

First investigations on the feeding behaviour of juvenile milkfish (*Chanos chanos* Forsskål) in extensively managed brackishwater lagoons on South Tarawa, Kiribati (Central Pacific)

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Introduction

The milkfish (*Chanos chanos* Forsskål; Fig. 1) is widely cultured in the Asian-Pacific region. The importance of milkfish to the livelihood of the Asian-Pacific people is evidenced by the enormous amounts of land (750,000 ha), water and human resources involved in milkfish culture. In South-East Asia, milkfish production is dominated by Indonesia, the Philippines and Taiwan. Less is known about milkfish production in the small micronesians states in the Central Pacific. Additionally, there is no current data about the feeding behavior. The present study was aimed at finding out the feeding behaviour and culture of milkfish kept in extensively managed brackishwater lagoons in Kiribati.

Materials and Methods

Pond monitoring was conducted in the governmental fish farm in Bikenibeu, South Tarawa, Kiribati in August, 1998. The lagoon had a size of 0.2 ha and was at least 30 cm deep. Water exchange occurred by tidal flushing. No supplemental feed was given to the fish. A total of 8 fish were caught during 6 hourly intervals over a period of 24 hours with a cast net. Fish were sacrificed and the stomachs were removed for further gravimetric and microscopic analysis. Fish had a mean weight of 100 ± 14 g and an average condition factor of 20.4 (Richter *et al.* 2000).

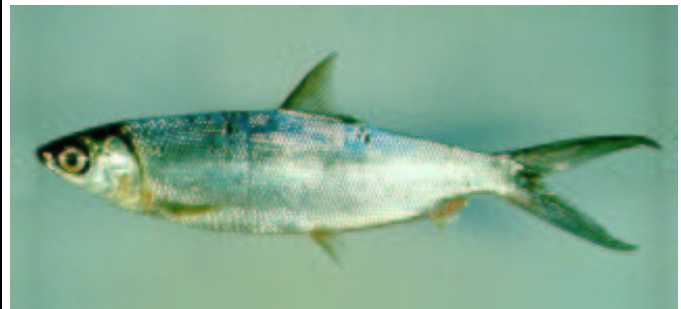


Figure 1: juvenile milkfish *Chanos chanos*



Figure 2: extensively managed fish farm in South Tarawa, Kiribati

Results

The stomach content, as listed in Table 1, consisted mainly of single cellular green algae (*Chlorophyta*), single cellular and filamentous blue-green algae (*Cyanophyta*) and detritus. Diatoms and crustaceans, like copepods, phyllo pods and nauplii, as well as "others" (ciliata, dinoflagellata and rotatoria) made up only a small fraction of the fish diet. Furthermore, diatoms and crustacea were mainly consumed during daytime. However, the differences between feed intake during night and day were not statistically significant. When results were compared with a plankton sample from the pond water (Table 2), it turned out that *Cyanophyta*, diatoms and crustacea were positively selected by the fish.

Table 1: Stomach contents of milkfish from Bikenibeu, Kiribati in August 1998 (in %)

Time	Chlorophyta	Cyanophyta	Diatoms	Crustacea	Others	Detritus
day	17.3 ± 9.2	38.7 ± 22.5	8.0 ± 12.7	5.3 ± 8.5	5.0 ± 6.4	25.7 ± 29.2
night	15.8 ± 9.3	53.5 ± 18.5	0.3 ± 0.5	0.7 ± 1.0	3.5 ± 2.1	26.2 ± 15.3

Table 2: Plankton sample (250 µm; values in %) and resulting Ivlev index from milkfish for the whole monitored period

	Chlorophyta	Cyanophyta	Diatoms	Crustacea	Others
Plankton sample (%)	37	26	2	2	33
Ivlev index E ⁺	-0.37	0.28	0.33	0.20	-0.78

⁺ Ivlev index E: -1 to 0 for negative selection; 0 to +1 for positive selection

Discussion and Conclusions

The predominant part of the detritus in the stomach suggests that milkfish in these lagoons are benthic oriented feeders. Feed intake took place constantly, including night hours. Selective feeding was observed for all natural food components. However, phyto- and zooplankton density were low, leading to reduced fish growth. The productivity of these lagoons could be enhanced through fertilization and increasing the retention time of water in the ponds.

References

Hartmut Richter; Christian Lückstädt; Ulfert Focken; Klaus Becker (2000): An improved procedure to assess fish condition on the basis of length-weight relationships. *Archive of Fishery and Marine Research* 48 (3):255-264.