STUDY OF LAMPREYS IN THE PEMBERTON AREA

by R.J. Sneeuwjagt

Lampreys are one of the most fascinating fish species existing today. Together with the hag-fishes, the lampreys represent the last existing forms of a group of fishes which evolved at the beginning of vertebrate evolution as evidenced in many fossil records of the Carboniferous era (280 million years ago). In addition these fish spend four years in fresh water rivers, then migrate into the ocean for a year or two where they travel thousands of kilometres before returning to spawn in the rivers again.

The lamprey found in the rivers of southwestern Western Australia is Gestria australis. These lampreys live in the tributaries and brooks of the major rivers, including the Warren, Donnelly, Blackwood, Gardner, King and Kent.

Until very recently, the bulk of man's knowledge of the life history of these fish has come from studies of the Northern Hemisphere lamprey, and the studies that have been made on Gestria australis are showing it to be quite distinct and unique from the bulk of the world's lamprey species. (approximately thirty altogether).

In order to learn a great deal more about the life history and behaviour of our lamprey, a 3-year research project was initiated in 1977 by Professor Ian Potter of Murdoch University. Two of his graduate students, Rob Hilliard and David Macey, spend many weeks of the year trying to capture these fish and obtain information on their feeding, sexual and spawning habits. These researchers, along with other students from both Murdoch and the University of W.A., utilise the 'Cork Oak' hut in the Pemberton settlement for their laboratory and sleeping quarters.

Life History

Although very little study has been done to date on the life history of our lamprey, Gestria australis, enough is known to make interesting reading.

Sexually mature adults of Gestria spawn in the southwest rivers, probably between October and December, although very few reports have ever been made about the spawning, the actual time of year and exactly what kind of place the adults seek before spawning, such as gravel beds, shallow or deep pools. The Northern Hemisphere species are known to spawn in groups, over a shallow, fast running section of the stream, probably over gravel and in clear, clean waters.

The adults spawn once only as death follows soon after. The eggs hatch probably three weeks after spawning, and the tiny lamprey larvae, called "ammocoetes", are about 8-10 mm in length, and superficially resemble brown tadpoles in appearance. The ammocoetes are blind and immediately burrow into sandy banks of the shallow edges of the streams. They probably remain burrowed in these banks for the first four years of life, feeding on organic debris using a filter system more usually found in invertebrates rather than vertebrates. They grow quite slowly and change (metamorphose) into miniature adults of about 100 mm (4") in length after four years. The metamorphosis is fairly dramatic and is similar to the metamorphosis of a tadpole into a frog. The previously blind amoecetes develop large silver eyes, change colour from brown to deep marine blue with a silver belly, and finally sport two irridescent metallic blue-green stripes down the length of their back.

Sea Migration Phase

Metamorphosis starts in the summer months and the young adults are ready to migrate out to sea in the following winter months.

George Cassells of the Pemberton Trout Hatchery often catches the young adults on their way out to sea, as they get sucked down the Hatchery's water supply pipes, and end up in the filter nets.

Invariably they migrate during the hours of darkness only, and will not start to feed until reaching the estuaries and their first taste of salt water. Metamorphosis equips them with a sucking mouth, full of tiny, needle sharp teeth, plus a tongue similarly armed.

Lamprey feed by sucking onto a host fish, and boring a small hole through the side of the host fish until they are able to freely suck the fish's blood. Gestria australis probably feeds in the same manner, although at present there are no reports at all concerning what it attacks and how it eats. Attached to its host, the lamprey will travel many thousands of miles throughout the southern oceans.

Return Journey

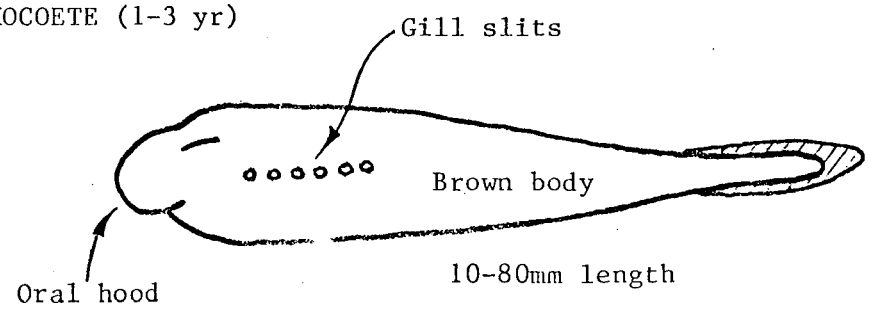
The lamprey return to the coast when they are 60-80 cm (3') in length and search for estuaries of major rivers along the southwest coast. They start the upstream migration in early August, and at Pemberton can be found trying to get around (or climb over) the town weir between late August and December. These upstream migrants are not yet sexually mature, and will spend twelve months until the following spring hiding at the head of the river systems before finally spawning and dying. During this time they do not feed, but live off their own body reserves and fats, stored during the marine phase.

Many questions still remain unanswered about these incredible eel-like animals. Professor Potter and his research team would be delighted to receive any reports of sightings of these fish as these may help to fill many of the gaps of knowledge of this little known fish of Western Australia.

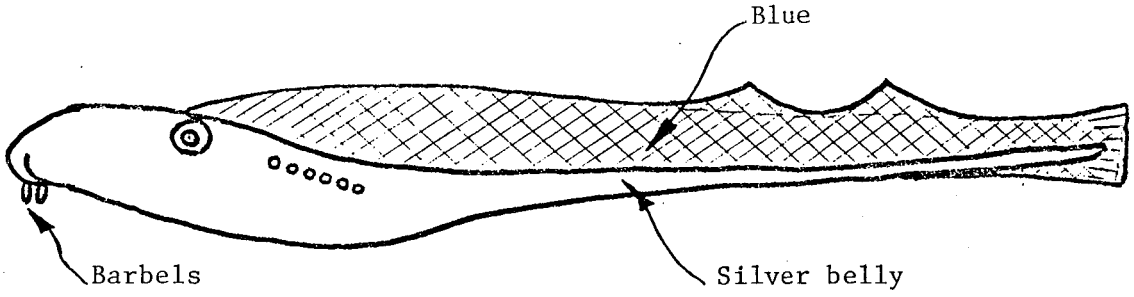
Editor's Note: Since receipt of this article an occurrence near Dwellingup has been recorded.

DEVELOPMENT PHASES OF GESTRIS LAMPREY

1. AMMOCOETE (1-3 yr)



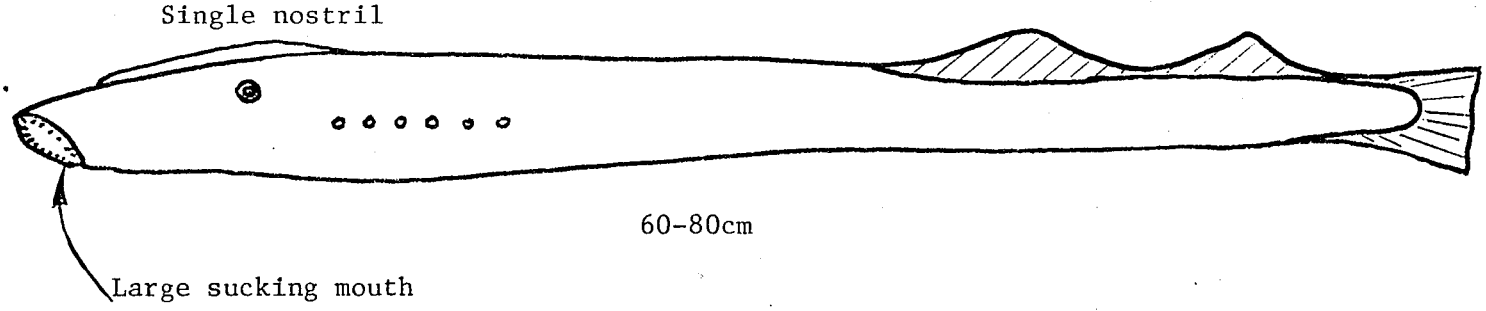
2. DOWNSTREAM MIGRANT (age 4)



8-10cm

3. UPSTREAM MIGRANT (age 6)

Single nostril



60-80cm

Large sucking mouth

4. MATURE MALE (age 7)