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**Title**

The relationship between the size of mesh used  
and the state of maturity of goldeye  
from the Saskatchewan River

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THE RELATIONSHIP BETWEEN THE SIZE OF MESH USED AND THE  
STATE OF MATURITY OF GOLDEYE FROM THE SASKATCHEWAN RIVER.

A total of 1236 goldeye were examined from gill nets of known mesh size operated in the waters of the Saskatchewan River delta region from April 25 to August 21, 1946. The majority of these fish were taken from the commercial  $3\frac{3}{4}$ -inch nets set in the Saskatchewan River proper. Other specimens were obtained from Head River Lake, Kelsey Lake, Baptizing Creek and McKenzie Creek. Casual examination of samples from the commercial catch disclosed a paucity of mature individuals and led to a critical analysis of the state of maturity of the summer's catch (table 1.).

Table 1. The relationship between size of mesh and state of maturity of 1236 goldeye netted in the Saskatchewan River delta region between April 25 and August 21, 1946.

Size of mesh	1 $\frac{1}{2}$ "	2"	2 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	3 $\frac{3}{4}$ "
Number of specimens	52	16	35	123	1010
No. of immature males	32	3	20	28	163
No. of mature males	0	0	2	14	127
No. of immature females	20	13	13	77	597
No. of mature females	0	0	0	4	123
% of immature males	100%	100%	90.1%	66.7%	56.2%
% of immature females	100%	100%	100%	95.1%	82.9%
% of immature fish	100%	100%	94.3%	85.4%	75.2

Approximately 75 per cent of the goldeye captured in the commercial  $3\frac{1}{2}$ -inch mesh were immature with 56 per cent of the males and 83 per cent of the females falling into this category. These figures indicate that a larger mesh size should be legalized for this area in order to allow a greater escapement of immature fish. There are no data available on the maturity of goldeye from nets of larger mesh size in this area but analysis of records from Dawson Bay, Lake Winnipegosis, obtained during the summer of 1945 shows that only 11 per cent of the males and 13% of the females taken in  $4\frac{1}{2}$ -inch mesh were immature. These figures, although not strictly comparable to those obtained from the Saskatchewan River, may be used to indicate what might be expected from an increase in mesh size on the river. It is improbable that a value as low as 12 for the percentage of immature fish caught need be maintained and thus an increase of only  $\frac{1}{2}$ -inch which would bring the legal mesh up to 4 inches would likely be satisfactory. Since the  $\frac{1}{2}$ -inch increase between  $3\frac{1}{2}$ - and  $3\frac{3}{4}$ -inch mesh reduced the number of immature fish captured by 10% (table 1) it is conceivable that a further increase of  $\frac{1}{4}$ -inch would bring about a similar reduction. This would allow a one-third escapement of immature stock rather than the presently maintained one-quarter escapement and should greatly improve the possibilities of successful natural propagation of the species.

Such an increase in mesh size would not reduce the catch of other species appreciably. Jackfish and suckers make up the bulk of the catch and would be taken just as readily in 4-inch mesh. Although there is a large population of sauger in the river, these are of small size and are taken only occasionally in the present  $3\frac{1}{2}$ -inch mesh. It is probable that there would be a change in the pickerel catch comparable to that in the goldeye which would be equally advantageous since pickerel also mature slowly.

