

A New Pygmy Seahorse (Pisces: Syngnathidae: *Hippocampus*) from Lord Howe Island

RUDIE H. KUITER

Ichthyology, Museum Victoria, Melbourne Victoria 3001, Australia

rudie.kuiter@zoonetics.com · syngnathiformes@zoonetics.com

ABSTRACT. A new species of seahorse, *Hippocampus colemani*, is described from Lord Howe Island off eastern Australia. It can be distinguished from congeners by the following combined features: very small size (to about 23 mm in height), very deep trunk (about 60% in its length), low number of tail rings (27–29) and most distinctly, a single gill opening, placed dorsally behind the head.

KUITER, RUDIE H., 2003. A new pygmy seahorse (Pisces: Syngnathidae: *Hippocampus*) from Lord Howe Island. *Records of the Australian Museum* 55(2): 113–116.

Seahorses are currently placed in a single genus: *Hippocampus* (family Syngnathidae). The Australian species were recently revised by Kuitter (2001), who recognized 24 species, two of which are diminutive, reaching less than 50 mm height. The two are collectively known as pygmy seahorses. These tiny species usually occur at depths of 30 m or more, but a third pygmy species was discovered at a depth of only 5 m in the lagoon at Lord Howe Island in the Tasman Sea. A description of the species, based on two specimens, is presented here.

Materials and methods

Methodology follows that of Kuitter (2001), except specimens were photographed and enlarged 20 times and proportional measurements recorded from the enlarged photos. Radiographs were used to confirm the number of tail rings. Sex was determined on the absence or presence of a pouch, however, in pygmy species this character is not as obvious as in the larger species. In all seahorse species, including pygmy species, the position of the anus in both sexes is at the same horizontal level in relation to the dorsal fin base. All males have a pouch and the anus is positioned

further away from the body axis compared to the female. The pouch can look somewhat like a posterior extension of the trunk since the anus is often not obvious, especially when brooding. This is applicable to pygmy seahorses and sex can be determined by the posterior reach of their trunk and pouch combined in relation to the horizontal level with the dorsal-fin base, especially when working with photographs. The specimens are deposited in the Australian Museum, Sydney (AMS).

Hippocampus colemani n.sp.

Figs. 1, 2

Coleman's Pygmy Seahorse

Type material. HOLOTYPE: AMS I41181-001, height 22.1 mm, female, near Erscott's Hole, lagoon, Lord Howe Island, New South Wales (approximately 32°32.950'S 159°05.080'E), depth 5 m, collected by hand, Neville Coleman, January, 2002. PARATYPE: AMS I41181-002, height 21.4 mm, female, same data as holotype.

Diagnosis. Dorsal-fin rays 12–13; pectoral-fin rays 10; anal fin absent; trunk rings 11; tail rings 27–29; nose ridge well

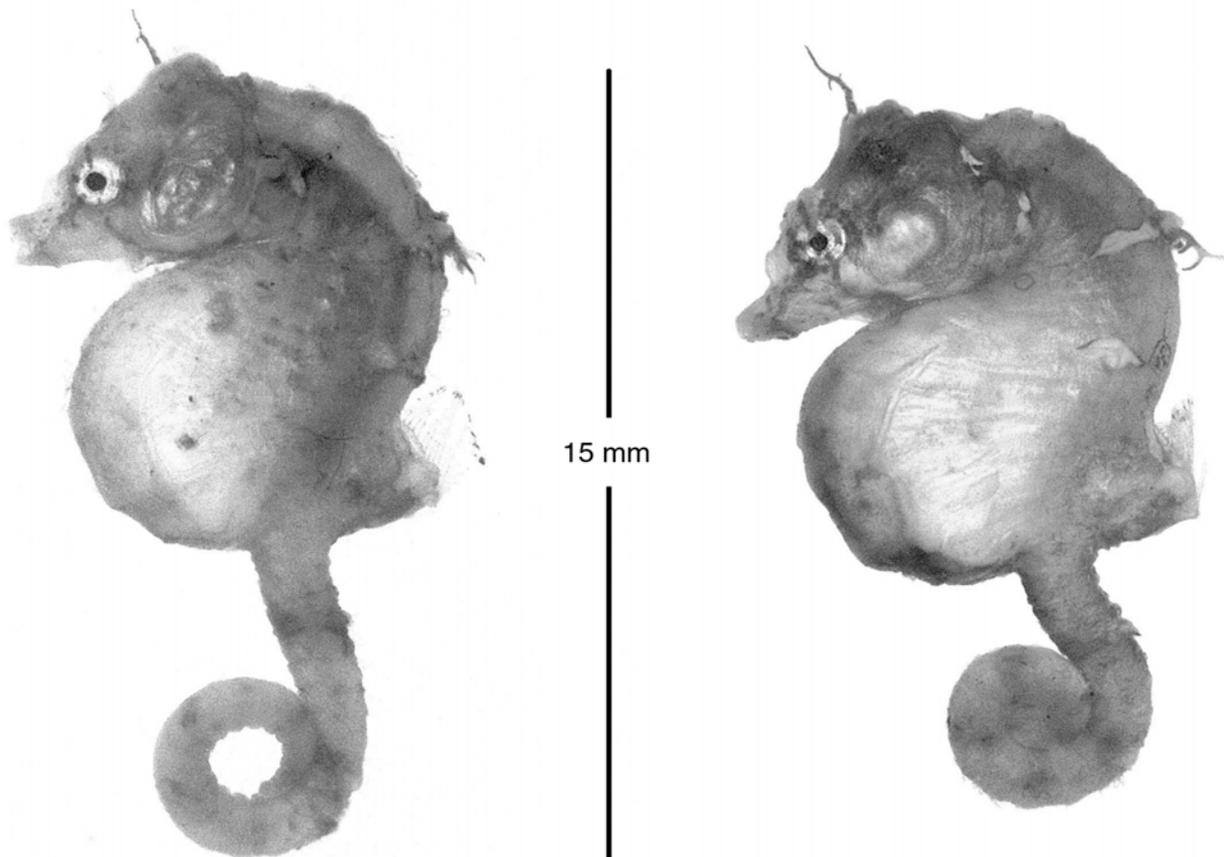


Fig. 1. *Hippocampus colemani*, holotype AMS I41181-001 (left) and paratype AMS I41181-002 (right), both female.

developed in front of eye; a single gill opening on the neck ridge, directly behind the head; base of dorsal fin greatly elevated posteriorly, forming a triangular hump on the back.

Description. Head small, c. 50% of trunk length and strongly angled down onto trunk; snout short, length about equal to eye diameter; trunk very deep, c. 60% of its length; tail thin, 1.3 times eye diameter, its greatest depth and width anteriorly, and its length 58% in height (overall, see fig. 3, Kuitert, 2001); dorsal fin with 12 rays (13 in paratype), its base greatly elevated posteriorly so that fin rays almost parallel with trunk axis, height of fin base at posterior end almost equal to its length; pectoral-fin rays 10; anal fin absent; trunk rings 11, obscured and smooth dorsally; tail rings 29 (27 in paratype); trunk and tail ridges poorly developed, mostly indistinguishable and only evident on lower two-thirds of trunk, as ventral and inferior ridges; all spines reduced to tubercles, those on back at 4th, 7th and 11th rings enlarged and most notable, largest below dorsal-fin base, and on head as lateral head spines, some with dermal appendages; coronet low and rounded with tentacle like dermal appendage anteriorly (also in paratype); nose spine present as well-developed ridge in front of eye; single relatively large gill opening, slightly raised by skin, and situated mid-dorsally on neck ridge, immediately behind head. Colour in life (paratype): body mostly pale golden-yellow; trunk with white circular or elliptical markings, each outlined with thin red lines, largest around tubercles

on 4th and 7th rings; shoulder-ring tubercles white; head white on nape above eyes, extending over snout to tip of mouth, highlighting several dusky brown bands radiating from eye; tail slightly more brown with red markings, some expressed as elongate spots on same ring, suggesting a band. Colour in alcohol: pale brownish all over, some thin dark lines near tubercles on body and dusky bands radiating from eye.

Distribution and ecology. Only known from the types and two additional specimens photographed (Figs. 3, 4), but not collected at Lord Howe Island, off the New South Wales coast. All were found in the same general area at a depth of 5 m. The habitat is comprised of coarse sand with sparse *Zostera* and *Halophila* plants that have fine filamentous algae on their leaves. The same algae are present on the body of the seahorses, attached to their skin.

Remarks. This species is named *colemani* after Mr Neville Coleman, who discovered and photographed the species at Lord Howe Island, and then returned specifically to collect the type material. Only 4 specimens have been observed, the largest was collected and measured at 22.1 mm in height. Judging by its shape, it appears to be fully grown and would unlikely get much larger. At this stage it is the smallest known seahorse. Despite its small size, it is surprising that it has gone unnoticed until now. Several extensive fish surveys have been undertaken at Lord Howe Island, the largest and most comprehensive led by the



Fig. 2. *Hippocampus colemani*, paratype AMS I41181-002, in situ. Photo by Neville Coleman.



Fig. 3. *Hippocampus colemani*, this specimen not collected, sex not determined. The single gill opening is arrowed. Photo by Neville Coleman.



Fig. 4. *Hippocampus colemani*, this specimen not collected. A probable male as it appears to have a pouch. Photo by Neville Coleman.

Australian Museum in 1973. At the time, a team of 15 collectors, 8 of whom were ichthyologists, collected constantly for one month (Allen *et al.*, 1976), and did not find this seahorse.

The closest relative of *Hippocampus colemani* in Australian waters is *H. bargibanti* Whitley, a tropical species that lives on gorgonian corals. It has similar meristic values and shares the greatly elevated dorsal-fin base, but is quite different in its fleshy and lumpy appearance, and has a longer tail. From a global perspective, most similar in its morphology is a pygmy species from Japan (sp. 7, Kuitert, 2000) that is nearly identical in shape and has an almost identically formed nose ridge. Kuitert's *Hippocampus* sp. 7, however, has small but distinctive spines along the trunk and tail ridges. A further similar species that appears to be closely related (sp. 6, Kuitert, 2000) occurs on gorgonians in Papua New Guinea, but is only known from photographs. All share the unusually elevated dorsal-fin base that forms a large hump on their back. The feature of a single gill opening (see Figs. 2, 3) appears to be the same in the Japanese and the Papua New Guinea species (not clear in photographs). It is likely that the three species form a natural group, but until the relationship of all seahorses are understood the species will be retained together in the single genus *Hippocampus*.

ACKNOWLEDGMENTS. Martin Gomon, Museum Victoria provided the radiographs and commented on the manuscript. I thank Mr Geoff Kelly, Manager of the Lord Howe Island Marine Park, and Mr Patrick Tully, NSW Fisheries, for providing the collecting permit so quickly. I am most grateful to Neville Coleman who made a special trip and spent many long hours underwater just to find and collect the types plus taking the photographs in situ, and thanks to the Prodrive-crew for their patience assisting Neville.

References

- Allen, G.R., D.F. Hoese, J.R. Paxton, J.E. Randall, B.C. Russell, W.A. Starck, F.H. Talbot & G.P. Whitley, 1976. Annotated checklist of the fishes of Lord Howe Island. *Records of the Australian Museum* 30(15): 365–454.
- Kuitert, Rudie H., 2000. *Seahorses, Pipefishes & Their Relatives*. Chorleywood (England): TMC Publications.
- Kuitert, Rudie H., 2001. Revision of the Australian seahorses of the genus *Hippocampus* (Syngnathiformes: Syngnathidae) with descriptions of nine new species. *Records of the Australian Museum* 53(3): 293–340.
www.amonline.net.au/pdf/publications/1350_complete.pdf

Manuscript received 25 February 2002, revised 4 August 2002 and accepted 22 August 2002.

Associate Editor: J.M. Leis.

A New Pygmy Seahorse (Pisces: Syngnathidae: *Hippocampus*) from Lord Howe Island

RUDIE H. KUITER

Ichthyology, Museum Victoria, Melbourne Victoria 3001, Australia

rudie.kuiter@zoonetics.com · syngnathiformes@zoonetics.com

ABSTRACT. A new species of seahorse, *Hippocampus colemani*, is described from Lord Howe Island off eastern Australia. It can be distinguished from congeners by the following combined features: very small size (to about 23 mm in height), very deep trunk (about 60% in its length), low number of tail rings (27–29) and most distinctly, a single gill opening, placed dorsally behind the head.

KUITER, RUDIE H., 2003. A new pygmy seahorse (Pisces: Syngnathidae: *Hippocampus*) from Lord Howe Island. *Records of the Australian Museum* 55(2): 113–116.

Seahorses are currently placed in a single genus: *Hippocampus* (family Syngnathidae). The Australian species were recently revised by Kuitter (2001), who recognized 24 species, two of which are diminutive, reaching less than 50 mm height. The two are collectively known as pygmy seahorses. These tiny species usually occur at depths of 30 m or more, but a third pygmy species was discovered at a depth of only 5 m in the lagoon at Lord Howe Island in the Tasman Sea. A description of the species, based on two specimens, is presented here.

Materials and methods

Methodology follows that of Kuitter (2001), except specimens were photographed and enlarged 20 times and proportional measurements recorded from the enlarged photos. Radiographs were used to confirm the number of tail rings. Sex was determined on the absence or presence of a pouch, however, in pygmy species this character is not as obvious as in the larger species. In all seahorse species, including pygmy species, the position of the anus in both sexes is at the same horizontal level in relation to the dorsal fin base. All males have a pouch and the anus is positioned

further away from the body axis compared to the female. The pouch can look somewhat like a posterior extension of the trunk since the anus is often not obvious, especially when brooding. This is applicable to pygmy seahorses and sex can be determined by the posterior reach of their trunk and pouch combined in relation to the horizontal level with the dorsal-fin base, especially when working with photographs. The specimens are deposited in the Australian Museum, Sydney (AMS).

Hippocampus colemani n.sp.

Figs. 1, 2

Coleman's Pygmy Seahorse

Type material. HOLOTYPE: AMS I41181-001, height 22.1 mm, female, near Erscott's Hole, lagoon, Lord Howe Island, New South Wales (approximately 32°32.950'S 159°05.080'E), depth 5 m, collected by hand, Neville Coleman, January, 2002. PARATYPE: AMS I41181-002, height 21.4 mm, female, same data as holotype.

Diagnosis. Dorsal-fin rays 12–13; pectoral-fin rays 10; anal fin absent; trunk rings 11; tail rings 27–29; nose ridge well

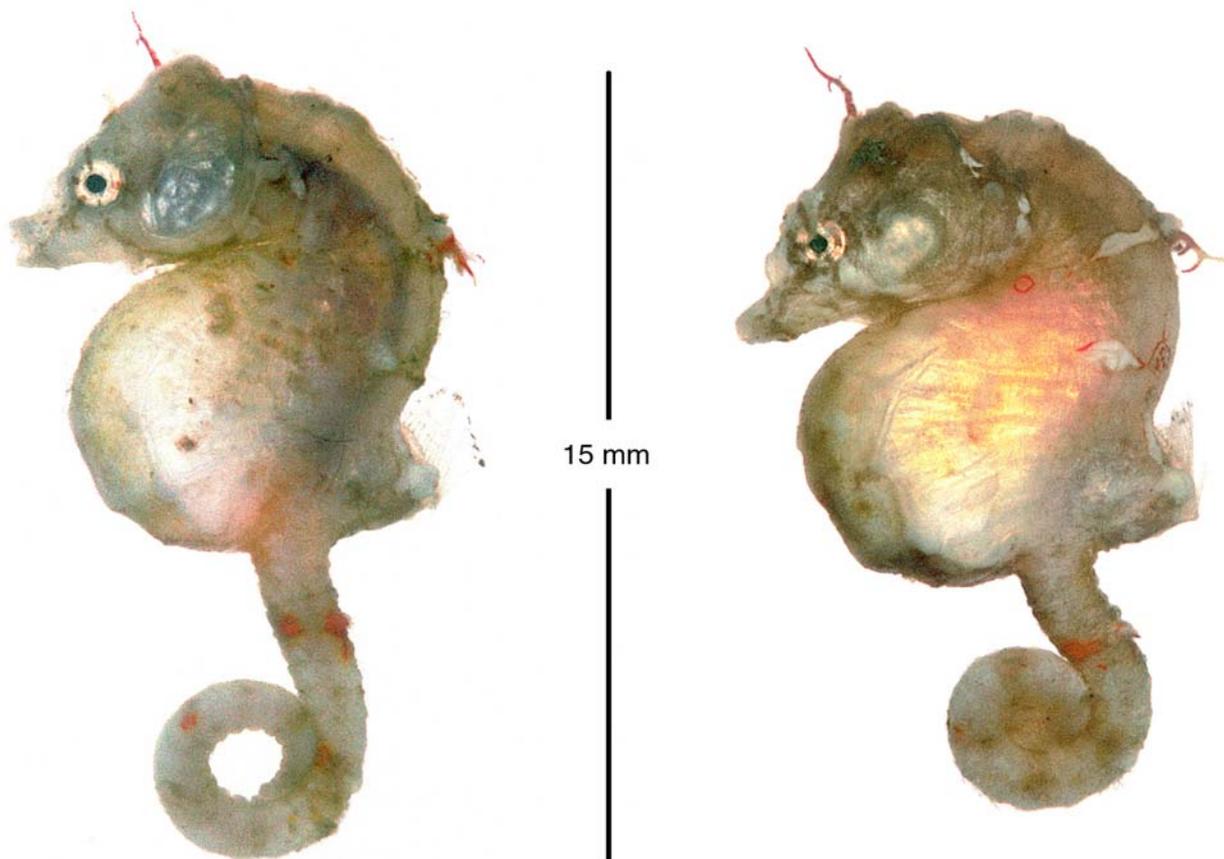


Fig. 1. *Hippocampus colemani*, holotype AMS I41181-001 (left) and paratype AMS I41181-002 (right), both female.

developed in front of eye; a single gill opening on the neck ridge, directly behind the head; base of dorsal fin greatly elevated posteriorly, forming a triangular hump on the back.

Description. Head small, c. 50% of trunk length and strongly angled down onto trunk; snout short, length about equal to eye diameter; trunk very deep, c. 60% of its length; tail thin, 1.3 times eye diameter, its greatest depth and width anteriorly, and its length 58% in height (overall, see fig. 3, Kuitert, 2001); dorsal fin with 12 rays (13 in paratype), its base greatly elevated posteriorly so that fin rays almost parallel with trunk axis, height of fin base at posterior end almost equal to its length; pectoral-fin rays 10; anal fin absent; trunk rings 11, obscured and smooth dorsally; tail rings 29 (27 in paratype); trunk and tail ridges poorly developed, mostly indistinguishable and only evident on lower two-thirds of trunk, as ventral and inferior ridges; all spines reduced to tubercles, those on back at 4th, 7th and 11th rings enlarged and most notable, largest below dorsal-fin base, and on head as lateral head spines, some with dermal appendages; coronet low and rounded with tentacle like dermal appendage anteriorly (also in paratype); nose spine present as well-developed ridge in front of eye; single relatively large gill opening, slightly raised by skin, and situated mid-dorsally on neck ridge, immediately behind head. Colour in life (paratype): body mostly pale golden-yellow; trunk with white circular or elliptical markings, each outlined with thin red lines, largest around tubercles

on 4th and 7th rings; shoulder-ring tubercles white; head white on nape above eyes, extending over snout to tip of mouth, highlighting several dusky brown bands radiating from eye; tail slightly more brown with red markings, some expressed as elongate spots on same ring, suggesting a band. Colour in alcohol: pale brownish all over, some thin dark lines near tubercles on body and dusky bands radiating from eye.

Distribution and ecology. Only known from the types and two additional specimens photographed (Figs. 3, 4), but not collected at Lord Howe Island, off the New South Wales coast. All were found in the same general area at a depth of 5 m. The habitat is comprised of coarse sand with sparse *Zostera* and *Halophila* plants that have fine filamentous algae on their leaves. The same algae are present on the body of the seahorses, attached to their skin.

Remarks. This species is named *colemani* after Mr Neville Coleman, who discovered and photographed the species at Lord Howe Island, and then returned specifically to collect the type material. Only 4 specimens have been observed, the largest was collected and measured at 22.1 mm in height. Judging by its shape, it appears to be fully grown and would unlikely get much larger. At this stage it is the smallest known seahorse. Despite its small size, it is surprising that it has gone unnoticed until now. Several extensive fish surveys have been undertaken at Lord Howe Island, the largest and most comprehensive led by the



Fig. 2. *Hippocampus colemani*, paratype AMS I41181-002, in situ. Photo by Neville Coleman.



Fig. 3. *Hippocampus colemani*, this specimen not collected, sex not determined. The single gill opening is arrowed. Photo by Neville Coleman.



Fig. 4. *Hippocampus colemani*, this specimen not collected. A probable male as it appears to have a pouch. Photo by Neville Coleman.

Australian Museum in 1973. At the time, a team of 15 collectors, 8 of whom were ichthyologists, collected constantly for one month (Allen *et al.*, 1976), and did not find this seahorse.

The closest relative of *Hippocampus colemani* in Australian waters is *H. bargibanti* Whitley, a tropical species that lives on gorgonian corals. It has similar meristic values and shares the greatly elevated dorsal-fin base, but is quite different in its fleshy and lumpy appearance, and has a longer tail. From a global perspective, most similar in its morphology is a pygmy species from Japan (sp. 7, Kuitert, 2000) that is nearly identical in shape and has an almost identically formed nose ridge. Kuitert's *Hippocampus* sp. 7, however, has small but distinctive spines along the trunk and tail ridges. A further similar species that appears to be closely related (sp. 6, Kuitert, 2000) occurs on gorgonians in Papua New Guinea, but is only known from photographs. All share the unusually elevated dorsal-fin base that forms a large hump on their back. The feature of a single gill opening (see Figs. 2, 3) appears to be the same in the Japanese and the Papua New Guinea species (not clear in photographs). It is likely that the three species form a natural group, but until the relationship of all seahorses are understood the species will be retained together in the single genus *Hippocampus*.

ACKNOWLEDGMENTS. Martin Gomon, Museum Victoria provided the radiographs and commented on the manuscript. I thank Mr Geoff Kelly, Manager of the Lord Howe Island Marine Park, and Mr Patrick Tully, NSW Fisheries, for providing the collecting permit so quickly. I am most grateful to Neville Coleman who made a special trip and spent many long hours underwater just to find and collect the types plus taking the photographs in situ, and thanks to the Prodrive-crew for their patience assisting Neville.

References

- Allen, G.R., D.F. Hoese, J.R. Paxton, J.E. Randall, B.C. Russell, W.A. Starck, F.H. Talbot & G.P. Whitley, 1976. Annotated checklist of the fishes of Lord Howe Island. *Records of the Australian Museum* 30(15): 365–454.
- Kuitert, Rudie H., 2000. *Seahorses, Pipefishes & Their Relatives*. Chorleywood (England): TMC Publications.
- Kuitert, Rudie H., 2001. Revision of the Australian seahorses of the genus *Hippocampus* (Syngnathiformes: Syngnathidae) with descriptions of nine new species. *Records of the Australian Museum* 53(3): 293–340.
www.amonline.net.au/pdf/publications/1350_complete.pdf

Manuscript received 25 February 2002, revised 4 August 2002 and accepted 22 August 2002.

Associate Editor: J.M. Leis.