

# The world as it is

## A footbridge too far: not quite belly up in the stream

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### Key words

Envenomation, first aid, injuries, toxins, pain, marine animals, snorkelling

I always prefer a melodramatic title and this personal account of an Estuary Catfish envenomation surely deserves one. Okay, it was really a minor incident, one experienced often by fishermen, waders and boaties all around our coasts (though few would set themselves up for punishment as foolishly as I did!) but in my usual self-serving way I will henceforth overlook this inconvenient truth and dwell on my pain and suffering to hopefully emerge (are you yet convinced?) the gracious loser in a mighty battle between fish and man.

Enough, enough! It is Easter Monday (24/4/00), late afternoon, incoming tide with clear seawater flooding into the Onkaparinga Estuary at Southport Beach, Noarlunga, South Australia. After a quick swim in the sea, the Southern Sea Garfish (*Hyporhamphus melanochir*), Black Bream (*Acanthopagrus butcheri*), and Tommy Roughts (*Arripis georgiana*) milling around the fishers' baits under the footbridge several hundred metres inland look good in the clean water so I decide to grab my snorkelling gear and have a lazy drift snorkel to finish a relaxing day.

Right at the mouth there is a two metre deep gutter in against the low cliff with plenty of the above fish active from surface to seafloor. As I skim over shallow clear sand carried along by the 2 knot current, I pass healthy schools of big Yellow-eye Mullet (*Aldrichetta forsteri*) with occasional smallish Tommy Roughts. Further in, the bottom has low patches of rock and some areas of filamentous green algal turf and here a tightly packed school of at least 100 Striped Perch (*Pelates octolineatus*), better known to fishers as Trumpeter, moves past me swimming strongly towards the sea.

There is the odd adult Silver Whiting (*Sillago bassensis*) moving around on the bottom in twos and threes and even one pair of juvenile King George Whiting (*Sillaginodes punctata*), about 15 cm long, near the footbridge. A few juvenile Zebrafish (*Girella zebra*) shelter among the slightly larger rocks in the main channel, and I see an unusual long thin fish, about 25 cm long which I have never seen before, moving quickly past me into the current, right on the bottom. I later identify it as a Beaked Salmon (*Gonorynchus grevi*), not a species we hear a lot about, but quite distinctive in profile. It is also known as Sandfish, Sand Eel and Sharkwhiting.

I congratulate myself on my decision to embark on this snorkel, as I am really enjoying myself and wondering what

I might see if I drift further up the estuary past the footbridge. So far the only hazards have been fishing lines and by staying midstream and scanning the banks ahead on either side to spot the fishermen I had easily avoided their hooks. But then I came upon a large Estuary Catfish (*Cnidoglanis macrocephalus*) resting on the sandy bottom in the middle of the channel in waist-deep water, its broad head facing into the tide. They grow to over 60 cm and this one was about 50 cm.

I became curious when it showed no inclination to flee but I soon saw why, it had a hook in its mouth and was dragging a heavy sinker on a 20 cm trace, hard work for a fish this size. I had no way of telling how long it had carried this burden, but I knew that its survival prospects were poor. I also knew that this species is good eating, but has venomous spines and must be handled with respect when caught.

Thinking I had the advantage over this unfortunate fish I decided to kill two birds with one stone, save it from a probably slow death by starvation, and catch myself a tasty dinner. I reasoned that I could grab the sinker and quickly stand up, suspending the fish out of the water at arm's length where it would dangle harmlessly on the trace. It would then be easy to carry it to the bank, or if it was too animated I could fling it there, and then dispatch it humanely with a rock. But too late I was reminded that our best-laid plans often go astray.

As soon as I grabbed the sinker with my left hand the catfish swam right at me and skilfully managed to jab me in the right forearm with one of its pectoral fin spines. I was partially protected by a 3 mm neoprene surf suit, and I would probably otherwise not have tried this stunt, but I felt almost immediate burning, aching pain of moderate intensity throughout the whole arm diffusely up to my shoulder, and promptly let go the sinker.

After sizing up the situation for half a minute and realising with relief that I had no discernible systemic symptoms such as weakness, light headedness, palpitations, breathlessness, tongue swelling or chest tightness, I began to feel quite hostile towards this clever if desperate creature, and I moved towards it again as it resumed its position on the sand. But it too was in a foul mood and albeit instinctively it then surprised me by repeatedly swimming upward towards me making passes in which it was clearly trying to repeat its first and only successful defensive strike (perhaps the fisherman responsible for this fish's predicament had cut the line after receiving similar treatment!)

At first I thought I was becoming paranoid but each time I moved towards it, it repeated the same threatening action. Although the pain was not getting worse I now decided, slow learner that I am, to make discretion the better part of valour and left the water, sans captive catfish, with seemingly no one on the banks or footbridge any the wiser concerning my ignominious retreat.

I ruefully walked back to our friends' nearby holiday accommodation overlooking the river mouth, and after getting out of my wetsuit in a hot shower I obtained virtually immediate pain relief by immersing my arm in a bucket of very hot water, as is the well-documented first aid for most mild to moderate fish spine or barb envenomations, including stingray barbs.

Within seconds of removing my arm from the bucket the pain would return at the same intensity and there was an increasingly unpleasant additional component involving a burning sensation exacerbated by touching or rubbing the forearm. So I spent two hours sitting in front of the TV thanking various attendants (initially fascinated, but later bored!) for their boiled-kettle deliveries and occasional bucket-decanting manoeuvres so necessary to top up the bucket and maintain adequate water temperature.

There was a seemingly trivial puncture wound in the back of my forearm, but the skin of the forearm had a generalised mottling which lasted about 24 hours, localised mild

swelling to a diameter of about 8 cm, and diffused but very mild forearm swelling lasting about 48 hours. I was slightly feverish and "weak and wobbly" on the Tuesday (Anzac Day) but by Wednesday, when I returned to work I felt well apart from minor tiredness which however was not easily explained by my modest activity levels over Easter. This had resolved in another day or so.

Minor local swelling (2 mm elevation, diameter 2 cm) has persisted till today (15/5/2000), ie some three weeks, but apart from very slight tenderness directly over the puncture site there has been no real pain since day one, only a mild ache which did not limit use of the arm or hand at all.

However the tiny (1–2 mm diameter) puncture wound, which bled only weakly during the first few hours and only ever looked mildly inflamed, took about a week to develop a dry scab and was very itchy from about day 7 to day 14. It is now only occasionally itchy but retains a tiny, slightly depressed scab and so has not yet completely healed.

Despite this event I can recommend this snorkel site as being refreshingly different (and although I didn't know it then, Phillip Hall and other Marine Life Society of South Australia members have also snorkelled here) and I hope to repeat it next summer or autumn, possibly with a camera.

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## Applying pain theory in fish spine envenomation

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### Abstract

Personal experience of catfish spine envenomation leads the author to question the long-accepted heat-labile toxin denaturation hypothesis as explanation for the established and very effective first aid treatment using hot water immersion of the envenomed limb. An alternative hypothesis compatible with contemporary pain theory is proposed.

Pain hypotheses in current usage, including Gate Control theory and Diffuse Noxious Inhibitory Control (DNIC) theory, have evolved substantially from observations that interference stimuli such as vibration, heat or cold, applied to the peripheral skin can induce pain relief at remote anatomical sites.

Have we overlooked the obvious in continuing to accept the hypothesis, entrenched in the diving medical community,<sup>1,2,3</sup> that heat-labile properties of fish spine toxins explain the well-documented analgesic effectiveness of hot water limb immersion in fish spine envenomation? A literature search has revealed a remarkable paucity of papers addressing this issue. Those that do, appear to assume that

the proven heat lability of the few fish toxins so far analysed is the actual mechanism.

In April 2000, the author received a minor envenomation by an Estuary Catfish, *Cnidoglanis macrocephalus*, while snorkelling in an estuary south of Adelaide as described above.

As a South Australian coastal general practitioner, with occasional experience of treating mostly minor marine fish-spine injuries, I am familiar with the core first aid management using hot water (approx 46°C) immersion of the affected limb. I expected excellent pain relief as I placed my envenomed right forearm into a bucket of hot water,