

Climate change and food: Disappearance of Alaska /walleye pollack in the Korean sea

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Abstract

Alaska / walleye pollack (myeong-tae) is one of the preferred fish species in Korean cushion. It is used as fish itself and its eggs and intestines are used as fermented food. The annual catch of the fish was more than 50,000 tons in 1981, but dropped to less than 10,000 tons in 1990. It is not even counted today. It has been suspected that it is because of climate change, however, few study reported. This study was performed to investigate the relationship between the production of Alaska / walleye pollack in Korea and various oceanographic factors. We used annual production data of Alaska / walleye pollack of offshore fisheries from the Fisheries Yearbooks and Agricultural and Fisheries Statistics, and official data of National Fisheries Research and Development Institute for the oceanographic condition of the 30 years (1981~2010). Time series analysis correlation analysis, and regression analysis were used for this study. Both air temperature and surface sea temperature rose during the 30 years. The temperature rise of the East Sea / Japan Sea, a main fishing ground of the fish, was the most prominent. Among the oceanographic factors, sea surface temperature, salinity, nitrite nitrogen, nitrate nitrogen, wind scale, and wave grade were negatively correlated with the production of Alaska / walleye pollack ($p < 0.05$). Only salinity was positively correlated with production of the fish ($p < 0.001$). The results of this study definitely indicate that climate change affected the oceanographic environment of the habitat of Alaska / walleye pollack. The results also indicate that low sea surface temperature and air temperature, low concentration of nutrients, mild wind scale and wave grade, and high salinity are preferred by the fish species. This study suggests that most of the major pollutants of the oceanographic condition affect the production of Alaska / walleye pollack.

Image



Fig 1. Changes in the production of Alaska / walleye pollack in offshore fisheries of Korea during the past 30 years

Recent Publications

1. Jang LH, Kang YQ, Suh YS. 2000. Relationship between sea surface temperature and air temperature variation depend on time scale at coastal stations in Korea. *J Korean Environ Sci Soc* 9:303-309.
2. Kim S et al. 2007. Climate variability and its effects on major fisheries in Korea. *Ocean Sci J* 42:179-192
3. Perry RI, McKinnell SM. [Eds.] 2004. *Marine ecosystems of the North Pacific.. PICES Special Publication, No. 1. PICES: Sidney/British Columbia, Canada. p. 80.*
4. Takasuka A, Oozeki Y, Aoki I. 2007. Optimal growth temperature hypothesis: why do anchovy flourish and sardine collapse or vice versa under the same ocean regime? *Can J Fish Aquac* 64:768-776 .
5. Cho JH, Nam, JO. .2013. Creative approaches for future aquaculture in Korea. *Ocean & Future* 41: 5-8.



Biography (150 word limit)

J. G. Kim is working for Faculty of Food and Health Sciences, Keimyung University of Korea (South) from 1993. She is in teaching and research capacity. She is now in sabbatical leave and joining University of Washing, U. S. A. She is a specialist in the field of Food and Environmental Hygiene. She has more than 100 publications in the peer-reviewed scientific journals, and edited more than five books.

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