NOAA Fisheries Service
Alaska Fisheries Science Center

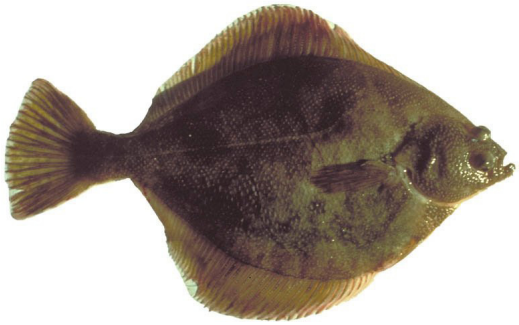
Protecting
Conserving
Managing
Marine Resources
in
Alaska

The **Alaska Fisheries Science Center** is a scientific research organization responsible for the development and implementation of NOAA's scientific research on marine resources in Alaska waters. Our research focuses on more than 250 fish and 42 marine mammal stocks off the coasts of the Bering Sea, Gulf of Alaska and Aleutian Islands.

National Marine Fisheries Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Yellowfin sole
Limanda aspera

Length 42 cm (16.5 in)*
Weight 750 grams (1.6 lbs)*
Age 35 years*
*maximum



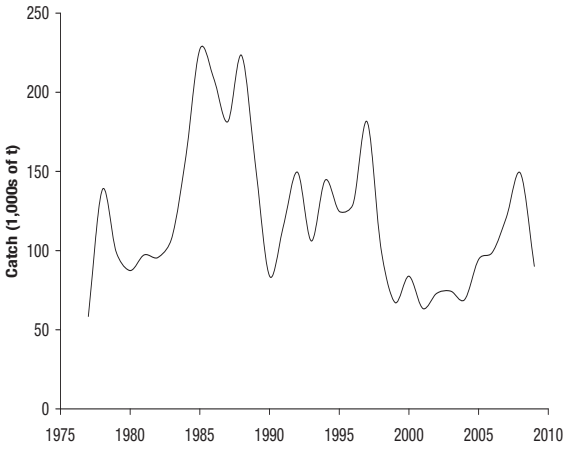
Range/Habitat
Yellowfin sole are distributed in North American waters from off British Columbia, Canada, (approx. 49° N) to the Chukchi Sea (approx. 70° N) and south along the Asian coast to about 35° N off the South Korean coast in the Sea of Japan. In Alaska, they are most abundant on the Bering Sea continental shelf. Adults are benthic (bottom dwelling), and migrate into shallow waters to spawn.

Diet/Role in Ecosystem
Adults feed upon infauna and epifauna such as clams, polychaete worms, amphipods, other marine worms, and tunicates (such as sea squirts).

Reproduction
About half of the female yellowfin sole mature at approximately 28 cm (11 in) or about 10 years old. Spawning occurs in shallow waters which subsequently serve as nursery areas for settled juveniles.

Population
Fishery and Catch History

From 1950s - early 1980s: Since 1954, yellowfin sole have been landed in the Bering Sea using bottom trawl gear. The fishery was overexploited by a mainly foreign fleet during 1959-62 when catches averaged 404,000 metric tons (t) annually. As a result, catches declined to an annual average of 117,800 t from 1963-71 and further declined to an annual average of 50,700 t from 1972-77. The lower harvest in this latter period was partially due to the discontinuation of the former U.S.S.R. fishery.



1980-1989: A major transition in the yellowfin sole fishery began in the 1980s. As the foreign fishing fleet was being phased out, the U.S. fishing fleet began to develop rapidly as joint ventures. Catches also increased, reaching a recent peak of over 227,000 t in 1985.

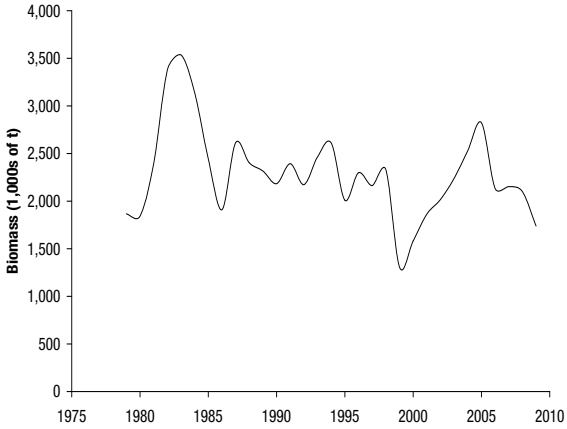
Since 1990: Currently, only domestic harvesting and processing has occurred. The 1997 catch of 181,389 t was the largest since the fishery became completely domestic, but catchhas since been at lower levels, averaging 78,000 t per year from 1998-2005.

RESEARCH

As one of the more abundant flatfish species in the Bering Sea, yellowfin sole have been well studied. Current research is focused on understanding the mechanics of the mathematical models used to estimate the biomass of this species. Research questions to be addressed: How does uncertainty affect various model parameter estimates, and how have fishing catch rates changed over the past 28 years? Lastly, with new technological advances in measuring fish catch on fishing vessels, scientists will have better data to compare the differences between fishery weight-at-age and similar data from the AFSC independent research surveys.

Resource Status

Bering Sea yellowfin sole are not overfished and they are not approaching an overfished condition. The estimated biomass has remained at a high and stable level for the past 9 years.



Stock Assessment

Information used in yellowfin sole stock assessments include fishery catch data, trawl survey biomass estimates, and age composition of both the fishery catch and survey biomass estimates. These data are used in statistical catch-at-age models for the Bering Sea/Aleutian (BSAI) stock assessment. Model estimates of age-structure and population size are generated, and deviations between observed and estimated quantities are assumed to follow statistical distributions. Model parameters are then chosen to minimize the deviations between the observed and estimated quantities.

Management

A total allowable catch (TAC) is set for yellowfin sole for the BSAI area. As of 2008, this is primarily allocated to a subsector of the trawl fleet, known as the Amendment 80 sector, within which many vessels have formed cooperatives. A varying percentage of the TAC is also made available as a limited access fishery for other BSAI trawl sectors, with more quota available in years of high yellowfin sole abundance.

Economics

The 2008 price/lb was $0.60/lb. The average product price from 1992 to 2008 is $0.43/lb. Primary products from yellowfin sole are whole fish, headed and gutted (eastern cut), kirimi, fish meal, and headed and gutted (western cut).

The inflation-adjusted prices shown in the graph are 1st wholesale (2008 U.S. currency). Numbers are from NMFS and ADF&G price data.

For more information

Most recent stock assessment:
http://www.afsc.noaa.gov/REFM/Stocks/assessments.htm

Management:
http://www.alaskafisheries.gov/npfmc

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Questions or Comments?
email: **afsc.outreach@noaa.gov**