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THE OCCURENCE OF *HYDROCYNUS GOLIATH* (BLGR.) IN LAKE TANGANYIKA

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SUMMARY

OCCURRENCE of *Hydrocynus goliath* (Blgr.) in Lake Tanganyika is discussed. It seems a recent immigrant from the Congo river system, and the fact that all records are from the southern parts of the lake may be fortuitous. Its presence enhances the lake from the angling point of view.

INTRODUCTION

The occurrence of the giant tiger fish *Hydrocynus goliath* (Blgr.) in Lake Tanganyika is of interest from two aspects; the first concerns its establishment as a recent immigrant to the lake from the Congo river system, and the second is as a sporting fish. The only other representative of the genus in the lake is *H. vittatus* (Cast.), which is common and ubiquitous around the lakeshore.

RECORDS FROM LAKE TANGANYIKA

There are four records of *H. goliath* in Lake Tanganyika, all from the south part within the Zambia border. They are as follows:—

- (i) Poll (1953) recorded a very small specimen of 7.4 cm. caught by seine-net close to a beach in Mbete bay, near Mpulungu.
- (ii) Poll (*op. cit.*) was told by "Une pecheur sportif britannique d'Abercorn" that several large tiger fish of about eighty pounds weight had been caught by rod and line in the south of the lake. On enquiry in Abercorn, I could find record of only one *Hydrocynus* large enough for there to have been no doubt that it was *H. goliath*. This specimen weighed 74 lbs. and was caught by rod and line in the lake near the mouth of the Lufubu River in 1946 (Plate 1).
- (iii) A specimen weighing eighteen and a half pounds was caught by rod and line close inshore near the mouth of Nkamba bay in July, 1964. It was frozen shortly after capture, and I had opportunity to examine it.
- (iv) A large tiger fish was speared by local fishermen in the lake near the mouth of the Kalambo river in 1963 (P. Matthis, pers. comm.). Several people had been attacked and injured while swimming in shallow water, but when it was realised that the attacker was a fish, and not a crocodile, it was speared from canoes. Its length was estimated at about five feet.

Several points of importance arise from these records. Poll's specimen of 7.4 cms. was so small that it is highly improbable that it had made its way from the Lukuga River — the only connection of the lake with the Congo River system in which *H.*

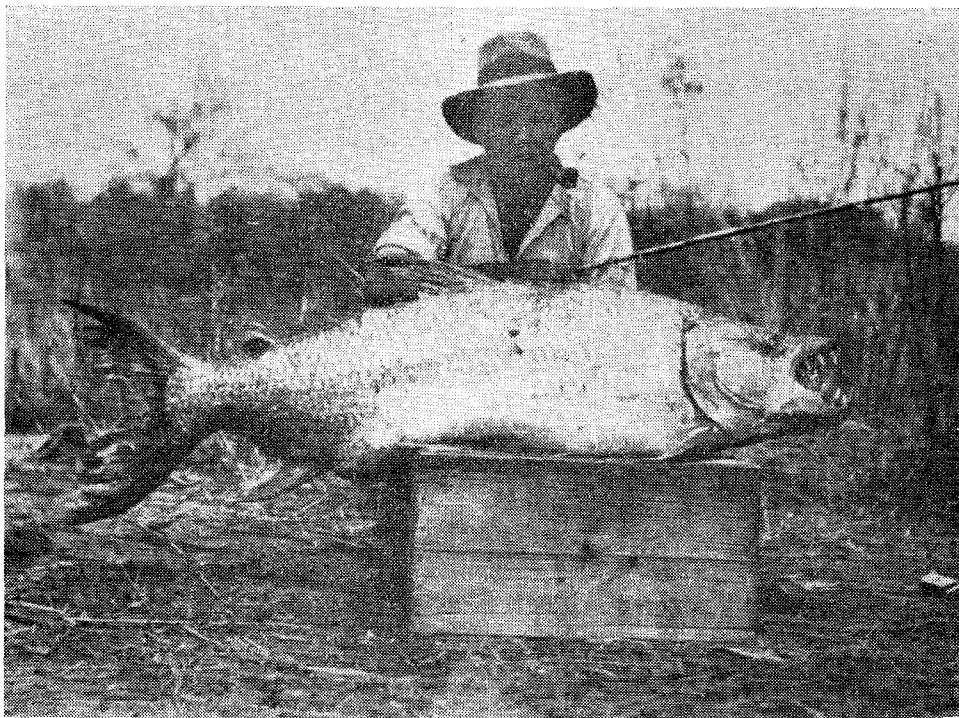


Photo by A. LANDRY

PLATE 1

Hydrocynus goliath of 74 lbs. from Lake Tanganyika.

goliath normally lives. The direct distance between the Lukuga and Mbeté bay is about 230 miles, but *Hydrocynus* in the lake is confined to inshore regions, and an even greater distance would be involved in migration along the shore. It seems more likely that this specimen was spawned in one of the affluent rivers of the southern part of the lake. The only affluent which can be regarded as a true river in this area is the Lufubu, the others being precipitous streams, and work on anadromous fish was conducted there from January, 1960 to April, 1964 in turn by myself, T. G. Carey, and Th. Badenhuizen. The possibility of finding *H. goliath* was borne in mind, but, of thousands of *Hydrocynus* examined, all were *H. vittatus*. Thus the origin of Poll's tiny specimen remains puzzling.

The size of the 74 pound specimen shown in Plate 1, and of the *Hydrocynus* which attacked bathers near the Kalambo mouth, indicates both to have been *H. goliath*, although no specific features were recorded. The largest *H. vittatus* known from Lake Tanganyika is 14 pounds (J. Curtis, pers. comm.). It may be noted in passing that records of attacks on humans by freshwater fish are very rare.

With regard to the specimen caught near Nkamba Bay in July, 1964 and examined, its more important morphological features were as follows:—

Standard length 85 cm., maximum depth 21 cm., head length 25 cm., (length was thus four times the depth, and 3.4 times the head length); 9 gill-rakers and one vestigial raker on the lower section of the first gill arch; dorsal fin III, 8; anal fin III, 12. Origin of the dorsal fin anterior to the origin of the anal fin. Caudal peduncle 1.4 times longer than deep. Lateral line scales 47; $7\frac{1}{2}/5\frac{1}{2}$ scales in transverse line; 3 scales between lateral line and origin of the ventral fin. Coloration: flanks bluish silver with no trace of lateral

black bands. Adipose and caudal fins dark. Weight 18 pounds 8 ounces. Female, with ovaries in an actively developing stage.

H. vittatus in Lake Tanganyika differs morphometrically from the above in that the body length in typical large specimens is nearer three times body depth than four times, thus the fish is relatively deeper; the body length 3.5 to 4.5 times head-length; and the caudal peduncle 1.6 to 1.8 times longer than deep.

H. vittatus bears very distinct black lateral bands along the flanks, the number of scales in the transverse line is $7\frac{1}{2}/4\frac{1}{2}$, and there are 1 to $2\frac{1}{2}$ scales between the lateral line and origin of the ventral fin.

The largest known Lake Tanganyika *H. vittatus* is 14 pounds.

The Nkamba Bay specimen was clearly not *H. vittatus*, but the description agrees closely with that of *H. goliath*.

ORIGIN OF THE LAKE TANGANYIKA POPULATION

According to Poll (*op. cit.*), the fish of the Lake Tanganyika basin may be divided into three groups:

1. exclusively lacustrine species,
2. species which live in affluent rivers and do not occur in the lake, and
3. species which spend part of their lives in the lake and part in affluent rivers.

The first group is by far the most important, and includes the numerous endemic species which have evolved within the lake from ancient stocks. The second is relatively insignificant, because large affluent rivers are few. The third group is mostly confined to coastal areas and some have marked anadromous habits. It is made up of species derived from fish which were in the lake during its very long period of isolation, together with recent introductions from the Congo system since a link was formed by its outflow at the Lukuga River.

Old conservative species, such as *Auchenoglanis occidentalis* (C. et V.), *Malapterurus electricus* (Gmel.) and *Heterobranchus longifilis* C. et V., were probably present in the Congo fluviatile stock of the proto-Tanganyika region and have changed little during long isolation. Others such as *Barbus tropidolepis* Blgr., *Barbus lestradei* David, *Varicorhinus tanganyicae* Blgr., and *Barilius moorei* Blgr. are endemic offshoots from ancient stocks. *B. tropidolepis* still makes very marked spawning runs up rivers, but the others cited are less strongly associated with rivers and may commonly be found around the lakeshore. Examples of recent introductions from the Congo system are *Hydrocynus vittatus*, *Alestes macrophthalmus* Gthr., *Citharus gibbosus* Blgr., *Distichodus sexfasciatus* Blgr., *Distichodus fasciolatus* Blgr., *Labeo lineatus* Blgr., *Labeo velifer* Blgr. and *Labeo kibimbi* Poll. The first three of these are strongly established in the southern parts of the lake, and migrate annually up the Lufubu River in great numbers, and, with *B. tropidolepis*, give rise to a flourishing seasonal fishery on the river (Anon., 1962). Of the other five, the two *Distichodus* spp. are caught on rare occasions near the Lufubu River mouth and, with the three *Labeo* spp., are also known from the lakeshore near Albertville, close to the nearby Lukuga connection. Specimens are generally large. They seem to be recent introductions to the lake, and in process of spreading along the shore. It is with these recent immigrants that are establishing themselves slowly that *H. goliath* may be associated. The fact that the only records of *H. goliath* are from the south of the lake may be fortuitous, or because relatively more angling is done there.

The rate of establishment of these recent introductions is of interest. During its long period of isolation, possibly from the Pliocene, the lake level was over 500 metres lower than at present. Late Pleistocene volcanic activity near the north of the lake created a new affluent, which caused the lake level to rise. When first discovered in 1874

the Lukuga outlet was blocked, but by 1879 there was a strong flow out of the lake. The appearance of the Lukuga valley, however, indicates that this outflow commencing in historic times was not the first, but rather the latest of a series of outflows, reflecting minor long term rises and falls in lake level (Capart, 1952). In short, after long isolation an intermittent connection with the Congo system was established which dates from geologically very recent times. One may assume that fluviatile species enter the lake from the Lukuga whenever it is flowing, but only those able to breed in suitable affluent rivers around the lakeshore have established themselves.

Hydrocynus vittatus, *Alestes macrophalmus* and *Citharinus gibbosus* have evidently been successful quickly, but the *Distichodus* spp. and *Labeo* spp. recorded in the lake were probably not born there but came from the Lukuga. This may also be true of *H. goliath*, though the small specimen found by Poll implies that breeding in affluent rivers can take place.

SPORTING VALUE

Hydrocynus goliath must be among the most desirable of the large freshwater sport fishes, and its occurrence in Lake Tanganyika will enhance the already considerable reputation of this lake among anglers.

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