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Bull. Inst. r. Sci. nat. Belg. Bull. K. Belg. Inst. Nat. Wet.	Bruxelles Brussel	31-XII-1984
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CONTRIBUTIONS TO THE STUDY OF BELGIAN OSTRACODA

2. *CYPRIA SUBSALSA* REDEKE, 1936, IN BELGIUM,
WITH A REDESCRIPTION OF THE SPECIES

BY

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(With one text-figure and two plates)

INTRODUCTION

When studying the ostracod fauna of Belgium, a *Cypria*-species with elongated valves was found in the brackish waters of N. and N.W. Belgium. It appeared to be *Cypria subsalsa* REDEKE, which was originally described from the Zuiderzee (The Netherlands) as *Cypria ophthalmica* (JUR.) var. *subsalsa* by REDEKE in 1936. The species has been overlooked for some time, but a few years ago it was rediscovered by PET-KOVSKI (1976), who considered it as a separate species. His point of view is confirmed here. Because the original description was in Dutch, it is felt necessary to give a full redescription of this remarkable species, living exclusively in brackish environments.

DESCRIPTION

Elongated bean-shaped valves; H/L-ratio ranging from 0.59 to 0.65; dorsal margin gently arched; maximal height near the middle; transition to anterior and posterior margin without angulation; anterior and posterior margins evenly rounded; left valve ventral margin straight; right valve ventral margin weakly concave; left valve overlap in ventral view slightly sinuous; carapace, in dorsal view, elongate egg-shaped with pointed

anterior and blunt posterior extremity. Inner lamella narrow with a very narrow fused zone; anterior and posterior vestibula present. Valve surface smooth and shiny; colour of fixed specimens light brown, sometimes indistinctly spotted; valves somewhat translucent. Antennula : six-segmented; segment ratios : 55 : 15 : 10 : 10 : 8 : 9. The first segment is very broad; it bears a dorsal, a dorso-distal and two long ventral setae; third to sixth segment with very long setae, the longest ones more than one and a half time the length of the antennula.

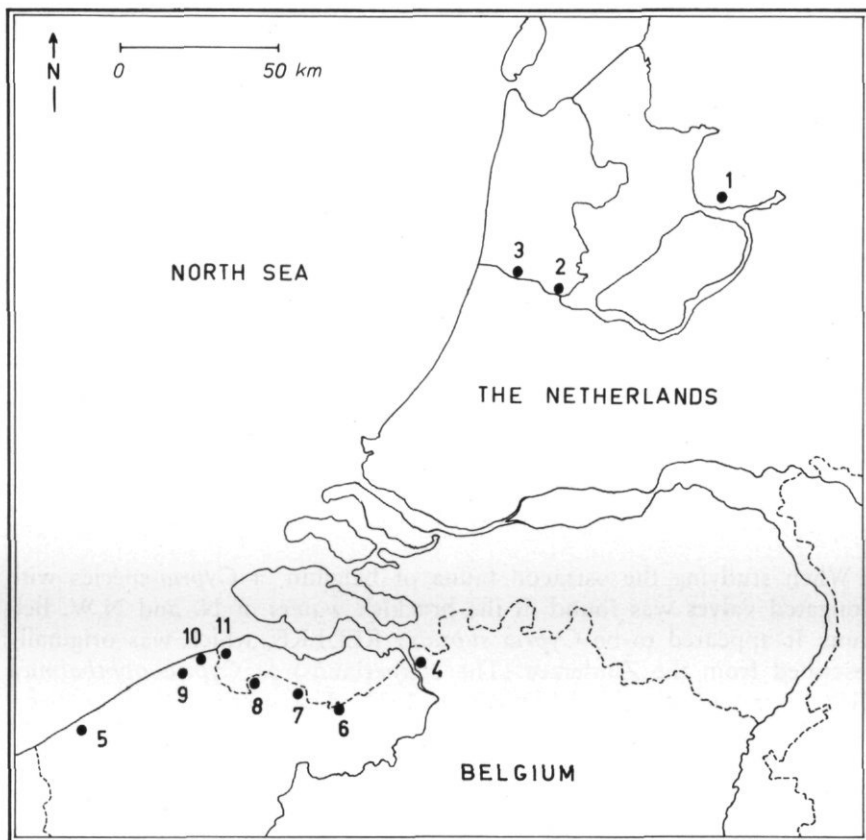


Fig. 1. — Distribution of *Cypria subsalsa* REDEKE in The Netherlands and Belgium.
 1 : Schokland; 2 : Schellingwoude; 3 : North Sea Canal; 4 : Lillo; 5 : Nieuwpoort;
 6 : Moerbeke; 7 : Assenede; 8 : Sint-Jan-in-Eremo and Sint-Margriete;
 9 : Zuienkerke; 10 : Knokke-Heist; 11 : Retranchement.

Antenna with five very long natatory setae, more than twice the length of the endopodite; five finely serrate claws; female antenna four-segmented; length ratios of endopodite segments : 46 : 27 : 10; claw inserted at the base of the terminal segment undulate; male antenna five-segmented; penultimate segment divided; length ratios of endopodite seg-

ments : 36 : 16 : 10 : 8; strong dorso-distal spine at the dorso-distal margin of the third segment; two distal « male setae » on the third segment.

Mandible : four-segmented endopodite; length ratios of segments : 35 : 9 : 21 : 18. Six molar teeth decreasing in size from the anterior; first tooth large and simple; other teeth indistinctly bifid or trifid; setae between teeth.

Maxillula : length ratios of palp : 39 : 8; epipod with 26 feathered setae; proximal segment of palp with six dorso-distal bristles; distal segment of palp subquadrate, bearing six large terminal spines; third lobe with two smooth Zahnborsten.

Maxilla : epipodite with one short and five long Strahlen; strong sexual dimorphism; male palps prehensile and dissimilar, left one being smaller with a narrow clasping organ and a small dorsal seta; right prehensile palp with larger and broader clasping organ and with a strong dorsal spine.

Walking leg (P II) : length ratios of the four distal segments and claw : 28(S2) : 19 (S3) : 18 (S4) : 7 (S5) : 43 (Cl.); segments dorsally and/or ventrally hirsute; second and third segment with a large ventro-distal seta; terminal segment with two small setae and a large, finely serrate, curved claw.

Cleaning limb (P III) : four-segmented; penultimate segment undivided; length ratios of the segments and seta : 40 (S1) : 36 (S2) : 34 (S3) : 10 (S4) : 83 (seta); protopodite with three indistinctly plumose setae; second segment hirsute, with a plumose dorsal seta; third segment ventrally hirsute, with medio-ventral plumose seta; terminal segment with two short, serrate (with two rows) claw-like setae and a large, curved and reflexed plumose seta.

Furca : shaft length to height is 68 to 7; anterior bristle : large claw : small claw is 11 : 34 : 25; claws serrate with double row of denticles; short posterior seta; posterior margin of ramus very finely pectinate. Female genital lobe broadly triangular with rounded apex. Male copulatory appendage with two distal lobes, the ventral one being shorter and narrower than the dorsal one.

Rake-like process with 17 teeth. Zenker's organ with a spherically enlarged entrance and five inner chitin rosettes.

Length : 0.55-0.63 mm; height : 0.34-0.38 mm; width : 0.23-0.30 mm.

Affinities and differences

C. subsalsa REDEKE can be easily distinguished from other European *Cypria*-species by its elongate shape. Furthermore, the subtriangular female genital lobe with rounded apex is typical for the species. The differences between European *Cypria*-species are largely discussed by PETKOVSKI (1976) who already noticed that *C. subsalsa* is a separate species.

DISTRIBUTION AND ECOLOGY

The species was originally described by REDEKE (1936) from a shallow ditch with a chlorinity of 7400 mg/l on the Isle of Schokland in the former Zuiderzee (now IJsselmeer). It was collected on 15 June 1921 when the Zuiderzee was still an inland sea. The species was found together with *Candona angulata* MÜLLER, *Cypria ophthalmica* (JURINE), *Heterocypris salina* (BRADY), *Sarscypridopsis aculeata* (COSTA), *Cyprideis torosa* (JONES), *Cytherura gibba* (MÜLLER) and *Loxoconcha elliptica* BRADY.

Cypria subsalsa is also recorded from the Isle of Schokland and from lagoons on the coast of the IJsselmeer by REDEKE and DEN DULK (1940). In the collections of the « Instituut voor Taxonomische Zoölogie (Zoölogisch Museum) », University of Amsterdam, numerous specimens of the species from different localities are preserved :

— Schellingwoude (N.E. of Amsterdam), 9 September 1928, det. : H. REDEKE; 19 July 1939, det. : A. DE VOS;

— North Sea Canal, 2 June 1951, 12 November 1951, 19 June 1952, 28 September 1952 and 12 October 1952; leg. : J. STOCK, det. : A. DE VOS.

LÖFFLER and DANIELOPOL (1978) mention the species only in zone 14, the lowlands, and consider it wrongly as characteristic of temporary waters. It has never been seen in temporary waters, but always in permanent oligohaline to mesohaline waters.

The collections of the « Koninklijk Belgisch Instituut voor Natuurwetenschappen » at Brussels contain some older records of *C. subsalsa* REDEKE, determined by D. R. ROME from the localities Lillo and Nieuwpoort.

— Lillo (N.W. of Antwerp), in a meadow pond called 'Put'. This pond was described in detail by CONRAD (1941). It was a brackish pond with a salinity ranging from 1.53 ‰ to 9.00 ‰ from April 1938 to April 1939. The specimens were collected on 25 May 1938 (mean salinity for May : 3.20 ‰), on 29 June 1938 (mean salinity for June : 3.94 ‰) and on 22 February 1939 (mean salinity for February : 1.53 ‰). This pond has been filled in some time ago.

— Nieuwpoort (W. Belgium), in the « Graningate Vliet », a drainage canal, collected on 10 September 1945. According to VAN MEEL (1984), this canal has a chlorinity ranging from 370 to 12,697 mg/l.

Recently, *C. subsalsa* REDEKE has been collected from different localities in N.W. Belgium by M. ESPEEL and F. FIERS, mainly from brackish inland waters. The chemistry, fauna and microflora of these waters have been extensively studied by DUMONT and GYSELS (1971) and by VAN MEEL (1984).

- Assenede, « Grote Kil », salinity 3 ‰, pH 8.3, 29 May 1981.
- Moerbeke, « Grote Kreek », salinity 0.5 ‰, pH 8.2, 30 May 1981.
- Sint-Jan-in-Eremo, « Boerekreek », salinity 1.5 ‰, pH 8.6, 29 May 1981; « Oostpolderkreek », salinity 1 ‰, pH 8.3, 29 May 1981; « Roeselarekreek », salinity 2.5 ‰, pH 8.8, 29 May 1981.
- Sint-Margriete, « Brandkreek », salinity 5 ‰, pH 8.0, 29 May 1981; « Molenkreek », salinity 8 ‰, pH 8.3, 28 May 1981.
- Knokke-Heist, creek in the « Hazegraspolder », salinity 1.5 ‰, pH 8.9, 1st June 1981.
- Zuienkerke, in the « Blankenbergse Vaart », a canal with a salinity of 0.5 ‰, pH 8.2, 2nd June 1981.
- Retranchement (The Netherlands, a few hundred meters from the Belgian border), in a drainage canal, salinity 4 ‰, pH 8.9, 1st June 1981.

Cypria subsalsa was found together with *Physocypria kraepelini* MÜLLER, *Cypria ophthalmica* (JURINE), *Herpetocypris chevreuxi* (SARS), *Sarsocypridopsis aculeata* (COSTA), *Cypridopsis vidua* (MÜLLER), *Heterocypris salina* (BRADY), *Candona angulata* MÜLLER, *Limnocythere inopinata* (BAIRD) and *Cyprideis torosa* (JONES).

From the foregoing it can be concluded that *Cypria subsalsa* REDEKE is a oligohaline to mesohaline species. Until now it has not been found in limnetic waters. It has been observed in salinities ranging from 0.5 ‰ to 13.4 ‰. The latter value, the highest recorded for the species, is the salinity recalculated from the chlorinity given by REDEKE (1936) from the type-locality.

ACKNOWLEDGEMENTS

I am indebted to M. ESPEEL and to F. FIERS for offering me their ostracod material to study and to Prof. J. STOCK and D. PLATVOET (University of Amsterdam) for the loan of specimens. Sincere thanks are due to Dr. C. HASKINS for critically reading the manuscript.

RESUME

Cypria subsalsa REDEKE, 1936, ostracode mal connu de Belgique et des Pays-Bas, est redécrit et figuré en détail. Sa distribution et son écologie sont discutés. Il s'agit d'une espèce qui vit exclusivement dans des milieux oligohalins et mésohalins.

SAMENVATTING

Cypria subsalsa REDEKE, 1936, een slecht bekende ostracodensoort uit België en Nederland, wordt in detail herbeschreven en afgebeeld. De verspreiding en ecologie worden besproken. Het betreft een soort die uitsluitend in oligohaliene en mesohaliene milieus voorkomt.

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EXPLANATIONS OF PLATES

PLATE I

Cypria subsalsa REDEKE, 1936

- Fig. 1. — Female left valve, interior view.
Fig. 2. — Female right valve, interior view.
Fig. 3. — Female carapace, dorsal view.
Fig. 4. — Antennula, female.
Fig. 5. — Antenna, female.
Fig. 6. — Antenna, male.
Fig. 7. — Mandible, molar teeth, female.
Fig. 8. — Furca and female genital lobe.
Fig. 9. — Furcal attachment, female.

PLATE II

Cypria subsalsa REDEKE, 1936

Fig. 1. — Maxillula, female.

Fig. 2. — Mandibular palp, female.

Fig. 3. — Maxilla, female.

Fig. 4. — Walking leg (P II), female.

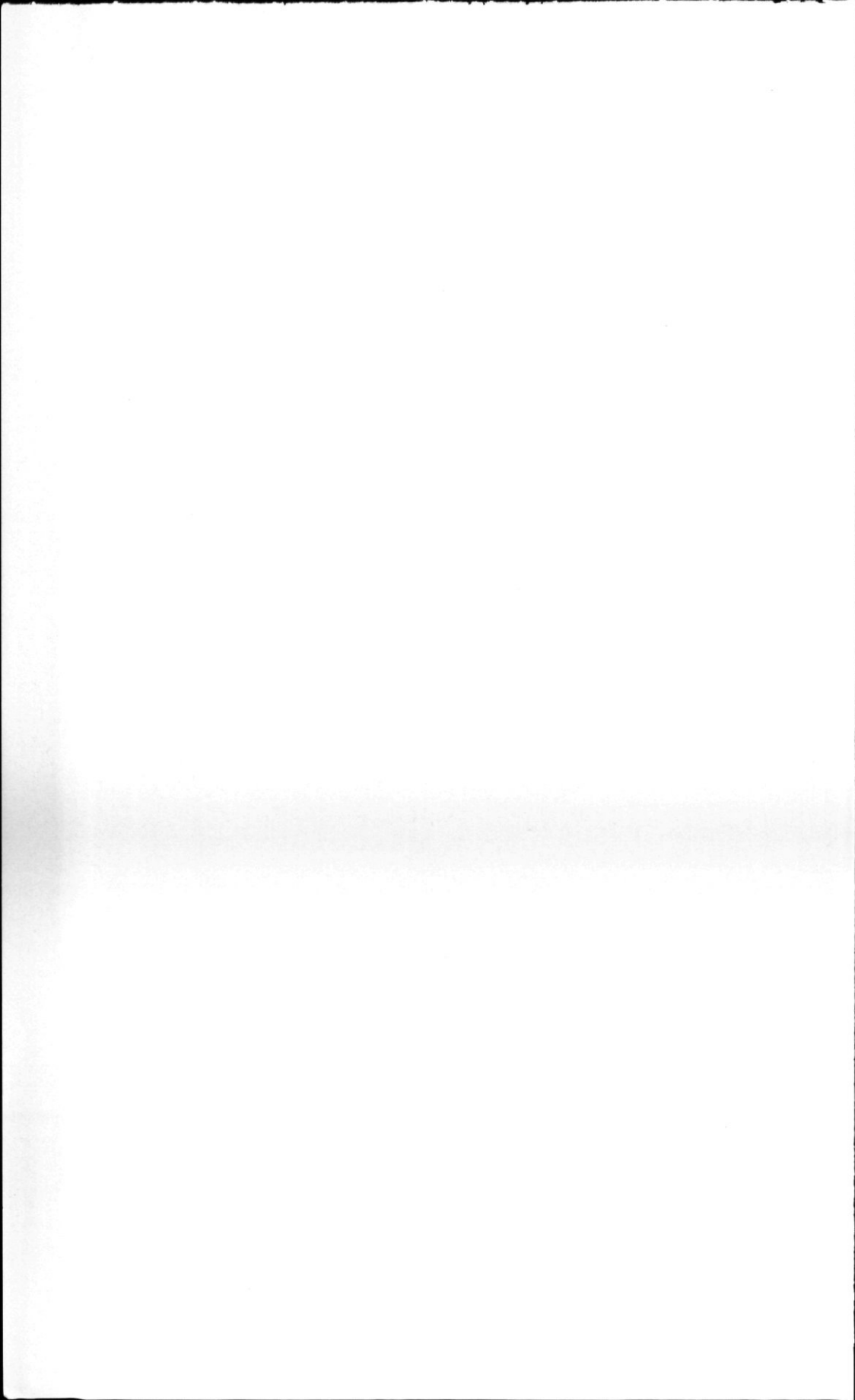
Fig. 5. — Cleaning limb (P III), female.

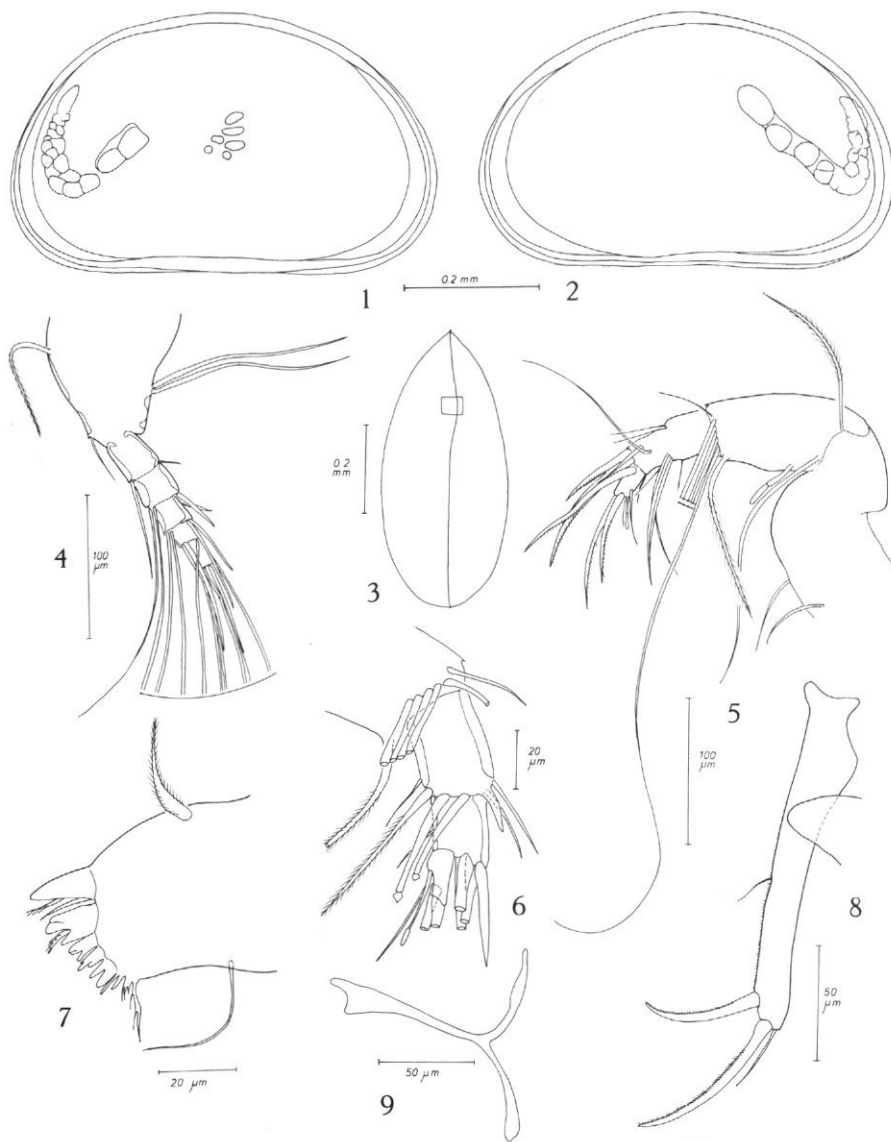
Fig. 6. — Male copulatory organ.

Fig. 7. — Rake-like process, female.

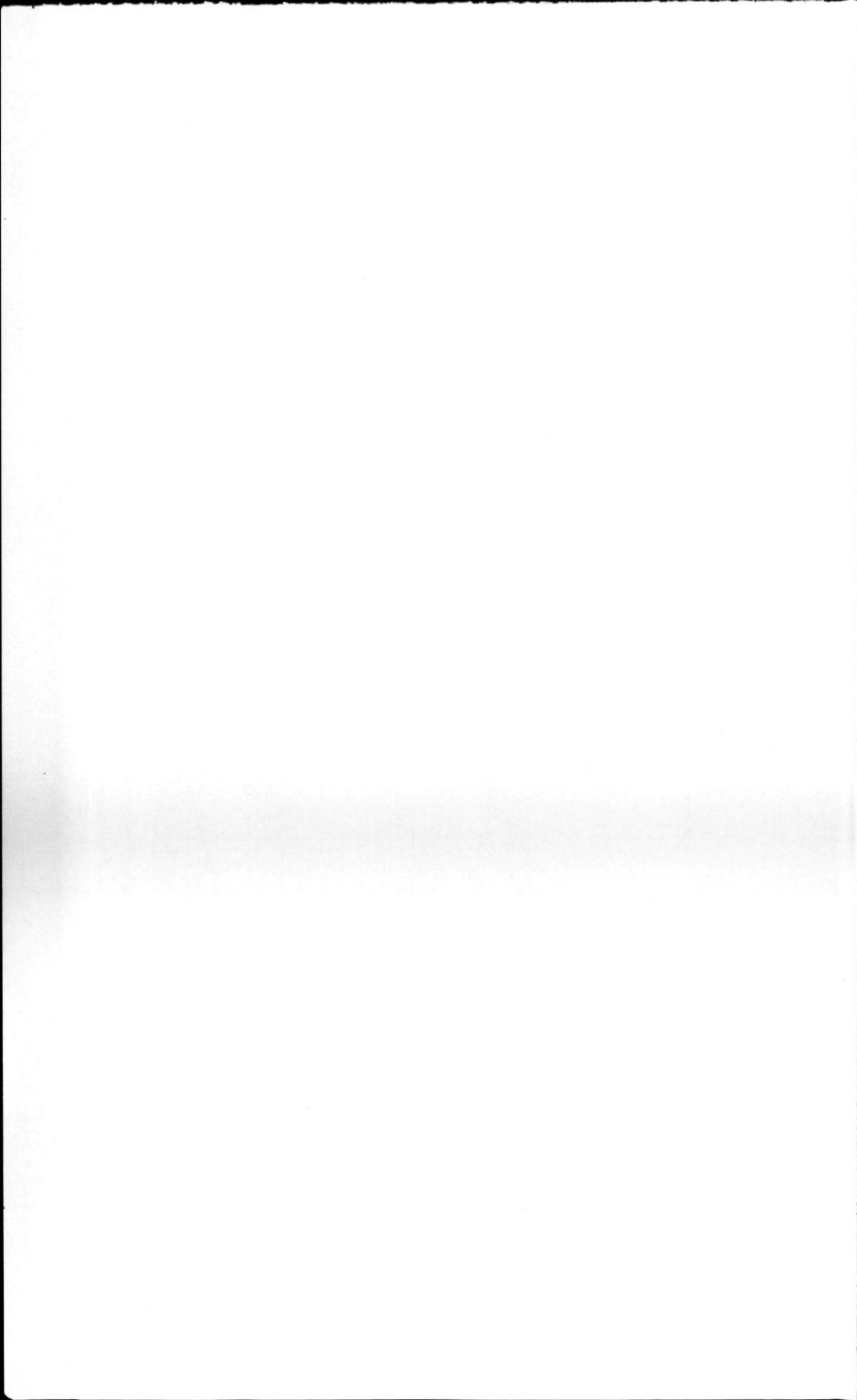
Fig. 8. — Prehensile palp of male left maxilla.

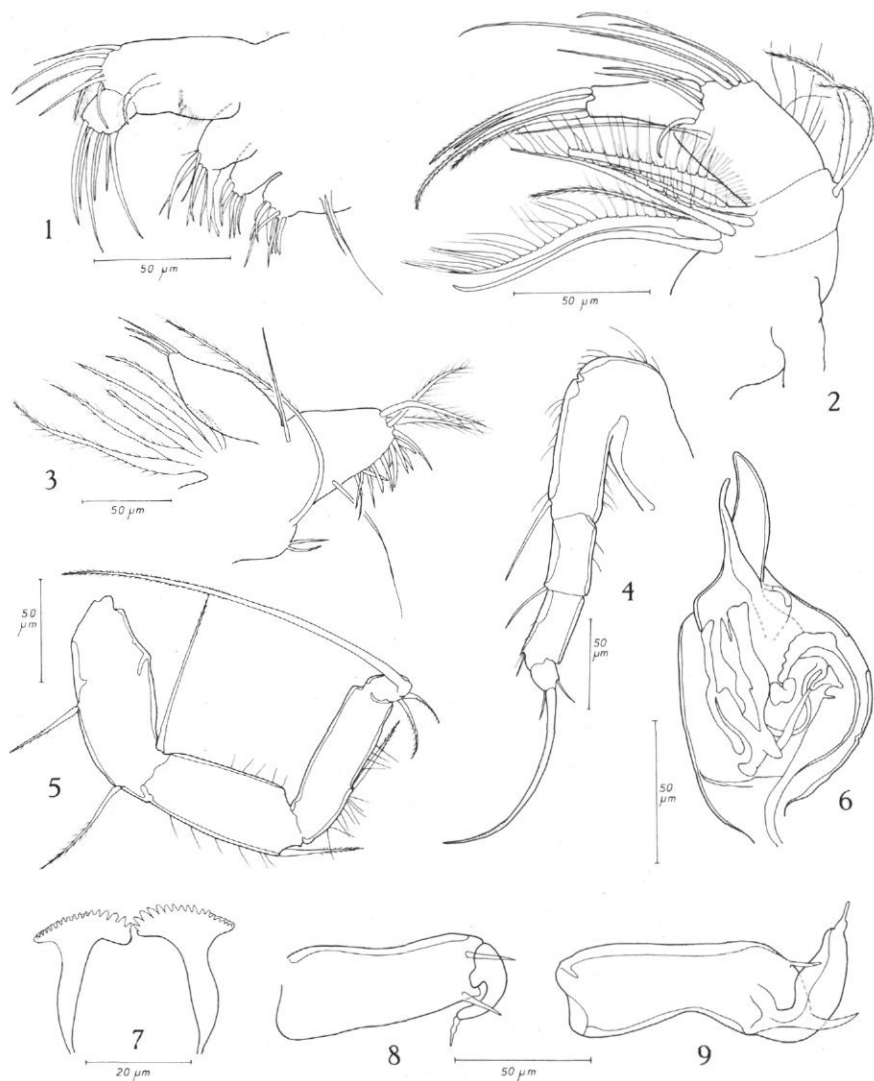
Fig. 9. — Prehensile palp of male right maxilla.





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