

ECOSYSTEM MANAGEMENT In Alaskan Waters

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**FISH AND
WILDLIFE**



MANAGEMENT STRUCTURE

- North Pacific Fishery Management Council (NPFMC)
 - One of 8 Federal Regional Management Councils
 - 11 voting and 4 non-voting members
 - Mix of government and non-government participants
 - Policy making requires a plurality from voting members
 - 5 Annual Meetings
 - 21 Member Advisory Panel, 13 member Scientific and Statistical Committee
 - Active public participation
 - **Emphasis on resource conservation and management transparency**

REGULATORY MANDATES

- Magnuson-Stevens Fishery Conservation and Management Act
 - 10 National Standards represent guiding principles for fishery management
- Sustainable Fisheries Act (Amends the M-S Act)
 - Prevent Overfishing, restore depleted stocks
 - Protect essential fish habitat
- Other Significant Legislation
 - Marine Mammal Protection Act
 - Endangered Species Act
 - Marine Protected Area Executive Order 13158
 - National Environmental Policy Act

MSFCMA National Standards

- **Environmental Components**

- NS 1: Prevent overfishing while achieving OY on a continuing basis
- NS 2: Use the best available science
- NS 3: Manage fisheries stocks as a unit throughout their range
- NS 9: Minimize bycatch to the extent practicable

SUSTAINABLE FISHERIES ACT

- **Essential Fish Habitat Requirements:**
 - Describe EFH and identify EFH in each fishery management plan,
 - Minimize to the extent practicable the adverse effects of fishing on EFH, and
 - Identify other actions to encourage the conservation and enhancement of EFH

OTHER ACTS

- **MMPA:** Maintain the health and stability of the marine ecosystem with the goal of obtaining the optimal sustainable population level
- **ESA:** Conserve ecosystems supporting threatened or endangered species; avoid jeopardizing the recovery of species listed as threatened or endangered
- **EO13158:** Strengthen and expand the nations system of marine protected areas
- **NEPA:** Enrich understanding of the ecosystem and natural resources, prevent environmental damage, evaluate the environmental consequences of proposed federal actions

WHERE DO WE BEGIN

- What do we mean by ecosystem management?
- 1996 U.S. Congress appointed a panel to make recommendations on
“ECOSYSTEM-BASED FISHERY MANAGEMENT”

ECOSYSTEM PRINCIPLES ADVISORY PANEL

- **Goal:** “Maintain Ecosystem Health”
- **Principles driving policies:**
 - Ability to predict ecosystem behavior is limited
 - Ecosystems have real thresholds which when exceeded can cause major restructuring
 - Once thresholds are exceeded, change can be irreversible
 - Diversity is important
 - Multiple scales of interaction
 - Ecosystem components are linked
 - Ecosystem boundaries are open
 - Ecosystems change with time

ECOSYSTEM PRINCIPLES ADVISORY PANEL

- **Recommended Policies:**
 - Change the burden of proof
 - Apply the precautionary approach
 - Purchase insurance against unforeseen, adverse ecosystem impacts
 - Make local incentives compatible with local goals
 - Promote participation, fairness and equity in policy and management

NPFMC

- **Definition:** Ecosystem-based management is a strategy to regulate human activity towards maintaining long-term system sustainability (within the range of natural variability as we understand it)
- **Objective:** Provide future generations the opportunities and resources we enjoy today

NPFMC UNDERSTANDING

- Uncontrolled human population growth and consequent demand for resources are inconsistent with resource sustainability.
- Ecosystem-based management requires time scales that transcend human lifetimes.
- Ecosystems are open, interconnected, complex, and dynamic; they transcend management boundaries.

NPFMC GOALS

- Maintain biodiversity consistent with natural evolutionary and ecological processes, including dynamic change and variability.
- Maintain and restore habitats essential for fish and their prey.
- Maintain system sustainability and sustainable yields of resources for human consumption and non-extractive uses.
- Maintain the concept that humans are components of the ecosystem

NPFMC GUIDELINES

- Integrate ecosystem-based management through interactive partnerships with other agencies, stakeholders, and public.
- Utilize sound ecological models as an aid in understanding the structure, function, and dynamics of the ecosystem.
- Utilize research and monitoring to test ecosystem approaches.
- Use precaution when faced with uncertainties to minimize risk; management decisions should err on the side of resource conservation.

PRACTICAL APPLICATIONS

- **WHAT IS ECOSYSTEM MANAGEMENT?**
 - A regulatory constraint imposed to achieve a socio-political goal (e.g., “Ecosystem Health”)
 - Applies to specific geographic area (despite the acknowledgement that ecosystems are open and boundaries indefinite)
 - Scope of the constraints imposed is limited by the authorities of the management system

STRONG SCIENCE AND RESEARCH

- **NMFS Alaska Fisheries Science Center conducts systematic surveys to assess groundfish and crab abundance and collect biological data (age, growth, maturity, distribution, etc.).**
- **Federal and State stock assessment scientists use survey and fishery data in their models to provide accurate biomass estimates and conservative harvest rates.**
- **Scientific research is also conducted to assess impacts of fisheries on habitat, marine mammals, seabirds, and other ecosystem components.**

EFFECTIVE CATCH MONITORING

- **Except for small vessels <60', all vessels fishing for groundfish are required to carry a NMFS certified observer.**
- **Coverage is based on vessel length:**
 - **100% on vessels >125', and all shore processors**
 - **30% on vessels 60-125'**
 - **200% coverage for certain vessels and fisheries**
- **The observers are contracted by each vessel through a NMFS approved contractor, and the costs for the observers are borne by each vessel.**
- **Observers measure total catch weight, catch composition, discard composition, and collect other biological information.**
- **Observers are 'de-briefed' at the end of each trip to ensure data accuracy and consistency.**

NPFMC ACTIONS

- Whether motivated by ecosystem considerations or incidentally responsive to ecosystem principles, the NPFMC has imposed a number of policies that promote ecosystem-based management.

EXAMPLES

MOTIVE	ACTION
Protect birds	Catch deterrent devices Catch limits
Protect Marine Mammals	Closed areas Catch limits
Limit Bycatch	Prohibited species catch Retention & Utilization standards Gear Restrictions
Prevent Habitat Degradation	MPAs Trawl closures; gear restrictions Designate EFH
Control Competition for Prey	Forage Fish FMP

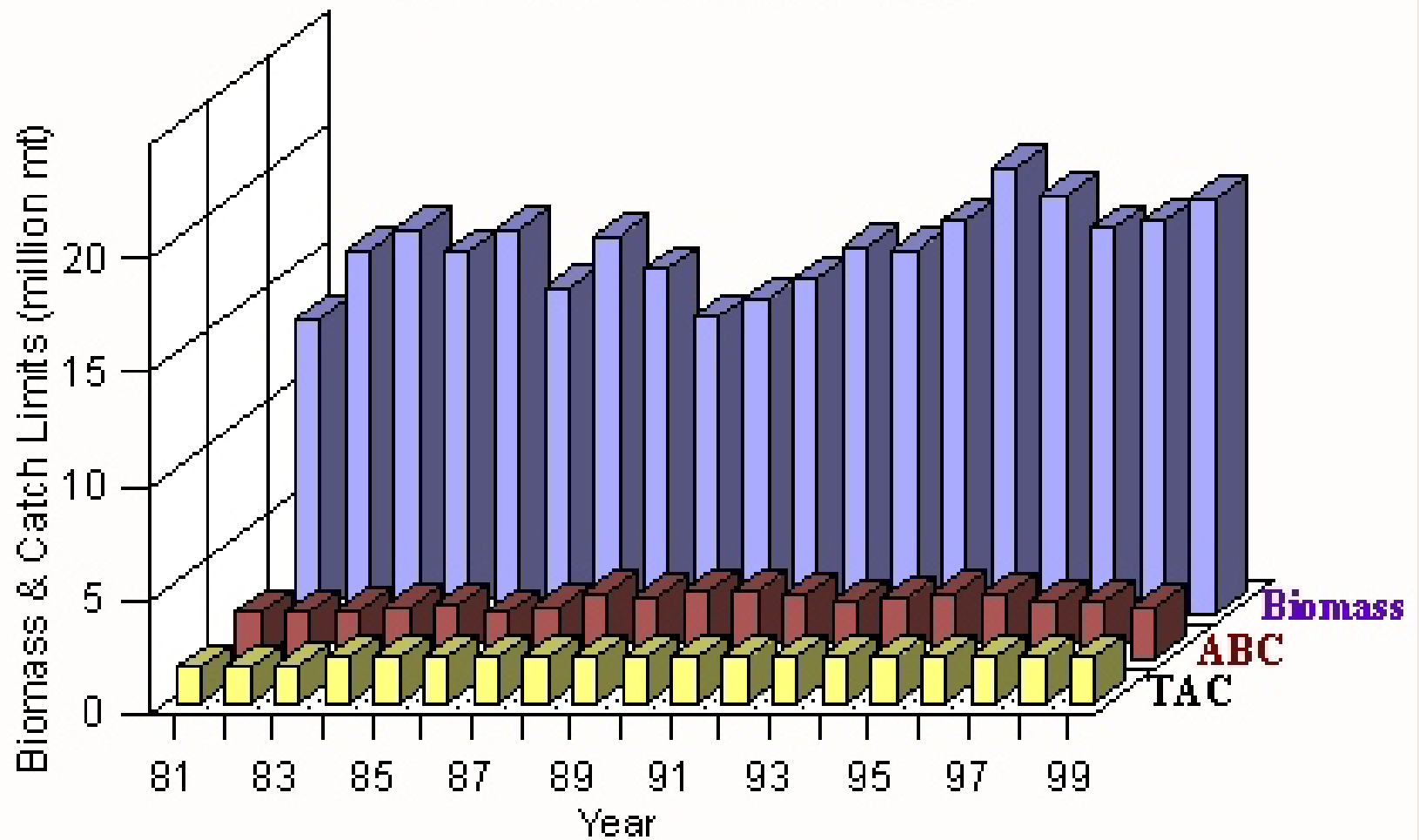
CONSERVATIVE CATCH LIMITS FOR TARGET SPECIES

- SYSTEM-WIDE OPTIMUM YIELD
 - Absolute constraint on total removals of all species
 - Less than the sum of the individual species ABC

$$\Sigma ABC > OY$$

- Information based allowable fishing rate
 - Less information implies more conservative harvest allowance
- Global harvest rule that promotes stock rebuilding at low stock levels

Bering Sea/Aleutian Islands Groundfish Harvest Limits 1981-1999



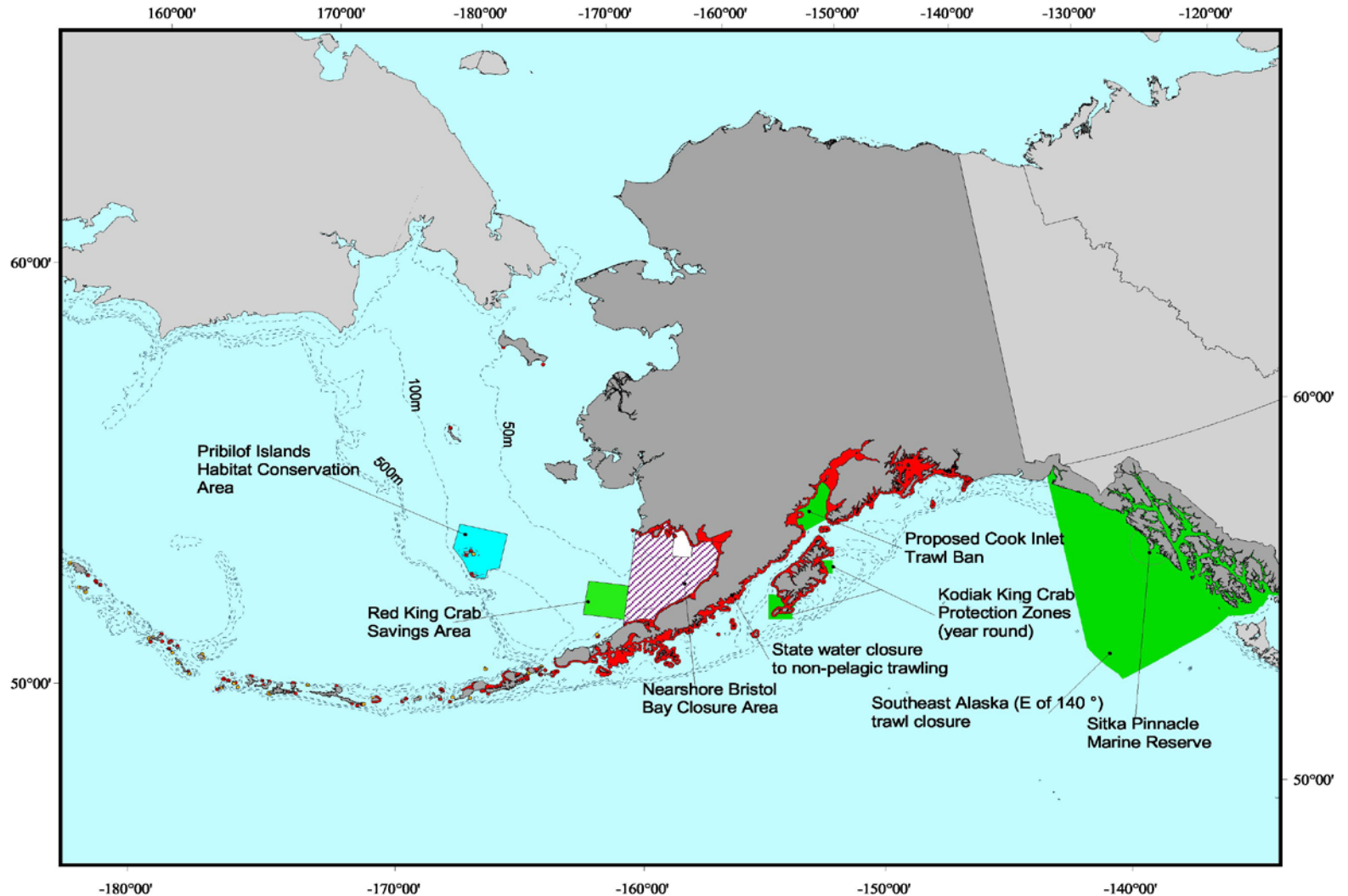
LIMITS ON INCIDENTAL CATCH AND DISCARD

- Mandatory Observer Program
- Limits on incidental catch, particularly for non-target species (halibut, crab, herring and salmon—typically <2% of the Prohibited species biomass)
- Gear constraints (e.g., pelagic trawl to avoid on bottom contact and incidental catch)
- Defined utilization and retention standards
- Encouraged an industry sponsored in-season bycatch monitoring program that promotes active avoidance of bycatch “hot spots”

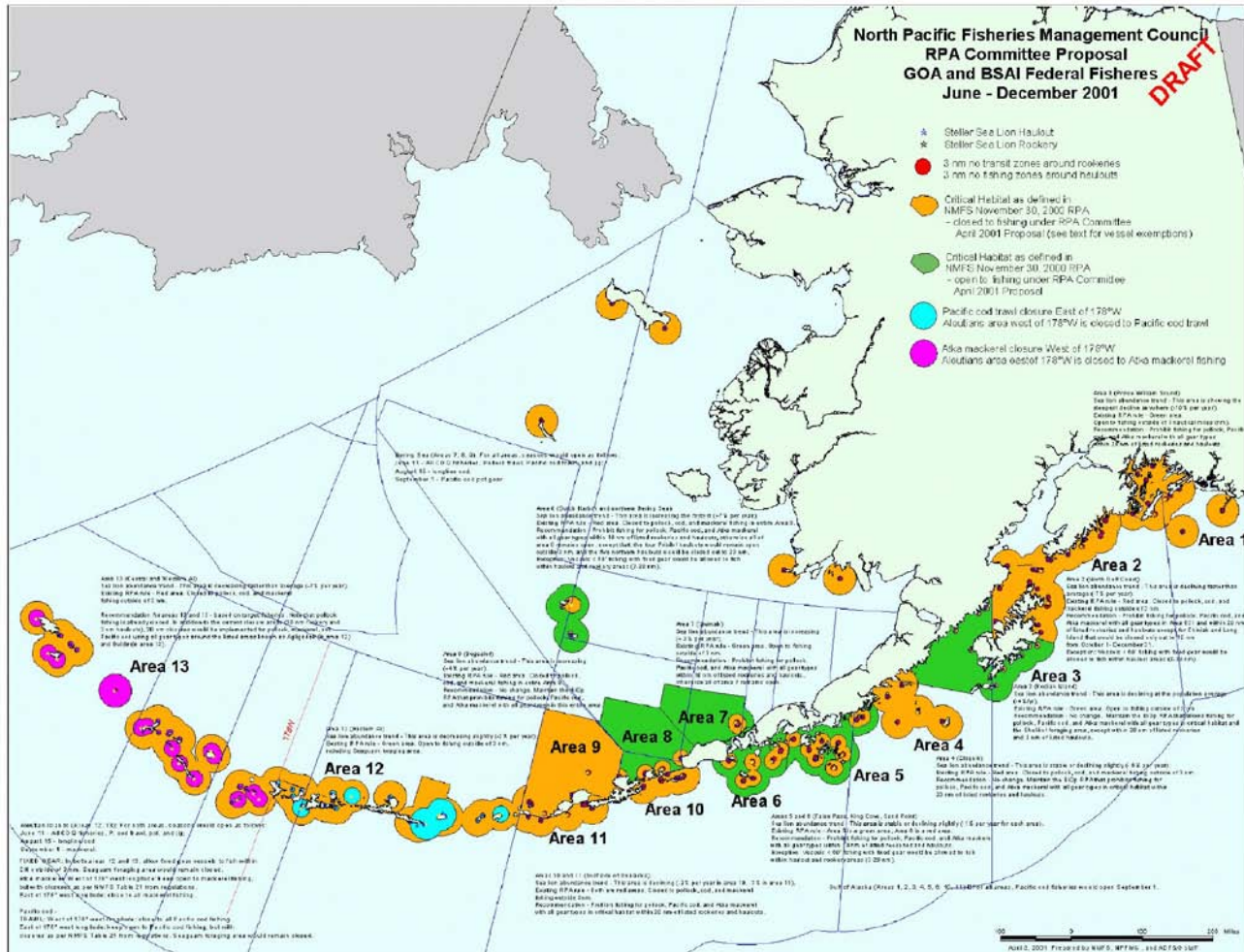
HABITAT PROTECTIONS

- S.E. Alaska no-trawl zones
- Herring and Salmon Savings Areas
- Walrus Haulout No-trawl / No-transit Zones
- Steller Sea Lion Closed Areas
- HAPC: Habitat Areas of Particular Concern
 - Crab protection areas
 - Gorgonian coral
 - Edgecomb pinnacles

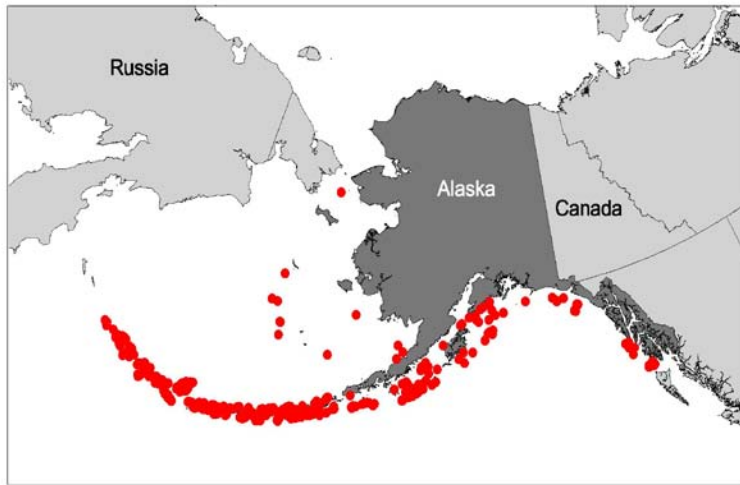
Year-round Trawl Closures



SSL HABITAT PROTECTION



GORGONIAN CORAL PROTECTION



**Location of gorgonian corals
from NMFS trawl surveys.**

- Corals and sponges were added as prohibited species (no take).
- Closures to all gear types were considered for areas with coral aggregations, but not adopted:.
- Current development of EFH regulations is looking at proposals to protect these sensitive areas.

AMOUNT OF YEAR-ROUND TRAWL CLOSURES TO PROTECT HABITAT

- Bering Sea/Aleutian Is.
 - Pribilof Islands Habitat area (1995): 24,000 km²
 - Red King Crab Savings Area (1995): 13,700 km²
 - Nearshore BB closure (1997): 65,200 km²
 - State water closure areas
- Gulf of Alaska
 - Kodiak Crab Areas (1987): 3,400 km²
 - Southeast Alaska closure (1998): 180,400 km²
 - Cook Inlet closure (2001): 24,000 km²
 - State water closure areas

Total Area Closed is > 300,000 km²

RATIONALIZED FISHERIES

- Increase fleet efficiency, lower fishing effort, diminished fishery “footprint”
 - Sablefish and Halibut IFQ (long-line fishery)
 - BS/AI Pollock Fishery
 - American Fisheries Act
 - Reduced fleet size
 - Authorized cooperatives
 - Final Stages of Crab Rationalization
 - Incentives for voluntary cooperatives
 - Gulf of Alaska Rationalization in development

ENDANGERED SPECIES

- Steller sea lions (*Eumetopias jubatus*)
 - Maximum allowable take
 - Rookery and haulout protections
 - An array of closed and limited fishing areas
 - Spatial and seasonal harvest allowances for fisheries on key SSL prey species
- Short-tailed albatross (*Phoebastria albatrus*)
 - Imposed use of bird savings devices in longline fisheries
 - Begun research on bird mortality associated with trawl fishery 3rd wire

BUILDING AWARENESS

- Annual Status of Stocks and Fishery Evaluation (SAFE) document includes an Ecosystem Chapter
- Increased emphasis for stock assessment scientists to evaluate ecosystem impacts on the stock and fishery impacts on the ecosystem

ECOSYSTEM CHAPTER

- Reviews Ecosystem Indicators, including:
 - Physical Environment
 - Habitat
 - Zooplankton, Chlorophyll and Nutrients
 - Forage Fish
 - Groundfish Biomass Trends
 - Other species
 - Benthic Communities and Non-Target Species
 - Marine Mammals
 - Seabirds
 - Ecosystem Modeling Results

ECOSYSTEM HEALTH

- Fishery trends
 - Bycatch/Discards; CPUE
- Track total area closed to fishing
- Trophic level of the catch
 - Pauly's (2001) FIB index - stable
- Number of overfished stocks
 - No groundfish (22 stocks), 2 of 6 crab, 207 unknown
- Fleet Capacity – reduced
 - Moratoria, License Limitations, IFQs, Cooperatives, Buyback programs
- Number of vessels:
 - Trawl is declining, longline declining, pot is increasing

STRUCTURAL CONSTRAINTS TO ECOSYSTEM MANAGEMENT

- Predominate fishery management drivers remain single species models of sustainable production
- Attention to ecosystem concerns while increasing, remains largely motivated by explicit legislative mandates (ESA, MMPA, EFH)
- Quantifiable indices of ecosystem health are emerging
- Continue to have large information gaps in our understanding of ecosystem dynamics
- Conflicting social-political goals require a wider-range of stakeholder interactions to establish acceptable policy compromises

SUMMARY

- NPFMC has been aggressive in their pursuit of resource conservation
- Established conservative harvest policies
- Been responsive to legislative mandates
- Increasingly building an understanding of fishery impacts on the broader ecosystem
- Done so, with stakeholder involved, transparent management process

More information @ www.fakr.noaa.gov/npfmc