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ANTS FROM THE ISLANDS OFF THE WEST COAST  
OF LOWER CALIFORNIA AND MEXICO

BY WILLIAM MORTON WHEELER

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The following paper deals with a small but important collection of Formicidæ made by Mr. H. H. Keifer in 1925 on Guadalupe, Cedros, San Martin and Isabel Islands, and the Tres Marias and Revillagigedo archipelagos during the 1932 expedition of the California Academy of Sciences. The collection comprises 28 forms, including eight which were previously undescribed. All belong to well-known Mexican genera and, like those of the Galapagos Islands and Cocos Island, recorded in previous papers, are members of the neotropical fauna, excepting *Aphænogaster patruelis* and *Camponotus keiferi* from Guadalupe Island, which are more closely related to certain nearctic or palearctic species (*Aphænogaster subterranea* and *Camponotus castaneus*). Some of the insular forms are sufficiently different from their nearest continental allies to reveal a certain amount of endemcity, which on further exploration may prove to be greater than our present knowledge indicates.

LOWER CALIFORNIA

APHÆNOGASTER PATRUELIS Forel.

Numerous workers and two males taken on the north end of Guadalupe Island (IV.20.25) may be regarded as topotypes of the typical forms of this ant.

The male (undescribed) measures about 3.5 mm. Head through the eyes slightly wider than long, broadly rounded behind, with very short cheeks. Mandibles well-developed, 6-toothed. Antennal scapes nearly four times as long as broad; funiculi long, the four terminal joints elongate, each constricted at its base and, with the exception of the terminal joint, also at its apex. Thorax long, through the wing-insertions broader than the head; mesonotum large, subhexagonal, as broad as long, anteriorly very convex and projecting, depressed posteriorly just in front of the scutellum; epinotum small, low and narrow, in profile with long, medially somewhat concave base and short, abrupt declivity, the two surfaces meeting at a right-angle. Petiole and postpetiole much as in the worker, but the nodes lower and more rounded. Gaster like that of the worker; legs more slender; hind tibiae slightly bent near the base. Sculpture and color as in the worker, but the body darker, nearly black; pilosity even less developed. Wings slightly brownish; veins brown; pterostigma dark brown.

The subsp. *willowsi* Wheeler (1933), from San Nicolas Island, one of the Santa Barbara Islands, California, differs from the typical *patruelis* only in the less convex base of the epinotum, less developed sculpture and somewhat paler coloration.

I have recently examined Pergande's specimens of the subsp. *carbonaria* from Sierra Laguna (type-locality) and El Chinche, Lower California. The worker differs from the typical *patruelis* in somewhat larger size and in having decidedly longer antennal scapes and funicular joints and the base of the epinotum less convex, with a pair of short ridges at the posterior end, terminating in sharp angles instead of acute denticles as in the typical form. Both petiolar and postpetiolar nodes are higher and more conical, the color is darker, the body being black and less reddish, and the legs and scapes darker brown; the hairs on the appendages, especially on the flexor surfaces of the femora and tibiae are much more developed; the frontal area is sharply carinulate in the middle, the head more abundantly rugulose and the clypeus and mandibles more coarsely rugose.

Among the Pergande specimens there is an undescribed, de-älated female from El Chinche, which has lost its abdomen. The thorax is scarcely wider through the wing-insertions than the head through the eyes, and is shaped much as in the male of *patruelis sens. str.*, but the epinotum bears two large, stout spines, which are somewhat longer than broad at their bases. Head coarsely rugose throughout, the rugæ longitudinal on the clypeus and cheeks but strongly and sinuously diverging on the front and curving outward to the rounded posterior corners of the head, where they are

joined by rugæ diverging from between the lateral ocelli. Pronotum transversely, sides of epinotum longitudinally, its base and declivity transversely and sharply, rugose; mesonotum smooth and shining, with a few fine converging rugules at its posterior end; scapes and legs with sparse piligerous punctures. Color and pilosity as in the worker.

*Carbonaria*, originally described as a species was reduced to subspecific rank by Forel (1899), but it and *patruelis* may eventually prove to be specifically distinct.

#### PHEIDOLE HYATTI Emery

Five soldiers, two workers and a dealated female from San Martin Island (VI. 8. 1925). This species is common in Southern California.

#### SOLENOPSIS GEMINATA Fabr.

subsp. *MANIOSA* Wheeler

A single worker from Cedros Island. This is the common form of *geminata* in Southern California.

*Leptothorax* (*Goniothorax*) *peninsularis* Wheeler, sp. nov.

Female. Length about 5 mm.

Head subrectangular, slightly longer than broad, nearly as wide anteriorly as posteriorly, with rounded posterior corners and straight posterior border. Eyes convex, at the middle of the sides. Mandibles small, with straight external borders and about six small teeth. Clypeus convex, its anterior border straight and transverse in the middle, sinuate on each side. Antennæ 12-jointed; scapes reaching somewhat beyond the posterior corners of the head; funiculi with joints 2 to 6 as long as broad, remaining joints longer than broad, the last three forming a distinct club, with the basal two joints subequal and together as long as the terminal joint. Thorax large and robust, broader than the head; pronotum with prominent, rectangular but not acute humeri; mesonotum and scutellum flattened above, the former subhexagonal, very nearly as broad as long; epinotum with somewhat convex base, shorter than the perpendicular declivity; spines large and stout, acute, longer than their basal diameter, but shorter than their distance apart. Petiole with well-developed peduncle and stout anteroventral tooth; node subcuboidal, slightly broader than long, its latero-superior border distinctly denticulate anteriorly; postpetiole much

broader than the petiolar node, from above transversely rectangular, nearly twice as broad as long, its posterior border emarginate in the middle. Gaster large, elliptical, with straight anterior border. Wings with large pterostigma, small discoidal cell and very short, closed marginal cell.

Subopaque; venter smooth and shining; mandibles very finely striate; clypeus and head longitudinally and rather finely rugulose, the rugules becoming more reticulate laterally and posteriorly. Pronotum, mesonotum and scutellum evenly rugulose and glossy, the rugules on the pronotum transverse anteriorly, longitudinal on the sides and on the mesonotum and scutellum; remainder of thorax finely punctate-rugulose; the epinotal declivity anteriorly and posteriorly very finely and transversely rugulose. Gaster above and appendages very finely and densely punctulate; bases of the second and following gastric segments smooth and shining.

Hairs pale yellowish; numerous, obtuse and very short on the head and thoracic dorsum, somewhat longer on the gaster. Scapes and legs with very fine, short, appressed pubescence.

Ferruginous; mandibles, clypeus, cheeks, sutures of thorax and legs brownish yellow; ocellar area fuscous; wings faintly tinged with yellow; veins brown; pterostigma darker brown, especially along its posterior border.

Two specimens taken at Magdalena Bay, Lower California (V.30.'25). They are much larger than any of the other *Goniothorax* females I have seen. I have described them without the workers because they can be very readily recognized. At first sight they seem to be referable to the genus *Macromischa*, which is very closely related to *Leptothorax*. The shape of the marginal cell is characteristic and exactly like that of the North African *L. rottenbergi* Emery, which belongs to a group in certain respects intermediate between *Leptothorax* and *Macromischa*. The worker of *peninsularis*, when discovered, will probably be found to resemble the Brazilian *L. sculptiventris* Mayr, which might be placed in the genus *Macromischa*.

CREMATOGASTER (ACROCÆLIA) LINEOLATA Say  
subsp. CALIFORNICA Emery

I refer five workers from Magdalena Bay, Lower California (V.30.'25) and a dozen from San Martin Island (VI.8.'25) to this form. They agree closely with Emery's brief description of specimens from Encenitas and Los Angeles, California. He says

that *californica* combines the robust stature of the subsp. *læviuscula* Mayr with a very aberrant sculpture like that of the subsp. *coarctata* Mayr. "The head is opaque, only the front being somewhat shining but otherwise with dense, longitudinally confluent punctuation. Thorax and pedicel entirely opaque, very densely punctate, only the declivity of the epinotum shining, its base coarsely, irregularly and longitudinally striate. Pubescence of the tibiæ and scapes as in *læviuscula*."

On examining the *Crematogaster* material from various Californian localities in my collection, I find considerable variation in all the characters mentioned by Emery. The status of *californica*, which he regarded as a variety of *læviuscula*, must therefore remain in doubt till a special study of a large amount of material from numerous localities can be undertaken. I regard it provisionally as a variable subspecies of *lineolata*.

The specimens from Magdalena Bay seem to be almost typical *californica*. The antennal scapes are shorter than in *coarctata*, the epinotal spines long, divergent and feebly sinuous, but the sculpture of the head is variable and the epinotal declivity either smooth and shining or opaque and densely punctulate. The pubescence of the scapes and tibiæ is abundant, oblique and as long as in the subsp. *læviuscula*, but shorter than in our Eastern subsp. *pilosa* Pergande. The appressed pubescence on the head and gaster is conspicuously long. The base of the gaster is reddish brown like the thorax.

The specimens from San Martin Island average smaller and have shorter, straight, epinotal spines and the petiole is distinctly broader than long, the gaster in most individuals black throughout, the legs darker than in the series from Magdalena Bay.

*Crematogaster* (*Acrocœlia*) *lineolata*  
subsp. *cedrosensis* Wheeler, subsp. nov.

*Worker*. Length 3-3.5 mm.

Related to the subsp. *læviuscula*, but differing as follows: Smaller and less robust, with smaller head and narrower thorax, the mesoëpinotal constriction less pronounced both dorsally and laterally; the carina on the mesonotum shorter, very prominent and often tooth-like in profile; epinotal spines much shorter, not longer than the base of the epinotum, very thin and acute, straight and

much less diverging posteriorly; petiole narrower, trapezoidal, less cordate anteriorly. Smoother and more shining than *laeviuscula*, but cheeks and clypeus more sharply longitudinally rugulose, petiole subopaque and finely punctate. Pubescence on scapes and legs less abundant, finer and appressed. Color much darker, being castaneous brown, with darker head; antennal clubs and gaster, except at the base, black; legs slightly paler brown than the thorax.

Eight specimens from Cedros Island (VI.5.'95).

*Camponotus (Camponotus) keiferi* Wheeler, sp. nov.

*Worker major.* Length 7-8 mm.

Head rather small, subtrapezoidal, longer than broad, narrowed anteriorly, with straight sides and feebly and broadly excavated posterior border. Eyes moderately large and convex. Mandibles stout and convex, 6-toothed. Clypeus subcarinate at the base, its anterior border neither lobed nor produced, slightly emarginate in the middle. Frontal area small, transversely trapezoidal, frontal groove distinct; frontal carinae sigmoidal. Antennal scapes extending nearly two-fifths of their length beyond the posterior corners of the head, slender and feebly flattened but not dilated at the base. Thorax of the usual shape, the pronotum, mesonotum and base of the epinotum forming an even curve in profile; pronotum flattened above, anteriorly semicircular, submarginate at the sides; metanotal sclerite distinct, bounded by a suture posteriorly; epinotum strongly compressed laterally, in profile with the base straight and rather strongly sloping, forming a distinct obtuse angle with the slightly shorter, perpendicular and somewhat concave declivity. Petiolar scale rather broad, convex both anteriorly and posteriorly, the superior border not very acute, from behind feebly convex as are also the lateral borders. Legs moderately long, fore femora enlarged; hind tibiae somewhat flattened but not grooved, their flexor surfaces without bristles.

Smooth and shining, microscopically shagreened and with small, sparse, piligerous punctures; anterior portion of head less shining and distinctly though minutely and densely punctulate, elypeus and adjacent portions of cheeks also with sparse piligerous foveolae, the more posterior portions of cheeks with small, non-piligerous punctures. Mandibles sharply punctate; antennal scapes subopaque, finely punctulate.

Hairs golden yellow, moderately long, very sparse, erect, absent on the scapes and legs, except at tips of femora. Pubescence undeveloped, except on the tibiae, where it is extremely fine and appressed.

Brownish yellow; gaster brown above; head, mandibles and scapes castaneous; funiculi red; mandibular teeth black; coxae, femora and palpi yellow; knees, tibiae and tarsi somewhat darker and more reddish; posterior borders of gastric segments yellowish.

*Worker minor.* Length 5.5-6 mm.

Very similar to the major, except in having the head smaller and narrower, though with anteriorly converging sides, with straight posterior border, larger and more convex eyes, more convex and more distinctly subcarinate clypeus, proportionally longer antennal scapes, less sigmoidal frontal carinæ. Pilosity, sculpture and color as in the major, but the head is more shining anteriorly, with less distinct punctures, the gaster darker brown.

Described from four major and two minor workers taken on the south end of Guadalupe Island (IV.20.'25).

This form closely resembles the typical *C. castaneus* Latr. of our Eastern States but is quite distinct, being much smaller, with a narrower head, distinct metanotal sclerite in the major worker, a much more acute petiole, no bristles on the flexor surfaces of the hind and middle tibiæ, etc.

**CAMPONOTUS (MYRMOBRACHYS) PHYTOPHILUS** Wheeler (MS)

Two minor workers from Magdalena Bay (V.30.'25). I have recently described this species from Cuernavaca, Mexico.

**ISABEL ISLAND, SINALOA**

**PSEUDOMYRMA PALLIDA** F. Smith

Six workers (V.24.25) of rather small dimensions.

**MONOMORIUM PHARAONIS** L.

Numerous workers and a single dealated female (V.24.'25).

**CREMATOGASTER (ORTHOCREMA) BREVISPINOSA** Mayr  
subsp. **MINUTIOR** Forel.

Six workers (V.24.'25).

**CAMPONOTUS (MYRMOTHRIX) ABDOMINALIS** Fabr.  
subsp. **ESURIENS** F. Smith

The female and male taken by Mr. M. Willows, also on Isabel Island (III.27.'32) and mentioned in my former paper (1933) probably belong to this species.



## TRES MARIAS ISLANDS

## ODONTOMACHUS HÆMATODA L. subsp. INSULARIS Guérin

Seven workers from the village on Maria Madre Island (V.21.'25) are very similar to the common form of this ant from Florida and the West Indies.

## PSEUDOMYRMA GRACILIS Fabr. var. MEXICANA Roger

A single worker from the village on Maria Madre Island (V.21.'25).

## PSEUDOMYRMA PALLIDA F. Smith

A single worker from the village on Maria Madre Island (V.16.'25).

## PSEUDOMYRMA ELONGATA Mayr

A worker and a dealated female from Maria Madre Island (V.20.'25) agree closely with specimens from Florida and the West Indies but are decidedly smaller. They may, therefore, represent a distinct subspecies.

## PSEUDOMYRMA SUBTILISSIMA Emery

Two workers from the village on Maria Madre Island (V.15.'25).

## CREMATOGASTER (ACROCÆLIA) OPACA Mayr

A worker and a dealated female from Maria Madre Island. Numerous workers from the village on Maria Magdalena Island (V.21.'25). These specimens vary greatly in size, from 2.6 to 4.5 mm. Mayr's type was intermediate, measuring 3.5 mm. The well-developed epinotal spines in the specimens before me are strongly divergent, straight or somewhat incurved, but not subparallel as described by Mayr. The frontal area is larger and surrounded by more pronounced sutures than in the various subspecies of *C. lineolata* and the mesonotum is not carinate. There can be no doubt that *opaca* is a valid species and not a subspecies of *lineolata*.

## CREMATOGASTER (ORTHOCREMA) SCULPTURATA Perg.

## subsp. PHYTOECA Wheeler (MS)

Four workers from Maria Magdalena Island (V.20.'25) and one from Maria Madre Island (V.21.'25). I have recently described this ant from Mirador, Vera Cruz, Mexico.

*Cryptocerus pilosus* Emery subsp. *insularis* Wheeler, subsp. nov.

*Worker minor.* Length 4.3 mm.

Differing from the typical *pilosus* in having the three lateral teeth of the pronotum longer and more acute, the mesonotum neither projecting nor angulate on the sides, the pair of lateral teeth of the epinotum developed as short acute spines, the lateral backwardly directed spines of the petiole and postpetiole more slender and more unequal in length, and the anterior border of the gaster at the articulation of the postpetiole less concave and without angular projections and pale spots. The basal third of the gaster is finely, regularly, longitudinally striate.

A single specimen from Maria Madre Island (V.21.'25).

The type of the species which I know only from Emery's description and figures, is recorded from Paraguay, but I have specimens of a closely related form taken by Dr. W. M. Mann in Brazil. The precise rank of *insularis* cannot be decided till the soldier has been secured.

#### ATTA MEXICANA F. Smith

A number of media and minor workers from the village on Maria Madre Island (V.21.'25).

#### CAMPONOTUS (MYRMOTHRIX) ABDOMINALIS Fabr. subsp. ESURIENS F. Smith

Several major and minor workers from Maria Magdalena Island (V.20.'25).

#### Camponotus (Myrmepomis) sericeiventris Guérin subsp. imperator subsp. nov.

*Worker media.* Length nearly 10 mm.

Resembling the subsp. *rex* Forel in pilosity and pubescence, but the pelisse of golden pile on the gaster is somewhat less brilliant and shows no tendency to converge towards the mid-dorsal line. The erect hairs on the head, thorax and gaster are much shorter and less numerous. The humeral spines of the pronotum are more slender and more acute, the superior border of the petiolar scale sharper in profile and straight and transverse from behind. The coloration is quite unlike that of any of the other forms of this widely distributed neotropical ant, being red,

with the sides of the pronotum, the fore coxæ, meso- and epinotum blackish, the extensor halves of the middle and hind tibiæ deeper red.

A single specimen from Maria Magdalena Island (V.20.'25). The peculiar coloration cannot be due to immaturity.

CAMPONOTUS (MYRMOCLADÆCUS) RECTANGULARIS Emery  
var. AULICUS Wheeler

Three workers from the village on Maria Magdalena Island (V.21.'25). Originally described from Guatemala (33).

REVILLAGIGEDO ISLANDS

Odontomachus hæmatoda L. subsp. ✓  
clarionensis Wheeler, subsp. nov.

*Worker.* Length about 9 mm.

Resembling the subsp. *coninodis* Wheeler of Arizona in the shape of the petiolar node, which has a very short, stout apical spine, but of larger stature and with a proportionally much larger and broader head. Posterior corners of the latter smooth and shining; striæ on pronotum concentric in the middle, transverse anteriorly and posteriorly and longitudinal on the sides. Pubescence on the thorax, petiole, gaster and legs long and conspicuous. Head, antennæ, thorax and petiole deep red, darker than in the subspecies *clara* Roger and *coninodis* but paler and less brownish than in the typical *hæmatoda*; gaster black; legs testaceous.

Three specimens from Clarion Island (IV.26.'25).

SOLENOPSIS GEMINATA Fabr.

A single small worker from Clarion Island (VI.26.'25). Mr. M. Willows took specimens of this same form on the same island (III.24.32) and also on Socorro Island (III.7.32).

Forelius fœtidus Buckley  
subsp. keiferi subsp. nov.

*Worker.* Length 2.3—2.5 mm.

Differing from the typical form of *fœtidus* from Texas in the following characters: Color somewhat deeper and more reddish, with the legs paler, yellowish, and the last gastric segment fuscous. Head broader behind, distinctly narrowed anteriorly, posterior border somewhat more excavated; antennal scapes and legs longer, the former reaching one-fourth their length beyond the posterior

border (in the typical form only one-fifth); mesoëpinal impression in profile deeper and more acute, epinotum more convex, evenly rounded, without distinct base and declivity; superior border of petiolar scale with a much less acute median point; tibiæ without fine oblique hairs.

*Female.* Length 5—5.5 mm.

Differing from the typical form in the somewhat longer and more anteriorly narrowed mesonotum, the absence of black spots at the insertions of the fore wings, much less sharply bounded dark fasciæ on the gaster, paler wing veins and absence of oblique hairs on the legs.

*Male.* Length about 1.8 mm.

Like the typical *fætidus* but the head, thorax and appendages paler brown, the veins and pterostigma of the wings colorless and the scapes and legs without oblique hairs.

Described from numerous workers and four males from Grayson Cove, (V.2.'25) and numerous females from Braithwaite Bay, Socorro Island (V.10.'25).

IRIDOMYRMEX PRUINOSUS Roger  
var. ANALE Ern. André

Numerous workers from San Benedicto Island (V.12.'25). These agree closely with typical specimens from Northern Mexico, Texas, Arizona and California.

(CAMPONOTUS (TANÆMYRMEX) PICIPES Olivier

A dozen minor workers from Clarion Island (IV.26.'25). Minor workers of the same form were later taken by Mr. M. Willows (III.7.32) on Socorro Island, as recorded in my former paper (1933). Since the tibiæ and tarsi of both series of specimens are paler than in the typical Mexican form in my collection, they may represent a distinct variety.

*Camponotus* (*Myrmobrachys*) *socorroënsis* Wheeler, sp. nov.

*Worker major.* Length 5—5.2 mm.

Closely related to *brevis* Forel and *mina* Forel. Head moderately large, subtrapezoidal, slightly longer than broad, the posterior border nearly straight, the sides feebly rounded behind, more convex in the region of the cheeks. Mandibles stout, very convex, 6-toothed. Clypeus subrectangular, slightly longer than broad, evenly convex but not carinate in the middle. Frontal area distinct, very small, transversely trapezoidal; frontal carinæ closely approximated in front, strongly sinuate and widely divergent posteriorly; frontal groove distinct. Eyes rather large

and convex, as long as their distance from the posterior border of the head. Antennæ slender; scapes curved, extending only a distance equal to their greatest diameter beyond the posterior corners of the head. Thorax short, shaped much as in *brevis* but decidedly lower and less strongly arcuate above in profile; pronotum depressed, distinctly narrowed anteriorly and nearly as long as broad, the humeri broadly rounded, submarginate. Mesonotum trapezoidal, somewhat broader than long; epinotum small and narrow, in profile with subequal base and declivity, the former straight and sloping, forming a distinct obtuse angle with the more abrupt, slightly concave declivity. Petiolar scale thick, twice as high as long, nearly as thick above as below, with flat posterior surface, the anterior surface flat below, very convex above; seen from behind the superior border is broadly rounded, the sides straight and converging ventrally. Gaster elongate-elliptical. Legs rather short.

Mandibles, gula, posterior corners of head, coxæ and legs distinctly shining; dorsal surface of head and thorax subopaque; petiole and gaster lustrous. Mandibles finely and superficially shagreened and sparsely punctate; head and thorax finely and densely punctulate, the clypeus and cheeks also with sparse, piligerous foveolæ, which on the occiput and pronotum are replaced by sparse, coarse punctures. Gaster finely and transversely shagreened or striolate, with numerous transverse, piligerous punctures. Legs more finely shagreened than the gaster, sparsely punctate.

Hairs glistening white, erect, rather coarse, abundant and moderately long on the dorsal surface of the head, thorax, petiole and gaster; longest on the epinotum, absent on the pleuræ; on the clypeus and cheeks short, stiff and obtuse, on the legs short and obtuse, much more numerous on the tibiæ than on the femora. Antennæ with dilute, appressed pubescence, tips of scapes with a few short hairs.

Black; mandibles, antennæ and anterior third of head, including the mandibles, red; gula and fore coxæ castaneous; legs more yellowish or testaceous, terminal funicular joints and the last joint of each tarsus fuscous; mandibular teeth black.

*Worker minor.* Length 3.3—3.5 mm.

Very similar to the worker major, but the head much smaller and narrower, with slightly convex posterior border, more convex and more posteriorly situated eyes. Mandibles much narrower and less convex. Clypeus broader, but ecarinate as in the major. Antennal scapes nearly straight, extending half their length beyond the posterior corners of the head. Thorax like that of the major but even lower and less arcuate; pronotum semicircular, not narrowed anteriorly, distinctly marginate at the sides; base of epinotum decidedly longer than the declivity. Petiole similar to that of the major, gaster proportionally shorter.

Sculpture, pilosity and color as in the major, but the clypeus and posterior portions of the cheeks darker and more brownish, as are also the bases of the femora and the antennal funiculi beyond the first joint. Foveolæ on the clypeus and cheeks fewer and less conspicuous.

*Male.* Length 3.5—4 mm.

Very similar to the male of *brevis* in structure, sculpture, pilosity and color but slightly smaller and with somewhat longer antennal scapes, more strongly carinate clypeus, much narrower mesonotum and longer and more convex epinotum.

Described from five major workers, ten minor workers and twelve males taken at Grayson Cove, Socorro Island (V.4.'25).

At first sight this ant might be regarded as a small and depauperate form of *C. mina*, but it evidently represents a distinct species. The major worker can be readily distinguished from that of *mina* by the shorter antennal scapes, ecarinate clypeus, much more diverging frontal carinæ, anteriorly narrowed pronotum, finer sculpture, etc.