

NATAL PARKS, GAME AND FISH PRESERVATION BOARD

KOSI LAKE SYSTEM FISH SURVEY

15th February, 1968.

The fish survey of the Kosi Lake System was continued over the period 14th January to 19th January, 1968. Work was carried out by Technical Officer D.T. Rowe-Rowe and the author.

Gill nets and fyke nets were used for estimating yields and collecting specimens. Derris powder was also used in a small inlet stream for collecting specimens.

Gill netting

Lake Makhawulani

*Site 9

Water salinity 19.0‰

5 inch x 100 ft gill net top set in water 7 ft to 8 ft deep, stretching from top to bottom, just off shallow area on N.W. shore.

Catch

Caranx stellatus (512)

Total of 3 fish		
Maximum weight	5 lbs 8 oz.	20.1 ins.
Minimum weight	4 lbs 6 oz.	18.9 ins.
Average weight	4 lbs 13 oz.	
Total weight	14 lbs 12 oz.	

Chorinemus lysan (546)

One fish	6 lbs 4 oz.	24.5 ins.
Catch per 100 ft of net = 21 lbs 0 oz.		

*Site 10

3 inch x 100 ft gill net top set in water 6 ft to 8 ft deep, approximately 150 yards from shore and at right angles to shore. Net disappeared at night.

Lake Mpungwini

*Site 2

Water salinity 12 ‰

3 inch x 100 ft. gill net set just west of northern channel mouth, at right angles to shore and in water 6ft to 7ft deep.

Catch/.....

Catch

Caranx stellatus (512)

Total of 6 fish.
Maximum weight 5 lbs 0 oz. 19.7 ins.
Minimum weight 2 lbs 0 oz. 15.4 ins.
Average weight 3 lbs 1 oz.
Total weight 18 lbs 4 oz.

Caranx sexfasciatus (511)

Total of 3 fish.
Maximum weight 12 oz. 10.0 ins.
Minimum weight 10 oz. 9.4 ins.
Average weight 11 oz.
Total weight 2 lbs 0 oz.

Chorinemus sanctipetri (545)

One fish 1 lb 3 oz. 14.9 ins.

Mugil cephalus (877)

Total of 7 fish
Maximum weight 4 lbs 8 oz. 19.8 ins.
Minimum weight 1 lbs 2 oz. 13.5 ins.
Average weight 2 lbs 8 oz.
Total weight 18 lbs 2 oz.

Valamugil buchanani (888)

One fish 4 lbs 8 oz. 20.5 ins.

Rhabdosargus sarba (710)

One fish 4 lbs 11 oz. 17.5 ins.

Monodactylis falciformis (580)

Total of 4 fish.
Maximum weight 3 oz. 6.0 ins.
Minimum weight 2 oz. 5.25 ins.
Average weight 2 oz.
Total weight 9 oz.

Gerres oyena (629)

Total of 25 fish
Maximum weight 10 oz. 8.9 ins.
Minimum weight 4 oz. 7.0 ins.
Average weight 7 oz.
Total weight 10 lbs 5 oz.

Catch per 100 feet
of net 59 lbs 10 oz.

*Site 3

Water salinity 10.5 ‰

5 inch x 100 ft. gill net set on western sand bank, approximately 80 yards from shore, parallel to shore and in water depth of 6 ft.

CatchCaranx stellatus (512)

One fish	7 lbs 0 oz.	22.5 ins.
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Lake Nhlange*Site 6

Water salinity 2.5 ‰

3 inch x 100 ft. gill net set at right angles to eastern shore, approximately 70 yards from shore and in water depth of 6 ft to 9 ft.

CatchCaranx sexfasciatus (511)

Total of 3 fish

Maximum weight	1 lb 11 oz.	14.0 ins.
Minimum weight	9 oz.	9.5 ins.
Average weight	15 oz.	
Total weight	2 lb 14 oz.	

Pteromugil diadema (881)

One fish	4 lbs 1 oz.	20.0 ins.
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Rhabdosargus sarba (710)

One fish	6 oz.	8.2 ins.
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Gerres oyena (629)

Total of 12 fish

Maximum weight	8 oz.	7.8 ins.
Minimum weight	4 oz.	6.8 ins.
Average weight	6 oz.	
Total weight	4 lbs 3 oz.	

Monodactylis argenteus (581)

Total of 4 fish

Maximum weight	3 oz.	6.0 ins.
Minimum weight	2 oz.	5.0 ins.
Average weight	2 oz.	
Total weight	9 oz.	
Catch per 100 ft of net	12 lbs 1 oz.	

5 inch x 100 ft. gill net set parallel to above
3 inch net.

Catch

Megalops cyprinoides (101)
One fish 5 lbs 15 oz. 20.5 ins.
Lutianus argentimaculatus (664)
One fish 5 lbs 0 oz. 21.0 ins.
Catch per 100 ft
of net 10 lbs 15 oz.

Lake Amanzimnyama

*Site 8

Water salinity 0‰

3 inch x 100 ft gill net top set at right angles to
eastern shore, approximately 20 yards from shore in
water 7 ft to 9 ft deep.

Catch

Caranx ignobilis (520)
Total of 2 fish
Maximum weight 8 oz. 9.2 ins.
Minimum weight 7 oz. 9.2 ins.
Total weight 15 oz.
Rhabdosargus sarba (710)
One fish 8 oz. 8.9 ins.
Gerres oyena (629)
Total of 4 fish
Maximum weight 10 oz. 9.0 ins.
Minimum weight 6 oz. 7.5 ins.
Average weight 8 oz.
Total weight 2 lbs 0 oz.
Mugil cephalus (877)
Total of 36 fish
Maximum weight 4 lbs 2 oz. 19.0 ins.
Minimum weight 1 lb 4 oz. 13.6 ins.
Average weight 1 lb 15 oz.
Total weight 69 lbs 15 oz.
Pteromugil diadema (881)
Total of 11 fish.
Maximum weight 4 lbs 3 oz. 19.5 ins.
Minimum weight 2 lbs 4 oz. 16.3 ins.
Average weight 3 lbs 5 oz.
Total weight 36 lbs 12 oz.

Clarias gariepinus

Total of 5 fish		
Maximum weight	2 lbs 10 oz.	20.0 ins.
Minimum weight	1 lb 0 oz.	14.6 ins.
Average weight	1 lb 12 oz.	
Total weight	8 lbs 14 oz.	

Catch per 100 ft. of net 119 lbs 0 oz.

* See accompanying map for netting sites.

5 inch x 100 ft gill net set parallel to above
3 inch gill net.

Catch

Tilapia mossambica

Total of 8 fish		
Maximum weight	2 lbs 7 ozs.	14.5 ins.
Minimum weight	1 lb 12 oz.	13.3 ins.
Average weight	2 lbs 2 oz.	
Total weight	17 lbs 0 oz.	

Catch per 100 ft of
net 17 lbs 0 oz.

Fyke Nets

A fyke net was set in a clearing amongst the reed patch at the jetty site in Nhlange.

The following species were recorded from here.

Anguilla bicolor

Clarias gariepinus

Gerres oyena (629)

Ambassis safgha (634)

A series of two gill nets were set in water approximately 5 feet deep on the north western shore of Nhlange (below Aapies Draai).

The following species were recorded from here.

Gerres oyena (629)

Rhabdosargus sarba (710)

Ambassis safgha (634)

Poisoning

Derris powder (5% Rotenone) was used for poisoning a section of a small inlet stream (Sfazanene) of the Enkovugeni area. The following species were collected.

Aplocheilichtys katangae

Clarias gariepinus

Eleotris fusca (938)

Ophiocara porocephala (941)

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** Awaiting official identification.

Numbers following the scientific names are from "The Sea Fishes of Southern Africa" by J.L.B. Smith.

The following species abundance was found to occur at the sites netted:

Table I

Species abundance from gill net catches and salinity range where fish were caught.

Species	Numbers	Salinity Range	‰
<u>Mugil cephalus</u>	43	0.0	- 12.0
<u>Gerres oyena</u>	41	0.0	- 12.0
<u>Caranx stellatus</u>)	24	10.5	- 19.0
<u>C. sexfasciatus</u>)		2.5	- 12.0
<u>C. ignobilis</u>)	12	0.0	- 2.5
<u>Pteromugil diadema</u>)		0.0	- 2.5
<u>Tilapia mossambica</u>	8	0.0	
<u>Monodactylus</u>)	8		12.0
<u>falciformis</u>)			2.5
<u>M. argenteus</u>)	5	0.0-	- 2.5
<u>Clarias gariepinus</u>)		0.0	- 12.0
<u>Rhabdosarga sarba</u>	3		19.0
<u>Chorinemus lysan</u>)	2		12.0
<u>C. sanctipetri</u>)			12.0
<u>Valamugil buchanaani</u>	1		2.5
<u>Megalops cyprinoides</u>	1		2.5
<u>Lutianus</u>	1		2.5
<u>argentimaculatus</u>			2.5

Table 2

Species abundance from fyke net catches

<u>Ambassis safgha</u>	22
<u>Gerres oyena</u>	8
<u>Rhabdosargus sarba</u>	5
<u>Clarias gariepinus</u>	2
<u>Anguilla bicolor</u>	1

Discussion

From Table I it appears that Mugil cephalus was the most caught specie. It must be noted that of the 43 fish of this specie caught, 36 were caught in one net on one night in Lake Amanzimnyama.

Gerres appeared to be the dominant species in the lakes, as besides the high numbers caught, vast shoals were seen in the water. This was most noticeable in the interleading channels of the lakes.

The heaviest catch per 100 ft of net was obtained in Lake Amanzimnyama - 119 lbs 0 oz. Of this figure, 106 lbs 11 oz. was made up by a catch of mullet (Mugil cephalus and Pteromugil diadema). The other species in this 3 inch mesh gill net were Clarias, Caranx, Rhabdosargus and Gerres.

In a 5 inch mesh gill net set parallel to the 3 inch, with a 3 ft to 4 ft space between them, a catch of Tilapia mossambica only was made. This is a good example of catch selectivity due to net mesh size (the body shape and size of the fish determining its susceptibility to being caught by a certain mesh size). Mullet weighing up to 4 lbs 3 oz were caught in the 3 inch mesh net, while the smallest Tilapia from the 5 inch mesh net weighed 1 lb 12 oz.

Gill nets set at site 8 (Amanzimnyama lake) in August 1967 caught Tilapia, Lutianus and Rhabdosargus. A gill net set in Lake Nhlange, at the mouth of the Amanzimnyama-Nhlange channel caught the following species:

Pomadasys commersonni
Rhabdosargus sarba
Gerres oyena
Mugil cephalus
Pteromugil diadema
Caranx hippos
Elops saurus

There seemed a possibility that these species were not present in Amanzimnyama because of the "fresh water" in this lake. Most recent netting results showed that Rhabdosargus, Gerres, Mugil, Pteromugil and Caranx were found in the non-saline water of Amanzimnyama lake.

As on previous occasions, it was found that gill net catches were not poorer over the full moon period. Contrary to gill net catches in inland waters, the highest yield (119 lbs per 100 ft of net) was obtained in Amanzimnyama lake on the night of full moon. It seems obvious that estuarine fishes are not affected in the same way as fresh-water fishes by moon phases.

Due to the fact that the 3 inch mesh x 100 ft gill net disappeared overnight from the site where it had been set (in Lake Makhawulani), the survey work could not be completed.

Netting results have so far shown that fish from these lakes could be beneficially exploited by the local Bantu population, but only if netting was carried out on a strictly controlled basis according to regulations laid down by the Board of authorities.

The following species of fish were recorded on this fish survey of the Kosi Lake System:

<u>Scientific name</u>		<u>Common name</u>
<u>Estuarine species</u>		
<u>Megalops cyprinoides</u>	101	Tarpon
<u>Caranx sexfasciatus</u>	511	Kingfish
<u>Caranx stellatus</u>	512	Kingfish
<u>Caranx ignobilis</u>	520	Kingfish
* <u>Chorinemus sanctipetri</u>	545	Queenfish

<u>Scientific name</u>		<u>Common name</u>
<u>Estuarine species</u>		
* <u>Chorinemus lysan</u>	546	Queenfish
<u>Monodactylus</u>		
<u>falciformis</u>	580	Kite-fish
<u>Monodactylus argenteus</u>	581	Kite-fish
<u>Gerres oyena</u>	629	Pouter
<u>Ambassis safgha</u>	634	Glassy
<u>Lutianus</u>		
<u>argentimaculatus</u>	664	Rock salmon
<u>Rhabdosargus sarba</u>	710	Yellow-fin bream
<u>Mugil caphalus</u>	877	Flat-head mullet
<u>Pteromugil diadema</u>	881	Diamond mullet
<u>Valamugil buchhanani</u>	888	Blue tail mullet
<u>Eleotris fusca</u>	938	
* <u>Ophiocara</u>		
<u>porocephala</u>	941	

* New records for the area.

Freshwater species

<u>Tilapia mossambica</u>	Largemouth Tilapia
<u>Clarias gariepinus</u>	Barbel
<u>Aplocheilichtys katangae</u>	Top minnow
<u>Anguilla bicolor</u>	Short-fin eel

One elver and two other species of small fish are awaiting official identification.

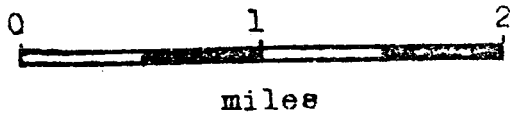
References

- Smith, J.L.B. 1953. "The Sea Fishes of Southern Africa". Central News Agency.
- Crass, R.S. 1964. "Freshwater Fishes of Natal" Shuter and Shooter.

T. Pike
RESEARCH OFFICER

KOSI ESTUARY

1:50,000



Enkovugeni

Sifunze

Makhawulani

Mpungwini

Bluff *

Ficus swamp forest

Nhlange

Pyramid Peak

Amanzimnyama

— Represents gill - netting sites, January, 1968.

13 12

9 10

6

7

8

3