Introduction to the Leptopodomorpha of Thailand and adjacent countries

by John T. Polhemus & Dan A. Polhemus

Abstract: Illustrated keys are provided for the three families and nine genera of Leptopodomorpha occurring in Thailand and adjacent countries. Notes on the genera and their habitat preferences are given, and a list of genera and species now known from the region. The following taxa are recorded from Thailand for the first time: *Leotichius* DISTANT, 1904 (probably undescribed species), *Valleriola javanica* DRAKE & HOTTES, 1951 (Leptopodidae), and *Saldoida armata* HORVATH, 1911 (Saldidae).

The infraorder Leptopodomorpha is comprised of four families of small insects that are mostly associated with the littoral habitat, although the habitat range is quite diverse, from intertidal rocks to strictly xeric. Three of these families and nine genera are known to occur in or near Thailand, but the shore bug fauna of the region is certainly much richer than now known. One genus of Saldidae of uncertain taxonomy, which was rarely collected in the mountains of North Thailand, is not considered in this study. Most species live in habitats that are cryptic or quite restricted, and others are difficult to catch, thus they are rarely collected except by specialists.

A world overview was given by POLHEMUS (1985). Catalogues are available for the world (SCHUH, GALIL & POLHEMUS 1987) and the Palearctic Region (LINDSKOG 1995), the latter with important nomenclatural information for the Asian fauna. A key to the genera of the Leptopodini may be found in POLHEMUS & POLHEMUS (1991). A detailed discussion of the species groups and morphology of the genus *Saldula* (Saldidae) is given in LINDSKOG & POLHEMUS (1992). Most Leptopodidae and some Saldidae possess stridulatory mechanisms (PERICART & POLHEMUS 1990, POLHEMUS 1985).

Notes on the genera and their habitat preferences are given, and a list of genera and species now known from the region, with their distribution.

Key to families and genera of Leptopodomorpha

1 Small, body length less than 2 mm; hemelytra without membrane, coleopteroid; antennal segments short, of similar diameter (Fig. 1) (Family **Omaniidae**) *Corallocoris*

Larger, body length at least 2.2 mm; ant-mimetic, with prominent horn-like structures on pronotum (Figs. 8a, b), or hemelytra with well developed membrane having 3, 4 or 5 cells, overlapping distally; antennae long, or distal segments much more slender than basal segments (Figs. 2, 5, 8a).

2

3

5

2 Eyes very large; antennal segment two thicker and shorter than distal segments (Figs. 2 - 4). (Family **Leptopodidae**: Subfamily **Leptopodinae**)

Eyes exserted but smaller; second and distal antennal segments of roughly similar diameter (Figs. 5, 8a). (Family **Saldidae**)







Figs. 5 - 6: (6) *Saldula* sp., habitus; (7) *Saldula thailandana*, left hemelytron.

7b

Figs. 7a, b: *Pentacora* sp., habitus, legs not shown.



7a







Fig. 8 - 9: (8) *Saldoida armata*, (a) habitus, (b) head and thorax, lateral view; (9) *Salduncula* sp., habitus.

-	Hemelytral margin, pronotum, and head not heavily spinose. (Fig. 3) Valleriola
5	Hemelytral membrane with five closed cells. (Fig. 7) (Subfamily Chilo- xantinae)
- '	Hemelytral membrane with four closed cells. (Subfamily Saldinae)
6	Pronotum short, quadrate (Fig. 9). (Tribe Saldunculini) Salduncula
-	Pronotum longer, tapering anteriorly (Fig. 5). (Tribe Saldoidini)

7 Pronotum strongly narrowed anteriorly, with a pair of dorsal outgrowths (Figs. 8a, b). Saldoida

Pronotum not strongly narrowed anteriorly, without outgrowths (Fig. 5)...... Saldula + Micracanthia

Note: The genera *Saldula* and *Micracanthia* are separated by minute differences in the deep structures of the male genitalia, as described by P. Lindskog in LINDSKOG & POLHEMUS (1992); thus they are treated together here.

List of Leptopodomorpha of Southeast Asia, with distribution of species

New country or island records, marked with an asterisk (*), are based on material in the J. T. Polhemus Collection (if not marked) or Bishop Museum (BPBM).

LEPTOPODIDAE

Leotichius DISTANT, 1904

<i>Leotichius glaucopis</i> DISTANT, 1904	Myanmar (Burma)
Leotichius speluncarum CHINA, 1941	West Malaysia
<i>Leotichius</i> sp.	Thailand (leg. Burckhardt, Geneva Museum)
Patapius (Pseudopatapius) DRAKE & HOBERLAN	dt, 1951
Patapius (Ps.) thaiensis COBBEN, 1968	Thailand
Valleriola DISTANT, 1904	
Valleriola javanica DRAKE & HOTTES, 1951	Hong Kong*, Java, Myanmar (Burma)*, Thailand*, West Malaysia*
<i>Valleriola</i> sp.n.	Myanmar (Burma)*, Thailand*
OMANIIDAE	
Corallocoris Cobben, 1970	
<i>Corallocoris marksae</i> (Woodward, 1958)	Australia, Kwajelein*, New Caledonia, Philippines (Luzon), Samoa, Singapore
SALDIDAE	
Pentacora REUTER, 1912	
Pentacora malayensis (Dover, 1929)	Pakistan, West Malaysia
Salduncula Brown, 1954	
Salduncula murphyi J. Polhemus, 1991	Singapore

Saldoida OSBORN, 1901

<i>Saldoida armata</i> Horvath, 1911	Australia, China, East Malaysia (Sabah*), India, Indonesia (Ambon*, Bali*, East Kalimantan*, Irian Jaya*, Java, Sulawesi*, Sumbawa*), Japan, Papua New Guinea*, Philippines (Luzon, Palawan*), Singapore*, Taiwan, Thailand*, West Malaysia*
Saldula VAN DUZEE, 1914 + Micracanthia Re	EUTER, 1912
<i>Micracanthia ornatula</i> (REUTER, 1881)	Africa, Australia, China, East Malaysia, India, Indonesia, Laos, Myanmar (Burma), Oman, Papua New Guinea*, Philippines, Saudi Arabia, Taiwan, Thailand*, Vietnam.
Saldula bengali COBBEN, 1986	India (Bengal), Nepal*, Vietnam*
Saldula niveolimbata (REUTER, 1900)	Africa, Laos*(BPBM), Seychelles, Vietnam, West Malaysia* (BPBM)
Saldula recticollis (HORVATH, 1899)	China, Japan, Russia (Far East), South Korea, Vietnam (south)*
Saldula sonneveldti BLÖTE, 1947	East Malaysia (Sarawak*),

Indonesia (Sulawesi), West Malaysia* Saldula thailandana Соввел, 1986 (Burma)*, Thailand, Vietnam*, West Malaysia*

Notes on the habits and habitats of the Southeast Asian genera

LEPTOPODIDAE

Leotichius: Three described species are known, from Burma, West Malaysia and Bali (POLHEMUS & SCHUH 1995). One unnamed, probably undescribed, species is known from Thailand. These insects live on completely dry, sheltered earth in conjunction with ant lion larvae. The Malaysian species was found in a cave entrance, the Balinese species on dry powdery earth under multiple temple roofs.

Patapius (**Pseudopatapius**): One species, *Patapius thaiensis*, is the only known Asian species of this subgenus, which has four additional species distributed across Africa (DRAKE & HOBERLANDT, 1951). As far as now known, all species are xerophilous on rocks or logs.

Valleriola: Of the many species known from Asia, two are known from Thailand, *Valleriola javanica* and one undescribed species. Members of this tropical genus, distributed from Africa and Madagascar to the southwestern Pacific islands, live on dry vertical or undercut rock surfaces, usually the shaded sides of large boulders in or near streams, but also concrete bridge pylons or dam faces.

OMANIIDAE

Corallocoris: Five species are widely distributed across the tropical western Pacific and Indian Oceans. One widespread species, *Corallocoris marksae*, is known from Singapore, where it lives on intertidal rocks in the upper tidal zone, secreting itself in crevices or small holes until low tide, then emerging to search for small prey. It can be expected along the rocky seashores of Thailand.

SALDIDAE

Micracanthia: One species of this cosmopolitan genus is found in Thailand, *Micracanthia ornatula*. This species is found on muddy shores of ponds and streams, and commonly comes to light. It is very common and widespread in the Old World tropics.

Pentacora: Pentacora malayensis, the only known Southeast Asian species of this genus, has been found just south of the Thai border in Kelantan, Malaysia. Most species of this cosmopolitan genus are salt tolerant, usually found in salt marshes, or muddy seashores.

Saldoida: One widely distributed Asian species, *Saldoida armata*, is known from Singapore and West Malaysia, and has recently been recognized from Thailand. Found on damp sandy soils, sparsely vegetated stream banks, steep rock surfaces near waterfalls, and occasionally saline habitats.

Saldula: Five species of this cosmopolitan genus are found in southeast Asia. Only *Saldula thailandana* has so far been found in Thailand, where it is restricted to steep rock surfaces near streams or waterfalls. *Saldula sonneveldti* is known from a tidal estuary just south of the Thai border in Kelantan, West Malaysia; this species seems restricted to mixohaline seashore habitats with sparse vegetation. The other species are found on shores of streams, lakes or ponds, seep springs, or hygropetric habitats.

Salduncula: One species, *Salduncula murphyi*, is known from Singapore, and should be found along the sea coasts of Thailand. All species of this genus are strictly intertidal, on large rocks in the high tide zone; during low tide they intermittently emerge, and move from crevice to crevice.

References and Bibliography

- COBBEN, R.H. 1986: New shorebugs from the Solomon Islands, Thailand, India and South America (Heteroptera, Saldidae). Annales de la Societe Entomologique de France 22: 223-233.
- COBBEN, R.H. 1968b: A new species of Leptopodidae from Thailand (Hemiptera-Heteroptera). Pacific Insects 10: 529-533.

- COBBEN, R.H. 1970: Morphology and taxonomy of intertidal dwarfbugs (Heteroptera: Omaniidae fam. nov.). Tijdschrift voor Entomologie 113: 61-90.
- DRAKE, C.J. & CHAPMAN, H.C. 1958: The subfamily Saldoidinae (Hemiptera: Saldidae). Annals of the Entomological Society of America 51: 480-485.
- DRAKE, C.J. & HOBERLANDT, L. 1951: New Leptopodidae (Hemiptera-Heteroptera) from Angola, Portuguese West Africa. - Pubicáoes Culturais da Companhia de Diamantes de Angola 11: 7-16.
- LINDSKOG, P. 1995: Infraorder Leptopodomorpha, pp. 115-141. In AUKEMA, B. & RIEGER, C., eds., Catalogue of the Heteroptera of the Palearctic Region. Netherlands Entomological Society, Amsterdam, xxvi + 222 pp.
- LINDSKOG, P. & POLHEMUS, J.T. 1992. Taxonomy of *Saldula*: revised genus and species group definitions, and a new species of the *pallipes* group from Tunisia (Heteroptera: Saldidae). - Entomologica scandinavica 22: 63-88.
- PERICART, J. & POLHEMUS, J.T. 1990: Un appareil stridulatoire chez les Leptopodidae de l'Ancein Monde (Heteroptera). - Annales de la Societe Entomologique de France 26: 9-17.
- POLHEMUS, J.T. 1985: Shorebugs (Heteroptera: Hemiptera; Saldidae). A world overview and taxonomy of Middle American forms. - The Different Drummer, Englewood, Colorado, v +252 pp.
- POLHEMUS, J.T. 1991: Three new species of *Salduncula* BROWN from the Malay Archipelago, with a key to the known species (Heteroptera: Saldidae). Raffles Bulletin of Zoology 39: 153-160.
- POLHEMUS, J.T. & POLHEMUS, D.A. 1991: A revision of the Leptopodomorpha (Heteroptera) of Madagascar and nearby Indian Ocean Islands. - Journal of the New York Entomological Society 99: 496-526.
- POLHEMUS, J.T. & SCHUH, R.T. 1995: A new species of *Leotichius* from Bali, with notes on immature stages and habitat (Heteroptera, Leptopodidae). - Journal of the New York Entomological Society 102: 367-373.
- SCHUH, R.T., GALIL, B. & POLHEMUS, J.T. 1987: Catalog and bibliography of Leptopodomorpha (Heteroptera). Bulletin of the American Museum of Natural History 185 (3): 243-406.

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