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Notes on the ant genus *Hypoclinea* Mayr, with descriptions of three new species (Hymenoptera: Formicidae)

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Abstract: Three new species of *Hypoclinea* from the *bispinosa* –group are described, two from western Colombia, and the other from southern Venezuela. Biological data on *H. dolonigera* is offered, including a description of the queen and nest.

RESUMEN

Se describen tres nuevas especies del género neotropical de hormigas principalmente arboreas *Hypoclinea.* Dos especies son del Chocó, y el Cauca colombiano respectivamente y la última proviene de la región del Cerro La Neblina en Venezuela. Se ofrecen datos biológicos sobre *H. dolonigera,* incluyendo una descripción de la reina y un nido. También se dan citas de localidades para otros miembros del género en Venezuela.

The ants of the neotropical group *Monacis* were revised by Kempf in 1959 with the recognition of 16 valid species and one as inquirenda. He divided them into three groups according to the petiole characters of the workers: the *bispinosa*-group, species have their petiole crowned by a long, acuminate spine; the *debilis*-group, members which have a short or atrophied tooth on the petiolar summit; and the *laminata*-group, species with a strongly sculptured petiole that may present a short spine or a transverse crest on the summit. Since then three additional living species have been described: *andina* (Kempf, 1962: 36) and *omacantha* (Kempf, 1972: 251), both of the *bispinosa* group, and another (Harada and Silva, 1986) of the *debilis* group. The last reference includes a key for the identification of the species. Two fossil species from the Dominican amber were described by Wilson (1985: 18-22).

The three groups defined by Kempf have withstood the addition of new taxa including the three species described below, all of wich belong to the *bispinosa* group. The status of the group itself is controversial and Kempf briefly summarizes its history in his revision. Even though he treats it as a genus, he points out that his paper concerns itself with the species and that further study is needed in order to clear the validity of this and other dolichoderine genera. Brown (1973), and G.C. and J. Wheeler (1973; 1976) consider both *Monacis* and *Hypoclinea* as junior synonyms of *Dolichoderus.* Snelling (1981: 401) provisionally considers *Monacis* as a junior synonym of *Hypoclinea.* Wilson (1985) treats *Monacis* as a genus but nevertheless is apologetic about it. Brown, and Snelling now agree that *Monacis* is a synonym of *Hypoclinea* (pers. comms.). Since it is apparent that *Monacis* will not survive as a genus for very long this paper will treat this group as a synonym of *Hypoclinea.* For a definition of the genus and the measurements used the reader should consult Kempf (1959). PSD is the distance between the tips of the pronotal spines and EL is the maximum length of the eye. Descriptive terms for surface sculpturing follow Harris (1979).

Hypoclinea curviloba sp. n.
(Fig. 1)

Diagnosis: Large (TL. 7.00 mm) *Hypoclinea* with propodeal dorsum ending in two upcurved

lobes. Stoutly based but acutely pointed pronotal spines present, and the petiole gradually tapering dorsally into a needle. Pilosity abundant.

Worker metrics, Holotype (Paratype): TL 7.00 (–), HL 1.60 (1.68), HW 1.62 (1.60), SL 1.80 (1.80), PSD 1.96 (2.10). WL 2.40 (2.24), EL 0.32 (0.32) mm, CI 101 (95), SI 111 (113). Mandibles finely rimose with decumbent hairs along the inner margins and median area, appressed pilosity near the mandibular base; apical margin smooth. Clypeus with aprons shallowly imbricate and median area longitudinally costulate. Frontal carinae extending to eye midlength, slightly divergent and costulate in between. Head areolate laterad of posteromedian depression. Ventrolateral region of head with shallow oblong depressions. Pronotal disc reticulate-rugose, the spines stout and tapering to an acute point. Mesonotal disc transversely concave with upraised lateral corners that slightly overhang the mesopleura; mesonotum slightly shorter than wide, longitudinally costulate. Propodeal dorsal face areolate-rugose with sharply marginate lateral and caudal edges. Posterior margin deeply excised in the middle, ending in two upcurved lobes that project slightly laterad over the declivity. Propodeal declivity shining, with transverse costae. Propleura with transverse rugosity interpersed with minute mostly oval depressions. Mesopleura reticulate-rugose; sculpture on the anepisternum being coarser than on the katepisternum. Meso-metapleural suture distinct and broad, shining in its upper half and with some transverse costulae. Metapleura reticulate rugose and punctulate. Posterior face of petiole with shallow transverse reticulate costulae, its outline tapering into a long spine which is slightly bent caudad. Gaster mostly reticulate-rugose with punctulae. Front coxae transversely to obliquely costulate, minutely imbricate between the costulae. Basidorsal tubercle of hind coxae well developed; femora tranversely imbricate. Dense, apressed, golden pilosity widespread specially on vertex, nota and gaster. Numerous standing and decumbent hairs on trunk, head, scapes, legs and gaster. Body black with ferruginous to brown legs, coxae, and antennal condyle plus apical margin of each funicular segment. Base of mandibles black with an infuscate to brown chewing border. Only two specimens were available for study, both taken by a malaise

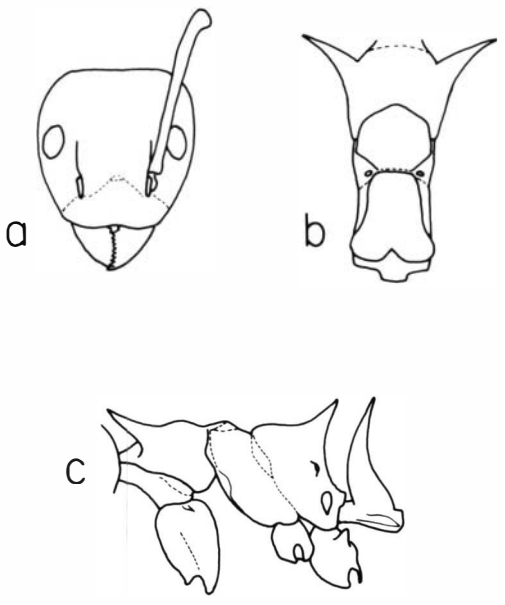

Fig. 1. *H. Curviloba* sp. n. a. Head in full-face view b. Dorsum of trunk c. Lateral view of trunk and petiole.

trap in the southern Chocó region of Colombia, between the Río San Juan and Río Baudó, 150 m, 20–II–1976, R.C. Wilkerson, leg. Both specimens deposited in the collection of the Instituto de Zoología Agrícola (IZA) of the Universidad Central de Venezuela. The paratype lacks its gaster. The name of this species was created from the Latin adjective "curvus" and the Latin noun "lobus". This species is apparently closely related to *H. valida* (Kempf) and *H. bispinosa* (Olivier). It differs from *valida* in having stouter pronotal spines that seen laterally project more upwards and as seen dorsally curve slightly back. The outline of the posterior margin of the head in full-face view is fairly straight to feebly concave and not strongly impressed. The sculpture of the vertex and nota is not densely and heavily punctate. The PSD greatly surpasses the HW. The PSD and SL probably average more than in *valida* but due to the scarce material to hand this can't be confirmed. Differences from *bispinosa* are the following: the SL is greater than than the HW; the petiolar summit is not crenulate nor is its spine abruptly constricted at the base. It seems to be on the average larger ant (TL) even though some overlap may occurs. The deep median impression of the posterior cephalic margin of *bispinosa* also sets *curviloba* apart. The strongly upturned and bilobed pos-

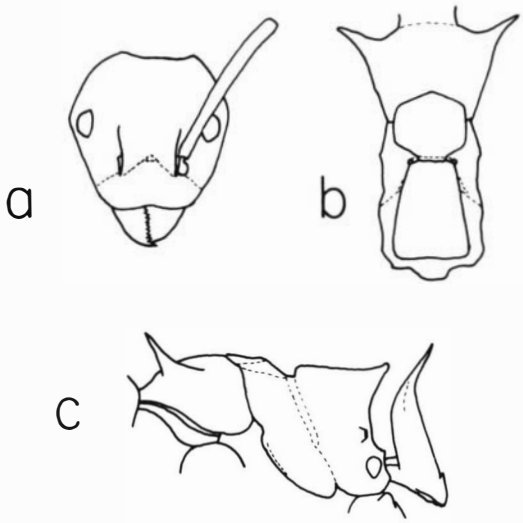

Fig. 2. *H. superacula* sp. n. a. Head in full-face view b. Dorsum of trunk c. Lateral view of trunk and petiole.

terior margin of the propodeal dorsum is not shared by any other species in the genus.

Hypoclinea superacula sp. n.
(Fig. 2)

Diagnosis: Small (TL 5.00 mm) *Hypoclinea* with acute pronotal spines that protude obliquely upwards. Length of antennal scapes about 0.1 mm more than HW or HL. Petiolar needle significantly higher than the nota.

Holotype metrics: TL 4.68, HL 1.26, HW 1.28, SL 1.38, PSD 1.28, WL 2.40, EL 0.30 mm, CI 102, SI 108. Head and mandibles black, the latter with a brown and smooth apical margin, aprons of clypeus fuscous. Mandibles finely imbricate with sparse piligerous punctures. Clypeus rugulose with a band of rugose carinae below each antennal socket which converge toward the anterior clypeal border. Head longitudinally costulate, finely areolate-rugulose between each of the costulae and with small areolate areas at each side of the vertex. Posterolateral region of head rimulose with shallow foveolae. Head in full-face view with a feebly marked excision at the vertex; erect and suberect hairs present plus long pubescence on all surfaces of head. Palpi light fuscous. Atennal condyles light and most of the funiculus. Pro- and mesonotum longitudinally rugose costulate, rimulose between the costulae. Dorsal face of

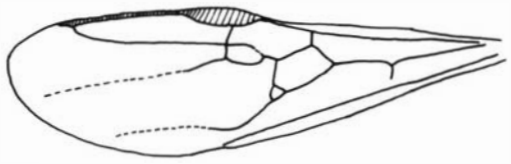

Fig. 3. *H. dolonigera* Female fore-wing.

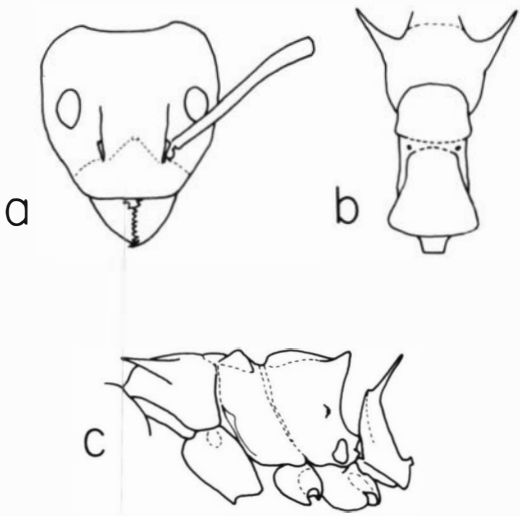

Fig. 4 *H. epetreia* sp n. a. Head in full-face view b. Dorsum of trunk c. Lateral view of trunk and petiole.

propodeum trapezoid, shallowly aerolate with each areola bottom rugulose; sparse pubescence and some standing hairs, but less than on pro- and mesonotum. Posterior margin of propodeal dorsum mostly straight with a slight median excision. Propleura mostly areolate-rugulose and metapleura with transverse costulae. Anepisternum with some oblique costulae, becoming transverse and finer on katepisternum. Petiolar node strongly compressed, shining and coriarious, tapering to an acute spine dorsally. Coxal tooth blunt, legs finely imbricate. Gaster shining and aciculate with erect to suberect hairs and long pubescence. Body mostly black with fuscous coxae and brown legs. Only one specimen of this species was available for study. It was taken from a malaise trap in lowland rain forest near the town of Guapi, Cauca Dept., Colombia, 7–11–1976, R.C. Wilkerson, leg. The holotype is deposited in the IZA collection.

Additional differences that separate this species from *H. andina* (Kempf), which it closely resembles, are its longer and more acute pronotal spines and the long pubescence on its body. This pubescence, however, is never as

long nor as dense as in *H. bispinosa* (Olivier). The name of this species is derived from a combination of the Latin adjective "super" (above) and the Latin noun "acula" (needle).

Hypoclinea epetreia sp. n.
(Fig. 4)

Diagnosis: Large (TL 5.9–7.4 mm) mostly black *Hypoclinea* with testaceous legs, palps, and antennal condyles. Areolate-rugulose nota with many erect to suberect hairs, but no appressed pubescence. Needle of petiolar scale long and fine.

Holotype (Paratypes) metrics: TL 6.90 (5.88–7.42), HL 1.68 (1.44–1.84), HW 1.66 (1.40–1.84), SL 1.66 (1.44–1.76), EL 0.32 (0.30–0.34), PSD 1.70 (1.24–1.80), WL 2.08 (1.84–2.40), PSD 1.70 (1.24–1.80) mm, CI 99 (95–105), SI 100 (92–103). Head capsule mostly areolate-rugulose, areolae shallow and elongate between the frontal carinae; about as long as wide with a shallow, broad excision at the posterior cephalic border in full-face view. Mandibles imbricate, interpersed with piligerous punctures, apical border smooth. Clypeus rugose in center with imbricate lateral and anterior margins. Pronotal spines stout at their base but long and acute. Nota areolate-rugulose, the areolae of the mesonotum and propodeal dorsum shallower than those of pronotum. Anepisternum areolate-rugose, katepisternum with imbricate anterior half and transversely costulate posterior half. Upper fourth of metapleuron imbricate giving way to transverse costulae thatex tend to lateral margins of declivous face of propodeum. Propodeal dorsum sharply marginate laterad and caudal. The rest of thepropodeum imbricate and shining. Petiolar node compressed, shining and imbricate, with the dorsal margin of the anterior face bordered by a transverse ridge along the summit, abrupty crowned medially with a long fine needle, its base usually set back a little from transverse ridge of petiolar summit though in some specimens it interrupts the ridge. Leg microsculpture imbricate, dorsal tubercle on hind coxae well developed. Anterior face of gaster and dorsum imbricate. Dorsum of ant with numerous long, erect and suberect hairs, including the petiolar scale, but shorter and not as dense as on gaster. Short suberect hairs also on tibiae, tarsi, and ventral surfaces of the femora. Some appressed pubescence on gastric dorsum, never completely covering the integument. The material is a sample of 70 workers from Venezuela, Territorio Federal Amazonas, Río Baria, 0° 49' 50" N, 66° 09' 40" W, 140 m, 3–VIII–1984, L.J. Joly, leg. The ants had moved their nest into the luggage of the collector!. Paratypes will be distributed to the British Museum (Nat. Hist.), Museum of Comparative Zoology (Harvard Univ.) Museu de Zoología Univ. Sao Paulo (Brazil), Nat. Hist. Mus. of Los Angeles County (California) and other collections. This species is apparently very closely related to *H. bispinosa* but aside from the diagnosis, it can be separated with the following characters. The average size of *H. epetreia* is larger, the minimum and maximum dimensions for the following parameters being respectively more than those for *H. bispinosa* workers: HL 1.35–1.178, HW 1.39–1.86, SL 1.21–1.61, WL 1.64–2.10 mm (Kempf, 1959: 214). The *epetreia* pronotal spines are relatively longer, averaging 0.44 mm in length and they sometimes exceed the HW. The same is true for the petiolar spine, which can measure 0.5 mm long. The species name comes from the Greek noun "epetrion" (needle) and alludes to the petiolar spine.

Hypoclinea dolonigera (Roger)

Queen (previously undescribed): The queen is considerably larger than the worker, but shares the same yellowish brown color. The head is about as long as broad and the eyes touch the lateral borders when seen in a full-face view. Abundant short standing hairs on all surfaces of the body, and abundant long hairs on the tibiae and first tarsal segments; the hairs reaching 0.68 mm, more than the maximum tibial width. The pronotal spines are very poorly developed, at most present as small, vague tubercle. The dorsum of the propodeum presents a median shallow longitudinal depression that separates it into two convex regions; it is not marginate but rounds into the declivity and pleura. The tubercle of the hind coxae is blunt, and mound-like. The petiolar node lacks a spine, is slightly excised medially on the summit, forming two lobes. The dominant sculpturing throughout the dorsum is areolate, slightly shallower and larger on the mesonotum. The wing venation is as in fig. 3.

Key to the *bispinosa* –group of workers

The following key is based upon Kempf's 1959 key and his 1972 ammendment.

1. Petiolar scale produced apically as a long, needlelike spine 2
– Apex of petiole without a long, needlelike spine 12

2. Posterior corners of mesonotum and dorsal face of propodeum with a spine, the mesonotal spines shorter and suberect, the propodeal spines longer and obliquely raised upward . . . . . *septemspinosa* (Emery)
– Posterior corners of mesonotum and propodeum without such a spine, at most with a very short tooth or else unarmed 3

3. Dorsal face of propodeum with the posterior border marginate or crested, overhanging the excavate declivous face; hind coxae with the basidorsal tooth well-developed 4
– Dorsal face of propodeum with the posterior border immarginate, not overhanging the flat, not excavate, declivous face; hind coxae without a well-developed tooth or tubercle. 10

4. Standing hairs practically absent on head and thorax, none on scapes and legs; color yellowish-brown . . . . . *dolonigera* Roger

– Standing hairs abundant, also on scapes and legs; color predominantly black 5

5. Posterior margin of propodeal dorsum evenly convex, not medially impressed 6
– General shape of posterior margin of propodeal dorsum variable, but always with a weak to deep median impression 7

6. Head in full-face view with the posterior margin broadly convex, not medially impressed and the eyes almost touching the lateral borders, separated by less than half the maximum scape width; body and legs black. . . . . *andina* Kempf
– Head in full-face view with posterior margin broadly excised and the eyes separated by more than half the maximum scape width from the cephalic lateral borders; testaceous legs contrast sharply with the black body . . . . . *epetreiae* n. sp.

7. Scape length, excluding articular condyle, distinctly shorter than the maximum length of the head; the petiolar summit more or less transversely truncate and slightly crenulate . . . . . *bispinosa* (Olivier)
– Scape length, excluding articular condyle, about as long as maximum length of head; petiolar summit tapering to a needlelike spine 8

8. Posterior margin of propodeal dorsum sharply up-turned and distinctly bilobed, with a deep median emargination . . . . . *curviloba* n. sp.

– Posterior margin of propodeal margin not sharply up-turned nor conspicuosly bilobed, the median excision weak 9

9. Ant when seen laterally with pronotal spines projecting only slightly upwards and the nota higher than the tip of the petiolar spine; propodeal dorsum densely punctate. . . . . *valida* (Kempf)
– Ant in lateral view with pronotal spines projecting upwards and the petiolar spine higher than the nota; propodeal dorsum areolate. . . . . *superacula* n. sp.

10. Sides of head, antennal scapes, femora and tibia with erect hairs; pronotal spines as long as width of mesonotum . . . . . *omacantha* (Kempf)
– Sides of head, antennal scapes, femora and tibiae without erect hairs; pronotal spines either much longer or much shorter than width of mesonotum 11

11. Posterior corners of dorsal face of propodeum dentate; pronotal spines huge, exceeding by much the width of the mesonotum . . . . . *spinicollis* Latreille
– Posterior corners of dorsal face of propodeum edentate; pronotal spines much shorter than width of mesonotum . . . . . *mucronifera* Roger

Here the key continues at couplet 9 in Harada & Silva (in press) or couplet 7 in Kempf (1959: 232).

Material: Two alate queens from Barinas, Vzla., Reserva Forestal Ticoporo, 230 m, 4–IV–1966, F. Fernández Yépez, and Luis J. Joly, legg., and a queen from the nest that is described below. HL 2.08–2.12, HW 2.04–2.12, EL 0.52–0.62, SL 1.96–2.04, WL 3.64–3.84 mm, CI 98–100, SI 94–96. The nest queen has a TL of 11.72 mm, while this length is 11.36–11.40 mm for the alate specimens. This difference in TL is mostly due to the enlarged gaster of the nest queen. An alate queen from the Cerro Neblina Base Camp in the venezuelan Amazonas, 0° 49' 50" N, 66° 09' 40" W, 140 m presents the petiolar summit with a median bluntly pointed crest. A nest of this species including its resident population was taken from decidous forest in Carabobo, Venezuela, Hacienda Bucarito (near Montalban), 750 m, 13–XI–1983, L.D. Otero, leg. The nest and its contents were frozen until it could be studied. It was found 1 m from the ground in the branches of a small tree. The nest is 150 mm long and 97 mm wide, being made up of fibers from many different plants including gramines, dicots and bits of tree bark. The fibers are adhered one to another by a brown resin-like substance, and shaped into a mesh that permits the free circulation of air throughout the nest. The outer layer has an additional amount of loose plant fibers on it, and a few leaves. By weighing counted samples of adults and pupae it was possible to determine the ratio of number of ants vs. weight and thus estimate the size of the population. A total of 3100 adults along with about 1560 pupae and some 870 larvae were the results. Possibly some 870 larvae may be present but this figure is subject to appreciable error since it includes eggs and larvae of all instars which adhere one to another. The queen along with most of the eggs and larvae were found in the innermost chambers of the nest. Also found in the nest were 2 small roaches, some thysanura and an immature hemipteran.

H. laminata (Mayr)

A nest was located beneath the bark of a tree in Bolívar, Santa Elena, 800 m, 15–VIII–1979, J. Lattke, leg.

H. lamellosa (Mayr)

A series of workers taken from a nest found beneath the bark of a treee in Portuguesa, Mesa de Cavaca, 250 m, 17–VIII–1983, J. Lattke, M. Moratorio, legg. A winged female from Cojedes, Hacienda Mata Clara (near El Baúl), 14–IV–1981, F. Fernández Yépez, leg. Also present in the Barlovento area of Miranda State and the Central Valley of Aragua State.

H. gagates (Emery)

One worker in the Universidad Simon Bolivar Collection taken in Territorio Fed. Amazonas, [San Carlos de] Rio Negro, [125 m], III–1981, L. Garvin, leg.

H. debilis (Emery)

Táchira, Río Negro, 550 m, 13–VIII–1983, J. Lattke, G. Borges, legg.; Terr. Fed. Ama., near San Carlos de Río Negro, 125 m, VII–1979, G. Morillo, leg., taken from extrafloral nectaries of a *Catostemma* (Bombacaceae); also collected from several sites along the northern slopes of the Cordillera de la Costa.

H. septemspinosa (Emery)

A nest was found in the root mass of an epiphytic bromeliad about 6 m from the forest floor, several cavities existed in the midst of the roots and the ants had apparently added miscellaneous plant fibers to the root mass. Total nest population was estimated as not exceeding 500 adults. This species appears to be locally abundant in a basin of 1040 m altitude below the northern peak of Marawaca Tepui, Terr. Fed. Amazonas, 6–III–1985, J. Lattke, leg., Fundación Terramar Expedition.

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