



Contribution of submarine groundwater discharge on coastal fisheries production: increase in feeding and growth rates of juvenile fishes revealed by a cage experiment

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In order to detect possible effects of submarine groundwater discharge (SGD) on fish feeding and growth, a cage experiment was conducted in Seto Inland Sea, Japan. Juvenile marbled flounder *Pseudopleuronectes yokohamae* dominate fish community on tidal mudflat of the coastal waters of central Seto Inland Sea from February to May. Six cultured juveniles (49.7 mm in total length) were kept in a cage (0.9 x 0.9 x 0.3 m, 10 mm mesh, four replicates). Juvenile growth rates for one week were compared between two sites with high and low SGDs which were evaluated by the use of radon (^{222}Rn) concentrations in the water. Water temperature was monitored with a data logger at each site. Carbon-based primary production of benthic microalgae was compared between the two sites. Abundance of major prey for the juveniles were examined by towing a sledge-net (0.4 x 0.3 m, 0.3 mm mesh) for 20 m at each site (four replicates). Stomach contents of the juveniles were analyzed at the end of the experiment. Water temperature ranged between 16 and 19°C during the experiment and was slightly lower at the site with high SGD. Carbon-based production of benthic microalgae was significantly higher at the site with high SGD. Stomach contents of the juveniles were dominated by gammarids at the site with high SGD and molluscs at the site with low SGD. Dry weight of stomach contents of the juveniles was significantly higher at the site with high SGD. Juvenile growth rate was higher at the site with high SGD. We concluded that the SGD increased feeding and growth of the juvenile marbled flounder.