

STUDIES IN NEOTROPICAL ACROKERIDAE, PART II. THE NEW GENUS

ARCHIPIALEA AND ITS FOUR NEW CHILEAN SPECIES (DIPTERA)

EVERT I. SCHLINGER¹

Division of Entomology
University of California
Berkeley, California

ABSTRACT

A new autochthonous Chilean genus *Archipialea* and its four includes new species. *A. chilensis*, *A. irwini*, *A. penai* and *A. setipennis* are described. The relationship of *Archipialea* to the tropical American *Pialea* Erichson and the South African *Stenopialea* Speiser is noted.

INTRODUCTION

Specimens of this rare new genus *Archipialea* were first collected and sent to me several years ago by my friend Luis Peña. Mr. Michael E. Irwin, who was with me in Chile in 1966-67 carrying out a survey of Chilean arthropods for the Convenio program of the University of California-Universidad de Chile, and Dr. Lionel Stange, now at Instituto Miguel Lillo, Tucumán, Argentina, collected another new species in a Malaise trap in Chile. These specimens, together with a few others subsequently loaned to me from the Peña collection constitute all that is known about this new genus.

This is the sixteenth in a series of papers offered towards a monograph of the family Acroceridae of the world, and it is the second part of those papers dealing with Neotropical species as outlined by Schlinger (1968a). References citing other papers in this series are those of Schlinger (1960 and 1968b).

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Roberto González, Dr. Luciano Campos and others at the Estación Experimental Agronomía at La Rinconada, Chile, for their assistance, and to Señor Luis E. Peña, Mr. Michael E. Irwin and Dr. Lionel Stange for collecting with me in Chile and loaning these important specimens for this study. The abbreviations used here for the deposition of specimens were given in detail in Schlinger (1968a).

Archipialea Schlinger, new genus.

Type Species: Archipialea chilensis Schlinger, new species, by present designation.

Description: Medium to large flies (6 to 13 mm. long), black and/or brown with yellow to orange markings.

Head with pilose and holoptic eyes in both sexes; antennae of similar shape in both sexes and placed at or slightly below mid-eye height; frons elevated but not large; clypeus small, separated from postclypeus; prementum present, but indistinct; lateral ocelli distinct, median ocellus indistinct or absent; ocellar tubercle slightly raised, triangular or rounded anteriorly; occiput large, occupying about $\frac{1}{3}$ of head capsule; antennae with minute hairs on segments I and/or II, otherwise bare; segments I and II short, segment III 5 to 8 times longer than segment I; segment I of each antennae approximate, but not fused.

Thorax swollen, 3 to 4 times higher than head height; proepisternum large, from $\frac{1}{2}$ to almost as long as forecoxa; widely separated or partly fused anteroventrally; forecoxal cavity present; proepimeral callosity swollen, but hardly visible; distinct metapleural pit

¹Part of this study was undertaken while the author was a Guggenheim Fellow in Chile, 1966-67.

present posterior to spiracle; legs relatively short, tibial spurs present on all legs, outer ones somewhat longer; tarsi about as long as tibiae; 3 pulvilli present, empodium of equal length to lateral pulvilli; tarsal claws strongly curved, little longer than pulvilli, basal half covered with microsetae; wing venation strong (Figs. 1-4); macrotrichiae present in costal, subcostal, marginal, and 1 or 2 submarginal cells, microtrichiae also present in costal and subcostal cells.

Abdomen broad, short and somewhat dorsoventrally compressed in ♀, or longer, narrower and higher in ♂; abdominal spiracle I greatly or somewhat swollen, placed in tergite I, other spiracles placed in intersegmental membrane, slightly to not swollen; ♂ with 6 sternites and tergites visible; ♀ with 7 sternites and 6 tergites visible.

Genitalia caudal and simple in ♀; small (partly concealed) in ♂, aedeagi as in Figs. 6, 7 and 10.

Distribution: The 4 known species in *Archipialea* occur near the coast in a vegetated area of the Coquimbo desert region at Talinay, a small mountain area near the coast, at 31°S, and south into the *Nothofagus-Araucaria* forested regions in the coastal mountains of Nahuelbuta (1,300 meters) at 38°S, and in the Andean *Nothofagus* forests at río Blanco and Las Trancas at 37 to 38°S at 1,050 to 1,320 meters. This distribution suggests a northern Valdivian Forest pattern where species occurring in the main forested areas (between 37 to 39°S) may also occur in spot locations along the coast as far north as Coquimbo in forested canyons. For a discussion of the various insect zones in Chile, the reader is referred to a recent paper by Peña (1966).

Discussion of Generic Relationships: Three of the 7 genera forming the *Ocnaea* branch of the Panopinae appear to be much closer to each other than to the other 4 genera. These 3 genera are *Pialea* Erichson, *Stenopialea* Speiser and *Archipialea* n. gen. *Pialea* is a true Neotropical genus with species in Brazil, Ecuador and an undescribed species from Venezuela. *Stenopialea* is a South Afri-

can endemic genus with only 2 described species. *Archipialea*, a Chilean endemic, seems to show a closer relationship with *Stenopialea* than with *Pialea*, a notion which may perhaps be explained by the continental drift relationship of South America and Africa. All 3 of these genera are quite primitive, at least in this author's mind, but for those who might be skeptical about the likelihood of these genera surviving "continental drift", I refer them to a recent article by Ussatchov (1968) where he described a new fossil genus of Acroceridae, *Archocyrus*, from the Jurassic period from Russia. This is the oldest record of this family, yet the taxon involved appears to be much more derivative than those of the *Ocnaea* branch noted above.

In any event, the more complete wing venation, and the presence of a distinct humeral crossvein are shared by *Stenopialea* and *Archipialea*, whereas *Pialea* lacks the humeral crossvein and has more contorted radial veins and less-developed posterior cells than the others, indicating a derived condition.

The feature of strong macrotrichiation on the wing membrane of *Archipialea* species is indicative of its more primitive condition for this generic group, yet its more holoptic eye condition is here considered a more derived condition than in either *Pialea* or *Stenopialea*. For further analysis of these genera see Schlinger (1956, 1960, 1968a).

In the key to genera of the *Ocnaea* branch by Schlinger (1968a), *Archipialea* will run out to couplet N° 4 to the "new genus".

Key to the species of *Archipialea* Schlinger

1. Abdomen and/or thorax with brown, orange or yellow markings; legs mostly brown or yellowish-brown 2
 - Thorax and abdomen black 3
2. Mesonotum black; macrotrichiae present on costal, subcostal, marginal and both submarginal cells *setipennis* Schlinger, n. sp.
 - Mesonotum with some brown or orangish-brown areas; macrotrichiae absent on second submarginal cells..... *chilensis* Schlinger, n. sp.

3. Wing membrane covered throughout with macrotrichiae *irwini* Schlinger, n. sp.

Wing membrane mostly bare, with some microtrichiae and macrotrichiae only in costal and subcostal cells *penai* Schlinger, n. sp.

Archipialea chilensis Schlinger, new species

Male: Length of entire specimen 13.0 mm, wing length 9.0 mm.

Coloration: Black, orangish-brown and brown. Black are eyes, occiput, ocellar tubercle, frons, antennal segment I, postclypeus, clypeus, basisternum, apical $\frac{2}{3}$ of tarsal claws, lower $\frac{1}{3}$ of pleura, hypopleura, mesonotum except large anterolateral areas, and disc of scutellum; dark brown are antennal segments II and III, ocelli, base of coxa I and II, all of III, upper pleura area, basal $\frac{1}{3}$ of tarsal claws, most of halter, wing veins, tergite I, small median spot on tergite II, larger median spot on tergite III, all but extreme lateral margins of tergites IV and V, median and lateral spot on tergite VI (all tergal markings almost black in spots) and genital capsule; wing membrane and squama membrane lightly infuscated; pulvilli light brown; remainder of specimen orangish-brown almost yellowish-brown on abdominal sternum.

Pile: Dense, long, golden brown on thorax, coxae, squama, some on hind coxa and median area of sternites II and III about as long as trochanter I; that on head brown about as long as antennal segments I + II, a little longer on occiput; that on abdomen dense, concolorous with ground color except golden brown on orangish-brown areas, long and erect on tergites I, II and VI, and along lateral margins, otherwise short and rather appressed; that on sternum golden brown, dense, mostly appressed but longer than on medial tergal areas III to V; that on legs dense, short, mostly appressed and golden brown.

Head: Higher than long as 21:16; occiput occupies about $\frac{1}{3}$ of head length; ocellar tubercle slightly raised, triangular, lateral ocelli distinct, median ocellus present, but indistinct; antennae slightly longer than head height; segments I, II and III as 7:4:35 (Fig. 9); clypeus and prementum small, but distinct; an-

tennal triangle flat; frons small, triangular but distinctly raised.

Thorax: Shiny (even under dense pile); scutellum about $\frac{1}{3}$ wider than long; intercoxal cavity large, as wide as width of coxa; prosternum large, completely exposed below head; proepisternal callosity present but not greatly swollen; length of hind tarsus greater than length of metatarsal segments as 13:46; metapleural pit distinct, with long hairs present on metapleural suture near sclerotized disc, and minute seta present on metanotal basalare; metathoracic spiracle with long hairs along posteroventral margin, nearly forming a brush; squama semiopaque; wing venation as in Fig. 4; macrotrichiae present but not dense on costal, subcostal, marginal and a few on first submarginal cell; microtrichiae present on base of costal cell.

Abdomen: Longer than wide as 13:10; abdominal spiracle I greatly swollen, other spiracles flat.

Genitalia: Subapical, formed as in Fig. 10.

Female: Similar to male except: head much smaller, mesonotum mostly brown to orangish-brown, only area in front of scutellum black; abdomen with much larger medial brownish-black areas; tergites V and VI all black, sternites darker brown.

Type Material: Holotype ♂, Peillen Pille, Cordillera Nahuelbuta, Arauco, Chile, feb. 2-5, 1959, G. Barría (L. P.); paratype ♀, Nahuelbuta, Chile, jan. 1957, Cerda collector (AMNH); paratype ♂, Nahuelbuta, Nat'l. Park, Malleco, Chile, jan. 24, 1967, 1,300 m, M. E. Irwin (E. I. S.). The holotype is in excellent conditions, but is somewhat greasy. The paratype female has a crushed thorax, third antennal segments missing, and the fore hind legs of the left side missing.

The paratype ♂ is in excellent condition and according to Mr. Irwin it was collected about 10 A. M., when Irwin was attracted to a small clump of grass by a very high-pitched hum being made by the fly just as the sun was breaking through the morning clouds. As he approached the humming noise from about 35 feet he looked at the clump of grass without being able to see from where the noise was coming. After parting the grass in

several places he then saw the fly crawling up a grass blade about 1 foot above the ground and realizing it was an acrocerid, quickly collected it.

Discussion: This species is most closely related to *A. penai* and *A. setipennis*, and may well be intermittent between these 2 species. It can be easily separated by both wing venation and wing membrane trichiation features.

Archipialea setipennis Schlinger, new species

Male: Length of entire specimen 9,0 mm, wing length 6,5 mm.

Coloration: Black, yellow, brown and orangish-brown. Entire specimen black except: antennae, ocelli, wing veins and squamal rim dark brown; humerus, apical $\frac{3}{4}$ of coxa I and remainder of legs, abdominal sternites (except sternite I, base of II, parts of V and VI, brown), halter stem, yellow to yellowish-brown; posterior margin of tergite II, anterior and posterior margin of III, anterior and posterior margins of IV, anterior margin of V, most of VI yellowish to orangish-brown, those fasciae on posterior margins of III to V expanded laterally, those on anterior margins narrowed laterally, that on anterior margin of IV narrowed medially, expanded sublaterally, that on anterior margin of V greatly expanded medially; remainder of tergum dark brown to black; squama opaque, light brown; wing membrane hyaline, faintly infuscated; pulvilli dark brown and tarsal claws dark brown to black; genitalia light to dark brown.

Pile: That on eyes, occiput and ocellar tubercle dark brown and dense, about as long as length of antennal segment I; short, light brown hairs present on apices of antennal segments I and II; that on most thorax, proepisternum, coxae, squama, and on dark areas of abdomen dense, mostly dark brown, a little longer than lengths of antennal segments I + II; that on remainder of legs short, dense, light brown somewhat darker on posterior tibia; that on abdominal sternum dense, yellow to yellowish-brown about as long as on dorsum, somewhat shorter and more appressed on posterior sternites.

Head: Higher than long as 35:22, occiput occupies about $\frac{1}{3}$ of head length; length of antennal segments I, II, III as 5:4:31, antennae placed just below mideye height (Fig. 5); ocellar tubercle with only lateral ocellus present, broadly rounded-off apically, slightly raised, and with indistinct median longitudinal groove; clypeus small, separated from postclypeus; prementum present but indistinct.

Thorax: Forecoxae separated basally by distance equal to width of coxa; proepisternal areas strongly fused basally; metathoracic spiracle with very long hairs present; wing venation and trichiation as in Fig. 1, humeral crossvein present and distinct; most of trichiation present are macrotrichiae, some microtrichiae are present at base of costal cell.

Abdomen: About $\frac{1}{3}$ longer than wide, about $\frac{3}{4}$ as high as wide; abdominal spiracle I greatly swollen, other spiracles slightly swollen.

Genitalia as in Fig. 6.

Female: Unknown.

Type Material: Holotype ♂, río Blanco, Curacautin, Malleco, Chile, feb. 1-5, 1959 (L. Peña collection).

Discussion: This species is most closely related to *Archipialea penai*, but is easily distinguished by its color pattern, the heavy trichiation of wing membrane and its wing venation.

Archipialea penai Schlinger, new species

Holotype Female: Length of entire specimen 10 mm, wing length 8 mm.

Coloration: Black and dark brown. Entire specimen shiny black except: antenna, occiput, pulvilli, and halter, dull black; ocellus, upper area of humerus near spiracle, postalar callus, posterior fascia on abdominal sternites, wing veins, squamal rim, apices of femora I and II dark brown; genitalia light brown; intersegmental membrane of sternum whitish-brown.

Pile: That on eyes, occiput and ocellar tubercle dark brown, dense, slightly longer than length of antennal segments I + II; that on

thorax, squama, coxae and femora dense, dark brown (reddish-brown in spots), much longer than that on eyes; that on tibiae and tarsi dense dark brown, much shorter than on eyes; that on abdomen dense, dark brown, slightly shorter than on mesonotum, the longest pile on medial tergal II and sternal II + III areas.

Head: Higher than long as 37:25; occiput occupies about $\frac{1}{3}$ of head length; length of antennal segments I, II, III as 3:4:25, antennae placed slightly below mid-eye height (Fig. 8); numerous small strong setae present on apical margin of antennal segment II; ocellar tubercle with only lateral ocellus present, broadly rounded almost squared-off apically, slightly raised; clypeus present but indistinct, separated from postclypeus, prementum probably present but not visible due to antennal position.

Thorax: Humerus with distinct posterior apical angle directed upwards; forecoxae separated basally by distance less than width of coxa; hind metatarsal segments together shorter than hind basitarsus as 5:6; propisternal areas not separated anteroventrally; metapleural pit and halter base area similar to *Archipialea chilensis*, but not clearly evident due to mounting of specimen; squama lightly infuscated, opaque; wing venation and trichiation as in Fig. 2, humeral crossvein present, but faint; most of trichiation on costal and subcostal cells are microtrichiae, but a few macrotrichiae are present distally on costal cell.

Abdomen: About as long as wide, widest at segment III; highest at segment II, about $\frac{1}{2}$ as high as wide.

Male: Unknown.

Type Material: Holotype ♀, Talinay, Coquimbo, Chile, April 21, 1955, L. E. Peña (L. P.). The holotype is in good condition, but is somewhat crushed at junction of thorax to abdomen, the scutellum is crushed and only the right foreleg and the middle and left hindlegs are present.

Discussion: Even though the wing trichiation, venation (particularly the faint humeral crossvein), and the absence of a median ocellus depart from features considered typical

for *Archipialea* species, *A. penai* certainly is more closely related to *Archipialea* than to other *Pialea*-like genera. *A. penai* is not closely related to any of the presently included species of *Archipialea*.

Archipialea irwini Schlinger, new species

Holotype Male: Length of entire specimen 8.50 mm, wing length 5 mm.

Coloration: Entire specimen black, except: apical $\frac{1}{2}$ of antennal segment II, small basal ring on antennal segment III, ocelli, inner side of forefemora, foretibiae, and foretarsi, pulvilli, halter stem and aedeagus brown; squama (except narrow rim) opaque white; intersegmental membranes of abdomen, broad fascia on sternite I and areas around wing base white to brownish-white; eyes in certain light partly dark brown.

Pile: That on entire specimen dense, dark brownish-black except that on squama and that on foretibiae and foretarsi brownish-white; that on eyes short, not reaching apex of antennal segment I; that on occiput slightly longer than on eyes; that on thorax about as long as antennal segments I + II; that on dorsum of abdomen slightly longer than antennal segment I; that on venter of abdomen about as long as on mesonotum, appressed on sternite II and basal $\frac{1}{2}$ of sternites III and IV; that on coxae about as long as that on mesonotum; that on femora about as long as that on eyes; that on tibiae and tarsi about $\frac{1}{2}$ as long as that on eyes; that on squama sparse, about as long as that on occiput.

Head: Higher than long as 38:25; occiput swollen basally, occupies about $\frac{1}{3}$ of head length; length of antennal segments I, II, III as 3:2:24; antennae placed slightly below mid-eye height (Fig. 11); antennal segment III very thin, laterally compressed; numerous small, strong setae present on apical $\frac{1}{2}$ of both antennal segments I and II; ocellar tubercle with only lateral ocellus present, not well raised except at upper outer angle of ocellus area; clypeus small but distinct, covered with many long hairs, clypeus not clearly separated from postclypeus.

Thorax: Forecoxal cavity present but small,

proepisternum fused, for short distance basally; mesonotum about 2 times broader than head; scutellum broader than long as 7:4; metathoracic spiracle with few ventral hairs; metapleural suture without hairs; squama nearly opaque; wing venation as in Fig. 3; humeral crossvein present, but indistinct; macrotrichiae present and dense throughout wing membrane except sparse or absent in basal areas of the basal cells; no microtrichiae present.

Abdomen: Shiny, about twice as long as high; spiracle 1 slightly swollen, other spiracles not swollen, difficult to detect.

Genitalia: Formed as in Fig. 7.

Female: Unknown.

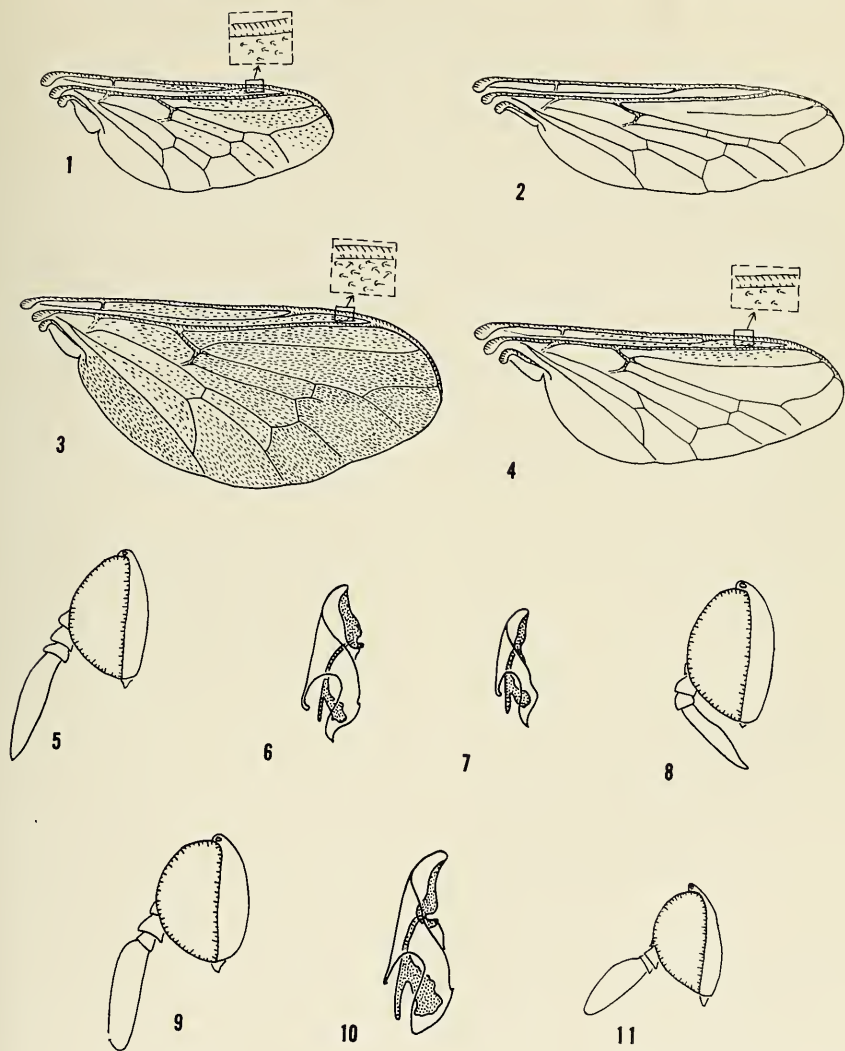
Type Material: Holotype ♂ and 3 ♂ ♂ paratopotypes from Chile, Ñuble Prov., 2,7 km. N. Las Trancas, 1,320 meters, Jan. 15, 1967, Malaise trap (M. E. Irwin and L. A. Stange).

The paratopotypes agree in observable ways with the holotype except that they are slightly smaller.

Discussion: This species is not closely related to any of the presently described species of *Archipialea*. Its broader wing structure and the heavy trichiation of the wing membrane clearly separate it from all the known species.

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Figures 1, 5 and 6 *Archipialea setipennis* Schlinger, holotype ♂; Figs. 2 and 8, *Archipialea penai* Schlinger, holotype ♀; Figs. 3, 7 and 11, *Archipialea irwini* Schlinger (3 and 11) paratype ♂, (7) holotype ♂; Figs. 4, 9 and 10, *Archipialea chilensis* Schlinger (4) holotype ♂, (9 and 10) paratype ♂.
 Figures 1-4 wings; Figs. 5, 8, 9 and 11, heads in lateral view; Figs. 6, 7 and 10, aedeagi in lateral view.