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Influence of environmental factors on biology and catch composition of *Barbonymus schwanenfeldii* in a tropical lake, northern Malaysia: implications for conservation planning

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ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH

Volume: 29 Issue: 9 Page: 13661-13674 Special Issue: SI

DOI: 10.1007/s11356-021-16502-w

Published: FEB 2022

Early Access: SEP 2021

Indexed: 2021-10-08

Document Type: Article

Abstract

Very little work has determined the relative importance of uncontrolled environmental factors for affecting fish biology, and how these might influence gillnet catches. This study addresses this deficit for an important Southeast Asian cyprinid (*Barbonymus schwanenfeldii*). Fish were caught monthly for 12 months using gillnets of three different mesh sizes, each of which was deployed in duplicate at the surface of one of three randomly selected sites in Lake Kenyir, Malaysia, concurrent with determining various environmental parameters and the abundance of phytoplankton (chlorophyll-a). Results indicated that growth co-efficient of *B. schwanenfeldii* was positively influenced by dissolved oxygen and negatively influenced by total inorganic nitrogen, whereas an opposite result was observed in case of the hepatosomatic index of fish. Water turbidity was a limiting factor only for small fish (mean total length: 15.74 +/- 1.10 cm). *B. schwanenfeldii* could best be caught during the period of high phytoplankton abundance or at the location of high phytoplankton density in the water. Water temperature negatively influenced the gillnet catches of the fish. The remaining environmental factors such as water depth, pH, and phosphate had a weak and insignificant influence ($P > 0.05$) on the biology and gillnet catches of fish. The observed results can be very useful for the ecological monitoring and conservation plans for this species in relation to climate change. Furthermore, the utility of the similar data for other species would be useful not only for regional but also for international fishery by optimizing catches considering environmental conditions.

Keywords

Author Keywords: [Water quality](#); [Ecology](#); [Lake Kenyir](#); [Phytoplankton](#);

[Dissolved oxygen](#); [Gillnet](#); [PDA](#); [PERMANOVA](#)

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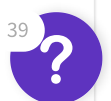
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Categories/Classification

Research Areas: Environmental Sciences & Ecology

Funding

Funding agency	Grant number
Ministry of Higher Education (MOHE), Malaysia	FRGS19-096-0705
International Islamic University Malaysia	P-RIGS18-032-0032P-RIGS18032-0032

Funding Table

[View funding text](#)

Document Information

Language: English

Accession Number: WOS:000701378800003

PubMed ID: 34590229

ISSN: 0944-1344

eISSN: 1614-7499

Other Information

IDS Number: YS90A

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Journal information

[ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH](#)

ISSN: 0944-1344

eISSN: 1614-7499

Current Publisher: SPRINGER HEIDELBERG,
TIERGARTENSTRASSE 17, D-69121 HEIDELBERG, GERMANY

Journal Impact Factor: [Journal Citation Report™](#)

Research Areas: Environmental Sciences & Ecology

Web of Science Categories: Environmental Sciences

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