

Estimation for migration routes of coastal flatfish juveniles using a stable isotope analysis

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Coastal fish species migrate among many habitats depending on their ontogenetic changes with the resource requirement. The migration sometimes exceed several tens kilometers, and it is suggested that they play an important role which transport nutrients and materials among various habitats. Therefore, clarifying their migration route and resource use at stop-over sites is essential to understand a nutrient cycling in coastal ecosystems in large scale such as water sheds.

In North Pacific coastal areas, marbled flounder (*Pleuronectes yokohamae*) typically inhabit nearshore and estuarine areas at juvenile stages. In the life cycles, they gradually migrate to off-shore area in dependence on their growth after spending larva or juvenile period in nursery ground. Their migration is suggested to extend for several ten kilometers across ecosystem boundaries, although their migration route and resource use are still unclear. In this study, we tried to estimate the route of juvenile migration of marbled flounder in Tokyo Bay using stable isotope analysis.

We firstly revealed that geographic variation in delta¹³C signature of organic materials of sediments in Tokyo Bay. Our analyses also clarified that delta¹³C signature of juvenile marbled flounder well corresponded to that of the sediment in each area where they were caught by monthly census. Using these information and depth data of Tokyo bay, we analytically found two migration routes of the juvenile marbled flounder: Chiba coastal route and Tokyo-Yokohama route. Moreover, the result of our analyses indicated that the contribution of juveniles via Chiba route to the adult population of Tokyo Bay was higher than that via Tokyo-Yokohama route.

Keywords: coastal flatfish, juvenile, migration, stable isotope