



Larvae development

**Larval rearing**

Feeding regime during the larval rearing is shown below. The first feeding is given 58 hours after hatching or on 2 days' old (D-2) larvae. First feeding is conducted based on the observation of early stage larvae development. The length of juveniles (45-55 days old) is around 2-3 cm. The main problems of coral trout grouper larval rearing is type and size of feeds at the initial feeding since mouth gape of the larvae is very small (145-150 µm) compared to tiger and humpback grouper. Smaller live feeds such as SS-type rotifers and copepod nauplii must be fed to the larvae.



Larvae development



Feeding regime of coral trout grouper (*P. leopardus*) larvae.

Feeds	Larval stage					
	1	5	10	20	30	45
Boiled chicken yolk egg (1 g/m <sup>3</sup> )	[Yellow bar from stage 1 to 5]					
<i>Nanochloropsis</i>	[Green bar from stage 5 to 45]					
Rotifers (5-30 ind/ml)	[Blue bar from stage 5 to 30]					
Artificial feeds	[Orange bar from stage 10 to 30]					
<i>Artemia nauplii</i>	[Red bar from stage 10 to 20]					
<i>Mesopodytes</i> sp. (small shrimp)	[Grey bar from stage 20 to 45]					

**NURSERY**

Harvested juveniles have total length of 2.5-3.5 cm. The juveniles are still too weak to be cultured in net cages and need to rear in nursery up to 6-10 cm TL for 4-6 weeks.

In this juvenile stage, it is usually fed with *Mesopodytes* sp. (Small shrimp) and artificial feeds. During the nursery period, juveniles are better to be fed with artificial feeds formulated depending on the biological requirement of the fish.



Nursery until 6-10 cm

This leaflet is funded by  
Agency for Marine and Fisheries Research  
2006



**BREEDING OF CORAL TROUT GROUPER**

(*Plectropomus leopardus*)



DEPARTMENT OF MARINE AFFAIRS AND FISHERIES  
AGENCY FOR MARINE AND FISHERIES RESEARCH  
RESEARCH INSTITUTE FOR MARICULTURE  
GONDOL, BALI

2006



## INTRODUCTION

Coral trout grouper, *Plectropomus leopardus* that available on the market, most come from natural capture. Culture of this species has not well developed yet, beside seeds has been relied from natural capture with seasonable supply. Increasing demand of it seeds for mariculture has been considered to establish hatchery technology to anticipate sustainable seed supply in the near future.

Research Institute for Mariculture (RIM) Gondol has been succeeded to establish hatchery technology for some grouper species in Indonesia. The program consists of broodstock management (domestication and gonad maturation), larval and juvenile rearing.

## SPAWNER

### Source of spawners

Coral trout groupers are caught from wild for live fish export and domestic market. Fishing areas are West and East Nusa Tenggara, Sulawesi, Java, Maluku and Sumatera. Spawners were selected before they were domesticated in the hatchery. Results indicated that fish with size of 0.5 -2.5 kg and 1.6-3.5 kg were mature females and males, respectively some with developed gonad. Total fecundity of female was around 343,980-429,259 eggs for fish of 1.5 - 1.8 kg body weight and 36.4 - 38.8 cm standard length (SL).



Spawner tank



Treatment with Elbazu (a disinfectant)

## Broodstock management

About 90 broodstock with female and male ratio of 2:1 were reared in 150 m<sup>3</sup> concrete tank with flow through water system. Sizes of broodstocks are 0.5 - 2.5 kg with length of 30-54 cm for females, and 1.6-3.7 kg with length of 44 - 57 cm for males.

Health of broodstock is observed carefully to prevent parasite break up commonly found in groupers such as *Herudenia*, which usually attached body scales, gills, lips, and around the fin. Dipping infected fish into 100-150 ppm formaldehyde solution eliminate parasites for one hour.

## Feed

Seawater turn over rate is kept at 300-400% per day. Broodstock are fed with trash fish and squid with ratio of 2:1 with vitamin mix of vitamin C and E at 50 mg and 25 mg per kg feed, respectively. Feeding frequency is once a day at morning.



Feeds (trash fish, squid and vit. Mix)

## Spawning

The broodstock spawn naturally after eight months reared in the tank. Fecundities of coral trout grouper in the period of October 2003 to March 2005, showing that the broodstock spawn monthly throughout the year. Spawning usually occurs at night between 23.00 pm to 02.00 am. Eggs are collected in the morning around at 07.00 - 08.00 am from the egg collector tank.



Egg collector



Egg incubation

## LARVAE

### Larvae development

Newly hatched larvae have endogenous energy source in yolk sac and oil globule. Average length of newly hatched larva is 1.62-0.04 mm with yolk sac and oil globule volumes of  $1.23 \times 10^{-3}$  -  $0.012 \text{ mm}^3$  and  $4.9 \times 10^{-3}$  -  $0.002 \text{ mm}^3$ , respectively. Yolk sac and oil globule reduced along the larval age with absorption rate of yolk and oil globule of  $1.8 \times 10^{-3} \text{ mm}^3/\text{hour}$  and  $9.39 \times 10^{-3} \text{ mm}^3/\text{hour}$ , respectively. Yolk sac volume and its absorption related to first feeding and feeding management of the larvae. Larvae spine has already developed on day-6 (D6). Length of the spine is continuously increased until day-17 (D-17). The larvae are metamorphosed to juvenile on day 29-31 (D29-D31).

For further information  
**RESEARCH INSTITUTE FOR MARICULTURE  
GONDOL, BALI**

Po. Box. 140. Singaraja - 81101 - Bali  
Telp. : 0362-92278, 92271, Fax. : 0362-92272  
E-mail : gondol\_dkp@singarajaja.wasantara.net.id  
rimgdl@indosat.net.id