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No. 31: AN UNUSUAL MASKINONGE FROM LITTLE VERMILION LAKE, ONTARIO

By G. S. Cameron

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AN UNUSUAL MASKINONGE FROM LITTLE VERMILION LAKE, ONTARIO[1]

By G. S. Cameron[2]

Abstract

An unusual type of maskinonge found in two lakes in Kenora District, Ontario, is regarded as a hybrid between *Esox masquinongy* and *Esox lucius*. It differs from the typical maskinonge found in the same waters in having a stouter body, longer and deeper head, longer maxillary, and longer fins. It retains dark vertical bars throughout life whereas in the typical form these break up and tend to disappear with age. Of 69 specimens examined, six were of the presumed hybrid type. These all appeared to be sterile. They showed the following *Esox lucius* characters—cheeks totally scaled, head concave interorbitally, cheeks and opercula vividly marked.

The presence of an unusual type of maskinonge in Little Vermilion Lake, Kenora District, Ontario, was brought to general attention in 1945, when it was described as a new species, *Esox amentus*, by Godfrey (3).

During the summer of 1946, two months were spent on Little Vermilion Lake and a number of other lakes in the vicinity in connection with a taxonomic study of maskinonge undertaken by the Royal Ontario Museum of Zoology with the financial support of the Carling Conservation Club. The accompanying map indicates the location of these lakes, which drain by way of the English River, the Winnipeg River, Lake Winnipeg, and the Nelson River into Hudson Bay.

In the course of these studies, 69 specimens of maskinonge from Little Vermilion Lake, and a smaller connecting lake, known as Maskinonge Lake (Musky Lake), were studied. The study included the making, on each specimen, of 28 measurements of such body proportions as head length, head depth, diameter of eye, length of snout, length of maxillary, body depth and width, caudal peduncle depth and length, and height and base of dorsal, anal, pectoral, and ventral fins. In addition, counts were made of scales in the lateral line, of branchiostegals, and of fin rays. Measurements and counts were made as described by Dymond (1). A description, including a photograph, was made of the markings and color pattern of each specimen. Age was determined also, by scale examination.

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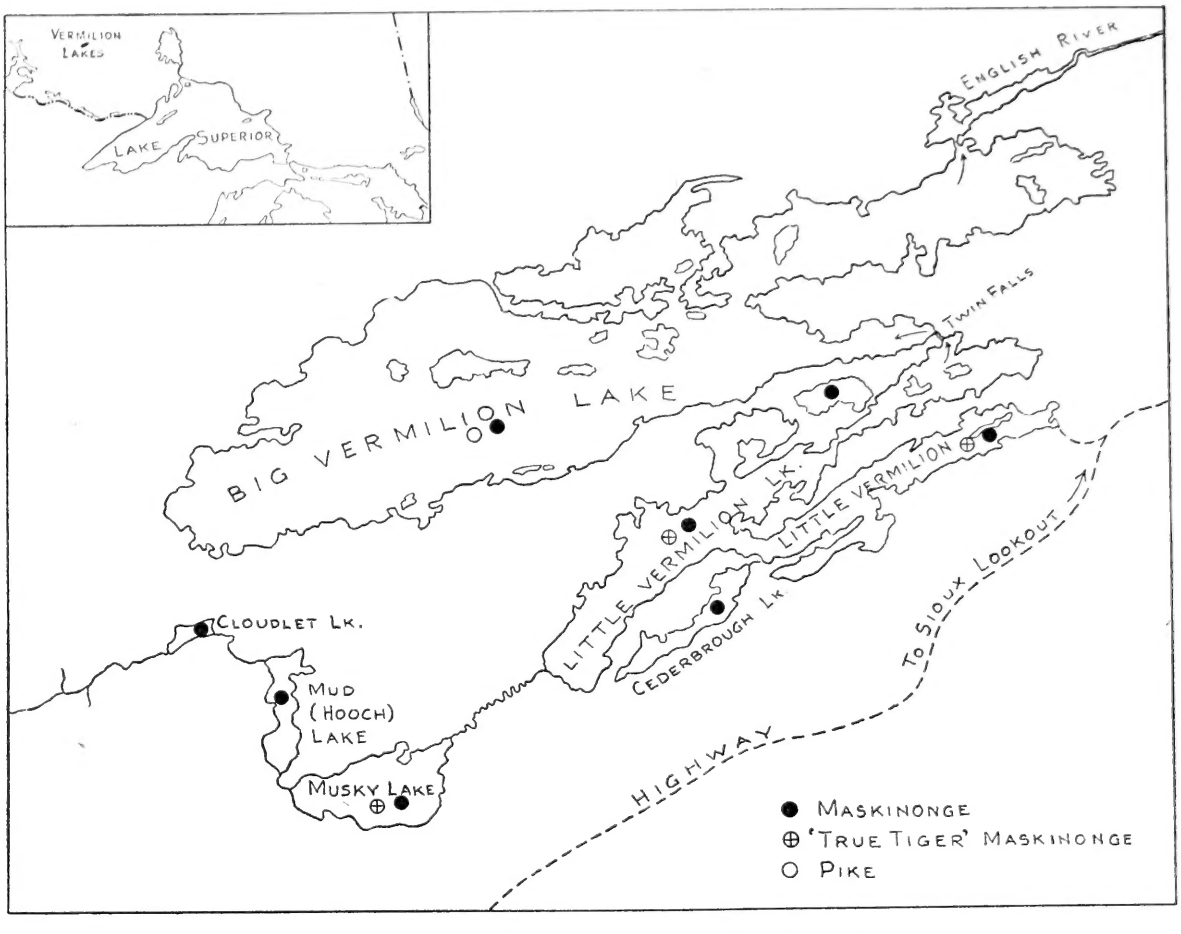
Contribution No. 30 of the Royal Ontario Museum of Zoology, Toronto, Ont.
[2] *Junior Zoologist (Seasonal) Royal Ontario Museum of Zoology.*



Map of Little Vermilion and surrounding lakes.

Table I presents a comparison of the body proportions and counts of the common and of the so-called 'true tiger' or *amentus* maskinonge. In the case of the common type, only average and extreme ranges are given.

A comparison between a number of these body proportions in the two types is presented graphically in Figs. 1, 2, and 3.

The table and figures indicate several significant differences between the common or typical maskinonge of Little Vermilion and Maskinonge lakes and the so-called 'true tiger' (*amentus*) variant, occurring in the same waters. As compared with the typical form, the variant has a much stouter body (deeper and wider in proportion to length), with a longer and deeper head, much more sharply concave interorbitally, longer maxillary (reaching a vertical through the posterior margin of the eye), and a caudal peduncle both shorter and deeper. The fins are all longer, with larger bases, while the scale count seems slightly lower. Other differences include the complete scaling of the cheek of the variant as compared with the naked lower half of the cheek of the typical form.

The color and markings of the two forms are quite different. Small specimens of the typical form (up to about 30 in. in length) are predominantly bluish green on the sides with distinct dark vertical bars (Fig. 4). Larger fish show a gradual darkening of color, while the markings become gradually

TABLE I

COMPARISON OF BODY PROPORTIONS AND COUNTS OF SCALES AND BRANCHIOSTEGALS OF THE COMMON TYPICAL MASKINONGE OF LITTLE VERMILION AND MASKINONGE LAKES AND OF THE SO-CALLED 'TRUE TIGER' OR *amentus* TYPE FOUND IN THE SAME LAKES

All body proportions listed are expressed as thousandths of standard length; standard length in mm.

	Common type		'True tiger' (*amentus*) type						
	Average	Range							
Field number	—	—	037	024	075	042	050	035	Mean
Standard length	769	631-1022	850	862	885	904	908	911	887
Head length	276	252-309	315	321	329	303	315	324	318
Head depth	112	092-129	127	115	138	125	143	122	128
Eye	029	024-032	027	028	030	029	026	025	028
Snout	113	104-126	137	137	142	140	142	142	140
Interorbital	067	061-074	072	074	073	075	072	073	073
Maxillary	132	109-145	166	166	167	167	168	170	167
Snout to occiput	190	183-201	222	219	229	226	225	228	225
Body depth	183	163-222	188	209	206	204	193	200	200
Body width	105	089-122	108	115	120	122	120	113	116
Caudal peduncle									
length	124	103-147	108	122	119	132	123	122	121
depth	074	063-083	075	075	082	076	085	076	078
Dorsal									
rays	22	19- 23	22	22	23	22	23	22	22
height	115	099-129	119	119	134	134	121	128	126
base	120	109-141	132	133	137	128	140	133	134
Anal									
rays	20	18- 22	21	20	20	20	21	21	20/21
height	114	096-130	119	120	134	127	112	122	122
base	099	090-120	104	104	110	108	098	094	104
Pectoral									
rays	18	16- 19	18	18	18	17	18	18	18
height	115	101-132	114	130	139	133	118	132	128
base	036	030-043	042	042	042	039	035	039	040
Ventral									
rays	12-13	12- 13	12	12	12	12	12	12	12
height	100	089-117	101	112	119	118	110	120	113
base	036	031-040	039	037	037	038	035	038	037
Scales	149	137-156	143	150	143	146	140	145	145
Branchiostegals	17-18	16- 19	19/18	19/20	18/19	18/17	18/17	18/18	17/18

obscured (Fig. 5). The back is often so dark a shade of olive green as to be almost black. This color shades down through bronze to sides that have a ruddy ground color. As a fish ages, the bars break up into obscure blotches, which remain more distinct in the caudal region (Fig. 6). In the largest specimens (over 40 in.) the sides are usually of a uniform dirty brownish color. The belly is usually white, although that of some young maskinonge is marked by faint dark patches. The fins are typically of a brownish color with obscure darker blotches; the fins are often of a vivid red color.

The variants are given the name 'true tiger' because they possess permanent distinct dark crossbars (Fig. 7) traversing light-colored sides, which show a subtle bluish tint. This light color darkens dorsally through a purple hue to a back that is so deep a purple as to appear black. The bars arise from this

black back and slope downwards and forwards, occasionally being broken by distinct dark spots. These markings are sometimes described as 'worm-tracks'. The cheeks and opercula are covered with distinct dark blotches, while the fins are less reddish than those of the typical form, and are faintly spotted.

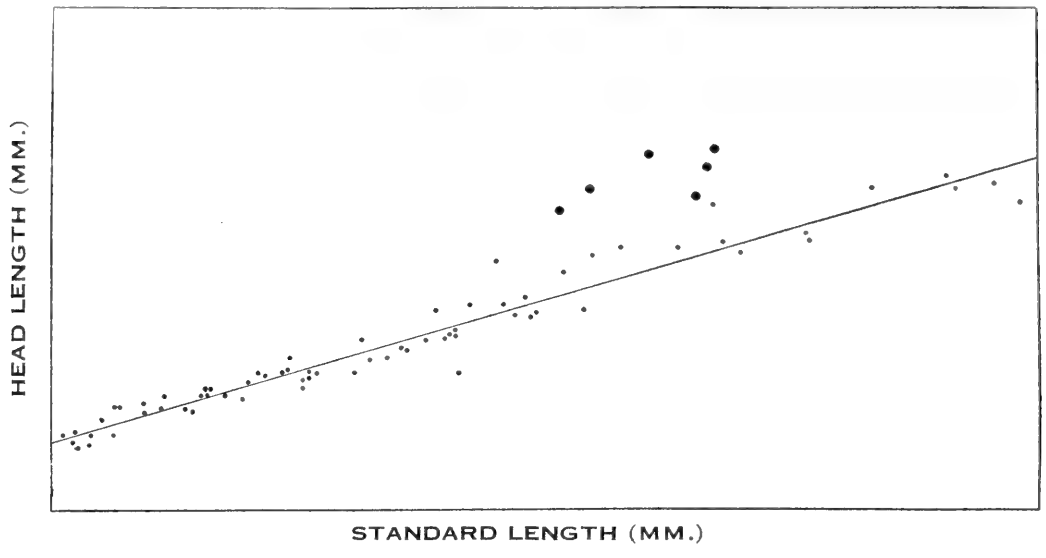


FIG. 1. *Diagram showing relation between head length and standard length in typical maskinonge (small dots) and 'tiger' maskinonge (large dots).*

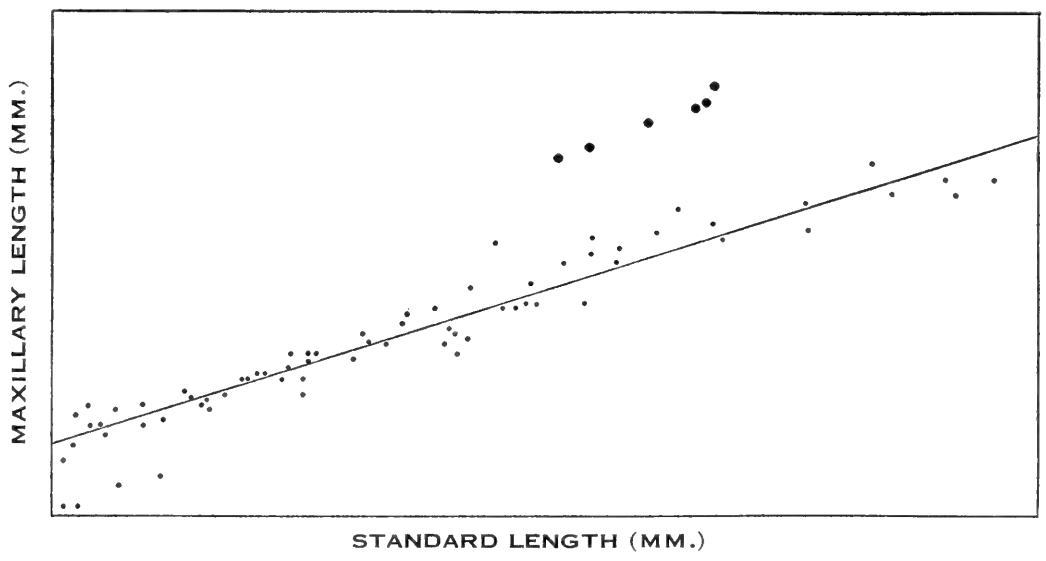


FIG. 2. *Diagram showing relation between maxillary length and standard length in typical maskinonge (small dots) and 'tiger' maskinonge (large dots).*

Through the co-operation of anglers fishing for maskinonge on Little Vermilion and Maskinonge lakes, and local resort owners, a considerable proportion of the specimens caught and retained were made available for examination. So keen are anglers to exhibit their catch of a rare 'true tiger' that every specimen of this variant taken during the time the study was in progress was photographed and examined. The fact that of the 69 specimens examined only six were of the 'true tiger' type indicates that this type is comparatively rare. This rarity, together with the striking beauty of the

fish makes it a prize eagerly sought after, and may in part explain its reputation for superior fighting qualities. Actually, experienced guides insist that both 'true tiger' and common maskinonge fight with equal vigor.

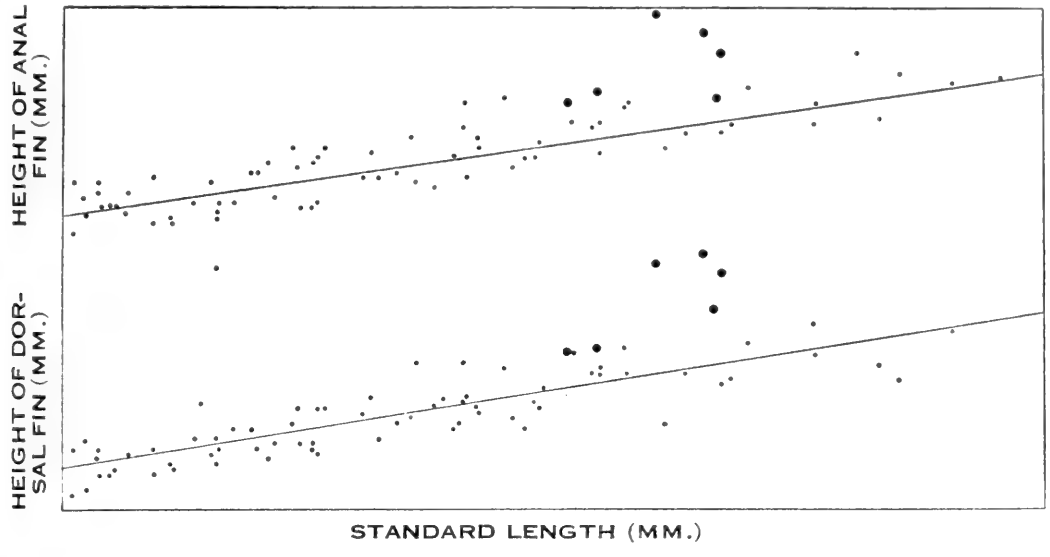


FIG. 3. *Diagram showing relation between height of anal and dorsal fins and standard length in typical maskinonge (small dots) and 'tiger' maskinonge (large dots).*

A striking feature of these variants was the fact that their gonads were so small and shrivelled as to suggest that they were nonfunctional. The texture was quite different from that of the gonads of normal specimens of the same size.

So far as is known this variant is confined to Little Vermilion and Maskinonge lakes although there were reports of its occurrence in Cliff and Height of Land lakes. Until specimens from these waters can be examined it will not be known whether these are of the same nature or merely vividly marked young of the typical form.

Several of the characters in which the so-called 'true tiger' maskinonge of Little Vermilion and Maskinonge lakes differ from the typical form suggests that it is a hybrid between the common maskinonge (*Esox masquinongy*) and the pike (*Esox lucius*). The pike is not known to occur normally in Little Vermilion and Maskinonge lakes, although it abounds in the lower neighboring lake, Big Vermilion, separated from Little Vermilion by a low falls. Little Vermilion and Maskinonge lakes are joined by a long meandering creek. At high water in spring when these fish spawn it is quite possible that occasional pike may gain entrance to the Maskinonge lakes above.

Some of the considerations that suggest that the 'true tiger' (*amentus*) maskinonge is a *masquinongy–lucius* hybrid are as follows.

It appears to be sterile.

It possesses the following characteristics of *Esox lucius*—cheeks totally scaled, head sharply concave interorbitally, cheeks and opercula vividly marked.

The scale count is intermediate between *lucius* and *masquinongy*.

Presumed *lucius–masquinongy* hybrids are known in other waters and have been produced artificially. Eddy and Surber (3) say that late-maturing pike have been reported as spawning with maskinonge and that evidence of hybridization has been found in the frequent appearance of specimens bearing maskinonge markings but having the cheeks entirely scaled as in the pike.

These authors further report that a large number of maskinonge eggs were successfully fertilized with pike milt at the Nevis Hatchery and that pike eggs were likewise successfully fertilized with maskinonge milt. Some of the resulting fish were reared in the vicinity of the Nevis Hatchery and some in tanks and ponds at the University of Minnesota.

Some of the characters shown by underyearlings of these hybrids have been reported by Eddy (2, pp. 25-27) as follows: "Both of the crosses were heavily barred. Some had the scales absent from the lower part of the cheek, but many showed the lower part of the cheek to be covered partially or entirely by scales." By Sept. 15 the hybrids were between 11 and 12 in. in standard length whereas the pure bred lunge were between 7 and 8 in. in standard length.

The heavy barring and the scaling on the lower part of the cheeks of the artificially produced hybrids correspond to the condition found in the presumed hybrid here reported.

The increased rate of growth and apparent infertility of the presumed hybrid correspond to the condition found by Hubbs and Hubbs (5) in the case of hybrid sunfish.

While the evidence for an increased growth rate in the case of the presumed hybrids reported here is not as great as in the case of the artificial hybrids during their first year there is some indication of it. The six specimens of the *amentus* type, ranging in standard length from 850 to 911 mm. were from 8 to 11 years of age, whereas six typical maskinonge from the same waters 860 to 911 mm. in length were 9 to 14 + years of age.

Four of the seven peculiar maskinonge reported by Seaborn (6, p. 237) were probably pike–maskinonge hybrids as indicated by the barred pattern and the complete scaling of the cheeks.

Acknowledgments

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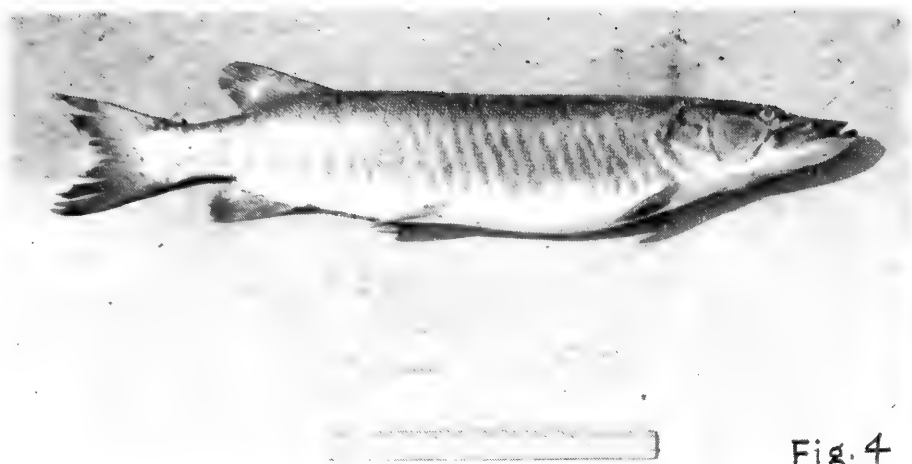

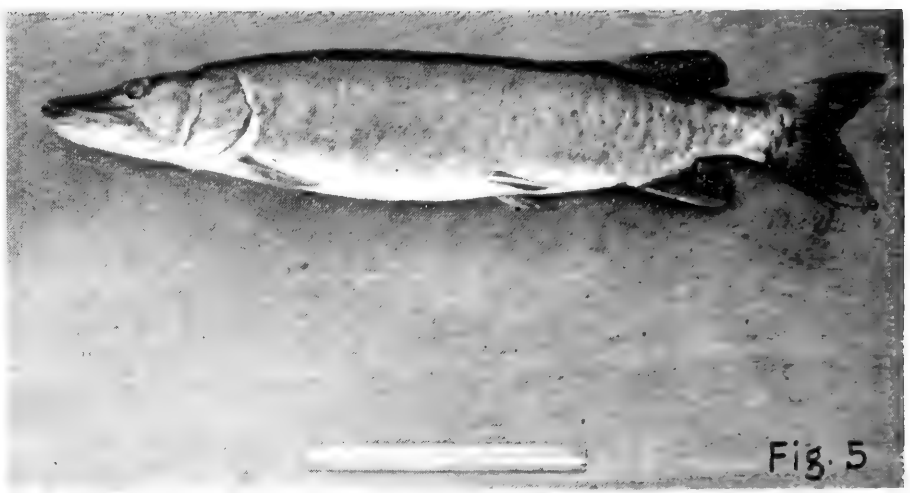

FIG. 4. *Typical form 28½ in. long, showing pattern of dark vertical bars.* FIG. 5. *Typical form 34 11/16 in. long, showing remains of dark vertical bars.* FIG. 6. *Typical form, 43½ in. long, showing only traces of dark vertical bars.* FIG. 7. *'True tiger' (amentus) form, 38 5/16 in. long, showing persistence of dark vertical bars in larger specimens.*

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