Influence of submarine groundwater discharge on feeding and growth of fish

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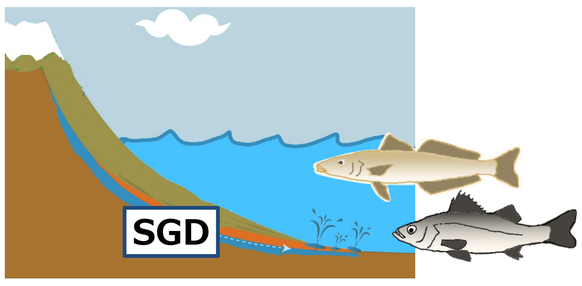
Background & Purpose

【Submarine Groundwater Discharge (SGD)】

- Groundwater flowing directly into the sea
- Rich in nutrients （ N, P, Si ）
- Constant temperature（around 16℃）



The influence of nutrients on fish is unknown

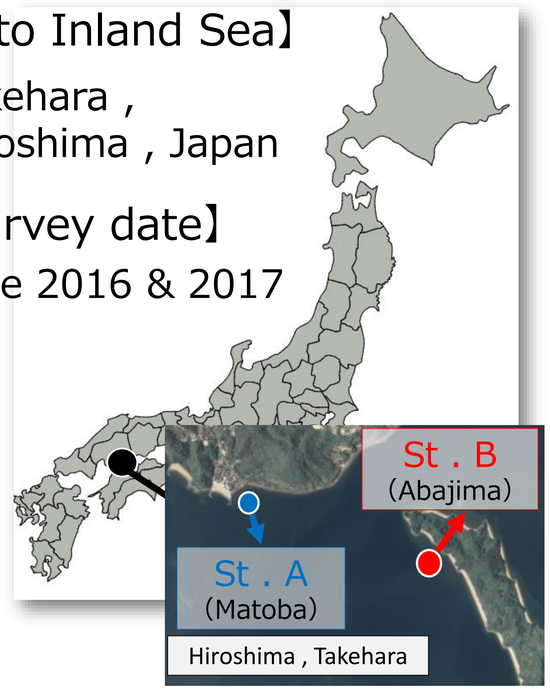
Survey area

【Seto Inland Sea】

Takehara , Hiroshima , Japan

【Survey date】

June 2016 & 2017



SGD (^{222}Rn concentration) is high in the St . A

Methods

Water temperature・Salinity

Measured by a data logger in the cage.
1 hour interval for 2 weeks

Production of benthic microalgae

Plastic plates were set near bottom layer for 1 week.

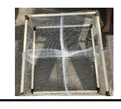
After filtering, dried and measured in carbon weight.
(250 x 300 mm)

Epi-benthic crustacean

Near-bottom plankton net towed for 25m.
Core sampler for in-benthic animals at both site.
(0.4 ×0.3 m mesh 0.3 mm)

On-site cage experiment

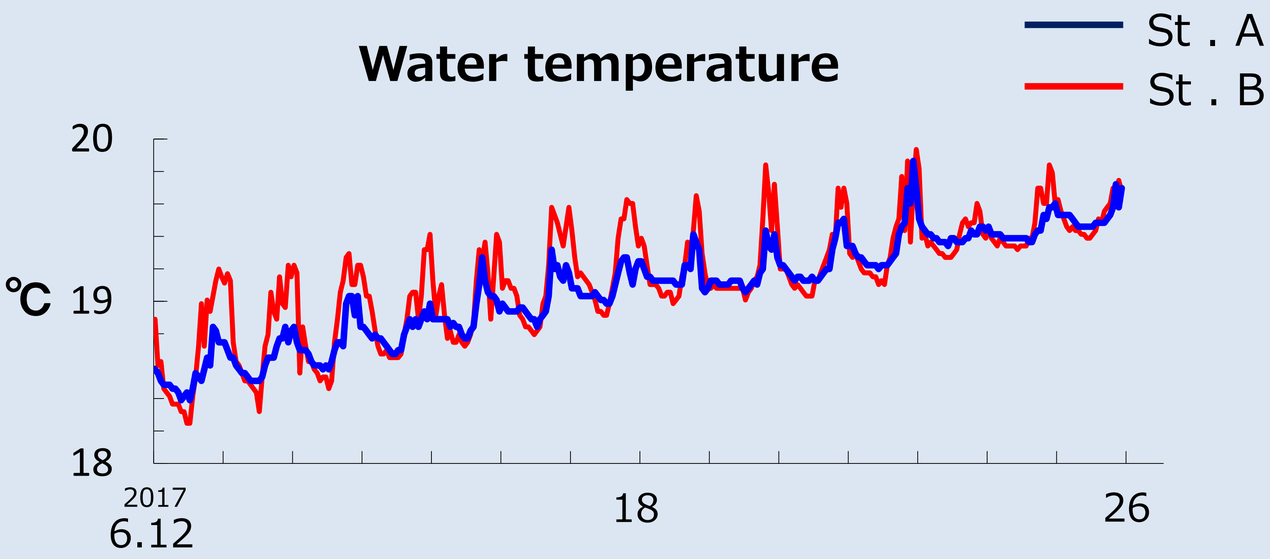
Cultured ***Pleuronectes yokohamae*** for two weeks in the cage.
Total length was measured and the stomach contents were analyzed.



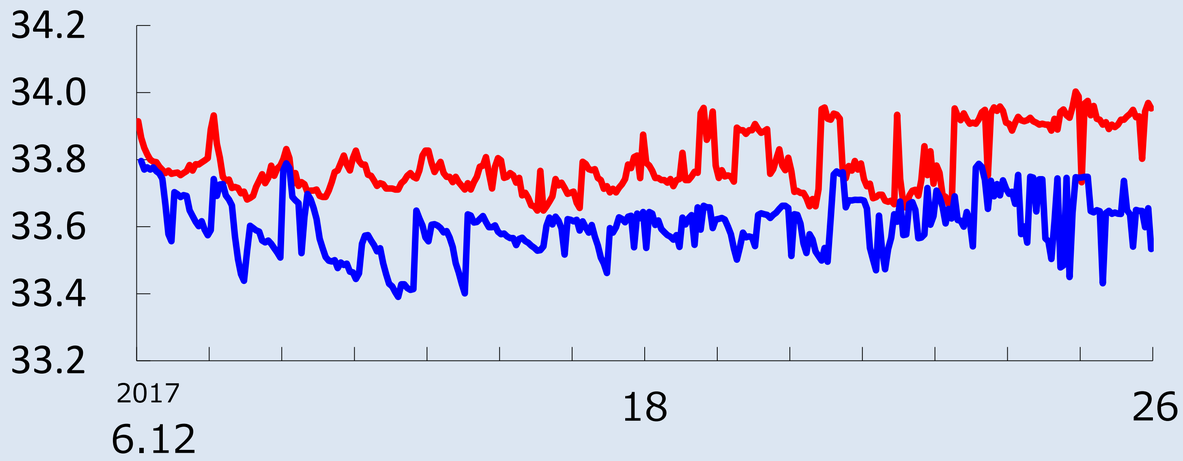
(0.45x0.45 x0.3 m)

Results

Water temperature

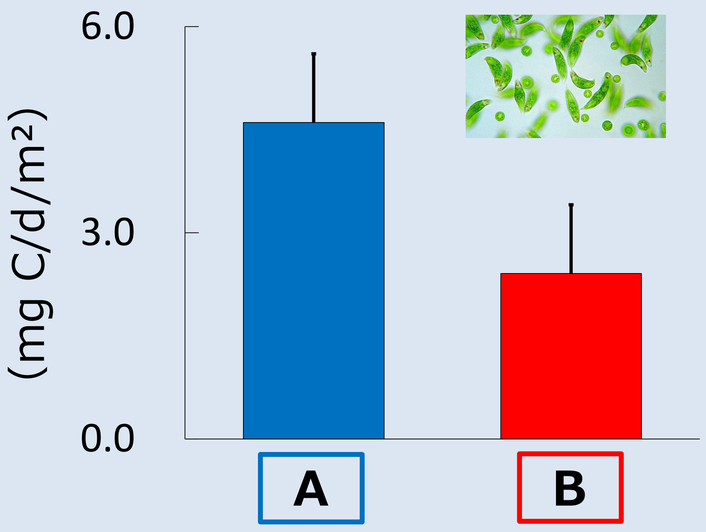


Salinity

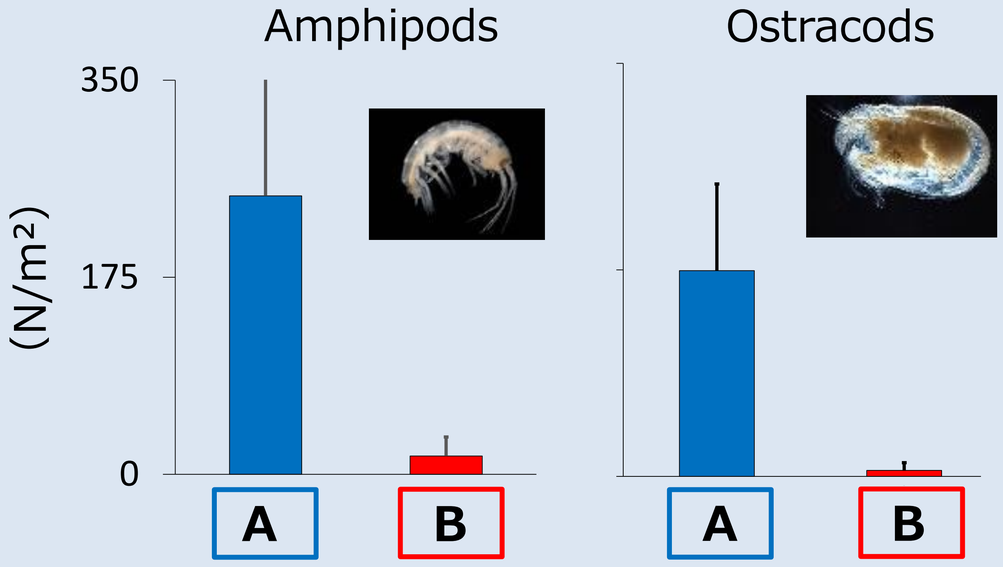


Carbon production

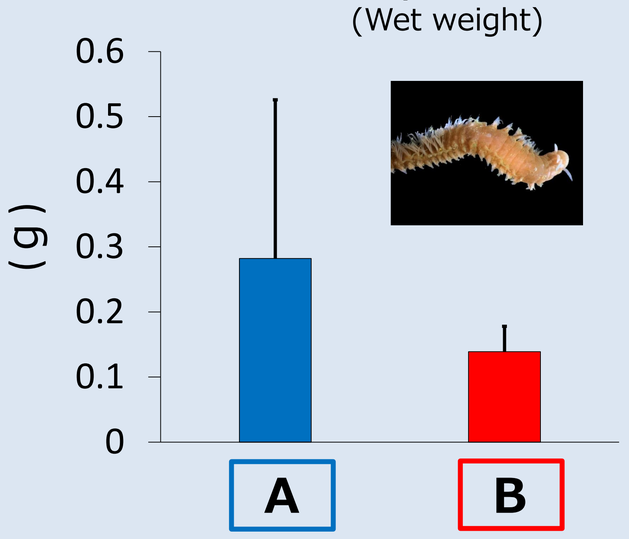
(benthic microalgae)



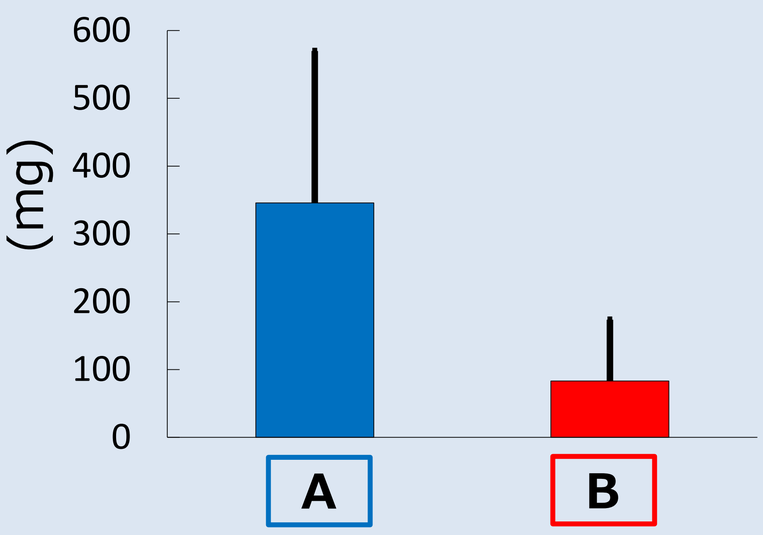
Epi-benthic crustacean

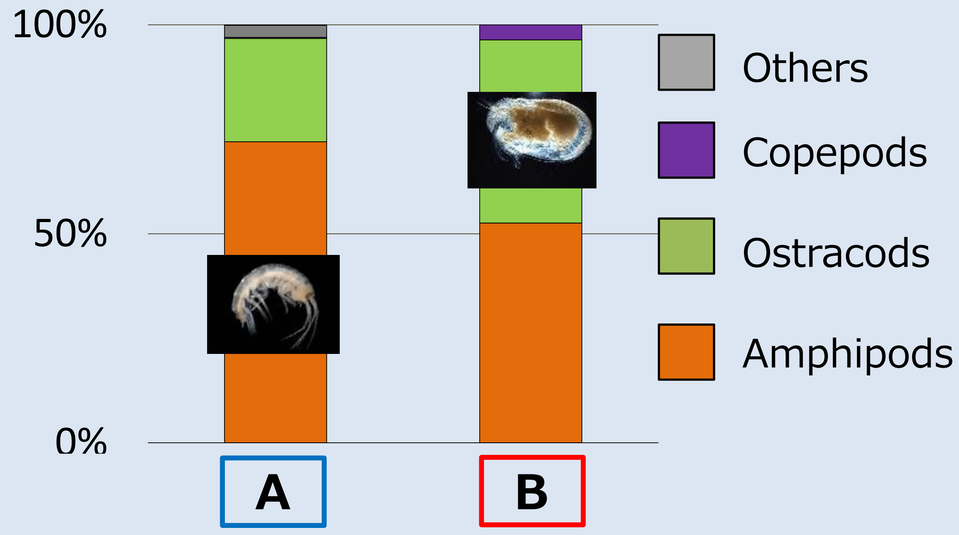


In-benthic animals

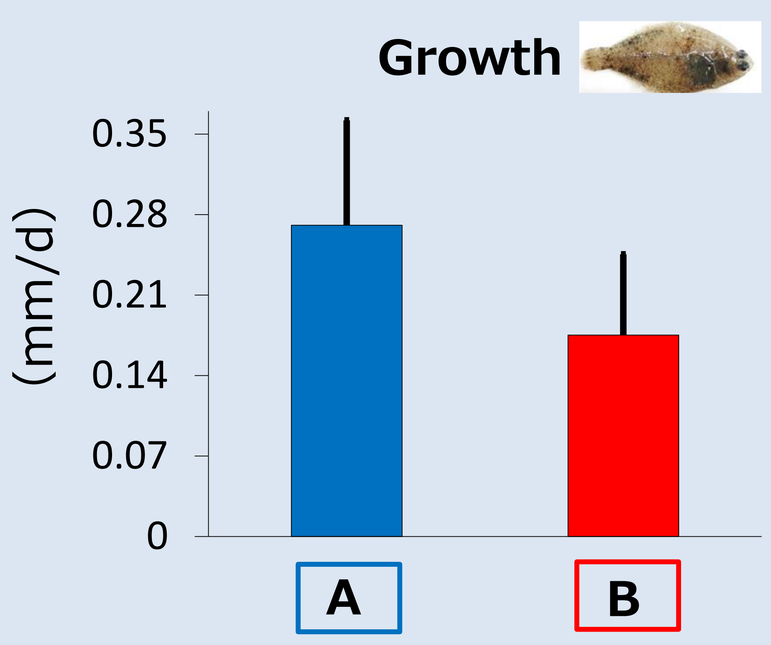


Stomach content





Growth



After 2 weeks of cage experiments of *Pleuronectes yokohamae* in an environment with SGD, there was a difference in growth.
From this result, it is suggested SGD may affect fish. This experiment site was not difference in the surrounding environment such as temperature and salinity , I thought that rich nutrition supplied by SGD is the biggest cause. In future, further research on seabed spring water is considered necessary. By being able to further clarify, importance as land water affecting the new sea will be improved.

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