Fisheries Oceanography 437

Assignment 2

Using walleye pollock (*Gadus chalcogrammus*) or Pacific hake (*Merluccius productus*) in the northeast Pacific, speculate (with literature support) on the **effects of warmer water** on **recruitment variability** of these commercially important species. What is recruitment variability? What is current variability? What are the biological and physical factors that will determine cohort strength under changing conditions? The review must be typed, double spaced, with 1" margins and should not exceed 4 pages.

Due: January 18, 2017 during Discussion Period

Literature Seeds

Houde, E.D. 2008. Emerging from Hjort's shadow. J. Northw. Atl. Fish. Sci. 53-70.

Walleye Pollock

Hurst, T.P. 2007. Thermal effects on behavior of juvenile walleye pollock (*Theragra chalcogramma*): implications for energetics and food web models. Can. J. Fish. Aquat. Sci. 64: 449-457.

Mueter, F.J., Bond, N.A., Ianelli, J.N., and A.B. Hollowed. 2011. Expected declines in recruitment of walleye pollock (*Theragra chalcogramma*) in the eastern Bering Sea under future climate change. ICES J. Mar. Sci. 68: 1284–1296.

Pacific Hake

Agostini, V.N., R.C. Francis, A.B. Hollowed, S.D. Peierce, C. Wilson, and A.N. Hendrix. 2006. The relationship between Pacific hake (*Merluccius productus*) distribution and poleward subsurface flow in the California Current System. Can. J. Fish. Aquat. Sci. 63: 2648-2659.

Dorn, M.W. 1995. The effects of age composition and oceanographic conditions on the annual migration of Pacific whiting, *Merluccius productus*. Calif. Coop. Oceanic Fish. Invest. Rep. 36: 97-105.