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ATLANTIC SALMON AND TROUT INVESTIGATIONS
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Report XII. A Preliminary Report on Elver Migrations into Moser River, N.S.

By L. R. Day.

Previous observation on the eel and salmon relationship have shown that the eel is responsible, no little, for the immense loss of salmon fry at the time of their emergence from the redds (White 1941). Also, many of the trout examined in the traps have been found to bear the characteristic jaw markings made by an eel in an attempt to capture living food. Such a relationship is interesting and certainly merits considerable investigation.

As a consequence, during the summer of 1941 it was decided to conduct a more extensive research on the eel in fresh water, beginning with the migration of the elvers into fresh water from the estuarial water.

By the middle of June, when observations began, transparent elvers averaging two and one-half inches in length and morphologically similar to the eel, were ascending the river in exceedingly large numbers, keeping relatively close to the shores and swimming at or near the surface of the water. Through July and August the numbers of elvers migrating gradually decreased. At the height of the migration it was estimated that 500 elvers per minute passed over a white submerged board, five feet long by one foot wide, placed near the bank.

Repeated counts of elvers passing over a white board placed at different stations along the river from its mouth to a point past the limit of tidal influence revealed that the elvers move into the fresh river water on the incoming tide.

Many instances of the preying of the larger eels on the elvers were observed. Large eels were observed lying behind rocks and logs and taking the elvers as they passed. Stomach contents of trapped eels revealed up to 20 elvers in some cases and probably many more in others. The greatest movement of migrating elvers is in the day time, when preying larger eels are skulking in the shaded areas. Pools left by the ebbing of tidal waters often trap quantities of elvers which conceal themselves in or along the mud or beneath stones. Disturbing them when they are lying quiet causes much scurrying to a new hiding place, in contrast to their almost utter disregard of disturbances when they are migrating in masses upstream.

Elvers from fresh water were kept in both fresh and salt water containers without any detrimental effect. Those in salt water were continually active while those in fresh water remained comparatively inactive.

A correlation between water temperature and the movement of elvers in the river seems to exist as movement is greatest between 20°C. and 25°C.

Elvers in the quiet pools of tributary waters were found swimming through the bottom flora and fauna and often disappearing down holes in the mud to reappear working their jaws and pharynx. They were apparently feeding on some form of marsh life.

From previous observations made by White in the spring of 1941 and observations made this summer it would appear that there was an important prey to predator relation involving the eel and the young salmon in their fresh water stages. Larger eels have been

observed eating elvers. On stomach analyses the large eels have been found to contain small eels, salmon fry and parr. Conversely salmon parr and smolts have been taken with elvers making up an important part of their food content.