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Review of *Noterapion* Kissinger from Chile and Argentina (Coleoptera: Apionidae).

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Abstract. Descriptions and a key are provided for 7 South American species of *Noterapion* Kissinger (2002) (type species *Apion meorrhynchum* Philippi and Philippi) including *N. bruchi* (Béguin-Billecocq), *N. meorrhynchum* (Philippi and Philippi), *N. philippianum* (Alonso-Zarazaga) and four new species described from Chile: *N. chilense* Kissinger, *N. kuscheli* Kissinger, *N. nothofagi* Kissinger, and *N. saperion* Kissinger. A lectotype designation is published for *Apion meorrhynchum* Philippi and Philippi and *Apion vestitum* Philippi and Philippi. *Apion fuegianum* Enderlein and *A. pingue* Béguin-Billecocq are synonymized with *N. meorrhynchum* (Philippi and Philippi), *new synonymy*.

Noterapionini (new tribe) is erected for *Noterapion* Kissinger (type genus) within Apioninae. Extension of a phylogenetic analysis of Brentidae *s. lato* by Wanat (2001) places *Noterapion* near the base of Apioninae and shows the genus sharing various symplesiomorphies with primitive apionid subfamilies from Africa and not found otherwise in the New World apionids.

The weevils are associated with the southern beech, *Nothofagus* Blume (in Nothofagaceae, see Manos, 1997), also known from the Australasian Region. *Noterapion meorrhynchum* develops in abandoned cynipid wasp leaf galls.

The combination of a plant host with biogeographic significance and the possession of very primitive characters suggests that *Noterapion* may represent an ancient lineage dating back to the time of the Cretaceous and the breakup of Gondwana.

Introduction

This paper summarizes the examination of approximately 2,300 specimens of *Noterapion* Kissinger (type species *Apion meorrhynchum* Philippi and Philippi), a genus recently proposed for several species of Chilean and Argentinean apionids (Kissinger, 2002). The family name Apionidae is used following Alonso-Zarazaga and Lyal (1999) and Wanat (2001). The paper presents a key with descriptions of *Noterapion* species; the possible phylogenetic implications of the characters exhibited by some of its species; and the establishment of a new tribe for *Noterapion*, *Noterapionini*, near the base of Apioninae, based on an extension of a phylogenetic analysis of Brentidae *s. lato* carried out by Wanat (2001).

Methods and procedures follow those in Kissinger (1968, 1990, 1992) except that the term "specialized seta" is used instead of "sensory seta" because a sensory function has not been demonstrated for the setae. Description of tegmen based largely on terminology of Wanat (2001). The classification of Apionidae follows Wanat (2001). Generic group characters, their identifying numbers (in bold) and their state polarization used especially in the section on phylogenetic analysis are from Wanat (2001, pp. 333-344). Photographs were taken with a Wild 5 stereomicroscope and KODAK MDS 290 digital imaging system

and processed with Adobe Photoshop 6.0 (Adobe 2000). Collection codons are from Arnett *et al.* (1993): BMNH, The Natural History Museum, London, United Kingdom; CMNC, Canadian Museum of Nature, Ottawa, Canada; DGKC, personal collection of David G. Kissinger; MNHN, Museum National d'Histoire Naturelle, Paris, France; MNNC, Museo Nacional de Historia Natural, Santiago, Chile; NZAC, N. Z. Arthropod Collection, Auckland, New Zealand; USNM, Smithsonian Institution, National Museum of Natural History, Washington, DC, USA.

The Microsoft Encarta Interactive World Atlas 2001 (Microsoft 2000) was used to interpret Chilean localities on labels. Encarta does not refer to the Chilean provinces that were superceded in the last 20 years by 11 "Regiones" or administrative divisions; thus it was difficult to ascertain assignment of a locality to a región. Also, Encarta lacks many localities. The administrative regions involved in this study, ordered from north to south are: Maule, Biobío, Araucanía, Los Lagos, Aisén, and Magallanes; distribution data will follow this order. I am indebted to Mario Elgueta for information about location and spelling of these localities.

Kuschel borrowed the type material for *Apion meorrhynchum* Philippi and Philippi, *A. pachymerum* Philippi and Philippi, *A. humerale* Philippi and Philippi, *A. vestitum* Philippi and Philippi, and *A.*

angustatum Philippi and Philippi from the Collection Philippi in the Museo Nacional de Historia Natural, Santiago, Chile. He personally identified these specimens as type material during a recent trip to Santiago. None of the specimens had an original locality or identification label. He cleaned, remounted, and labeled the specimens (Kuschel *pers. comm.*). All will have a locality label with three lines: "Chile, Valdivia/ Fundo San Juan/ Coll. Philippi". Dimensions are listed for the specimen selected as lectotype: the length (taken from the middle of the eye to the end of the elytra) and the width (across the widest part of the elytra) (Kuschel *pers. comm.*). Because the number of syntype specimens is not given in the original description, a lectotype is picked for each species: lectotypes are labeled in red and paralectotypes in pale blue; each label will have four lines: Lectotype [symbol for male or female] / [original name] / RA & F Philippi / G Kuschel, 2002 (Kuschel *in litt.*).

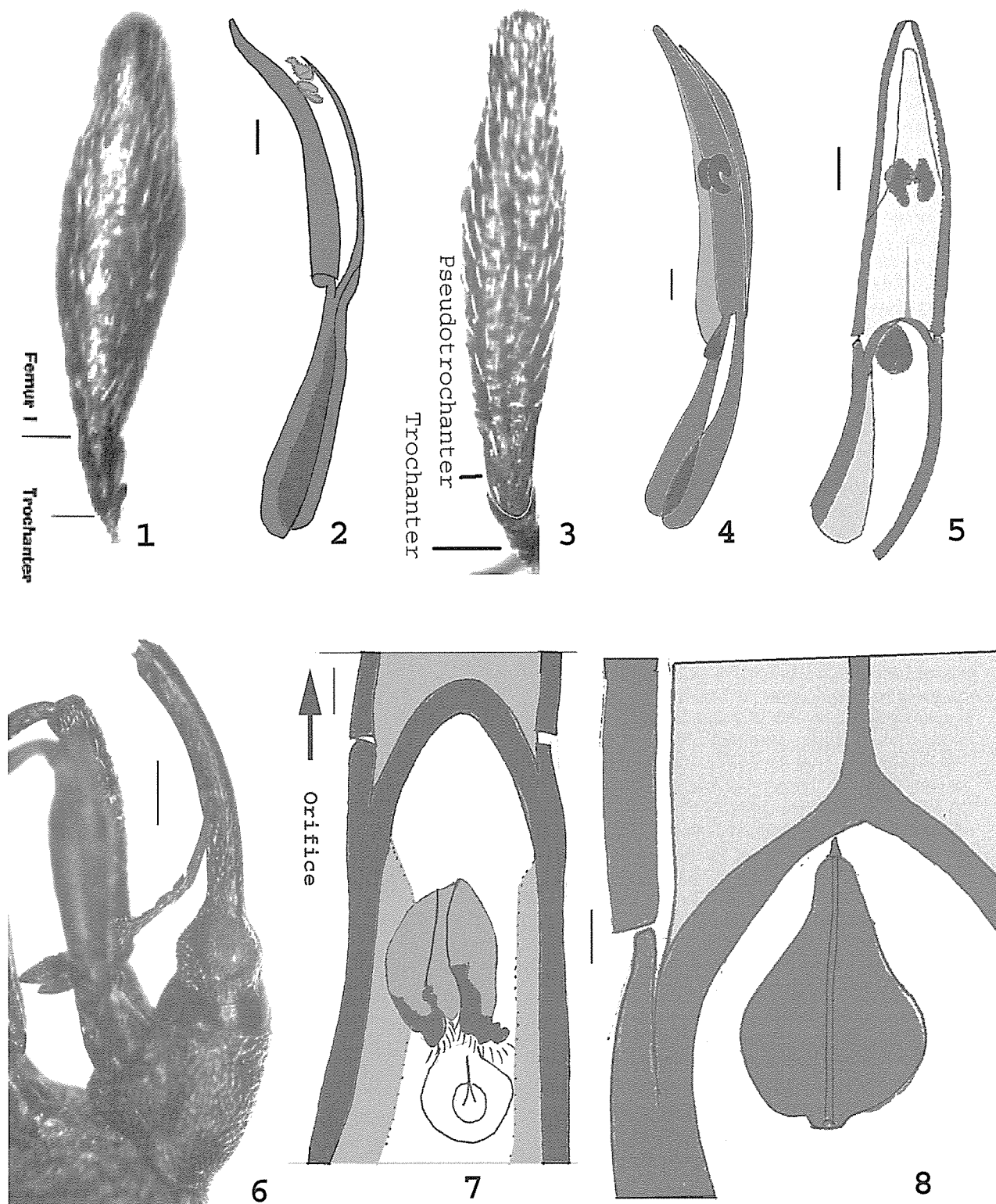
A lectotype is designated in this paper (based on the research of Kuschel) for *Apion meorrhynchum* Philippi and Philippi and for *Apion vestitum* Philippi and Philippi to achieve taxonomic stability for these very similar species, otherwise, there is no labelled type material for them. This statement is intended to fulfill article 74.7.3 of the ICZN (4th ed.) requiring justification for such designations.

Note about holotypes: The holotypes for *N. chilense*, *N. kuscheli*, *N. nothofagi*, and *N. saperion* are to be returned to the NZAC. It is the author's understanding that the holotypes (and other representative material) will be sent to MNNC for permanent storage (Kuschel, *in litt.*).

Each description begins with a section, "Distinctive characters"; characters mentioned there will not be repeated in the description unless more detail is furnished.

Key to the species of *Noterapion* Kissinger occurring in South America

- 1A. In dorsal view femur 1 sides at base evenly converge to attachment with trochanter; pseudotrochanter not distinct (Fig. 1); in profile male median lobe of aedeagus dorsal margin abruptly curved downward near orifice and apex recurved upward (Fig. 2); endophallus lacks globular sclerotized process near base of median lobe 3
- 1B. In dorsal view femur 1 sides at base narrowed to short subparallel region with distinctive sculpture (pseudotrochanter) which attaches to trochanter (Fig. 3); in profile male median lobe of aedeagus nearly flat, (at most slightly, evenly curved) (Fig. 4); endophallus with distinct sclerotized process near base of median lobe (exact position depends on condition of endophallus) (Fig. 5) 2
- 2A. In profile dorsal margin of head constricted behind eye, ventral surface of head broadly convex (Fig. 6); impressed area on pseudotrochanter comparatively shorter; male endophallus at base of median lobe of aedeagus with globular process somewhat wider than long, consisting of 2 halves separated variable distance (depending on condition of endophallus) (Fig. 7); female rostrum generally less than 1100 μ long *Noterapion kuscheli* Kissinger
- 2B. In profile dorsal margin of head not constricted behind eye, ventral surface of head flat (angular ridge may be present) (Fig. 9); impressed area on pseudotrochanter comparatively longer (Fig. 24 & 25); male endophallus near base of median lobe with single top-shaped globular sclerite usually longer than wide (Fig. 8); female rostrum generally more than 1100 μ long *Noterapion meorrhynchum* (Philippi and Philippi)
- 3A. Inner margin of tibia 3 relatively straight, not distinctly convex or bowed (Fig. 10); mesocoxae with flat union of mesosternal intercoxal and metasternal processes, in profile union on level with usual sternal surface; mesocoxae not dentate or angulate 4
- 3B. Inner margin of tibia 3 distinctly convex, tibia appears bowed (Fig. 11); mesocoxae with mesosternal process long, nearly vertical, distinctly projecting away from usual sternal surface, it and metasternal coxal process meet as two upright cylindrical objects nearly on level of apex of mesocoxae (Fig. 12A,B); mesocoxae (of both sexes) dentate or angulate on posterior medial aspect (Fig. 12C) *Noterapion saperion* Kissinger
- 4A. Total length from anterior margin of eye to tip of elytra less than 3250 μ ; in dorsal view sides of female rostrum more nearly parallel beyond insertion of antenna; scutellum variable 5
- 4B. Total length greater than 3500 μ ; in dorsal view female rostrum strongly narrowed beyond insertion of antenna, strongly expanded toward apex (Fig. 13); scutellum narrow, elongate (Fig. 14) *Noterapion bruchi* (Béguin-Billecocq)
- 5A. Elytral striae fine, elytra interval 2 at middle nearly flat, about twice as wide as stria (Fig. 15); pronotal punctures denser, deeper, interspaces narrower, scales tend to overlap (Fig. 16); scutellum short, rounded 6



Figures 1-8. *Noterapion bruchi* (Béguin-Billecocq). 1) dorsal view of trochanter and femur 1 [no scale]; 2) lateral view of median lobe of aedeagus [110 μ]. *N. meorrhynchum* (Philippi and Philippi). 3) dorsal view of trochanter, femur 1 and pseudotrochanter [no scale]; 4) lateral view of median lobe of aedeagus [71 μ]; 5) dorsal view of median lobe of aedeagus [110 μ]; 8) detail of basal armature of endophallus, diagrammatic [27 μ]. *N. kuscheli* Kissinger. 6) female, lateral view of head and prothorax [367 μ]; 7) detail of basal armature of endophallus, diagrammatic [54 μ]. [Scale value].

- 5B. Elytral striae coarse, deep, elytra interval 2 at middle subconvex, about as wide as stria (Fig. 17); pronotal punctures sparse, shallow, interspaces flat, wide, scales tend to be isolated (Fig. 18); scutellum tends to be narrow, elongate (Fig. 18) *Noterapion chilense* Kissinger.
- 6A. Rostrum in profile distinctly curved (Fig. 19), apical ventral margin of hypostomal area not prominent (Fig. 20); antennomere 1 generally > 1.2 as long as eye; ventral sublateral sulcus generally present (Kissinger, 1992, Fig. 2,3)
... *Noterapion philippianum* (Alonso-Zarazaga)
- 6B. Rostrum in profile straight (Fig. 22), apical ventral margin of hypostomal area produced into angular or acute projection (Fig. 21); antennomere 1 frequently < 1.12 as long as eye; ventral sublateral sulcus generally absent
..... *Noterapion nothofagi* Kissinger

***Noterapion meorrhynchum*
(Philippi and Philippi)**

Figs. 3-5, 8-10, 23-26

Apion meorrhynchum Philippi and Philippi, 1864: 364.

TYPE MATERIAL: 1 syntype, in Collection Philippi (MNNC), no original labels, LECTOTYPE (here designated, original number of syntypes not specified in original description; labeled by G. Kuschel, who gives dimensions of specimen as 3.00mm long x 1.45mm wide (Kuschel, pers. comm.)), symbol for male, [white locality label] "Chile, Valdivia / Fundo San Juan ? / Coll. Philippi"; [red lectotype label with 4 lines] "Lectotype, symbol for male / *Apion meorrhynchum* / RA & F Philippi / G Kuschel, 2002" [The locality is not certain based on the original description; the species recently was collected from Valdivia].

Apion tenebricosum Gemminger, 1871: 2473. Replacement name for *Apion obscurum* Blanchard, 1851: 309 (not Marsham 1802). TYPE LOCALITY: Valdivia, Chile (MNHN); syntype female, labeled "Museum Paris. Chili ci Gay, 1849, Type", photographed in 1965 by DG Kissinger. Synonymy Kuschel, 1950: 16.

Apion pingue Béguin-Billecocq, 1909: 461. TYPE LOCALITY: République de Argentine: Gouvernement de Río Negro (MNHN); syntype female, labeled "R. Argentina Geb Rio Negro C Bruch", photographed in 1965 by DG Kissinger. New Synonymy.

Apion fuegianum Enderlein 1912: 16. TYPE MATERIAL: HOLOTYPE: male, [Argentina: Tierra del Fuego Administrative Division:] Lapataia in Feuerland. Not examined. New Synonymy.

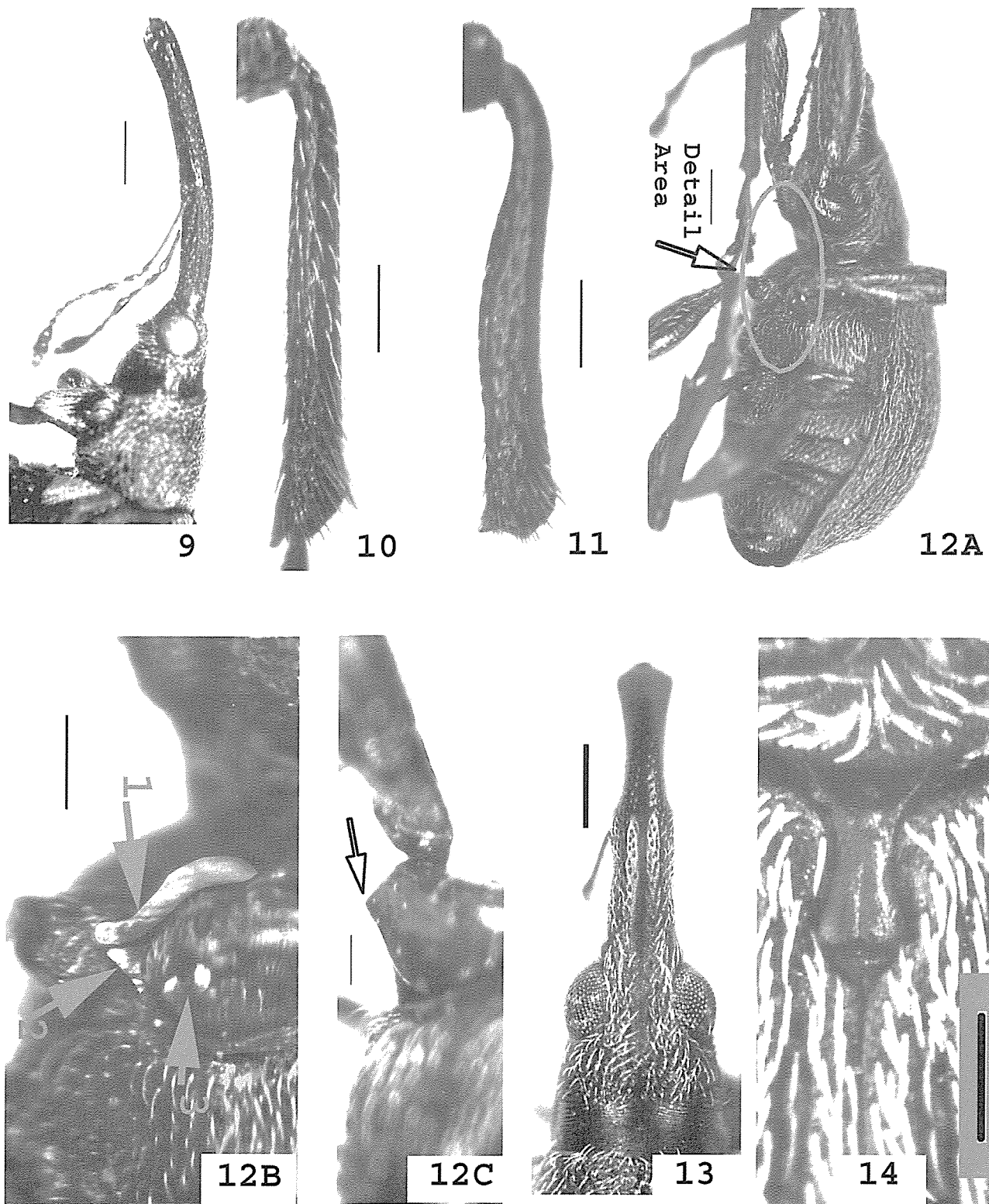
Noterapion meorrhynchum (Philippi and Philippi), Kissinger, 2002: 315.

Noterapion pingue (Béguin-Billecocq), Kissinger, 2002: 315.

Noterapion fuegianum (Enderlein), Kissinger, 2002: 315.

Distinctive characters. Length less than 3.50mm; pronotum with denser, deeper punctures (Fig. 16). Femur 1 of both sexes with distinct pseudotrochanter (Fig. 3, 24, 25). In profile rostrum distinctly curved (Fig. 9); lacks hypostomal prominence (Fig. 20); in dorsal view female rostrum largely subparallel throughout; female rostrum > 1.6 length of prothorax; dorsal margin of head not constricted behind eyes; ventral surface of head flat, possibly with angular transverse ridge (Fig. 9). Scutellum short, broad. Tibia 3 straight (Fig. 10). Sternal processes separating mesocoxae not prominent; mesocoxa not dentate. Dorsal margin of median lobe of aedeagus in profile slightly, evenly curved from base to apex (Fig. 4); endophallus at base of median lobe with single top-shaped globular sclerite usually longer than wide (Fig. 5, 8).

Description. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length 2360-3530µ; width 1100-1700µ. Rostrum of male 820-1230µ long; 1.24-1.94 as long as prothorax; in basal 0.5 surface more strongly alutaceous, bearing punctures 18-36µ in diameter with very fine seta-like scales 36-64µ long, laterally with punctures arranged in 3 indistinct, irregular, shallow sulci, which end before insertion of antenna, in apical 0.5 surface very finely alutaceous with punctures finer, sparser and with suberect setae 12-20µ long, ventral sublateral sulcus (VLS) indicated by row of 11-13 slightly impressed, coarser punctures bearing erect setae 27-64µ long, at apex of VLS and ventrally near antenna insertion with individual setae up to 100µ long; in profile slightly curved, sides largely subparallel throughout, slightly stouter behind antennal insertion; in dorsal view slightly expanded at antennal insertion, subequal to base, in apical 0.3 sides subparallel, indistinctly expanded toward apex; male antenna inserted at basal 0.48-0.56 of rostrum at distance in front of eye 2.48-3.46 width of frons; dorsal margin of scrobe nearly straight, ending near anterior margin of eye, subcephalic ridges lacking. Rostrum of female 1100-1790µ long; 1.67-2.58 as long as prothorax; sculpture much as male, more polished near tip; sparse vestiture throughout as in male apical 0.5, VLS similar to male without long seta near antennal insertion; in profile (Fig. 9) slightly curved, sides subparallel throughout; in dorsal view largely subparallel throughout, slightly broader at insertion of antennae and at apex; female antenna inserted at basal 0.44-0.52 of rostrum at distance in front of eye 2.99-4.42 width of frons. Head with frons 140-220µ wide; 0.81-1.09 as



Figures 9-14. *Noterapion meorrhynchum* (Philippi and Philippi). 9) female, lateral view of head and prothorax [170 μ]; 10) male, lateral view tibia 3 [190 μ]. *N. saperion* Kissinger. 11) male, lateral view tibia 3 [190 μ]; 12A) detail area indicated for B and C [370 μ]; 12B) detail of area between mesocoxae, 1 is mesosternal intercoxal process, 2 is same for metasternum, 3 is coxal process; 12C) detail of profile of mesocoxa with angular process. *N. bruchi* (Béguin-Billecocq). 13) female, dorsal view of head and rostrum [367 μ]; 14) detail of scutellum [190 μ]. [Scale value].

wide as dorsal tip of rostrum; head surrounding eye with moderately dense scales 55-83 x 6-9 μ , scales slightly longer and coarser in male, in profile frons adjacent to upper quadrant of posterior margin of eye with 3-4 erect setae 55-64 μ serially arranged, frons flat, median area glabrous, laterally with 2-3 irregular rows of punctures with scales as described above; in profile dorsal and ventral margin of head flat, ventrally transverse angular ridge may be present. Prothorax 460-740 μ long, at base 1.04-1.56 as wide as long; basal margin moderately expanded laterally, sides slightly diverging toward middle, there distinctly narrower than base, constricted apically; punctures 18-36 μ in diameter, shallow, bearing acute, decumbent scales similar to those on basal lateral part of head; interspaces narrow, finely alutaceous; basal fovea lacking, may be indicated as basal median impunctate area. Elytra at humeri 1.10-1.57 as wide as pronotum base; 2.52-3.51 as long as prothorax; 1.17-1.58 as long as wide; interval 2 at middle of elytra 1.4-1.7 X stria, somewhat convex, with 4-5 rows of fine punctures bearing scales similar to pronotum; intervals with long (>60 μ), erect specialized setae scattered along length as follows: intervals 1, 3 and 5 with 4-7+ setae, interval 7 with 1-4 setae, interval 9 with 1 seta near apex; striae moderately fine, deep, with scales somewhat longer than adjacent interval, on apex striae join 1+2+9, 3+4, 5+6, 7+8. Femur 1 (Fig. 3) with basal pseudotrochanter 150-220 μ long (measured along dorsal margin); area with fine, dense microsculpture similar to coxa and trochanter and not relatively smooth as surface of remainder of femur; in profile area with distinct impression 90-185 μ in length oriented parallel with dorsal margin of femur, located about 0.3 width of femur down from dorsal margin; in profile dorsal margin of pseudotrochanter somewhat arcuate with respect to remainder of femur; in dorsal view sides of pseudotrochanter subparallel, somewhat disjoint from outline of remainder of femur. male characters: Tibia 2 with simple mucro 46-64 μ long; tibia 3 with simple mucro 46-74 μ long. Median lobe of aedeagus 655-848 μ long (excluding posterior apophyses), strongly depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 3.6-3.8, in dorsal view (Fig. 5) sides subparallel from base to near orifice, evenly narrowing to 51-90 μ wide tip, tip simple, in lateral view (Fig. 4) sides subparallel from base to near orifice, slightly, evenly curved from base to 12-25 μ wide tip; posterior apophyses broad, 0.58-0.71 as long as body of median lobe; endophallus with top-like globular structure (Fig. 8) at base of median lobe 86-145 μ long X 86-100 μ wide,

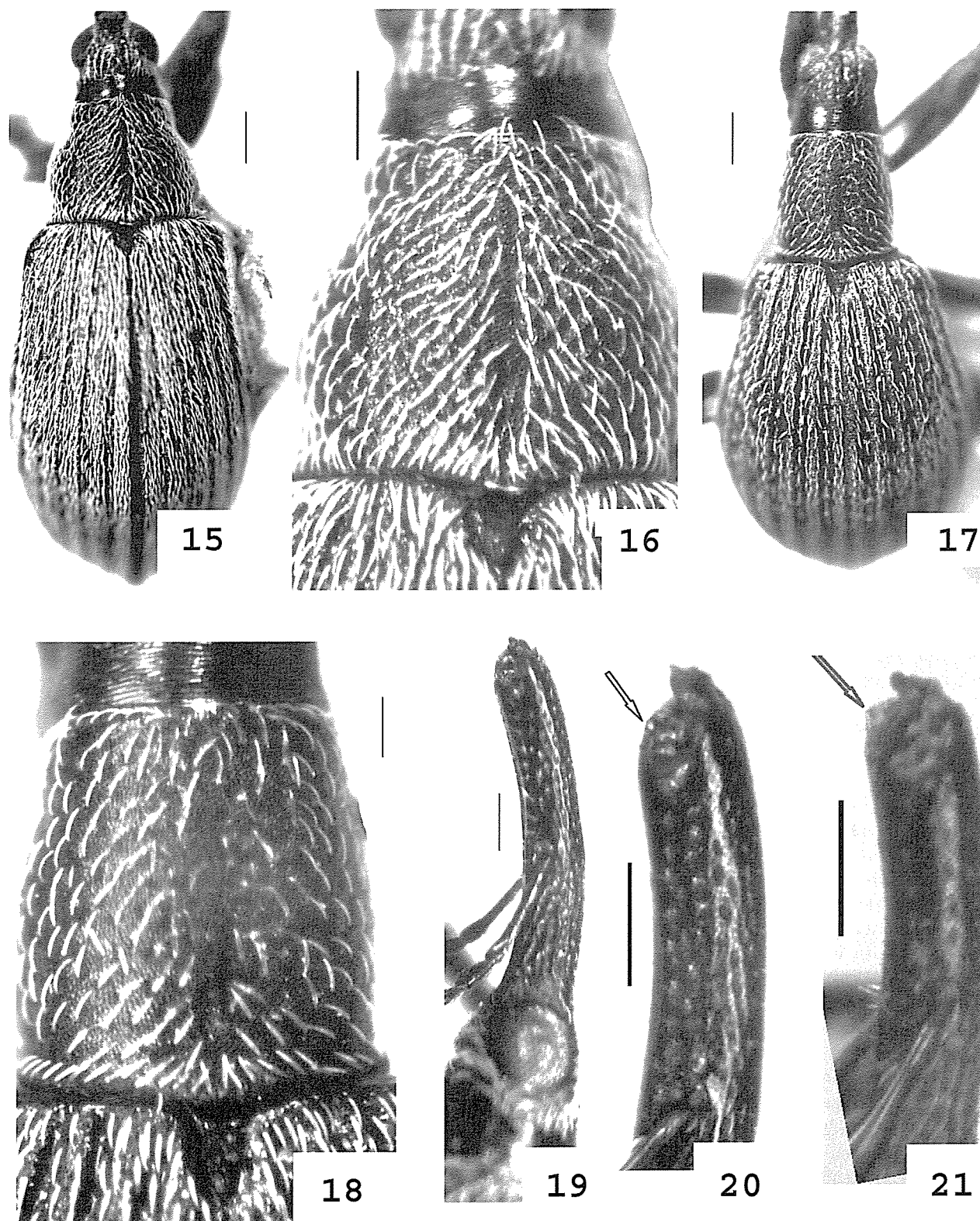
near orifice with 2 hook-like frena 86-110 μ long X 54-67 μ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing 4-6 macrochaetae 30-68 μ long; basal median area of parameres flat.

Biology. Collected on *Nothofagus antarctica* (G. Forst.) Oerst., *N. betuloides* (Mirbel) Blume, *N. dombeyi* (Mirbel) Blume, *N. pumilio* (Prepp. & Endl.) Krasser and *N. obliqua* (Mirbel) Blume based on label data and G. Kuschel (*in litt.*). The following is based largely on information from Kuschel (*in litt.*): *Noterapion meorrhynchum* oviposites in freshly abandoned leaf galls of a cynipid wasp (*Paraulax* sp.) on *Nothofagus dombeyi* where development occurs through pupal and adult stages. These galls (Fig. 23, photograph provided by G. Kuschel) are smooth, spherical, 10-15 mm in diameter, on 1-2 mm long stalks attached to 1-2 mm thick short twigs of last years growth. One gall may produce up to 12 weevils. (The galls often are thought, erroneously, to be the fruit of *Nothofagus dombeyi*.)

There may be a question about the gall inducer. De Santis *et al.* (1993) illustrated a gall from *N. dombeyi* much like Fig. 23 associated by him with parasitoids of the genus *Paraulax* (Cynipinae) and three other wasp families Pteromalidae, Eulophidae, and Torymidae. I agree with Kuschel that it is questionable that all these unrelated wasps could produce the same kind of gall and that, in fact, the three families may be parasitoids of *Paraulax* and not gall inducers (Kuschel *in litt.*). De Santis *et al.* (1993) also recorded undetermined Curculionidae obtained from galls of *Nothofagus antarctica*, but a recent attempt by G. Kuschel failed to locate this material in Argentina (Kuschel *in litt.*). Tomas Cekalovic at Punta Arenas, Chile reared *N. meorrhynchum* from galls of *N. antarctica* based on label data (USNM).

Stuardo (1929) reported that *Apion tenebricosum* Gemminger emerged from fruit of *N. antarctica*; the authority for the determination was not given; this material was not found in the collection of the Colegio San Pedro Nolasco, Santiago, Chile (Kuschel *pers. comm.*). Apionid material reared from the fruit of *N. antarctica* remains unlocated.

Hustache (1930) states that D. S. Bullock reared *Apion obscurum* Blanchard from galls on *N. dombeyi*; his illustration of the gall is much like Fig. 23. Kuschel has 1 specimen of the Bullock material; it is *N. meorrhynchum* labeled [Chile,] Angol, 10.XI.1933



Figures 15-21. *Noterapion philippianum* (Alonso-Zarazaga). 15) dorsal view of head, pronotum and elytra [150 μ]; 16) detail of pronotum and scutellum [60 μ]; 19) female, lateral view of head and rostrum [190 μ]; 20) detail of lateral view of rostrum hypostomal area [190 μ]. *N. chilense* Kissinger. 17) dorsal view of head, pronotum and elytra [240 μ]; 18) detail of pronotum and scutellum [94 μ]. *N. nothofagi* Kissinger. 21) detail of lateral view of rostrum hypostomal area [190 μ]. [Scale value].

(Kuschel *in litt.*); other reared Bullock material from Chile, Victoria, 25.II.1929 is in the USNM.

Notes on synonymy. My interpretation of *N. fuegianum* (Enderlein) is based on a female from Chile, Magallanes: Río Seco (BMNH), author of determination not stated, and a series from Chile, Magallanes, Puerto Williams, determined by Kuschel (NZAC). The type locality of *N. fuegianum* is 62 km west of Puerto Williams, across the Beagle Channel. Its synonymy with *N. meorrhynchum* (Philippi and Philippi) is based on a sample of 49 male and 41 female of *N. meorrhynchum* from northern Chile and 24 male and 24 female of *N. fuegianum* (Enderlein) from Magallanes. No significant differences within sex for the two populations were found for the following measurement characteristics: total length; length of rostrum; position of insertion of antenna on rostrum; length and width of femur 1; length of prothorax and of elytra; width of prothorax at base, middle and apex; width of elytra and of humeri; and width of frons. Also, the bionomics, the pseudotrochanter at the base of femur 1 in both sexes, the shape and structure of the median lobe of the aedeagus, and the armature of the endophallus are similar in the two forms.

A statistically significant difference was found in the greater thickness of the rostrum of both sexes of *N. fuegianum* compared to *N. meorrhynchum*. To illustrate using the width of the female rostrum in dorsal view at the insertion of the antenna, the mean for *fuegianum* ($n=24$) is 234μ and 199μ for *meorrhynchum* ($n=41$). The t -value, 2.96, for this difference between means, 35μ , with 63 d.f., is significant at less than 0.01%; there is less than 1 chance in 100 that this difference is due to chance. However, this measurement cannot be relied upon to separate the two species because the data overlap. The observed range of this measurement in *fuegianum* is $200\text{--}267\mu$ while for *meorrhynchum* it is $166\text{--}230\mu$. The critical overlap region, $200\text{--}230\mu$, virtually includes the means of both species; inspection of the data shows that over 50% of the individuals of both populations are in the overlap region. In general, *N. fuegianum* occurs in the Aisén and Magallanes Regiones in the extreme south of Chile, but individuals with a comparatively stout rostrum are found scattered throughout the more northern distribution of *N. meorrhynchum*; for instance, in Araucanía: Cautín; in Biobío: Chillán, Copahue, Las Cabras, and Puerto Octay; and in Los Lagos: Lago Llanquihue, Los Muermos, 10 km E Puyehue, and Salto del Pilmaiquén. Similarly, *N. fuegianum* occurring in the Río Negro, Santa Cruz and Neuquén provinces of southern Argentina tend to

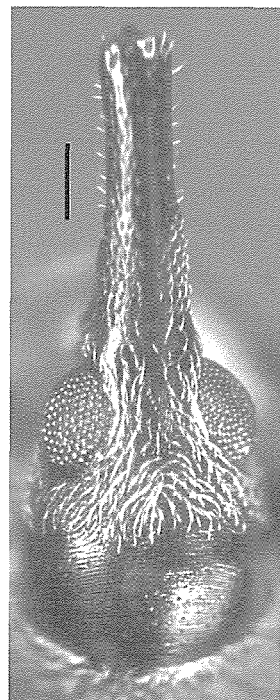
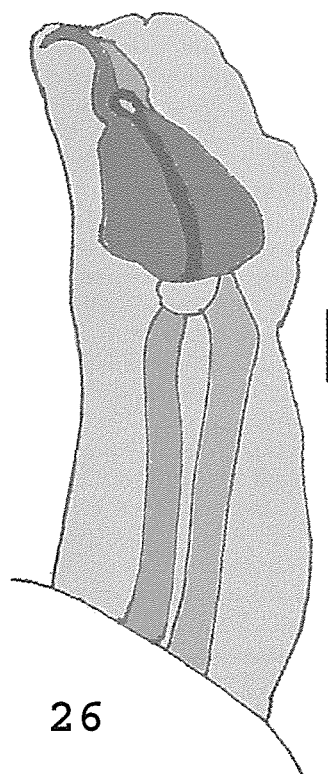
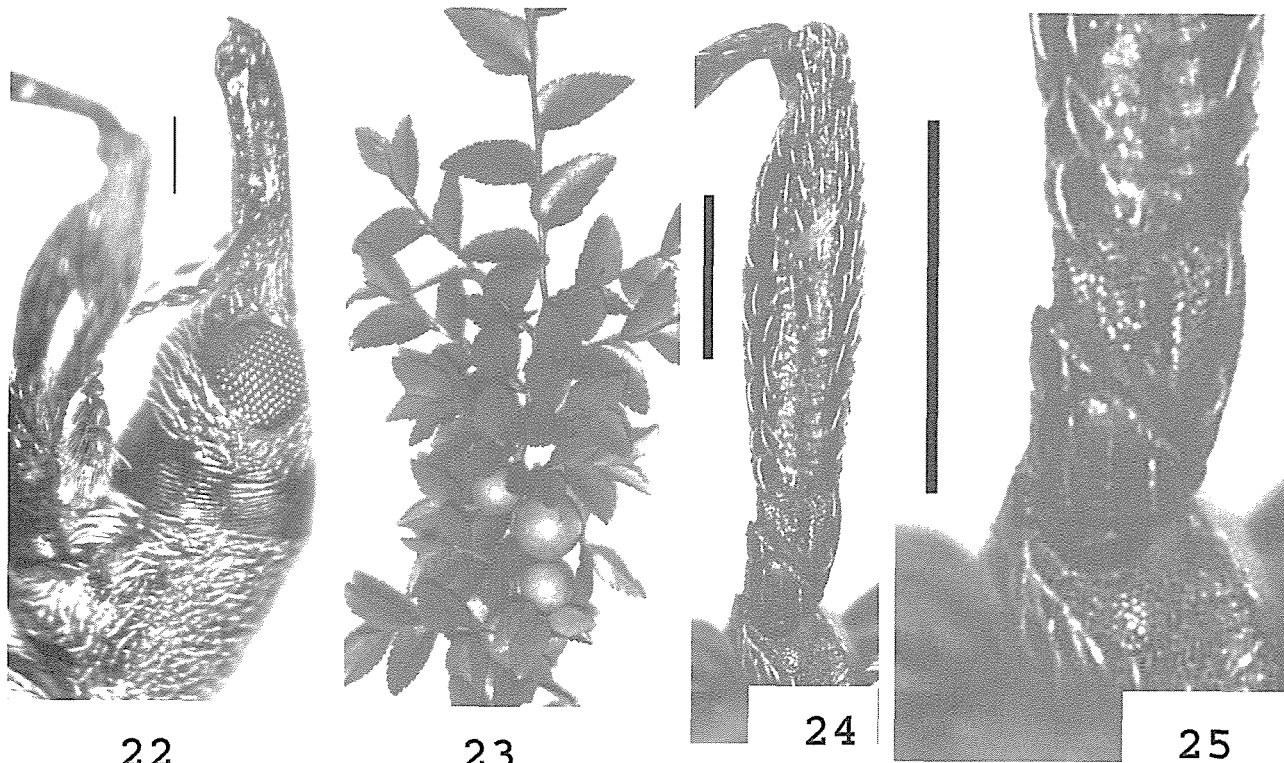
have the thickness of the rostrum more nearly like "typical" *N. meorrhynchum*. I believe *N. meorrhynchum* tends to form local races of which *N. fuegianum* is an example.

The synonymy of *Apion pingue* Béguin-Billecocq with *N. meorrhynchum* (Philippi and Philippi) is based on notes and photographs of a female (possible syntype: label data as in description but did not state "type") in the Oberthür Collection (MNHN) made by D. G. Kissinger in 1965 and on notes by G. Kuschel (*in litt.*). Length of rostrum was recorded as 1.37mm, above the upper limit of female rostrum length in *N. kuscheli* (1.23mm) and *N. philippianum* (1.10mm); also, the head is not globular as in *kuscheli*.

The synonymy of *Apion obscurum* Blanchard with *N. meorrhynchum* is based on notes and photographs of a female syntype in the Oberthür Collection (MNHN) made by D. G. Kissinger in 1965 and on notes by G. Kuschel (*in litt.*). The photographed female specimen has a rostrum 1.56mm long, 2.4 length of prothorax; specimens of *meorrhynchum* from Valdivia tend to be in the upper range of 1.67–2.58 observed in *meorrhynchum* for the rostrum length/prothorax length ratio; also, the photograph lacks the globular head of *kuscheli* (Fig 6.). The length of the female rostrum of this specimen is above the upper limit for *kuscheli* and *philippianum* as given above.

Note on structure of endophallus: A male from Valdivia (DGKC) has the endophallus everted through the orifice of the median lobe and projecting beyond the tips of the elytra (Fig. 26). The entire ejaculatory duct is not clear in this preparation, making interpretation uncertain. The basal top-like globular sclerite is situated at the end of the apparent ejaculatory duct and its narrow, short, corkscrew portion is associated with the end of the everted endophallus as if it was the gonopore. It is not certain whether this sclerite has an internal duct or is grooved along the venter (the figure is diagrammatic). There are 2 interpretations (at least) of Fig. 26. 1) The ejaculatory duct joins a longitudinal cleft on the globular sclerite and the edges of the cleft are visible and end as a circular object at the base of the "cork-screw". 2) The ejaculatory duct joins a longitudinal canal in the globular sclerite, which ends as above near the base of the "cork-screw". It is reasonably clear that the duct does not go out into the corkscrew structure (but it might still serve as a guide for the spermatozoa).

Two species, *N. meorrhynchum* and *N. kuscheli*, have a distinct basal globular process in the endophallus (Fig. 7–8). It is possible that this is a remnant of



Figures 22-27. *Noterapion nothofagi* Kissinger. 22) female, lateral view of head, rostrum and prothorax [190 μ]. 27) female, dorsal view of head and rostrum [190 μ]. *Nothofagus dombeyi* (Mirbel) Blume. 23) Sprig with three galls, from Frutillar, Llanquihue, Chile, 26 Nov 2001, G Kuschel [no scale]. *Noterapion meorrhynchum* (Philippi and Philippi). 24) female, lateral view coxa, trochanter and femur 1 [370 μ]. 25) female, detail of pseudotrochanter, femur 1 [370 μ]. 26) male, detail of partially everted endophallus; "basal sclerite" is near apex of structure; bottom of diagram is apex of elytra; dorsal is to left [34 μ]. [Scale value].

the endophallic flagellum found in more basal members of Apionidae. At the other extreme are highly derived species of Apioninae that lack obvious sclerotized elements in the endophallus. In *kuscheli* the process consists of 2 halves which become widely separated upon eversion of the endophallus as was seen in a partial eversion (NZAC).

Further, in *kuscheli* there is a basal median clear area adjacent to the sclerites in the base of the endophallus of about the same diameter as the single sclerite in *meorrhynchum* (Fig. 7); it is possible that this "clear area" contains the membranous equivalent of the gonopore as described for *meorrhynchum*; Fig. 7 is diagrammatic. At present the most that can be said is that *meorrhynchum* and *kuscheli* have at least one undisputed sclerotized element in the endophallus

at the base of the median lobe not found elsewhere in New World Apioninae; the lack of a good preparation of the elaculatory duct clouds the hypothetical relationship of this sclerite with a flagellum.

Distribution. The range is between latitude 34° 58' S and 54° 55' S in the Maule, Biobío, Araucanía, Los Lagos, Aisén, and Magallanes Regiones of Chile and the Río Negro, Santa Cruz, and Neuquén provinces and Tierra del Fuego administrative division of Argentina. **Argentina:** [Neuquén:] 4 males, 4 females, Neuquén, 17.I.1949, A. Willink (NZAC). **Río Negro:** 1F, P. Blest, 26.XI.1950, W. Wittmer (NZAC); male, L. Trébol, 8.II.1949, W. Wittmer (NZAC). **Santa Cruz:** 3 males, female, L. Viedma, 23.II.1947, W. Wittmer (NZAC); male, Brazo Onelli (Lago Argentino), 28.II.1953, A. Willink (NZAC). **Chile:** [Unspecified Región]: male, 2 females, Chili, Bovie Collection thru Buchanan, det Wagner (USNM). **Maule:** 10 male, 10 females, Cord. Curicó, Cubillo, 22-27.IX.1959 (NZAC); 1 females, Curicó, Cubillo, 25.IX.1959, L. E. Peña (NZAC); 12 males, 9 females, Curicó, El Coigual, III.1955 or I.1964, L. E. Peña (USNM, DGKC); male, Cord. Curicó, El Coigo, XI.-XII.1957 (NZAC); 56 males 1 female, Cord. Talca, Alto de Vilches, 18-25.X.1964, [L. E. Peña] (USNM, DGKC); 2 males, 3 females, Estero Leiva, Parral, 10.I.1953, L. E. Peña (NZAC); 1 male, Cord. Parral, Fundo Malcho, XI.1990 (NZAC). **Biobío:** 5 males, 1 females, Ñuble, Cord. Chillán, 20.XII.1954, L. E. Peña, 1100-1480 m (NZAC); 1 female, Chillán, Atacalco, 18.XII.1959, L. E. Peña (NZAC); 4 males, 1 female, Cord. Chillán, Las Cabras, 8-15.II.1959 (NZAC); 60 males, 57 females, 71 males, 1 female Cord. Chillán, Ñuble, Las Cabras "Andes in Chillán, S. foot-hill of Chillán Vulcano", 6.I.1963 [L. E. Peña] (USNM, DGKC); 1 male, 3 females, Cord. Chillán, Las Trancas, 10-18.II.1959 (NZAC); 5 males, 4 females, Cord. Chillán, Las Trancas, 21-30.XI.1964 or 1-11.XII.1964 [L. E. Peña] (USNM); 1 female, Fátima, Yungay, 23.II.1960, L. Schmidt, 1300 m (NZAC); 1 male, 1 female, Recinto, XI.1948 or XI.1951, L. E. Peña (NZAC); Los Ñirres, 12.III.1994, T. Cekalovic (DGKC); 1 female, 10 km W Recinto, 17.XII.1976, Gurney & Barria (USNM); Río Renegado, 19.IX.1986, T. Cekalovic (DGKC); 1 male, 1 female, Laguna Laja, Los Barros, 15.I.1948, on *Nothofagus antarctica*, 1500 m (NZAC); Laguna Verde, 1 male, 27.I.1948, 1500 m (NZAC); 1 male, 3 females, Copahue, 21.I.1948, G. Kuschel, on *Nothofagus pumilis*, 1800 m (NZAC); 1 female, Lag. Trapapa, 19.I.1948, on *Nothofagus antarctica*, 1700 m (NZAC); 1 male, 1 female, Pemehue, 17.I.1946, G. Kuschel, 1700 m (NZAC); 9 males, 2 females, Cord. Nahuelbuta, Pichinahuel, 1-31.I.1959 (NZAC). **Araucanía:** 2 females, Malleco, Estero Cabreria, 11.I.1958 (NZAC); 2 males, 3 females, Victoria, 1.III.1929, galls of *Coigüs*, D. S. Bullock [specimens teneral] (USNM); 2 males, Victoria, 25.II.1929, galls of *Coigüs*, [specimens teneral; part of D. S. Bullock material], Colln E C Zimmerman 1941, determined as "*Apion obscurum* Wenck" (USNM); 6 males,

10 females, Cautín, Nueva Imperial, Chacamo, 17-23.II.1981, L. E. Peña, 600-700 m (USNM, DGKC); 1 females, Nueva Imperial, Fdo Las Selvas, W Temuco, 18.II.1981, L. E. Peña, 600-700 m (USNM); 1 male, 2 females, Termas de Tolhuaca, 15-25.I.1959 (NZAC); 3 males, La Fusta, 9.XII.1959, 800 m (NZAC); 2 males, Termas Río Blanco, 23.XI.1979, A. C. Ashworth, J. W. Hoganson, On *Nothofagus*, 1100 m, Valdivian Rain Forest (USNM); 1 male, P. N. Conguillío, 12.XII.1990, G. Kuschel, *Nothofagus pumilio*, 1000 m (NZAC); 1 female, Volcán Llaima, 17.IX.1951, M. Codoceo (NZAC); 3 males, 30 km NE Villarica, L. E. Peña (USNM). **Los Lagos:** 1 female, Valdivia, 13.II.1952, T. Cerda (NZAC); 2 females, Valdivia, Valdivia, 23.X.1982, E. Krahmer (DGKC); 1 female, Valdivia, Llanacura, 6.I.1957, en agallas de *Nothofagus dombeyi* (NZAC); 2 females, Valdivia, Panguipulli, 9.II.1983, E. Krahmer (DGKC); 1 male, 2 females, Valdivia, Santo Domingo, 5.X.1975, E. Krahmer (DGKC); 8 males, 20 females, Valdivia, Santo Domingo, 25.II.1976, T. Cekalovic (DGKC). 7 males, 8 females, Valdivia, Valdivia, 12.X.1981, E. Krahmer (DGKC); 1 male, 1 female, Osorno, Salto del Pilmaiquen, 27.I.1951, R. M. (NZAC); 1 male, Osorno, 10 km E Puyehue, 24.I.1951 (NZAC); 1 male, 2 females, Osorno, Antillanca Airfield, Site 33A, PN de Puyehue, 22.I.1979, A. C. Ashworth, J. W. Hoganson, On *Chusquea* sp., 1970 m, subantarctic forest (USNM); 1 female, Llanquihue, Frutillar, 14.XII.1953, G. Kuschel (NZAC); 3 males, 2 females, Lago Llanquihue, Puerto Octay, 16.XI.1955, Oerhens leg., s/*Nothofagus dombeyi* (NZAC); 2 females, 8 mi W Puerto Varas, 16.I.1951, R. M. (NZAC); Silla del Diablo, 15.II.1990, T. Cekalovic (DGKC); 2 males, 3 females, Los Muermos, 19.I.1951, R. M., forest (NZAC); 1 female, Chiloé, Río Dongo, 19.I.2000, T. Cekalovic (DGKC); 1 female, Chiloé, San Juan de Chadmo, 18.II.1998, T. Cekalovic (DGKC); 5 males, 3 females, Chiloé, 5 km S Compu, 10.II.1999, T. Cekalovic (DGKC). **Aisén:** 1 male, 1 female, Coihaique (or Coyhaique), 8.II.1956, s/*Nothofagus pumilio* or none (NZAC); 2 males, 2 females, Lago B. Aires, Puerto Cristal, 21-23.I.1956, s/*Nothofagus pumilio* or *Nothofagus dombeyi* or none (NZAC). **Magallanes:** 1 male, Estero White, Wellington, 49 59.5', 23.XII.1956, on *Nothofagus betuloides* (NZAC); 2 females, Ba. Muñoz Gamero, 27.XII.1958, s/*Nothofagus betuloides* (NZAC); Chorillos de los Alumbres, 22.II.1971, T. Cekalovic (DGKC); 1 male, Lag. Amarga, Cabo Paine, 12.II.1959, s/*Nothofagus antarctica* (NZAC); 1 male, Los Robles, 21.I.1961, T. Cekalovic, #9, 62-32917 (USNM); 5 males, 4 females, Los Robles, Laguna, 10.X.1961, T. Cekalovic (USNM); 2 females, P. Eden, 5.XII.1958, G. Kuschel (NZAC); 3 males, 1 female, Punta Arenas, I.1963, T. Cekalovic, reared from galls of *Nothofagus antarctica* (USNM); 6 male, 4 females, Punta Arenas, 22.II.1962, T. Cekalovic (USNM); 1 male, 2 females, Punta Arenas, 12.II.1963, T. Cekalovic (DGKC). 1 male, 1 female, Río Chabunco, 2.II.1990, T. Cekalovic, ex *Nothofagus antarctica* (DGKC); 1 female, Ultima Esperanza, pen. Vargas, 5.II.1951, s/*Nothofagus antarctica* (NZAC); 7 males, 7 females, Puerto Williams, Is. Navarino, 3.II.1959 or

17.I.1959, s/*Nothofagus antarctica* or s/*Nothofagus pumilio* or none, some G. Kuschel (NZAC).

***Noterapion kuscheli* Kissinger
new species**

Figs. 6, 7

Distinctive characters. Length less than 3.40mm; pronotum with denser, deeper punctures (Fig. 16). Femur 1 of both sexes with distinct pseudotrochanter (see Fig. 3). In profile dorsal margin of head constricted behind eyes; ventral surface of head broadly convex from base of head to base of rostrum (Fig. 6); rostrum curved (Fig. 6). Rostrum lacks hypostomal prominence (Fig. 20); rostrum of female < 1.6 length of prothorax. Scutellum short, broad. Tibia 3 straight (Fig. 10). Sternal processes separating mesocoxae not prominent; mesocoxa not dentate. Dorsal margin of median lobe of aedeagus in profile slightly, evenly curved from base to apex (see Fig. 4); endophallus with globular process somewhat wider than long, consisting of 2 halves separated variable distance upon eversion of endophallus (Fig. 7).

Description. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length 2470-3343 μ ; width 1114-1627 μ . Rostrum of male 822-1151 μ long; 1.33-1.64 as long as prothorax; finely alutaceous throughout; in profile distinctly, evenly curved, sides subparallel throughout, in basal 0.5 surface smoother, punctures deeper, denser, elongate, 18-37 μ long, arranged in indistinct rows, with very fine, decumbent seta-like scales 18-37 μ long, in apical 0.5 punctures well separated, shallow, 18-28 μ long, with very fine, short, erect setae, ventral sublateral sulcus (VSL) shallow with 7-8 shallow punctures, bearing short setae (<37 μ), apical seta of VSL 70-80 μ long, in larger, deeper puncture; in dorsal view sides somewhat abruptly converging at base, subparallel in basal 0.5, converging somewhat beyond insertion of antenna, distinctly diverging at apex; male antenna inserted at basal 0.49-0.52 of rostrum at distance in front of eye 2.66-3.62 width of frons; dorsal margin of scrobe nearly straight, ending slightly basad of anterior margin of eye, subcephalic ridges flat, low, short. Rostrum of female (Fig. 6) 950-1225 μ long; 1.40-1.66 as long as prothorax; similar to male; female antenna inserted at basal 0.43-0.50 of rostrum at distance in front of eye 2.88-3.10 width of frons. Head with frons 145-192 μ wide; 0.80-1.18 as wide as dorsal tip of rostrum; in profile dorsal margin of head scales distinctly coarser and longer than those on basal 0.5

of rostrum, 46-83 μ long; in profile dorsal margin of head slightly constricted above basal margin of eye, with 2 specialized erect setae 40-50 μ long above dorsal-basal quadrant of eye; ventral margin of head broadly, evenly convex. Prothorax 512-858 μ long, at base 0.93-1.23 as wide as long; basal margin moderately expanded laterally, sides slightly divergent toward middle, middle narrower than base, constricted apically; punctures moderately deep, 18-36 μ in diameter, bearing acute, decumbent scales similar to those on basal lateral part of head; interspaces narrow, finely alutaceous; basal fovea shallow, elongate. Elytra at humeri 1.29-1.49 as wide as pronotum base; 2.52-3.21 as long as prothorax; 1.23-1.60 as long as wide; interval 2 at middle of elytra 1.4-1.6 X stria, somewhat convex, with 4-5 rows of scales similar to pronotum; intervals with long (>50 μ), erect specialized setae as follows: 1 and 3 with >2, 5 with 2-3, and 7 and 9 with 1 near apex; striae moderately fine, deep, with scales similar to adjacent interval, on apex striae join 1+2+9, 3+4, 5+6, 7+8. Femur 1 with short pseudotrochanter with lateral impression as deep puncture 25-40 μ wide. male characters: Tibia 2 with simple mucro 46-64 μ long; tibia 3 with simple mucro 46-74 μ long. Median lobe of aedeagus 473-728 μ long (excluding posterior apophyses), strongly depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 2.9-4.2; in dorsal view sides subparallel from base to near orifice, evenly narrowing to 49-66 μ wide tip, tip simple; in lateral view sides subparallel from base to near orifice, slightly, evenly curved from base to 12-27 μ wide tip; posterior apophyses broad, 0.84-1.03 as long as body of median lobe; at base of median lobe endophallus with globular process (Fig. 7) somewhat wider than long, 110-176 μ long X 98-137 μ wide, consisting of 2 halves separated variable distance (process can be everted out of median lobe and halves are then widely separated), near orifice with 2 hook-like frena 77-122 μ long X 42-66 μ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing macrochaetae; basal median area of parameres flat.

Biology. Collected on *Nothofagus dombeyi* (Mirbel) Blume and *N. pumilio* (Prepp. & Endl.) Krasser (G. Kuschel, *in litt.*).

Distribution: The range is between latitude 34° 58' S and 46° 40' S in the Maule, Biobío, Araucanía, Los Lagos and Aisén regiones of Chile and the "Argentin-

ian side of the Andes". Data from Aisén (Lago General Carrera (formerly Lago Buenos Aires) and Argentina from Kuschel (*in litt.*).

TYPE MATERIAL. Holotype male labeled S. CHILE [Chile: Los Lagos:] Los Muermos, 19.I.51 [19.I.1951], forest, R. M. / DG Kissinger measure 00700 / N. Z. Arthropod Collection, NZAC, Private Bag 92170, AUCKLAND New Zealand [goldenrod-colored label] / *Apion meorrhynchum* Phil. & Phil. 1864 G. Kuschel 2000 / [specimen dissected, abdomen in glycerin in attached microvial] HOLOTYPE *Noterapion kuscheli* KISSINGER [red holotype label] (NZAC). Paratypes 60 total. 1 male, 2 females, Chile: Maule: Curico, El Coigual, III.1955 or I.1964, [L. E. Peña] (USNM). 1 female, Chile: [Maule:] Curico Prov., El Coigual, I.1964 [L. E. Peña], DG Kissinger Collection (DGKC). 1 male, 1 female, Chile: [Maule:] Cord. Curico, Cubillo, 22-27.IX.1959, G Kuschel Collection (NZAC). 1 male, Chile: [Maule:] Talca, Vilches, 14-15.XII.1976, Gurney & Barria (USNM). 2 females, Chile: [Maule:] Talca Prov., Alto de Vilches, 26-27.X.1964, [L. E. Peña], DG Kissinger Collection (DGKC). 1 female, Chile: [Maule:] Talca, Alto Vilches, 28.XI.1971, Luis Peña, H. & A. Howden Collection, Ottawa Canada (CMNC). 1 male, Chile: [Biobío:] Ñuble, El Marchant, 8.I.1978, L. Peña (CMNC). 1 female, Chile: [Biobío:] Cord. Chillán, Las Trancas, 21-30.X.1964, [L. E. Peña] (USNM). 4 males, 1 female, Chile: [Biobío:] Ñuble, Las Trancas, I.1978 (CMNC, DGKC). 1 male, Chile: [Biobío:] Ñuble, Recinto, XI.1951, L. E. Peña; measure 01028 DG Kissinger [dissected] (NZAC). 3 males, 3 females, Chile: [Biobío:] Ñuble, Los Nirres, 12.III.1994, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 2 females, Chile: [Biobío:] Ñuble, Río Renegado, 19.IX.1986, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, 1 females, Chile: [Biobío:] Cord. Nahuelbuta, Pichinahuel, 23-31.XII.1958, G Kuschel Collection, measure male 01063 [dissected], female 01214 DG Kissinger (NZAC). 4 males, 2 females, same data but date 1-31.I.1959 (NZAC). 1 male, Chile: [Biobío:] Nahuelbuta Nat. Pk., 40 km W Angol, 9.XII.1984-17.II.1985, 1200-1500m, S. & J. Peck, FIT, Nothofagus-Araucaria For (CMNC). 1 male, 1 female, Chile: [Biobío:] Cord. Nahuelbuta, Pichinahuel, 10-20.I.1959, L. Peña, H. & A. Howden Collection, Ottawa Canada (CMNC). 1 male, Chile: [Biobío:] Pichinahuel, II.53, Luis E Peña Collector, DG Kissinger Collection (DGKC). 1 female, Chile: [Biobío:] El Abanico, 30.XII.1950, R. M. (NZAC). 2 female, Chile: [Araucanía:] Caramavida [West slope of Nahuelbuta Range, approx 37° 40'S, 73° 19'W], 5-10.II.1953, Luis E Peña Collector, DG Kissinger Collection (DGKC). 4 male, 3 females, Chile: [Araucanía:] Cautín Prov., Chacamo NW Nueva Imperial, 600-700m, 17-23.II.1981, L. Peña (USNM, DGKC). 1 male, Chile: [Araucanía:] Chacano, W Temuco, 7-10.XII.1981, 600m, L. Peña (CMNC). 1 male, Chile: [Araucanía:] Malleco, Piedra del Aquila, 19.XII.1988, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, 1 female, Chile: [Araucanía:] PN Con-

guillío, 13.XII.1990, G Kuschel, Nothofagus pumilio, 1000m (NZAC). 1 female, Chile: [Araucanía:] Cautín Prov., 30km NE Villarica, [no date], [L. E. Peña] (USNM). 1 male, same data but 30.I.1965 (USNM). 1 male, Chile: [Los Lagos:] Valdivia, Santo Domingo, 25.II.1976, T. Cekalovic (CMNC). 2 females, Chile: [Los Lagos:] Valdivia, Santo Domingo, 25.II.1976, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Valdivia, Valdivia, 12.X.1981, E. Krahmer, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Valdivia, II.1979, L. Peña, H. & A. Howden Collection, Ottawa Canada (CMNC). 2 male, 1 female, Chile: [Los Lagos:] Valdivia Prov., 3 km W Las Lajos, W. La Union, 10-11.I.1989, 650m, C. Bellamy (CMNC). 1 male, Chile: [Los Lagos:] Chiloé, Isla Chiloé, Piruquina, 16.II.1995, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, Chile: [Los Lagos:] Chiloé, Isla Lemuy, Ichuac, 9.II.1993, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Ensenada, 25.II.1945, E. A. Chapin (USNM). Other specimens not in type series (data from G. Kuschel, *in litt.*; specimens in (NZAC)). Argentina: Río Negro: Llaollao. Chile: Biobío: Pemehue; Ñuble, Cord. Chillán, Atacalco. Araucanía: Malleco: Estero Cabreria, Río Blanco, Volcán Lonquimay. Los Lagos: Llanquihue: Fresia, Volcán Osorno. Aisén: Puerto Cristal, Río Murta.

Etymology. The specific name is a patronym honoring Professor Guillermo Kuschel.

Noterapion philippianum (Alonso-Zarazaga)

Figs. 15, 16, 19, 20

Apion philippianum Alonso-Zarazaga, 1983: 627. Replacement name for *Apion vestitum* Philippi and Philippi, 1864: 364 (not Gyllenhal 1833). TYPE MATERIAL: 3 syntypes, in Collection Philippi (MNNC), no original labels. LECTOTYPE (here designated; labeled by G. Kuschel, who gives dimensions of specimen as 2.8mm long X 1.3mm wide (Kuschel, *pers. comm.*)), male symbol, [white locality label] "Chile, Valdivia / Fundo San Juan / Coll. Philippi" and [red lectotype label with 4 lines] "Lectotype, symbol for male / *Apion vestitum* / RA & F Philippi / G Kuschel, 2002"; the other two are labeled as paralectotypes (Kuschel, *pers. comm.*).

Noterapion philippianum (Alonso-Zarazaga), Kissinger, 2002: 315.

Distinctive characters. Length less than 3.20mm; pronotum with denser, deeper punctures (Fig. 16). Femur 1 of both sexes lacks pseudotrochanter (Fig. 1). Rostrum lacks hypostomal prominence (Fig. 20); in profile rostrum distinctly curved; in dorsal view female rostrum largely subparallel throughout; dorsal margin of head not constricted behind eyes; ventral surface of head flat, possibly with angular trans-

verse ridge. Scutellum short, broad (Fig. 16). Tibia 3 straight (Fig. 10). Sternal processes separating mesocoxae not prominent; mesocoxa not dentate. In lateral view dorsal margin of median lobe of aedeagus abruptly curved ventrally, tip somewhat curved dorsally (Fig. 2); endophallus lacks structure at base of median lobe.

Description. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length 1481-3192 μ ; width 548-1516 μ . Rostrum of male 419-1096 μ long; 1.04-1.76 as long as prothorax; in profile moderately stout, curved, sides slightly convergent from base to apex, in basal 0.5 punctures sparse, shallow, 19-37 μ in diameter, variably confluent, with fine scales 27-55 μ long, in apical 0.5 punctures tend to be elongate, bearing (<18 μ) suberect setae, ventral sublateral sulcus (VLS) varies from absent (in small individuals) to distinct, with punctures bearing erect setae 35-83 μ long, longest at apex and near insertion of antenna; in dorsal view sides slightly convergent at base, subparallel in basal 0.5, slightly convergent beyond insertion of antenna, slightly divergent at apex; male antenna inserted at basal 0.41-0.52 of rostrum at distance in front of eye 1.84-3.33 width of frons; dorsal margin of scrobe nearly straight, ending slightly basad of anterior margin of eye, subcephalic ridges flat, low, short. Rostrum of female 402-1096 μ long; 1.10-1.68 as long as prothorax; vestiture and sculpture as in male except basal scales shorter, setae of VLS more uniform in length; female antenna inserted at basal 0.39-0.49 of rostrum at distance in front of eye 1.76-3.25 width of frons; dorsal margin of scrobe as male. Head with frons 73-202 μ wide; 0.73-1.17 as wide as dorsal tip of rostrum, flat; scales on head distinctly coarser and longer than those on basal 0.5 of rostrum, 46-740 μ long, scales of male somewhat coarser, in dorsal view narrow area at base of rostrum and anterior margin of eye with fringe of scales as on frons; in profile head broadly cone-shaped, widest at base, dorsal margin slightly ascending above basal margin of eye, with 2-3 specialized erect setae 35-60 μ long above dorsal-basal quadrant of eye; ventral surface of head varies from flat to slightly convex, obscured by vestiture. Prothorax 329-759 μ long, at base 0.97-1.34 as wide as long; basal margin strongly, acutely expanded laterally, sides subparallel to middle, middle narrower than base, rounded to slight apical constriction; pronotum with shallow punctures 18-37 μ wide bearing scales 46-83 μ long, interspaces flat, narrow, finely alutaceous; in profile dorsal margin slightly, evenly convex, laterally punctures and

scales similar to disk of pronotum; basal fovea variable. Scutellum short, broad. Elytra at humeri 1.10-1.69 as wide as pronotum base; 2.54-3.82 as long as prothorax; 1.23-1.73 as long as wide; interval 2 at middle of elytra 1.9-2.1 X stria, slightly convex, with 2-4 rows of scales similar to pronotum; intervals with long (>50 μ), erect specialized setae scattered along length as follows: 1 with 4-10, 3 with 2-5, 5 with 1-5, 7 with 1-4, and 9 with 1 near apex; striae fine, deep, with scales slightly longer than adjacent interval, on apex striae join 1+2+9, 3+4, 5+6, 7+8. male characters: Tibia 2 with simple mucro 30-60 μ long; tibia 3 with simple mucro 35-75 μ long. Median lobe of aedeagus 419-783 μ long (excluding posterior apophyses), strongly depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 2.8-4.4; in dorsal view sides subparallel from base to near orifice, evenly narrowing to 49-98 μ wide tip, tip simple; in lateral view sides subparallel from base to near orifice, slightly, evenly curved from base to orifice, dorsal margin abruptly curved ventrally, tip 10-17 μ wide, somewhat curved dorsally; posterior apophyses broad, 0.52-0.77 as long as body of median lobe; endophallus lacks structure at base of median lobe, near orifice with 2 hook-like frena 49-78 μ long X 27-61 μ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing macrochaetae; basal median area of parameres flat.

Biology. Collected on *Nothofagus antarctica* (G. Forst.) Oerst., *N. betuloides* (Mirbel) Blume, *N. dombeyi* (Mirbel) Blume, *N. nitida* (Phil.) Krasser, and *N. obliqua* (Mirbel) Blume based on label data and G. Kuschel (*in litt.*).

Comment on size range: There is no good explanation for the multimodal distribution of size in this species. Present data seem to indicate that the populations of small and large individuals belong to the same species. Precise biological studies may prove otherwise. (For the species *N. chilense* Kissinger, G. Kuschel (*in litt.*) found a sample of 30 individuals that were small ("tiny") compared to the usual size of the species. *N. nothofagi* Kissinger also has a wide size range, 1.9 - 3.1mm, but the swarm of small individuals is not as marked).

For *N. philippianum*, museum specimens indicate that minute individuals may occur as local swarms (the local collection may be 100+) and these are sympatric with less abundant larger individuals

(the local collection may be 5-10); for these specimens a frequency distribution by size may be bi- or multimodal. The extremes appear to be connected by intermediates. The minute individuals appear different because they have comparatively larger scales when compared to larger individuals.

To investigate this problem a sample of 28 individuals of *N. bruchi* (the largest species in *Noterapion*) and *N. philippianum* was chosen to represent extremes and intermediate points for body length: 1.48 – 5.03 mm (the X variable). For each specimen the length of 7 pronotal scales was averaged (the Y variable) with an observed range of 50 – 80 μ for the means. The small range for mean scale length (largest = 1.6 x smallest) compared with the large range for body size (largest = 3.4 x smallest) supports the contention that the vestiture of *Noterapion* spp. tends to be similar in length throughout the genus regardless of the size of the individual. The scale length average was regressed against body length. Based on these 28 specimens, the regression equation for the average length of pronotal scale given body size is $= 0.04510 + 0.00653X$, where is the estimated mean scale length, 0.04510 is the Y-intercept ($Y_variable_mean - b * X_variable_mean$), 0.00653 is the slope of the regression line (b), and X is total length. The slope, 0.00653, is statistically larger than 0 ($p < 0.001$) but practically it is horizontal. Using this regression line the estimated mean scale length for a 1.48 mm individual is 55 μ (observed is 50 μ); for a 5.03 mm individual it is 78 μ (observed is 80). My conclusions is that small individuals have fewer scales (i.e. number of rows on an elytral interval) than large individuals but scale length is not reduced proportionately to the reduction in body size; this contributes to the distinctive appearance of the small individuals.

Distribution. The range is between latitude 34° 58' S and 54° 55' S in the Maule, Biobío, Araucanía, Los Lagos, Aisén, and Magallanes Regiones of Chile and the Río Negro and Santa Cruz provinces of Argentina. **Argentina: Río Negro:** 1 female, Catedral, 28.I.1949, W. Wittmer, 1600 m (NZAC); 1 male, Lago Trébol, Bariloche, 23.XI.1950 (NZAC). **Santa Cruz:** 1 male, Moreno Glacier, P.N. Los Glaciares 50° 28'S 73° 02'W, 27.II.1985, A. C. Ashworth, mixed *Nothofagus* forest, on Escallonia along lake shore (NZAC). **Chile: Maule:** 1 female, Cubillo, Cord. Curico, 22-27.IX.1959 (NZAC); 2 females, El Coigo, Cord. Curico, 10-31.I.1960 (NZAC). 1 female, El Coigo, Cord. Curico, XI.-XII.1957 (NZAC); 1 male, Alto de Vilches, Cord. Talca, 18-25.X.1964, L. E. Peña (USNM). **Biobío:** 256 males- females, Cord. Chillán, Ñuble, Las Cabras "Andes in Chillán, S. foot-hill of Chillán Vulcano", 6.I.1963

[L. E. Peña] (USNM, DGKC); 20 males, 5 females, Cord. Chillán, Las Cabras, 8-15.II.1959 (NZAC); 2 females, Cord. Chillán, Las Trancas, 21-30.X.1964, [L. E. Peña] DG Kissinger Coll (DGKC); 6 males, 1 female, Cord. Chillán, Las Trancas, 10-18.II.1959 (NZAC); 1 male, 5 females, Ñuble, Fátima, Yungay, 23.II.1960, L. Schmidt, 1000 m (NZAC); 1 male, Ñuble, Shangrila, 17.VII.1994, T. Cekalovic (DGKC); 6 males, 3 females, Recinto, II.1955 (NZAC); 3 females, Laguna del Laja, 13-16.II.1957 (NZAC); 1 males, Laguna Laja, Los Barros, 13.I.1948, 1500 m (NZAC); 8 males, 6 females, Laguna Laja, Los Barros, 14.I.1948, 1500 m, on *Nothofagus antarctica* (NZAC); 2 males, 2 females, Laguna Laja, Los Barros, 15.I.1948, 1600 m (NZAC); 1 males, 1 female, Laguna Laja, Los Barros, 18.I.1948, 1900 m (NZAC); 10 males, 9 females, Laguna Verde, Abanico, 27.I.1948, 1500 m (NZAC); 3 males, 2 females, Copahue, 21.I.1948, K., 1800 m (NZAC); 2 males, 2 females, Lag Trapatrapa, 19.I.1948, 1700 m, on *Nothofagus antarctica* (NZAC); 3 females, Trapatrapa, 22.I.1948, 1650 m (NZAC); 2 males, 2 females, Pemehue, 11.I.1946, 900-1500 m (NZAC); 9 males, 6 females, Cord. Nahuelbuta, Pichinahuel, 1-31.I.1959 (NZAC); 1 males, Nahuelbuta, Pino Hachado, 6-10.I.1959, 1800-2000 m (NZAC). **Araucanía:** 5 males, 3 females, Malleco, La Fusta, 9.XII.1959, 800 m (NZAC); 1 male, Malleco, Lag. Malleco, 24.I.1946, 1150 m (NZAC); 4 males, 4 females, Malleco, Piedras del Aquila, 29.XII.1988, T. Cekalovic (DGKC); 1 male, 1 female, Malleco, Sierra Nevada, 5.I.1962, [L. E. Peña] DG Kissinger Coll. (DGKC); 2 males, Termas de Tolhuaca, 15-25.I.1959 (NZAC); 2 females, Arauco, Caramavida [West slope of Nahuelbuta Range, approx 37° 40'S, 73° 19'W], 20.XII.1956, 1200 m (NZAC); 1 female, Volcán Lonquimay [38° 23'S, 71° 36'W], 22.XII.1994, G. Kuschel, 1400 m (NZAC); 6 females, Cord. Lonquimay, Lago Icalma, 12-17.I.1962, [L. E. Peña] (USNM); 1 males, 2 females, Cord. Lonquimay, Lago Icalma, 12-17.I.1962, [L. E. Peña], DG Kissinger Coll. (DGKC); 3 males, 5 females, Icalma, 29-31.XII.1958 (NZAC); 11 males, 7 females, P N Conguillío, 12.XII.1990, G. Kuschel, 1000 m, *Nothofagus pumilio* (NZAC); 3 males, 9 females, Cautín, Nueva Imperial, Chacamo, 17-23.II.1981, L. E. Peña, 600-700 m (USNM). 2 females, Cautín, NW Nueva Imperial, Fdo Las Selvas, W Temuco, 18.II.1981, L. E. Peña, 600-700 m (USNM); 1 males, 7 females, Liucura, 1-9.I.1959 (NZAC); 1 male, 1 female, Río Blanco, Caracautín, 27-31.I.1959 (NZAC). **Los Lagos:** 3 females, Valdivia, Panguipulli, XII.1951, Gutierrez (NZAC); 3 males, Valdivia, Santo Domingo, 25.II.1976, T. Cekalovic (DGKC); 1 female, Valdivia, Santo Domingo, 5.X.1975, E. Krahmer (DGKC); 2 females, Valdivia, Valdivia, 12.X.19816, E. Krahmer (DGKC); 3 males, 1 female, Osorno, 10 km E Puyehue, 24.I.1951 (NZAC); 1 male, 1 female, Osorno, 20 km E Puyehue, 26.I.1951, R. M. (NZAC); 3 males, 3 females, Osorno, Antillanca Airfield, Site 33A, P N de Puyehue, 22.I.1979, A. C. Ashworth, J. W. Hoganson, On Chusquea sp, 1970 m, subantarctic forest (USNM); 1 female, Osorno, Antillanca, Puyehue, 18.III.1955, 1000m, Col. L. E. Peña (NZAC); 1 male, Osorno, Cardal, 11.I.1990, T. Cekalovic (DGKC); 3 males,

Chiloé, Chepu, 21-22.X.1958, G. Kuschel, on *Nothofagus nitida* (NZAC); 21 males 1 female, Chiloé, 5 km S Compu, 10.II.1999, T. Cekalovic (DGKC); 13 males 1 female, Chiloé, 5 km W Conchi, 21.I.1998, T. Cekalovic (DGKC); 4 females, Chiloé, Río Dongo, 19.I.2000, T. Cekalovic (DGKC); 4 males, 4 females, Chiloé, San Juan de Chadmo, 20.II.1007, T. Cekalovic (DGKC); 1 female, Chiloé, San Juan de Chadmo, 8.II.2001, T. Cekalovic (DGKC); 1 male, 2 females, Chiloé, Isla Lemuy, Aldachildo, 24.I.2000, T. Cekalovic (DGKC); 2 males, 6 females, Chiloé, Isla Lemuy, Ichuac, 9.II.1993, T. Cekalovic (DGKC). **Aisen:** 6 males, 3 females, Coyhaique, 8.II.1956, s/*Nothofagus pumilio* (NZAC); 6M, 2F, Balmaceda [approx 45° 54'S, 71° 44'W], 13.II.1956, s/*Nothofagus antarctica* (NZAC); 3 males, Lago B. Aires, Río Murta, 2.II.1956, s/*Nothofagus antarctica* (NZAC); 1 female, Río Murta, Lago B. Aires, 26.I.1956 (NZAC); 13 males, 1 female, Puerto Cristal, Lago B. Aires, 21.I.1956, s/*Nothofagus dombeyi* or s/N. *pumilio* (NZAC). **Magallanes:** 3 males, 2 females, Puerto Eden, Is. Wellington, 28-30.XI.1958, s/*Nothofagus betuloides* (NZAC); 1 female, Ba. Muñoz Gamero, 27.XII.1958, s/*Nothofagus betuloides* (NZAC); 2 males, 2 females, Estancia Fenton [possibly 52° 45'S, 71° 24'W], 29.X.1960 (NZAC); 10 males, Laguna Amarga, Cerro Paine, 13.II.1957, s/*Nothofagus antarctica* (NZAC); 7 males, 5 females, Laguna Amarga, 12.XII.1960, T. Cekalovic (USNM); 3 males, 3 females, Laguna Amarga, 12.XII.1960, T. Cekalovic, DG Kissinger Coll. (DGKC); 2 males, 1 female, Punta Arenas, 9-15.I.1966, Flint & Cekalovic (USNM); 1 male, 2 females, 5 km NW Punta Arenas, 3.III.1959, J. F. G. Clarke (USNM); 2M, 8 km NW Punta Arenas, 27.II.1959, J. F. G. Clarke (USNM); 6 females, Río Ganso, Seno Otway, 12.II.1961, T. Cekalovic, #8, 62-3291 (USNM); 2 males, 2 females, Río Tres Pasos [53° 45'S, 72° 05'W], 11.XII.1960, T. Cekalovic (USNM); 1 male, Ultima Esperanza, east side Lago Pehoe, PN Torres del Paine, 51° 06'S 72° 57'W, 20.II.1985, A. C. Ashworth, M. J. Gunderson, Steppe-N. *pumilio* forest, on *Nothofagus antarctica* (NZAC); 3 male, 4 females, Río Serrano [51° 14' 73° 00'W], 16.II.1990, T. Cekalovic (DGKC); 1 male, 2 females, Ultima Esperanza, Silla del Diabolo, 15.II.1990, T. Cekalovic (DGKC); 2 males, 1 female, Ultima Esperanza, Laguna Escondida, 17.II.1990, T. Cekalovic (DGKC); 1 male, 1 female, Is. Navarino, 20-30.XII.1958, L. E. Peña (NZAC); 5 males, 4 females, Puerto Williams, Is. Navarino, 10.I.1959-9.II.1959, s/*Nothofagus antarctica* or s/N. *pumilio* (NZAC).

Noterapion nothofagi Kissinger

new species

Figs. 21, 22, 27

Distinctive characters. Length less than 3.00mm; pronotum with denser, deeper punctures (Fig. 6). Femur 1 of both sexes lacks pseudotrochanter. In profile rostrum short, straight (Fig. 22); apical ventral margin of hypostomal area produced into angular or acute projection (Fig. 21); dorsal margin of head not

constricted behind eyes; ventral surface of head evenly (or with slight convexity) ascending from base of head to base of rostrum (Fig. 22). In dorsal view female rostrum sides convergent from base to near insertion of antenna (Fig. 27), in apical half with 2 rows of distinct specialized setae. Scutellum short, broad. Tibia 3 straight. Sternal processes separating mesocoxae not prominent; mesocoxa not dentate. In profile dorsal margin of median lobe of aedeagus abruptly curved downward near orifice and curved upward slightly at tip; endophallus lacks basal process.

Description. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length 1899-3040μ; width 1024-1481μ. Rostrum in profile with sides subparallel throughout except in apical 0.25 may have dorsal margin broadly convergent with straight ventral margin to apex; of male 548-730μ long; 0.92-1.07 as long as prothorax; in basal 0.5 punctures deep, close, 18-37μ in diameter, bearing fine suberect scales 37-65μ long, in apical 0.5 punctures finer, sparser, bearing fine suberect setae 18-28μ long, ventral sublateral sulcus (VLS) varies from shallow to indistinct, with 7-9 punctures bearing erect setae 45-65μ long, apical ventral margin of hypostomal area produced into angular or acute projection; in dorsal view sides beyond short basal convergence subparallel in basal 0.5, subparallel in apical 0.25; male antenna inserted at basal 0.45-0.50 of rostrum at distance in front of eye 1.72-2.30 width of frons; dorsal margin of scrobe with anterior portion slightly inclined to posterior portion, ending slightly basad of anterior margin of eye, subcephalic ridges flat, low, short. Rostrum of female 530-768μ long; 0.98-1.22 as long as prothorax; in profile straight (at least in basal 0.6) (Fig. 22), surface alutaceous, sides subparallel throughout, in basal 0.5 punctures as in male, bearing fine suberect setae 30-46μ long, in apical 0.5 punctures finer, sparser, bearing suberect setae 18-28μ long, ventral sublateral sulcus indicated by row of punctures bearing erect setae 46-65μ long, ventral submedian sulcus similar, apical ventral margin of hypostomal area produced into angular or acute projection; in dorsal view sides subconvergent from base to insertion of antennae, convergent slightly to narrowest point beyond insertion of antenna, slightly divergent to apex (Fig. 27), median region of rostrum may be polished, with minute punctures bearing suberect setae 18-37μ long; female antenna inserted at basal 0.42-0.47 of rostrum at distance in front of eye 1.61-1.87 width of frons; dorsal margin of scrobe and

subcephalic ridge as male. Head with frons 138-201 μ wide; 0.89-1.24 as wide as dorsal tip of rostrum, flat; scales on head distinctly coarser and longer than those on rostrum, 40-74 μ long; in profile head broadly conical, widest at base, dorsal margin flat, slightly ascending above basal margin of eye, with 2 specialized erect setae above dorsal-basal quadrant of eye; ventral surface flat, may be slightly rounded below middle of eye (especially in female). Prothorax 474-786 μ long, at base 1.00-1.26 as wide as long; basal margin strongly, acutely expanded laterally, sides at middle subequal to base, rounded to slight apical constriction; pronotum with shallow, dense punctures 18-37 μ in width bearing scales similar to head, interspaces flat, narrow, alutaceous; in profile dorsal margin nearly flat, laterally punctures and scales similar to disk of pronotum; basal fovea lacking. Scutellum short, broad. Elytra at humeri 1.31-1.57 as wide as pronotum base; 2.30-2.99 as long as prothorax; 1.16-1.52 as long as wide; interval 2 at middle of elytra 1.9-2.1 X stria, moderately convex, with 3-5 rows of scales similar to pronotum; intervals with erect specialized setae 40-90 μ long scattered along length as follows: 1 with 5-9, 3 with 5-6, 5 with 4-7, 7 with 2, and 9 with 1 near apex (female may have additional 1 near base); striae moderately coarse, deep, with scales similar to adjacent interval, on apex striae join 1+2+9, 3+4, 5+6, 7+8 (2 may be prolonged before joining 1 + 9). male characters: Tibia 2 with simple mucro 35-55 μ long; tibia 3 with simple mucro 55-74 μ long. Median lobe of aedeagus 491 μ long (excluding posterior apophyses), strongly depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 3.2; in dorsal view sides subparallel from base to near orifice, evenly narrowing to 61 μ wide tip, tip simple; in lateral view sides subparallel from base to near orifice, slightly, evenly curved from base to orifice, dorsal margin abruptly curved ventrally, tip 9 μ wide, curved up slightly; posterior apophyses broad, 0.81 as long as body of median lobe; endophallus lacks structure at base of median lobe, near orifice with 2 hook-like frena 49 μ long X 37 μ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing macrochaetae; basal median area of parameres flat.

Biology. Collected on *Nothofagus antarctica* (G. Forst.) Oerst., *N. betuloides* (Mirbel) Blume, *N. dombeyi* (Mirbel) Blume, *N. nitida* (Phil.) Krasser

and *N. pumilio* (Prepp. & Endl.) Krasser based on label data and G. Kuschel (*in litt.*).

Etymology. The specific name is based on the host genus, *Nothofagus* Blume.

Distribution: The range is between latitude 34° 58' S and 54° 55' S in the Maule, Biobío, Araucanía, Los Lagos, Aisén, and Magallanes Regiones of Chile and Río Negro Province of Argentina.

TYPE MATERIAL. Holotype male labeled Chile: [Araucanía:] Cord. Nahuelbuta, Pichinahuel, 1-31.I.1959/G. Kuschel Collection/measure 00724 DG Kissinger/N. Z. Arthropod Collection, NZAC, Private Bag 92170, AUCKLAND New Zealand [goldenrod-colored label] / HOLOTYPE Noterapion nothofagi KISSINGER [red holotype label] [specimen dissected, abdomen in glycerin in attached microvial] (NZAC). Paratypes 113 total. 2 males, 2 females, same data as holotype (NZAC). 1 female, Chile: [Maule:] Cord. Curico, Cubillo, 22-27.X.1959, G Kuschel Collection (NZAC). 2F, Chile: [Maule:] Cord. Curico, El Coigual, XI-XII.1959, G Kuschel Collection (NZAC). 2 males, 1 females, Chile: [Maule:] Cord. Talca, Alto de Vilches, 18-25.X.1964, [L.E. Peña], DG Kissinger Collection (DGKC). 1 male, Chile: [Maule:] Talca, Alto Vilches, 1.XI.1971, P. Ramirez (CMNH). 1 male, Chile: [Maule:] Talca, Alto Vilches, 28.XI.1971, Luis Peña (CMNH). 2 males, 4 females Chile: [Maule:] Cord. Talca, Alto de Vilches, 18-25.X.1964, (USNM). 1 female, Chile: [Biobío:] Cord. Chillán, Las Cabras, 8-15.II.1959, G Kuschel Collection, N. Z. Arthropod Collection, NZAC, Private Bag 92170, AUCKLAND New Zealand (NZAC). 1 female, Chile: [Biobío:] O'Higgins D., Cord. Chillán, Las Cabras, 8-15.II.1959, Luis Peña (CMNH). 2 males, Chile: [Biobío:] Cord. Chillán, Las Trancas, 21-30.X.1964, (USNM). 1 male, Chile: [Biobío:] Ñuble, Las Trancas, 1-15.XII.1975, Luis Peña (CMNH). 1 female, Chile: [Biobío:] Ñuble, 10 km W Recinto, 17.XII.1976, Gurney & Barria, (USNM). 2 males, 1 female, Chile: [Biobío:] Ñuble, Los Ñirres, 12.III.1994, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, Chile: [Biobío:] Ñuble, Río Renegado, 19.IX.1986, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 2 females, Chile: [Biobío:] Cord. Nahuelbuta, Pichinahuel, 23-31.XII.1959, Luis Peña (CMNH). 1 male, 3 females, Chile: [Araucanía:] 1F, Chile: [Araucanía:] Malleco, Sierra Nevada, 5.I.1962, [L.E. Peña], DG Kissinger Collection (DGKC). Cautín Province, Chacamo, NW Nueva Imperial, 17-23.II.1981, L. E. Peña, 600-700m (USNM). 2 females, Chile: [Araucanía:] Cautín Province, Fdo Las Selvas, NW Nueva Imperial, W Temuco, 18.II.1981, L. E. Peña, 600-700m (USNM). 1 female, Chile: [Araucanía:] Malleco, 40 km W Curcautín, 12.XII.1984-16.II.1985, S. & J. Peck, FIT malaise, 1500m, Nothofagus-Araucaria (CMNH). 2 males, 2 females, Chile: [Araucanía:] Malleco Prov., 20 km E Manzanar [38° 28'S, 71° 43'W, original

spelling Manzanares], 19-21.XII.1976, H. F. Howden, 1100m (CMNH). 1 male, 1 female, Chile: [Araucanía:] PN Conguillío, 12.XII.1990, G Kuschel, *Nothofagus pumilio* (NZAC). 1 male, Chile: [Araucanía:] Cautín, 30 km NE Villarica, 16-31.XII.1962, (USNM). 1 male, 1 female, Chile: [Araucanía:] Cautín, 30 km NE Villarica (USNM). 1 male, Chile: [Araucanía:] Cautín, 10 km S Pucon, Vol. Villarrica N.P., 15.XII.1984-10.II.1985, S. & J. Peck, FIT, 900m, *Nothofagus* grove on ash (CMNH). 3 males, 6 females Chile: [Los Lagos:] Valdivia, 3 km W Las Lajas, W La Union, C. Bellamy, 10-11.I.1989, 650m (CMNH). 1 male, Chile: [Los Lagos:] Valdivia, Santo Domingo, 5.X.1975, K. Krahmer, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Is Chiloé, 19 km S Ancud, 14.II.19779, Ashworth, Hoganson, Gordon, Site C2m El 120m, Valdivian Rain Forest, on *Nothofagus* sp (USNM). 1 male, 1 female, Chile: [Los Lagos:] Isla Chiloé, 5 km S Compu, 10.II.1999, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Isla Chiloé, Compu Alto, 18.I.1998, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 2 males, Chile: [Los Lagos:] Isla Chiloé, Piruquina, 16.II.1995, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Isla Chiloé, Piruquina, 16.II.1995, T. Cekalovic (CMNH). 1 male, 3 females, Chile: [Los Lagos:] Isla Chiloé, Río Dongo, 9.I.2000, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 4 males, 1 female, Chile: [Los Lagos:] Isla Chiloé, San Juan de Chadmo, 18.II.1998, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 2 females, Chile: [Los Lagos:] Isla Chiloé, San Juan de Chadmo, 20.II.1997, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Isla Chiloé, San Juan de Chadmo, 10.II.1999, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 2 females, Chile: [Los Lagos:] Isla Lemuy, Aldachildo, 24.I.2000, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: [Los Lagos:] Isla Lemuy, Ichuac, 9.II.1993, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 3 females, Chile: [Los Lagos:] Isla Lemuy, Puerto Haro, 24.I.2000, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, Chile: Aisén: Lago B. Aires, Río Murta, 2.II.1956, s/*Nothofagus antarctica*, Coll. Kuschel (NZAC). 2 males, 1 female, Chile: Magallanes: Chorillo de los Alambres, 22.II.1971, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: Magallanes: Punta Arenas, 12.II.1963, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 female, Chile: Magallanes: Punta Arenas, 9-15.I.1966, Flint & Cekalovic, (USNM). 1 female, Chile: Magallanes: Punta Arenas, 11.III.1962, T. Cekalovic, #7 62-18422 (USNM). 3 females, Chile: Magallanes: Río Chabunco, 11.II.1990, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, 6 females, Chile: Magallanes: Río Chabunco, 11.II.1990, T. Cekalovic (CMNH). 1 female, Chile: Magallanes: Río Ganso, 31.XII.1962, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, 2 females, Chile: Magallanes: Ultima Esperanza, Cueva Chica del Milodon, 14.II.1990, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, 1 female, Chile: Magallanes: Ultima Esperanza, Lago Pehoe, 16.II.1990, T. Cekalovic, DG Kissinger Collec-

tion 2001 (DGKC). 4 females, Chile: Magallanes: Ultima Esperanza, Lago Pehoe, 16.II.1990, T. Cekalovic (CMNH). 1 female, Chile: Magallanes: Ultima Esperanza, Laguna Escondida, 8.III.1969, T. Cekalovic (CMNH). 1 male, 1 female, Chile: Magallanes: Ultima Esperanza, Laguna Escondida, 17.II.1990, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, Chile: Magallanes: Ultima Esperanza, Silla del Diablo, 15.II.1990, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). Other specimens not in type series (data from G. Kuschel, *in litt.*; specimens in (NZAC)). Argentina: **Rio Negro**: Puerto Blest, Llaollao, Lago Espejo. "Tres Pasos on the Argentinian side of Magallanes". Chile: **Biobío**: Ñuble: Fátima, Yungay; Los Barros, Laguna Laja, Cord. Pemehue, Volcán Callaqué. **Araucanía**: Malleco: Termas Tolhuaca, Volcán Lonquimay, Pino Hachado; Cautín: Parque Nacional Conguillío. **Los Lagos**: Llanquihue: Frutillar; Chiloé: Chepu, Dalcabue. **Magallanes**: Cerro Paine, Laguna Amarga, Puerto Williams, Isla Navarino.

Noterapion bruchi (Béguin-Billecocq)

Figs. 1, 2, 13, 14

Apion bruchi Béguin-Billecocq, 1909: 449. TYPE MATERIAL: HOLOTYPE: female, République Argentine: Province de Neuquén (MNH); photographed in 1965 by Kissinger.

Noterapion bruchi (Béguin-Billecocq), Kissinger, 2002: 315.

Distinctive characters. Size large, > 3.6mm. Femur 1 of both sexes lacks pseudotrochanter. Rostrum lacks hypostomal prominence (Fig. 20); in profile rostrum distinctly curved; dorsal margin of head not constricted behind eyes; head narrowly cone-shaped, widest at base. In dorsal view sides of female rostrum subparallel from base to near insertion of antenna, convergent beyond antennal insertion and strongly expanded to apex (Fig. 13). Scutellum elongate (Fig. 14). Tibia 3 straight (Fig. 10). Sternal processes separating mesocoxae not prominent; mesocoxa not dentate. In profile dorsal margin of median lobe of aedeagus abruptly curved downward near orifice and curved upward slightly at tip (Fig. 2); endophallus lacks basal process.

Description. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length 3609-5035 μ ; width 1572-2099 μ . Rostrum of male 1042-1151 μ long; 1.11-1.23 as long as prothorax; in profile stout, curved, more strongly so on dorsal margin, sides parallel in basal 0.5, convergent to apex, in basal 0.5 punctures deep, close, 28-37 μ in diameter, arranged in 5-6 indistinct rows, bearing fine decumbent scales 28-60 μ

long, in apical 0.5 punctures finer, may be elongate, bearing short ($<20\mu$) suberect setae, ventral sublateral sulcus varies from narrow and shallow to broad and deep, with 9-11 punctures bearing erect setae $55-100\mu$ long (longest on apical puncture); in dorsal view sides abruptly narrowed at base, subparallel in basal 0.5, slightly convergent beyond insertion of antenna, divergent at apex; male antenna inserted at basal 0.47-0.52 of rostrum at distance in front of eye 2.43-2.60 width of frons; dorsal margin of scrobe nearly straight, ending slightly basad of anterior margin of eye, subcephalic ridges flat, low, short. Rostrum of female $1260-1425\mu$ long; 1.13-1.26 as long as prothorax; vestiture and sculpture as in male except sublateral sulcus not impressed, its setae $82-120\mu$ long; in profile distinctly curved, sides convergent from base to insertion of antenna, then more strongly convergent to narrowest point near apical 0.3, divergent slightly to apex; in dorsal view (Fig. 13) sides convergent from base to insertion of antennae, strongly convergent to apical 0.4, strongly divergent to apex; female antenna inserted at basal 0.45-0.49 of rostrum at distance in front of eye 2.29-2.71 width of frons. Head with frons $192-264\mu$ wide; 0.90-1.04 as wide as dorsal tip of rostrum, flat; scales on head distinctly coarser and longer than those on basal 0.5 of rostrum, male $55-110\mu$ long, female $46-83\mu$ long, slightly finer than male; in profile head narrowly cone-shaped, widest at base, sides evenly convergent from somewhat basad of basal margin of eye to somewhat distad of anterior margin of eye, dorsal margin slightly ascending above basal margin of eye, with 8-10 specialized erect setae $55-75\mu$ long in line above dorsal-basal quadrant of eye and continuing onto base of head; ventral surface of head virtually flat. Prothorax $849-1169\mu$ long, at base 0.95-1.02 as wide as long; basal margin strongly, acutely expanded laterally, sides arcuately expanded to widest point near middle, rounded to broad apical constriction; pronotum flattened, with deep, dense punctures $27-46\mu$ in width bearing scales $64-100\mu$ long, interspaces flat, narrow, coarsely alutaceous; in profile dorsal margin slightly convex, flattened basally and apically, laterally punctures and scales similar to disk of pronotum; basal fovea lacking. Scutellum elongate (Fig. 14). Elytra at humeri 1.29-1.38 as wide as pronotum base; 2.60-2.84 as long as prothorax; 1.46-1.66 as long as wide; interval 2 at middle of elytra 1.5-1.7 X stria, moderately convex, with 4-5 rows of scales similar to pronotum; intervals with long ($>60\mu$), erect specialized setae scattered along length as follows: 1 and 3 with 4-10+, 5 with 2-7, 7 with 2-3, and 9 with 1 near apex; striae coarse, deep, with scales slightly longer than adjacent interval, on

apex striae join 1+2+9, 3+4, 5+6, 7+8. male characters: Tibia 2 with simple mucro $55-92\mu$ long; tibia 3 with simple mucro $55-92\mu$ long. Median lobe of aedeagus $837-855\mu$ depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 2.6-3.1; in dorsal view sides subparallel from base to near orifice, evenly narrowing to $80-82\mu$ wide tip, tip simple; in lateral view (Fig. 2) sides subparallel from base to near orifice, slightly, evenly curved from base to orifice, dorsal margin abruptly curved ventrally, tip $15-24\mu$ wide, curved upward; posterior apophyses broad, 0.83-0.89 as long as body of median lobe; endophallus lacks structure at base of median lobe, near orifice with 2 hook-like frena $98-122\mu$ long X $49-86\mu$ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing macrochaetae; basal median area of parameres flat.

Biology. Unknown.

Distribution. The range is between latitude $36^{\circ} 50'$ S and $42^{\circ} 30'$ S in the Biobío, Araucanía, and Los Lagos Regiones of Chile and Neuquén province of Argentina. **Argentina:** 1 female, Province de Neuquén (MNHN). **Chile: Biobío:** Ñuble: Termas Chillán (NZAC). **Araucanía:** 1 male, Cautín, Cherquenco, III.1954, L. E. Peña (NZAC); 1 male, 3 females, Nueva Imperial, Chacamo, 17-23.II.1981, L. E. Peña, 600-700 m (USNM). 1 male, 1 females, Malleco, Cord. Nahuelbuta, 6-12.I.1982, 1300 m, L. Peña (CMNH); 1 female, Pichinahuel, Arauco, I.1959, G. Barria (NZAC); Arauco, Pillimpilli (NZAC); 1 male, 4 females, Pichinahuel, 23-31.XII.1958-1-31.I.1959 (NZAC); 1 female, W Temuco, Chacamo, 7-10.XII.1981, 600 m, L. Peña (CMNH). **Los Lagos:** 2 females, Chiloé, Isla Chiloé, Piruquina, 16.II.1995, T. Cekalovic (DGKC); 1 male, Los Muermos, 19.I.1951, R. M., forest (NZAC).

The definition of *Apion bruchi* Béguin-Billecocq is based on a photograph of the female type in the Oberthür Collection (MNHN) taken by D. G. Kissing-er in 1965.

Noterapion chilense Kissinger new species

Figs. 17, 18

Distinctive characters. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length less than 3.00mm; pronotum with sparse, shallow punctures (Fig. 17, 18). Femur 1 of both sexes lacks

pseudotrochanter. Rostrum lacks hypostomal prominence (Fig. 20); in profile rostrum distinctly curved; in dorsal view female rostrum largely subparallel throughout; dorsal margin of head not constricted behind eyes; ventral surface of head flat. Scutellum narrowly triangular (Fig. 18). Elytral striae coarse, deep, about as wide as intervals. Tibia 3 straight. Sternal processes separating mesocoxae not prominent; mesocoxa not dentate. In lateral view dorsal margin of median lobe of aedeagus abruptly curved ventrally, tip somewhat curved dorsally; endophallus lacks structure at base of median lobe.

Description. Length 2318-2850 μ ; width 1078-1280 μ . General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Rostrum lacks hypostomal prominence; of male 658-804 μ long; 1.23-1.29 as long as prothorax; finely alutaceous throughout; in profile moderately stout, dorsal margin broadly arcuate, ventral margin nearly straight, sides parallel in basal 0.75, convergent slightly to apex, in basal 0.5 with shallow, somewhat indistinct punctures 18-37 μ in diameter, bearing fine decumbent setae 25-45 μ long, in apical 0.5 surface more polished, punctures well separated, deeper, somewhat elongate, bearing short (<20 μ) suberect setae, ventral sublateral sulcus (VLS) marked by row of 7-9 subconfluent punctures bearing erect setae 25-55 μ long; in dorsal view sides subparallel in basal 0.5, base and insertion of antenna and apex subequal in width, narrowest point beyond insertion of antenna; male antenna inserted at basal 0.42-0.49 of rostrum at distance in front of eye 2.30-2.56 width of frons; anterior part of dorsal margin of scrobe slightly oblique to rest of margin, ending slightly basad of anterior margin of eye, subcephalic ridges flat, low, short. Rostrum of female 896-1042 μ long; 1.53-1.54 as long as prothorax; sculpture and vestiture much as male but more slender; in profile both dorsal and ventral margins curved, sides subparallel throughout; in dorsal view sides largely subparallel throughout, width at base, insertion of antenna and apex subequal, narrowest point beyond insertion of antenna; female antenna inserted at basal 0.42-0.44 of rostrum at distance in front of eye 2.42-2.95 width of frons; dorsal margin of scrobe as male. Head with frons 119-155 μ wide; 0.77-0.89 as wide as dorsal tip of rostrum, flat; scales on head distinctly coarser and longer than those on basal 0.5 of rostrum, 37-65 μ long; in profile head narrowly cone-shaped, widest at base, sides evenly convergent from somewhat basad of basal margin of eye to somewhat distad of anterior margin of eye, dorsal margin slightly ascending above basal

margin of eye, with 2-4 specialized erect setae 35-55 μ long in line above dorsal-basal quadrant of eye; ventral surface of head virtually flat. Prothorax 512-676 μ long, at base 0.97-1.07 as wide as long; basal margin strongly, acutely expanded laterally, widest at base, sides subparallel in basal half, slightly convergent to shallowly constricted apex; pronotum (Fig. 18) with sparse shallow punctures 18-37 μ in diameter, bearing scales 37-65 μ long, interspaces flat, coarsely alutaceous, tend to be wide along central quadrant from base to apex where punctures are smaller and more widely separated; in profile dorsal margin nearly flat, laterally scales may be longer and coarser than on disk of pronotum; basal fovea lacking. Scutellum narrowly triangular (Fig. 18). Elytra at humeri 1.33-1.50 as wide as pronotum base; 2.57-2.92 as long as prothorax; 1.25-1.48 as long as wide; intervals at middle of elytra 1.0-1.5 as wide as stria, convex, with 3-4 rows of scales 55-74 μ long, denser and slightly longer than vestiture on pronotum; intervals with long (>55 μ), erect specialized setae scattered along length as follows: 1 with 3-6, 3 with 3, 5 with 1, 7 with 1, and 9 with 1 near apex; striae (Fig. 17) coarse, deep, with scales similar to adjacent interval, on apex striae 1 and 2 and 9 are isolated, any connection between them is very shallow, 3+4, 5+6, 7+8. Femur 1 lacks pseudotrochanter. Tibia 3 straight. Sternal processes separating mesocoxae not prominent. male characters: Tibia 2 with simple mucro 46-55 μ long; tibia 3 with simple mucro 55-64 μ long. Median lobe of aedeagus 728 μ long (excluding posterior apophyses), depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 1.6; in dorsal view sides subparallel from base to near orifice, evenly narrowing to 66 μ wide tip, tip simple; in lateral view sides subparallel from base to near orifice, slightly, evenly curved from base to orifice, there dorsal margin abruptly curved ventrally, tip 39 μ wide; posterior apophyses broad, 0.70 as long as body of median lobe; endophallus lacks structure at base of median lobe, near orifice with 2 hook-like frena 61 μ long X 36 μ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing macrochaetae; basal median area of parameres flat.

Biology. Collected on *Nothofagus antarctica* (G. Forst.), *N. betuloides* (Mirbel) Blume, and *N. dombeyi* (Mirbel) Blume based on label data and G. Kuschel (*pers. comm.*).

Distribution. The range is between latitude 34° 58' S and 54° 55' S in the Maule, Biobío, Araucanía, Los Lagos, and Magallanes Regiones of Chile and the Río Negro province of Argentina.

TYPE MATERIAL. Holotype male labeled **Chile:** [Biobío:] Lag Trapatrapa, 19 JAN 1948 [19.I.1948], 1700m, on *Nothofagus antarctica* / G. Kuschel Collection / measure 01164 DG Kissinger / [specimen dissected, abdomen in glycerin in attached microvial] HOLOTYPE *Noterapion chilense* KISSINGER [red holotype label] (NZAC). Paratypes (15 total). 1 female, Chile: [Maule:] Curico, Cubillo, 22-27 .IX.1959, G. Kuschel Collection (NZAC). 1 female, [Chile: Maule:] Cord. Talca, Alto de Vilches, 18-25.X.[19]64, [L. E. Peña] (USNM). 2 males, 1 female, [Chile: Biobío:] Cord. Chillán, Las Trancas, 21-30.XI.1964, [L E Peña] (USNM). 1 male, Chile: [Araucanía:] Malleco, La Fusta, 800m, 9.XII.1959, G. Kuschel Collection (NZAC). 1 male, 2 females, Chile: Araucanía: Malleco, Icalma, 24.II.[19]75, L Peña, H & A Howden Collection (CMNC,DGKC). 2M, Chile: [Araucanía:] Cord, Nahuelbuta, Pichinahuel, 10-20.I.[19]59, L Peña, H & A Howden Collection (CMNC). 1 female, Chile: [Los Lagos:] Isla de Chiloé, Castro Dalcahue, 31.I.1981, H & A Howden Collection (CMNC). 1 female, Chile: [Los Lagos:] Chiloé, Isla Chiloé, 5 km SW Choachi, 22.I.1997, T. Cekalovic, DG Kissinger Collection 2001 (DGKC). 1 male, Chile: **Magallanes:** Fuerte Bulnes, 4.II.1990, T. Cekalovic (CMNC). 1 female, [Chile:] Magallanes: Ult[ima] Esp[eranza], pen. Var[g]as, 5.II.[19]51, s/*Nothofagus antarctica* [NZAC]. Other specimens not in type series (data from G. Kuschel, *in litt.*; specimens in (NZAC)). Argentina: **Río Negro:** Moquehue [32 specimens, all tiny, typical *chilense* from *N. dombeylei*]. Chile: **Biobío:** Arco, Los Barros at Laguna Laja; Cord. Pemehue. **Los Lagos:** Valdivia: Panguipulli. **Magallanes:** Isla Wellinton, Puerto Edén; Isla Navarino, Puerto Williams.

Etymology. The specific name is based on the name of the country Chile.

***Noterapion saperion* Kissinger**
new species
 Figs. 11, 12A-C

Distinctive characters. Length less than 3.90mm; pronotum with denser, deeper punctures (Fig. 16). Femur 1 of both sexes lacks pseudotrochanter. Rostrum lacks hypostomal prominence (Fig. 20); in profile rostrum distinctly curved; in dorsal view female rostrum largely subparallel throughout; dorsal margin of head not constricted behind eyes; ventral surface of head flat. Scutellum somewhat elongate. Tibia 3 inner margin convex (Fig. 11). Sternal processes separating mesocoxae very prominent (Fig.

12B); mesocoxae dentate (Fig. 12C). In profile dorsal margin of median lobe of aedeagus abruptly curved downward near orifice and curved upward slightly at tip (Fig. 2), tip robust; endophallus lacks basal process.

Description. General aspect black, tarsi and antenna dark piceous. Vestiture silvery white, fine, decumbent, moderately dense, uniform. Length 2963-3875 μ ; width 1260-1790 μ . Rostrum of male 964-1114 μ long; 1.23-1.34 as long as prothorax; surface polished throughout; in profile slender, curved, sides parallel in basal 0.5, slightly convergent to apex, in basal 0.6 punctures deep, somewhat elongate, tend to be confluent, 18-37 μ in length, arranged in indistinct rows, behind insertion of antenna bearing fine decumbent setae 25-46 μ long, in apical 0.2 punctures finer, sparser, bearing suberect setae 12-18 μ long, ventral sublateral sulcus (VLS) shallow with 8-11 somewhat indistinct punctures bearing erect setae as on adjacent rostrum except terminal seta 55 μ long; in dorsal view sides in basal 75 μ converge to 0.85 width of base, subparallel in basal 0.5, narrowest point beyond insertion of antenna, divergent to apex; male antenna inserted at basal 0.43-0.47 of rostrum at distance in front of eye 2.31-3.06 width of frons; dorsal margin of scrobe nearly straight, ending slightly basad of anterior margin of eye, subcephalic ridges flat, low, short. Rostrum of female 1004-1298 μ long; 1.33-1.49 as long as prothorax; surface polished throughout; in profile sides subparallel throughout, curved, more strongly so in apical 0.5, punctures finer and sparser than male, sparser setae 18-28 μ long, VLS not apparent, its apical puncture with seta 40-50 μ long; in dorsal view in space of 90 μ from base sides converge 0.69, subparallel to insertion of antenna, beyond insertion of antenna in space of 90 μ sides converge 0.79, in apical 0.2 divergent to apex where is 1.10-1.20 width at insertion of antenna; female antenna inserted at basal 0.36-0.41 of rostrum at distance in front of eye 2.10-2.55 width of frons; dorsal margin of scrobe as in male. Head with frons 164-230 μ wide; 0.82-1.14 as wide as dorsal tip of rostrum; scales on head distinctly coarser and longer than those on basal 0.5 of rostrum, 45-90 μ long; in profile head narrowly cone-shaped, widest at base, sides evenly convergent from somewhat basad of basal margin of eye to somewhat distad of anterior margin of eye, dorsal margin slightly ascending above basal margin of eye, with 3-6 specialized erect setae 40-65 μ long in line above dorsal-basal quadrant of eye and continuing onto base of head; ventral surface of head virtually flat. Prothorax 712-932 μ long, at base 0.94-1.09 as wide as long; basal

margin strongly, acutely expanded laterally, sides arcuately divergent to widest point well behind middle, convergent to broad shallow apical constriction; pronotum with moderately shallow punctures 18-46 μ in width bearing scales 46-75 μ long, interspaces flat, moderately wide, coarsely alutaceous; in profile dorsal margin slightly evenly convex, laterally punctures and scales similar to disk of pronotum; basal fovea lacking. Scutellum elongate as in *bruchii*. Elytra at humeri 1.28-1.45 as wide as pronotum base; 2.48-2.81 as long as prothorax; 1.34-1.51 as long as wide; interval 2 at middle of elytra 2.1-2.4 X stria, moderately convex, with 4-5 rows of scales similar to pronotum; intervals with long (>46 μ), erect specialized setae scattered along length as follows: 1 with 6-12, 3 with 5-8, 5 with 3-5, 7 with 1-3, and 9 with 1 near apex; striae coarse, deep, with scales similar to adjacent interval, on apex striae join 1+2+9, 3+4, 5+6, 7+8. Tibia 3 (Fig. 11) bowed inward. Posterior median mesosternal apophysis elongate, largely vertical, projecting to near level of apex of mesocoxa; anterior median metasternal apophysis vertical; union of these processes between mesocoxae projecting well below the usual ventral surface (Figs. 12A & B). Mesocoxa (of both sexes) with small angular process on posterior aspect (Fig. 12C). male characters: Tibia 2 with simple mucro 44-64 μ long; tibia 3 with simple mucro 37-46 μ long. Median lobe of aedeagus 892 μ long (excluding posterior apophyses), depressed, the ratio of the dorsal width and lateral depth of the median lobe at the junction with the posterior apophyses is 2.1; in dorsal view sides subparallel from base to near orifice, evenly narrowing to 61 wide tip, tip simple; in lateral view sides subparallel from base to near orifice, slightly, evenly curved from base to orifice, dorsal margin abruptly curved ventrally, tip robust, 73 μ wide; posterior apophyses broad, 0.71 as long as body of median lobe; endophallus lacks structure at base of median lobe, near orifice with 2 hook-like frena 74 μ long X 50 μ wide. Basal piece of tegminal apodeme articulates with postfenestral plate; parameres fenestrae not visible; apical lobes long, moderately slender, lightly sclerotized, at apex with more heavily sclerotized plate bearing macrochaetae; basal median area of parameres flat.

Biology. Collected on *Nothofagus antarctica* (G. Forst.) Oerst. based on label data and G. Kuschel (*in litt.*).

Distribution. The range is between latitude 36° 50' S and 38° 44' S in the Biobío and Araucanía Regiones of Chile.

TYPE MATERIAL. Holotype male labeled **Chile:** [probably **Araucanía:**] Nahuelbuta, 3.1.51 [3.1.1951], 1200m, R. M. / Coll. Kuschel / N. Z. Arthropod Collection, NZAC, Private Bag 92170, Auckland New Zealand [goldenrod-colored label] / measure 00743 DG Kissinger / HOLOTYPE *Noterapion saperion* KISSINGER [red holotype label] (NZAC). Paratypes (19 total). 2 males, 1 female, Chile: [**Biobío:**] Lag Trapatrapa, 19.I.1948, 1700m, G. Kuschel Collection, N. Z. Arthropod Collection, NZAC, Private Bag 92170, Auckland New Zealand (NZAC). 1 male, 1 female, Chile: [**Biobío:**] Río Biobío, El Arco, 2-6.I...1959, G. Kuschel Collection, N. Z. Arthropod Collection, NZAC, Private Bag 92170, Auckland New Zealand (NZAC). 1 male, Chile: [**Biobío:**] Cord. Chillán, Las Trancas, 21-30.X.1964, [L. E. Peña], DG Kissinger Collection (DGKC). 1 male, 1 female, Chile: [**Araucanía:**] Malleco Prov., 7km W Villa Portales, 23-24.XII.1976, 1100-1300m, H. F. Howden, H. & A. Howden Collection, Ottawa Canada (CMNC). 1 female, Chile: [**Araucanía:**] La Selva, W. Temuco, 10-12.XII.1981, 700m, H. & A. Howden Collection, Ottawa Canada (CMNC). 2 females, Chile: [**Araucanía:**] Malleco, Nahuelbuta, 1.I.1979, H. & A. Howden Collection, Ottawa Canada (CMNC, DGKC). 2 males, 1 female, Chile: [**Araucanía:**] Malleco, Cord. Nahuelbuta, XII.1976, 1300m, H. & A. Howden Collection, Ottawa Canada (CMNC, DGKC). 1 female, Chile: [**Araucanía:**] Cord. Nahuelbuta, Cabrera, 14.XII.1976, L. Peña (CMNC) [rostrum broken]. 2 females, Chile: [**Araucanía:**] Malleco, Nahuelbuta, 6-12.I.1982, L. Peña, 1300m (CMNC). 2 females, Chile: [**Araucanía:**] Malleco Prov., Sierra Nevada, 5.I.1962, Luis E. Peña, DG Kissinger Collection (DGKC). Other specimens not in type series (data on 24 specimens from G. Kuschel, *in litt.*; specimens in (NZAC)). **Chile: Biobío:** Ñuble: Las Cabras. **Araucanía:** Malleco: Curacautín; Lonquimay. Cautín: Parque Nacional Conguillío. Note from Kuschel (*in litt.*): "Although the species is most distinctive, the downwards protruding processes between the middle coxae can be quite flat, much as in the other species, and the hind tibiae can be completely straight in some specimens."

Etymology. The specific name is Greek, of neuter gender, and means "an unknown animal" (Brown, 1956, p. 91).

Comment on mesocoxae of *N. saperion*. The species *N. saperion* is remarkable even among a group of remarkable species. Unlike other *Noterapion* spp., the union of the meso- and metasternal processes between male and female mesocoxae consists of two vertical cylindrical structures projecting ventrally well below the sternal surface (fig. 12B: the structures involved were enhanced for contrast with Photoshop). This arrangement may be a precursor for

the derivation of character #40 state (1), "mesocoxal cavities contiguous", which is a synapomorphy occurring in Rhadinocybinae, *Neocyba* Kissinger, Aplemonini, Piezotrachelini, *Rhinorhynchidius* Voss, *Podapion* Riley, *Chilapion* Kissinger, *Circapion* Kissinger, and *Chrysapion* Kissinger (Wanat, 2001 and Kissinger, 1968). A later discussion will suggest a position for *Noterapion* as a tribe basal to most of the groups in Apioninae that have contiguous mesocoxal cavities.

Both sexes of *N. saperion* have the mesocoxae dentate on the posterior margin (fig. 12C); this the only female New World apionid known to have dentate coxae. Among New World apionids, males in very scattered groups have dentate coxae: *Trichapion whiteheadi* (A.-Z.) and congeners (coxa 1), *Trichapion sleeperi* (Kissinger) (coxa 1), *Kissingeria seminuda* (Wagner) (coxa 2), *Bothryopteron larium* (Kissinger) (coxae 1 and 2), and *Circapion circipenne* (Wagner) (coxa 2).

The significance of female *N. saperion*'s dentate mesocoxae may be as follows. Some of the possible antecedents of *Noterapion*, such as Antliarhininae or Tanainae, share a synapomorphy with *Noterapion*, character #62 state (0), "Endophallus with paired frena" (Wanat, 2001), a character not found elsewhere in Apioninae. Antliarhininae and Tanainae also possess character #43, state (0), "Pro- and mesocoxa apically with a minute dentiform process limiting rotation of trochanter" (Wanat, 2001). There is a possibility that the dentate mesocoxa of *saperion* is another state of character #43. The fact that both sexes of *N. saperion* have the mesocoxae dentate argues against the trait appearing for the benefit of male sexual advantage, as for males of species listed above. Recent advances in gene sequence discoveries show that the Hox clusters of homeotic genes controlling Bithorax and Antennapedia development in *Drosophila* (where an antenna has been transformed into a leg during development) also occur in a wide range of animals: echinoderms, beetles, flies, nematodes and vertebrates (mice) (Raff 1996, p. 183). The significance here is the possible presence of "The Specific Gene(s)", i.e. character #43, in all nodes from the least advanced to the most advanced members of an apionid lineage regardless of expression in the phenotype at intermediate nodes. Raff further concludes, "Two kinds of gene evolution have occurred: changes in patterning and changes in downstream genes that execute the pattern. ... the evolution of novel regulatory patterns in the Hox genes led to the modern pattern of limb and wing expression. It appears that these patterns resulted from alterations in the control

of expression, not from the evolution of new Hox genes" (Raff, 1996, p. 413-414). I am not saying that Hox genes are involved in the expression of character #43 in *Noterapion* but that they serve as a useful model in attempting to understand character development in Apionidae, etc. For instance, slight changes in interacting genes controlling the morphogenesis of character #43 may produce an apparently new state so unexpected and unrelated that it is not recognized as pertaining to #43.

Phylogenetic Position of *Noterapion* Kissinger

Wanat (2001) proposed a classification of Apionidae on the genus group level based on a phylogenetic investigation of the brentid family complex as proposed by Kuschel (1995); my goal is to place *Noterapion* in that scheme. Wanat provides the basis for his study, a matrix of 22 taxa and 70 characters, his table 51, "Character matrix for phylogenetic analysis of the family and genus group taxa of the Brentidae" (Wanat, 2001, p. 334). The taxa, ranking largely from Alonso-Zarazaga and Lyal (1999), included Caridae (out-group), Curculionidae (out-group), *Myrmacielus* Chevrolat, *Neocyba* Kissinger, Notapionini, Rhadinocybini, *Chilapion* Kissinger, *Rhinorhynchidius* Voss, *Podapion* Riley, *Apiomorphus* Wagner, *Mecolenus* Schoenherr, *Lispostherium* Faust, *Cybebus* Schoenherr, *Tanaos* Schoenherr, Antliarhininae, Apionitae, Aspidapiitae, Eurhynchidae, Nanophyidae, Brentinae, and Cyladinae. In Kuschel's scheme Brentidae includes all of these, except Curculionidae. Wanat divided the brentid lineage into four families: Brentidae with Brentinae and Cyladinae; Eurhynchidae; Nanophyidae; and Apionidae with Antliarhininae, Tanainae for *Tanaos*, Mecoleninae for *Mecolenus* and *Apiomorphus* (a complex with at least 2 possible genera), Cybebininae for *Cybebus* Schoenherr, Myrmacielinae with Myrmacielini for *Myrmacielus* and Lispostheriini for *Lispostherium*; Rhadinocybinae for Rhadinocybini and Notapionini; and Apioninae with supertribes Apionitae, Aspidapiitae, Rhinorhynchidiitae for *Rhinorhynchidius*, Chilapiitae for *Chilapion*, and Podapiitae for *Podapion*.

Wanat analyzed table 51 using Hennig86 option "ie" (Farris, 1988) and produced 3 minimum length trees each with 196 steps and a consistency index of 0.440 (Wanat, 2001, figure 820); the 3 trees were identical except for differences in the arrangement of *Cybebus*, *Myrmacielus* and *Lispostherium*. Kissinger analyzed table 51 using PAUP (Swofford 1985) with options set to default except Caridae selected as

outgroup and OPT=delayed transformation optimization (DELTRAN). The result was identical to Wanat (2001, figure 820, middle tree) except the PAUP tree was 5% longer, with 207 steps and a consistency index of 0.425; see Fig. 28. The strong similarity between the PAUP and Hennig86 trees suggests that identical input (table 51) to the two programs should produce comparable output. The addition of *Noterapion* to table 51 resulted in Fig. 28 (edited to follow figure 824 of Wanat; for reference the nodes are numbered; presents row (23) of character states for *Noterapion*). *Noterapion* came out as node 33. Node 34 is the base of Apioninae. On this diagram *Chilapion* Kissinger is the most basal (primitive) group in Apioninae with *Noterapion* a close second. (The preferred consensus tree (Wanat, figure 824) was the basis of the new classification; it is the same as the middle tree of figure 820 except for the order of Nanophyidae, Eurhynchidae, and Curculionidae, but that is not the concern of this paper.)

Tribe *Noterapionini*, new tribe

Type genus: *Noterapion* Kissinger, 2002. The characters of the tribe are based on *Noterapion*; the bold face numbers correspond to the list of characters in Wanat (2001). A member of Apioninae. With 9-striate elytra (#28). male pygidium of apionine type (#54). Specialized setae numerous on intervals 1, 3, 5, and 7 (#29). Endophallus with paired frena (#62). Endophallic flagellum always absent (#63). Mesocoxal cavities separated (#40). Trochanter short, femur not touching coxa (#44). Pro- and mesocoxa apically with dentiform process vestigial or absent (#43). Base of notum with with a fringe of setae (#23). Apical sutural setae on elytra well developed (#32). Inferolateral flange of elytra vanishing far from elytral suture (#33).

Character #28 with state (3) 9-striate elytra, "stria 10 reduced to a short link between equally ranged apices of striae 1 and 2 or absent, the 10th interval absent". This is an important synapomorphy held in common with all members of Apioninae except Chilapiidae; *Noterapionini* is the lowest category in Apioninae that shows state (3). (*Setapion* Balfour-Browne is the only non-apionine that shows this character; currently its position is in or between Tanainae and/or Mecoleninae and is under study by Wanat.)

Character #54 male pygidium type of state (2) "apionine". This is a synapomorphy shared with Cybebinae, Mecoleninae, Podapiidae, and Apionitae.

Many of the following characters represent symplesiomorphies with subfamilies of Apionidae more basal than Apioninae, but otherwise do not occur in Apioninae.

Character #29 with state (0), "specialized setae numerous on all odd intervals". Regarding the multiple specialized setae, Alonso-Zarazaga (1989, p. 217 fig. 9, left side) illustrated the arrangement of multiple specialized setae along alternate elytral intervals 3 to 9 for a hypothetical primitive apionid. *Noterapion* spp. show essentially this pattern except that interval 1 has multiple setae and interval 9 has (usually) 1 specialized seta near its apex. Some members of Mecoleninae such as *Apiomorphus* Wagner and *Lepanomus* Balfour-Browne have numerous erect specialized setae scattered regularly along the length of intervals 1-8; the exact placement of these genera is under study by Wanat. Compared with Mecoleninae, some distinctive features about the multiple setae of *Noterapion* are that they are on odd intervals (1-7) and tend to be sparse and irregularly distributed; also the intervals have moderately dense, fine, silvery white, decumbent scales, in addition to the setae. As defined by Wanat state (0) is symplesiomorphic with Caridae, Rhadinocybini, *Apiomorphus*, Eurhynchidae, and Nanophyidae. As redefined here, this appears to be an autapomorphy for *Noterapion* and may represent a separate state.

Character #62 endophallus with state (0), "with paired frena". This is symplesiomorphic with Caridae, Myrmacielinae, Mecoleninae, Cybebinae, Tanainae, Antliarhininae, Eurhynchidae, Nanophyidae, Brentidae, and *Ithycerus* Schoenherr. This state is absent in all other New World apionids; it probably indicates a position in Apioninae more basal than Chilapiidae.

Character #63 endophallic flagellum with state (1), "always absent". This is synapomorphic with Mecoleninae, Tanainae, Antliarhininae, and Apioninae. *N. meorrhynchum* (Philippi and Philippi) has an endophallic process that may be the derived remnants of a flagellum.

Character #40 mesocoxal cavities with state (0), "separated". This is symplesiomorphic with Caridae, Curculionidae, Myrmacielinae, Mecoleninae, Cybebinae, Tanainae, Antliarhininae, Aspidapiidae, Eurhynchidae, Nanophyidae, and Brentidae. The aberrant meso- and metasternal structures of *N. saperion* Kissinger suggest that at least one line of modifications which resulted in open mesocoxal cavities may have started in the *Noterapion* complex. If this is so then *Noterapion* could well be basal to *Chilapion*.

*****		Caridae	1		
*					
*	*****	Curculionidae	2		
*	*				
****44	*****	Eurhynchidae	19		
*	*				
43	**	Nanophyidae	20		
*	*				
42	**	Brentinae	21		
*	****32				
*	*	*****	Cyladinae	22	
*	*				
41	**	Antliarhinae	16		
*	*				
*	*	*****	Tanaos	15	
****40	*				
*	*	*****	Mecolenus	12	
*	*	*			
39	*	**	Apiomorphus2	10	
*	*	****27			
*	*	*	*****	Apiomorphus	11
*	*	*			
38	*	**	Cybebus	14	
*	*	**28			
37**	*	*	*****	Myrmacielus	3
*	*	**24			
*	*	*	*****	Lispothorium	13
*	*	*			
36	*	***	Neocyba	4	
*	****26				
*	*	*	*****	Notapionini	5
*	*	**25			
*	*	*	*****	Rhadinocybini	6
35	*	**	Chilapion	7	
*	*	*			
*	*	*****	Noterapion	23	
**34	*				
*	*	*****	Rhinorhynchidius	8	
*	*	*			
33	*	***	Podapion	9	
*	*	*			
31	*	***	Apionitae	17	
*	*	*			
**30	*				
29	***	Aspidapiitae	18		

Figure 28. Result of PAUP Analysis of Table 51 (Wanat, 2001) with added row 23 for *Noterapion* Kissinger. Edited to conform to order of taxa in Fig. 824 (Wanat, 2001). Taxa and nodes numbered as output from PAUP. Taxon number is row order in Table 51. Row 23 (*Noterapion*) =

character - 11111111112222222223333333334444444445555555556666666667
index - 123456789012345678901234567890123456789012345678901234567890
state - 200110200000000011000?00000302010????010101110111???2???0?1?01???????

Character index corresponds to list of 70 characters from Wanat (2001, pp. 333-344). Example: Character 1 state = 2, "Vestiture on body dorsum ordered, scales also in striae". ? is character state uncertain. Tree rooted to Caridae; root at top of page.

Character #44 trochanter state (1), "short, femur not touching coxa". This is synapomorphic with Antliarhinae, Tanaina, Mecoleninae, Rhinorhynchidiidae, and Podapiidae. The pseudotrochanter of *N. meorrhynchum* (Philippi and Philippi) may suggest how a "normal-sized" trochanter (state 2, trochanter elongate) was developed in Apionidae, which could argue for a position basal to other taxa with trochanter state (2), "trochanter elongate".

Character #43 pro- and mesocoxa apically with state (1), "dentiform process vestigial or absent". This is symplesiomorphic with Cyladini, Nanophyidae, Apioninae, Cybebinae, Myrmacielinae, and Rhadinocybinae. This character apparently appears in a new guise on the non-articular surface of the mesocoxa of *N. saperion* Kissinger "as an ornament" (Fig. 12C). This is the possible origin for the dentate coxa found in some male apionids.

Character #23 base of notum with state (0), "with a fringe of setae". This is symplesiomorphic with Curculionidae, Mecoleninae, Tanainae, Antliarhininae, Eurhynchidae, Nanophyidae, Brentidae, and Podapiidae.

Character #32 apical sutural setae on elytra with state (1), "well developed". This is synapomorphic with Antliarhininae and Tanainae.

Character #33 inferolateral flange with state (0), "vanishing far from elytral suture". This is symplesiomorphic with Caridae, *Neocyba*, Chilapiidae, Rhinorhynchidiidae, Podapiidae, Apiomorphus, Antliarhininae, Eurhynchidae, and Nanophyidae.

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References cited

- Adobe Photoshop 6.0.** © 2000 Adobe Systems Incorporated, 345 Park Avenue, San Jose, California 95110, USA.
- Alonso-Zarazaga, M. A.** 1983. In Alonso-Zarazaga, M. A. and D. R. Whitehead. 1983. Nomenclatural notes on Apionidae (Coleoptera: Curculionoidea). Proceedings of the Entomological Society of Washington. Washington, D. C. 85: 626-627.
- Alonso-Zarazaga, M. A.** 1989. Revision of the supraspecific taxa in the Palaearctic Apionidae Schoenherr, 1823. I. Introduction and subfamily Nanophyinae Seidlitz, 1891 (Coleoptera, Curculionoidea). Fragmenta Entomologica. Roma. 21: 205-262.
- Alonso-Zarazaga, M. A. and C. H. C. Lyal.** 1999. A world catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (Excepting Scolytidae and Platypodidae). Entomopraxis, Barcelona. 315 pp.
- Arnett, R. H., Jr, G. A. Samuelson, and G. M. Nishida.** 1993. The Insect and Spider Collections of the World. Sandhill Crane Press, Inc, Gainesville, FL. 310 pp.
- Béguin-Billecocq, L.** 1909. Apions nouveaux de la République Argentine. Annales de la Société Entomologique de France. Paris. 78: 449-464.
- Blanchard, C. E.** 1851. Fauna chilena. Insectos. Coleópteros. In Gay, C., Historia Física y política de Chile, vol. 5, Zool., pp. 285-563.
- Brown, R. W.** 1956. Composition of Scientific Words. Revised Edition. Smithsonian Institution Press, Washington D.C. 882 pp.
- De Santis, L., P. Fidalgo, and S. Ovruski.** 1993. Himenopteros parasitoides de los generos Aditrochus Ruebsaamen y Espinosa Gahan (Insecta, Hymenoptera, Pteromalidae) asociados a agallas en Nothofagus (Fagaceae) del sur de Argentina y Chile. Acta Entomológica Chilena 18: 133-146.
- Enderlein, G.** 1912. Die Insekten des Antarkto-Archipelates (Feuerland, Falklands-Inseln, Süd-Georgien). 20. Beitrag zur Kenntnis der antarktischen Fauna. Kungliga Svenska Vetenskaps Akademien Handlingar. Stockholm. 48: 1-170.
- Farris, J. S.** 1988. Hennig86, version 1.5. Computer programme and documentation. Stony Brook, N.Y.

- Gemminger, [M.]** 1871. In Gemminger, [M.] and [E.] von Harold, 1871. *Catalogus Coleopterorum hucusque descriptorum synonymicus et systematicus*. Gummi, Monachii. Vol. 8, Curculionidae, pp. 2181-2668.
- Hustache, A.** 1930. Deux Curculionides nouveaux du Chili. *Revista Chilena de Historia Natural* 34: 266-271.
- Kissinger, D. G.** 1968. Curculionidae subfamily Apioninae of North and Central America. Taxonomic Publications, South Lancaster, Mass. 559 pp.
- Kissinger, D. G.** 1990. Apionidae from North and Central America. Part 1. Notes on the classification of the *Apion* subgenus *Trichapion* Wagner with description of new species from the United States of America. (Coleoptera). *Insecta Mundi* 3: 271-287.
- Kissinger, D. G.** 1992. Apionidae from North and Central America. Part 4. Generic classification and introduction to the genus *Coelocephalapion* Wagner, with new species from Mexico and Venezuela (Coleoptera). *Insecta Mundi* 6: 65-77.
- Kissinger, D. G.** 2002. A new genus of Apionidae from Chile and Argentina. *Coleopterists Bulletin* 56: 315-316.
- Kuschel, G.** 1950. Nuevas sinonimias, revalidaciones y re combinaciones (9° aporte a Col. Curculionidae). *Agricultura Técnica*. Santiago, Chile. 10: 10-21.
- Kuschel, G.** 1995. A phylogenetic classification of Curculionoidea to families and subfamilies. *Mem-oir Entomological Society of Washington*, 14: 5-33.
- Manos, P. S.** 1997. Systematics of *Nothofagus* (Nothofagaceae) based on rDNA spacer sequences (ITS) taxonomic congruence with morphology and plastid sequences. *American Journal of Botany* 84: 1137-1155.
- Microsoft Corporation**, 2000. Microsoft Encarta Interactive World Atlas 2001, Microsoft Encarta Reference Suite 2001 [DVD], © 1993-2000 Microsoft Corporation.
- Philippi, R. A., and F. H. Philippi.** 1864. Beschreibung einiger neuen Chilenischen Käfer. *Revista Chilena de Entomología*. Santiago de Chile. 25: 266-284, 313-406.
- Raff, R. A.** 1996. *The Shape of Life: Genes, Development, and the Evolution of Animal Form*. The University of Chicago Press, Chicago and London. 520 pp.
- Stuardo, C.** 1929. Notas Entomológicas. Breves anotaciones sobre *Apion tenebricosum* Gem. *Revista Chilena de Historia Natural* 32: 226-229.
- Swofford, D. L.** 1985. PAUP Phylogenetic Analysis using Parsimony. Version 2.4. Illinois Natural History Survey, 607 East Peabody Drive, Champaign, Illinois 61820.
- Wanat, M.** 2001. Genera of Australo-Pacific Rhadinocybinae and Myrmacicelinae with biogeography of the Apionidae (Coleoptera: Curculionoidea) and phylogeny of the Brentidae (s. lato). *Mantis Olsztyn*. 432 pp.