

FLORIDA BASS AN ANGLING SPECIES IN NATAL

by T. Pike

The largemouth black bass *Micropterus salmoides* is indigenous to north America, with the first specimen recorded having been caught in northern Florida in 1562. The species is widely distributed through the eastern section of the continent, extending from the eastern shores, through Florida, neighbouring western states and north to the Great Lakes and south-eastern Canada. The species was separated into two sub-species, with Florida bass *M.s. floridanus* confined to Florida in the south east, extending slightly north of Florida, and the other sub-species *M. S. Salmoides* occurring in the northern and north-western area of its distribution. Natural hybridisation of the two sub-species has been found to occur in some areas just north of the Florida peninsula.

Florida bass were reported to grow to a larger size than in the northern sub-species, so extensive translocations of Florida bass beyond their native range have occurred in north America since the late 1950s, in attempts to produce faster growing and angling trophy sized bass. The USA and world record for Florida bass is a fish of 10 102 kg caught in 1932. The northern bass record stands at 9 534 kg and more Florida bass of over 3,6 kg than northern bass were recorded in angling catches in the USA during 1974.

The northern bass was originally introduced into South Africa in 1928. Progeny were brought to Natal in 1930 and reared in small ponds for stocking angling waters. The sub-species has been widely distributed to water impoundments, mainly artificial, since then and has become a popular freshwater angling fish.

The original Natal Parks Board policy incorporates the responsibility of this organisation to maintain and improve public and freshwater sport angling in Natal. An attempt was thus made to improve largemouth bass angling by importing Florida bass. 211 Florida bass fry of ca. 30 mm length were introduced from Forest Wholesale Bait Co., Fort McCoy, Florida. The fish consignment arrived in Durban on 2 June 1979 and the fish were taken to the Natal Parks Board's Umgeni Fish Hatchery, at Nagle Dam. The fry were reared to use as breeding stock and the first spawning occurred at the Hatchery on 2 October 1980.

Juvenile Florida bass from the first Umgeni Fish Hatchery spawnings were used for stocking

selected dams situated in different areas in Natal. These dams contained no other bass and no bass occurred in the catchments above the selected dams. It was thus certain that hybridisation with northern bass did not occur with these Florida bass populations.

Owners of experimental dams stocked with Florida bass were asked to maintain records of the sizes of fish that were caught in their dams and make observations of spawning and other noteworthy activities of the fish. Members of registered angling clubs who fished these impoundments were also asked to submit angling catch returns to me.

Observations of Florida bass were made at Umgeni Fish Hatchery on reproduction, colouration and aggression of male adults while protecting their nests.

The largest bass caught by angling in KwaZulu-Natal was a Florida bass of 5,8 kg, taken from a dam at Mkuze. The second largest Florida bass recorded had a mass of 5,4 kg, which is the same mass as the largest northern bass in South Africa, caught in the Braam Raubenheimer dam in the Transvaal. Florida bass have grown to a larger size in Zimbabwe with the biggest being 6,02 kg, whereas the biggest northern bass in Zimbabwe was 4,29 kg. The warmer climate certainly favours Florida bass as the biggest fish in KwaZulu-Natal have been caught in the warmer areas, and quite a large number over 5 kg have been recorded from warmer climates in Zimbabwe.

Growth of Florida bass was found to be affected to a large extent by environmental conditions in the USA with the amount of available food and water temperatures being of most importance. Florida bass had a long growing season in the warm Florida temperatures compared to the shorter warm season in the colder northern areas where northern bass occur. Clugston stated that this could attribute towards the larger size of the Florida sub-species as both the sub-species have similar longevity with a maximum age of 16 years having been recorded.

It was also found in the USA that northern bass grew faster than Florida bass or their first generation hybrids during their first year. Floridas or their hybrids grew faster after the first year, although Florida bass showed slightly faster growth than the hybrids.

The body shape of Florida bass is not a good identifying feature to distinguish between Florida and northern bass. Florida bass in KwaZulu-Natal had a much deeper body from dams in the warmer coastal areas where tilapia and minnows were available for the bass to feed on, in comparison to Florida bass from dams in the colder higher altitude areas. Investigations of Florida and northern bass made by Lombaard in farm dams at Warden in the Orange Free State, at an altitude of 1 650 m.a.s.l. indicated that Florida bass were deeper bodied than northern bass.

The shape of Florida bass in the USA was examined by Chew who found that they had a deep body shape in the warm areas of Florida but the fish were less deep bodied in lakes north of Florida in colder climate regions. Growth of Floridas also varied tremendously from lake to lake depending on available food supplies.

A variation in the colour of Florida bass also occurred so this could not be used to distinguish them from northern bass. Taxonomic or physiological features are the only definite means to identify the two sub-species, with scale counts, stomach pyloric caeca counts or isoenzyme analysis regarded for positive identification.

Florida bass were found to become sexually mature and spawn in their first year in Natal dams, between altitudes of 350 to 1 540 m.a.s.l. Two spawnings also occurred during a season, early and late summer during the months of October and March, and bass spawned successfully to establish populations in all of the dams that were stocked. Female northern bass normally only mature in their second year in most KwaZulu-Natal dams, and occasionally in their first year in warm coastal dams. It was found that Florida bass, in Florida, matured when one year old whereas northern bass only matured in their second year.

Male Florida bass were found to be more aggressive than were northern bass while they were protecting their nests. Florida bass remained over the nest, or sometimes rushed towards an approaching observer, with its mouth wide open. Northern bass males retreated from their nests when they were approached.

According to bass anglers in Natal, Florida bass fight more aggressively than northern bass. It also required more skill to catch Floridas than northern bass. Anglers in Natal were satisfied that the introduction of Florida bass had provided them with better sport angling than they had obtained from northern bass.

No hybrids between Florida and northern bass have yet been positively recorded from Natal, but hybridisation could have occurred in some dams. A leading fish geneticist in the USA has stated that hybrid vigour can not be obtained by interbreeding the two sub-species, and hybridisation can cause problems. Mixing of the two gene pools has two disadvantages in the hybrids. First, the genes which are adaptive and beneficial in warmer or colder native ranges become maladaptive and detrimental in the opposite environment, which lowers the fitness and performance of the integrated population. Secondly, the genetic integrity of each sub-species is lost and the individual genetic identity cannot be regained. The maladaptive genes will remain and hinder the resulting populations for many generations.

The two sub-species evolved in different climatic zones. The northern bass evolved in cold climates with relatively short growing seasons and often harsh winters. On the other hand, the Florida sub-species is adapted to warmer environs with extended growing seasons and mild winters.

The following recommendations for the use of Florida bass can be made based on results of this investigation.

1. Florida bass should not be introduced into the same water impoundments or river catchments as northern bass, or into adjacent dams where hybridisation of the two sub-species could occur.
2. Florida bass should be stocked in impoundments which are situated in the warmer coastal to lowland climates, where minimum-maximum water temperature ranges of 8–39 deg.C occur. Impoundments in colder climates, with water temperature ranges of 4–28 deg.C, should be stocked with northern bass.
3. Bass should be positively identified by lateral line scale counts and scale index counts. Body shape or external colouration can not be used for separation of the sub-species.

ACKNOWLEDGEMENTS

The following people are thanked for their assistance and information which they supplied towards this project:

Messrs M. Muller, V. Meyer, L.J. van der Merwe, H. Lee and Noordsberg Sugar Co. For the use of their dams to stock with Florida bass for this project, and the information they supplied on observations which they made of the bass.

Natal Parks Board Staff at Umgeni Fish Hatchery in particular Messrs J. Craigie, T. Ferguson and B. Barnes.

Messrs P. Lombaard and W. Meyer for their information on their Florida bass breeding project in the Orange Free State.

Mr K. Ainslie for records of large bass that have been caught in South Africa and Zimbabwe.

Mr A. Whittaker for information on bass angling in South Africa and Zimbabwe.

Dr J.A. Reinke of the department of Energy and Natural Resources, Illinois, USA for information on Florida bass.

The late Mr A.C. Harrison for information on northern largemouth bass in the Cape Province.

Mrs M. Hamilton for typing the draft manuscripts many times.

This project was undertaken while the author was employed by the Natal Parks Board.