

REDESCRIPTIONS OF *ANAPHOTHRIPS ORCHIDACEUS* AND *A. ORCHIDEARUM* (THYSANOPTERA: THRIPIDAE)¹

K. SAKIMURA

Pineapple Research Institute of Hawaii, Honolulu, Hawaii

Although both *Anaphothrips orchidaceus* Bagnall and *A. orchidearum* Bondar have long been known to be economically significant thrips on orchids, no functional description for separating them has been recorded, and the validity of the latter species has never been scrutinized.

An earlier attempt to study them (Sakimura 1955) brought no results because the type specimens of *A. orchidearum* were not where they were presumably deposited. Upon my recent visit, L. J. Stannard at Urbana, Illinois, showed me the type slide which was on loan from the American Museum of Natural History. Soon thereafter, syntypes of both species as well as a long series of non-type material became available on loan from the U. S. National Museum through arrangement by Kellie O'Neill. S. F. Bailey also provided a loan of some other slides. Acknowledgments are due to all of them for their gracious cooperation.

As will be shown in the text, the two taxa are readily separable on the subspecies level by wing color, antennal structure, and other minor differences. They are herewith designated as *Anaphothrips orchidaceus* subsp. *orchidaceus* (Bagnall) and *Anaphothrips orchidaceus* subsp. *orchidearum* (Bondar).

Anaphothrips

orchidaceus subsp. *orchidaceus* (Bagnall), comb. n.
(Fig. 1, 2, 5, 6, 7, 9)

Anaphothrips orchidaceus Bagnall (1909: 33); Watson (1927: 41).

Euthrips orchidaceus: Karny (1912: 333); Williams (1913: 220).

Anaphothrips (Neophysopus) orchidaceus: Priesner (1925: 145);

Priesner (1926: 200); Sakimura (1955: 598).

Neophysopus orchidaceus: Morison (1957: 493, Fig.).

FEMALE: Color: Yellow body with yellow legs; gray longitudinal blotching, 2 rows on head below both eyes, a single broad row continuously from pronotum to tergum VII or VIII, its width and shade somewhat variable but on females constantly reaching to tergum VII or VIII, on tergum I always lighter in shade or sometimes absent. Antenna dark gray brown; III distal and basal 1/4 pale, both pale areas variable in extent; IV basal 1/4 or thereabout pale, usually but not always distal extreme pale also, basal ring area grey; V basal 1/4 to 1/3 pale, basal ring area gray. Forewing (Fig. 6 and 7) grayish brown, distal 2/5 lighter and quite pale at tip; basal 1/4 area hyaline but broad shaded area as wide as 1/3 wing width along the lower margin of wing on all the English specimens examined, whereas only a small shaded spot at the extreme lower corner of base and a narrow shaded band connecting

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the spot and the distal shaded area along the lower margin of wing on all the Central American and Florida specimens examined; scale basal 1/2 or thereabout always hyaline. Ocellar crescent red. Body setae yellow except grayish brown on abdominal terminal and shaded area of forewing; lighter brown on antennae and distal half of abdomen and gray-blotched areas of body.

INTEGUMENT: Head (Fig. 1), about 8 to 9 deep striae across occiput, conspicuous on shaded area, freely anastomosing, cheek notches shallow; front nearly smooth. Antenna, deep striae on I-II, shallow ring striae on the rest with nearly smooth profile, microtrichia fairly long and dark. Pronotum (Fig. 1), about 20 to 24 deep but sparse striae over shaded area, freely anastomosing, nearly scalloping over lower half area, 1 or 2 darker premarginal wrinkles present. Mesonotum (Fig. 5), freely anastomosing deep striae on upper area, slightly anastomosing striae over converging area. Metanotum (Fig. 5), sparse and deep sculptures, few anastomosing linear type on top transverse area, irregular near-reticulum type over mesal area, denser anastomosing linear type longitudinally over lateral areas. Metepimeron sculpture inconspicuous. Abdomen, sculpture weak except a single transverse submarginal line on each tergum; shaded area on terga nearly smooth, striae and posterior margin of epipleura as well as of lateral portions of terga with tiny and sparse microtrichia, pleura nearly smooth, sterna with sparse transverse striae.

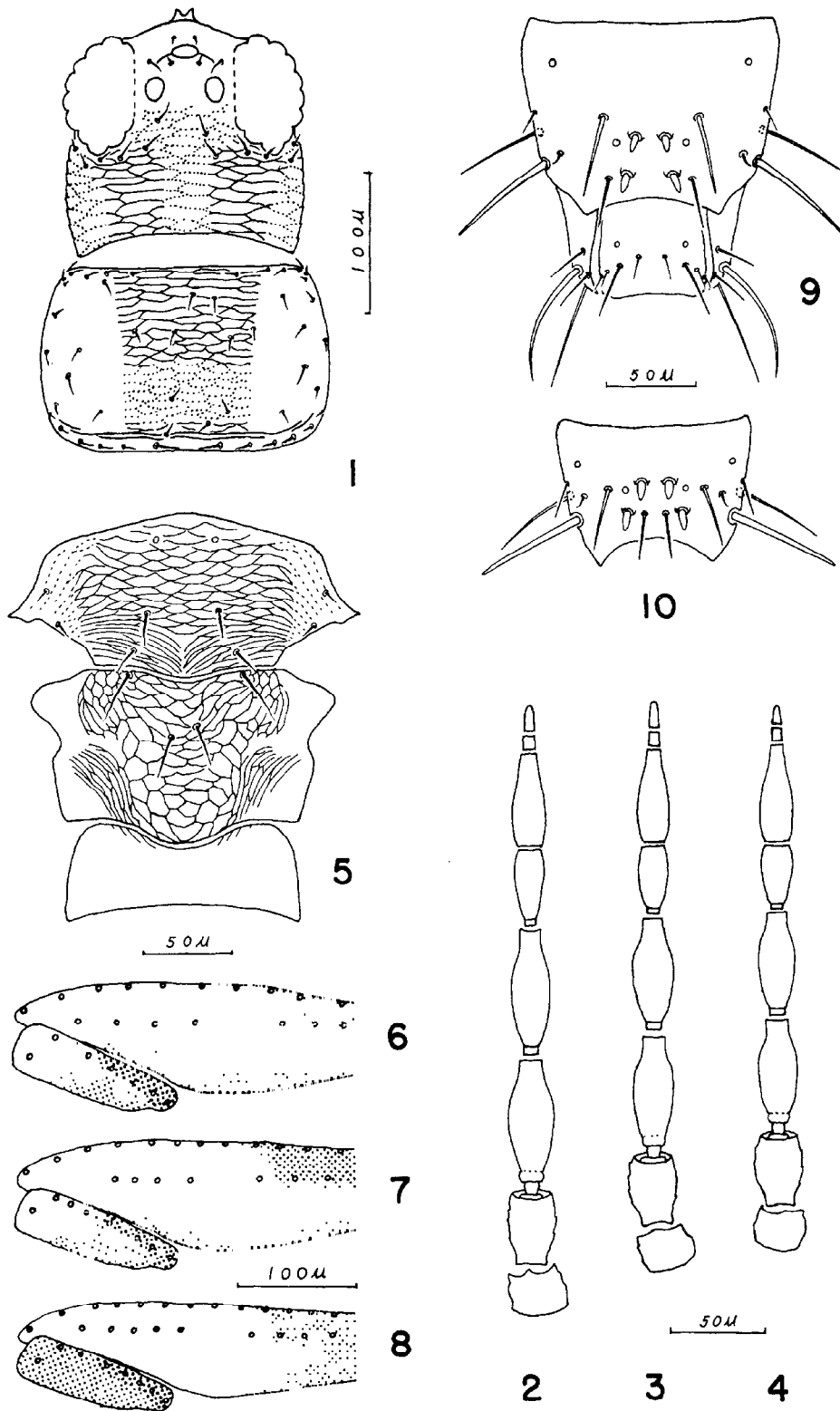
Measurements primarily on the paralectotype specimen; minimum/maximum and mean of 18 specimens given in parentheses; all measurements in μ .

Body length: 1550 in natural dimension (1450/1800, 1670).

HEAD: (Fig. 1). 155 long (143/165, 154), 170 wide at eye, 155 below eye, 170 on cheek, 158 at base (head of paralectotype was excessively pressed, but widths were measured on other unpressed specimen from England (USNM 45-12762) with the same head length as paralectotype); front roundly produced slightly, weakly concave below fore ocellus; well constricted below eye, cheek weakly arched, broadest at middle, base slightly narrowed. Eye not bulged, large, dorsally 83 long, laterally 68 long, 50 wide, 72 interval; cheek 88 long laterally, occiput below eye 60 long. Ocellar triangle 55 wide, 43 tall, posterior ocelli well apart from eyes, ocelli 18 to 20 across. All setae minute, longest 13 only, ante- and latero-ocellar present, interocellar near anterior ocellus, 25 apart; 6 post-ocular series, inner most below posterior ocellus. Mouthcone long and broad, 270 long from front (240/295, 270), maxillary palpi 18, 10, 20 long.

ANTENNA: (Fig. 2). Proportionally slenderer than *orchidearum*, 360 long (325/390, 353), 2.3 times as long as head (2.2/2.4, 2.3); length (width) of segments: 30(30, 25, tip), 40(28), 78(22), 73(22), 47(18), 55(19), 12(8), 13(6) dimensions of each segment highly variable (III length: 68/88, 78; width: 20/25, 23; IV length: 65/79, 72; width: 20/25, 22); V is a characteristic of this subspecies, decidedly slenderer than *orchidearum*, 2.6 times as long as wide, (2.5/2.8, 2.6), 0.85 times as long as VI (0.78/0.90, 0.83); shape as illustrated, long pedicel of III, well defined basal rings on IV and V, bottle-neck shaped III and IV, both V tip and VI base narrowed to subequal width; sense cone long, 35 on III.

PROTHRAX: (Fig. 1). 125 long (125/150, 131) 175 wide along anterior margin, 200 at the middle, 190 along posterior margin; all setae short and weak, 6 pairs each on fore margin and also on hind margin, median on hind margin longest (17 μ), disk and other marginal setae variable in number.



PTEROTHORAX: (Fig. 5). Dorsally 210 long, laterally 290 long (290/340, 310), 285 wide; mesonotum 90 long, metanotum I 83 long, II 35 long; setae rather short and subequal (20 to 25 long) except tiny lateral of mesonotum, median on mesonotum 30 away from posterior margin, median of metanotum 20 away from foremargin and narrow between them; mesospinula 95 long, mesofurca poorly developed showing readily only foremargin (50 wide), metafurca about 60 wide; disk setae on sterna sparse, weak, short.

LEG: Seta row on hind tibia with 4 or rarely 5 short setae, 3 long terminal setae on tibia, longest 25 to 35 long.

WING: long, tip tapered to a sharp point, 980 long (850/1050, 920), 50 wide at middle, 85 wide at base; setae on wing very short near base but become longer toward tip, last seta on costa 30 to 45 long; on costa about 30 setae, on forevein 4 + 6 to 8 basal setae and 5 but rarely 4 scattered distal setae, on hind vein usually 12 to 14 setae; scale with 6 nerval setae and a tiny disk seta, distal seta on nerval about 30 long and proximal seta often very short.

ABDOMEN: 1000 long (950/1300, 1090), 320 wide on IV; on tergum I tiny median setae and pores aligned on a transverse line; on tergum IV median setae and 2 lateral setae and pores aligned on a transverse line, postangular seta shorter than latero-marginal seta, post-marginal setae on epipleurum IV and sternum IV rather short and weak, no accessory seta on sternum; terminal segments VIII 75 long, IX 95 long, X 85 long and no slit on dorsum; terminal setae rather thin, on IX, B1 83 to 100 long, always shortest in group, B2 120-125 long, B3 95-105 long; dorsal setae thin, straight, light brown in contrast to gray brown of marginal group, 63 to 68 long; on X, B1 and B2 about 100 to 110 long; combs on VIII complete, long (about 25), thin, about 17 pairs; ovipositor 290 long (245/300, 270).

MALE: Color: Body and legs as female; gray longitudinal blotching highly variable in extent, starting from head or pronotum or meso-metanota or rarely none at all and extending only to meso-metanota or to tergum II, III, IV, or V, but always clear on I. Antenna I-II as head, sometime darker yellow in II, the rest dark grayish brown, III lighter, pale areas on III-V essentially same as female and somewhat variable. Forewing completely as female, same difference in basal hyaline area between the English and Central American specimens, basal hyaline area of scale somewhat variable in extent but never less than a third. Ocellar crescent and body setae as female,

Explanation of Figures:

Fig. 1. *A. orchidaceus* ♀. Head and prothorax (USNM 45-12762, ex England).

Fig. 2. *A. orchidaceus* ♀. Right antenna (USNM 39-7286, ex Mexico).

Fig. 3. *A. orchidearum* ♀. Right antenna (Hood 1682, ex Santos, Brazil).

Fig. 4. *A. orchidearum* ♀. Left antenna (Lectotype, ex Bahia, Brazil).

Fig. 5. *A. orchidaceus* ♀. Meso- and meta-nota (USNM 39-10377, ex Mexico).

Fig. 6. *A. orchidaceus* ♀. Right wing (USNM 45-12762, ex England).

Fig. 7. *A. orchidaceus* ♀. Right wing (USNM 39-10377, ex Mexico).

Fig. 8. *A. orchidearum* ♀. Right wing (Hood 1682, ex Santos, Brazil).

Fig. 9. *A. orchidaceus* ♂. Abdominal segments IX and X (USNM 39-10377, ex Mexico).

Fig. 10. *A. orchidearum* ♂. Abdominal segment IX (Hood 1682, ex Santos, Brazil).

On Fig. 2, 3, and 4, sense cones, striae, microtrichia, and setae are not shown. On Fig. 6, 7, and 8, setae are omitted but their sockets are shown.

setae on abdominal terminal brown, sometimes B2 and curved clasper of IX grayish brown, thorns and dorsal setae of IX always yellow.

INTEGUMENT: Sculpture as female, less conspicuous.

Measurements primarily on a Mexican specimen (USNM 45-13137); minimum/maximum and mean of 8 specimens are in parentheses.

Body length: 1300 in natural dimension (1250/1360, 1300).

HEAD: Not pressed, 125 long (120/130, 125), 138 wide at eye, 125 below eye, 133 on cheek, 120 at base. Eye dorsally 63 long, laterally 55 long, 38 wide, 63 interval; cheek laterally 70 long, occiput 55 long below eye. Ocellar triangle 48 wide and 35 tall. All setae minute, chaetotaxy as female. Mouth cone 220 long (210/230, 220).

ANTENNA: Proportionally slenderer than *orchidearum*, 280 long (275/310, 284), 2.25 times as long as head (2.2/2.4, 2.3); length (width) of segments: 28(28, 23, tip), 40(25), 58(20), 53(20), 38(16), 48(17), 10(8), 10(6); dimensions of each segment highly variable between specimens (III length: 57/68, 61; width: 18/21, 20; IV length: 48/60, 54; width: 20/21, 20); V is a characteristic of this subspecies, decidedly slenderer than *orchidearum*, 2.4 times as long as wide (2.3/2.5, 2.4), 0.80 times as long as VI (0.75/0.83, 0.80); sense cone 35 long on III.

PROTHORAX: 95 long (93/105, 98), 150 wide at middle; chaetotaxy as female, all setae tiny.

PTEROTHORAX: 215 long laterally (213/238, 225), 160 long dorsally, 210 wide; mesonotum 70 long, metanotum I 65 long, II 25 long; chaetotaxy as female, all setae thin and short; mesospinula 75 long, furca poorly developed, metafurca 45 wide.

WING: about 640 long (620/700, 680), 40 wide at middle, 63 wide at base; setae rather short, last seta on costa 33 to 45 long; on costa 25 to 30 setae, on forevein 10 to 12 basal setae, usually 4 to 5 but rarely 3 to 6 distal setae, on hind vein usually 9 to 10 but rarely 8 to 13 setae, on scale 6 nerval setae, 1 tiny disk seta.

ABDOMEN: 830 long (750/870, 820), 200 wide on IV; chaetotaxy on IV as female, dorsal and post-angle setae of tergum very short; gland areas on sterna III-VII in weakly dumbbell shape, about 65/95 wide, 12/20 long, larger than *orchidearum*; terminal (Fig. 9) segment VIII 70 long, IX 75 long, X 65 long; combs on VIII complete, long (17), thin, about 17 pairs; chaetotaxy as illustrated, on IX, 2 pairs of short thick thorns (about 13 long), always yellow, second pair always farther apart than first pair, B2 at posterior angle thick, 65 long, blunt at tip, sometimes thinner and longer, dorsal setae always above a line of first pair of thorns, yellow, 35 long, highly variable to 65 sometimes, curved clasper on IX sternum 75 long, thinner than B2 of tergum; phallus 95 long (95/105, 100), 55 wide.

SPECIMENS EXAMINED: 2 ♀♀ on a slide ("cotype", designated herewith as paralectotype), on *Zygopetalum* sp., Kew Garden, England, Dec. 1907, coll. ? G. Nicholson, R.S.B. 1 ♂ (36-18622), 2 ♀♀ 1 ♂ (45-12762), 1 ♂ (46-17415), all on orchids from England, intercepted at Hoboken, 1936-1946. 1 ♀, on *Odontoglossum* sp., Gloucester-Tetbury, England, Aug. 1927, coll. H. L. Kingston, R.S.B., in Coll. S. F. Bailey.

1 ♀ (36-21401), 1 ♀ (36-35395), 1 ♀ (36-36096), 1 ♀ (37-14195), 1 ♀ 1 ♂ (37-14202), 1 ♀ (37-14945), 1 ♀ (38-17326), 2 ♀♀ 2 ♂♂ (39-10377), 1 ♂ (45-13137), all on orchids from Mexico, intercepted at Brownsville, San Francisco, and Laredo, 1936-1945. 1 ♀ (39-7286) on orchid from Mexico, May 1939, in

Coll. Ill. Nat. Hist. Survey.

1 ♀ (41-673), 1 ♀ (51-2587), all on orchids from Guatemala, intercepted at Hoboken and Brownsville, 1941, 1951.

1 ♀ 1 ♂ (39-16052, -16054), 2 ♀ ♀ (39-1747), all on orchids from Colombia, intercepted at Brownsville, 1939.

1 ♀ "Separated (by) Berlese funnel from *Epidendrum* on oak tree, Gainesville, Fla., near 'pond a', Hogtown Creek, Dec. 1, 1926, coll. A. N. Tissot (see Watson 1927)", in Coll. S. F. Bailey.

All except 3 from Bailey's coll. and INHS Coll. are on loan from USNM, and accession numbers given are of USNM.

One female and one male, presently in the British Museum collection, of *Anaphothrips orchidaceus*, ex *Odontoglossum crispum*, Wylam-on-Tyne, Northumberland, England, VIII 1907, R.S.B. are herewith designated as lectotype and paralectotype, respectively. These are part of the syntypes collected at the first of three localities mentioned (Bagnall 1909). The type locality therefore should be Wylam-on-Tyne, Northumberland.

Anaphothrips

orchidaceus subsp. *orchidearum* (Bondar), comb. n.

(Fig. 3, 4, 8, and 10)

Anaphothrips orchidearum Bondar (1931: 435, Fig.); Mendes (1935: 234); Sakimura (1955: 598).

FEMALE: Color: Yellow body with yellow legs, gray longitudinal blotching on body as *orchidaceus*, no blotching on tergum I but broad on tergum II. Antenna deep gray brown with pale areas essentially same as *orchidaceus* but variable in extent. *Orchidearum* differs from *Orchidaceus* in the absence of pale distal area on IV. Forewing (Fig. 8) gray brown with lighter distal 2/5 area and a completely hyaline area at the basal 1/4, scale gray brown completely from tip to base, wing color is outrightly different from *orchidaceus*. Ocellar crescent and body setae as *orchidaceus*.

INTEGUMENT: Identical with *orchidaceus*.

Measurements primarily on the lectotype; the paralectotype and the Santos specimen, respectively, in parentheses.

Body length: 1250 (1250, 1350).

HEAD: 135 (135, 140) long, head of the type pressed, on the unpressed Santos specimen 150 wide on eye, 143 below eye, 150 on cheek, 138 at base; general shape as *orchidaceus*. Eye on Santos specimen 85 long dorsally, 70 long laterally, 45 wide, 60 interval; cheek 70 long, occiput 58 long below eye. Ocellar triangle on Santos specimen 55 wide, 40 tall, ocelli 18 across; all setae minute, chaetotaxy as *orchidaceus*. Mouthcone 230 (230, ?) long from front.

ANTENNA: Proportionally stouter than *orchidaceus*, 300 (290, 320) long, 2.2 (2.1, 2.2) times as long as head; length (width) of segments on the type (Fig. 4): 22 (30, 22, tip), 35 (28), 65 (22), 58 (21), 36 (17), 50 (18), 9 (7), 10 (6); on Santos specimen (Fig. 3): 25 (28, 25 tip), 38 (28), 68 (23), 63 (22), 37 (17), 50 (18) 8 (8), 13 (6); V is a characteristic of the subspecies, decidedly shorter and stouter than *orchidaceus*, 2.1 (2.1, 2.2) times as long as wide, 0.72 (0.70, 0.74) times as long as VI; shape as illustrated, IV not strongly bottle-neck.

PROTHORAX: 120 (125, 120) long, prothorax of the type pressed, on the unpressed Santos specimen 170 wide, all setae tiny, chaetotaxy as *orchidaceus*.

PTEROTHORAX: Dorsally 165(165, 175) long, laterally 220(220, 240) long, 240 wide on Santos specimen; mesonotum 70 long, metanotum I 68 long, II 25 long; all setae short and thin, chaetotaxy as *orchidaceus*; mesospinula 88 long.

LEGS: Seta row on hind tibia with 3 short weak setae, longest on terminal 25 long.

WING: 680(690, 780) long, 48 wide at middle, 75 wide at base, proportionally shorter than *orchidaceus*; last seta on costa 25 to 33 long, on costa about 25 to 33 setae, on forevein 10 to 12 basal and 5 or 6 scattered distal setae, on hind vein 11 to 14 setae, on scale 6 nerval setae, chaetotaxy as *orchidaceus*.

ABDOMEN: 710(720, 850) long in natural dimension, about 220 wide on IV; chaetotaxy on I and IV as *orchidaceus*, terminal segments, VIII 75 long, IX 75 long, X 65 long; terminal setae variable in length, on IX range 65 to 90, on X range 65 to 75, dorsal on IX thin straight, in light brown (all the other setae gray brown), 40 to 48 long; combs on VIII complete, long (17 to 24), thin, about 17 pairs; ovipositor 225(220, 230) long.

MALE: The following is the first description of the male.

Color: As female, grey longitudinal blotching weak, only on metanotum I and II; antenna as male of *orchidaceus*, pale areas on III-V essentially same as female of *orchidaceus*, III basal 1/4 pale and distal extreme weakly pale, IV and V basal extremes pale above gray rings, IV distal extreme not pale at all; wing completely as female and differs from male of *orchidaceus*; body spines essentially as female, thorns and B2 and curved clasper on abdominal IX all dark gray brown and dorsal setae brown, different from *orchidaceus*.

INTEGUMENT: As female, less conspicuous.

Measurements primarily on the Santos specimen, those on the New Orleans specimen, which is partly macerated, follow in parentheses.

Body length: 1220 (ca. 1100) in natural dimension.

HEAD: Not pressed at all, 125 long (ca. 120), 133 wide at eye, 120 below eye, 125 on cheek, 120 at base; general shape as *orchidaceus*. Eye dorsally 70 long, laterally 58 long, 42 wide, 50 interval; cheek laterally 68 long, occiput 50 long below eye. Ocellar triangle 40 wide, 35 tall. All setae minute, chaetotaxy as female.

ANTENNA: 275(255) long, 2.1(2.1) times as long as head; length (width) of segments on Santos specimen: 25(25, 22, tip), 35(23), 57(21), 50(20), 35(17), 48(17), 10(7), 10(5); on New Orleans specimen: 25(25, 22, tip), 32(25), 53(22), 46(20), 32(16), 44(17), 6(6), 10(5), V is a characteristic of the subspecies, decidedly stouter than *orchidaceus*, 2.0(2.0) times as long as wide, 0.73(0.71) times as long as VI; sense cone 33 long on III.

PROTHORAX: 100(100) long, 155 wide at middle; all setae tiny, chaetotaxy as female.

PTEROTHORAX: 230 (ca. 225) long laterally, 156(155) long dorsally, 200 wide; mesonotum 60(63) long, metanotum I 68(68) long, II 25(25) long, all setae short; mesospinula 75 long.

WING: 630(580) long, 38 wide at middle, 63 wide at base; all setae short, last one on costa 30 long; 29 to 30 setae on costa, 11 to 12 basal and 4 to 6 distal setae on forevein, 10 to 11 setae on hind vein, 6 setae on scale.

ABDOMEN: 730 (650) long, 180 wide on IV; chaetotaxy on IV as female; gland areas on sterna small narrow rod shaped with a weak constriction at middle, smaller than *orchidaceus*, 30 to 38 wide (15 to 20 wide), 5 to 7 long (2 to 3 long); terminal (Fig. 10) segment VIII 55 long, IX 58 long, X 55 long;

combs on VIII tergum complete, about 17 (14) pairs, 16 long, thin; on IX, 2 pairs of short thick thorn (about 17 long), always dark brownish gray, different from *orchidaceus*, second pair wider apart than first pair on one specimen but similarly apart on the other, variable, dorsal setae always brown, thin, 33 long, always on a line across first pair, accessory marginal setae come between second pair; B2 at posterior angle extra thick, bluntly tipped thorn, 50 to 63 long, dark brownish gray, curved clasper 60-70 long, thinner and lighter in color than B2; chaetotaxy on tergum IX different from *orchidaceus*; phallus 85 long, 50 wide.

SPECIMENS EXAMINED: 2 ♀ ♀ on a slide, "typo, orchidar (No.) 1805, Bondar", (both in ventral mount, the left one is designated herewith as lectotype; the right, paralectotype) no date and no locality on the label, should be 1931 and Bahia, Brazil (Bondar 1931), the label by the author's hand writing, currently in Amer. Nat. Hist. Mus. Coll. and on loan to Ill. Nat. Hist. Survey. 1 ♀ "cotypo, orchidar (No.) 1805, Bondar" (designated as paralectotype). 1 ♀ 1 ♂, Brazil, Santos, on leaves of Orchidaceae, coll. E. R. de Figueiredo, Jr., 10 June 1948 (Hood No. 1682). 1 ♂ (USNM 39-20554), on *Cattleya* sp., Brazil, intercepted at New Orleans, Dec. 1939. All except the lectotype are on loan from USNM Coll.

DISCUSSION

In general appearance, *orchidaceus* is larger than *orchidearum*, particularly the female.

COLOR: The scale and the basal portion of forewing show readily recognizable differences between the two taxa on either female or male (Fig. 6, 7, 8). On *orchidearum*, the scale is totally shaded, and the basal portion of forewing is totally clear. On *orchidaceus*, the scale is basally clear, and the basal portion of forewing is partly shaded. The shaded area, however, is strongly limited to a narrow band on all the specimens from Mexico, Guatemala, Colombia, and Florida, whereas it is not limited at all on those from England. One female from Guatemala (USNM 51-2587) was found, however, with the English type wing shading. Between these 2 groups of *orchidaceus* with the difference in wing shading, however, no other difference in either color or structure is present. The Central American and Florida type of wing shading appears to be intermediary between the English type and *orchidearum* which seems limitedly distributed in Brazil or thereabout (Mendes 1935 recorded 2 other collections in Brazil). It seems that here is an indication of possible allopatric distribution, although the extent of natural distribution or origin of the English type *orchidaceus* is unknown (a collection on an orchid shipped from California is also known to me).

Another minor color difference on both female and male is the distal extreme of antenna IV which is clear on *orchidaceus* and shaded on *orchidearum*.

STRUCTURE: The two taxa are minutely identical in many features. One exception is that of antennal shape, which is slender on *orchidaceus* and stouter on *orchidearum* (Fig. 2, 3, 4). This difference is particularly accentuated on segment V and constantly persists on every specimen in spite of broad variabilities on other segments. The two taxa may be separable by antennal segment V as follows: *Orchidaceus*: 2.5 to 2.8 times on females and 2.3 to 2.5 times on males, as long as wide; 0.78 to 0.90 times on females and 0.75 to 0.83 times on males, as long as segment VI. *Orchidearum*: 2.1 to

2.2 times on females and 2.0 times on males, as long as wide; 0.70 to 0.74 times on females and 0.71 to 0.73 times on males, as long as segment VI.

Other structural differences present on the male abdominal IX are color of 2 pairs of thorns, stoutness of B2 at the posterior angle, and locations of accessory marginal and dorsal setae (Fig. 9, 10). One male *orchidaceus* from Colombia (USNM 39-16054) was found, however, with the *orchidearum* type chaetotaxy, showing possible evidence of intergradation of the two taxa.

Probable allopatric distribution, the presence of an intermediary form, some evidence of intergradation, and limited morphological differences with substantial variabilities suggest that *orchidaceus* and *orchidearum* should be considered as subspecies of a single species, although experimental proof of reproductive isolation is lacking.

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