Science, Service, Stewardship



Assessing and Reducing the Amounts and Impacts of Fisheries Bycatch in Alaska Marine Ecosystems

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US approach to bycatch reduction and mitigation in an ecosystem approach to fisheries management

Alaskan context

- -Overview of groundfish fishery management
- -Strategies and mechanisms for bycatch reduction and mitigation: Examples

Ongoing research and management issues relating to bycatch reduction





MSA: Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

Bycatch: "Discarded catch of any living marine resource plus retained incidental catch and unobserved mortality due to a direct encounter with fishing gear."





What are the primary issues addressed in the US National Bycatch Implementation Strategy?

Monitoring

Bycatch reduction engineering and other research

Management (including international efforts)

Education/outreach

The U.S. National Bycatch Report



NOAA

FISHERIES

SERVICE

Reporting on Discard of Fish and Incidental Mortality of Marine Mammals and Sea Birds and Addressing Deficiencies in Data Quality & Estimation Methodology

- Statutory requirements
- International and national focus on discard and bycatch
- Not all regional methods well documented
- Fishery & ecosystem management
 - Full accounting for mortality of fish, mammals and birds
- Track performance in reducing bycatch over time
- Funding prioritization
- Outreach

Alaska Groundfish Fishery Management



➢In-season management ensures catch does not exceed quota (TAC), which is less than biological reference points of allowable biological catch (ABC) and overfishing level (OFL)

Prohibited species catch limits and 2 million t. OY cap prevent some target fisheries from achieving allowable biological catch allowances

Alaska Groundfish Fishery Measures for Bycatch and Waste Reduction

The catch composition of incidental bycatch and discards of non- target species is quantitatively estimated from observer data, both at-sea and onshore.

Groundfish retention standards will increase minimum retention in flatfish fisheries to 85%.

- Biodegradable panels and escape rings in cod pots are required to minimize bycatch and ghost fishing.
- Bycatch limits for halibut, crab, salmon, and herring.
- Full retention of Pacific cod and pollock (all gear/areas) is required.



Halibut Bycatch Reduction in Alaska Groundfish Fisheries- Amendment 80 and use of Halibut Excluders





Habitat Conservation Measures

Salmon Bycatch Mitigation

Short-tailed Albatross Bycatch



Impacts of Bottom Gear





Figure 2.2-7. Option 4 The Northern Bering Sea Research Area would be closed to fishing with nonpelagic trawl gear.



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Reducing Salmon Bycatch

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Figure 12. Time series of Chinook adult equivalent bycatch from the pollock fishery, 1991-2007 compared to the annual totals with stochasticity in the bycatch age composition (via bootstrap samples), maturation rate (CV=0.1), natural mortality (Model 2, CV=0.1).



- Bycatch measures to protect valuable species caught in groundfish fisheries
- Uncertainty about river of origin and actual impact of catch
- Numerous research areas: genetics, spatial analyses, population dynamics, socioeconomic

Salmon Bycatch Management Alternatives







Fig. 2-3 Proposed B-season trigger closures, encompassing 90% of Chinook bycatch in 2000-2007.



December 25, 2008

Figure 2. Orientation of DIDSON sonar and the area that it imaged on the trawl net.

Chinook escapement rates for sqaure mesh flapper over the course of winter 2007 EFP



Seabird Bycatch and Fishing Effort



Cooperative Research to develop Seabird Bycatch Mitigation Devices



Seabird Bycatch Mitigation Measures



- Seabird bycatch mitigation device requirements : 1997/98
- Effectiveness vs small vessel issues
- Easing of restrictions in areas not used by STAL
- Requires interagency coordination and information sharing
- Importance of spatial information

The "STAL Subarea" is illustrated below (shaded and cross-hatched area of IPHC Area 4E south of 60 degrees North latitude and west of 160 degrees West longitude).



Bycatch Research

Study of fish behavior

- Flatfish behavior around bottom trawls (reduce halibut bycatch)
- Salmon and pollock swimming behavior
- Development and testing of new gear technology and fishing techniques to minimize bycatch and any adverse effects on essential fish habitat
 - Trawl sweep and footrope modifications (seafloor habitat protection)
 - Escape vents/excluders
 - Longline streamers
 - Video monitoring
- Promotion of efficient harvest of target species
 - Mesh selectivity studies
 - Hook studies