



Baker, J. L. (2015) *Marine Assets of Yorke Peninsula*. Volume 2 of report for Natural Resources - Northern and Yorke, South Australia.

### **Introduction**

The intertidal and shallow subtidal habitats around Yorke Peninsula support a rich variety of syngnathid species, including weedy and leafy seadragons, two seahorse species, a pipehorse species (and a single record of a rare species known from the west coast of SA), and at least 19 species of pipefishes. Some of these species are found across southern Australia; others are shared with either Western Australia, or south-eastern Australia (Victoria and Tasmania); and a few are tropical or sub-tropical species. Two species found on Yorke Peninsula are known mainly from SA, with isolated records from east and west of this State respectively, and one is known to date only from South Australia, and is thus considered to be endemic (Baker 2012).

Fishes in the Syngnathidae family are encased in bony “armour” made up of segmented rings and ridges. Syngnathids also have a tubular snout, used for sucking up small crustaceans such as mysids, which are the major food source. In this family of slow-moving fishes, males brood the young on the underside of their trunk, or under the tail. Eggs may be brooded on the body, or enveloped in folds of skin from the male’s trunk, or, in some syngnathids (such as the seahorses), brooded in a specialised fully enclosed brood pouch (Dawson 1985; Kuitert 2008).

Until the 2000s, knowledge of the range, distribution and habitat requirements of pipefishes in most parts of South Australia was limited, and based on few studies and a small number of museum records. However, during the past 10 years, work by fish researchers such as R. Browne and K. Smith, and divers such as D. Muirhead have helped to clarify information on the distribution, relative abundance in particular locations, and habitat requirements of a number of pipefish species, particularly inshore, seagrass- and rubble-dwelling species that occur around Fleurieu and Yorke peninsulas.

Syngnathid fishes are strongly associated with their preferred habitats, and have limited ability to disperse away from those habitats, since the young at hatched in the same environments in which the adults live, and have poor swimming ability.

Some species live in seagrass beds, others in caves and crevices in reefs, and some live in mixed habitats of reef, sand, seagrass and sponges. Some of the pipefish species from seagrass beds are amongst the most common and widely distributed. Several species are seen most commonly amongst dead seagrass detritus in the intertidal and shallow subtidal.

Most syngnathids known around Yorke Peninsula are found in shallow water, from just below tide level, to about 10m deep. For several species, there are records extending to deeper water, about 20m - 30m, but the full depth distribution is not known, due to dive survey depth limits.

All syngnathids are fully protected under South Australian legislation. However, there has been ongoing community concern about possible illegal collection of syngnathids in SA for the aquarium market, and thus locations where syngnathids occur on Yorke Peninsula are not specified in this report, in the interests of species conservation.

### **Species in Seagrass**

Syngnathid fishes are found in most of the seagrass beds around Yorke Peninsula (see **Chapter 8 on Seagrasses** for description of seagrass locations), ranging from the fine eelgrasses and grass-wracks (*Zostera* and *Heterozostera*) in the tidal channels of the northern gulfs, to the larger Strapweeds (*Posidonia* species) and Wireweeds (*Amphibolis* species) in the subtidal waters. Fewer syngnathid fish species are associated with the fine Paddleweed (*Halophila* species), which is often interspersed with denser species of seagrass.

Some of the species which occur in seagrass beds around Yorke Peninsula include the following (from Baker 2012):

- Spotted Pipefish *Stigmatopora argus*, a common species which is found (sometimes in large numbers) in seagrass beds of various types, such as strapweed, wireweed and eelgrass, and combinations of these. Occasionally recorded in seaweed patches in (or adjacent to) seagrass beds. Individuals of this species often wrap the tail around marine plants and lie in the same direction as the plant, and are thus well camouflaged.
- Deep-body Pipefish *Kaupus costatus*, which is usually found in small aggregations in low energy, silty environment which support *Zostera* eelgrass and short, filamentous seaweeds;

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- Wide-body Pipefish *Stigmatopora nigra*, which mimic strap-like seagrasses such as *Posidonia* in its movement, orientation and colour (Howard and Koehn 1985, cited by Baker 2012);
- Port Phillip Pipefish *Vanacampus phillipi*, often found in shallow sandy bays with seagrass, but sometimes in seaweeds on shallow reefs. Phillip Pipefish is well camouflaged when lying among the leaf detritus that collects beneath seagrass canopies (Howard and Koehn 1985, cited by Baker 2012); and
- Brush-tail Pipefish *Leptoichthys fistularius*, a large species to 65cm, but most adults are smaller than that maximum size. This species is found in dense beds of *Zostera* and *Posidonia* seagrass. Juveniles sometimes swim in small groups, at the edges of seagrass beds and seaweed patches.

### **Species in Reefs**

There are relatively few records by divers of reef-inhabiting pipefishes, particularly cryptic species which live in caves. Reef- and rubble-dwelling species are rarely observed without targeted searches, and some habitats where these species live are difficult to sample. The few syngnathid species which are known from reefs habitats in SA, including habitats around Yorke Peninsula, include:

- Red Pipefish *Notiocampus ruber*, a rarely seen, well camouflaged pink-red species associated with filamentous red seaweeds, and also on pink sponges, in reef crevices, and on reef surfaces.
- Sawtooth Pipefish *Maroubra perserrata*, a small pipefish (to around 8cm) found in the back of crevices in rocks, and in caves. This species also hides under rocks.

Also of note is Upsidedown Pipefish *Heraldia nocturna* or *Heraldia* species 1, a reef species found across southern Australia in caves and crevices. Although records from Yorke Peninsula are lacking, this cryptic species is likely to occur there.

### **Species in Sandy Habitats**

Most syngnathid are found in vegetated areas, because many species eat the small crustaceans (mysids) which congregate at the edges of seagrass beds and reefs. However, there are several species of pipefishes found in shallow sandy areas, often near accumulations of dead seagrass and seaweed, in which they are well camouflaged. Examples include:

- Rhino Pipefish *Histiogamphelus cristatus* and the closely related Brigg's Crested Pipefish *H. briggsii*, brown species which resemble dead blades of *Posidonia* seagrass in appearance;
- Tiger Pipefish, a sub-tropical species found in sheltered bays, tidal channels and estuaries, on rubble, sand or mud bottom, and sometimes near the edges of seagrass beds. There is a population of this species in northern Spencer Gulf, and the distribution may extend to the NY NRM region on the eastern side;
- Ringback Pipefish *Stipeocampus cristatus*, found on rubble bottom and beds of shell debris, but also in sandy bays with sparse seagrass. There are few records in SA, but some of these are from within the NY NRM region.

### **Species in Mixed Habitats**

There are two seahorse species confirmed in the Yorke Peninsula region, and both occur in mixed habitats. The larger and less common of the two, Bigbelly or Potbelly Seahorse *Hippocampus abdominalis*, grows to 35cm but is not usually seen at that maximum size. It is found in *Ecklonia* kelp beds and in other seaweeds on rocky reefs. More generally, it also occurs in estuaries, and near seagrass, and around sponges on sand and rubble bottom in deeper waters (Baker 2012). Rarely, it is seen around jetty piles.

The Bigbelly Seahorse is less commonly seen around Yorke Peninsula than the smaller Short-snout Seahorse *Hippocampus breviceps*, which grows to about 10cm. This seahorse is very well camouflaged, when clinging to *Sargassum* or *Caulocystis* seaweeds, or *Amphibolis* wireweed. It has also been found near jetties, and sponge beds, and red seaweeds. Juveniles are pelagic in the water column, and settle on the seafloor as they grow older, at which time they change colour, shape and dimensions (Kuitert 2008). In some years, following autumn and winter storms, Short-headed Seahorses may be washed up in large numbers, after "rafting" across the sea on dislodged clumps of seagrass and/or seaweed (Kuitert 2008; Foster and Manuel, in Atlas of Living Australia 2015). Examples of locations where such events have been recorded around Yorke Peninsula include Troubridge Shoals (J. Baker, pers. obs. 1972), Foul Bay (Brown, 2006), and Marion Bay (reported in Browne et al. 2008).

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Both Leafy Seadragons (*Phycodurus eques*) and Weedy Seadragons *Phyllopteryx taeniolatus* are found at various locations around Yorke Peninsula. These species are strongly associated with their chosen habitat, and do not move far from it (Connolly et al. 2002). Habitats include edges of *Posidonia* seagrass beds; reef areas with *Ecklonia* kelp and other seaweeds; mixed habitats of seaweed and seagrass patches on sand and rubble bottom; and around jetties and wrecks. Seadragons are slow moving, as they have weak swimming ability compared with many other pelagic fish species which are a more streamlined shape for swimming, and do not rely on camouflage for protection. In contrast, seadragons tend to hover in the water near vegetation, and rely upon the excellent camouflage provided by their colour and dermal appendages. More information about seadragons in the Yorke Peninsula region is provided in the Dragon Search monitoring program report by Baker (2005).

For more information about the biology and ecology of seadragons and seahorses, refer to Kuitert (2008). Reports by Baker (2012) and a booklet on Syngnathidae fishes (Reef Watch 2014) also contain information about seadragons and seahorses in South Australia.

One of the most uncommonly seen syngnathid fishes in waters off Yorke Peninsula is the Southern Pygmy Pipehorse *Idiotropiscis australe* (*Acentronura australe*). This small (~ 5cm long) pipehorse is very well camouflaged by filamentous outgrowths on the body surface. It is known from few locations in WA and SA (Baker 2012), in and near seagrass beds, and in red seaweeds. Males and females are pair-bonded, and the males brood eggs in a pouch (Kuitert 2008). Locations off Yorke Peninsula where this species has been recorded will not be detailed here, for conservation reasons.

In addition to the seadragons and seahorses and Southern Pygmy Pipehorse, a number of pipefishes also utilise a variety of habitats throughout their life. Examples of species found in mixed habitats around Yorke Peninsula are listed below (from Baker 2012 and references therein):

- Gulf Pipefish *Stigmatopora narinosa*: known from several locations around Yorke Peninsula, and locally abundant in some areas. Habitats include moderately sheltered, shallow coastal areas supporting seagrass patches and stands of brown seaweeds on rubble/rock substrate within seagrass; also small patches of seagrass (*Zostera*, *Posidonia* and *Amphibolis*) in sand, amongst stands of brown seaweeds. This species has also been recorded and photographed (by K. Smith) in various areas of coarse, sandy, broken bottom and rubble substrate, with brown seaweeds, and *Zostera* / *Heterozostera* and *Posidonia* seagrass (including decaying seagrass) and coralline algae.
- Long-snouted Pipefish *Vanacampus poecilolaemus*, often found in *Posidonia* and *Zostera* seagrasses, but also in on reefs with seaweeds such as *Caulocystis*.
- Mother-of-Pearl Pipefish *Vanacampus margaritifer*, found mostly among seagrass and seaweeds over mud, sand and rubble, to depths of about 10m
- Verco's Pipefish *Vanacampus vercoi*, an uncommon species from seagrasses in tidal channels, and shallow subtidal seagrass and seaweeds, and rubble bottom habitat with *Halophila* seagrass;
- Ringback Pipefish *Stipecampus cristatus*, found in and at the edges of sparse seagrass beds in bays and estuaries; and also mixed habitat with seaweed-covered reef patches in sand;
- Pugnose Pipefish *Pugnaso curtirostris*, recorded from a variety of habitats which vary in temperature, salinity and wave exposure. Examples of habitats across the geographic range include *Zostera* seagrass beds in sheltered bays and estuaries; *Posidonia* and *Amphibolis* seagrass (including seagrass patches near reef) in more exposed waters; seaweeds on low reef patches in sand, and large rubble on sand. Juveniles are often found in estuaries, amongst decaying vegetation, and are well camouflaged, resembling a piece of decaying seagrass;
- Javelin Pipefish *Lissocampus runa*, a small species (to around 10cm) which is found in various nearshore habitats such as estuaries, tide pools, shallow seagrass beds, shallow rubble reefs with low seaweeds, and shallow sand habitats below tide level.

**Table 18.1** below illustrates the syngnathid fishes which occur in the Yorke Peninsula NRM region.

**Table 18.1: Examples of syngnathid species which occur on Yorke Peninsula**






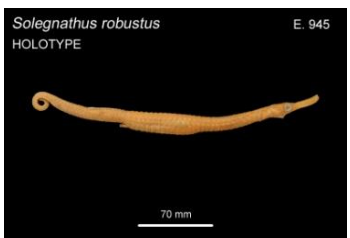




Species Name	Representative Image	Species Name	Representative Image
Weedy Seadragon	 <p>© Ta-graphy @ Wikimedia Commons</p>	Leafy Seadragon	 <p>© M. Sutcliffe</p>
Bigbelly / Potbelly Seahorse	 <p>© S. Speight @ Flickr</p>	Short-snout Seahorse	 <p>© J. Lewis</p>
Southern Pygmy Pipehorse	 <p>© D. Fernie, <a href="http://www.oceanincolour.com">www.oceanincolour.com</a></p>	Robust Pipehorse	 <p>© Australian Museum</p>
Knife-snout Pipefish	 <p>Image of head. © K. Smith</p>	Deep-body Pipefish	 <p>© D. Muirhead</p>
Gales Pipefish	 <p>© J. Lewis</p>	Tiger Pipefish	 <p>© R. Ling @ Flickr</p>



Table 18.1 (continued): Examples of syngnathid species which occur on Yorke Peninsula















<p><b>Brigg's Crested Pipefish</b></p>	 <p>© D. Muirhead</p>	<p><b>Rhino Pipefish</b></p>	 <p>© D. Muirhead</p>
<p><b>Brush-tail Pipefish</b></p>	 <p>© K. Smith</p>	<p><b>Smooth Pipefish</b></p>	 <p>© A. Sutandio</p>
<p><b>Javelin Pipefish</b></p>	 <p>© I. Shaw, SURG</p>	<p><b>Sawtooth Pipefish</b></p>	 <p>© J. Lewis</p>
<p><b>Pugnose Pipefish</b></p>	 <p>© D. Muirhead</p>	<p><b>Spotted Pipefish</b></p>	 <p>© J. Lewis</p>
<p><b>Gulf Pipefish</b></p>	 <p>© J. Lewis</p>	<p><b>Wide-body Pipefish</b></p>	 <p>© K. Smith</p>

Table 18.1 (continued): Examples of syngnathid species which occur on Yorke Peninsula

<b>Ringback Pipefish</b>	 <p>A photograph of a Ringback Pipefish, which is a slender, elongated fish with a dark dorsal stripe and a lighter belly, resting on a sandy seabed with some green algae and shells.</p> <p>© S. Speight @ Flickr</p>	<b>Mother-of-Pearl Pipefish</b>	 <p>A photograph of a Mother-of-Pearl Pipefish, a small, slender fish with a brownish body and a long, thin snout, resting on a sandy seabed.</p> <p>© D. Harasti <a href="http://www.daveharasti.com">www.daveharasti.com</a></p>
<b>Port Phillip Pipefish and Long-snout Pipefish</b>	 <p>A photograph of a Port Phillip Pipefish and a Long-snout Pipefish, both small, slender fish with long snouts, resting on a sandy seabed with some green algae.</p> <p>© J. Lewis</p>	<b>Verco's Pipefish</b>	 <p>A photograph of a Verco's Pipefish, a small, slender fish with a long snout, resting on a sandy seabed with some green algae.</p> <p>© D. Muirhead</p>