

# *Longibrachium falcigerum*, a new species of Onuphidae (Annelida: Polychaeta) from the Seamount 2 Expedition, North Atlantic Ocean

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A new species, *Longibrachium falcigerum*, is described from seamounts in the North Atlantic Ocean, from depths of 495–695 m. *Longibrachium falcigerum* sp. nov. is unique among its congeners for possessing falcigers and spinigers in the lower chaetal bundle. Another member of the *Rhampobrachium* complex, *Rhampobrachium (Spinigerium) brevibrachiatum*, occurring with the new species, is briefly characterized.

## INTRODUCTION

The invertebrate fauna of North Atlantic seamounts has been studied to evaluate its composition and to compare it with the surrounding North Atlantic areas and other seamounts (Gofas, 1993). The polychaetes studied were collected during the Seamount 2 Expedition on-board the RV 'Le Suroît' in 1993. Gillet & Dauvin (2000) presented results from the Atlantis and Hyeres seamount analyses and Gillet & Dauvin (2003) those of Irving, Meteor and Plato seamounts, showing that Onuphidae, Amphinomididae and Eunicidae were dominant both in diversity and abundance.

Five species of Onuphidae were collected on these five seamounts. Of these *Hyalinoecia tubicola* (Müller, 1776) and *Rhampobrachium brevibrachiatum* (Ehlers, 1875) are the most abundant, followed by *Nothria conchylega* (M. Sars, 1835), *Paradiopatra quadricuspis* M. Sars, 1872 and *Longibrachium falcigerum* sp. nov.

The present paper is treating the specimens that had been reported as *Rhampobrachium atlanticum* Day, 1973 from the Atlantis and Hyeres seamounts (Gillet & Dauvin, 2000). More material from the other three seamounts allowed further study and they were found to belong to two species of the *Rhampobrachium* complex, namely *Rhampobrachium (Spinigerium) brevibrachiatum* and a new species of *Longibrachium* Paxton, 1986. The former will be briefly characterized below, while the latter is described as *Longibrachium falcigerum* sp. nov., making it the fourth known species in the genus.

## MATERIALS AND METHODS

The Seamount 2 Expedition in 1993 with the RV 'Le Suroît' studied the south Azores seamounts Atlantis, Hyeres, Irving, Meteor and Plato (Gofas, 1993). Benthic samples were collected on the Meteor and Plato seamounts in January and February 1993 using three types of equipment: Waren Dredge (WD with a mesh size of 2 mm in the net), an Epibenthic Dredge (ED) and a Beam Trawl (BT with a mesh size of 5 mm in the net). The material was

fixed on-board in 4% neutral formalin and later transferred to 70% ethyl alcohol.

The material examined is deposited in the following institutions: AM, Australian Museum, Sydney; MNHN, Muséum National d'Histoire Naturelle, Paris; UCO, Université Catholique de l'Ouest, Angers. Counts and measurements are of the holotype, with the range of paratypes in parentheses. Body width (without parapodia) is of chaetiger 10. Terminology follows Paxton (1986a, 1998).

## SYSTEMATICS

Family ONUPHIDAE Kinberg, 1865

Subfamily ONUPHINAE Kinberg, 1865

Genus *Longibrachium* Paxton, 1986 emended

### Diagnosis

Anterior four pairs of parapodia prolonged, with more than three distally recurved hooks each; hooks with two rows of immovable spines; chaetal sacs extending to chaetigers 20–60.

### Definition

Prostomium with two frontal lips, two palps and three antennae; palps and antennae with ceratophores with 4–7 rings, with moderately long styles: longest style to chaetigers 6–15. Peristomial cirri present.

Anterior four pairs of parapodia modified, moderately to greatly prolonged. Branchiae from chaetigers 6–7; pectinate filaments.

Modified parapodia with more than three hooks each; hooks simple, distally recurved, shafts with two rows of immovable spines; chaetal sacs extending to chaetigers 20–60 in body cavity. Pectinate chaetae and limbate chaetae from chaetiger 5, lower limbate chaetae simple or pseudocompound to compound (=spinigers), falcigers present or absent. Bidentate hooded subacicular hooks from chaetigers 16–26.

Jaws with mandibles and maxillae, Mx VI present or absent.

*Remarks*

The new species described below has pseudocompound to compound lower limbate chaetae and falcigers, a feature that is absent in the previously known species, requiring the emendation of the generic definition. This feature is also present in the closely related genus *Rhambrobrachium* and is considered a plesiomorphic character of the family (Paxton, 1986a).

In the original description of the genus it was stated that pectinate chaetae start on chaetiger '5 or later'. Since these chaetae commence in all known species on chaetiger 5, the definition has been emended to that effect.

*Longibrachium falcigerum* sp. nov.

Figures 1 & 2

*Rhambrobrachium atlanticum* (non Day, 1973)—Gillet & Dauvin 2000 (in part).

*Longibrachium* sp. nov.—Gillet & Dauvin 2003.

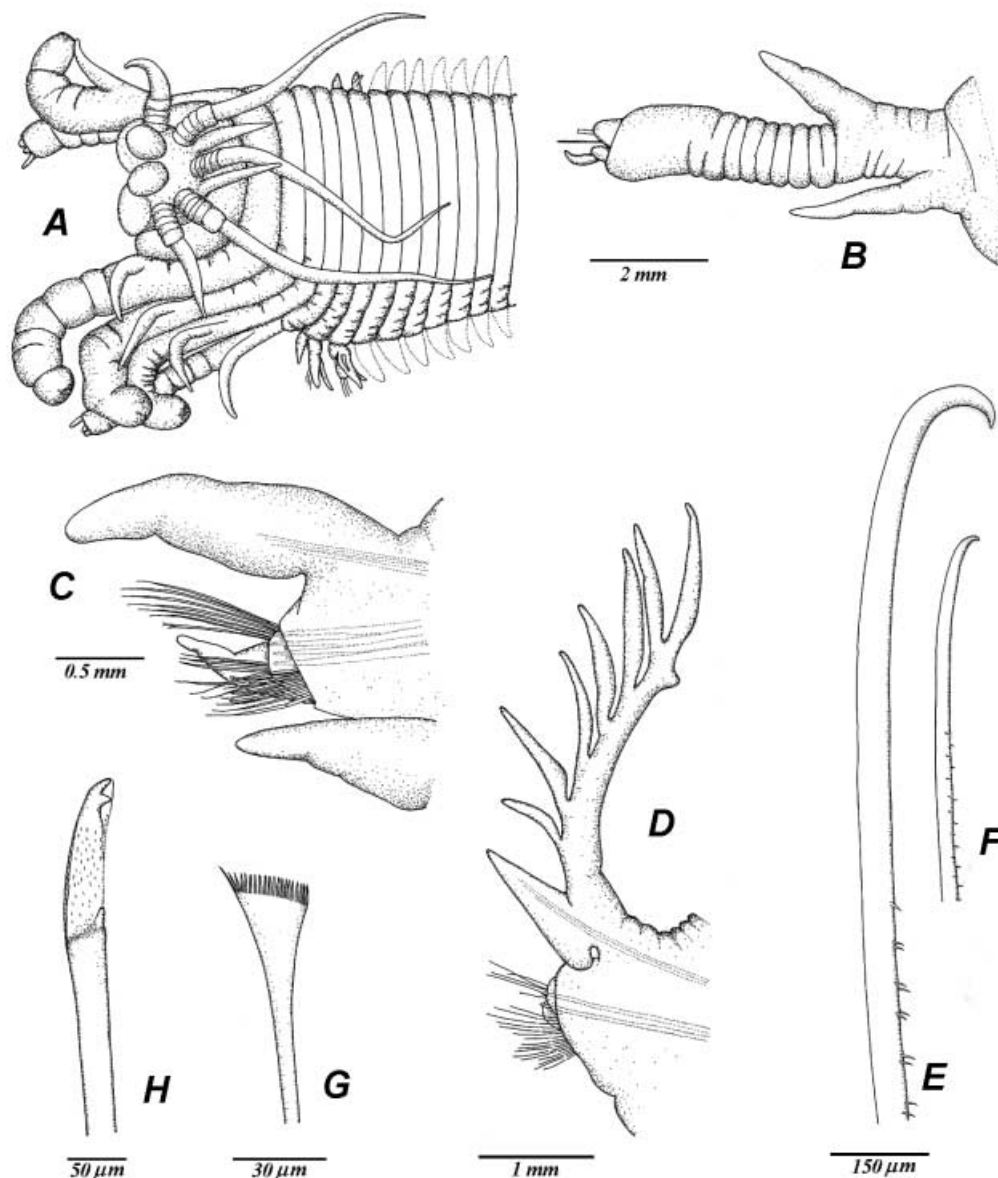
*Material examined*

Holotype: MNHN POLY1401, Station M148, 11 January 1993; 30°12.01'N 28°24.64'W, 585–615 m.

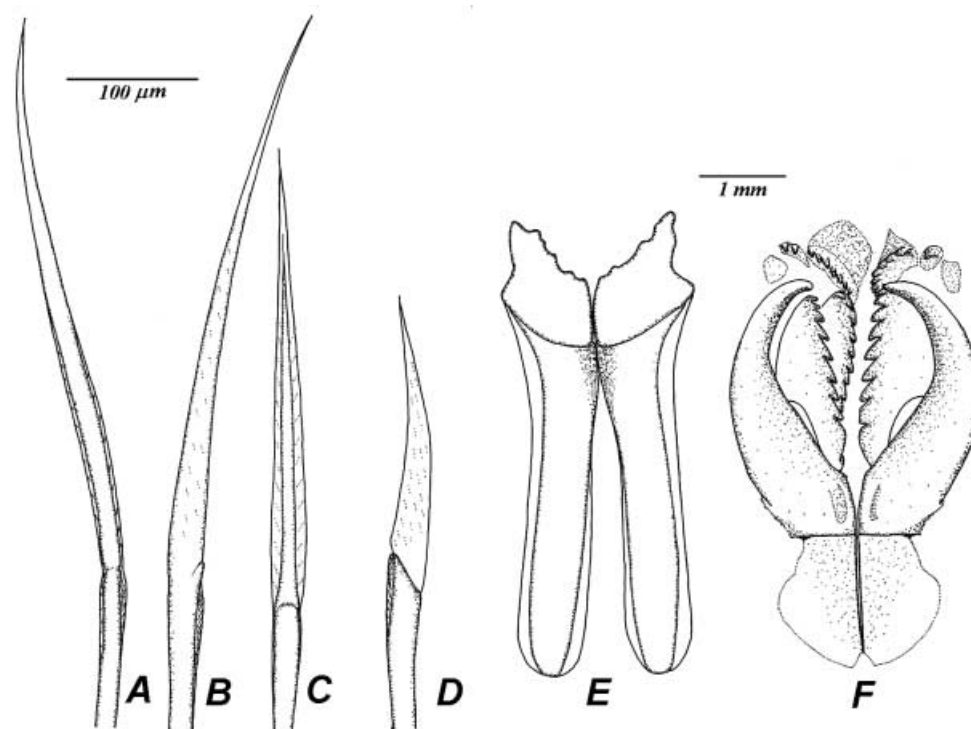
Paratypes: UCO IRFA ONU33 (2) Station M167, 14 January 1993; 30°04.60'N 28°42.10'W, 495–520 m; AM W28460 (1) Station P240, 31 January 1993; 33°12.26'N 29°01.87'W, 565–575 m; MNHN POLY1402 (1) Station P241, 31 January 1993, 33°11.91'N 28°59.32'W, 695–695 m.

*Description*

All types incomplete; holotype measuring 10 mm in length for 18 chaetigers, 5.5 mm in width; paratypes 10–15 mm (7–22 chaetigers) width 5.0–8.0 mm. Colour markings absent. Prostomium short with globular frontal lips (Figure 1A). Ceratophores of palps and antennae with 4–5 (4–6) proximal rings and a longer distal ring. Styles gradually tapering, ending in fine tips; paired



**Figure 1.** *Longibrachium falcigerum* sp. nov. (A Holotype MNHN POLY1401, B–F&H Paratypes UCO IRFA ONU33, G Paratype MNHN POLY1402). (A) Anterior end, dorsolateral view; (B) parapodium 2, posterior view; (C) parapodium 5, anterior view; (D) parapodium 12, anterior view; (E) large spiny hook from chaetiger 2; (F) small spiny hook from same; (G) pectinate chaeta from chaetiger 5; (H) pseudocompound falciger from chaetiger 5.



**Figure 2.** *Longibrachium falcigerum* sp. nov. (Paratypes UCO IRFA ONU33). (A) Pseudocompound median bilimbate chaeta from chaetiger 5; (B) pseudocompound long cultriform lower limbate chaeta from same; (C) pseudocompound median spine-like bilimbate chaeta from chaetiger 12; (D) compound short cultriform limbate chaeta from same; (E) mandibles; (F) maxillae.

palps reaching to chaetiger 2 (1–2), antennae about equal in length reaching to chaetiger 13 (6–11). Nuchal grooves straight, with small mid-dorsal separation. Peristomial cirri large, almost as thick as antennal styles, 1.5 times as long as peristomium, inserted distally on peristomium between median and lateral antennae. Peristomium and chaetiger 1 almost twice as long as following chaetigers.

Modified parapodia (chaetigers 1–4) greatly prolonged, directed anteroventrally; parapodia 1 longest, becoming progressively shorter. Modified parapodia of all specimens partly retracted, resulting in curved (Figure 1A) or ringed appearance (Figure 1B). Modified parapodia (Figure 1B) with low acicular lobes, three papilliform lobes and digitiform postchaetal lobes. Following parapodia (Figure 1C) short; low prechaetal folds, rounded acicular, and subulate postchaetal lobes, latter reduced by chaetigers 10–15. Dorsal cirri digitiform with basal swelling developing into basal process by chaetiger 8 (Figure 1D). Ventral cirri subulate on anterior 5 (5–6) chaetigers. Branchiae as single (single to bifid) filaments from chaetiger 6, 3–4 filaments from chaetigers 7–8, reaching a maximum of seven filaments by chaetigers 11–12.

Hooks of modified parapodia with two longitudinal rows of spines, spaced far apart, absent from distal part of hook. One large distally recurved hook (Figure 1E) projecting from each of three papilliform lobes. Bundle of three shorter, thinner, falcate or bidentate hooks (Figure 1F) from lower fold. Chaetal sacs of hooks of parapodia 1–4 extending in body cavity to about chaetigers 30, 27, 24, 12 respectively.

From chaetiger 5 limbate and pectinate chaetae replacing hooks. Upper bundle of 8–12 simple limbate chaetae

and 1–3 pectinate chaetae (comb with about 20 teeth) (Figure 1G) projecting from dorsal pocket. Lower bundle of 10–15 pseudocompound limbate chaetae and 5–6 pseudocompound falcigers (Figure 1H). From chaetiger 6, only pseudocompound limbate chaetae in lower bundle, consisting of bilimbate median (Figure 2A) and long cultriform lower (Figure 2B) limbate chaetae, changing to spine-like (Figure 2C) and compound short cultriform (Figure 2D) respectively in following chaetigers. One bidentate subacicular hook from chaetiger 15, two from 16, replacing lower limbate bundle.

Mandibles (Figure 2E) white, strongly calcified; broad, thick shafts and large cutting plates serrated at distal margin. Maxillae (Figure 2F) moderately sclerotized, darker towards toothed inner plate edges. Central triangle of carrier pale brown, basal outer lobes very pale, hardly sclerotized. Maxillary formula (based on two paratypes): Mx I=1+1; Mx II=6–8+7–8; Mx III=6–8+0; Mx IV=5–7+7–9; Mx V=1–2+1; Mx VI=toothless plate. Tube with white, parchment-like inner lining, and outer covering of foraminiferous sand.

#### Remarks

*Longibrachium falcigerum* sp. nov. is unique in having pseudocompound falcigers on chaetiger 5, and pseudocompound to compound limbate chaetae in the lower bundle of chaetigers 5–15, rather than only simple limbate chaetae as the remaining three species in the genus. The new species resembles *L. longipes* Paxton, 1986 most closely in having a combination of large and smaller hooks in modified parapodia, and the presence of maxilla VI, while *L. atlanticum* (Day, 1973) and *L. quadripes*

(Kucheruk, 1979) have only large hooks, maxilla VI is absent in the former and the state is unknown for the latter.

Unfortunately, the types are all relatively short incomplete specimens, containing only up to 22 chaetigers. However, this does not affect the validity of the species as the distinguishing characters are present. Since the complete chaetal sacs of the modified hooks are present and protruding from the end of the specimens, it was possible to extrapolate their extent in terms of number of chaetigers reached.

The largest paratype (UCO ONU33) displays some obviously abnormal development in that its frontal lips are fused into one structure and the median antenna is almost absent. However, because of its comparatively large size and good preservation it has nevertheless been designated as a paratype.

#### *Etymology*

The name of the new species is derived from its characteristic falcigers on chaetiger 5.

#### *Distribution*

North Atlantic Ocean, Meteor and Plato seamounts; bathyal between 495–695 m in bioclastic sand and sponges or in pteropod sand and coral, in some stations collected together with *Rhampobranchium brevibrachiatum*.

Genus *Rhampobranchium* Ehlers, 1887

#### *Diagnosis*

Anterior three pairs of parapodia prolonged, with three distally recurved hooks each; hooks with two rows of movable spines, chaetal sacs extending to chaetigers 30–60.

Subgenus *Spinigerium* Paxton, 1986

#### *Diagnosis*

Lower limbate chaetae pseudocompound to compound (=spinigers).

*Rhampobranchium (Spinigerium) brevibrachiatum* (Ehlers, 1875)

*Diopatra brevibrachiata* Ehlers, 1875:49, plate 3, figures 11–21.

*Rhampobranchium (Spinigerium) brevibrachiatum*—Paxton, 1986b:89, figure 9a–g.

*Rhampobranchium atlanticum* (not Day, 1973)—Gillet & Dauvin, 2000 (in part).

*Rhampobranchium brevibrachiatum*—Gillet & Dauvin, 2003.

#### *Material examined*

UCO IRFA ONU34 (2) Station M167, 14 January 1993, 30°04.60'N 28°42.10'W, 495–520 m.

#### *Diagnosis*

Posterior antennae on median part of prostomium; branchiae from chaetigers 11–13, maximum of 5–6 filaments by chaetiger 30; falcigers present or absent on chaetiger 4; one subacicular hook from chaetigers 12–16, two from 14–18.

#### *Remarks*

The incomplete specimens examined agree with the above diagnosis and description of Paxton (1986b). They measure 15 mm in length for 47–48 chaetigers and 2.0–2.5 mm in width, branchiae start on chaetigers 12–13 and attain a maximum of 3–4 filaments, one subacicular hook starts on chaetigers 14–15 and two from 15–16. Falcigers are absent.

#### *Distribution*

North Atlantic Ocean; 120–1470 m.

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