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The Stocks of the River Lamprey in Rivers of Latvia

by

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River lamprey is an important object for fishery in the Latvian rivers. For the last twenty years two periods of different level of stocks (and catches) of the Latvian lamprey can be noted.

a) 1946 to 1956: low level of stocks (the average yearly catch was 483 centners).

b) 1957 to 1967: very high level of stocks (the average yearly catch was 1,829 centners).

Both periods are characterised by great yearly fluctuations in catches (Table 1; Ryapolova, 1962).

Table 1. Catch of river lamprey in Latvia (in centners).

Years	Catches
1960	880
1961	1,600
1962	2,180
1963	2,224
1964	3,309
1965	2,780
1966	1,845
1967	3,406

The size of catches is determined by the strength of the year-classes which constitute the base of the fishery. The spawning stock apparently includes no more than three age-groups, one group (lamprey at an age of 6 or 7) usually dominates. Since spawners die after spawning, annual changes in catches depend on the strength of the year-class forming the commercial stock of this year.

The strength of year-class and size of catches are determined by the complex of abiotic and biotic factors. The degree of their influence changes, depending on their correlation.

On the basis of the peculiarities in the biology of the river lamprey the following factors can be noted:

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1. The parent stock, determining the abundance of born larvae. However, the relationship between the size of the parent stock and the number of offspring in rivers of Latvia during the last twenties is less distinctly expressed (the correlation factor for the Gaui river is 0.50) than in pre-revolutionary years (the factor for the same river was 0.70) which shows the better condition of the stock of lamprey at present.

2. Changes in the sun-activity (W), influencing to some extent changes in the climate of soil and, consequently, conditions for the reproduction of the river lamprey. For example, in years of high sun-activity rich year-classes are born, in years of minimum sun-activity poor or below average year-classes are born. The effect of this factor is the same on lampreys of the Latvian rivers and those of Estonian rivers and rivers of the Gulf of Finland. The correlation is characterised by high coefficients for both levels corresponding to eleven-year cycles of sun-activity.

$r = +0.84$ (for the 1943 to 1951 year-classes)

$r = +0.85$ (for the 1952 to 1961 year-classes)

3. The thermal regime, influencing greatly the strength of the year-class in the first spring and summer-life period of the fingerlings, as has been mentioned earlier[x].

The above relations are used for predicting river lamprey catches some years in advance, which is of practical importance.

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x Ryapolova N.I., Annales Biologiques, XVII (1960), 1962.