

DIPTERA: TRICHOCERIDAE OF SOUTH GEORGIA¹By Christine Dahl²

Abstract: The South Georgian collection of trichocerids contains only one species, *T. regelationis* (L.). Morphological peculiarities of the ♂, ♀ and larvae of the South Georgian specimens are discussed against the knowledge of variability in the European specimens, and the distribution and biology of the species is commented upon.

From islands of the South Ocean several trichocerid species have been recorded under different genera. From Campbell Island and Auckland Island the occurrence of 2 species, *Paracladura antipodum* (Mik) and *Nothotrichocera antarctica* (Edwards) has been established by Alexander (1955: 234; 1964: 273-75). Both seem to be endemic in the islands. They belong to 2 genera, which are well represented in the Southern Hemisphere—*Paracladura* Brunetti, found in South America and New Zealand (Edwards 1928: 36), and *Nothotrichocera* Alexander in Tasmania (Alexander 1926: 301).

One species is known from the Kerguelen Island. It was described as an endemic genus and species: *Paleopetaurista dubitata* Séguy, which will be dealt with in a separate paper (Dahl, see following article).

A trichocerid from South Georgia was described by Bréthes (1925: 172-73) as *Trichocerodes georgianus*. After re-examination of the type Edwards (1928: 32) made it synonymous with *Trichocera regelationis* (L.). This species was at the same time recorded from the Falkland Islands, where it was said to be common. All specimens of the present material clearly belong to *T. regelationis*. The genus *Trichocera* is otherwise only represented in the Southern Hemisphere by *T. annulata* Meigen, supposedly to be introduced into Australia (Alexander 1926: p. 303) and New Zealand (Edwards 1. c. p. 33). *T. annulata* and *T. regelationis* are widespread and common species in the North Hemisphere. The adults have different sensibility against low temperatures. *T. annulata* occurs only during autumn in North Europe and the adults are killed by temperatures below zero. The species reaches its northern limit in Central Sweden. The adults of *T. regelationis* occur in Europe during autumn, winter and spring and are able to survive cold periods (Dahl, 1966 p. 106, 111). The species has not been found in Subarctic or Arctic localities in the Northern Hemisphere.

The present samples from South Georgia of about 90 adults, 4 pupae and ca. 300 larvae are preserved in alcohol and mainly collected by H. B. Clagg (exceptions indicated by collectors name). The adults were netted or caught in traps and the larvae, pupae extracted with Berlese funnels from bird nest material or penguin rookery material.

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In Sweden and Finland the males of *T. regelationis* show variations in some hypopygial features (Dahl, 1966: fig. 4, 5) of which a type with long, slender distal part of forceps and very thin basal apodeme of parameres (1. c.: Fig. 8) is dominant in the South Georgian specimens. Variations in the setation and shape of the 9th sternite occur as in northern specimens (1. c.: Fig. 12, 13), as well as considerable variability in body size. The 3rd antennal segment of the South Georgian ♂♂ is slightly longer than the 4th. In ♂ Scandinavian specimens the segments are of equal length, but the ♀♀ always have a slightly longer 3rd segment.

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The ♀♀ from South Georgia are bigger than those from Scandinavia with a tendency to fusion of the 3rd and 4th antennal segments. In all hypopygial features they correspond well with Fig. 47, 52, 57 (Dahl l.c.) However, small variations in the vaginal plate (less indented) and broader and more bowed ovipositors may be noticed.

The pupae and larvae were carefully described by Rhynchart (1925). The dorsal setae (1. c. fig. 22), 1 central, 4 lateral (placed 2 and 2), are also found on South Georgian ♂ pupae, but in the few ♀ pupae available the 4 lateral bristles form a rhomboid pattern. Both sexes have a row of dense small setae on the caudal margin of the thorax.

The larvae (mainly 4th, 3rd and a few 2nd instars) correspond well to the description (1.c.: 40-42). The hind-fringe of the 4th instar headcapsule (1.c.: fig. 13) resembles very much that of *T. saltator* (Dahl 1966: fig. 7), but the mandible with 7 teeth on the terminal part, one big and between 3 to 5 small teeth on the dentate process and 2 very close, equally long bristles on the basal part (Rhynchart 1925: fig. 16, 17) separates the species from *T. saltator*. The occurrence of *T. regelationis* larvae in bird nest material and rookery is noteworthy. In North Finland, the larvae were found in vole burrows (Hackman 1963: 18). In both areas the species seems to live on the margin of its possibilities for survival. The change to a more or less coprophagous feeding manner is also known from another species, *T. columbiana* Alex. in the high Arctic on Ellef Ringnes Island, Canada, (cf. Dahl 1967: 74).

The genus *Trichocera* is not known from South America. This, together with the fact that the present material shows only one of the morphological variations in the ♂ hypopygium represented in North Europe, supports the assumption that *T. regelationis* was introduced into South Georgia and the Falkland Islands. Whether it came from Europe or North America is an open question, because the variability of the features mentioned has not been studied in American specimens. At the same time, however, it must be kept in mind that the trichocerids of South America are very poorly known. At present very little can be said concerning the possible connections between the trichocerid faunas of the Northern and Southern hemispheres along the Andes mountain chain.

DISTRIBUTION: SOUTH GEORGIA: unknown sources (Jones) Jan. March 61 2 ♂♂.

ROYAL BAY, MOLTKE HARBOR: Lower Valley 13.III.64 (and from tussock and Acaena) 5 ♂♂, 2 ♀♀; 3.IV.64, Gentoo penguin rookery, 15 ♂♂, 1 ♀; Upper Valley, 6.III.64, from Acaena 2 ♂♂; 18.III.64, short grasses and rotting tussock 3 ♂♂; at light, 3 ♂♂, 3 ♀♀.

GRYTVIKEN PEN.: Whaling station, 23.IV.63, 1 ♂; Hestesletten, 12.XII.63, grass, 1 ♂; 29.II.64, P. J. T. under log. 2 ♀. **STROMNESS PEN.:** Stromness Beach, 1-7.I.64, tussock grass, handswept near beach, 15 ♂♂, 4 ♀♀; Husvik, 22-23.XII.63, trapnet ser., 2 ♂♂, 1 ♀; 6-9.I.64, misc. sources, 2 ♀♀; 21.I.64, Jones, from freshwater lake, 1 ♂. **BIRD I:** Wanderer Ridge, 21.III.63, nest mat. of shoemaker bird 3 (4. inst.) larvae; 7-10.IV.63, nest mat. of shoemaker. 5 (2. inst.), ca. 50 (3. & 4. inst.) larvae; Fresh Water Bay, North Valley, 15.IV.63, nest mat. of S. G. Diving Petrel, Berlese funnel, 1 (2. inst.), 3 (3. inst.), 2 (4. instar) larvae; Fresh Water Bay, 1.IV.63, tussock, 1 ♂; 7.IV.63, nest of Dove Prion, Berlese funnel, 6 (2. inst.), 8 (3. inst.), ca. 70 (4. inst.) larvae, 18.IV.63, nest mat. of Dove Prion, ca. 30 (2. inst.), ca. 150 (3. and 4. inst.) larvae, 1 pupa; 18.IV.63, nest mat. of shoemaker, Berlese funnel, 4 (4. inst.) larvae, 3 pupae, 1 ♂ with exuviae; 22.-23.IV.63, tussock grass and meadows 4 ♂♂, 1 ♀; 30.VI.63, on snow surface, 1 ♀.

KING EDWARD PT.: 12.II.61, (under stones, Jones, 1 ♀.

MAIVIKEN: 12.II.61, Jones, 2 ♀♀; 26.II.64, P. J. T., tussock, 1 (3. inst.) larva.

BARFF PEN.: Lisbastal, 16.I.64, ex. under reindeer carcass, 1 ♂, 1 larva; Ocean Harbor, 16.I.64, snow surface, 2 ♀♀, tussock grass 2 ♂♂; Jorobihaan, 29.I.64, trapnet ser., 2 ♀♀.

BUSEN PEN.: Olsen Valley, 21.XII.63, 2 ♂♂; Allen Bay, 3.I.64, under rocks, 1 ♀.

FORTUNA BAY: 8.I.64, on tussock 2 ♀♀; 8.I.64, in Gentoo Penguin rookery, 1 ♀; Gentoo Point, 23.X.63, tussock, 1 ♂.

BROWN MOUNTAIN: 14.XI.63, on short grass, 1 ♂.

REFERENCES

- Alexander, C., P.** 1926. The Trichoceridae of Australia (Diptera). *Proc. Linn. Soc. N. S. Wales*. **11**(3) Sydney.
1955. The Crane-Flies of the Subantarctic Islands of New Zealand (Diptera). *Rec. Dom. Mus.* **2**(4). Wellington N. Z.
1964. Insects of Campbell Island. Diptera: Trichoceridae and Tipulidae. *Pacif. Ins. Monogr.* **7**: Honolulu.
1967. Family Trichoceridae. In: A Catalogue of the Diptera of the Americas South of the United States. *Dept. Zool. Secr. Agric. Sao Paulo*.
Bréthes, J. 1925. Un Coléoptère et un Diptère nouveaux de la Georgie du Sud. *Comun. Mus. Nac. Hist. Nat. Buenos Aires*. **2**: Buenos Aires.
Dahl, C. 1966. Notes on the taxonomy and distribution of Swedish Trichoceridae (Dipt. Nemat.). *Opusc. Ent.* **31**: Lund.
1967. Notes on the Arctic and Subarctic Trichoceridae (Dipt. Nem.) from Canada, Alaska and Greenland. *Opusc. Ent.* **32**: Lund.
1970. *Trichocera maculipennis* Meigen (Dipt. Nemat.) from Kerguelen Island. *Pacif. Ins. Monogr.* **23**: 283-84.
Edwards, F. W. 1928. Diptera. Trichoceridae. *Gen. Ins.* **190**: Bruxelles.
Hackman, W. 1963. Studies on the Dipterous Fauna in Burrows of Voles (*Microtus*, *Clethrionomys*) in Finland. *Acta Zool. Fenn.* **102**: Helsinki—Helsingfors.
Rhynehart, J. G. 1925. The larva and pupa of *Trichocera regelationis* L. (Diptera, Rhyphidae). *Proc. Belf. Nat. Hist. Phil. Soc.* **102**nd sess. Belfast.