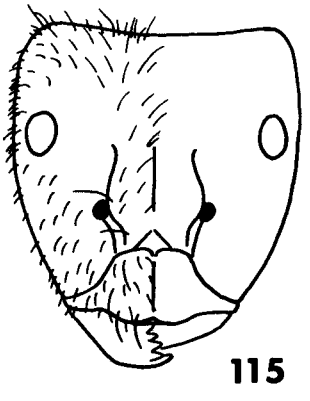
Camponotus (Tanaemyrmex) chilensis, Menozzi, 1935:329, 335; Kempf, 1970:32; Kempf, 1972:66.

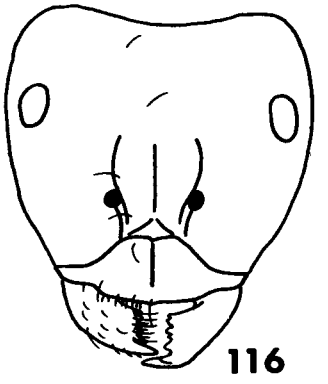
Type locality. Santiago, CHILE.

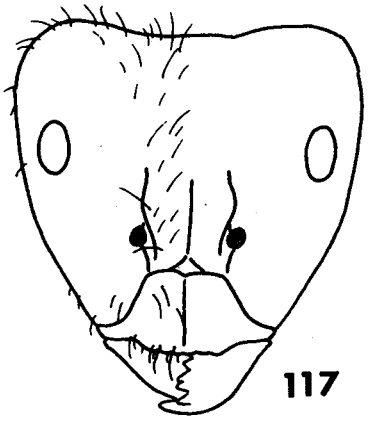
This black ant, with bright golden abdominal pubescence, is one of the most conspicuous and common ants in Chile. This color pattern is shared with *ovaticeps* and *spinolae,* but these lack erect hairs on the margins of the head.

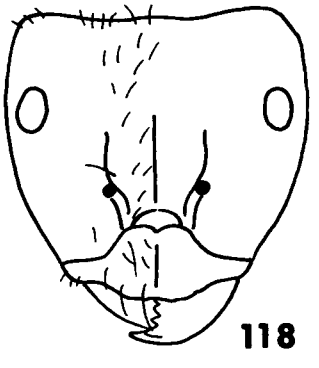












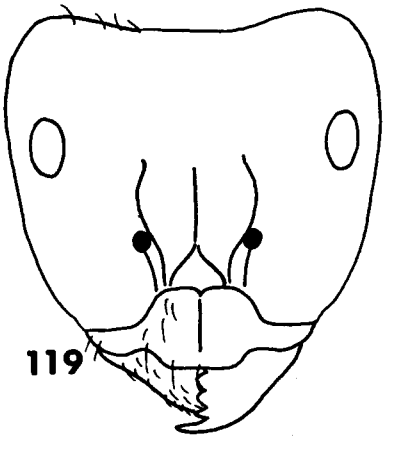
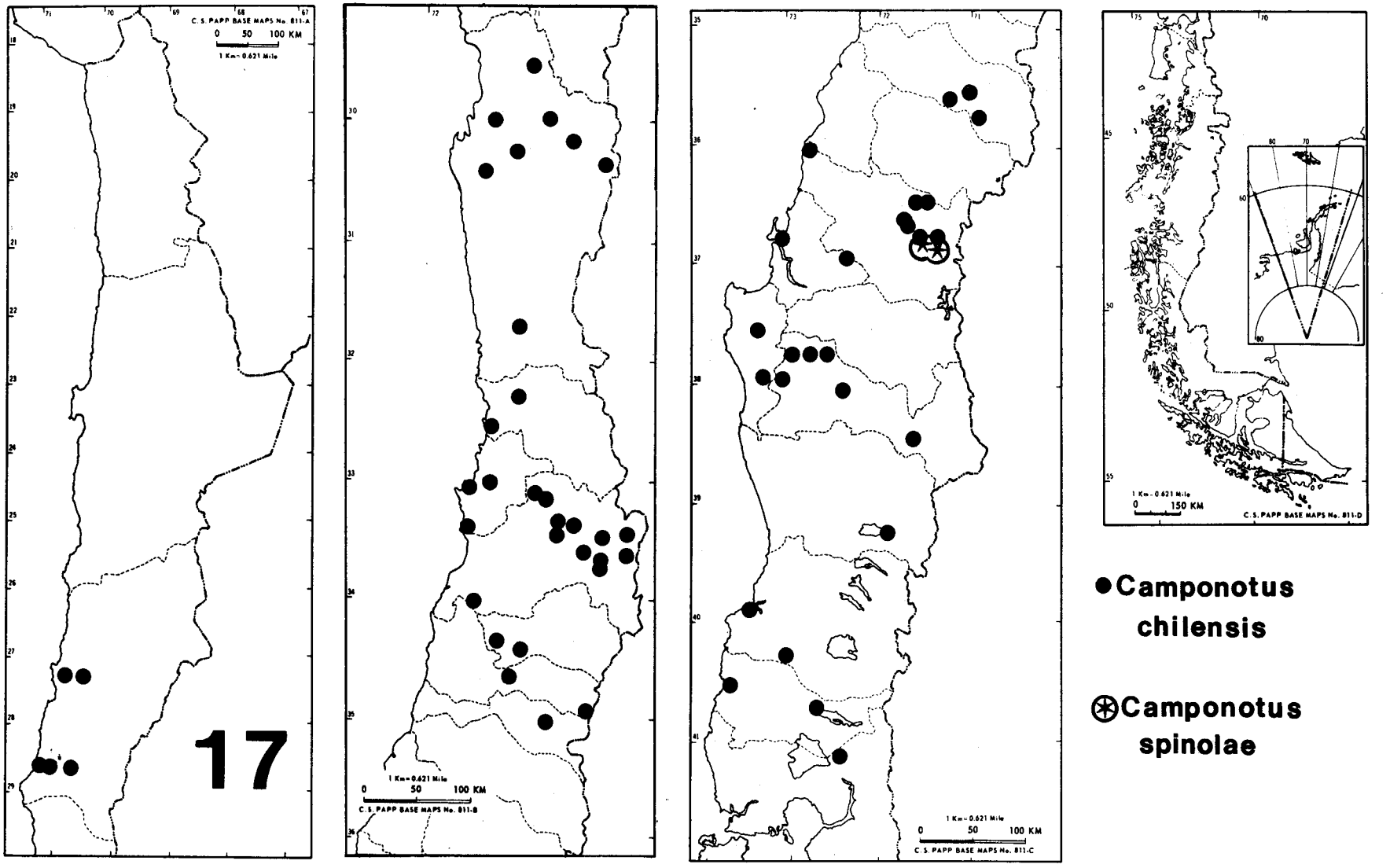


Plate 17. Figs. 113-119. Formicinae, *Camponotus*, major workers. 113, 114, *C. chilensis*, head in frontal view and head and thorax in lateral view; 115-119, head in frontal view, of 115, *C. distinguendus*; 116, *C. hellmichi*; 117, *C. morosus*; 118, *C. ovaticeps*; 119, *C. spinolae*.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● Camponotus chilensis
⊛ Camponotus spinolae

In the paper by Emery (1905) the name *chilensis* was accidentally scrambled to "*Issicheni*". Kempf (1970), in citing this reference confused it still further, as "*issecheni*". Wheeler (1914) reported *chilensis* from Urubamba, Perú. This record is, however, based on *mus* Roger.

Specimens have been seen from the following Provinces (Map 17): Atacama, Coquimbo, Aconcagua, Valparaíso, Santiago, O'Higgins, Colchagua, Curicó, Talca, Maule, Linares, Ñuble, Concepción, Arauco, Malleco, Cautín, Valdivia, Osorno, Llanquihue and Aisén.

Camponotus (Tanaemyrmex) distinguendus (Spinola)
(Fig. 115)

Formica distinguendus Spinola, *in* Gay, 1851: 235-237. ♀ ♀ ♂.

Camponotus distinguendus, Mayr, 1863: 398; Mayr, 1886:364; Emery, 1905:191; Forel, 1907:10; Goetsch, 1933:380-382.

Camponotus distinguendus var. *denudatus* Emery, 1905:191. ♀. *Preocc.* NEW SYNONYMY.

Camponotus distinguendus var. *tenuipubens* Santschi, 1916:242. *N. name* for *denudatus* Emery, 1905, not Emery, 1903; Kempf, 1972: 67. NEW SYNONYMY.

Camponotus (Tanaemyrmex) distinguendus var. *tenuipubescens* (!) Menozzi, 1935:336; Kempf, 1970:33.

Camponotus (Tanaemyrmex) distinguendus, Kempf, 1970:33; Kempf, 1972:67.

Type locality. *distinguendus:* Santa Rosa, CHILE; *denudatus:* Pitrufquén, CHILE.

This is the common all-black *Camponotus* in Chile. It differs inmediately from *chilensis, ovaticeps* and *spinolae* in lacking dense, golden pubescence on the gaster. It can be confused only with *hellmichi* and *morosus,* but these two species lack erect hairs extending continuously along the side of the head from the occiput to the mandibular base. The flagellum is also ferruginous in *morosus.*

The var. *denudatus* was proposed for those populations with unusually short and sparse gastric pubescence. Since *denudatus* was preoccupied by Emery, 1903, this form was renamed *tenuipubens* by Santschi; the name has been erroneously cited as "*tenuipubescens*" by Emery (1925) and some subsequent authors. Since this variant occurs within populations of the more typical form, and often within the same nest, there is no reason to recognize it at any taxonomic level other than that of a synonym. Another sporadic variant has the tergal pubescence longer and denser than usual. These superficially look like sparsely pubescent *chilensis,* but the hairs are white rather than golden or yellowish.

This ant occurs in Peru and Argentina as well as in Chile. Numberous samples have been seen from the following Chilean Provinces (Map 18): Coquimbo, Aconcagua, Valparaíso, Santiago, O'Higgins, Curicó, Talca, Maule, Ñuble, Concepción, Biobío, Arauco, Malleco, Cautín, Valdivia, Osorno, Llanquihue, Chiloé, Aisén and Magallanes.

Camponotus (Tanaemyrmex) hellmichi Menozzi
(Fig. 116)

Camponotus (Tanemyrmex) morosus var. *hellmichi* Minozzi, 1935:330-331, 335. ♀.; Kempf, 1970:34; Kempf, 1972:69.

Type locality. Volcán Villarrica, CHILE.

This ant was very superficially described as a variety of *morosus.* The characteristics cited in the key to separate *hellmichi* from *morosus* are consistent. Since there is no evidence of hybridization between the two we feel *hellmichi* should be recognized as a separate species.

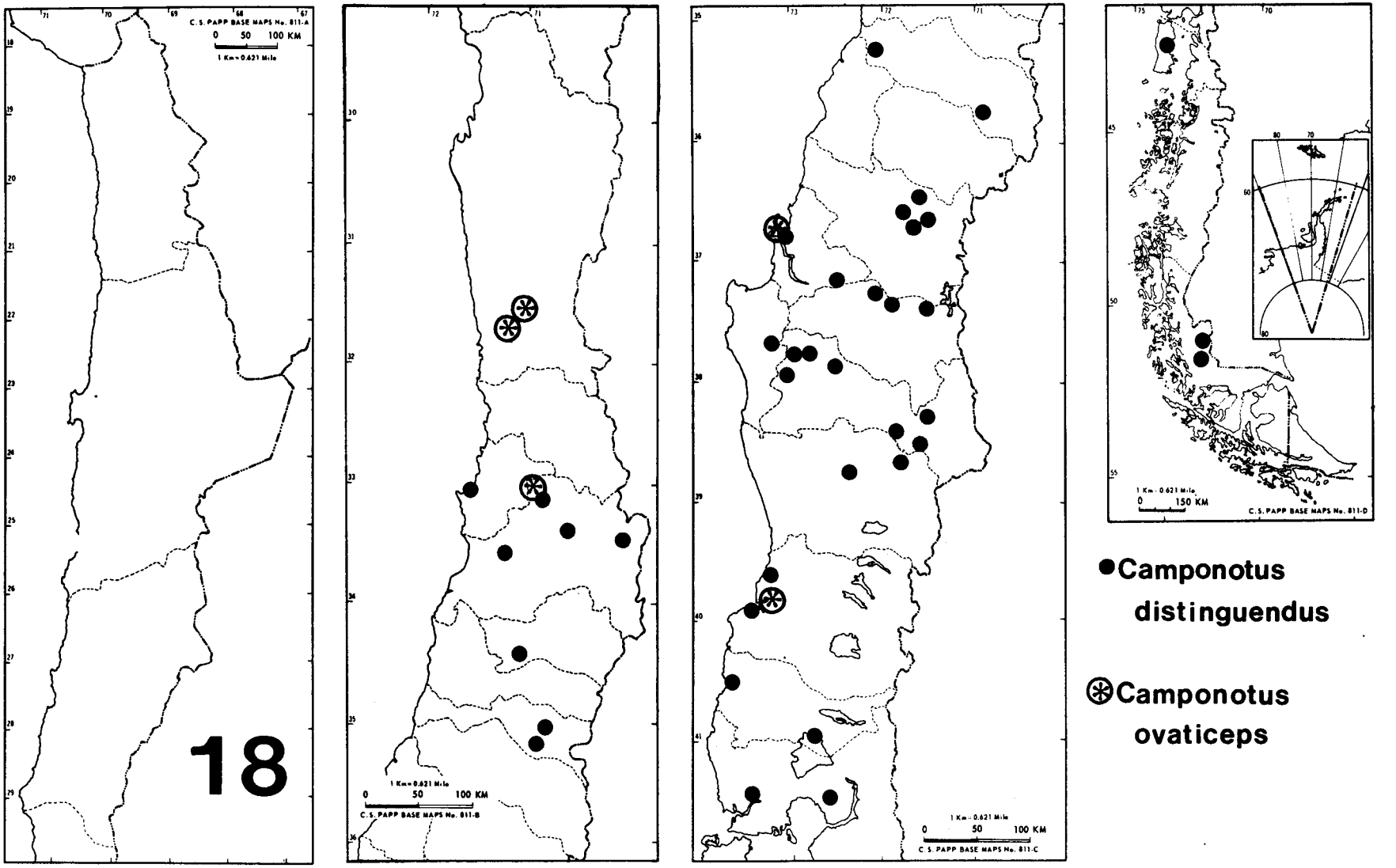
Localities (Map 19). CHILE. *Tarapacá:* S. Chiapa, 3400-3600 m elev. (UCH); Cariquima, cord. Iquique, 3700 m elev. (UCH); Poroma (UCH); 3 km E Zapahuire, 11,100 ft. elev. (UCB); Caquena, 4300-4600 ft. elev. (USNM); Chapiquiña (UCH). *Antofagasta:* Turi (UCH). *Ñuble:* [Volcán de Chillán; Menozzi, 1935]; Las Trancas (UCH). *Concepción:* Queime (UCH). *Malleco:* cord. Las Raíces, 1500 m elev. (MSTO). *Cautín:* [Pucón; Menozzi, 1935]; volcán Villarrica, 1000 m elev. (UCON). *Valdivia:* [volcán Villarrica; type series *of hellmichi* Menozzi, 1935]. Llanquihue: volcán Osorno, *ca.* 1000 m elev. 15 km N Ensenada (LACM).

Camponotus (Tanaemyrmex) morosus (F. Smith)
(Fig. 117)

Formica morosa F. Smith, 1858:50-51. ♀.

Camponotus morosus, Mayr, 1862:665; Mayr, 1865:32.

Camponotus distinguendus var. *morosus,* Emery, 1894:214; Emery, 1895b:18; Emery, 1905:191; Santschi, 1916:396.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0 150 KM
●Camponotus distinguendus
⊛Camponotus ovaticeps

Camponotus (Tanaemyrmex) morosus, Menozzi, 1935:329-330, 336; Kempf, 1970:33; Kempf, 1972:69.

Type locality. CHILE, without more definite locality.

This is the other common black-bodied *Camponotus* in Chile. Is is easily separated from *distinguendus* by the much more limited distribution of erect cephalic hairs. With the head in full face view there are a few short, erct hairs on the occipital corner and a few on the malar area near the base of the mandible, but none between these areas. The presence of occipital and malar hairs will serve to distinguish *morosus* from *hellmichi,* and the red flagellum will separate it from both.

Common and widely distributed in Chile, *morosus* is found also in Argentina. Numerous samples have been seen from the following Provinces (Map 19): Antofagasta, Atacama, Coquimbo, Aconcagua, Valparaíso, Santiago, O'Higgins, Colchagua, Curicó, Talca, Linares, Ñuble, Concepción, Malleco, Cautín and Magallanes.

Camponotus (Tanaemyrmex) ovaticeps (Spinola) (Fig. 118)

Formica ovaticeps Spinola *in* Gay, 1851: 238-239. ♀.

Camponotus ovaticeps, Berg, 1890:30.

Camponotus chilensis var. *ovaticeps,* Emery, 1894:214.

Camponotus (Tanaemyrmex) chilensis var. *ovaticeps,* Kempf, 1970:32; Kempf, 1972:66.

Type locality. Valdivia, CHILE.

This little-known ant resembles *chilensis,* of which it was regarded as a variety by Emery (1894). The sides of the head, in frontal view, are without erect hairs, except a few on the occipital corner and a few near the base of the mandible. The gastric pubescence is paler than in *chilensis* and the head is broader than in that species. Since the range of *ovaticeps* lies wholly within that of *chilensis* and there is no evidence that the two hybridize, we think that *ovaticeps* is best recognized as a separate species.

Localities (Map 18). CHILE. *Coquimbo:* Hda. Illapel, 3000 m elev. (MCO); 30 km S Combarbalá (CAS). *Santiago:* Cerro del Roble, 2000-2100 m elev. (LACM). *Concepción:* [Talcahuano; Berg, 1890]. *Valdivia:* [Valdivia; type series of *ovaticeps* Spinola, 1851).

Camponotus (Tanaemyrmex) spinolae Roger (Fig. 119)

Camponotus spinolae Roger, 1863:144-145. ♀; Emery, 1894:214-215.

Camponotus chilensis var. *ruficornis* Emery, 1894:214. ♀; Emery, 1895b:18. NEW SYNONYMY.

Camponotus ruficornis, Emery, 1903:64, 69.

Camponotus chilensis ruficornis, Forel, 1907:10.

Camponotus (Tanaemyrmex) ruficornis, Menozzi, 1935:329, 335; Kempf, 1970:34; Kempf, 1972:71.

Camponotus (Tanaemyrmex) spinolae, Kempf, 1970:34.

Camponotus (Tanaemyrmex) spinolae, Kempf, 1972:72.

Type locality. *spinolae:* CHILE, without more definite locality; *ruficornis:* cordillera de Chillán, CHILE.

There appears to be but a single species with red flagellum and golden gastric pubescence in Chile. Roger's name antedates that of Emery, so *ruficornis* must be placed in synonymy. The red flagellum will inmediately separate this attractive species from *chilensis,* as will the absence of erect hairs along the head margins. No specimens intermediate between the two forms have been seen, and we conclude *spinolae* to be a valid species.

Localities (Map 17). CHILE. *Ñuble:* Termas de Chillán (UCON); Las Trancas rd., near Termas de Chillán, 1270 m elev. (UCB); Las Trancas (UCH); Refugio Shangrila, cord. Chillán, 1400 m elev. (UCH); [cordillera de Chillán; type series of *ruficornis* Emery, 1894]; [Volcán de Chillán; Menozzi, 1935].

Paratrechina fulva (Mayr)*

Prenolepis fulva Mayr, 1862:698. ♀ ♀; Mayr, 1865:51-52.

Paratrechina (Nylanderia) fulva, Kempf, 1970:34.

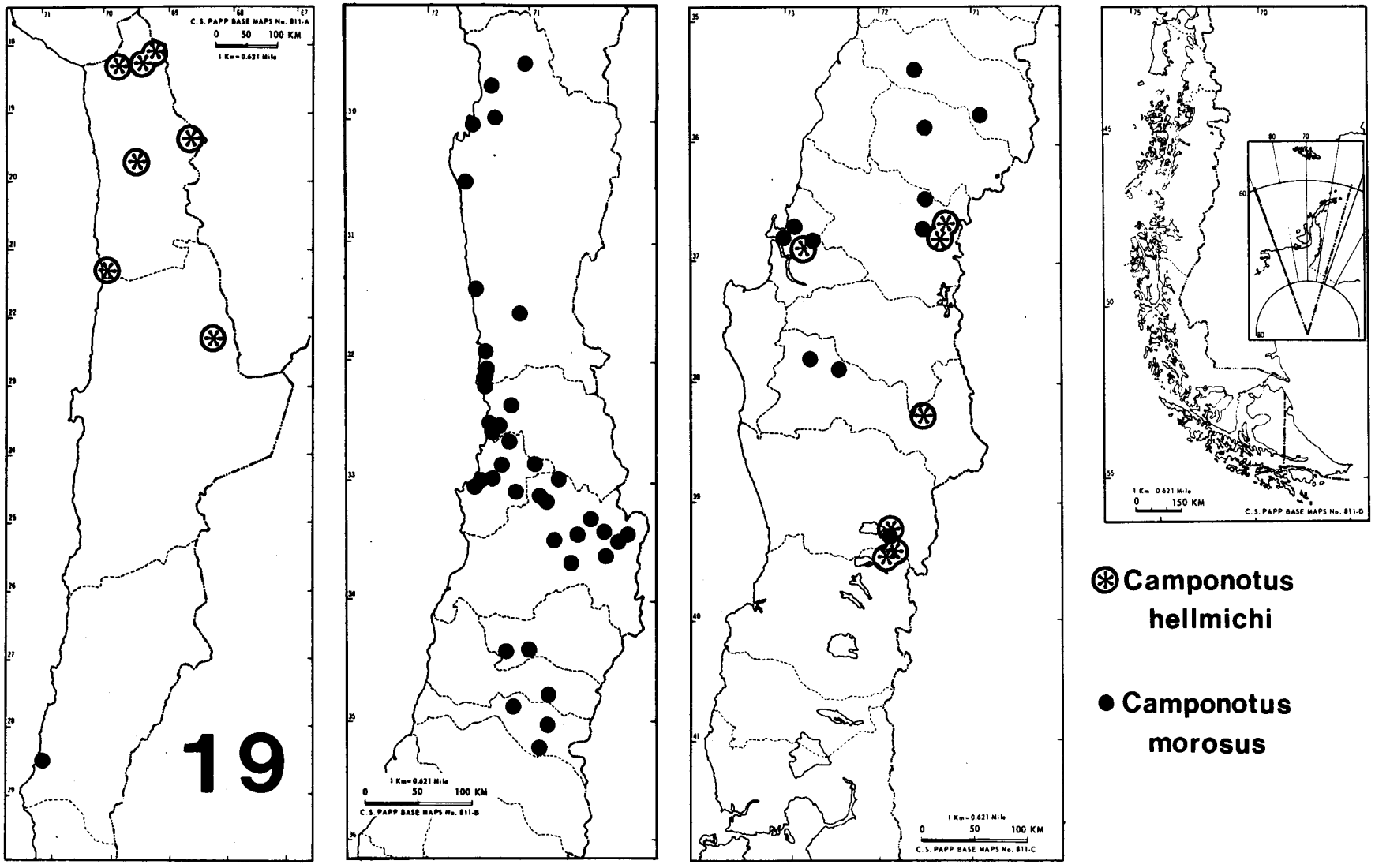
This Brazilian ant was initially recorded from Chile, without more specific locality, by Mayr (1865). Kempf (1970) included it in his Catalogo, with the note that is was probably imported. No specimens have been seen, and the species may not be established.

Paratrechina longicornis (Latreille)*

Formica longicornis Latreille, 1802:113 ♀.

Prenolepis longicornis, Mayr, 1865:50-51.

Paratrechina longicornis, Kempf, 1970:34.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C.S. PAPP BASE MAPS No. 811-D
0 150 KM
⊛ Camponotus hellmichi
● Camponotus morosus

There is only a single report of this tramp species in Chile, that of Mayr (1865). No specimens have been seen, and the species may not be established. This and the foregoing species are included because it is possible they may exist in some coastal cities.

Paratrechina sp.

A single series, including all castes, is from Santiago (MSTO). Although belonging to the group assigned to the subgenus *Nylanderia,* they are not *fulva.* The genus *Paratrechina* is much in need of revision, and it would be futile to attempt to place a name on the specimens at this time.

GENERIC REPRESENTATION

The genera of living ants of the world and their distributions are reviewed by Brown (1973). The living ants of Central and South America are catalogued by Kempf (1972). Kempf lists 147 genera in the Neotropical Realm, to which may now be added the genus *Antichthonidris.* Of this total, only 22 (about 15%) are here recorded as being present in Chile. This figure is, however, unnaturally high, for some genera *(Monomorium, Tetramorium, Anoplolepis, Paratrechina)* are represented only by introduced tramp species, and others *(Hypoponera,* "*Iridomyrmex*") are probably introduced also. The native generic representation consists of only about 11% of the native South American genera. One genus, *Nothidris,* appears to be known only from Chile.

The Chilean ant fauna is therefore a depauperate derivative of the South American fauna and has obvious similarity to that of Argentina. Several genera *(Amblyopone, Heteroponera, Pseudomyrmex, Pheidole, Brachymyrmex)* are all well represented elsewhere in the Neotropics, and the one or two species of each present in Chile are marginal representations.

Solenopsis and *Camponotus* are large, worldwide genera with numerous species in South America. The Chilean species in both genera have close affinities with those of Argentina and, to some degree, with those of Peru. The arboreal genus *Myrmelachista* is wholly Neotropical, and the few Chilean species belong to a large assemblage of poorly known species centered in Brazil.

Pogonomyrmex is a temperate zone genus of North and South America. The South American forms, for the most part, belong to the subgenus *Ephebomyrmex,* as that group was characterized by Cole (1968); Kempf (1970, 1972) has treated it as a genus, following Kusnezov (1959). The Chilean species all belong to *Ephebomyrmex,* and only *bispinosus* is endemic; the other species occur in the Patagonian subregion of Argentina.

Araucomyrmex is a genus of temperate South America, with numerous species in Argentina. It is the most diverse genus in Chile, with 10 species. Three of these are shared with Argentina and seven are endemic. The related genus *Dorymyrmex,* with several Argentinian species, is represented in Chile by a single endemic species.

The genus *Lasiophanes* is Patagonian and appears to be most closely related to the Australian *Melophorus.* It is the only Chilean genus which shows a notable affinity with the Australian fauna. At least two species of *Lasiophanes (nigriventris* and *picinus)* occur in Argentina, but the taxonomy of the genus is so poorly understood that the status of several names is uncertain.

Another Patagonian genus is *Antichthonidris,* with two known species. This genus is of uncertain affinities, but seems most similar to the Holarctic *Stenamma.* A *Stenamma*-like progenitor may once have existed along the entire Andean chain leaving derivative species only in Patagonia, widely separated from the North and Central American *Stenamma.*

There is one endemic Chilean genus, *Nothidris,* represented by three species. This genus is an obvious derivative of the Neotropical *Megalomyrmex* and may not be truly separable from it.

An endemic ant worthy of special mention is *Tapinoma antarcticum.* This is a common, widely distributed species in Chile. In habitus and behavior it is much like some of the smaller species of *Forelius.* Unfortunately, the taxonomy of the tapinomine genera is very confused and the correct placement of this species is uncertain. Its affinities, however, seem to lie with some of the Argentinian *Forelius* rather than with *Tapinoma.*

SPECIFIC COMPOSITION

The ant fauna of Chile as described herein consists of 62 recognized forms. This includes species from a variety of origins and faunal groups.

Eight of the species are imported. These are: *Monomorium floricola, M. pharaonis, Tetramorium caespitum, T. guineense, Anoplolepis longipes, Paratrechina fulva, P. longicornis,* and *Paratrechina* sp. Though these comprise 12.9% of the total number of species, they are insignificant members of the fauna. In fact, the only one of these species seen during our study was *Paratrechina* sp., which was represented by only a single series. We conclude that it is doubtful that the imported species are well established. They may, however, be locally established in urban areas.

Six of the species can be considered to have Neotropical distributions. These are: *Hypoponera opacior, Cylindromyrmex striatus, Pheidole chilensis, Solenopsis latastei, "Iridomyrmex" humilis* and *Myremelachista chilensis. Hypoponera opacior* is widely distributed in the Neotropical and Nearctic Realms. There are only a few records from Chile, and the status of the species is uncertain. Its presence in Chile may be the result of accidental introduction within historic times. *Cylindromyrmex striatus* was described from Surinam and has been recorded from Peru. The single record for Chile is from Arica. *Pheidole chilensis* is a poorly collected species known only from extreme northern Chile and Lima, Peru. Its affinities are with a large group of Neotropical species. *Solenopsis latastei* is included among the Neotropical species only with reservation. A variety has been described from Argentina (Buenos Aires), but it may prove to be a separate species. If so, then *latastei* will have to be considered an endemic Chilean species. *"Iridomyrmex" humilis* is probably of Brazilian origin, though this species has been widely dispersed by commerce to many parts of the world. *Myrmelachista chilensis* has been collected in Misiones Province, Argentina, and so must be included among the Neotropical species. The species is so poorly known that it is not possible to state where it originated. Thus these six species, representing 9.6% of the total species number, are also an insignificant element of the Chilean fauna. Only *Solenopsis latastei* is a common ant in natural habitats, and its distribution outside Chile is questionable. *Hypoponera opacior* and *"Iridomyrmex" humilis* may be introduced. The other species are uncommon to rare.

Fourteen species have Patagonian distributions and are found in southern Argentina as well as in Chile. This group represents 22.5% of the total ant fauna of Chile and includes such very common species as: *Pogonomyrmex vermiculatus, Araucomyrmex antarcticus, A. tener, Lasiophanes hoffmanni, L. picinus, Camponotus chilensis* and *C. distinguendus.* Other, less common, species in this group are: *Pogonomyrmex angustus, P. laevigatus, P. odoratus, Antichthonidris bidentatus, A. denticulatus, Solenopsis patagonicus* and *Araucomyrmex minutus.*

The remaining 34 species are endemic to Chile. Though these species represent over half (54.8%) of the total ant fauna, only a few are common: *Pseudomyrmex lynceus, Solenopsis gayi, S. germaini, "Tapinoma" antarcticum, Araucomyrmex goetschi* and *Brachymyrmex laevis.*

Three additional species have been recorded from Chile, but are here excluded. (1) *Neivamyrmex pertyi* (Shuckard) was recorded from Santiago, under the synonymous name *fonscolombii,* by Forel (1907). The record was surely based on a mislabelled specimen. No ants of the subfamily Dorylinae are known from Chile. (2) *Conomyrma pyrmica* (Roger) was recorded from Santa Rosa de Los Andes, Chile, by Berg (1890) as *Dorymyrmex pyramicus.* There is no evidence of the presence of *pyramica* in Chile, and this record is very likely a misidentification of one of the species of *Araucomyrmex.* (3) *Dorymyrmex planidens* Mayr was reported from Santa Rosa de Los Andes, Chile, by Berg (1890). The known distribution of *planidens* makes its occurrence in Chile unlikely. The specimens seen by Berg were most probably *agallardoi.*

DISTRIBUTION AND SPECIATION

Continental Chile has been divided into five biographic regions by Goetsch (1931). These regions have subsequently been employed by various authors. We will refer to them here as the Atacaman (18-30°S), Espinal (30-37°S), Valdivian (37-45°S), Magellanic (45-56°S), and Andean Regions. These biogeographic regions have subsequently been partioned into eighteen entomofaunal regions by Peña (1965, 1966). Peña's regions were somewhat modified by O'Brien (1971). Distribution data on the ants of Chile as illustrated in maps 1-19 may be used to examine the suitability of the biogeographic and entomafaunal regions for interpretation of ant distribution and speciation patterns.

Inspection of maps 1-19 reveals that the entomofaunal regions appear to be too finely partitioned to be useful with reference to ants. Only a few specific points may be mentioned.

Two of the regions, the Northern Desert and Southern Pacific, appear to be devoid of ants. In the Northern Desert only urban areas and river valleys have ants; the Southern Pacific Region is probably too wet for any ants at all. Pena's Intermediate Desert and Coquimban Desert Regions together compromise O'Brien's Coquimban Region, and this region may be characterized by the presence of *Araucomyrmex goetschi*. No other ant species seems restricted to sp. or characteristic of a particular entomofaunal region.

The biogeographic regions, on the other hand, are more general and hence more useful. The Atacaman and Magellanic Regions have depauperate ant faunas and cannot be characterized by the ants present. The Espinal and Valdivian regions, however, have very characteristic ant species assemblages. These assemblages are as follows. Espinal Region: *Pseudomyrmex lynceus, Pogonomyrmex bispinosus, P. vermiculatus, Solenopsis gayi, S. latastei, "Tapinoma" antarcticum, Araucomyrmex chilensis, Camponotus morosus, Myrmelachista hoffmanni, Brachymyrmex giardii* Valdivian Region: *Heteroponera carinifrons, Amblyopone spp., Pogonomyrmex angustus, P. odoratus, Antichthonidris spp., Nothidris latastei, Solenopsis germaini, Lasiophanes spp.*

At least two ant species appear to have Andean distribution patterns: *Araucomyrmex tener* and *Camponotus hellmichi*. Other ant species are either represented by very few records or by very wide distributions *(Camponotus chilensis, C. distinguendus)* and are difficult to delimit distributionally.

The distribution patterns of Chilean ants may give some insight into their possible patterns of immigration and speciation. An important consideration in this regard would be the possible routes of entry into Chile for immigrant species. Goetsch (1931) cites four routes that might be employed: in the north, across the Puna from Peru, Bolivia, and Argentina; in the south, through various mountain passes that connect with Argentina; in the far south, across the low Cordillera that connects directly with Patagonian Argentina; and, along the northern coast, a desertic connection with Peru. Each of these routes has probably been exploited by ants.

For example, many species that are characteristic of the Espinal Region fauna may have entered Chile across the northern Andes from Peru, Bolivia, or Argentina. Many of the characteristic species in the Valdivian Region probably entered via the forested mountain passes of the south. *Pogonomyrmex vermiculatus* is a species found in arid habitats that might have entered Chile via the Patagonian steppe. *Cylindromyrmex striatus* and *Pheidole chilensis* may have dispersed south along the coast from Peru.

Speciation of ants in Chile, as reflected by their distributions, may have followed at least two major patterns. One important pattern would involve isolation of Chilean immigrants from populations that are centered outside of Chile. Chilean species of genera such as *Pseudomyrmex, Pheidole, Solenopsis, "Tapinoma"*, and *Myrmelachista* may represent this pattern. A second, more interesting pattern might involve speciation among populations within Chile itself. *Nothidris bicolor* and *N. cekalovici* may illustrate this pattern: speciation in areas of most forest habitat isolated from the contiguous Valdivian forests of the south. Isolated areas of arid habitat on the slopes of the volcanoes in the south that are separated from the contiguous arid habitats farther north may have offered the reverse situation for speciation, though no species are clearly recognized to have followed that pattern. *Araucomyrmex* is a genus where there has clearly been extensive speciation within Chile, yet the pattern of that speciation is obscure. *Lasiophanes* and *Componotus* are other genera that pose intriguing problems as concerns speciation.

FAUNAL RICHNESS

The fauna of Chile has been described as being as interesting for those elements lacking as for those present. This is as true for Formicidae in particular as for the fauna in general. The army ants (Dorylinae) have already been noted to be absent. Since the females in this subfamily are always wingless it is understandable that they have been unable to disperse into Chile. Equally conspicuous by their absence (but less explainably so) are the Attini and Cephalotini. The attines, those species that cultivate fungi in their nests, are abundantly represented by genera and species in Argentina. The cephalotines are arboreal; a rich fauna is found in tropical forests, and they are by no means rare in temperate areas. Another conspicuously absent form is *Crematogaster,* a varied and successful genus with many species in tropical and temperate South America yet none found in Chile. Although *Pheidole* and *Camponotus* are present in Chile, the low number of species

in these genera is surprising in view of the large number present in the rest of South America.

The depauperate ant fauna of Chile is clearly due in part to the difficulty of immigration. Goetsch (1931) recognized this and aptly described Chile as an island. Boundaries that isolate Chile are the deserts in the north, cordillera in the east, ocean in the west, and cold forests in the south. Difficulties that confront species in crossing these boundaries have served, at least in part, to limit the abundance of species.

CONCLUSION

Future studies of ants in Chile will unquestionably reveal additional species to be present. Specialized collecting methods such as Burlese sampling or careful survey of arboreal habitats will probably add species to the list. We feel, however, that the fundamental nature of the Chilean formicid fauna is clear: two major species assemblages represent the Espinal and Valdivian Biogeographic Regions. Most other species are uncommon and locally distributed; a few species are both very widespread and common. The fauna as a whole, considering especially its depauperate nature, offers numerous interesting opportunities for sistematic, biogeographic, and ecological research.

LITERATURE CITED

Berg, C. 1890. Los formicidios argentinos, chilenos y uruguayos. *Soc. Cient. Argent. An.* 29:5-43.

Borgmeier, T. 1948. Einege Ameisen aus Argentinien (Hym. Formididae). *Rev. de Entomol.* 19:459-471.

Brown, W. L., Jr. 1950. Morphological, taxonomic and other notes on ants. *Wasmann Jour. Biol.* 8:241-250.

Brown, W. L., Jr. 1973. A comparison of the Hylean and Congo-West African Rain Forest Ant Faunas. In *Tropical forest ecosystems in Africa and South America: A comparative review.* B. J. Messers, E. S. Ayensu and W. D. Duckworth, eds. *Smithsonian Institution Press,* Washington, D. C., pp. 161-185.

Brown, W. L., Jr. 1958a. Contributions toward a reclassification of the Formicidae II. Tribe Ectatommini. *Mus. Comp. Zool. Bull.* 118:175-362.

Brown, W. L., Jr. 1958b. A review of the ants of New Zealand. *Acta. Hymen.* 1:1-50.

Brown, W. L., Jr. 1960. Contributions toward a reclassification of the Formicidae. III. Tribe Amblyoponini. *Mus. Comp. Zool. Bull.* 122:145-230.

Cameron, P. *In* E. Whymper. 1891. *Travels amongst the great Andes of the Equator. Suppl. Append.* :89-95.

Cekalovic, K. T. 1964. Las hormigas chilenas del género *Pogonomyrmex* Mayr y su hallazgo en Magallanes (Chile). *Mus. Nac. Hist. Nat. Santiago, Nat. Mens.* año 9, n° 100, s/p.

Cole, A. C., Jr. 1968. *Pogonomyrmex* harvester ants. A study of the genus in North America. *Univ. Tenn. Press.* x + 222 pp.

Creighton, W. S. 1930. The New World species of the genus *Solenopsis. Amer. Acad. Arts Sci. Proc.* 66:39-151.

Creighton, W. S. 1950. The ants of North America. *Mus. Comp. Zool. Bull.* 104:1-585.

Dalla Torre, C. G. de. 1893. *Catalogus Hymenopterorum hucusque descriptorum systematicus et synonymicus.* 7:289 pp.

Emery, C. 1894 (1895). Note sur les fourmis des Chili avec descriptions de deux especies nouvelles. *Soc. Sci. Chili Act.* 4:213-216.

Emery, C. 1895a. Descriptions de quelques fourmis nouvelles d'Australie. *Soc. Entomol. Belg. Ann.* 39: 345-358.

Emery, C. 1895b. Deuxième note sur les fourmis de Chili. *Soc. Sci. Chili Act.* 5:10-18.

Emery, C. 1903. Intorno ad alcune specie di *Camponotus* del'America Meridionale. *Acad. Sci. Bologna Rendia* (1902/03):62-81.

Emery, C. 1905. Studi Sulle formiche della fauna neotropica. *Soc. Entomol. Ital. Bull.* 37:107-194.

Emery, C. 1912. Fam. Formicidae. Subfam. Dolichoderinae. *In* Wytsman, P., *Gen. Insect.,* fasc. 137:1-50.

Emery, C. 1915. Noms de sous-genres et de genres proposés la sous-famille des Myrmicinae. Modifications à la classification de ce groupe. [Hymenoptera Formicidae]. *Boll. Soc. Entomol. France,* 1915:189-192.

Emery, C. 1925. Fam. Formicidae. Subfam. Formicinae. *In* Wytsman, P., *Gen. Insect.,* fasc. 183:1-302.

Ettershank, G. 1965. A new species of *Megalomyrmex* from the Chilean Andes. *Psyche* 72:55-58.

Ettershank, G. 1966. A generic revision of the world Myrmicinae related to *Solenopsis* and *Pheidologeton. Austr. Jour. Zool.* 14:73-171.

Fabricius, J. C. 1793. *Entomolgia systematica emendata et aucta* 2:349-365.

Fabricius, J. C. 1804. *Systema piezatorum secundum ordines, genera et species,* pp. 395-428.

Forel, A. 1886. Etudes myrmecologiques en 1886. *Soc. Entomol. Belg. Ann.* 30:131-215.

Forel, A. 1892. *Critique:* P. Cameron, Hym. Form. in: Whymper, Travels amongst the great Andes of the Equator. *Soc. Entomol. Belg. Ann.* 36:255-256.

Forel, A. 1893. Formicides de e'Antille St. Vincent recoltees par Mon. H. H. Smith. *Entomol. Soc. London Trans.,* pp. 333-418.

Forel, A. 1901. Formiciden des Naturhistorischen Museums zu Hamburg. I. *Mitt. Naturhist. Mus. Hamburg* 18:44-82.

Forel, A. 1903. Melanges entomologiques, biologiques et autres. *Soc. Entomol. Belg. Ann.* 47:249-268.

Forel, A. 1904a. In und mit Pflanzen lebende Ameisen aus dem Amazonas-Gebett und aus Peru, gesmmelt von Herrn E. Ule. *Zool. Jahrb. Syst.* 20:679-707.

Forel, A. 1904b. *Hamburger Magalhaensische Sammelreise.* Formiciden, pp. 3-7.

Forel, A. 1907. Formiciden aus dem Naturhistorischen Museum in Hamburg. II. *Mitt. Naturhist. Mus. Hamburg.* 24:1-20.

Forel, A. 1908. Ameisen aus São Paulo (Brasilien), Paraguay, etc., gesamelt von Prof. Herm. v. Ihering, Dr. Lutz, Dr. Fiebrig, etc. *Verh. Zool.-bot. Ges. Wien.* 58: 340-418.

Forel, A. 1909. Ameisen aus Guatemala usw, Paraguay und Argentinien. *Deutsche Entomol. Zeitschr.,* pp. 239-269.

FOREL, A. 1911. Ameisen des Herrn. Prof. v. Ihering aus Brasilien (São Paulo usw) nebst einigen andereu aus Sudamerika und Afrika. *Deutsche Entomol. Zeitschr.*, pp. 285-312.

FOREL, A. 1912. Formicides Neotropiques. Part iv. *Soc. Entomol. Belg. Mem.* 20:1-32.

FOREL, A. 1914. Formicides d'Afrique et d'Amerique nouveaux ou peu connus. *Soc. Vaud. Sci. Nat. Bull.* 50:211-288.

FOREL, A. 1915. Formicides d'Afrique et d'Amerique nouveaux ou peu connus. *Soc. Vaud. Sci. Nat. Bull.* 50:335-364.

GALLARDO, A. 1916. Las hormigas de la República Argentina: Subfamilia Dolichoderinae. *Mus. Nat. Hist. Nat. B. Aires Bull.* 28:1-130.

GALLARDO, A. 1932. Las hormigas de la República Argentina: género *Pogonomyrmex* Mayr. *Mus. Nac. Hist. Nat. B. Aires* 37:98-170.

GOETSCH, W. 1931. Estudios sobre Zoogeografia Chilena. *Bol. Soc. Biol. Concepción* (Chile). 5&6:1-19.

GOETSCH, W. 1932. Beitrage zur Biologie Sudamekanischer Ameisen. I. Teil: Wustenameisen. *Zeitschr. f. Morph. u. Oekal. d Tiere* 25:1-30.

GOETSCH, W. 1933. Untersuchungen uber die Zusammenarbeit in Ameisenstaat. *Zeitschr. f. Morph. u. Oekal. d. Tierre* 28:319-401.

GOETSCH, W. AND C. MENOZZI. 1935. Die Ameisen Chiles. *Konowia* 14:95-102.

GREGG, R. E. 1953. Taxonomic notes on the ant, *Camponotus cooperi* Gregg. *Psyche* 60:102-104.

IHERING, H. VON. 1894. Die Ameisen von Rio Grande do Sul. *Berl. Entomol. Zeitschr.* 39:321-446.

JERDON, T. C. 1851. A catalogue of the species of ants found in southern India. *Madras Jour. Litt. Soc.* 17:103-125.

KEMPF, W. W. 1961. Estudos sobre *Pseudomyrmex*. iii. *Studia Entomol.* 4:369-408.

KEMPF, W. W. 1962a. Retoques a classificao das formigas neotropicais de genero *Heteroponera* Mayr. *Dep. Zool. S. Paulo, Papeis Avulsos* 15:29-47.

KEMPF, W. W. 1962b. Miscellaneous studies on Neotropical ants. *Studia Entomol.* 5:1-38.

KEMPF, W. W. 1970a. Catálogo das Formigas de Chile. *Dept. Zool. S. Paulo, Papeis Avulsos* 23:17-43.

KEMPF, W. W. 1970b. Taxonomic notes on ants of the genus *Megalomyrmex* Forel, with the description of new species (Hym. Formicidae). *Studia Entomol.* 13: 353-364.

KEMPF, W. W. 1972a. Correção par o "Catálogo das Formigas do Chile" *Studia Entomol.* 15:448.

KEMPF, W. W. 1972b. Catálogo abreviado des Formigas de Regiao Neotropical (Hym. Formicidae). *Studia Entomol.* 15:3-344.

KUSNEZOV, N. 1949. *Pogonomyrmex* del grupo *Ephebomyrmex* en la fauna de la Patagonia. *Acta. Zool. Lill.* 8:291-307.

KUSNEZOV, N. 1951. *Lasiophanes* Emery en la Patagonia. *Acta. Zool. Lill.* 12:89-100.

KUSNEZOV, N. 1952. El estado real del grupo *Dorymyrmex* Mayr. *Acta. Zool. Lill.* 10:427-448.

KUSNEZOV, N. 1959a. La fauna de hormigas en el oeste de la Patagonia. *Acta. Zool. Lill.* 17:321-401.

KUSNEZOV, N. 1959b. Die Dolichoderinen-Gattungen von Sud-Amerika. *Zool. Anz.* 162:38-51.

LATREILLE, P. A. 1802. *Histoire naturelle des fourmis.* Paris. 445 pp.

MAYR, G. 1862. Myrmecologische Studien. *Verh. Zool.-bot. Ges. Wien* 12:649-766.

MAYR. G. 1865. Formicidae. *In Reise Novara,* Zool. Theil, Bd. 1, 110 pp.

MAYR. G. 1868. Formicidae novae Americanae a Prof. P. de Strobel. *Annuar. Soc. Nat. Modena* 3:161-178.

MAYR. G. 1870. Neue Formiciden. *Verh. zool.-bot. ges. Wien* 20:938-996.

MAYR. G. 1886. Notizen uber die Formiciden-Sammlung des British Museum in London. *Verh. zool.-bot. ges. Wien* 36:355-368.

MAYR. G. 1887. Sudamerikanische Formiciden. *Verh. zool.-bot. ges. Wien* 37:511-632.

MENOZZI, C. 1935. Le formiche del cile. *Zool. Jahrb. Syst.* 67:319-336.

O'BRIEN, C. W. 1971. The biogeography of Chile through entomofaunal regions. *Entomol. News* 82:197-207.

PEÑA G., L. E. 1965. Ensayo preliminar para dividir Chile en regiones entomofaunísticas, basadas especialmente en la familia *Tenebrionidae* (Col.). *Revista Universitaria,* Univ. Católica de Chile. 50-51, fascículo ii: 209-220.

PEÑA G., L. E. 1966. A preliminary attempt to divide Chile into entomofaunal regions, based on the Tenebrionidae (Coleoptera). "Postilla" 97:1-17.

ROGER, J. 1863. Die neu aufgefeuhrten gattungen und Arten meines Formiciden-Verzeichnisses. *Berl. Entomol. Zeitschr.* 7:131-214.

SANTSCHI, F. 1916a. Formicides sudamericains nouveaux ou peu connus. *Physis* 2:365-399.

SANTSCHI, F. 1916b. Rectifications a la nomenclature de quelques formicides. *Soc. Entomol. France Bull.,* pp. 242-243.

SANTSCHI, F. 1919. Nouveaux Formicidae de la Republique Argentine. *Soc. Cient. Argent. An.* 87:37-57.

SANTSCHI, F. 1920. Formicides africains et americains nouveaux. *Soc. Entomol. France Ann.* 88:361-390.

SANTSCHI, F. 1921. Ponerinae, Dorylinae et quelques autres formicides neotropiques. *Soc. Vaud. Sci. Nat. Bull.* 54: 81-103.

SANTSCHI, F. 1922. Descriptions nouvelles fourmis de l'Argentina et pays limitrophes. *Soc. Cient. Argent. An.* 94:241-262.

SANTSCHI, F. 1923a. *Solenopsis* et autres fourmis neotropicales, *Suisae Zool. Rev.* 30:245-273.

SANTSCHI, F. 1923b. Revue de genre *Brachymyrmex* Mayr. *Mus. Nac. Hist. Nat. B. Aires An.* 31:650-678.

SANTSCHI, F. 1925. Nouveaux formicides bresiliens et autres. *Soc. Entomol. Belg. Bull. & Ann.* 65:221-247.

SANTSCHI, F. 1929. Nouvelles fourmis de la Republique Argentine et du Bresil. *Soc. Cient. Argent. An.* 107:273-316.

SANTSCHI, F. 1936. Fourmis nouvelles ou interessantes de la Republique Argentina. *Rev. Entomol.* 6:402-421.

SMITH, F. 1857. Catalogue of the Hymenopterous insects collected at Sarawak, Borneo; Mount Ophir, Malacca; and at Singapore by A. R. Wallace. *Linn. Soc. Zool. Jour. Proc.* 2:42-130.

SMITH, F. 1858. Catalogue of the Hymenopterous Insects in the collection of the British Museum. iv. Formicidae. 116 pp.

SMITH, M. R. 1936. Ants of the genus *Ponera* in America, north of Mexico. *Entomol. Soc. Amer. Ann.* 29:420-430.

SNELLING, R. R. 1973. The ant genus *Conomyrma* in the United States. *L. A. Co. Mus. Nat. Hist. Contrib. Sci.* 238:1-6.

SNELLING, R. R. 1975. Descriptions of new Chilean ant taxa (Hymenoptera: Formidae). *L. A. Co. Mus. Nat. Hist. Contrib. Sci.* 294: 1-19.

SPINOLA, M. 1851. *In* Gay, *Historia física y política de Chile. Zoología,* 6:235-246.

TAYLOR, R. W. 1968. Nomenclature and synonymy of the

North American ants of the genera *Ponera* and *Hypoponera* (Hymenoptera: Formicidae). *Entomol. News* 79:63-66.

WHEELER, W. M. 1919. The ants of the Galápagos Islands. *Calif. Acad. Sci. Proc.* (ser 4) 2:259-297.

WHEELER, W. M. 1923a. Ants of the genera *Myopias* and *Acanthoponera*. *Psyche* 30:175-192.

WHEELER, W. M. 1923b. Formicidae from Easter Island and Juan Fernández. *In* Skottsburg, *Nat. Hist. Juan Fernández & Easter Island* 3:317-319.

WHEELER, W. M. 1925. Neotropical ants in the collection of the Royal Museum of Stockholm. *Ark. f. Zool.* 17a:1-55.

WHEELER, W. M. 1937. Ants, mostly from the mountains of Cuba. *Mus. Comp. Zool. Bull.* 81:441-465.