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Population genetic study of spiny king crab (*Paralithodes brevipes*): relationship between ocean current and patterns of stock structure

Minoru IKEDA

Graduate School of Agricultural Science, Tohoku University, Japan

The spiny king crab *Paralithodes brevipes* (Japanese name: Hanasaki-gani) occurs off northern Japan in the Sea of Okhotsk and in the Bering Sea. It is an important fishery resource of eastern Hokkaido, but the catches have declined in recent years. Nemuro City in Hokkaido, well known for fishery of this crab, has organized the "Hanasaki Program" consisting of researchers from different study fields (ecology, oceanography, and population genetics, etc.) to survey this crab's biology for the resource management and stock enhancement toward sustainable use. We have joined in this program since 2005 in order to reveal population structure of this species around coastal areas of Hokkaido and Far East Russia. Using microsatellite and mitochondrial DNA markers, we revealed that remarkable genetic differentiation occurs between the southern side of the Sea of Okhotsk (the southern Sakhalin and northern Hokkaido) and the eastern side of the Pacific Ocean (the South Kuril and eastern Hokkaido). The presumable boundary between these two putative stocks is deemed to be the Nemuro Straight. The simulation on the dispersal of planktonic larvae based on the POM (Princeton Ocean Model) thoroughly explained the current larval dispersal within each stock and isolation between stocks. These results suggest that coupled molecular population genetic and ocean physical model analyses give us essential information to recognize management units (MUs) for the marine organisms having difficulty of tracing their actual larval transport in ocean.