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Nesidiorchestes hawaiiensis Kirkaldy: new tribal assignment and lectotype designation (Hemiptera: Heteroptera: Miridae: Orthotylinae: Orthotylini)

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Abstract

The preponderance of documented morphological evidence presented for *Nesidiorchestes hawaiiensis* Kirkaldy, 1902 argues for its tribal reassignment to the Orthotylini from the Halticini. A lectotype is designated for a male syntype maintained in the Natural History Museum, London.

Key words: Insecta, Hemiptera, Miridae, Taxonomy, Hawaii

Introduction

Recent revisionary studies of the orthotyline plant bug fauna of Hawaii have dramatically increased our knowledge of species richness of several genera: *Sarona* (Asquith, 1994), *Nesiomiris* (Gagné, 1997), and *Orthotylus* (Polhemus, 2003, 2004); provided a new genus *Loulucoris* and two new species (Asquith, 1995); and led to a change in the tribal assignment of *Sarona* (Asquith, 1994). In this note we ascertain the generic placement of another Hawaiian endemic, *Nesidiorchestes* Kirkaldy, 1902, and stabilize the concept of its type species, *N. hawaiiensis* Kirkaldy, 1902. The original tribal assignment of *Nesidiorchestes* was the Halticini. In founding his new taxon, Kirkaldy compared *Nesidiorchestes* with *Halticus* and cited a suite of external characters to substantiate the placement and diagnose the genus.

The wide head with a convex vertex and prominent frons, the transverse pronotum, the brachypterous hemelytron, and the hind leg with incrassate femur and long tibia are all features usually associated with species placed in the Halticini. However, the characters given to distinguish *Nesidiorchestes* from *Halticus* — the stout first antennal segment and relatively long labium, — although different from the gracile antennae and short labium of *Halticus*, are likewise features not found in other members of the tribe. Herein we document characters of the genitalia from both sexes, for the first time, which unambiguously require the reassignment of *N. hawaiiensis* to the Orthotylini.

Material and methods

Bibliographic citations in the generic and species treatment report only the original description and the most recent catalog listings. Here, the orientation of each genitalic structure is included on the illustration or figure caption. Scanning electron micrographs of uncoated and gold-coated preparations were taken with the digital Philips XL30 ESEM. Dorsal habitus photographs were taken with a Microptics-USA photographic system equipped with an Infinity Photo-Optical K-2, 3-lens system and a Nikon D1X digital camera. Scale bars are

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included within the photos and illustrations. Measurements are given in millimeters. Thirty-four specimens were examined for this project. As this research is a contribution to the Planetary Biodiversity Inventory of the Plant Bugs [http://research.amnh.org/pbi], each specimen was given a matrix label, which uniquely identifies each specimen ("unique specimen identifiers" or "USIs"). The USI numbers, e.g., AMNH_PBI 00081052, comprise an institution and project prefix (AMNH_PBI) and a unique number (00081052). In the specimens-examined section, verbatim label information is set off by quotes and interpretative notes in square brackets. Latitude-longitude data are presented in degrees and decimal parts thereof and altitude data are treated as metric. All these data were georeferenced with the aid of digital local maps of Hawaii and entered in the PBI project database to produce the list of specimens examined and locality points. Examined specimens belong to the following collections: The Natural History Museum, London, England (BMNH); Bishop Museum, Honolulu, Hawaii, USA (BPBM); and the United States National Museum of Natural History, Washington, D.C. (USNM). The Discover Life homepage (http://www.discoverlife.org/) gives online maps of the bug species ranges as well as images, when available, of plant bugs and their host plants when known.

Taxonomy

Nesidiorchestes Kirkaldy New tribal assignment

Nesidiorchestes Kirkaldy, 1902: 139 (gen. n.); Carvalho, 1958: 21 (cat.); Schuh, 1995: 62 (cat.).
Type species: *Nesidiorchestes hawaiiensis* Kirkaldy, 1902 by monotypy.

Diagnosis: Recognized by the small size; the brachypterous hemelytron; the large incrassate hind femur and long hind tibia; the pale yellowish brown ground color with variable reddish brown to brown blotches (Figs. 1A, B); the trifurcate vesica with medial and ventral spicules with apically dendritic rami (Fig. 3); the phallotheca with a long, narrow process on the left surface (Fig. 3); and the medially converging, strongly serrate interramal lobes (Fig. 5).

Redescription. *Male*: Short, small. COLORATION: Dorsal aspect patterned with pale yellowish brown and somewhat variably shaped brown to dark reddish brown areas (Figs. 1A, B). SURFACE AND VESTITURE: Surface dull, covered with microtrichia; dorsum with mixed vestiture composed of dense, pale and dark sericeous setae depending on surface coloration and relatively sparse, reclining pale and dark simple setae (Figs. 2B, G); anterior margin of pronotum and posterior margin and frons with long, dark, bristlelike setae (Fig. 2A); antenna with dense, reclining pale setae, segment I with four pale bristlelike setae with length slightly longer than diameter of segment; venter and legs with sparse, moderately long, reclining, pale simple setae; dorsal subapical surface of hind femur with several long, dark, bristlelike setae (Fig. 2E); forecoxa with a few long, black bristlelike setae; tibiae with two rows of long, pale spines and two lateral rows of short black setae. STRUCTURE: Head: Transverse, triangular in dorsal view (Fig. 2B); clypeus slightly prominent, smooth, not visible in dorsal view (Figs. 1A, B, 2A, B); frons broadly convex, extending anteriorly beyond clypeus (Fig. 2A); vertex slightly convex, posterior margin not elevated; head projecting below ventral margin of eye by slightly more than height of eye; mandibular plate triangular, flat, maxillary plate elongate, surface of both plates smooth; gena long, smooth; buccula reaching posterior margin of head, length about half that of labial segment I; gula obsolete; anterior margin of eye not emarginate, smoothly continuing curvature of frons laterally, eye ovoid, about half height of head in lateral view, adjacent to anterior margin of pronotum and reaching dorsal margin of head; dorsal margin of antennal insertion level with middle of eye and slightly removed from anterior margin of eye in lateral view (Fig. 2A); labrum narrow; labium reaching base of abdomen, labial segments I and II subequal in length, III and IV subequal in length, their combined length equal to length of II; antennal segment I less than width of vertex about 87% and reaching ventral margin of head, greatest in diameter, II approximately twice as long as width of head across eyes; about four times as long as

I, diameter of II narrower than I, III three-fifths as long as II, its diameter less than that of II, IV approximately 70% of III. Thorax: Transverse, trapezoidal; minute upturned collar barely visible in dorsal view; pronotum nearly flat, lateral margin rounded; anterior and posterior margins very slightly concave medially; anterolateral and posterolateral angles rounded; calli large but faintly differentiated from disc of pronotum; mesoscutum broadly exposed, but weakly differentiated from scutellum; scutellum forming an equilateral triangle; proepisternum small, narrow, slightly protruding laterally, glabrous; propleuron concave; lateral surface of prothorax with dense microtrichia (Fig. 2D); mesothoracic spiracle recessed, without evaporative area (Fig. 2D); metathoracic scent-gland efferent system with peritreme located medially on evaporative area, slightly protruding, dorsal margin of evaporative area reaching level with dorsal margin of metacoxa (Fig. 2D). *Hemelytra*: Flat; costal margin gently convex, posterior margin weakly sinuate, posteromedial margin separated; claval suture, cuneus, and membrane absent; greatest width of hemelytra greater than width of pronotum at posterior margin. *Legs*: Coxae cylindrical, elongate, subequal to one-half length of fore and middle femora, approximately equal to one-third length of hind femur; trochanter subtriangular; fore and middle femora elongate ovoid, gently tapering apically, slightly compressed laterally, hind femur incrassate (Figs. 1A, B, 2B, E); tibiae slender, length of hind tibia 48% of fore tibia, 58% of middle tibia, and 20% longer than hind femur; first tarsal segment shortest, second and third subequal in length (Fig. 2F); pretarsus as in Fig. 2C. Abdomen: Stout, about twice as long as genital capsule. Genitalia: *Genital capsule* relatively large (Figs. 1A, 2B, H, 3), broadly conical, caudal margin slightly produced in lateral view (Fig. 3); aperture subcircular, reclined; small, simple process dorsal to left paramere socket, projecting posterodorsally (Fig. 3); proctiger not surpassing apex of genital capsule; subgenital plate U-shaped, not reaching apex of genital segment (Fig. 3); *left paramere* vaguely L-shaped in lateral view (Figs. 2H, 3); *right paramere* flattened, broadly triangular (Figs. 2H, 3); *phallotheca* well sclerotized, somewhat attenuate distally and curved to right side; left margin of aperture with basally broad, elongate process, with narrow curved apex (Fig. 3); aperture dorsal and turned to right side; *vesica* with single trifurcate spiculum attached to conjunctiva on dorsal left side of sclerotized region of ductus seminus; dorsalmost lobe of spiculum most robust of three lobes (Fig. 4); medial and ventral lobes more narrow and longer than dorsal lobe, both strongly ramified with many thin, dendritic projections.

Female: Very similar to male in structure, vestiture, and coloration, except for slightly wider vertex. STRUCTURE: Genitalia (Fig. 5): *Subgenital plate* with length equal to 70% of width, apex curved; base of ovipositor located anterior to longitudinal midpoint of abdomen; *posterior wall* with interramal sclerite strongly sclerotized, ovoid; interramal lobe densely covered with numerous, relatively long, acute microtrichia; dorsal region of posterior wall with anterior surface microserrate; posteromedial surface of wall with sclerotized medial process adjoining base of ovipositor; *dorsal labiate* plate with medial region faintly sclerotized, area ventral to rings with numerous microtrichia; posterior margin with a few obvious microtrichia, lateral margins small, infolded; *sclerotized rings* D-shaped, medial margin of ring straight, parallel to long axis of body; *anterior wall of vestibulum* asymmetrical, formed by protruding and convoluted posterior margin of ventral labiate plate and right side of gonapophyses 8; left side of gonapophyses 8 not protruding.

Discussion

In his original description Kirkaldy placed *Nesidiorchestes* in the Halticini (= Halticaria Kirkaldy, 1902). All subsequent works (in particular, Zimmerman, 1948 as Halticarini; Asquith, 1995) have maintained this tribal assignment. Evidently the limited access to specimens, due to the Hawaiian endemicity, the obvious small size, brachyptery, and enlarged hind femora have led to the acceptance of the tribal assignment. Schuh (1974) listed four structures, in addition to the enlarged hind femur, as diagnostic for the tribe Halticini. These features are: 1) convergent parempodia, 2) apically enlarged right paramere, 3) posterior wall lacking interramal lobes (=K-structures), and 4) elongated gena. Only the condition of the hind femur and parempodia are met by *Nesidiorchestes* (Figs. 2C, E).

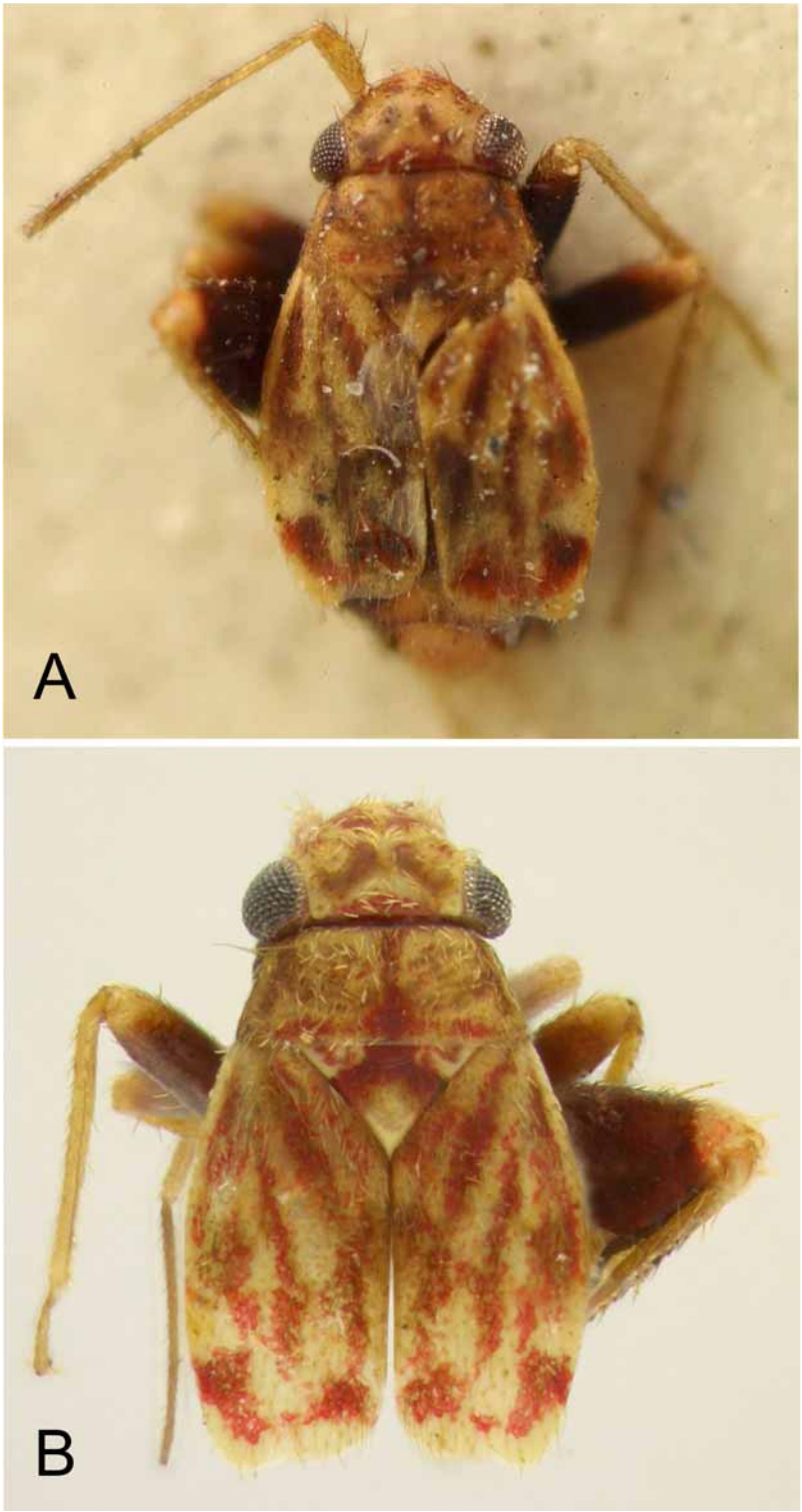

FIGURE 1. Dorsal habitus photograph of male *Nesidiorchestes hawaiiensis*. **A.** Lectotype (AMNH_PBI 00085496). **B.** Zimmerman specimen (AMNH_PBI 00113258).

Although the ventral portion of the head is somewhat elongated in *Nesidiorchestes*, a comparison to *Halticus* spp. as undertaken by Kirkaldy, reveals that the Hawaiian endemic falls short of this standard on several accounts. The eye of *Nesidiorchestes* is equal to half of the head height in lateral view (Fig. 2A); in *Halticus*,

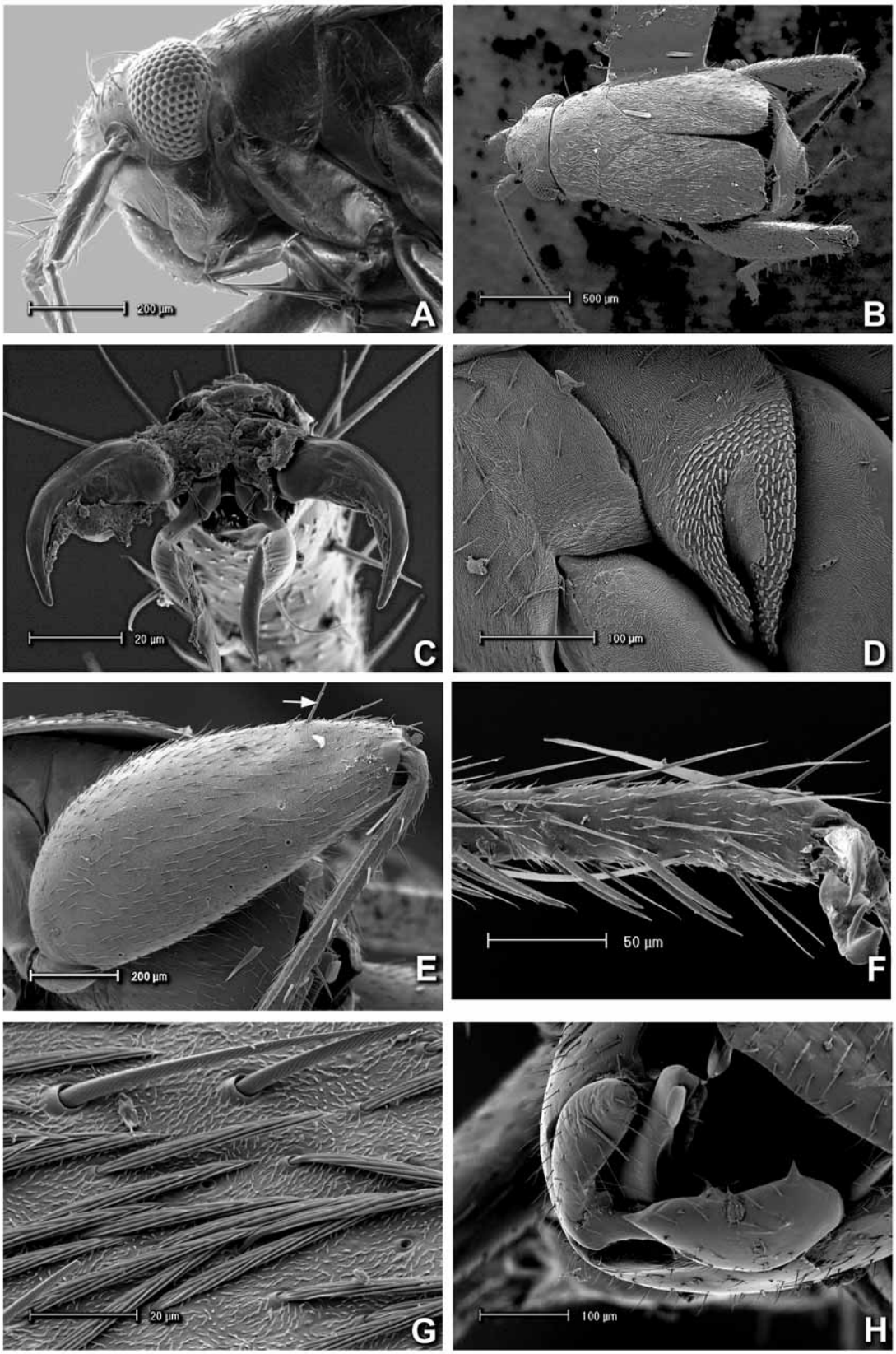

FIGURE 2. Scanning electron micrographs of male (AMNH_PBI 00113259). **A.** Head and thorax, lateral view. **B.** Body, dorsal view. **C.** Pretarsus, apical view. **D.** Mesepimeron spiracle and metepisternum scent-gland efferent system, lateral view. **E.** Hind femur, lateral view. **F.** Third tarsal segment, ventral view. **G.** Vestiture and surface of corium, dorsal view. **H.** Genital capsule and parameres, dorsal view. Scales as indicated.

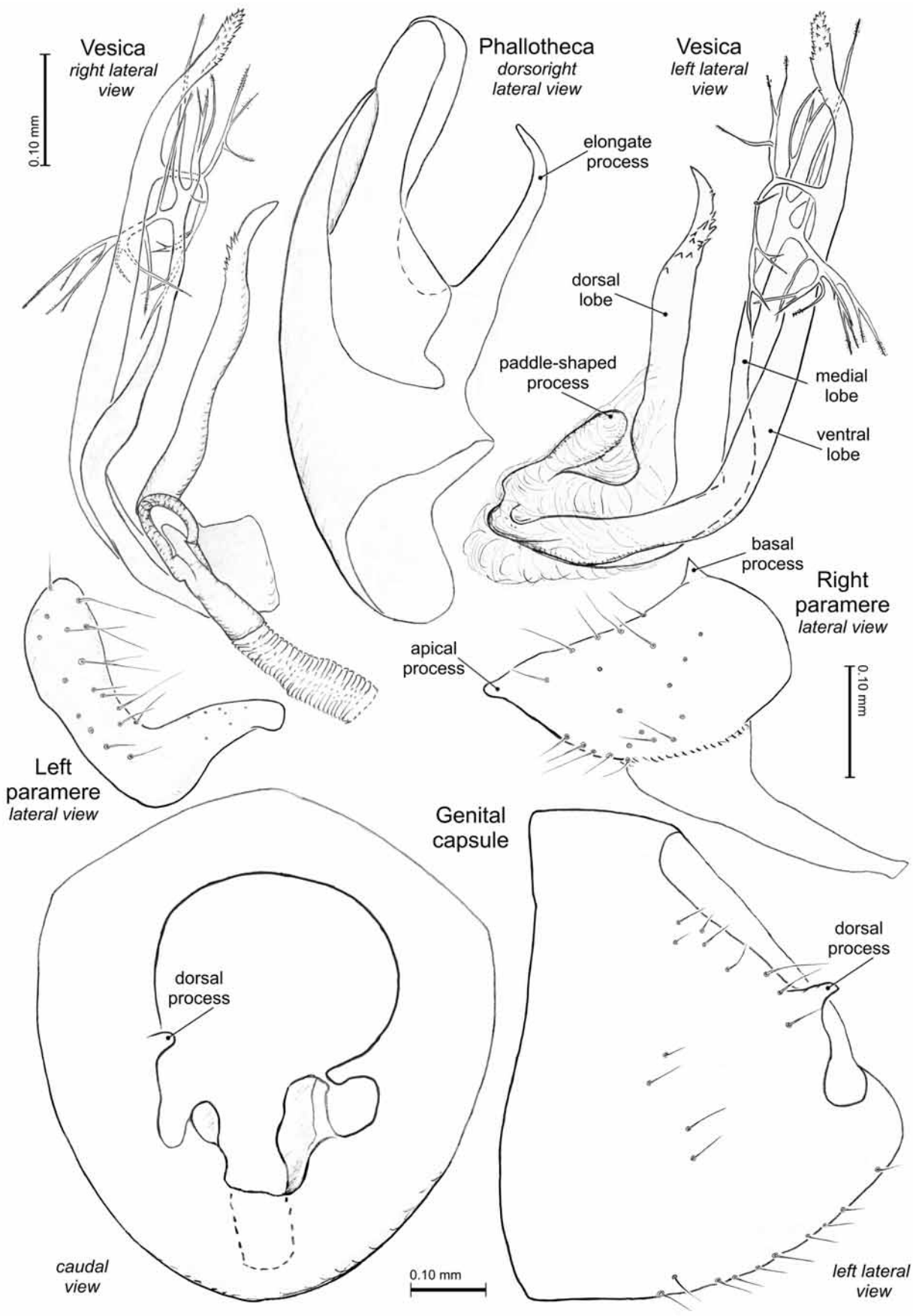

FIGURE 3. Male genitalia (AMNH_PBI 00113258).

the eye is considerably smaller, only occupying 40% of the head height. Antennal segment I in *Nesidiorchestes* is long and practically surpasses the ventral margin of the head, whereas in *Halticus* segment I is barely half the length of the gena. The interocular width of *Nesidiorchestes* is less than 50% of the head across the eyes, whereas in *Halticus* the interocular distance is greater than half the head width and sometimes about 75% of head width. As can be expected, there is great variation in these features and other apparently diagnostic attributes within the Halticini. For example *Plagiotylus* J. Scott, 1874 does not have predominately black coloration or the ventral portion of the head strongly extending below the eyes; and the hind femur is not thickened or saltatorial.

Assignment to the Halticini is perhaps best determined by the structure of the genitalia of both sexes. In the male the basal portion of the parameres, the region of muscle attachment hidden within the genital capsule, is long and narrow with the distal portion, especially in the right paramere, small. The vesica is usually a complex structure with an extensive inverted membranous sac and generally simple, but with a diverse number of spicules attached to a distal region of the sac (Kelton, 1959; Kerzhner & Konstantinov, 1999).

In *Nesidiorchestes* the parameres are neither elongate nor does the concealed portion form most of the structure (Fig. 3). The membrane of the vesica is small and does not protrude from the phallotheca. The membrane is confined to the base of the vesica, where with long extensively ramose spicules it is attached to the sclerotized region of the ductus seminis (Fig. 3).

The phallotheca of Halticini is generally a simple cone-shaped structure with modification restricted to more densely sclerotized or slightly folded regions (Kelton, 1959; Kerzhner & Konstantinov, 1999). The long, narrow lobe projecting from the left lateral margin of the phallotheca in *N. hawaiiensis* (Fig. 3) also occurs on the phallotheca of three species of Hawaiian *Orthotylus* (Polhemus, 2004, pg. 317). It is interesting to note that these *Orthotylus* are known from understory vegetation in wet forests with no obvious predominant host. One species, *O. kassandroides* Polhemus, 2004, an Oahu endemic, occurs in the Ko'olau and Wai'anae Mountains; only the former part of the range harbors *N. hawaiiensis.*

Characters of the female genitalia which have been considered diagnostic for the Halticini are the large ovoid sclerotized rings of the dorsal labiate plate with slightly upturned lateral margins, and the apparent absence of interramal lobes of the posterior wall (Slater, 1950). *Labops* Burmeister, 1835 and *Halitcus* have a more complicated posterior wall structure, the dorsomedial margin of the interramal sclerite being strongly sclerotized and in some cases marginally serrate (Slater, 1954). In *Nesidiorchestes* the lateral margin of the dorsal labiate plate is strongly folded medially and the medial portion of the sclerotized ring appears to be incomplete (Fig. 5). The posterior wall has clearly demarcated interramal lobes with obvious serrations. Although the form of the sclerotized ring is not reminiscent of a structure found in the Orthotylini, it is clearly not large, ovoid, and weakly upturned. The structure of the interramal lobes, as examined in *Nesidiorchestes*, is typically found in members of the Orthotylini (Fig. 5).

The first valvulae (gonapophyses 8) in the Halticini are symmetrical, surrounding the vulvar area with sclerites of variable development (Pluot-Sigwalt & Matocq, 2006). In *Nesidiorchestes* the first valvulae are asymmetrically developed, convoluted, and adjoin the bulbous anterior margin of the ventral labiate plate. This condition is only known in the Orthotylini (Fig. 5) (Pluot-Sigwalt & Matocq, 2006 and references therein).

None of the genitalic features hypothesized to be diagnostic for the Halticini is found in *Nesidiorchestes*, but rather are those usually observed in the Orthotylini.

***Nesidiorchestes hawaiiensis* Kirkaldy**

Nesidiorchestes hawaiiensis Kirkaldy, 1902: 139. pl. 4, figs. 15, 15a, 16, 16a (sp. n.); Carvalho, 1958: 21 (cat.); Schuh, 1995: 62 (cat.).

Diagnosis. Species specific coloration (Figs. 1A, B) with the dark brown ventral aspect of the body, including the head ventral to the eye, labium, lateral aspect of the thorax including the evaporative surface of the scent efferent system, abdomen, and the legs except for the apex of the femur and entire tibia; and the pair of long, black, subapical bristles on the dorsal surface of the hind femur.

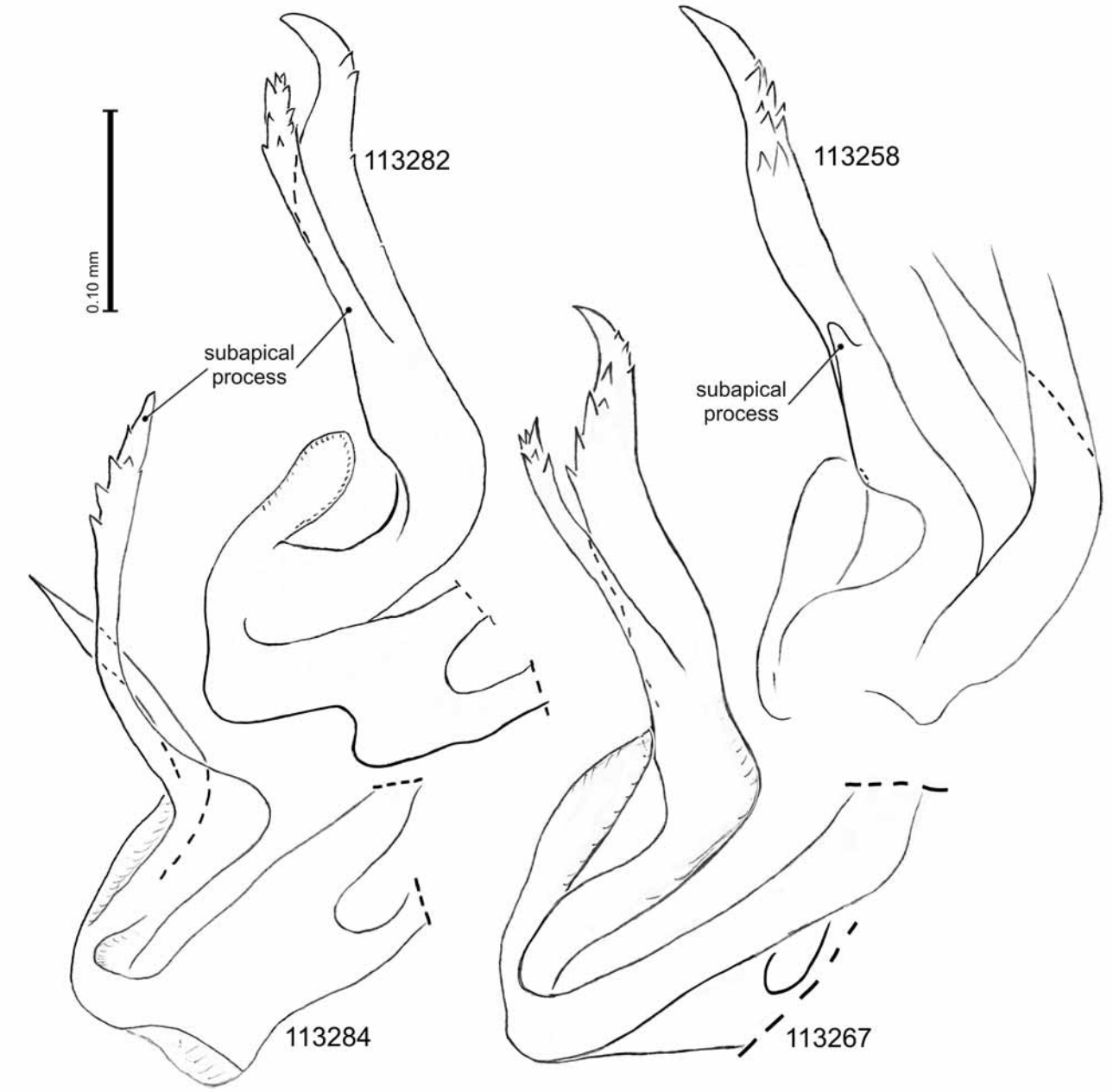

FIGURE 4. Male genitalia: Subapical process variation in the dorsalmost vesical lobe, left lateral view; numbers are USI codes preceded by "AMNH_PBI" .

Redescription. *Male*: Short, small, total length 1.75–1.88. COLORATION: Dorsal aspect patterned with pale yellowish brown and somewhat variably shaped brown to dark reddish brown areas (Figs. 1A, B). Head: Clypeus reddish brown with medial pale mark, sometimes clypeus pale; frons pale medially, bilaterally flanked by four or five parallel dark stripes, dark patch dorsal to antennal insertion; vertex with paired bilateral crescent brown shaped marks and reddish brown medial posterior margin; gena, mandibular and maxillary plates, and buccula dark reddish brown; eyes dark; labrum pale brown; labium dark brown; antenna with segments I and II pale yellow brown, II slightly and variably darkened distally; III and IV brown. Thorax:

Pronotal disc pale yellowish with obscure dark brown medial mark on midline and medial and obscure reddish brown posterior margin, posterior margin widest medially; obscure brown mark sublaterally and adjacent to callus posterolaterally; mesoscutum pale laterally with reddish brown medially and faintly sublaterally; scutellum dark brown with apex yellowish brown; dark brown on propleuron, except for pale extreme ventral margin, mesepisternum, sternum, mesepimeron, metepisternum, and evaporative surface of scent gland. *Hemelytra*: Pale yellowish brown with three variable and broken lines marking obsolete claval suture, and radius and costal veins; lines clearly interrupted subapically; entire margin of corium pale except for subapical blotch. *Legs*: Coxa, trochanter, and femur except for apices, dark brown; apex of femur, tibia, and tarsus pale yellowish brown. Abdomen: Dark brown with lateral margin paler; genital capsule dark brown, except for dorsum, proctiger, and parameres yellowish brown. Genitalia: *Genital capsule* as in figures 1A, 2B, H, 3; *left paramere* as in figures 2H, 3, basal portion strongly protruding, ventral portion sinuate, apex blunt; *right paramere* as in figures 2H, 3, with small pointed basal and apical apices; *phallotheca* as in figure 3; *vesica* as in figure 3, with dorsalmost lobe of spiculum sinuate at base, gradually attenuate distally, with subapical process of variable length (Fig. 4), terminating in pointed spiculate apex; medial and ventral lobes strongly ramified with many thin, multidivided dendritic projections, apices with microspicules (Fig. 3); medial lobe longest of three, terminating in relatively wider spiculate apex, ventral lobe terminating in needlelike apex; conjunctiva attached to base of vesical spiculum by large, recurved, paddle-shaped, thickly membranous process; sclerotized part of ductus seminis relatively long.

Female: Very similar to male in structure, vestiture, and coloration, pale base of ovipositor; total length 2.15–2.45. STRUCTURE. Genitalia (Fig. 5): *posterior wall* with interramal sclerite broadly overlapping medially; interramal lobe broad basally, incised medially, narrowed to point distally; apices converging medially; dorsal region of posterior wall with paired, anteriorly convex, microserrate membranous lobes, anterior surface medial portion of lobes wide, narrowed toward lateral margins of wall; posteromedial surface of wall with small, sclerotized, shield shaped medial process adjoining base of ovipositor; *dorsal labiate* plate as in figure 5; *sclerotized rings* as in figure 5; *anterior wall of vestibulum* as in figure 5.

Measurements. *Male* (n=10 unless noted otherwise; mean followed in parentheses by range): Length (n=7), 1.82 (1.75–1.88); clypeus to cuneus 1.58 (1.53–1.68); width, 0.98 (0.95–1.00). Head length, 0.30 (0.29–0.31); width through eyes, 0.65 (0.63–0.67); vertex width, 0.37 (0.36–0.39). Length of antennal segment I, 0.32 (0.30–0.34); II, 1.11 (1.03–1.18); III, 0.72 (0.69–0.79); IV (n=3), 0.50 (0.49–0.51). Labium length (n=8), 0.81 (0.78–0.84). Pronotal length, 0.29 (0.28–0.31); width, 0.71 (0.69–0.73). Scutellum length, 0.21 (0.20–0.23); width 0.28 (0.26–0.31). Hind tibia length, 1.50 (1.43–1.60). Cuneus absent.

Female (n=11; unless noted otherwise; mean followed in parentheses by range): Length (n=10), 2.30 (2.15–2.45); clypeus to cuneus 1.85 (1.65–1.93); width, 1.15 (1.08–1.20). Head length, 0.31 (0.30–0.32); width through eyes, 0.68 (0.65–0.71); vertex width, 0.40 (0.39–0.42). Length of antennal segment I, 0.33 (0.31–0.35); II, 1.11 (1.00–1.23); III (n=9), 0.80 (0.74–0.85); IV (n=7), 0.52 (0.50–0.55). Labium length, 0.89 (0.82–0.94). Pronotal length, 0.32 (0.28–0.33); width, 0.77 (0.70–0.83). Scutellum length, 0.24 (0.23–0.25); width 0.31 (0.28–0.33). Hind tibia length (n=10), 1.67 (1.50–1.85). Cuneus absent.

Distribution. Known from several localities on the flanks of the Ko'olau Mountain range of southeastern Oahu.

Host. Only brief notes of habitat were reported in the specimen label data; most individuals were sifted from dead leaves. Zimmerman (1948, pg. 200) provided these personal observations: "I have collected this remarkable species by sifting dead leaves and ground litter in the mountains behind Honolulu. It is an agile and active jumper. I have seen it make leaps of about 1.5 inches high and 3 inches long in rapid succession".

Lectotype (Here designated): **USA: Hawaii:** *Honolulu Co.*, "15; 816" [Oahu, Ko'olau Mountains, head of Pauoa Valley, nr. Mt. Tantalus, 21.34516^{0}N 157.80333^{0}W, 610 m, Dec. 1900, Perkins]; "*Nesidorchestes hawaiiensis* Kirk.Type (no 4)"; "Sandwich Is. 1913-323"; "figured specimen" 1? [specimen #4 of 5 hand numbered specimens, mounted on same card] (AMNH_PBI 00085496) (BMNH).

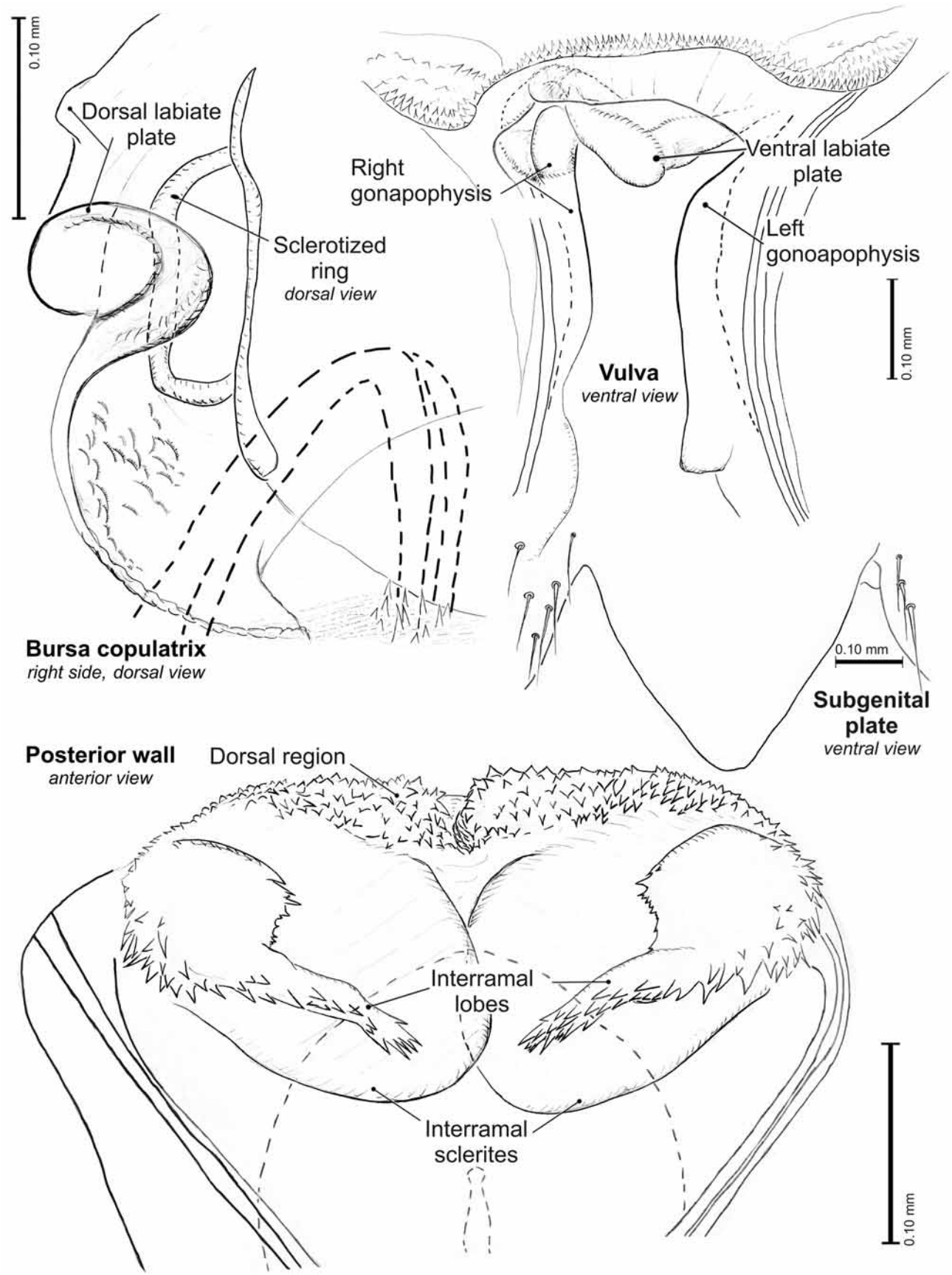

FIGURE 5. Female genitalia (AMNH_PBI 00113263).

Paralectotypes. Same label data as lectotype [specimen #1, 1♂; #'s 3&5, 2♀; #2 damaged, legs only] (AMNH_PBI 00085496) (BMNH).

Specimens examine. USA: Hawaii: *Honolulu Co.:* Oahu: M[oun]t. Tantalus, Honolulu, 21.33083^{0}N 157.81583^{0}W, 474 m, Apr 1954, Bianchi, 1♂, 2♀ (AMNH_PBI 00191259) (USNM). Manoa, Palolo Ridge, 21.32502^{0}N 157.78334^{0}W, 320 m, 27 Mar 1937, E. C. Zimmerman, 1♂ (AMNH_PBI 00113284), 1♀ (AMNH_PBI 00113264) (BPBM). Mount Tantalus, 21.33582^{0}N 157.81815^{0}W, 409 m, 23 Jan 1937, E. C. Zimmerman, 1♂ (AMNH_PBI 00113258), 1♀ (AMNH_PBI 00113265), 2♀ (AMNH_PBI 00113274, AMNH_PBI 00113275) (BPBM); 27 Feb 1937, E. C. Zimmerman, 2♂ (AMNH_PBI 00113259, AMNH_PBI 00113273) (BPBM); 10 Feb 1937, E. C. Zimmerman, 3♂ (AMNH_PBI 00113266-AMNH_PBI 00113268), 2♀ (AMNH_PBI 00113269, AMNH_PBI 00113270), 1 nymph (AMNH_PBI 00113271) (BPBM); 28 Feb 1937, E. C. Zimmerman, 1♂ (AMNH_PBI 00113272) (BPBM). Mount Tantalus, 21.32722^{0}N 157.81467^{0}W, 425 m, 02 May 1976, F. G. Howarth, 3♀ (A MNH_PBI 00113263, AMNH_PBI 00113277-AMNH_PBI 00113278) (BPBM). Mount Tantalus, 21.3284^{0}N 157.8247^{0}W, 396 m, 09 Apr 1905, W. M. Giffard, 2♀ (AMNH_PBI 00113279, AMNH_PBI 00113280) (BPBM). Mount Tantalus, 21.3328^{0}N 157.8151^{0}W, 610 m, 19 Mar 1940, D. Anderson, 1♂ (AMNH_PBI 00113281) (BPBM); 01 Aug 1968, W. C. Gagne, 1♂ (AMNH_PBI 00113282) (BPBM). Tantalus, 21.336^{0}N 157.8129^{0}W, 611 m, 03 Dec 1938, Y. Kondo, 1♀ (AMNH_PBI 00113276) (BPBM).

The locality given in the original description is "Oahu, N.W. Koolau, 2000 ft. (December: Perkins). Five examples." The five syntypes at the BMNH are mounted on a single card, have the collection lot number "15 816," and additional information in the form of a handwritten determination label and two labels added at the time of accession to the BMNH (see above). An online reference at the Bishop Museum (BPBM, 2007) provides the insect field collection numbers of R. C. L. Perkins; number 816 is listed and reported as "Oahu, head of Pauoa, Dec, 1900." D. A. Polhemus (pers. comm.) suggests that this locality would correspond to the modern label given in the specimens examined above and "lies immediately behind modern Honolulu, and not far from the Pali Highway (which is just one valley over to the northwest)." All specimens examined were collected on the leeward side of the southeastern half of the Ko'olau Mountains. A similar distribution is known for *Nesiomiris* (Gagné, 1997; four species), *Orthotylus* (Polhemus, 2004; three species), and *Sarona* (Asquith, 2004; one species).

It is well known that at least within the Hawaiian Orthotylini, the members of a given genus are predominately single island endemics and host specific, those species inhabiting the same island usually breeding on different species of plants (Asquith 1994, 1995; Gagné, 1997). Unfortunately, we are not aware of the host association of *N. hawaiiensis*. Typically, species of the same genus distributed on the same island are differentiated by external features of overall size, appendage length, coloration, and genitalia.

It is our opinion that all the specimens examined above conform to the description and illustrations of Kirkaldy and are conspecific with the syntypes housed in the BMNH. The measurements fall within a small range and the coloration pattern shows little variation. The structure of the male genitalia is strikingly similar in all the specimens examined, except for minor variation confined to the apices of the vesical spicules, especially the dorsalmost lobe (Fig. 4).

Because the syntypes in the collections of the BMNH match all the features of the original description, we hereby designate the specimen adjacent to the handwritten number 4 as the lectotype of *N. hawaiiensis* to stabilize Kirkaldy's concept of the species.

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