

# A New Genus and a New Species of Lanternflies of the Subfamily Cladyphinae (Homoptera, Fulgoridae)

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**Abstract**—*Sclerodepsa granulosa* gen. et sp. n., a new genus and a new species of lanternflies (Fulgoridae) of the subfamily Cladyphinae, is described from Brazil and Paraguay, based on the brachypterous adult and the 4th-instar larva (penultimate instar). Its relationship with Dichopterinae is confirmed, and its similarity to Issidae and Callscelldae is shown and discussed.

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Cladyphinae (Cladodipterinae) was distinguished by Melichar (1912) as a group (Gruppe Cladyphini), along with the groups Dichopterini, Dictyophorini, Orgeriini, and “Bursini” (Lyncidini), in the subfamily Dictyopharinae. The latter taxon has been regarded as a family since Muir’s (1930) publication. Muir modified the Melichar’s classification by dividing the family Dictyopharidae into two subfamilies and including in the subfamily Dictyopharinae three tribes, Dictyopharini, Dichopterini, and Cladyphini, corresponding to the Melichar’s groups. Metcalf in his *General Catalogue ...* (1946) followed the Melichar–Muir’s classification, but downgraded Cladyphini to a subtribe of the tribe Dichopterini to emphasize their primary affinity, but simultaneously toned down their essential differences which were at nearly the same level as the differences from Dictyopharini.

I transferred the tribe Dichopterini to the family Fulgoridae and promoted it to a subfamily (Emeljanov, 1979). Having no material on the tribe Cladyphini at that time, I kept the taxon in the Dictyopharidae (Emeljanov, 1983). Examination of the material of the genera *Cladodiptera* Spin. (*Cladypha* A. S.) and *Diacira* Walk. has shown that the tribe Cladyphini, as well as Dichopterini, deserves a subfamily rank and that Metcalf’s idea of its affinity with Dichopterinae is correct.

The new genus differs from the two other genera of the tribe Cladyphini, *Cladodiptera* and *Diacira*, in the short wings, being rather closely related to them in all the other essential taxonomic characters.

The holotype of the new species is deposited in the British Museum.

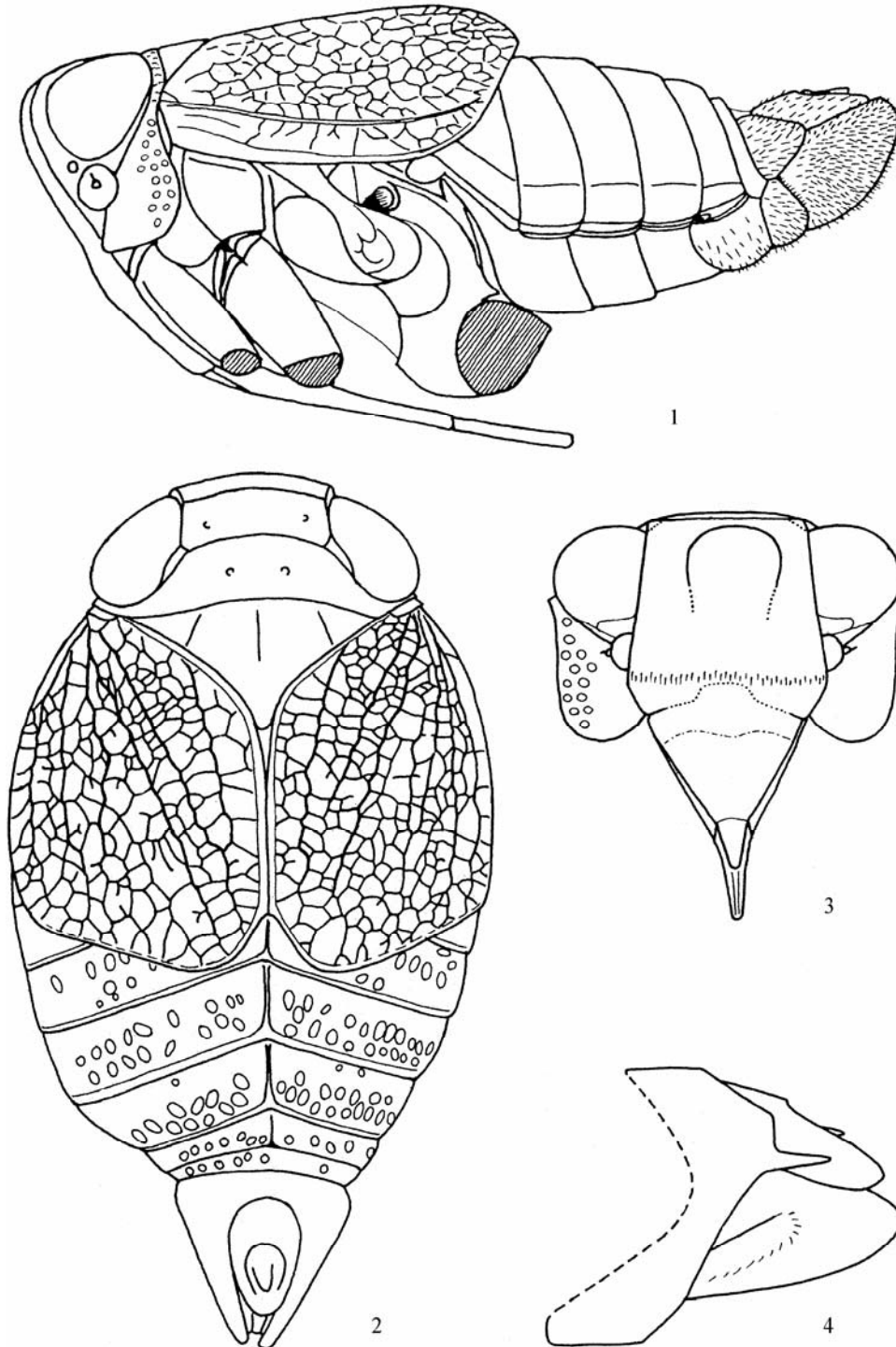
## Tribe CLADYPHINI

Genus *SCLERODEPSA* Emeljanov, gen. n.

Type species *S. granulosa* sp. n. (Fig. 1–7).

**Description.** Compact, brachypterous, weakly flattened dorsoventrally.

Head short and wide, eyes laterally almost entirely concealing lateral (humeral) parts of pronotum, as those in Issidae. Coryphe transverse, nearly 4 times as wide as long, with parallel, gently arcuate anterior and posterior margins; surface with 3 shallow depressions separated by smoothed elongate prominences; bottom of medial depression with weak filiform median carina. Length of metope along midline subequal to its width, its surface roundly deflexed backwards at upper margin, weakly convex in middle part, with distinct straight transverse depression before clypeus. Lateral margins of metope straight and moderately diverging from coryphe to level of lower margins of antennae, then rather sharply deflexed medially as far as their meeting with margins of clypeus; clypeal border arcuately bent. Antennae small, partly concealed by leaf-shaped flattened margins of metope. Surface of metope with intermediate carinae loop-like connected at margin of coryphe; distances between carinae in upper part of metope subequal to those from these carinae to lateral margins (carinae) of metope; in middle part, carinae gently arcuately curved towards each other. Median carina absent. Postclypeus truncate-cuneiform, strongly narrowed towards anteclypeus, convex, with sharp lateral carinae and without median carina. Sharp lateral carinae of postclypeus passing onto anteclypeus and merging in its middle part. Distal



**Figs. 1–4.** *Sclerodepsa granulosa* gen. et sp. n., adult: (1) body, lateral view; (2) body, dorsal view; (3) head and pronotum, anteroventral view; (4) male genitalia, left view.

part of anteclypeus steeply roof-shaped, with median carina; basal part without median carina. Rostrum moderately long, ultimate segment slightly shorter than penultimate one, apex of penultimate segment reaching trochanter condyles of hind coxae.

Pronotum wider than long, only disc visible in dorsal view; shape of disc intermediate between segmental to roundly trapeziform; posterior margin weakly concave. Pronotum along midline slightly more than 1.5 times as long as coryphe. Median

carina inconspicuous, with pair of depressed pits at sides.

Mesoscutum transverse, subtriangular, with attenuate apex; lateral carinae of disc well developed; median carina double, weakly projecting, absent in posterior half; disc with pair of depressed pits near lateral margins at level of its midlength. Fore wings strongly shortened, hardened to state of elytra, covered with rather fine system of sharply projecting vein; homology of main veins easily recognized, suture of clavus absent. Subcostal carina—vein *ScRA* distinct, appearing as stronger straight edge; *CuP* and *PCu* in shape of nearly straight (even) carinae; veins *M* and *CuA* less distinct among system of cross-veins, but well-visible in basal half. Tegulae strongly reduced, slightly projecting from under margin of pronotum. Posterior margins of elytra obliquely truncate, angles rounded. In female, sutural angle of elytra projecting backwards beyond costal angle in such way that posterior elytral margins together triangularly projecting backwards, costal angles lying above tergite III, sutural angles lying at anterior margin of tergite V. In male, posterior margins of elytra less strongly slanting.

Legs not flattened, fore and middle tibiae linear. Hind tibia only with 2 lateral teeth in distal half (as in Issidae), probable places of 2 more teeth in proximal part (if teeth assumed to be uniformly distributed) marked with pigmented spots. Apex of hind tibia with 7 teeth situated almost regularly, 3 teeth of medial group hardly distinguished among others. 1st and 2nd segments of hind tarsus with small characteristic pads of coarse hairs or setae; teeth of apical row, except for marginal teeth (which, as always, bearing no platellae), reduced on both 1st and 2nd segments. 1st and 2nd segments laterally with 2 or 3 teeth bearing platellae, and medially with 1 such tooth, but these teeth occasionally adjoining platellae with high large socle, i.e., rudimentary tooth. 2 or 3 medial teeth gradually becoming smaller towards middle, disappearing there; 1 or 2 teeth remaining laterally. 1st segment of hind tarsus about half as long as entire tarsus.

Abdominal tergites with sharp double median carina on tergites IV–VII; tergite VIII without carina; sublateral carinae unsharp. Each tergite with 2 transverse rows of smoothed granules paler than dark background. Part of these granules in anterior rows corresponding to larval sensory pits (see description of larva).

**Female.** Outer lobes of ovipositor sheaths III together with anal tube forming approximately cone-

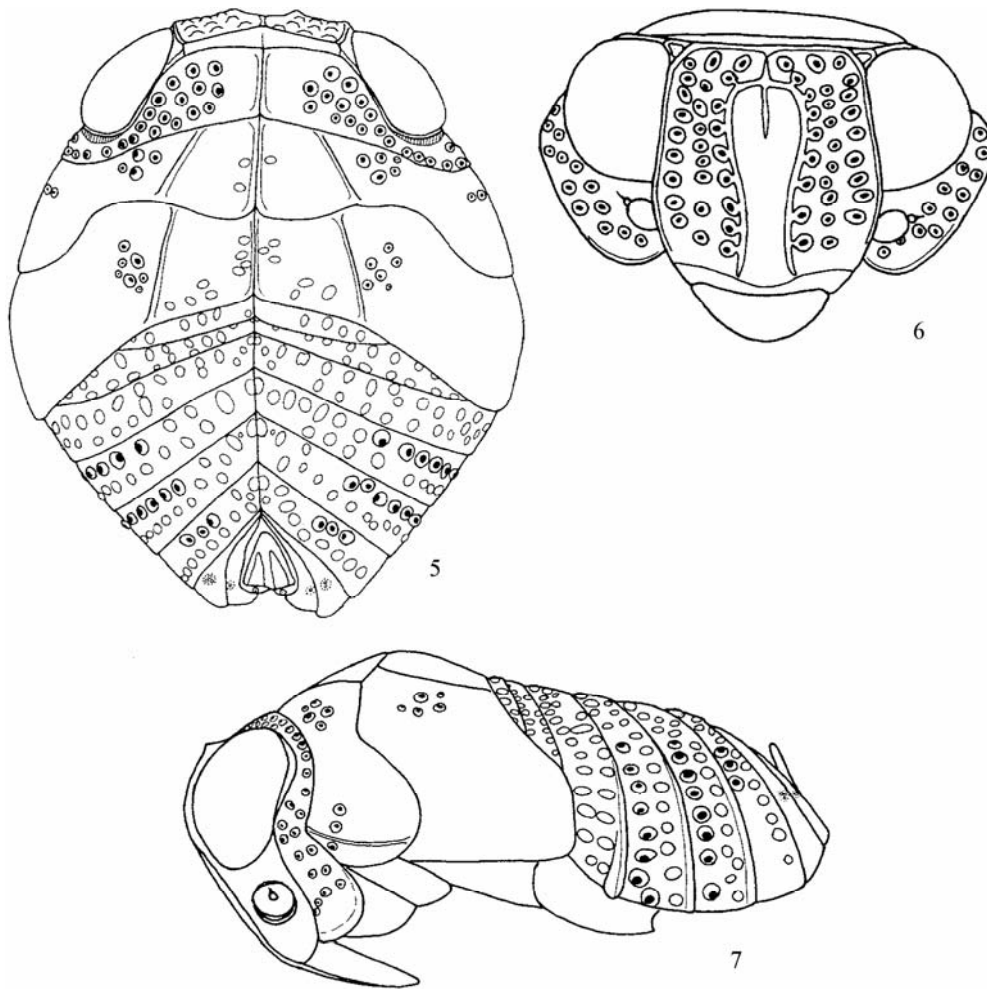
shaped figure similar to that in *Ommatidiotus* (Calicelidae), but shorter. Anal tube slightly shorter than sheaths. Sheaths and anal tube sparsely covered with rather coarse setae, sheaths dorsobasally with dentiform tubercle characteristic of Cladyphini.

**Male.** Anal tube oblong-oval, slightly flattened dorsoventrally. Styli in state of rest partly concealed by anal tube; lateral tooth not visible, absent or concealed by anal tube at base of dorsal tooth. Pygophore symmetrical, with digitate lateral process at each side; processes enclosing basal part of anal tube (Figs. 1–4).

Despite its strongly shortened and sclerotized wings with a disorganized venation, the new genus undoubtedly belongs to the tribe Cladyphini: the structure of anterior part of body and strigose plate on 1st and 2nd segments of hind tarsus as those in *Cladypha* and *Diacira*, and ovipositor with dorsal tubercle. The tendency to the reduction of teeth in the proximal half of the tibia and the reduction of middle teeth on the 1st and 2nd segments of the hind tarsus are also observed in other Cladyphini.

***Sclerodepsa granulosa*** Emeljanov, sp. n. (Figs. 1–7)

**Description. Adult** (Figs. 1–4). Coloration mostly reddish brown; face black, with pale band; abdomen intensively dark brown, with pale brown spots on granules. Coryphe and upper margin of metope (deflexed on dorsal side) reddish brown, not quite uniformly colored, as though faded and rather dirty (pronotum and scutellum colored similarly). Lateral depressions of coryphe with dark indistinct spots; pronotal disc with similar, but more closely approximated spots; mesoscutum with sharper and darker black spots in depressions at posterolateral margins. Metope black from narrow brown dorsal stripe to level of lower margins of antennae; contrasting pale (with reddish speckles) band extending through epiclypeal lobes of metope, its narrow margin adjoining clypeus, and through upper part of clypeus between epiclypeal lobes; this band continuing laterally onto paranotal lobes of pronotum, occupying their lower half, and then running onto upper part of mesepisterna. Lower part of postclypeus black; anteclypeus dark brown, with black furrows inwards from its lateral carinae. Rostrum brown, apex of apical segment darkened. Elytra with system of dark brown, reddish veins and paler gray cells; veins shiny, cells matte. Fore and middle coxae and adjacent areas of corresponding thoracic segments blackened; metathorax and coxae



**Figs. 5–7.** *Sclerodepsa granulosa* gen. et sp. n., 4th-instar larva: (5) body, dorsal view; (6) head and pronotum, anteroventral view; (7) body, lateral view.

brown to pale brown, except for blackened antecoxale. Legs behind coxae brown; fore and middle femora nearly dark brown, with pale speckles; tibiae brown, with black setae; tarsi brown. Hind femur with diffusely darkened dorsal surface. Hind tibia brown, with black apices of teeth and several dark spots in basal half. Abdomen dark brown, nearly black, with pale spots forming 2 rows: anterior and posterior; spots of anterior row partly coinciding with position of larval sensory pits (compared with larva collected together with adult (holotype)); these spots weakening, becoming darker, and disappearing towards sides. Sternite VII (♀) and genitalia brown, anal tube pale brown.

Length: ♂—6.7 mm, ♀—7.2 mm.

**4th-instar larva** (Figs. 5–7). Compact, oval, similar to ellipsoid moderately compressed dorsoventrally,

about 1.25–1.30 times as long as wide. Proportions of anterior part of body similar to those in adult.

Head wide and short, eyes strongly overlying lateral parts of pronotum. Coryphe very short, in shape of narrow transverse stripe, partly hidden in slit along border with pronotum, slightly longer medially because of weakly obtuse-angularly projecting anterior margin. Metope as long as wide, slightly convex longitudinally, nearly flat in cross direction. Intermediate carinae dorsally loop-like passing into each other near anterior upper margin of coryphe; less strong median carina connecting coryphe with loop of intermediate carinae, then weakening, and disappearing before middle. In upper part, distances between intermediate carinae similar to those between them and lateral carinae, below they first slightly approximate, then running in parallel; at clypeal margin, distances between

intermediate carinae nearly half as long as those between intermediate and lateral carinae. In lower part, metope slightly narrowed, its lateral carinae slightly deflexed medially in area lying below eyes. Sensory pits on lateral lobes of metope arranged into 3 rows. Clypeal margin of metope keel-shaped, nearly straight, forming ledge before clypeus, slightly projecting towards clypeus in middle part. Relative to metope, clypeus in lateral view deflexed backwards at obtuse angle, cuneiform, smooth, without median carina; lateral carinae of postclypeus sharp.

Pronotal disc roundly trapeziform, with median carina; lateral parts of disc occupied by sensory pits forming 3 longitudinal slanting rows; outer row deflexed laterally, passing posteriorly onto postorbital (paradiscal) area and then onto paranotal lobes, being doubled in dorsal half.

Disc of mesonotum approximately trapeziform, but with convex posterior margin. Group of 4 or 5 sensory pits situated at sides of lateral carina of disc, 2 pits arranged in transverse row closer to base of wing rudiment, medially to subcostal carina, and 1 pit situated laterally, on "epipleuron." Rudiments of fore wings along lateral margins about as long as those of hind wings. Metanotum also with small group of pits only outwards from lateral carinae of disc, without other pits. Granules appearing as sensory pits present on discs of mesonotum and metanotum, but these not sensory pits because of absence of depressions and setae. Only 1 or 2 such granules situated on mesonotum near median carina; on metanotum, they situated near posterior margin of disc and lateral to its median carina (exuvial suture). Similar granules forming 2 rows (anterior and posterior) on abdominal tergites, these rows rather dense and uniform; tergite I with only 1 row of granules; tergite II with 1 row of granules similar in shape and size, and 1 row of segmental granules at posterior margin, as though truncate posteriorly. On tergites IV and V, part of granules in anterior row replaced by sensory pits which very similar to granules in size and shape, but having small crater bearing seta; sensory pits replacing lateral half of anterior row of granules: 8 at each side. On tergite VI, 3 sensory pits situated behind 3 medial pits of preceding row (segment V), and anterior row of granules absent, except for 1 or 2 granules near median carina; tergite V also without granules adjoining median end of row of sensory pits. Tergites VII and VIII without granules and sensory pits inwards from sublateral

carina, with rudiments of wax glands (2 or 3 on tergite VII and 1 on tergite VIII) closer to lateral margin; each of these segments with 1 sensory pit in lateral area deflexed onto ventral side; segment IX with homological pits visible in dorsal and posterior view; lateral areas on tergites III–VI very strongly deflexed (in dry specimen) and cannot be visible without preparation.

Length 2.9 mm.

**Material.** Holotype: ♀: Brazil: Goiás (Goiás), Jataí, XI.1971. F.M. Oliveira, B.M., 1972–541. (Coll. B. M. N. H., London). 1 larva was pinned on the same bar (paratype); this is presumably the 4th-instar larva, small, but with 3-segmented hind tarsus, i.e., of the 4th, not 5th instar, according to the standard larval ontogeny; its size, compared with that of the adult, also confirms the 4th instar. The larva was transferred onto a separate pin.

Paratype: ♂, "Paraguay, San Pedro W Vacajhu Est. Triangulo, 24°35–40'S, 56°35–45'W, 180 m," "Bretzendorfer and C. Hauser leg. 12–15.XI.1995" (Staatliches Museum für Naturkunde, Stuttgart).

Cladyphinae undoubtedly belongs to the monophyletic group of the families Fulgoridae–Dictyopharidae (FD), and their affinity to Dictyopterinae also seems true (Metcalf, 1946) [though Metcalf gave a lower rank to these taxa]. The venation of the fore and hind wings, the male genitalia with the dictyopharid stylus (also characteristic of the subfamilies Zanninae and Dictyopterinae, of the family Fulgoridae), and the penis with inflated membranous areas (bubbles of the theca) are as those in the other FD. On the other hand, Cladyphinae is similar to the lineage Issidae–Caliscelidae (IC) in some characters, and this suggests that Cladyphini is a sibling group to this lineage. The following characters of Cladyphinae are similar to those of IC: metope wide; coryphe transverse, short and wide; eyes overlying humeral area of pronotum; pronotal disc wide; lateral teeth in basal part of hind tibia and median teeth on 2nd (not on 1st) segment of hind tarsus demonstrating tendency towards reduction and disappearance, supporting areas on 1st and 2nd segments of hind tarsus with setae; ovipositor subconical, externally similar to that in Ommatidiotinae (Caliscelidae). The stylus of Cladyphini (1 specimen examined) is of the dictyopharid type, but is similar to that in Issidae: the dorsal tooth is truncate apically, and the apex appears bidentate; the lateral tooth is reduced, approximate to the base of the dorsal tooth

and is "ready to move" onto the base of the dorsal tooth to form the structure of the issid type.

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