

## Rediscovery of *Nymphon gerlachei* Giltay, 1935 (Arthropoda, Pycnogonida)

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**Abstract:** Recently collected material from west of the Antarctic Peninsula has proven to be consistent with *Nymphon gerlachei* Giltay, 1935, previously known only from the holotype. The information now available on its intraspecific morphological variability has allowed the distinctions between this species and *N. charcoti* to be established.

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### Introduction

The Antarctic pycnogonid *Nymphon gerlachei* Giltay, 1935 was described from a single male collected from a depth of 460 m off Chalut Island, in the north of the Bellingshausen Sea and west of the Palmer Archipelago (Giltay 1935, pp. 7–10). Since that time, doubt has existed over its specific distinction, and it has generally been suspected of being a junior synonym of *N. charcoti* Bouvier, 1911. In particular, the two taxa share a palp with the four distal articles long, slender and subequal, and an oviger with article 5 relatively short and slightly curved. Giltay (1935) considered *N. gerlachei* a more slender species than *N. charcoti* (showing a proportionately longer tarsus and second coxa on its walking legs) with a different oviger.

Gordon (1932), in her comprehensive analysis of Antarctic *Nymphon*, described groups of species based largely on the

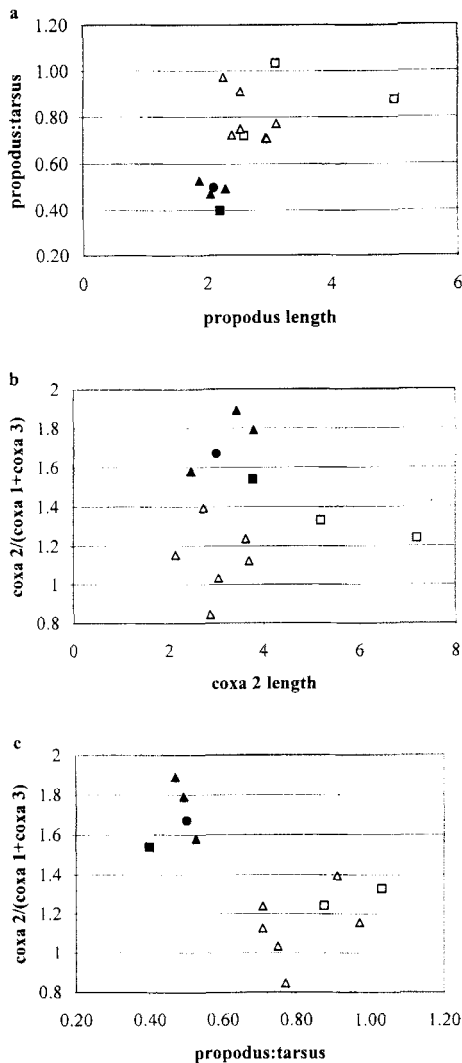
male oviger structure and the presence or absence of auxiliary claws (biunguiculate or uniuunguiculate, respectively); she found *N. charcoti* (of which she had extensive material) to be isolated in this analysis owing to its having a short, curved article 5 of the oviger. Gordon (1932, p. 56) also described a "*Nymphon* sp.", collected from the Schollaert Channel, just west of the Palmer Archipelago, which showed a relatively elongate tarsus and coxa 2 and a relatively short femur.

Most recently, Child (1995) reviewed the Antarctic Nymphonidae, and commented that "*N. gerlachei* appears to be an attenuated form of *N. charcoti* except for a few characters, mostly of the legs [most notably in the extremely long tarsus and shorter propodus in Giltay's species, p.36]. It was taken in ... an area into which only one American and few other nation's [*sic*] expeditions have penetrated." (Child 1995, p. 58).

**Table 1.** Measurements of the holotype of *Nymphon gerlachei*, of the NHM specimens and of "*Nymphon* sp.?" (mm).

Leg articles	claw	propodus	tarsus	tibia 2	tibia 1	femur	coxa 3	coxa 2	coxa 1				
Holotype male	1.9	2.2	5.5	18	13	12	1.08	3.78	1.38				
NHM male	2.16	2.05	4.36	14.05	10.35	8.90	0.79	3.43	1.03				
NHM gravid female	2.48	2.29	4.65	14.72	11.36	10.68	1.15	3.79	0.96				
NHM female	1.75	1.87	3.55	10.17	8.09	6.89	0.88	2.46	0.68				
<i>Nymphon</i> sp. (Gordon, 1932)	1.87	2.1	4.2	13	10.4	8.8	0.6	3	1.2				
Other dimensions													
	Article:		1	2	3	4	5	6	7	8	9	10	claw
Palp	NHM male, mm		0.27	1.72	1.83	1.84	1.87						
	<i>Nymphon</i> sp. proportions*			1.72	1.82	1.82	1.92						
Oviger	<i>N. gerlachei</i> holotype, mm		0.16	2.14	2.29	2.27	2.36						
	NHM male, mm		0.26	0.65	0.78	3.18	4.64	2.28	1.10	1.12	0.98	0.96	0.72
	<i>Nymphon</i> sp. proportions*					3.18	4.78	2.39				1	0.6
Oviger spines	<i>N. gerlachei</i> holotype, mm		0.45	0.77	0.96	3.89	5.85	2.78	1.29	0.66	0.57	0.57	0.31
	NHM male								14	8	7	7	
	<i>Nymphon</i> sp.								12	7	5	6	
	<i>N. gerlachei</i> holotype								17	9	8	8	

\*Gordon (1932) gave only proportions between various articles of the palp and of the oviger; these have been recalculated to an equivalent base of palp article 2 and oviger article 4 respectively for comparison with the NHM male.

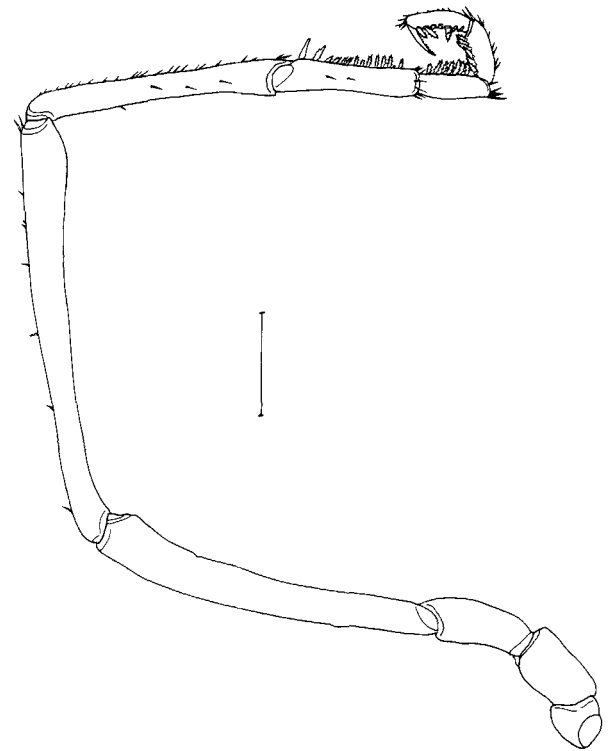


**Fig. 1.** Plots of: **a.** length of propodus: length of tarsus ratio against length of propodus, **b.** length of coxa 2: sum of lengths of coxae 1 and 3 against length of coxa 2, **c.** length of propodus: length of tarsus ratio against length of coxa 2: sum of lengths of coxae 1 and 3, for *Nymphon charcoti* (open symbols; types as squares, others as triangles) and putative *N. gerlachei* material (filled symbols: square = holotype; circle = *Nymphon* sp. of Gordon, 1932; triangles = NHM specimens).

Indeed, no specimen of *Nymphon gerlachei* has been reported since the type.

During the FOODBANCS expedition to the Antarctic in March 2000, a number of pycnogonid specimens were opportunistically collected from benthic samples collected west of the Palmer Archipelago, and have been retained in the collections of The Natural History Museum (NHM). Included in these were three specimens of a small *Nymphon*, including one gravid female, which appeared to agree closely with Giltay's description of *N. gerlachei*.

This material has been analysed in comparison with specimens of *N. charcoti*, and with the type descriptions of



**Fig. 2.** *Nymphon gerlachei* Giltay, 1935: oviger of gravid female. Scale line = 1 mm.

both species; in addition, the type of *N. gerlachei* was kindly made available by the Musée Royal d'Histoire naturelle de Belgique. In the event that the apparent morphological distinctions are part of a size-related trend within *N. charcoti*, six specimens of the latter were selected to include specimens of the same size range as the putative *N. gerlachei* specimens (the *N. charcoti* types being significantly larger).

### Material analysed

#### *Nymphon* "gerlachei"

2 males (NHM.2000.3173–3174), one gravid female (NHM.2000.3175), west of the Palmer Archipelago off the de Gerlache Strait, 65°08.687'S 64°47.191'W, 578 m, 15 March 2000. Coll. N.M.

Holotype male, Accession No. I.G.10131, 460 m, off Chalut Island, 71°05'S 89°03'W; 11 May 1898 (specimen in spirit plus microscope slide preparations of one oviger and one leg).

"*Nymphon* sp.?" Gordon (1932, p. 56–58, fig. 24 e, f); one male, Schollaert Channel, Palmer Archipelago, 64°20'S 63°01'W, 160–335 m.

#### *Nymphon charcoti*

Data on the types, from Bouvier (1911, 1913), collected at 420 m off the South Shetlands Islands, 1909.

6 specimens, NHM 1983:147:100, East Cumberland Bay, South Georgia, 220–247 m; 2 March 1926; det. I. Gordon.

Data from Gordon (1932).

The articles of the second or third leg (as available) were measured axially (Fry & Hedgpeth 1969) using a Filar micrometer eyepiece to the nearest 10  $\mu\text{m}$ . In addition, the articles of the palp and oviger of the putative *N. gerlachei* males were measured, and the compound oviger spines on articles 7 to 10 were counted.

## Results

In all respects other than being slightly smaller, the recent material was consistent with Giltay's description and with the type (e.g. Table I). The proportions of various articles of the legs were compared between all analysed specimens.

The length ratio of tibia 2 to the femur was size related, whereas those of the propodus to the tarsus, and of coxa 2 to coxae 1 and 3 were not (Fig. 1a & b). These last two ratios clearly clustered the species into two groups (Fig. 1c). As a result, Giltay's species is re-established, and the distinctions between these two species are described herein.

The specimens of *N. charcoti* had a tibia 2 of 1–1.59 times the femur length, a propodus greater than 0.7 times the length of the tarsus, and a coxa 2 less than 1.4 times the length of coxa 1 plus coxa 3.

Conversely, the *Nymphon gerlachei* holotype, the three NHM specimens from off the de Gerlache Strait, and "*Nymphon* sp.?" Gordon, 1932, herein and consequently all attributed to *N. gerlachei*, showed a tibia 2 of 1.38–1.58 times the femur length, a propodus less than 0.6 times the length of the tarsus, and a coxa 2 greater than 1.5 times the length of coxa 1 plus coxa 3. As suggested by Giltay (1935) and Child (1995), it is the proportionately long tarsus which is most noticeable.

It is therefore concluded that *Nymphon gerlachei* is a distinct species from *N. charcoti*, characterized by a proportionately longer tarsus and coxa 2. *Nymphon gerlachei*,

a smaller and more slender species at maturity, appears to be confined to the Antarctic waters west of the Palmer Archipelago, and has been taken in depths from 160 to 578 m.

As both the holotype and Gordon's (1932) specimens were male, the opportunity is taken to figure the oviger of the female from the gravid specimen (Acc. no. NHM.2000.3175) (Fig. 2).

In the same sample as the March 2000 *Nymphon gerlachei* specimens were one specimen of *N. charcoti*, 13 *N. australe* (Hodgson, 1907) (including an ovigerous male), one *Colossendeis australis* Hodgson, 1907, one *Pallenopsis pilosa* (Hoek, 1881) and three juvenile *Ammonothea carolinensis* Leach, 1814.

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## References

- BOUVIER, E.L. 1911. Les Pycnogonides du Pourquoi Pas? *Comptes Rendus des Séances Hebdomadaires de l'Académie des Sciences, Paris*, **152**, 1136–1141.
- BOUVIER, E.L. 1913. Pycnogonides du Pourquoi Pas? *Deuxième Expédition Antarctique Française (1908–1910)*, **6**, 1–169.
- CHILD, C.A. 1995. Antarctic and Subantarctic Pycnogonida: III. The family Nymphonidae. *Antarctic Research Series*, **69**, 1–68.
- FRY, W.G. & HEDGPETH, J.W. 1969. Fauna of the Ross Sea, Part 7. Pycnogonida, 1. Colossendeidae, Pycnogonidae, Endeidae, Ammonotheidae. *New Zealand Department of Scientific and Industrial Research Bulletin*, No. 198, 1–139.
- GILTAY, L. 1935. Pycnogonides. Résultats du voyage de la Belgica en 1897–99. *Rapports Scientifiques des Résultats de la Voyage de la Belgica en 1897–99, Zoologie*, 1–16.
- GORDON, I. 1932. Pycnogonida. *Discovery Reports*, **6**, 1–138.