

Sharksucker fish's strange disc explained

January 28 2013



Sharksucker fish (genus *Remora*) with its unusual sucking disc on its head that it uses to attach itself to large marine animals such as sharks. Credit: Dave Johnson

There's an old legend about a fish that attaches itself to ships and has powers to slow them down. The powers may be mythical but the fish is real.

It is a sharksucker, and it has a sucking disc on the top of its flattened head that it uses to attach itself, more usually, to large [sea animals](#). It's thought this unique disc is a modified dorsal fin and now scientists have got the evidence to prove it is.

Fish experts (ichthyologist) Ralf Britz of the [Natural History Museum](#) and David Johnson of the Smithsonian [National Museum of Natural History](#), investigated how the sucking disc develops in [larval fish](#) from the Remora genus. They took snapshots of the developmental stages, staining the bones red to see changes more clearly.

Development comparisons

To see whether the sucking disc is created from the existing dorsal fin that most other fish have, they looked at how the dorsal fin developed in the same early stages in another fish, of the genus Morone, which has a typical dorsal fin as an adult consisting of spinous and soft dorsal fin parts. They compared the two.

Such comparisons help to establish whether structures in different species have the same [evolutionary origin](#) despite looking and functioning differently, for example the arm in a human and the wing in a bat. This is known as homology.



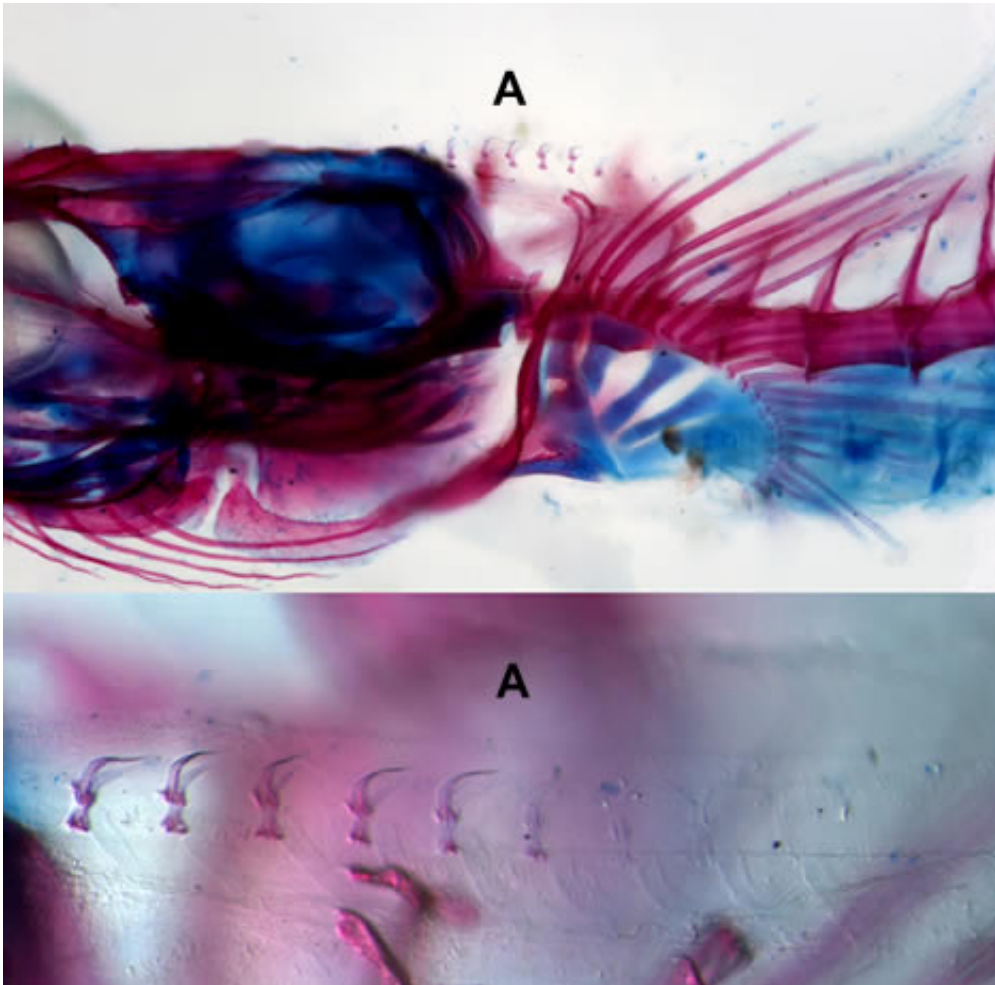
Sharksucker fish on a green turtle. Credit: Terry Dormer/ NHM

Results in small changes

Up to a certain stage in the fishes development, the dorsal fin can be seen developing in the same way and looking very similar in both fishes.

Then, over a series of small changes, the dorsal fin in the Remora begins to expand and shift towards the head.

By the time the Remora has reached around 30mm in length, the dorsal fin has become a fully formed 2mm sucking disc. It still has the components found in the dorsal fin, the tiny fin spines, spine bases and supporting bones, but the [spine](#) bases have greatly expanded.



Sharksucker fish with its bones stained red to show early development of dorsal

fin (A) - close-up at the bottom. At this stage it looks like a normal dorsal fin that most other fish have - you can see the fin spines. Credit: Ralf Britz

Small changes

So, the sucking disc is formed by a massive expansion of the dorsal fin through small changes while the fish is developing. It is not the result of the evolution of a completely new structure.

Britz, who last year uncovered the origin of pufferfishes' beaks, says, 'What keeps impressing me when I study the development of some of the weirdest structures in the fish world is that *natura non facit saltus*, "nature does not make jumps", and even the strangest anatomical modifications happen through small gradual changes in development'.



Comparing equivalent structures (1,2,3) in a normal dorsal fin in a Morone fish (top) and in a dorsal fin that has become a sucking disc in the sharksucher,

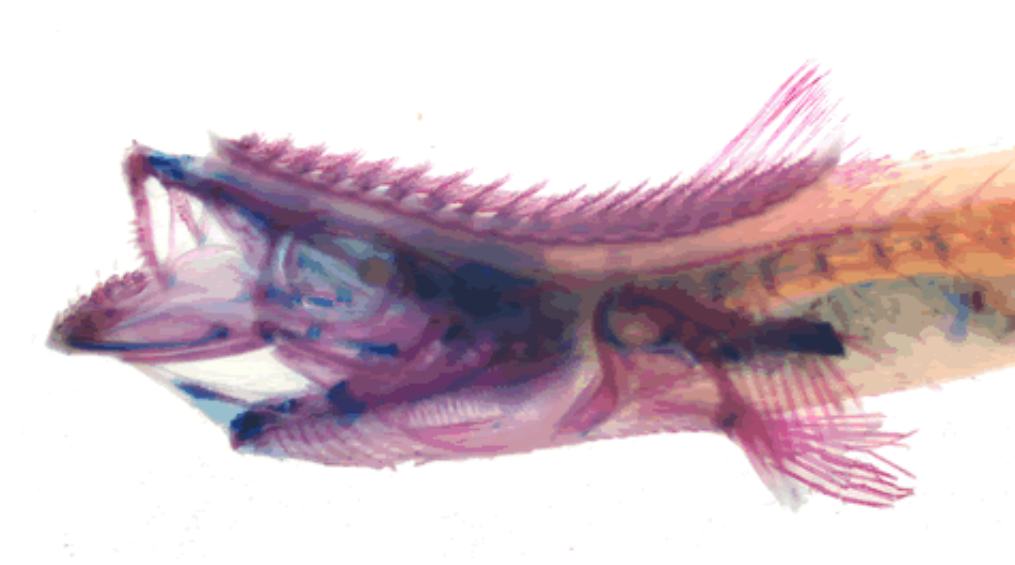
Remora (bottom) - individual parts have been separated to show detail.

Remoras

Ralf Britz with a sharksucker in the Museum's tank room.

There are 8 species of sharksuckers and they are the only fish with a sucking disc. Their closest relatives are the cobia and dolphin fish (or Mahi mahi). They are found in tropical and subtropical oceans.

Sharksuckers use the spines and suction of their sucking disc to attach themselves to large marine animals.



Stained sharksucker showing the fully developed sucking disc - the spination along the expanded base can be seen quite clearly. Credit: Dave Johnson

They don't seem to cause any harm, or benefit, to the animal they're

attached to, and they live off scraps of food, faeces or parasites from the larger animal.

Some people are known to use sharksuckers to catch other [fish](#), throwing them into the sea attached to a fishing line and pulling them in once they are attached to a larger sea animal.

The Remora sucking disc research was published in the Dec 2012 issue of the *Journal of Morphology*.

Provided by Natural History Museum

Citation: Sharksucker fish's strange disc explained (2013, January 28) retrieved 10 April 2024 from <https://phys.org/news/2013-01-sharksucker-fish-strange-disc.html>

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