

TIDAL TRANSPORT AND RECRUITMENT OF MARINE FISH
LARVAE TO ICE-COVERED SAROMA KO LAGOON
(HOKKAIDO, JAPAN) (ABSTRACT)

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Estuaries and bays, rich in copepod eggs and nauplii, often represent important nursery areas for fish that reproduce in the open sea. Tidal currents are the major mean of entry for young larvae of limited mobility that must enter on flood and avoid being flushed out on ebb.

Many temperate fish species that use estuaries as nurseries spawn in winter despite low food availability for their young at that time. The major advantages of this strategy are believed to be 1) that low temperatures prolong the survival time of young fish at low rations by slowing their metabolism and 2) that predation pressure on the larvae is at a minimum in winter.

In Saroma Ko lagoon, biological productivity starts early in spring while the lagoon is still covered with ice. As in other seasonally ice-covered seas, the development of microalgae at the ice-water interface is believed to trigger the early reproduction of grazers such as copepods. Copepod eggs and nauplii then become available for first feeding fish larvae before the spring phytoplankton bloom.

In the present study we describe the tidal exchange of fish larvae to and from the Saroma Ko lagoon in late winter of 1992 while the lagoon was still covered with ice. We also followed the development of the zooplanktonic community and estimated the abundance of copepod nauplii in the ice-covered lagoon.

We address the hypothesis that the emergence and colonisation of larvae of early spawners coincides with the very first production of zooplanktonic prey in the Saroma Ko lagoon. Copepod nauplii produced under the ice cover could serve as a food source for first feeding larvae before the spring phytoplankton bloom and subsequent maximum spawning of copepods.

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