Research Article

Budidaya Seabass Asia (Lates calcarifer) di Keramba Jaring Apung di Pusat Pengembangan Budidaya Perairan Air Payau

The Culture of Asian Seabass (Lates calcarifer) in Floating Net Cages at the Brackishwater Aquaculture Development Center

Fadhliyatud Diniyyah1*

1School of Fisheries and Aquaculture Sciences, Universiti Malaysia Terengganu, Malaysia, Kuala Terengganu 21030

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*) Corresponding author:
E-mail: diniyyah95@gmail.com

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Asian seabass, Lates calcarifer, Culture, Floating net cages, Fish feed

Abstract

Studi ini bertujuan untuk mengetahui pengaruh budidaya kakap putih Asia (Lates calcarifer) di keramba jaring apung di pusat pengembangan budidaya air payau, Situbondo. Kakap putih Asia diberi pelet ikan komersial (KPA) dengan ikan segar (limbah ikan) selama 21 hari. Kakap putih makan dengan limbah ikan dan pelet ikan komersial menunjukkan respon pertumbuhan rata-rata dari berat dan panjang. Pertumbuhan ikan dari berat awal 230g, 238g dan 244g pada hari ke-21 dan terjadi perubahan panjang rata-rata kakap putih masing-masing menjadi 23 cm, 25 cm dan 28 cm. Ikan diberi makan dengan 3-7% dari berat badan ikan dan pertumbuhan diamati dalam 21 hari. Hasil penelitian menunjukkan bahwa limbah ikan dapat meningkatkan respon pertumbuhan yang signifikan di kakap putih Asia.

1. Introduction

*Lates calcarifer* or Asian seabass is commonly known as ‘Kakap Putih’ in Indonesia. Asian seabass belongs to the Centropomidae family like other seabass and this seabass is one of the economically important food fish in tropical and sub-tropical regions of the Indo-Pacific (Wilson, 1991). It also serves as a sports fishing commodity, especially in Australia followed by the Indian Ocean countries, including India, Burma, Sri Lanka, Malaysia, Indonesia, and Taiwan. Seabass is classified as a bottom-living fish that live in seawater and this species is catadromous that can grow in freshwater and breed in the marine environment.

The advantages of Asian seabass culture is that they have considerable toleration to salinity or euryhaline and faster growth rate (Rao *et al*., 2013). Seabass can be identified by its body shape type with anelagonted and compressed body as well as a pointed head. The scale is ctenoid and large and the color is greenish silver similar to the body of the fish. The species has a very interesting ecological distribution at its various stages of life. The fish spend most of its life in a lagoon which connects to sea water. it spent two to three more years in estuary areas to mature and then migrate to the sea around the river mouth or lagoon for spawning. Larvae and juveniles of Asian seabass live in coastal areas for six months and grow to a size of 2 to 5 inches

2. Materials and Methods

The industrial training activities were carried out starting on August 13th to September 12th 2018. Asian seabass *Lates calcarifer* was cultured in floating net cages at the Brackish water Aquaculture Development Center, Pecaron Hamlet, Klatakan Village, Kendit District, Situbondo Regency, East Java or Jl. Raya Pecaron PO. Box 5 Panarukan, Situbondo, East Java.

The growth of Asian seabass was monitored in culture net for 21 days. The fish was fed with commercial fish pellet and trash fish for their feed growth response. The average length and weight of seabass were measured and recorded for the growth data of fish and the average of fish samples taken was 10 fishes. Materials used in the culture of *Lates calcarifer* are shown in Table 1.

### Table 1. Materials used in *Lates calcarifer* culture

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Net</td>
<td>To culture Asian seabass</td>
</tr>
<tr>
<td>2</td>
<td>Scoop net</td>
<td>To take seabass</td>
</tr>
<tr>
<td>3</td>
<td>Basket</td>
<td>Place for freshwater and fish</td>
</tr>
<tr>
<td>4</td>
<td>Scissor</td>
<td>To cut trash fish</td>
</tr>
<tr>
<td>5</td>
<td>Weight balance</td>
<td>To weigh fish</td>
</tr>
<tr>
<td>6</td>
<td>Pumping machine</td>
<td>To clean the net</td>
</tr>
<tr>
<td>7</td>
<td>Thermometer</td>
<td>To measure the water temperature</td>
</tr>
<tr>
<td>8</td>
<td>Ruler</td>
<td>To measure the length of the fish</td>
</tr>
<tr>
<td>9</td>
<td>Bottle</td>
<td>To take water samples</td>
</tr>
<tr>
<td>10</td>
<td>Life jacket</td>
<td>For safety</td>
</tr>
<tr>
<td>11</td>
<td>Motorboat</td>
<td>As transportation to KJA</td>
</tr>
<tr>
<td>12</td>
<td>Sinker</td>
<td>As sinker to net</td>
</tr>
<tr>
<td>13</td>
<td>pH meter</td>
<td>To measure pH value</td>
</tr>
<tr>
<td>14</td>
<td>DO meter</td>
<td>To measure dissolved oxygen</td>
</tr>
<tr>
<td>15</td>
<td>Refractometer</td>
<td>To measure water salinity</td>
</tr>
<tr>
<td>16</td>
<td>Plastic drum</td>
<td>For soaking the fish</td>
</tr>
<tr>
<td>17</td>
<td>Pipe</td>
<td>For spraying water to clean net cages</td>
</tr>
<tr>
<td>18</td>
<td>Camera</td>
<td>Take photos for documentation</td>
</tr>
</tbody>
</table>

3. Results and Discussion

In this study, the Asian seabass was fed with commercial fish pellet and trash fish for 21 days. The feed was given at 3-7% of the fish body weight. Asian seabass showed the increase in total length and total weight for each week. The average weight and length were shown in Table 2. The graph chart of average length and weight of Asian seabass was shown in Figures 1 and 2.
There are two terms that are closely linked which are the growth and the stocking density of fish (Coulibaly et al., 2007). The growth rate of fish can be calculated using the final average weight of fish deducted with the initial average weight of fish and it also applies to the calculation of the average length of fish. The weight of seabass increased by 0.67 gram/day and the length of seabass grew by 0.24cm/day. Hence, the result showed that the growth condition of Asian seabass in floating net cages in BADC Situbondo is slowly increasing in the growth culture. The fish feed was the main important for the growth performance of fish. It was supported by Nour et al. (1993) who stated that by increasing the fish feeding rates the growth performance in mullet fingerlings will also increase. According to Chua and Teng (1982), the best average weight, relatively good survival rates and better feeding efficiency is dependent on the feed given to fish.
Water quality parameters were checked twice weekly. The average water temperature was around 26.0 to 28.0 °C and the average pH value was around 7.5 to 8.4. Nitrite (NO$_2$), and ammonia were lowest at <0.001 mg/L and the dissolved oxygen was 6.0 mg/L. The water quality parameter is shown in Table 3.

### 4. Conclusion

In conclusion, this study showed that there are increased weight and length of Asian seabass in floating net cages when fed with trash fish and commercial fish pellet. The average fish weight is 230g, 238g and 244g and the average fish length is 23 cm, 25 cm, and 28 cm for 21 days respectively.

### Acknowledgment

Special thanks to the Brackish water Aquaculture Development Center (BADC) for allowing me to conduct my industrial training activities there for 21 days to culture Asian seabass (*Lates calcarifer*) in floating net cages and monitoring the fish growth.

### References


### Table 2: The average weight and length of seabass growth parameter for 21 days

<table>
<thead>
<tr>
<th>Growth Parameter</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Weight (g)</td>
<td>230</td>
<td>238</td>
<td>244</td>
</tr>
<tr>
<td>Average Length (cm)</td>
<td>23</td>
<td>25</td>
<td>28</td>
</tr>
</tbody>
</table>

### Table 3: The average results of water quality parameter for 21 days

<table>
<thead>
<tr>
<th>Water Parameter</th>
<th>Test result</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td>26.5 - 28.0</td>
<td></td>
</tr>
<tr>
<td>Dissolved oxygen (DO)</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.5 - 8.38</td>
<td></td>
</tr>
<tr>
<td>Water transparency (m)</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>Salinity (ppt)</td>
<td>33.0</td>
<td></td>
</tr>
<tr>
<td>Ammonia (mg/L)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Nitrite (mg/L)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>