

Some observations on the biology of Blubberlip snapper *Lutjanus rivulatus*

S. Gomathy* and Shoba Joe Kizhakudan

Madras Regional Station of ICAR-Central Marine Fisheries
Research Institute, Chennai-600 028, Tamil Nadu

*e-mail: gomathycmfri@gmail.com

Blubberlip snapper *Lutjanus rivulatus* (Cuvier, 1828) landed in Kasimedu Fisheries Harbour, Chennai in the size range of 16.1 to 69.8 cm weighing from 75 g to 5.91 kg (N= 150) were analysed for biological studies with detailed morphomeristic analysis for five specimens (Fig. 1, Table 1).

Mouth dimensions indicate the maximum prey size the fish is able to engulf. The mouth gape area was enthralled with the lower and upper jaws of the mouth opened wide and the outline drawn on a graph sheet.



Fig. 1. *Lutjanus rivulatus* landed at Chennai

Table 1. Morphomeristic measurements (cm) of *Lutjanus rivulatus*

Metrics /Specimen	1	2	3	4	5
Total length	65.5	69.8	30.3	27.5	26.8
Fork length	64.0	67.8	27.3	23.3	23.2
Standard length	53.5	61	25.8	21.8	22
Dorsal fin spine + rays	10 + 15	10+15	10+15	10+15	10+15
Anal fin spine + rays	3 + 8	3+8	3+8	3+8	3+8
Pectoral fin rays	17	17	16	16	15
Pelvic fin spine + rays	1 + 5	1+5	1+5	1+5	1+5
Body depth	26.5	30.5	13.1	11	11.1
Eye diameter (inner/outer)	2.1/2.9	2.2/2.95	1.4/1.6	1.1/1.4	1.3/1.6
Head length	22.0	21.4	9.9	8.4	8.3
Snout length (1 st / 2 nd)	3.5/3.8	5.5/5.8	1.6/2.4	1.3/2.1	1.2/1.9
Pectoral fin length	18.5	17.1	8.4	6.8	6.7
Pelvic fin length	10.5	10.9	5.5	4.8	4.2
Anal fin height	15.8	16.1	7.6	6.4	5.8
Caudal fin length	13.4	13.9	5.9	4.8	4.3
Upper jaw length	8.0	8.2	3.2	2.9	2.6
Lower jaw length	5.8	6.6	1.8	1.8	1.9
Fish weight (kg)	5.65	5.91	0.42	0.35	0.30
Liver + spleen weight (g)	71.5	71	5	2	3
Ovary weight (g)/ maturity stage	164.5 (stage6)	5 (stage 7)	Indeterminate	Indeterminate	Indeterminate
Fat weight (g)	20	490.5	2	8	3
Empty Stomach weight (g)	62.5	66	5	4.5	2

The height and width of the full-open mouth were measured (Fig. 2). From these dimensions, which formed an elliptical shape, the mouth gape area was measured as $\pi 0.5A \times 0.5B$, where A is mouth height and B is mouth width (Ward-Campbell *et al.*, 2005).

Compared to the body size of the fish the mouth gape area was found to be very small and the fish capable of consuming only small sized fishes, prawns and crablets. The gut of the *L. rivulatus* comprised of a small, thick and muscular stomach, 5 thick and muscular pyloric caeca and a short intestine which is characteristic of carnivorous fish. The gut content analysis showed that large fishes (<65.5 cm TL) had consumed small cardinal fishes (*Ostorhinchus fleurieu* (90mm/11g) and *Jaydia lineata* (68mm/4.5g)); goatfish (*Upeneus* sp. (78m/5g)) and threadfin breams (*Nemipterus* sp. (80mm/6.5g)), whereas the small

fishes (26cm to 30cm TL) in general consumed prawns (9.4/8g), crablets (4mm/1g and to 12mm/5g) and brittle stars. A large crab leg of 25 mm length and 8 mm width was noticed in a gorged stomach of the fish sized 23 cm. The IRI of each ingested prey was estimated as a linear combination of its frequency of occurrence (FO), abundance (A) and biomass (B). It indicated that the occurrence of crablets was by far the highest (85.5%) followed by fishes (7.6%) and prawns (6.9%). Sex could not be determined by visual examination in fishes below 30 cm length. Fishes in the length range of 26.8 m to 30.3 cm were all indeterminates. It was observed that the gonads were covered by bright orange fatty mass that fills the entire abdominal region in early maturity stages and spent recovery stages. The orange fatty mass reduces to thin red coloured strand on either side of ovary with maturity of ovary (Fig. 3). The female



Fig. 2. Fully open mouth of *Lutjanus rivulatus*

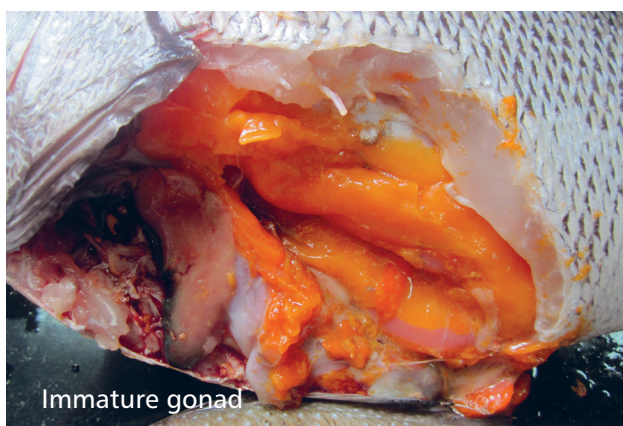


Fig. 3. Gonads of immature (left) and mature female fish

Table 2. Mouth gape area (cm²) of *Lutjanus rivulatus* (n=5) along Chennai coast

Total length of fish (cm)	65.5	69.8	30.3	27.5	26.8
Mouth height	7.9	7.6	3.9	3.1	4.4
Mouth width	7.5	7.4	3.6	2.9	3.8
Mouth gape area (cm ²)	46.5	44.1	11.0	7.1	13.1

fish with 65.5 cm length and 5.65 kg weight had an ovary weight of 164.5 g and fat weight of 20 g in stage 6. Another female fish with 69.8 cm length

and 5.91 kg weight had an ovary weight of 5 g and fat weight of 490.5 g in stage 7 (Table 1).

Big-sized blubberlip snappers (< 4kg) were sold at the rate of ₹220/- to 250/- per kg in the landing centre. FishBase records maximum size of this species as 80.0 cm TL with a weight of 11 kg. *L. rivulatus* is a tasty fish. It is a highly relished food fish in Hong Kong live fish market. Since it is a highly priced commercially important fish in southeastern Asia, more information on the ecology and life cycle of *L. rivulatus* will be useful to assess its potential as a candidate for aquaculture.