

## Sea water acidified conditions in the regions of scallop aquacultures in Northern Japan

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The oceans absorb approximately 30 % of anthropogenic carbon dioxide and that brings progress of ocean acidification. When acidification advances, carbonate ion concentration decreases. If calcium carbonate saturation state falls below 3, calcifiers become hard to make calcium carbonate and that influences the survival and growth of the calcifiers. The calcite forming scallop *Patinopecten yessoensis*, one of the important marine resources in Hokkaido, may be affected by the acidification. Under acidification conditions, *P. yessoensis* aquacultures and ecosystems of the regions may be damaged, but the current status is unclear. Here, we investigated three major areas of scallop aquaculture, Lake Saroma and off Yakumo of Funka Bay in Hokkaido and Mutsu Bay in Aomori, to understand carbonate system variability in these regions. We calculated pH and calcite saturation state ( $\Omega_{Ca}$ ) from measured dissolved inorganic carbon and total alkalinity, and evaluated the current situation of ocean acidification. For example in Lake Saroma pH and  $\Omega_{Ca}$  fluctuated seasonally in a range with  $8.06 \pm 0.09$  and  $3.43 \pm 0.67$ , respectively. Highlights are that low pH of 7.65 and  $\Omega_{Ca} < 3$  were observed in summer deeper layers and in winter low temperature waters. From the results, the growth of *P. yessoensis* may be controlled by the acidified conditions in a period of the year.

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