

A PRELIMINARY ASSESSMENT ON THE SPAWNING SEASON OF SOME SELECTED FISHES OF TARAWA REEF AND LAGOON

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3. INTRODUCTION

This report is based on our preliminary analysis of the data on the catch of some fishermen that were sponsored by the Atoll Research Programme. Our interest is on the spawning season of reef and lagoon fish species. Because the number of species landed varied from catch to catch we had to decide on which species to look at closely. Our familiarity with a few species that always made up certain proportions of the catches gave us the hint to focus on them only. The data we collected are from the catches of the months of November and December, 1996. This report, however, presents only a small picture of the fish species we selected. It might probably offer some indication and leads into what may be really happening out there.

The three most common species we selected are *Lutjanus gibbus* (te ikanibong), *Sphyræna fosterii* (te ikabwaauea) and *Lutjanus kasmira* (te bwaweata/takabe).

4. AIMS AND OBJECTIVES

The aim of this study is to identify the spawning seasons of 3 common reef and lagoon fishes of Tarawa Island. Our main objective is to produce a report that may be of use by the fisheries and government officials who are involved in the formulation of policies and regulations targeted at managing and conserving our marine resources, but most importantly is the return of marine resource richness and productivity to Tarawa lagoon.

5. METHODS AND MATERIALS

The fishes we used for this study were obtained from the catches of inshore fishing excursions at the reef and lagoon areas of the island of Tarawa. The number of fishes we processed each day exceeded one hundred individuals. What we did was picked different sizes of the same species we have selected for the determination of gonad stage.

Visual gonad staging

Our results are based on four gonadal stages determined visually and under the guidance of an experienced staff of the Atoll Research Programme. The 4 stages include:- 1 - Immature or Spent ; 2 – Developing; 3 – Matured or Ripe; and 4 – Spawning. The stages are matched against the moon's phase on which the fish was caught as shown in the diagrams and appendices below.

Measuring board, knife and a spring balance

Each individual specimen was measured for fork-length and wet weight. The ventral part was dissected and the gonads were exposed and the stage was examined. All measurements as well as the date of catch were recorded.

6. RESULTS AND DISCUSSION

***LUTJANUS GIBBUS* (te *ikanibong*)**

This snapper (also known as job fish) is often referred to as “red fish” because of its colour. It inhabits reef areas within and outside the lagoon area. The species is very common throughout the Pacific region. In Kiribati this fish is called *ikanibong* (literally means a night fish). It is one of the most sought after reef fish. I-Kiribati regard it as a delicacy because of the oily nature of the flesh.

Our study found that *Lutjanus gibbus* spawn during and after the full moon or more specifically around full-moon (Figure 1). We also observed that the spawning can extend to the last quarter (itibong inano).

The results also show that there is a sexual bias towards male. The data show that in most of the catches the percentage of females at the maturity stage as compared to males had always been low. Also most of the mature females were in the 27 – 28 centimetres range, very few were above this range where the males dominate. This implies that there is a change of sex from female to male sometime after the females have matured. This is fairly common in fish and other marine organisms.

***LUTJANUS KASMIRA* (Bwaweata/takabe)**

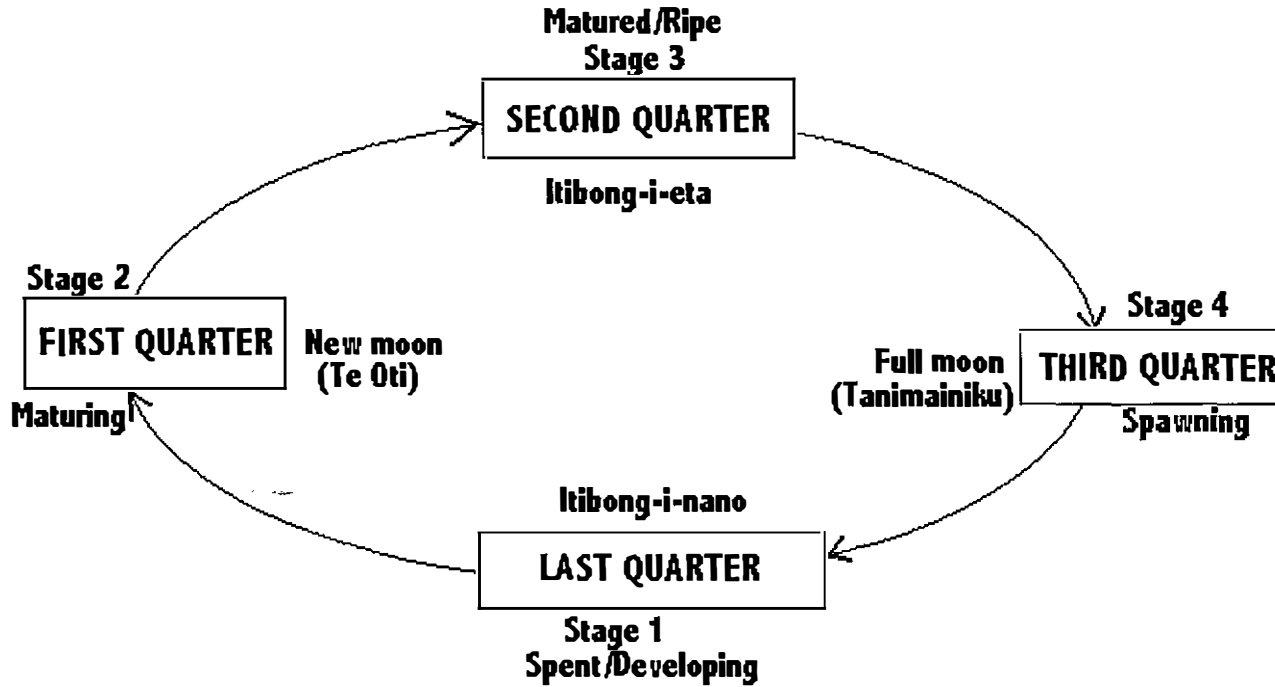
This fish is yellow with white stripes running from head to tail. It is fairly common throughout the tropical Indo-Pacific region. The species does not exceed 21 centimetres in length. The spawning occurs around full-moon and may continue till the last quarter. A bias in sex ratio toward male during maturity stage was observed (refer to diagram and appendix). This observation is similar to that for *Lutjanus gibbus*.

***SPHYRAENA FOSTERII* (Ikabwaua)**

This fish is in the barracuda family and is commonly known as seapike. It has a slender body with dark greyish dorsal area and a silvery ventral side. The fish is migratory and often seen in schools.

The results show that the fish becomes sexually mature (attains gonadal stages of 3 and 4) at fork-length of 44 to 60+ cm. In females a ripe gonad (ovary) is deep yellow and creamy while creamy white in males. The male fish matures at fork-length 44 - 48 cm. Of all the specimens examined only two males (with ripe gonads) measured more than 50 cm. This suggests that there may be a sex bias toward a female during maturity stage. The heaviest (1.8 kg) and biggest (64.2 cm) individual according to our data is a female. *Sphyraena forsterii* spawns around full-moon.

GONAD DEVELOPMENTAL STAGES AND SPAWNING CYCLE



APPENDIX

DATE	MOON PHASE	NAME	SCIENTIFIC NAME	LENGTH	WEIGHT	SEX	GONAD STATE
18/11/96	ITIBONG I KARAWA	IKANBONG	LUTJANUS GIBBUS	30	0.43	M	3
23/11/96	1BONG IMIN TE TABANIN	IKANBONG	LUTJANUS GIBBUS	27.2	0.6	F	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	32.4	1	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	31.2	0.7	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	32.3	0.9	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	38	1.5	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	31.5	0.9	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	25.7	0.5	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	25.3	0.4	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	24.4	0.4	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	29.5	0.6	M	3
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	22.9	0.3	M	3
03/12/96	ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	34.9	1	M	3
03/12/96	ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	32.5	1	M	3
10/12/96	OTI (FULL MOON)	IKANBONG	LUTJANUS GIBBUS	33.7	1.1	M	3
10/12/96	OTI (FULL MOON)	IKANBONG	LUTJANUS GIBBUS	34.3	1.2	M	3
11/12/96	1BONG IMIN TE OTI	IKANBONG	LUTJANUS GIBBUS	33.5	1.1	M	3
11/12/96	1BONG IMIN TE OTI	IKANBONG	LUTJANUS GIBBUS	25.9	0.5	M	3
18/11/96	ITIBONG I KARAWA	IKANBONG	LUTJANUS GIBBUS	32.5	0.88	M	4
21/11/96	3BONG IMIN ITIBONG I KARAWA	IKANBONG	LUTJANUS GIBBUS	21.2	0.2	M	4
27/11/96	2BONG IMIN TE RIN	IKANBONG	LUTJANUS GIBBUS	25.5	0.4	M	4
27/11/96	2BONG IMIN TE RIN	IKANBONG	LUTJANUS GIBBUS	27.8	0.6	F	4
27/11/96	2BONG IMIN TE RIN	IKANBONG	LUTJANUS GIBBUS	27.2	0.5	M	4
28/11/96	3BONG IMIN TE RIN	IKANBONG	LUTJANUS GIBBUS	30.5	0.9	M	4
28/11/96	3BONG IMIN TE RIN	IKANBONG	LUTJANUS GIBBUS	35.6	1.1	M	4
28/11/96	3BONG IMIN TE RIN	IKANBONG	LUTJANUS GIBBUS	35	1.2	M	4
02/12/96	1BONG IMAIN ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	28.7	0.7	M	4
03/12/96	ITIBONG INANO	IKANBONG	LUTJANUS GIBBUS	33.6	1.1	M	4
09/12/96	1BONG IMAIN TE OTI	IKANBONG	LUTJANUS GIBBUS	31.2	0.9	M	4
11/12/96	1BONG IMIN TE OTI	IKANBONG	LUTJANUS GIBBUS	33.6	1.2	M	4

DATE	MOON PHASE	NAME	SCIENTIFIC NAME	LENGTH	WEIGHT	SEX	GONAD STAGE
19/11/96	1 TE BONG IMIN ITIBONG	TE IKABWAUEA	SPHYRAENA FORSTERI	54.6		1 M	3
27/11/96	2 TE BONG IMIN TE RIN	TE IKABWAUEA	SPHYRAENA FORSTERI	27.4		1.2 F	3
27/11/96	2 TE BONG IMIN TE RIN	TE IKABWAUEA	SPHYRAENA FORSTERI	51		0.9 F	3
27/11/96	2 TE BONG IMIN TE RIN	TE IKABWAUEA	SPHYRAENA FORSTERI	61.8		1.5 F	3
27/11/96	2 TE BONG IMIN TE RIN	TE IKABWAUEA	SPHYRAENA FORSTERI	60		1.4 F	3
27/11/96	2 TE BONG IMIN TE RIN	TE IKABWAUEA	SPHYRAENA FORSTERI	52.2		1 F	3
28/11/96	3 TE BONG IMIN TE RIN	TE IKABWAUEA	SPHYRAENA FORSTERI	50		0.8 F	3
03/12/96	ITIBONG I NANO	TE IKABWAUEA	SPHYRAENA FORSTERI	52.5		1 F	3
03/12/96	ITIBONG I NANO	TE IKABWAUEA	SPHYRAENA FORSTERI	56.9		1.1 F	3
05/12/96	2 TE BONG IMIN ITIBONG INANO	TE IKABWAUEA	SPHYRAENA FORSTERI	47.2		0.6 F	3
10/12/96	OTI (NEW MOON)	TE IKABWAUEA	SPHYRAENA FORSTERI	48.4		1 M	3
10/12/96	OTI (NEW MOON)	TE IKABWAUEA	SPHYRAENA FORSTERI	49.1		0.9 F	3
11/12/96	1 TE BONG IMIN TE OTI	TE IKABWAUEA	SPHYRAENA FORSTERI	62.2		1.8 F	3
16/12/96	1 TE BONG IMAIN ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	44.1		0.8 M	3
17/12/96	ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	47		0.7 M	3
17/12/96	ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	46.3		0.6 M	3
17/12/96	ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	46.5		0.8 M	3
19/12/96	2 TE BONG IMIN ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	48.8		1 F	3
19/12/96	2 TE BONG IMIN ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	47.7		0.9 M	3
25/12/96	1 TE BONG IMIN TE TABANIN	TE IKABWAUEA	SPHYRAENA FORSTERI	47		1 F	3
19/11/96	1 TE BONG IMIN ITIBONG	TE IKABWAUEA	SPHYRAENA FORSTERI	64.2		1.6 F	4
19/11/96	1 TE BONG IMIN ITIBONG	TE IKABWAUEA	SPHYRAENA FORSTERI	59		1.3 M	4
19/11/96	1 TE BONG MIN ITIBONG	TE IKABWAUEA	SPHYRAENA FORSTERI	58.6		1.4 F	4
21/11/96	3 TE BONG IMIN ITIBONG	TE IKABWAUEA	SPHYRAENA FORSTERI	53.8		1.6 F	4
19/12/96	2 TE BONG IMIN ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	44.6		0.8 M	4
19/12/96	3 TE BONG IMIN ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	49		1.2 M	4
19/12/96	4 TE BONG IMIN ITIBONG I ETA	TE IKABWAUEA	SPHYRAENA FORSTERI	48.2		1 M	4
25/12/96	1 TE BONG IMIN TE TABANIN	TE IKABWAUEA	SPHYRAENA FORSTERI	47		0.9 M	4

DATE	MOON PHASE	NAME	SCIENTIFIC NAME	LENGTH	WEIGHT	SEX	GONAD STAGE
25/11/96	TABWANIN (FULL MOON)	TE BWaweata	LUTJANUS KASMIRA	18.3	0.1	F	3
25/11/96	TABWANIN (FULL MOON)	TE BWaweata	LUTJANUS KASMIRA	17.4	0.1	F	3
28/11/96	3 TE BONG IMIN TE RIN	TE BWaweata	LUTJANUS KASMIRA	19.5	0.2	F	3
18/12/96	1 TE BONG IMIN ITIBONG I ETA	TE BWaweata	LUTJANUS KASMIRA	18	0.1	F	3
18/12/96	1 TE BONG IMIN ITIBONG I ETA	TE BWaweata	LUTJANUS KASMIRA	19	0.2	F	3
19/12/96	2 TE BONG IMIN ITIBONG I ETA	TE BWaweata	LUTJANUS KASMIRA	21.3	0.3	F	3
19/12/96	2 TE BONG IMIN ITIBONG IETA	TE BWaweata	LUTJANUS KASMIRA	19.4	0.2	F	3
25/12/96	1 TE BONG IMIN TE TABANIN	TE BWaweata	LUTJANUS KASMIRA	20.1	0.2	F	3
25/11/96	TABWANIN (FULL MOON)	TE BWaweata	LUTJANUS KASMIRA	17.8	0.9	F	4
25/11/96	TABWANIN (FULL MOON)	TE BWaweata	LUTJANUS KASMIRA	18.7	0.1	F	4
05/12/96	2 TE BONG IMIN ITIBONG INANO	TE BWaweata	LUTJANUS KASMIRA	19.9	0.2	F	4
23/12/96	1 TE BONG IMAIN TE TABANIN	TE BWaweata	LUTJANUS KASMIRA	18.9	0.1	M	4
25/12/96	1 TE BONG IMIN TE TABANIN	TE BWaweata	LUTJANUS KASMIRA	20.5	0.3	F	4