Fig. 4.1. Catch composition of *Etroplus suratensis* in total finfish landings from Vembanad lake

![Graph showing catch composition of Etroplus suratensis](image)

2000-01

Punnamada | Kumarakom | Thanneermukkom | Vaikom
---|---|---|---
Catch (kg) | 0 | 100000 | 50000 | 0

Fig. 4.2. Exploited landings of *Etroplus suratensis* in Vembanad lake

![Graph showing exploited landings of Etroplus suratensis](image)

Month (2000)

J | F | M | A | M | J | J | A | S | O | N | D
---|---|---|---|---|---|---|---|---|---|---|---
Catch (t) | 0 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110

*E. suratensis* | Total
Fig. 4.3. Catch Per Unit Effort of *Etroplus suratensis* in scare line fishing

![Graph showing catch per unit effort (C.P.U.E) in scare line fishing for *Etroplus suratensis* over three years (2003-2005).](image)

Fig. 4.4. Catch Per Unit Effort of *Etroplus suratensis* in gill netting

![Graph showing catch per unit effort (C.P.U.E) in gill netting for *Etroplus suratensis* over three years (2003-2005).](image)
Fig. 4.5. Length frequency distribution of *Etroplus suratensis* from Vembanad lake

<table>
<thead>
<tr>
<th>Month</th>
<th>Length (cm)</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>0-5</td>
<td>10</td>
</tr>
<tr>
<td>February</td>
<td>5-10</td>
<td>50</td>
</tr>
<tr>
<td>March</td>
<td>10-15</td>
<td>20</td>
</tr>
<tr>
<td>April</td>
<td>15-20</td>
<td>30</td>
</tr>
<tr>
<td>May</td>
<td>20-25</td>
<td>40</td>
</tr>
<tr>
<td>June</td>
<td>25-30</td>
<td>50</td>
</tr>
<tr>
<td>July</td>
<td>30-35</td>
<td>60</td>
</tr>
<tr>
<td>August</td>
<td>35-40</td>
<td>70</td>
</tr>
<tr>
<td>September</td>
<td>0-5</td>
<td>10</td>
</tr>
<tr>
<td>October</td>
<td>5-10</td>
<td>50</td>
</tr>
<tr>
<td>November</td>
<td>10-15</td>
<td>20</td>
</tr>
<tr>
<td>December</td>
<td>15-20</td>
<td>30</td>
</tr>
</tbody>
</table>

Length (cm)
Fig. 4.6. Size variation of *Etroplus suratensis* among male and female fishes

![Size variation chart](image)

Fig. 4.7. Size frequency distribution of *Etroplus suratensis* in gill net and scare line catches

![Size frequency distribution chart](image)
Fig. 4.8. Length weight relationship of *Etroplus suratensis* - Male

\[ y = 2.8769x - 1.4552 \]

\[ R^2 = 0.9222 \]

Fig. 4.9. Length weight relationship of *Etroplus suratensis* - Female

\[ y = 2.9156x - 1.5105 \]

\[ R^2 = 0.8879 \]

Fig. 4.10. Length weight relationship of *Etroplus suratensis* - Juvenile

\[ y = 1.3359x - 0.6458 \]

\[ R^2 = 0.7669 \]
Fig. 4.11. Dominant Food components of *Etroplus suratensis*

![Pie chart showing food components of *Etroplus suratensis*.]

- Diatoms: 9%
- Filamentous algae: 43%
- Molluscan shell: 12%
- Macrovegetation: 12%
- Detritus: 1%

Fig. 4.12. Percentage Index of various degrees of fullness of the gut in *Etroplus suratensis*

![Bar chart showing feeding stages by month.]

- Feeding stages I, II, III, IV, V are represented by different colors.
- Months: Jan (J), Feb (F), Mar (M), Apr (A), May (M), Jun (J), Jul (J), Aug (A), Sep (S), Oct (O), Nov (N), Dec (D).
Fig. 4.13. Relative Length of Gut in *Etroplus suratensis*

![Graph showing relative length of gut percentage occurrence over time.]

Fig. 4.14. Sex ratio of *Etroplus suratensis* in Vembanad lake

![Bar chart showing sex ratio by month.]

- Male
- Female
- Total
Fig. 4.15. Distribution of oocytes in different stages of ovary in *Etroplus suratensis*

*Fr.% - Frequency percentage*
Gonado Somatic Index in male *Etroplus suratensis* from Vembanad lake

Fig. 4.16. Male

![Graph showing monthly GSI for male Etroplus suratensis](image1)

Fig. 4.17. Female

![Graph showing monthly GSI for female Etroplus suratensis](image2)
Fig. 4.18. Seasonal distribution of mature fishes of *Etroplus suratensis* in Vembanad lake
Size at first maturity of *Etroplus suratensis* in collections from Vembanad lake

**Fig. 4.19 - Male**

**Fig. 4.20 - Female**
Fig. 4.21. Length-Fecundity relationship in *Etroplus suratensis*

![Graph showing the relationship between length and fecundity. The equation is $y = 220.24x - 1561.9$ with $R^2 = 0.1433$.](image)

Fig. 4.22. Weight-Fecundity relationship in *Etroplus suratensis*

![Graph showing the relationship between fish weight and fecundity. The equation is $y = 8.4137x + 1174.4$ with $R^2 = 0.1812$.](image)

Fig. 4.23. Ovary Weight-Fecundity relationship in *Etroplus suratensis*

![Graph showing the relationship between ovary weight and fecundity. The equation is $y = 261.92x + 1862.2$ with $R^2 = 0.2247$.](image)
Fig. 4.24. Fluctuations on ova diameter (mm) of *Etroplus suratensis*
Fig. 5.1. Nest formation of *Etroplus suratensis* under controlled conditions

![Graph showing nest formation under controlled conditions]

Fig. 5.2. Growth performance of post larvae - *Etroplus suratensis*

![Graph showing growth performance over time]
Fig. 6.1. Catch details of *Horabagrus brachysoma* in different riverine zones, Vembanad lake

![Catch details of Horabagrus brachysoma in different riverine zones](image)

Fig. 6.2. Size distribution of male and female *Horabagrus brachysoma*

![Size distribution of male and female Horabagrus brachysoma](image)
Fig. 6.3. Length frequency distribution of *Horabagrus brachysoma* in riverine zones, Vembanad lake

Length (cm)
Fig. 6.4. Length weight relationship of *Horabagrus brachysoma* - Male

![Graph showing the length weight relationship of *Horabagrus brachysoma* - Male with the regression equation $y = 3.1553x - 2.1144$ and $R^2 = 0.8738$.]

Fig. 6.5. Length weight relationship of *Horabagrus brachysoma* - Female

![Graph showing the length weight relationship of *Horabagrus brachysoma* - Female with the regression equation $y = 2.9112x - 1.7791$ and $R^2 = 0.8634$.]

Fig. 6.6. Length weight relationship of *Horabagrus brachysoma* - Juveniles

![Graph showing the length weight relationship of *Horabagrus brachysoma* - Juveniles with the regression equation $y = 2.7567x - 1.6588$ and $R^2 = 0.771$.]
Fig. 6.7. Food Composition of *Horabagrus brachysoma*

![Pie chart showing food composition percentages.]

- 39% Filamentous algae
- 23% Crustaceans
- 8% Fish offals
- 6% Macrovegetation
- 6% Detritus
- 2% Others

Fig. 6.8. Percentage Index of various degrees of fullness in the gut of *Horabagrus brachysoma*

![Bar graph showing feeding percentages by month.]

- Feeding %
- Month (J F M A M JJA S O N D)

Legend:
- I
- II
- III
- IV
- V
Fig. 6.9. Relative Length of Gut in *Horabagrus brachysoma*

![Graph showing the relative length of gut in *Horabagrus brachysoma*.]

Fig. 6.10. Frequency distribution of male and female *Horabagrus brachysoma*

![Bar chart showing the frequency distribution of male and female *Horabagrus brachysoma* by month.]
Fig. 6.11. *Horabagrus brachysoma* – Oocyte size Distribution

*Fr.% - Frequency percentage*
Gonado Somatic Index in female *Horabagrus brachysoma*

Fig. 6.12. Male

![Graph showing GSI for male *Horabagrus brachysoma* over a year, with peaks in October and February.]

Fig. 6.13. Female

![Graph showing GSI for female *Horabagrus brachysoma* over a year, with peaks in November and February.]

F
Fig. 6.14. Seasonal distribution of mature fishes of *Horabagrus brachysoma*
Size at first maturity of *Horabagrus brachysoma*

Fig. 6.15. Male

![Graph showing size at first maturity for male *Horabagrus brachysoma*]

Fig. 6.16. Female

![Graph showing size at first maturity for female *Horabagrus brachysoma*]
Fig. 6.17. Length- Fecundity relationship in *Horabagrus brachysoma*

![Fig. 6.17. Length- Fecundity relationship in *Horabagrus brachysoma*](image)

\[ y = 2666.3x - 43506 \]

\[ R^2 = 0.2568 \]

Fig. 6.18. Weight- Fecundity relationship in *Horabagrus brachysoma*

![Fig. 6.18. Weight- Fecundity relationship in *Horabagrus brachysoma*](image)

\[ y = 108.54x - 407.72 \]

\[ R^2 = 0.3713 \]

Fig. 6.19. Ovary weight- Fecundity relationship in *Horabagrus brachysoma*

![Fig. 6.19. Ovary weight- Fecundity relationship in *Horabagrus brachysoma*](image)

\[ y = 852.77x + 2283.3 \]

\[ R^2 = 0.7798 \]
Fig. 6.20. Ova diameter (mm) of *Horabagrus brachysoma* in different months
Fig. 7.1. Growth performance of *Horabagrus brachysoma*

![Graph showing growth performance of *Horabagrus brachysoma*.](image)

Fig. 7.2. Growth performance of *H. brachysoma* hatchlings in hapa nurseries

![Graph showing growth performance of *H. brachysoma* hatchlings in hapa nurseries.](image)

$y = 2.8197x - 1.8123$

$R^2 = 0.7442$

Fig. 7.3. Growth performance of *H. brachysoma* in cemented nurseries

![Graph showing growth performance of *H. brachysoma* in cemented nurseries.](image)

$y = 2.6743x - 1.7221$

$R^2 = 0.7952$