Introduction

Petromyzontiformes, also known as lampreys, are an order of vertebrates with a very distinctive funnel-like mouth with rasping teeth. They use it mainly to attack their prey, but it is absent in larvae. Some species don’t feed as adults even though they have this kind of mouth.

Taxonomy

This class of vertebrates is classified as Agnatha, a superclass that also includes Myxiniformes. Agnatha are Vertebrata, but they are different enough from the other species (Gnathostomata) of this subphylum, so they are in their own superclass.

Paired species

More than half of the lamprey genera have paired (or satellite) species. This means that there’s a group of 2 or more species: the adults of one of these species predate and migrate, while the adults of the other species only reproduce and die. This phenomenon has only been observed in Petromyzontiformes, and it has caused a lot of speciation. The most accepted theory is that difference of size has a decisive importance in this speciation.

Table 1: List of the genera of Petromyzontiformes with paired or satellite species. Salewski (2003)

Table 2: Differences between two paired species. Kelly (2001)

Table 3: Egg hatching rate related to size difference. Beamish (1992)

Common ancestor and controversial studies

The common ancestor of paired (or satellite) species is considered to be parasitic or parasitoid by most of the authors. That’s because non feeding adults develop their mouth with rasping teeth even though they don’t attack any prey; and we usually find several non feeding species which have a restricted distribution that only overlaps with the distribution of a feeding species (the ‘parent’ species).

A molecular study about the Leptenteron species suggested that, by parsimonious reconstruction, the most probable phylogeny was that non feeding species were the ancestors. But those studies, which analysed different genes, had contradictory data, and the most widespread theory is still that the common ancestor was a species with feeding adult stage.