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(Coleoptera: Heteroceridae)

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TWO NEW SPECIES OF *HETEROCERUS* FROM  
NORTH AMERICA, WITH NOTES ON RELATED SPECIES  
(COLEOPTERA: HETEROCERIDAE)

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ABSTRACT

Two new species from North America, *Heterocerus unicus* (western) and *H. subtilis* (eastern), are described and illustrated, and their affinities to other members of the *undatus* group of heterocerids are presented. An identification key is provided plus distribution maps for all related species.

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Pacheco (1964) in his massive study of the Heteroceridae split the genus *Heterocerus* into 12 genera relying heavily on slight differences on the male genitalia. It does not appear justifiable nor necessary to split the rather homomorphic species of the genus *Heterocerus* into numerous genera. Until additional taxonomic justification is presented, the nomenclature of older workers will be followed.

*Dampfius* was the genus proposed by Pacheco for the four species of the *undatus* group, three of which were previously known, *undatus* Melsh., *collaris* Kies. and *mexicanus* Sharp, and one described as new, *inciertus* Pacheco. Therefore *Dampfius* is considered as a new synonym of *Heterocerus* and *H. inciertus* (Pacheco) as a new combination.

Members of the *undatus* group are medium sized, more or less reddish colored insects with highly variable elytral markings. The paler elytral markings are not well defined, especially those that occur near to or at the base of the elytra, which could present a problem in identification when using the external characters. Males have well-defined, tooth-like projections on the lateral ridge near the mandibular base.

Unfortunately Pacheco (1964) did not describe individual species, but instead relied upon descriptions of the male genitalia, all of which are similar in structure. He did, however, have illustrations of the elytral markings, which are helpful in species separation.

While studying several large collections of heterocerids, numerous specimens though apparently in the *undatus* group, seemed distinct. Two new species were confirmed when all characters, including those on the male genitalia, were compared. As an aid in identification, a key to the *undatus* group is presented. Distribution maps (Fig. 3) for all known species are also presented.

KEY TO THE SPECIES OF THE *UNDATUS* GROUP

1. Lateral arms of phallobase extending well beyond apexes of parameres; dark reddish brown species with bright pale area at or around basal margin of elytra, sometimes extending width of base; north-eastern species (Fig. 3f); length 3.5-4.0 mm ..... *subtilis*, new species
- Lateral arms of phallobase not strongly produced ..... 2
2. Lateral arms of phallobase reaching slightly beyond apexes of par-

- ameres; dark species with no noticeable paler basal spot at base of elytra near scutellum; northeastern species (Fig. 3a); length 3.4–4.2 mm ..... *undatus* Melsh.
- Lateral arms of phallobase as long as or shorter than apexes of parameres ..... 3
3. Lateral arms of phallobase as long as apexes of parameres ..... 4
- Lateral arms of phallobase shorter than apexes of parameres ..... 5
4. Phallobase produced posteriorly extending well beyond parameres, sides posteriorly scalloped along margins; usually pale species with a pale spot at base of elytra near scutellum, some specimens with pale area narrowly extending along base; eastern species (Fig. 3b); length 3.0–4.2 mm ..... *collaris* Kies.
- Phallobase not produced beyond apex of parameres; species darker than *collaris* with an obscured pale area at elytral base, at times extending narrowly, apically along suture, normal submarginal and subhumeral spots present but obscured; southern Canadian species also including Connecticut, Illinois, and Iowa (Fig. 3e); length 3.3–3.7 mm ..... *inciertus* (Pacheco)
5. Median plate of aedeagus sharply pointed posteriorly; dark species with pale area at base of elytra, frequently extending along base, submarginal and subhumeral spots somewhat obscured but noticeable; western species (Fig. 3c); length 3.5–4.4 mm ..... *mexicanus* Sharp
- Median plate of aedeagus bluntly rounded posteriorly; reddish brown species with bright pale area at or around basal margin of elytra, sometimes extending width of base, sometimes extending apically to unite with subhumeral spot; western species (Fig. 3d); length 4.0–4.5 mm ..... *unicus*, new species

*Heterocerus unicus* Miller, new species

Figs. 1, 3d

DESCRIPTION. General color dark brown but usually reddish brown with elytral markings (Fig. 1e); reflexed pronotal margins, apical pronotal corners of male (more so in the female), basal margin of elytra, legs, area of stridulatory ridge and lateral margins of abdominal sternites paler. Head small, densely and finely punctate; scabrous in appearance; setae fine, denser and longer on clypeus; antennae densely setate with longer setae on first few segments. Pronotum with surface as on head; wider than long; sides more or less evenly rounded, slightly convergent apically. Elytra with surface similar to that of pronotum except very densely punctate, individual punctures difficult to distinguish; setae short, evenly spaced, recumbent; striations very feeble; epipleuron dark with the epipleural line feeble if present at all, especially in the female, more easily seen in some males. Ventral surface finely roughened, setae sparse; mesocoxal line sharp and prominent; stridulatory ridge prominent in both sexes; legs of male stout, densely pubescent with 11 stout spines on margin of fore tibia. Length 4.0–4.5 mm.

Male holotype. Pronotum wider than elytra at base. Head with mandible (Figs. 1a, c) slightly elongate with an easily noticed mandibular horn near subapical tooth, as well as a large lateral tubercle originating from base of mandible; labrum longer than wide with sloping sides, apical margin with area devoid of setae, emarginate and sensory palpi easily seen, surface densely punctured with dense setae; clypeus broadly concave at margin. Genitalia (Figs. 1b, d, f) with parameres extending posteriorly beyond lateral arms of phallobase, parameres rounded without usual notch; phallobase short and bluntly rounded posteriorly; median strut of aedeagus long and slender, not extending beyond apex of median plate.

Female allotype. Pronotum as wide as base of elytra; mandibles less produced with

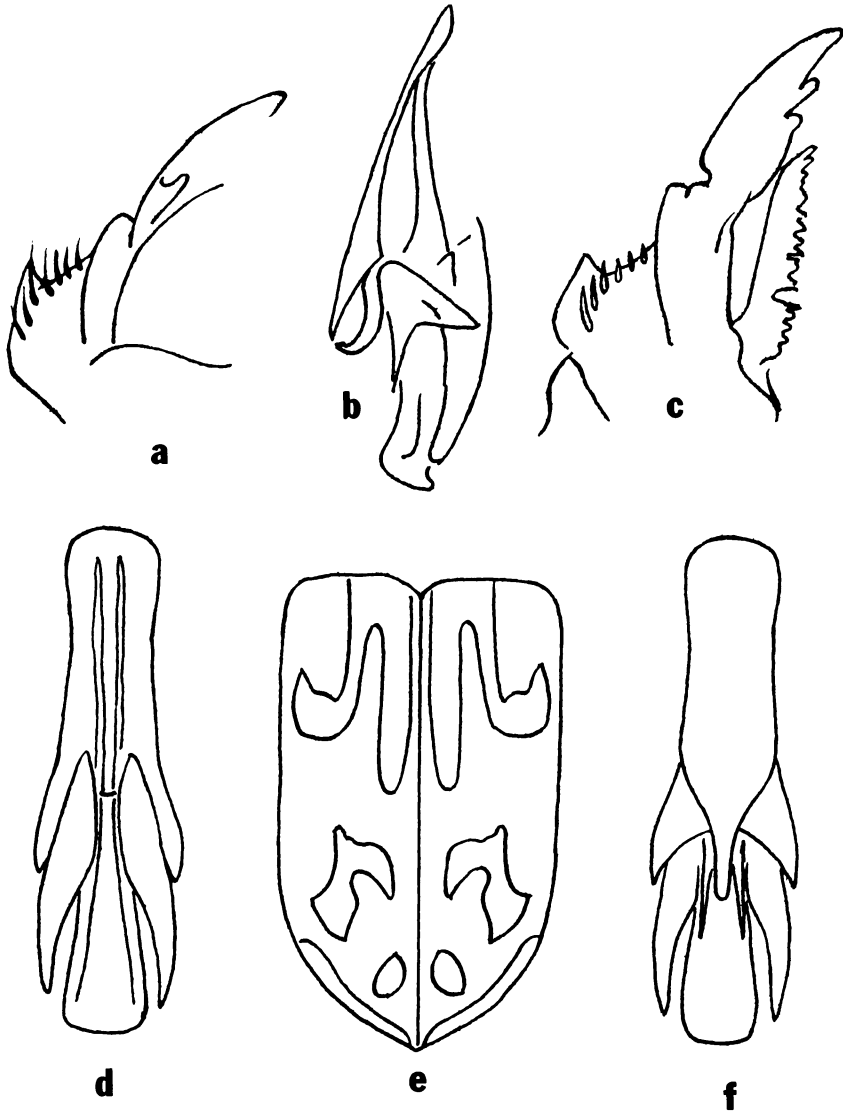


Fig. 1. *Heterocerus unicus* n. sp. a, left mandible of male holotype showing mandibular horn and lateral projection. c, left mandible of a paratype showing lateral projection but no mandibular horn. e, elytral markings. b, d, f, genitalia; lateral, dorsal, and ventral views respectively.

slight but noticeable lateral projection; labrum wider than long with broadly rounded sides; apical area devoid of setae with easily seen sensory palpi.

TYPE MATERIAL. Male holotype and female allotype from Baja Cal. Sur, MEXICO, 9 miles south of La Paz, 6 April 1982, W. H. Cross, blacklight trap

(Mississippi Entomology Museum). There are an additional 163 paratypes collected from Baja California. In this series there are 29 males representing 17.8% of the total. Sixty paratypes were retained by the author and the others were returned to the collection of the Department of Food and Agriculture, Sacramento, California.

**DISTRIBUTION.** This species is widely distributed in western North America. I have seen specimens from the following localities, however, these are specifically excluded from the type series.

**CANADA:** **Alberta:** Cypress Hills, July (4), Pincher, July (1), Tp 2 Rge 2 W 4 mi Mer., July (2). **British Columbia:** Oliver, Aug. (1). **Manitoba:** Aweme, Sept. (10), Tp 17 Rge 28 W 1 mi Mer., July (1). **Saskatchewan:** Tp 5 Rge 28 W 3 mi Mer., Aug. (2).

**MEXICO:** **Baja California Norte:** 8 mi E Tecate, July (2). **Baja California Sur:** 9 mi S La Paz, Apr. (see type series). **Coahuila:** N Hermanos, Aug. (1). **Guanajuato:** Empalmer Excobedar Rio de La Lago Hwy 49, June (2). **Guerrero:** Teloloapan, July (1). **Hidalgo:** Guadalupe Cyn., Mar. (6), Aug. (1). **Jalisco:** Teocaltiche, Oct. (2). **Nuevo Leon:** Monterrey, June (1). **Sinaloa:** E Chupadero, Mar. (4), N Los Mochis, Aug. (2). **Sonora:** 30 mi E Ures on road to Moctezuma N-52, 2,700 feet, Aug. (5), La Aduana, May (1). **Veracruz:** Fortin de Las Flores-Sumidero, 2,500–3,000 feet, May (2), Alazan, Aug. (1).

**UNITED STATES:** **Arizona:** *Cochise Co.:* Portal, June (6), Portal, 5,000 feet, Aug. (20), Cochise Stronghold, Oct. (2), E Apache Peloncillo Mts., Aug. (4), Texas Cyn, 5,300 feet, Dec. (1), E Douglas, Aug. (3), Guadalupe Cyn, Aug. (16), Pena Blanca Lake, Sept. (25), Cave Creek Rnch., Chiricahua Mts., 5,000 feet, Aug. (3). *Gila Co.:* S. Wikicup nr Groom Peak, 3,900 feet, Sept. (2). *Pima Co.:* E Cottonwood Cyn, Aug. (5), nr Olberg, May (1), NW Arivaca, May (13), Gates Pass, Oct. (2), Sabino Cyn, Catalina Mts., Nov. (2). *Santa Cruz Co.:* Pena Blanca, June (6), S Patagonia, Aug. (11), Madera Cyn, 4,880 feet, July (18), Pajarito Mts., Aug. (1), NW Nogales, Sept. (11), no locality, Sept. (14). *Yavapai Co.:* Date Creek Wash at Hwy 93, Sept. (8). *Yuma Co.:* no locality, May (1). **California:** *Butte Co.:* Chico, July (3), Fresno, July (9), nr Coalinga, June (1). *Imperial Co.:* Imperial Dam, June (1), NW Glenis (sand dunes), Mar. (3), Laguna Dam, Aug. (1). *Inyo Co.:* Saline Valley Willow Crk., 2,300 feet, Mar. (15). *Kern Co.:* NE Oildale at Pose Crk., May (2). *Lake Co.:* Butts Cyn., SE Middleton, May (3). *Lassen Co.:* Hallelujah Jct., July (13). *Los Angeles Co.:* Tapia Park, Santa Monica Mts., Dec., river bed (2), San Gabriel Cyn., May (4), Tanbark Flat, July (2). *Mendocino Co.:* Fort Bragg, July (1). *Monterey Co.:* Piney Crk. nr Arroyo Seco, April (2). *Placer Co.:* E Roseville Leona Way, June (1). *Riverside Co.:* Riverside, Santa Anna River, Oct. (3), Temecula Cyn. Sta. Margarita River, May (1), P. L. Boyd Desert Res. Center, S. Palm Desert, May (1), Riverside, Oct. (1). *Sacramento Co.:* Sacramento, May (1). *San Bernardino Co.:* Victorville, July (2), SE Hesperia on Mojave River, July (5), Cedar Spgs., Nov. (21), Saratoga Spgs. Death Valley, June (1). *San Diego Co.:* no locality, May (4), Mission Valley, May (6), Torrey Pines, July (2), San Mateo Cyn., Oct. (3), Scissors Crossing San Felipe Crk., July (1), San Luis Rey River 1 mi from coast, May (2), Mission Dam, June (10). Alvarado Cyn., June (1). *San Luis Obispo Co.:* Atascadero, Aug. (2). *Santa Barbara Co.:* Vic. Sta. Ynez River, 1,100 feet, July (18). *Siskiyou Co.:* Tulelake, Aug. (2), Gazelle, July (3), E Etna, July (1). *Solona Co.:* Gates Cyn., June (1). *Stanislaus Co.:* La Grange, July (2), Aug. (4). *Sutter Co.:* Nicolaus, May (7). *Tehama Co.:* Mineral, July (2), S Fork Batte Crk., 1,000 feet, May (8), nr Red Bluff, May (2). *Tulare Co.:* Ash Mt. Power Sta., Mar. (2). *Ventura Co.:* Howard Creek, July (1). *Yolo Co.:* nr Rumsey, July (5), Hopland, June (1). *State Label only:* Mikel Hill, July (2). **Colorado:**

*Arapahoe Co.*: Denver, Mar. (1), *Grand Co.*: Gramby, June (1). *Prowers Co.*: Laramar, June (3). **Nevada**: *Humboldt Co.*: Winnemucca, June (1). **New Mexico**: *Grant Co.*: Buck Creek at Cliff, May (1). *Hidalgo Co.*: N Rodeo Cienego Lake, Aug. (2). **Oklahoma**: *Cimarron Co.*: E Kenton, June (2). **Oregon**: *Benton Co.*: Oak Crk. Lab., July (1), *Curry Co.*: Illahe, Aug. (4), Gold Beach, Aug. (1). *Douglas Co.*: NW Roseburg, Aug. (2). *Josephine Co.*: Merlin, Aug. (5). *Lane Co.*: Dexter Lost Crk., June (2). *Wasco Co.*: Tygh Crk. Hwy 197, June (1). **Texas**: *Brewster Co.*: S Marathon, Oct. (1). *El Paso Co.*: El Paso, no date, (2). *Jeff Davis Co.*: Davis Mt. St. Pk., April (1). *State Label only*: Fink, June (1), Shafter, Oct. (1). **Utah**: *Garfield Co.*: nr Hatch, Aug. (1). *Grand Co.*: Arches Nat. Mon., June (1). *Kane Co.*: nr Virgin, Aug. (8). *Washington Co.*: W Rockville, July (1). *Wayne Co.*: S Hanksville, July (1). **Washington**: *Walla Walla Co.*: Walla Walla, July (1). **Wyoming**: *Hot Springs Co.*: Barum at Jct. Hwy. 120/296, June (2). *Platte Co.*: N Wheatland, June (2).

**DISCUSSION.** The lateral protuberance of the male mandible is not a common character and immediately associates this new species with those of the *undatus* group. Males of *unicus* have the lateral protuberance more produced with the apical end pointed and hooked (this is more pronounced in those males that bear mandibular horns). No other male member of the *undatus* group has this combination of external characters, nor do any have indications of mandibular horns. The mandibular horn is not a common character in the males of *unicus* as only 40 have been observed in the hundreds of specimens studied and less than 10 of these were from north of the Mexican/United States border. Some males have prolonged mandibles, but no horn is present. In heterocerids found north of Mexico the mandibular horn can be found in some males of *gemmatus* Horn, where it is quite small and easily overlooked and in some males of *mollinus* Kies. and *tristis* Mann., where the horns are quite spectacular. In *mollinus* the labrum is elongated as well as the mandibles which are reminiscent of some males found in the *gnatho* group of heterocerids. The horn on the mandible of *mollinus* is a true horn projecting from the surface of the mandible. In some males of *tristis* the labrum is slightly elongated, if at all, but the mandibles are enlarged. The horn is an enlargement of the dorsal subapical tooth and curves inward. Males of *tristis* having the spectacular mandibular horns also have clypeal horns. Males with only the clypeal horns are common, while males with the mandibular horns are rare. The spectacular mandibular horns of *mollinus*, as well as those of *tristis*, plus the clypeal horns, seemingly have not been previously recorded in the literature. Pacheco (1964) reported two species of heterocerids with mandibular horns from Mexico, *stankerus* Pacheco and *armatus* Sharp. He also reported two additional species from South America, *rivularis* Germ. and *similis* Gr.

This new species is difficult to confuse with other species since it (other than the new species that follows) has the basal margin of the elytra well defined by a bright pale area that at times covers most of the margin. This area in some specimens extends apically to join with the subhumeral spot. Also the apical corners of the pronotum are always paler than the general surface, with some specimens having the entire lateral margins pale. Furthermore most specimens have a paler median area extending to form a noticeable median stripe.

*Heterocerus subtilis* Miller, **new species**

Figs. 2, 3f

**DESCRIPTION.** Dark to chestnut brown with elytral markings (Fig. 2a), pronotal disc and margins, legs and margins of ventral sternites paler; basal spot of elytra bright, easily noticed, some specimens with median line of pronotum paler. Head with surface finely

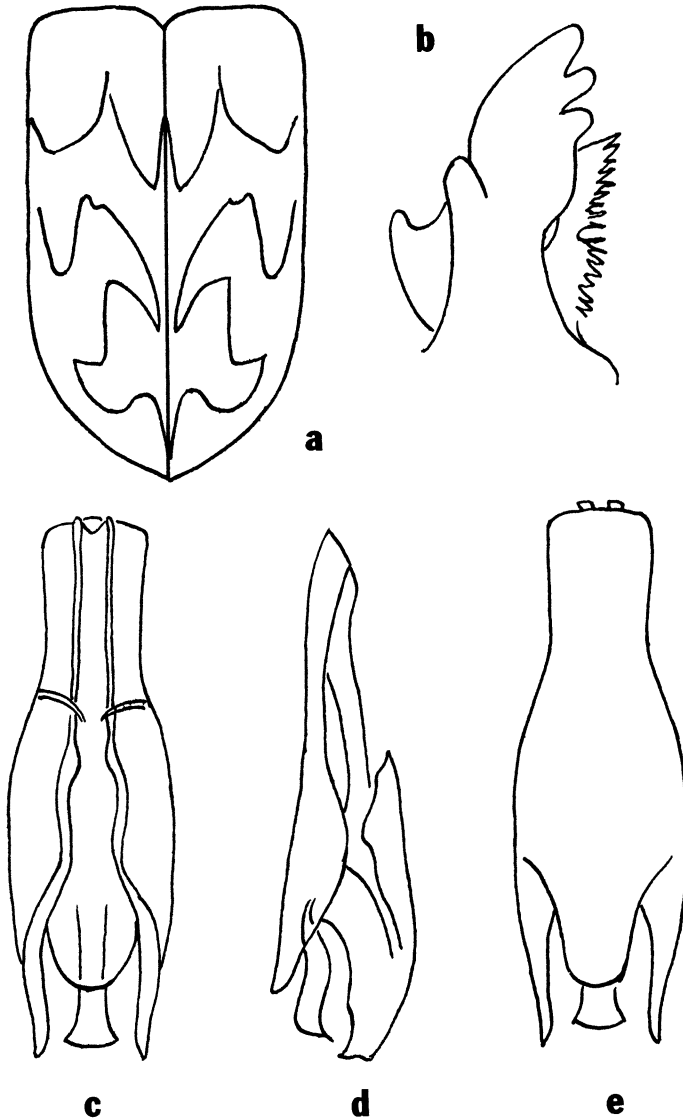
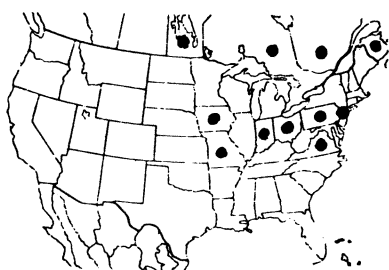
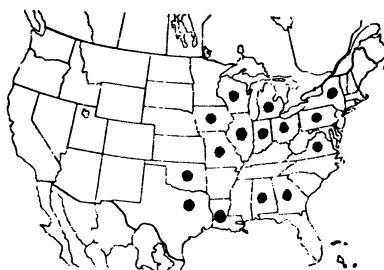
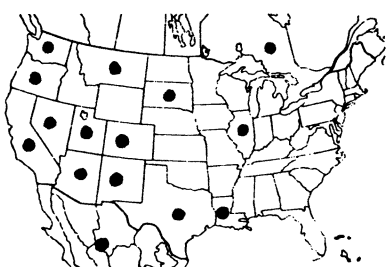
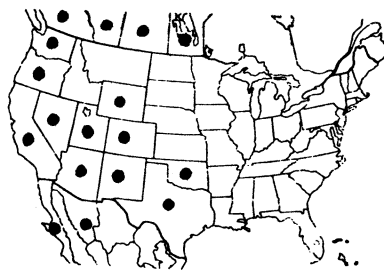
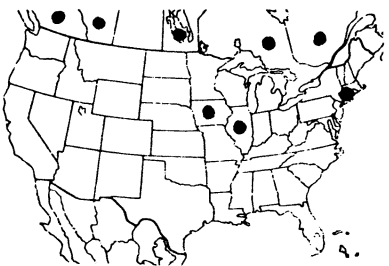
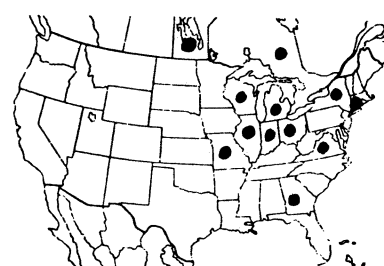


Fig. 2. *Heterocerus subtilis* n. sp. a, elytral markings. b, left mandible of male. c, d, e, genitalia; dorsal, lateral, and ventral views respectively.

and densely punctured; setae longer, denser in area of clypeus; clypeus broadly concave at apex, rather stout in shape; labrum wider than long, sides broadly rounded, apex with typical area devoid of setae; mandibles stout but not elongated. Pronotum wider than long, broadly rounded; margins converging apically; densely punctured, punctures very small but individual; setae sparse and fine; as wide as elytra at base. Elytra shining, surface with dense, simple punctures, not as dense as pronotum; striations faint but noticeable; epipleuron pale, epipleural line present. Ventral surface finely scabrous; setae

a. *H. undatus* Mels.b. *H. collaris* Kies.c. *H. mexicanus* Sharpd. *H. unicus* n. sp.e. *H. inciertus* (Pacheco)f. *H. subtilis* n. sp.Fig. 3. Distribution maps for species of the *undatus* group of heterocerids.

sparse; stridulatory ridge prominent; mesocoxal line present and prominent; fore tibiae in both sexes with 10 or 11 stout spines. Length 3.5–4.0 mm.

Male. Lateral margin of mandible at base with an easily noticeable protuberance (Fig. 2b); genitalia (Figs. 2c, e) with the lateral arms of phallobase extending well beyond the parameres, phallobase produced posteriorly.



TYPE MATERIAL. Male holotype from Moreland Hills (Cuyahoga Co.) Ohio, 18 VII 1982, W. V. Miller, at light trap. Allotype female from same location but collected on 1 VIII 1981. Paratypes from:

CANADA: **Manitoba:** Winnipeg, L. H. Roberts, June (1), Tp 17 Rge 29 W 1 Mer., J. Carr, July (16). **Ontario:** Toronto (label only), R. J. Crew (3), Walshingham, L. LeSage, at edge of a ditch, July (20).

UNITED STATES: **Connecticut:** *Middlesex Co.:* Cornwall, E. F. Chamberlain, June (3). **Georgia:** *Clark Co.:* N Athens, R. Turnbow, Oct. (2). **Illinois:** *Pike Co.:* Pittsfield, June (3). **Indiana:** *Allen Co.:* Black Crk., A. V. Provonsha, June (1), *Fountain Co.:* Coal Crk., A. V. Provonsha, June (1). *Morgan Co.:* Martinville, at edge of a pond, A. V. Provonsha, June (6), *Parke Co.:* N. M. Downie, May (1), *Spencer Co.:* Pigeon Crk., July (1), *Tippecanoe Co.:* (label only), N. M. Downie, July–Oct. (11). **Michigan:** *Antrim Co.:* Intermediate River, Toby Schuh and E. Evans, July (1), *Cheboygan Co.:* (label only), J. D. Lattin, June (1). **Missouri:** *Holt Co.:* Thurnau Wildlife Area, E. G. Riley, June (1), *Randolph Co.:* E. Moberly, E. G. Riley, June–Aug. (6). **New York:** *Lawrence Co.:* (label only), Oct. (1), *Monroe Co.:* Rochester, F. C. Fletcher, May–Sept. (9), *Tompkin Co.:* Ithaca, B. L. Lindner, Oct. (5). **Ohio:** *Allen Co.:* Lima, at edge of pond, W. V. Miller, July (1). **Virginia:** *Tazewell Co.:* Burkes Garden Sta. Spg. Crk., R. L. Hoffman, May (1). **Wisconsin:** *Grant Co.:* Boscobel State Nursery, R. D. Shenefelt, by light trap, July (1).

Paratypes returned to the Los Angeles County Museum (P. R. Snelling); N. M. Downie, Lafayette, Ind.; University of California, Berkeley (G. W. Ulrich); Canadian National Collection, Ottawa, Ontario (L. LeSage); J. Carr, Calgary, Alberta; and E. G. Riley, Louisiana State University, Baton Rouge.

DISCUSSION. *Heterocerus subtilis* is similar to *unicus* in appearance with its clearly noticeable bright pale area of the basal margin of the elytra. However, the basal spot seldom spreads laterally along the base and rarely extends apically to join the subhumeral spot. *Heterocerus unicus*, so far as known, is a western species (Fig. 3d), while *subtilis* is found mainly in the northeastern United States and in Canada in southwestern Ontario and southern Manitoba (Fig. 3f). Although only about 30 males have been studied, none had mandibular horns. Some specimens of this species could be easily misidentified as *collaris* (Fig. 3b), which is found in the same geographical area as *subtilis* (Fig. 3f). The pale area at the elytral base of *collaris* is, at times, quite noticeable and distinct. A few dark specimens of *subtilis* have the usual bright basal spot subdued to the point of being nearly obscured. These specimens could possibly be confused with *undatus*, which usually has the basal spot difficult to see, if present at all.

The species that make up the *undatus* group are closely related and at times difficult to differentiate due in part to the markings on the elytra. The two new species described here have the bright pale coloring associated with basal margin of the elytra which will help in separating them from the other species of the group.

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