

STUDIES OF NEW MEXICO ANTS. IX.
POGONOMYRMEX APACHE WHEELER A
SYNONYM OF *POGONOMYREX SANCTI-
HYACINTHI* WHEELER
(HYMENOPTERA: FORMICIDAE)¹

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Wheeler (1902, p. 388) described a new species of *Pogonomyrmex* for which he chose the name *sancti-hyacinthi* for no better reason than that the collection was made on the anniversary of the battle of San Jacinto. Wheeler took his types near San Pedro Springs, San Antonio, Texas from nests marked by "small, flat dirt-cones." The colonies, all of which were small, occupied chapparal and mesquite thickets. Only workers were collected.

In his description Wheeler (1902, p. 389) compared workers of *sancti-hyacinthi* with those of *barbatus* and by doing this he was able to provide an impressive set of differences between the two species. A few of the more pertinent characteristics of *sancti-hyacinthi* presented were namely, the smooth and shining posterior corners of the head, the very deeply incised clypeus, the spineless epinotum (although in some specimens there were short "projections" at the junction of the basal and declivous faces), the low and blunt petiolar node, and the deep ferruginous color with various parts of the body edged with black.

In his paper which described *sancti-hyacinthi*, Wheeler (1902, p. 392) added a postscript in which he described *Pogonomyrmex apache* as new. The exceptionally brief and inadequate description of *apache* deals exclusively with comparisons of this form with *barbatus*, *californicus*, and *sancti-hyacinthi*. According to Wheeler's description *apache* lacks epinotal spines, and has smooth and shining posterior cranial corners, a blunt and depressed petiolar node, a clear yellow color, and a clypeus without a deep marginal incision. It is obvious that only the last two characteristics could possibly distinguish *apache* from *sancti-hyacinthi*. The types of *apache* came from four nests at Fort Davis, Texas. The colonies were not populous and the nests did not differ significantly from those of *sancti-hyacinthi*. Furthermore, Wheeler found *sancti-hyacinthi* to be common at Ft. Davis where it constructed obscure nests in gravelly soil. Olsen (1934, p. 500) reported a collection by Wheeler of *apache* from North Miller Canyon, Huachuca Mountains, Arizona. No additional records appear to have been published since that time.

Olsen (1934, pp. 500, 509) who monographed *Pogonomyrmex* and

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Creighton (1950, pp. 115, 131) who keyed the North American forms treated both species as valid. During 1951, Creighton, while engaged in studies of southwestern ants on a Guggenheim Fellowship, had an opportunity to observe, in considerable detail, a large number of ants which he considered to represent *apache*. In the summer of 1951 I collected from several nests in New Mexico workers which I also considered to represent *apache*. Both Creighton and I examined independently our specimens more carefully in 1952 and each of us found some specimens which agreed with *sancti-hyacinthi* in having a deeply incised clypeus and others which agreed with *apache* in having a clypeus with a shallow incision. These extremes were connected by intermediates in the members from each colony. There was no correlation whatsoever between the color of the workers and the degree of clypeal incision. Most of the colonies examined had the deep ferruginous color which Wheeler attributed to *sancti-hyacinthi* but a few taken by Creighton in dry habitats approached the orange-yellow color of *apache*.

While Creighton and I were making independent studies of our individual collections I sent series of workers to Dr. Brown, at Harvard's Museum of Comparative Zoology, for his opinion. Brown was unable to pin my specimens down to one or the other species concerned, voiced his opinion that synonymy was apparent, and kindly supplied me with cotypic specimens of *apache*. Letters of Creighton, Brown, and myself crossed in the mail announcing our unanimous independent opinion that *apache* and *sancti-hyacinthi* must be synonymous. As Creighton and I have determined, the smaller workers of a colony possess the deeper and narrower clypeal incision while the larger workers have the broader and shallower emargination. Worker size also varies considerably among colonies.

From the foregoing discussion it can be noted that there is thus no way in which the two supposed species can be separated. The original trivial description of *apache* appears to be another example of Wheeler's having placed too much reliance on a color difference. It is unfortunate that it is not advisable to retain the name *apache* which is much more apropos than *sancti-hyacinthi* for this ant. Because it is likely that the revised version of the International Code of Zoological Nomenclature, which has not been released at the time of this writing, will rigorously stress page precedence, *apache* will have to fall as a synonym of the less appropriate name *sancti-hyacinthi*.

Dr. Creighton, who had already prepared a draft of his findings for

Since this paper went into proof I have learned that, as first reviser, I have the privilege of selecting, regardless of page precedence, one of two or more different names applied in the same paper to descriptions of supposedly different species by the original author and which names, in the opinion of the first reviser, have become synonymous (Copenhagen Decis. Zool. Nomen., London, 1953, p. 66). Therefore, as first reviser, I wish to choose the name *apache* Wheeler, instead of *sancti-hyacinthi* Wheeler, for the species which was described as both *Pogonomyrmex sancti-hyacinthi* Wheeler (1902, p. 388) and *P. apache* Wheeler (1902, p. 392) and which names I have synonymized. The name *apache* is definitely more correctly descriptive and more appropriate than the longer name *sancti-hyacinthi*. Dr. W. M. Brown, Dr. W. S. Creighton, and Mr. E. O. Wilson support my choice of names.

incorporation into his series of papers on Arizona ants, very graciously supplied me with his typescript and his opinions. Without these data at hand I could certainly not prepare as full a report of the range and habits of *sancti-hyacinthi* as I am now able to write. Furthermore, Dr. Creighton sent to me long series of specimens of *sancti-hyacinthi*, including a number of as yet undescribed males. My New Mexico collections have fortunately supplied me with two alate females and a single nest queen—a caste which also has been undescribed. Descriptions of these sexual forms will be presented later in this paper.

The nests of *sancti-hyacinthi* are obscure affairs. As a rule there is no sort of superstructure to mark a colony. The nests which I located in New Mexico during August and September consisted of an entrance hole with a scattering, circlet or semicirclet of shallow to deep chaff. Only this chaff, which Creighton has noted as being absent earlier in the season, makes the nests readily detectable. The colonies which I examined were small (40-60 workers) and inhabited very stony soil in xeric habitats. Such small populations seem to be the rule for *sancti-hyacinthi*. A colony comprising one hundred workers would certainly be a large one. I can do no better than to quote from Creighton's typescript the following passage concerning Creighton's observations of nest structure which agree well with mine.

The nest usually consists of one or two shallow, crooked passages about six or seven feet long. At intervals, often under a stone, these passages widen into chambers in which brood and seeds are kept. The ants seem frequently to build their nests in comparatively thin sheets of gravel which overlie rocky ledges. This often makes it possible to excavate the whole area down to bed rock with comparative ease. Several colonies were treated in this fashion. In three instances the writer feels certain that every individual in the nest was secured. It was, therefore, something of a surprise to find no female in these three nests. Two of them contained workers only. The third, taken on July 9, contained fourteen males and an ergatogyne with rudimentary wings and a greatly enlarged gaster. The writer has no doubt that this ergatogyne was the functional female of the colony. It also seems safe to infer that in many cases the true female is replaced in the nests by an egg-laying worker.

Both Creighton and I observed the unusual docility of *sancti-hyacinthi* workers in the field. Unlike most other members of the genus which are renowned for their innate ferocity, *sancti-hyacinthi* rarely bites and can be made to sting only after continuous prodding. Creighton says that the sting is much less painful than that of *barbatus*. I have been stung frequently by the latter species and can imagine no worse an antagonist in the genus. According to Creighton the pain is largely localized in the area of the puncture. This area becomes inflamed and itches for two or three days afterward. About the only belligerent action which *sancti-hyacinthi* displays is the response which occurs when a worker is suddenly surprised by an intruder. Under such a circumstance the worker rears on its hind legs, turns the abdomen forward and upward and thrusts up its jaws as far as possible. The significance of this response, which can be elicited from several species of *Pogonomyrmex*, is not clear to Creighton; nor can I explain it. The response resembles to a startling degree the action of

certain species in the genus *Formica*, except that there is no jet of formic acid from the gaster.

Both Creighton and I have observed the characteristic foraging gait of *sancti-hyacinthi* which is unlike that of any other species known to us. After every few paces the worker will make a brief pause and when it starts off again it is likely to veer in a slightly different direction. Thus the ant has a characteristic, hesitating gait which is quite unlike the steady progress of *barbatus* or *occidentalis*. The gait of *californicus* is only slightly similar, in my opinion.

All of the nests of *sancti-hyacinthi* which were encountered by Creighton were situated in mountain valleys at elevations between 4,800 and 5,800 feet. My observations extend this range to 4,550-6,550 feet. The ant is fairly widespread in the mountains of southeastern Arizona and in those of southern New Mexico, but it is apparently neither an abundant nor a conspicuous component of any community. Creighton reports a large concentration of colonies in the mountains of northwestern Chihuahua, Mexico, and this was the only one that he encountered.

P. sancti-hyacinthi is known from the following stations:

Arizona:

Huachuca Mts.

Carr Canyon, 5,400 ft. (W. S. Creighton)

Garden Canyon, 5,800 ft. (W. S. Creighton)

North Miller Canyon (W. M. Wheeler)

Whetstone Mts.

Dry Canyon, 5,000 ft. (W. S. Creighton)

Chiricahua Mts.

National Monument Camp Ground, 5,400 ft. (W. S. Creighton)

Peloncillo Mts.

Cottonwood Canyon, 4,800 ft. (W. S. Creighton)

New Mexico:

Alamogordo (G. von Krockow)

8 mi. W. of Alamogordo, 5,800 ft. (A. C. Cole)

20 mi. N. of Bernardo on U. S. 60, 6,550 ft. (A. C. Cole)

23 mi. E. of junction of U. S. 60 and 85 (on U. S. 60) east of

Bernardo, 5,950 ft. (A. C. Cole)

Juan Tabo area, Sandia Mts., 6,025 ft. (A. C. Cole)

15 mi. W. of Mountainair, 5,750 ft. (A. C. Cole)

Texas:

San Pedro Springs, San Antonio (W. M. Wheeler)

Ft. Davis, Jess Davis Co. (W. M. Wheeler)

Pine Springs, 4,550 ft. (A. C. Cole)

There follow descriptions of the sexual forms.

Male. Length: head (excluding mandibles), 1.5-1.7 mm.; thorax, 2.5-3.0 mm.; petiole and postpetiole, 1.3-1.5 mm.; overall length, 8.1-9.3 mm.

Head, viewed in profile, rather evenly convex from frontal area to occipital border, the posterior corners broadly rounded.

Upper surface of head with fine, irregular, longitudinal, undulating, non-reticulate rugae, becoming more widely spaced and fewer posteriorly. Rugae above frontal area and between it and median ocellus forming two lateral oblique series with their upper ends nearly meeting in the area below the median ocellus. Interrugal sculpture consisting of elongate, foveate, piligerous punctures. Posterior corners of head without rugae but with coarse elongate foveate piligerous punctures and fine epiligerous punctures. Sides of head with coarse piligerous punctures and very fine undulating rugules which tend to form faint reticulations behind the compound eyes. Lateral lobes of clypeus with a

few coarse, longitudinal rugae; anterior portion of median lobe of clypeus coarsely and reticulately rugose, the posterior portion with a few short, longitudinal rugae. Frontal area virtually smooth except for the median carinula and a few fine, longitudinal rugules. Interrugal areas, except those on anterior portion of median clypeal lobe and the lateral lobes, shining. Mandibles coarsely and longitudinally rugose. Interrugal areas of mandibles and of anteriomedial portion of clypeus and its lateral lobes subopaque. All interrugal areas with piligerous punctures. Venter of head with scattered fine punctures.

Entire thorax shining; the scutum, scutellum, and basal face of epinotum very shining. Dorsoventral margins of pronotum with coarse irregular rugae. Mesothoracic sternites with fine, longitudinal rugae. Posterior dorsal portion of scutum with curved, irregular, fine to rather coarse, longitudinal rugae. Dorsomesal portion of scutellum with a few short, irregular, longitudinal rugules. Metanotum with very coarse, longitudinal rugae. Sides of epinotum and mesothorax with a few curved, fine rugae interspersed with fine scattered punctures. A few fine oblique rugae near apex of declivous face of epinotum. Entire thorax with rather sparse, fine, scattered epiligerous punctures and somewhat more numerous, large, piligerous punctures. Antennal funiculi subopaque to opaque, with piligerous punctures; scape with elongate foveaceous piligerous punctures.

Petiole in profile with a short anterior peduncle, the ventral tooth of which is blunt and poorly developed; the node with convex sides, anterior and posterior surfaces, and apex; viewed from above the node is subglobular and somewhat narrower than the postpetiole which, when viewed from above, is subtrapezoidal. Upper surface of petiolar node rather smooth and shining, with a few fine punctures and numerous coarser piligerous ones. Posterior dorsal and posteriolateral margins of petiole dull and finely granulose. Postpetiole smooth and very shining, with a few scattered fine punctures and more numerous, coarser, piligerous punctures.

Erect hairs long, numerous, rather uniformly distributed, curved, attenuated, and light yellowish gray; sparser on dorsum of scutum and scutellum; absent, or nearly so, from entire median portion of declivous face of epinotum; somewhat shorter on posterior half of gaster and occurring chiefly along posterior border of each segment. Hairs erect and suberect on antennal scapes and first four funicular segments, usually fully appressed on remaining segments and with only an occasional hair suberect. Distal portion of parameres of genitalia with abundant, stiff, coarse, pointed, curved, yellow hairs. Pubescence negligible.

Head, thorax, antennal scapes, coxae, femora, petiole, postpetiole, first gastric segment, and parameres of genitalia glossy black; remaining gastric segments, trochanters, tibiae, tarsi, and parameres of genitalia brown. Dorsum of first gastric segment with brown splotches in four of the thirteen specimens. Wings hyaline, faintly iridescent, the veins and stigma brown.

Described from a series of thirteen males taken by W. S. Creighton, on August 11, 1951, from a single nest in Garden Canyon, Huachuca Mountains, Arizona, at an elevation of 5,800 feet. One male is in the U. S. National Museum, one in the Museum of Comparative Zoology (Harvard) and the balance in the collections of W. S. Creighton and the writer.

Female (dealate). Length: head (excluding mandibles), 1.8 mm.; thorax, 2.7 mm.; petiole and postpetiole, 1.7 mm.; overall length, 9.2 mm.

Similar to the worker in cephalic structure, but with the longitudinal rugae extending to the occipital border and with the smooth posterior corners of the head covering a lesser area and hence appearing less shining.

Thoracic rugae slightly coarser than those of worker; numerous, parallel, longitudinal on dorsum of scutum, oblique on sides of scutum; longitudinal, but fainter and less numerous on scutellum; neck of pronotum transversely rugulose; rugae of mesothoracic sternite longitudinally rugose; rugae of episternite longitudinal, curving upward on sides of epinotum, transverse on basal and declivous faces of epinotum. Interrugal sculpture like that of worker. Petiole finely coraceous, smooth and shining except for a few fine, irregular, transverse rugulae on posterior declivity of node and three coarser

ones at base of this declivity. Postpetiole smooth and shining, faintly coreaceous. Gaster smooth and shining.

Erect hairs present on upper surface of head along the occipital border, their length variable. Thoracic, petiolar, postpetiolar, and gastric pilosity similar to that of worker. Hairs on dorsum of scutum sparse. There is a patch of dense, long, coarse, suberect hairs on each mesothoracic sternite.

Entire body, except mandibular borders, teeth, and articulations, the compound eyes, the paraptera, and the gaster, ferruginous red. Mandibular borders, teeth, and articulations, the compound eyes, and the parapsides blackish brown. Basal two-thirds of first gastric segment ferruginous followed by a broad black band completely encircling the segment except for a ferruginous median dorsal interruption. This band extends posteriorly to near the margin of the first gastric segment which is ferruginous. Other gastric segments except the terminal one with similar but narrower and more widely interrupted bands. Terminal segment ferruginous.

Described from a nest queen with associated workers taken by the writer 20 miles north of Bernardo, New Mexico, at an elevation of 6,550 feet, September 10, 1951, Cole collection No. N-294. This specimen will remain in the writer's collection.

A single alate female was taken from each of two nests (H-307 and H-308) 15 mi. W. of Mountainair, New Mexico, at an elevation of 5,750 feet. One of these specimens has a few transverse rugules on the dorsum of the postpetiole. The wings are hyaline and iridescent and they have light brown veins and dark brown stigma. One of the females will be deposited in the collection of Dr. W. S. Creighton.

LITERATURE CITED

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STUDIES OF NEW MEXICO ANTS. XII. THE GENERA BRACHYMYRMEX, CAMPONOTUS, AND PRENOLEPIS (HYMENOPTERA: FORMICIDAE)¹

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Genus BRACHYMYRMEX Mayr

Brachymyrmex depilis Emery. This species was taken at only one locality, namely Sapello Canyon, near Beulah, 8,000 ft. The nests were in moist soil beneath stones on a steep pine slope.

Genus CAMPONOTUS Mayr

Camponotus (Camponotus) herculeanus (Linné). The only colony which I believe definitely to represent this species was found on Mogollon Mountain, 9,000 ft., beneath a stone and the bark of a dead standing pine in a moist area of pine, aspen, and spruce.

Camponotus (C.) herculeanus modoc Wheeler. The distribution in New Mexico seems to be limited to the northern half of the state. The ant nests beneath stones and in logs. Colonies were found at the following places: Tesuque Canyon, near Santa Fe, 7,650-10,000 ft.; 15 mi. N. of Eagle Nest, 9,500 ft.; 18 mi. E. of Eagle Nest, 8,500 ft.; Ute Park, 7,500-7,600 ft.; Sandia Mt., near Albuquerque, 8,700 ft.; 13 mi. S. of Mesalero, 8,200 ft.

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