

フィリピンにおける養殖ミルクフィッシュの成長と肥満度は水温で予測できる

Predicting body growth and body mass index of farmed milkfish in the Philippines from water temperature

養殖魚の成長に関する情報は、養殖の生産計画や経営費用の管理において重要である。また、養殖魚の肥満度や水温の情報は、品質(脂質含量の多寡)および魚の健康状態なども把握できる。改善した成長モデルにより正確な予測や養殖経営体による出荷予測などに活用できる。また、肥満度と水温の関係として、低温期(29~30℃前後)に肥満度(脂ののり)が高くなり、より高温期(>30℃)になると肥満度が低下する。加えて、最低温期(27~28℃)でも肥満度が低下する。肥満度と水温および餌料要求率には関係があり、高温期には餌料要求率が低下し、肥満度も低下する。低水温期には、餌料要求率が上昇し、肥満度も上昇する。

Information on the growth of farmed fish is important for aquaculture production planning and cost management. A modified growth model can be used for accurate growth forecasts and shipment predictions by aquaculture managers. The results show that body mass index (BMI) increases during low temperatures and decreases during higher temperatures and minimum temperatures. BMI (fat content) can be estimated from water temperature using the results of this research. Feed conversion rate and BMI decrease during high-temperature season. Conversely, they increase during low-temperature season.

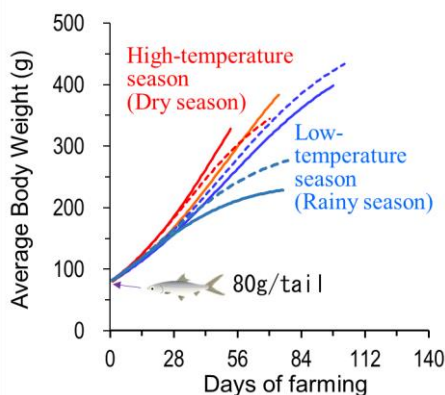


図1 養殖水温など異なる条件の成長の推計例

実線と破線は異なる養殖施設場所。高温期は3回、低温期は4回実験を実施。80g/尾の種苗で試験を開始。
Fig. 1. Examples of weight growth estimation for different conditions as seasons
Solid and dashed lines are different farm facility locations. Experiments were conducted three times during the high-temperature season and four times during the low-temperature season. Starting with seedlings weighing 80 g/tail.

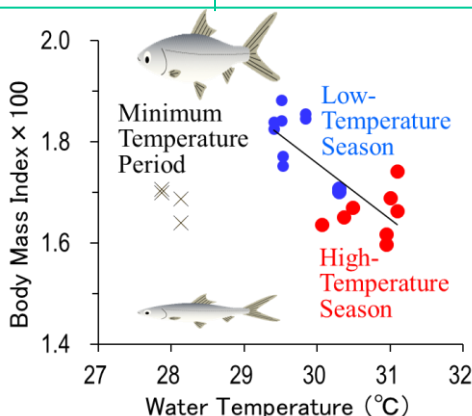


図2 肥満度と水温の関係

肥満度 = 魚体重(g)/(体長(cm))²。赤が高温期、青は低温期、Xは最低温期のデータ。

Fig. 2. Relationship between body mass index and water temperature
Body Mass Index = weight (g)/(length (cm))². Red dots correspond to high-temperature season, blue dots correspond to low-temperature season, and X marks indicate the minimum temperature period.

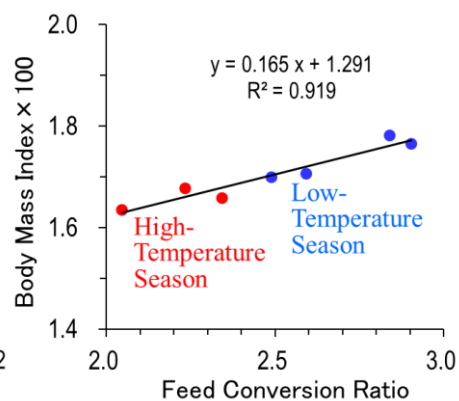


図3 肥満度と餌料要求率の関係

餌料要求率 = 飼料摂取量(g)/生産重量(g)。最低温期のデータは含んでいない。

Fig. 3. Relationship between body mass index and feed conversion ratio
Feed conversion ratio = total feed consumed(g)/total weight of product produced(g). Data of the minimum temperature period are not included. This figure was modified from Kodama et al. (2021).

Reference: Kodama M et al. (2021) JARQ 55: 191–200, <https://doi.org/10.6090/jarq.55.191>
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