

New pipefish discovered in South Australia

Seadragon Foundation, Thursday 20th March 2008

The surprising discovery of two new types of pipefish on the metropolitan beaches of Adelaide, South Australia, have shown that the southern Australian coast holds a Seadragon's treasure trove of unknown inshore fish biodiversity.

The recently described southern gulf pipefish (*Stigmatopora narinosa*) appears to be highly vulnerable to inshore developments due to its limited distribution.

The southern gulf pipefish was described in December 2007 in the *Memoirs of Museum Victoria*. No other pipefish has been described in southern Australia since 1975. Even more remarkable is the discovery of another new type of pipefish found at the same metropolitan beach as the southern gulf pipefish. The uniqueness of the southern gulf pipefish was confirmed with DNA studies by Dr Dawson of the University of California, Merced, USA.

Dr Browne who described the species with Kevin Smith said "The southern gulf pipefish is only found in a narrow zone of sheltered inshore habitat on moderate energy coast in the two South Australian Gulfs. This very small distribution and its preferred habitat being premium for residential and industrial coastal development makes the species one of the most restricted and threatened marine fish in the world."



Dr Browne, founder of the Seadragon Foundation, said "In 2003 we were snorkeling just south of Adelaide when my mate held up his hand net and said "What is this". The tiny bright green clingfish was a new species for the state. We thought "Just how much is known about inshore fish in South Australia."

Left: Southern gulf pipefish (*Stigmatopora narinosa*) showing the distinctive saddle shaped markings and broads and deep snout. Like all *Stigmatopora* species the southern gulf pipefish has a long thin prehensile tail. Image Kevin Smith.

Since 2003 the Seadragon Foundation group has initiated a renaissance of inshore fish discovery, driven by the growing need for the conservation of inshore marine species, supported by biodiversity assessment and exploration. Their success is partly due to their embracing new technologies like digital imaging and the www.



"We decided to focus on the syngnathids - the seadragons, seahorses and pipefish – because so little was known about them and they are so fascinating. Investigation of old jars in the South Australian Museum showed a few specimens of an undescribed pipefish species. An experienced diver Kevin Smith looked for the pipefish at the locations on the old museum bottles and there they were just offshore. We also discovered some new sites, all in the same restricted inshore habitat."

A southern gulf pipefish with its red prehensile tail Image Graham Short.

Surprisingly, the second new type of pipefish discovered is in the same genera, *Stigmatopora*, as the southern gulf pipefish. The *Stigmatopora*, or monkeytail pipefish with their thin prehensile tails are highly significant to biodiversity as they are in evolutionary terms an ancient lineage equal to seahorses. The monkeytail pipefish are only found in southern Australia and New Zealand and previous to the discovery of the two new species, only three species were known, two only in southern Australia and one in New Zealand. The tails are so fragile that often the tips are broken.



The new undescribed species of *Stigmatopora* with its red snout with a blue tip. Image David Muirhead.

Pipefish brood their eggs like seahorses, and the undescribed species has 64 eggs in contrast to 20 eggs for the similar sized southern Australian, widebody pipefish (*Stigmatopora nigra*) and about 40 for the much larger spotted pipefish (*Stigmatopora argus*).

According to our explorer divers Kevin Smith and David Muirhead, unlike the southern gulf pipefish this newer species is very rare and even in its known habitat of inshore dispersed seagrass and macroalgae only one or two may be seen a dive. However, it may be much more widely distributed than the southern gulf pipefish.

The potential for inshore fish discoveries, and the lack of knowledge of inshore marine biodiversity in South Australia, was further shown when Michael Hammer, UNiversity an expert in gobies published in 2006 a biodiversity survey of the Port River, the port of Adelaide, and found four unrecorded species, three of which were new to South Australia.

One of the most disturbing aspects of these discoveries is that both of the new pipefish have only been found in a very limited type of habitat. This habitat is the narrow transition between low energy silt and mangrove coastlines and medium energy exposed coastlines. This habitat mainly occurs in the sheltered corners of bays. This is exactly the area most affected by coastal urban development, particularly by marinas. Another clear threat to both new pipefish species is the proposed construction of a desalination plant within a few kilometers of the main site of the southern gulf pipefish at metropolitan Adelaide.

Browne, R.K., Smith, K. (2007) A new pipefish, *Stigmatopora narinosa* (Syngnathidae) from South Australia. *Memoirs of Museum Victoria* 64, 1-6.

Hammer, P.M. (2006) Range extensions for four estuarine gobies (Pisces: Gobiidae) in southern Australia: historically overlooked native taxa or recent arrivals? *Transactions of the Royal Society of South Australia* 131, 187-196.