

Accepted Manuscript

Multidecadal, centennial, and millennial variability in sardine and anchovy abundances in the western North Pacific and climate–fish linkages during the late Holocene

Michinobu Kuwae, Masanobu Yamamoto, Takuya Sagawa, Ken Ikehara, Tomohisa Irino, Keiji Takemura, Hidetaka Takeoka, Takashige Sugimoto

PII: S0079-6611(16)30160-4

DOI: <http://dx.doi.org/10.1016/j.pocean.2017.09.011>

Reference: PROOCE 1851

To appear in: *Progress in Oceanography*

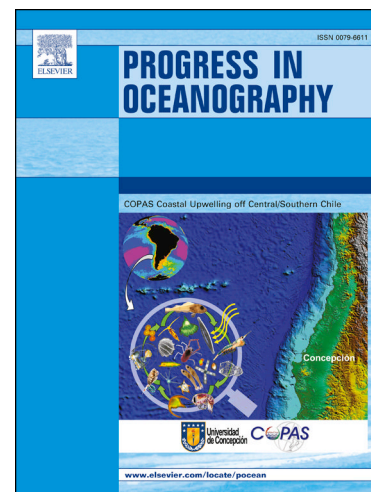
Received Date: 25 August 2016

Revised Date: 13 September 2017

Accepted Date: 13 September 2017

Please cite this article as: Kuwae, M., Yamamoto, M., Sagawa, T., Ikehara, K., Irino, T., Takemura, K., Takeoka, H., Sugimoto, T., Multidecadal, centennial, and millennial variability in sardine and anchovy abundances in the western North Pacific and climate–fish linkages during the late Holocene, *Progress in Oceanography* (2017), doi: <http://dx.doi.org/10.1016/j.pocean.2017.09.011>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Multidecadal, centennial, and millennial variability in sardine and anchovy abundances in the western North Pacific and climate–fish linkages during the late Holocene

Michinobu Kuwae^{a, *}, Masanobu Yamamoto^b, Takuya Sagawa^c, Ken Ikehara^d,
Tomohisa Irino^b, Keiji Takemura^e, Hidetaka Takeoka^a, Takashige Sugimoto^f

^aCenter for Marine Environmental Studies, Ehime University, Matsuyama 790-8577, Japan.

^bFaculty of Environmental Earth Science, Hokkaido University, Sapporo 060-0810, Japan.

^cCollege of Science and Engineering, Kanazawa University, Kakuma, Kanazawa 920-1192, Japan.

^dGeological Survey of Japan, National Institute of Advanced Industrial Science and Technology, 1-1-1 Higashi, Tsukuba 305-8567, Japan.

^eBeppu Geothermal Research Laboratory, Institute for Geothermal Sciences, Kyoto University, 3088-176 Noguchibara, Beppu 874-0903, Japan.

^fInstitute of Civilization, Tokai University, Orido 3-20-1, Shimizu-ku, 424-8610, Japan

* **Corresponding author:** Michinobu Kuwae, Center for Marine Environmental Studies, Ehime University, Bunkyo-cho 2-5, Matsuyama 790-8577, Japan; Tel: +81 89 927 9654; and email: mkuwae@sci.ehime-u.ac.jp.

Keywords: fish scale deposition rates, Japanese sardine and anchovy population, species alternation, climate–fish linkages, Pacific, Japan, Seto Inland Sea, Beppu Bay

Download English Version:

<https://daneshyari.com/en/article/5766465>

Download Persian Version:

<https://daneshyari.com/article/5766465>

[Daneshyari.com](https://daneshyari.com)