Fossil shows fish had sucker on its back

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(Phys.org) —A 30-million-year-old fossil has revealed how remoras – also called sharksuckers – evolved the sucker that enables them to stick to other fish and 'hitch a ride'.

Previous evidence, such as the segmented structure of the sucker and how it develops in a similar way to fins in normal fish, led scientists to believe that it must be a modified dorsal fin – the fin located on the back of normal fish. But the evolutionary steps that led from fin to sucker were a mystery.

Now a team led by scientists from Oxford University and London's Natural History Museum has studied an early fossil remora and found that it evolved a fully-functioning sucker – or 'adhesion disc' – on its back. It was only later in the evolutionary history of remoras that the sucker migrated to the top of the head, where it is found in all remoras alive today.

A report of the research is published in the journal *Proceedings of the Royal Society B*.

'The remora sucker is a truly amazing anatomical specialisation but, strange as it may seem, it evolved from a spiny fin,' said Dr Matt Friedman of Oxford University's Department of Earth Sciences, lead author of the report.

'In this fossil the fin is clearly modified as a disc but is found on the back of the fish. It enables us to say that fin spines on the back broadened to form wide segments of a suction disc. After the disc evolved, it migrated to the skull, and it was there that individual segments became divided in two, the number of segments increased, and a row of spines was developed on the back of individual segments.'

Modern remoras use their sucker to fasten themselves to hosts including whales, turtles, and sharks. The researchers have shown that the fossil remora (†Opisthomyzon), dating from the Oligocene period and unearthed in Switzerland, falls outside the branch on the evolutionary tree occupied by all living remoras. As such it preserves primitive aspects of the shape and construction of the adhesion disc not found in

modern remoras, all of which share discs that are broadly similar in construction.

'It's exciting that fossil fish from the Natural History Museum were so crucial to this study, and shows the important value of our collections for scientific research,' said Dr Zerina Johanson, palaeontologist at London's Natural History Museum.

'Following painstaking preparation by our fossil preparator, Mark Graham, we were able to clearly see several important features of the disc in the fossil, for example that it's much shorter than the disc in living remoras, with fewer segments.'

Dr Friedman added: 'One of the remarkable things we've learned about modern fishes is that some creatures that look very different, for example pufferfishes and anglerfishes, are actually very closely related.

'It's through fossils like this one, which preserve body plans and structures that have been pruned from the evolutionary tree by extinction, that we can unravel how they diverged from one another to assume the very different forms we see today.'

Provided by Oxford University