Organization and Priorities
Theme IV

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National Standard 1

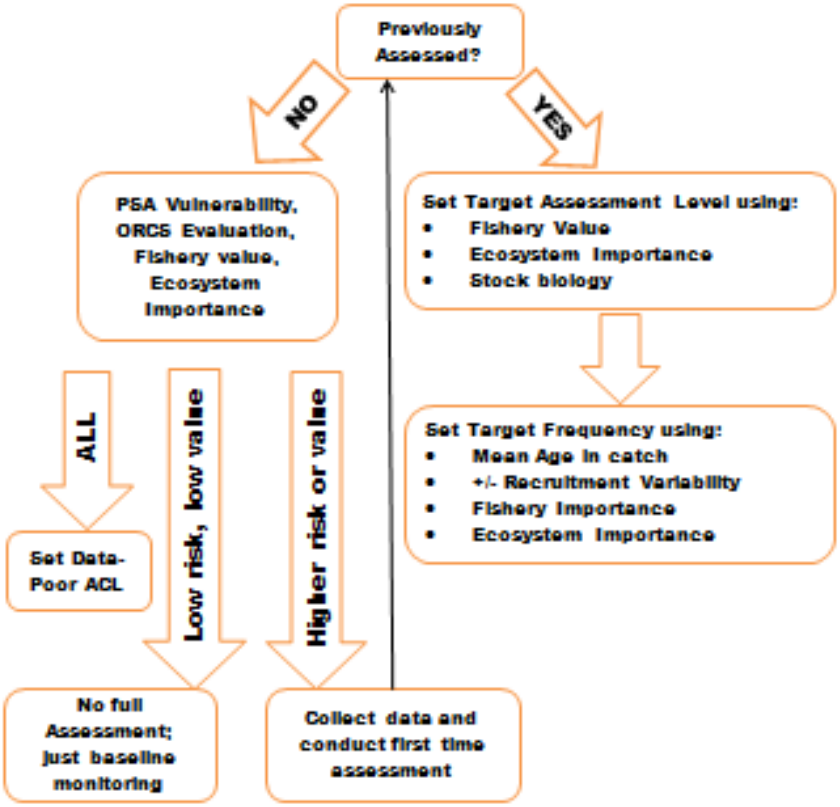
"Conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the United States fishing industry. "

North Pacific Fishery Management Council Management Goals

- ✓*Prevent Overfishing – Annual Catch Limits*
- ✓*Promote Sustainable Fisheries and Communities – science based guidelines*
- ✓*Preserve Food Web – Weak stock management*
- ✓*Manage Incidental Catch and Reduce Bycatch and Waste*
- ✓*Avoid Impacts to Seabirds and Marine Mammals*
- ✓*Reduce and Avoid Impacts to Habitat*
- ✓*Promote Equitable and Efficient Use of Fishery Resources*
- ✓*Increase Alaska Native Consultation*
- ✓*Improve Data Quality, Monitoring and Enforcement*

http://www.npfmc.org/wp-content/PDFdocuments/meetings/Management_FMP.pdf

Proposed National Protocol for Regional Prioritization of Stock Assessments Feb 2014



The major factors that influence the setting of assessment targets and priorities are:

1. **fishery importance** (commercial and recreational value to the regional fishing communities, with additional considerations);
2. **ecosystem importance** (role of the stock in the ecosystem and strength of its interactions with other species);
3. **stock status** (relative to target and limit levels of abundance and fishing mortality);
4. **stock biology** (how much change is expected per year, on average);
5. **history of assessment**, including availability of new information to resolve extant issues or indicate a change in stock abundance.

http://www.st.nmfs.noaa.gov/Assets/stock/documents/Prioritizing%20Fish%20Stock%20Assessment_Feb2014_final%20draft.pdf

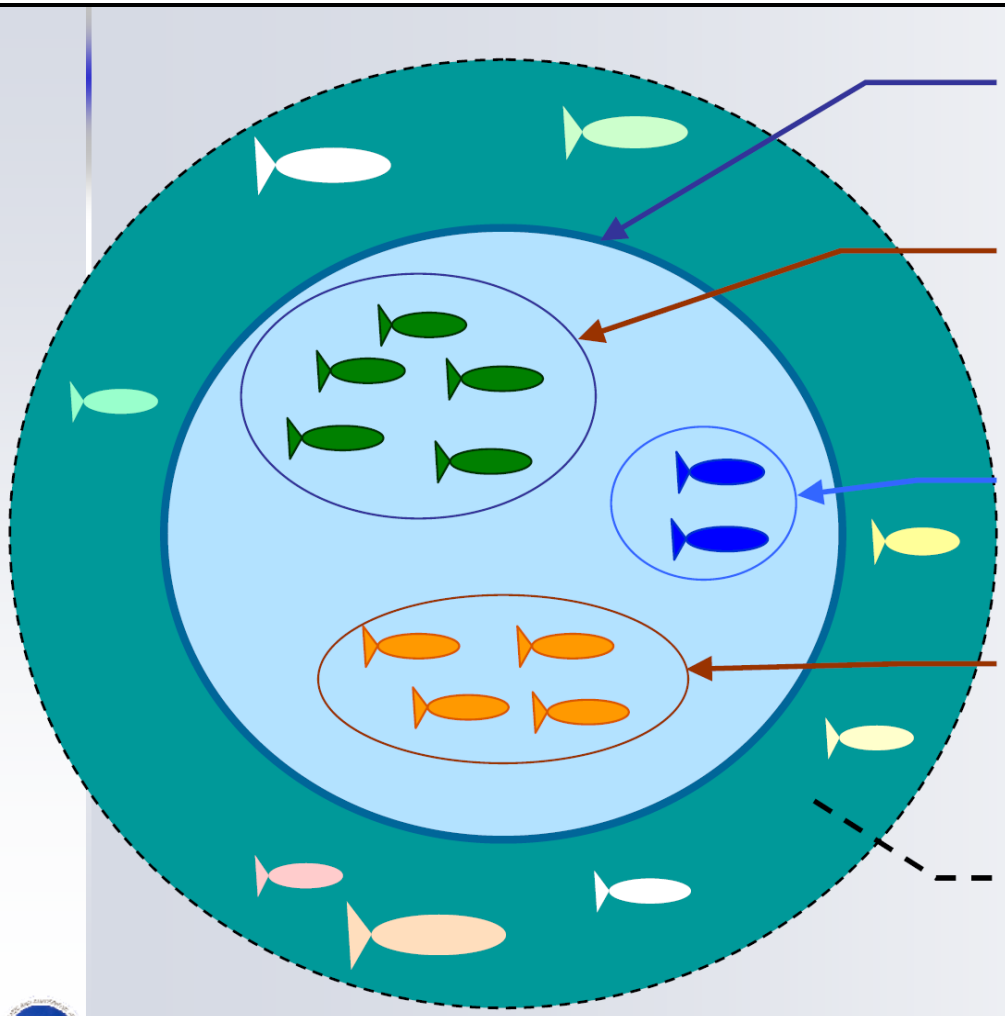
Prohibited species

Prohibited species bycatch caps: P. halibut, BSAI crab, P. salmon (especially chinook and chum), P. herring

- Gear/Area closures
- Bristol Bay Red King Crab Conservation Area
- Chinook and Other salmon (primarily chum):
    - Hard cap + incentive programs

Pacific herring. Photo: JJ Vollenweider, NOAA Fisheries

classification of stocks



The "fishery"
Stocks that are part of the fishery

Target stocks -
stocks people seek to harvest and retain for sale or personal use

Non-target stocks -
that people retain for sale or personal use

Non-target stocks -
not retained and for which an overfishing or overfished status is a concern

Ecosystem Component species

- EC category is optional and originally intended to accommodate species in existing FMPs that do not require Status Determination Criteria

Identifying stock complexes

NOAA FISHERIES

BSAI Sculpin:
48 species

BSAI Skate:
Alaska (separate)
At least 15 species

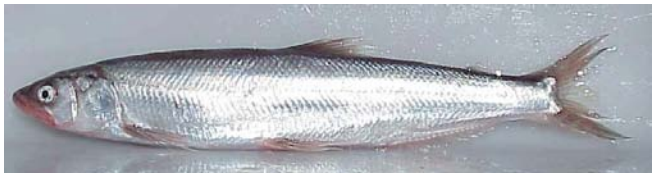
Other BSAI flatfish:
15 species

Other BSAI rockfish:

- Stock complexes are defined in NS1 as "*a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar.*"
- *An indicator stock is a stock with measurable status determination criteria that can be used to help manage and evaluate more poorly known stocks that are in a stock complex. If an indicator stock is used to evaluate the status of a complex, it should be representative of the typical status of each stock within the complex, due to similarity in vulnerability.*

Collection of forage fish

Identifying Ecosystem Component stocks

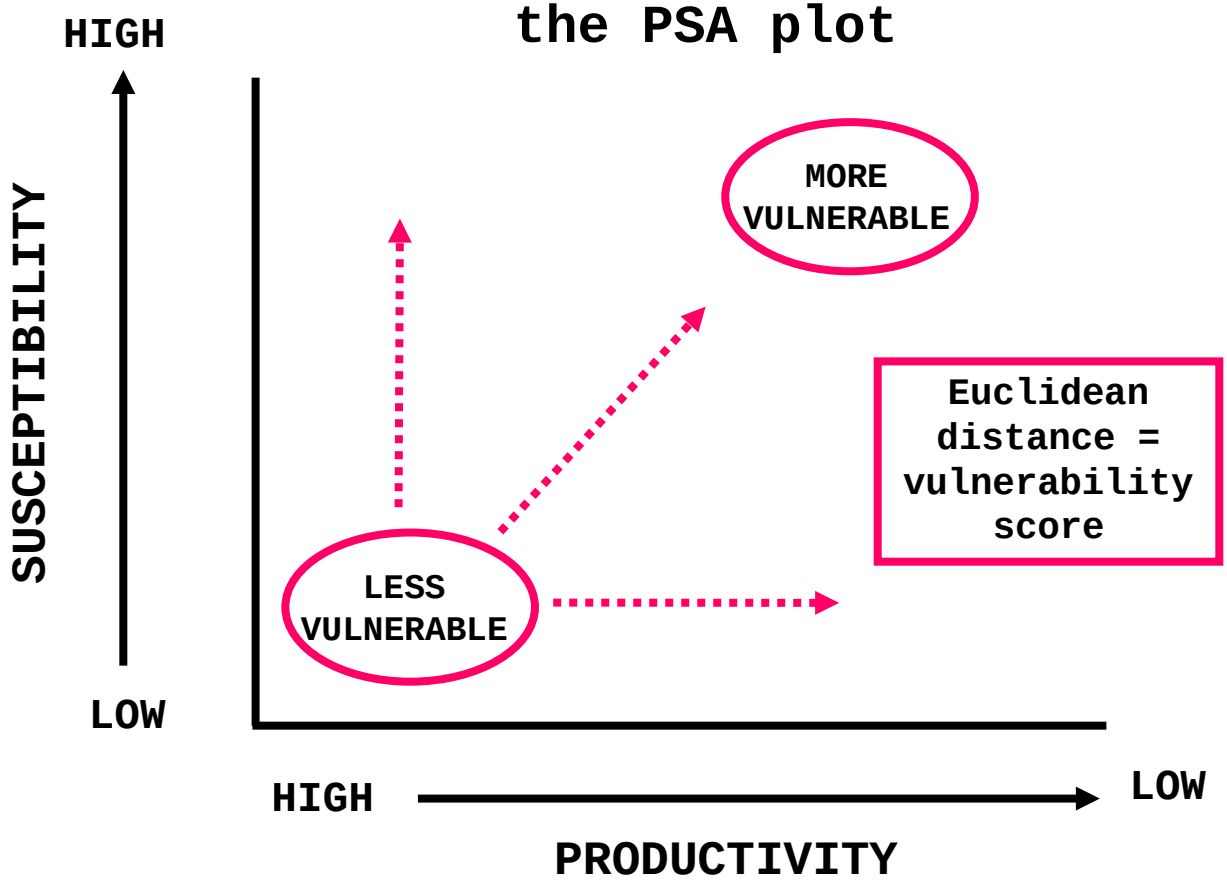


- Not generally retained for sale or personal use
- Not be determined to be subject to overfishing, approaching overfished, or overfished
- Not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures

Catch deterrents

- No directed fishery
- Groundfish Retention Standards
  - Full retention provisions on catcher vessels targeting cod and pollock
  - Forage Fish - Maximum Retention Allowance 2% of landed catch
- Bycatch avoidance research

PSA and vulnerability analysis: the PSA plot



data quality score is <u>separate</u> from the PSA score

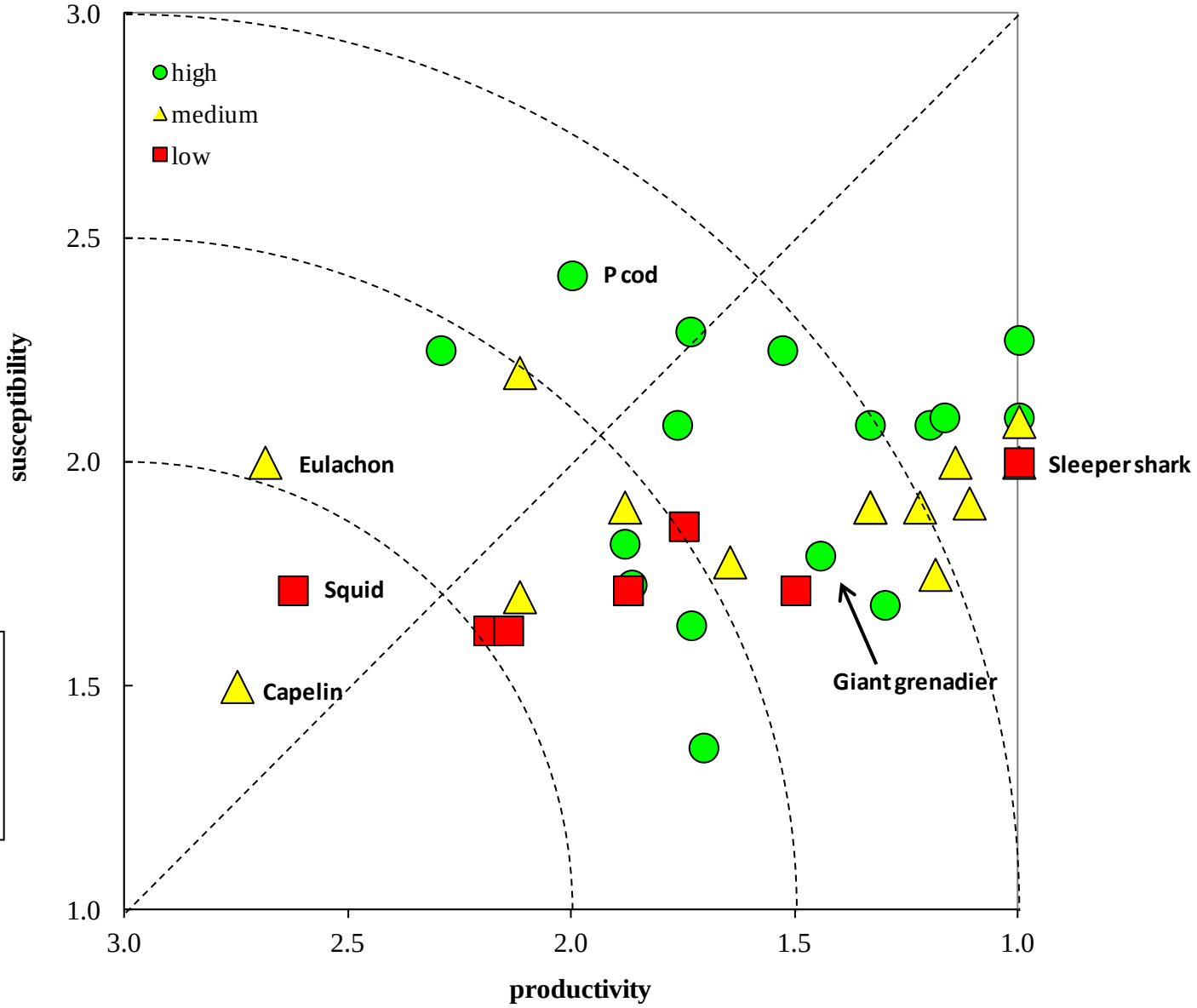
Ormseth and Spencer 2011, Fisheries Research 112(3):127-133

P & S attributes

productivity attributes	susceptibility attributes
r	management strategy
maximum age	areal overlap
maximum size	geographic concentration
growth rate (*k*)	vertical overlap
natural mortality	fishing rate relative to M
measured fecundity	biomass of spawners (SSB) or other proxies
breeding strategy	seasonal migrations
recruitment pattern	schooling/aggregation and other behaviors
age at maturity	gear selectivity
mean trophic level	survival after capture and release
	desirability/value of the fishery
	fishery impact to habitat

Ormseth and Spencer 2011, Fisheries Research 112(3):127-133

GOA



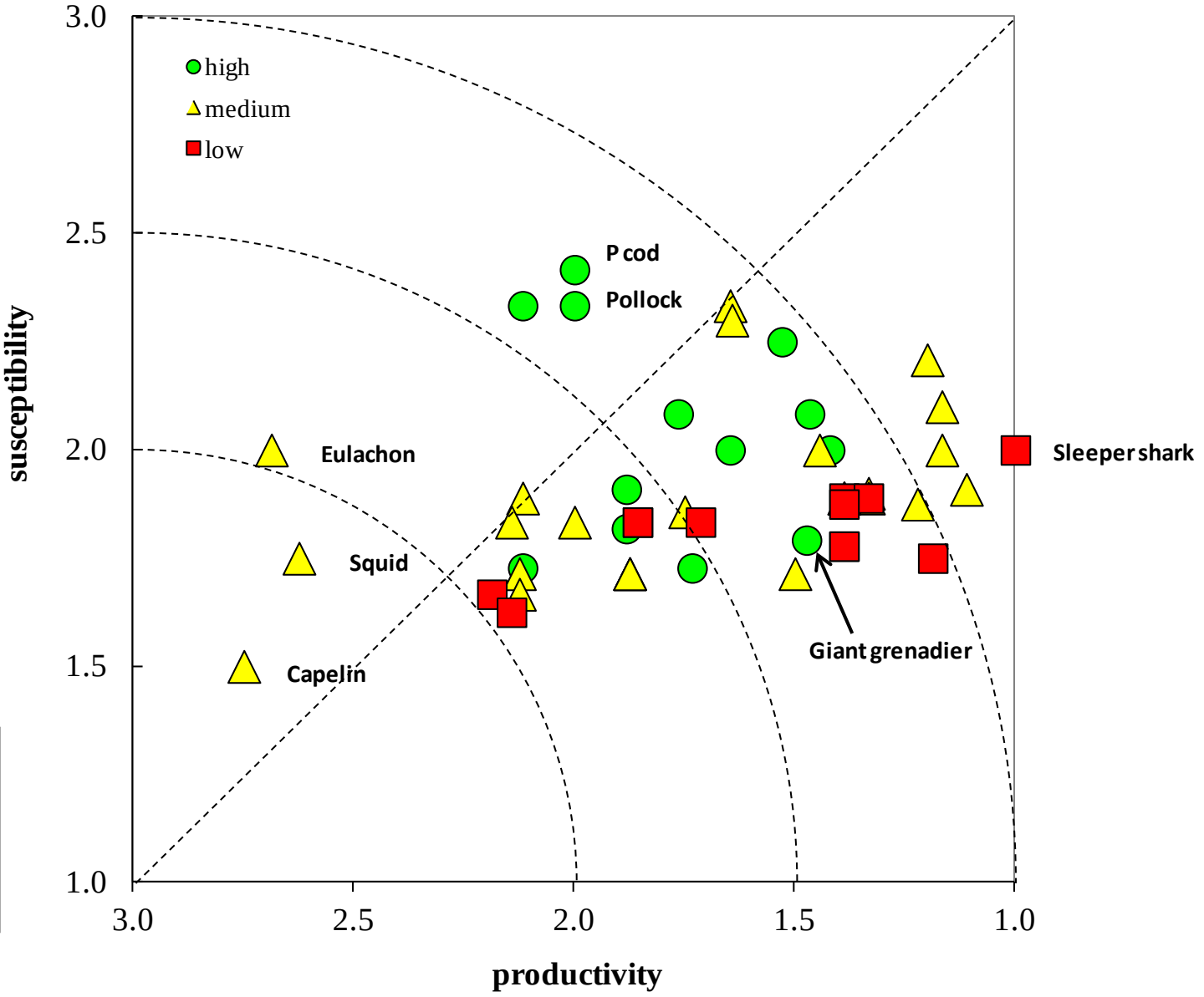
data quality legend

- high
- medium
- low

NOAA FISHERIES

Ormseth and Spencer 2011, Fisheries Research 112(3):127-133

BSAI



data quality legend

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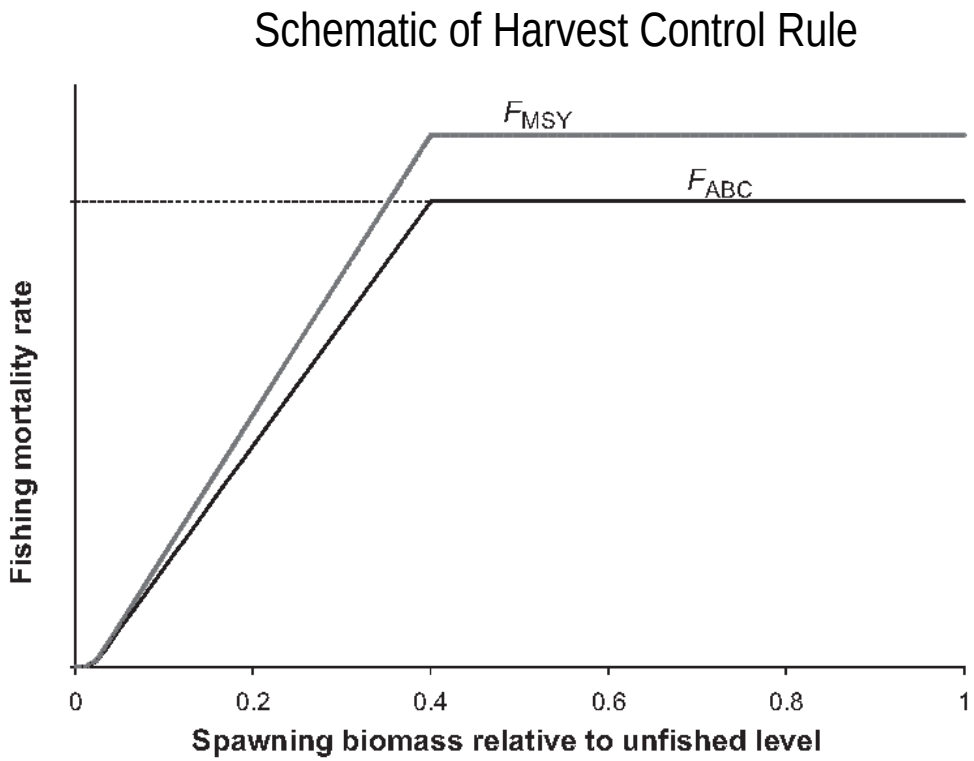
Groundfish Fishing Strategy

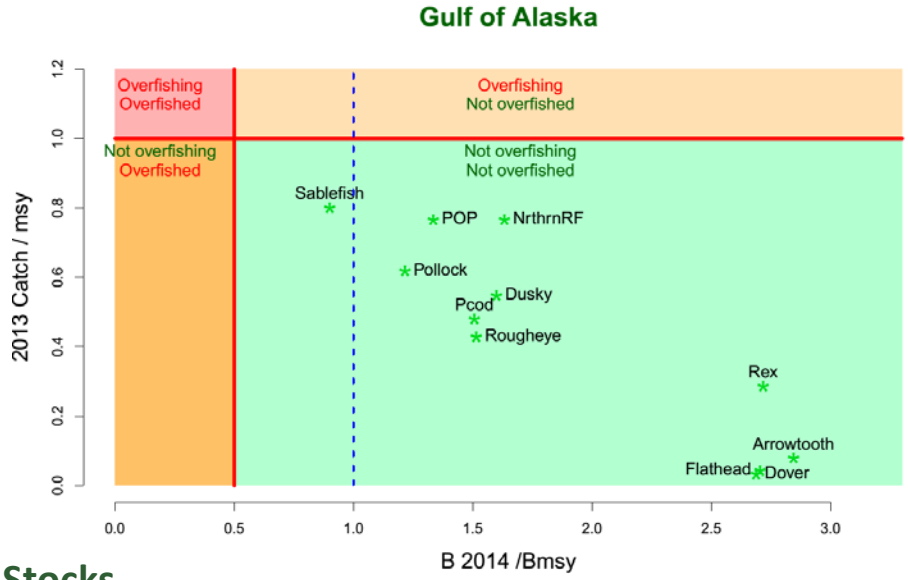


- Individual TAC's should not be exceeded
- Basis is to use "lowest common denominator" species
- Fishery "openings" allowed based on anticipated bycatch rates
- Fishery "closures" occur based on real-time observer catch estimates and fish-ticket data
- 2 million ton overall cap for groundfish in the BSAI
- Protected species considerations

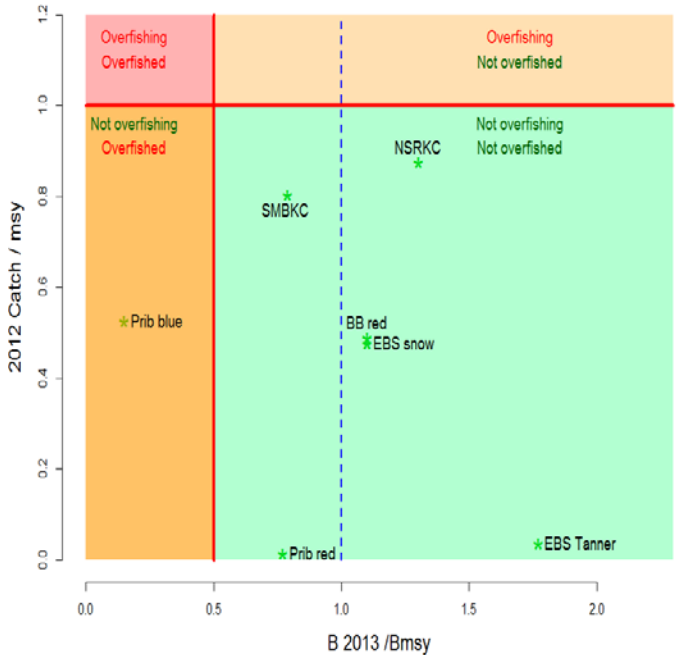
Catch ≤ TAC ≤ ABC/ACL < OFL

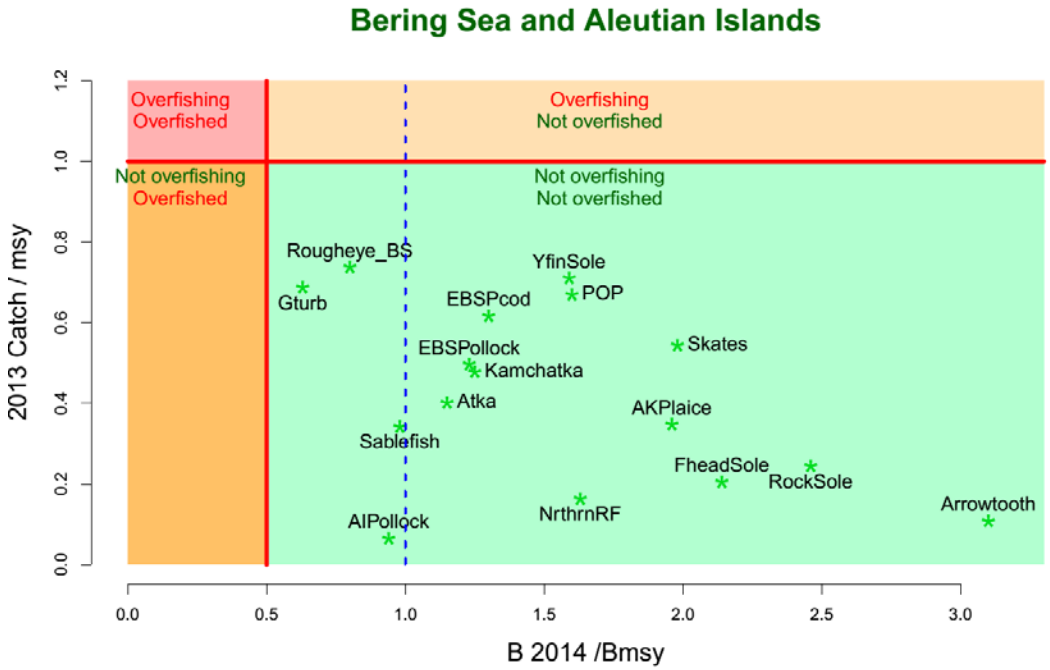
Total Allowable Catch | Acceptable Biological Catch | Overfishing Level

How are we doing?

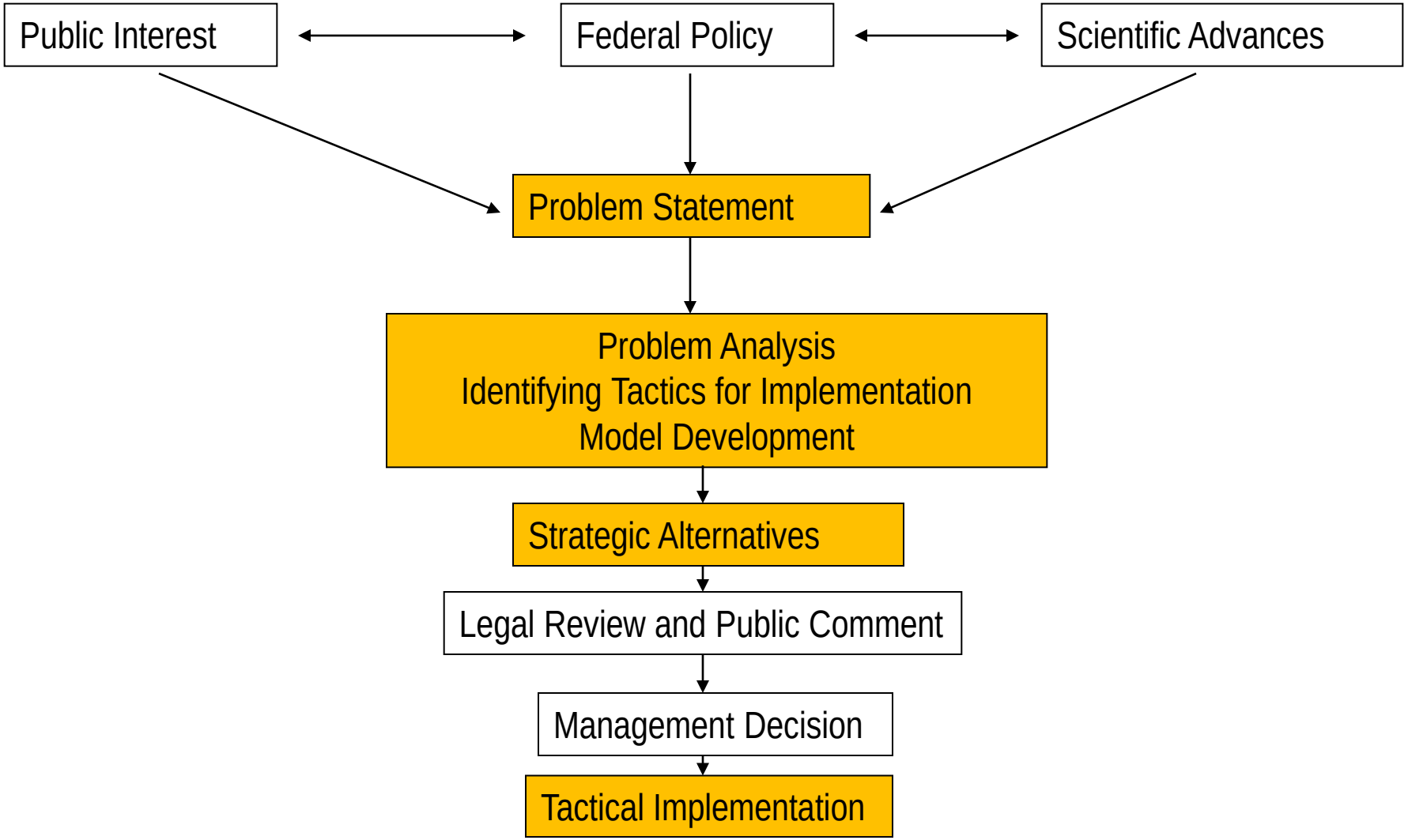


- *Stock Assessment Fishery Evaluations – annual or biennial*
- *Catch reporting: non-targets, prohibited species, seabirds, other non-specified, forage fish*
- *Essential Fish Habitat – 5 year assessment and review*





Public Decision Making Process: Based on Best Available Science



Hollowed, et al. 2011. *Fisheries and Fisheries* 12: 189-208.

Evaluate Outcomes of Resource Management Options in a Changing Climate

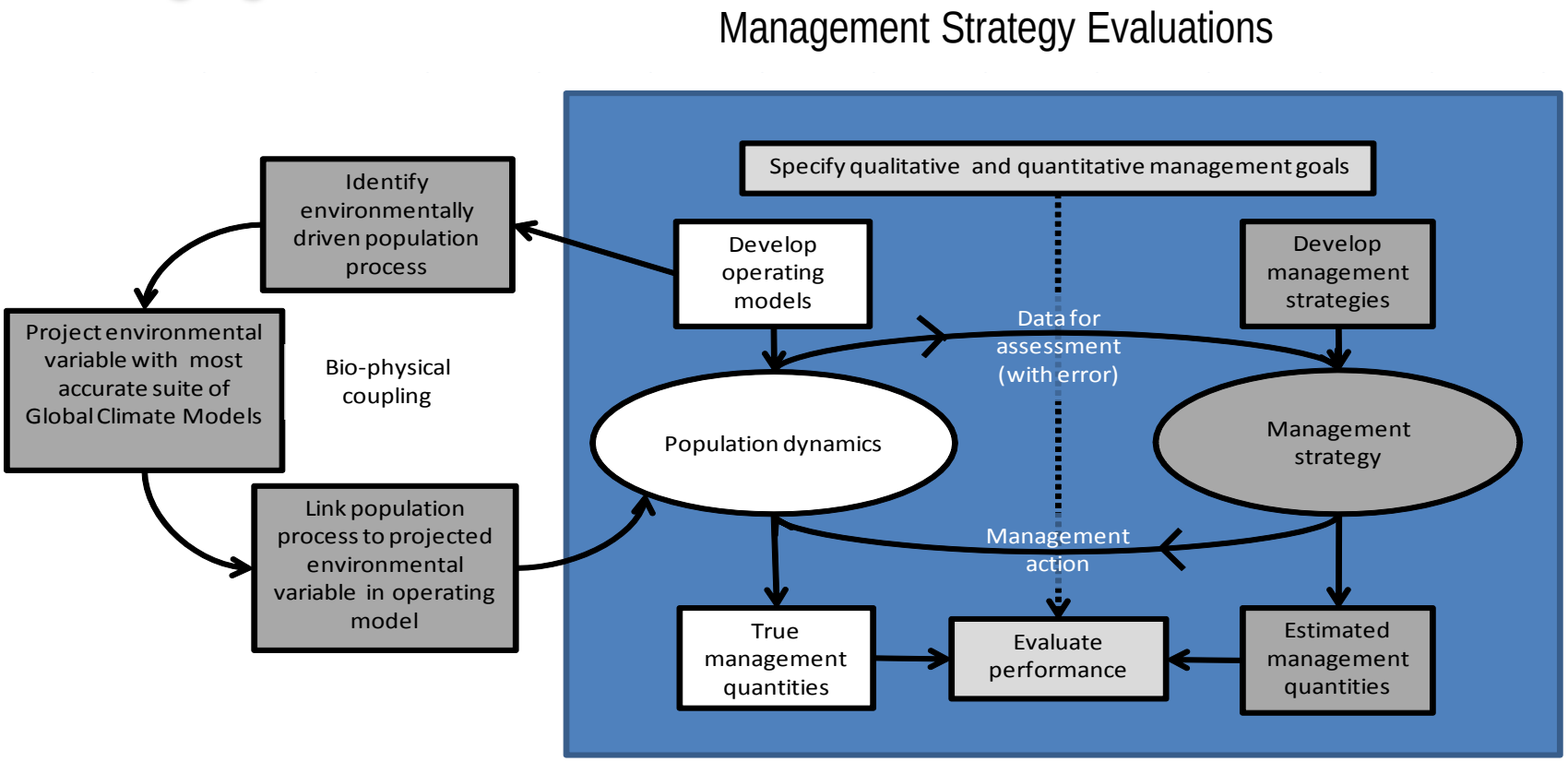
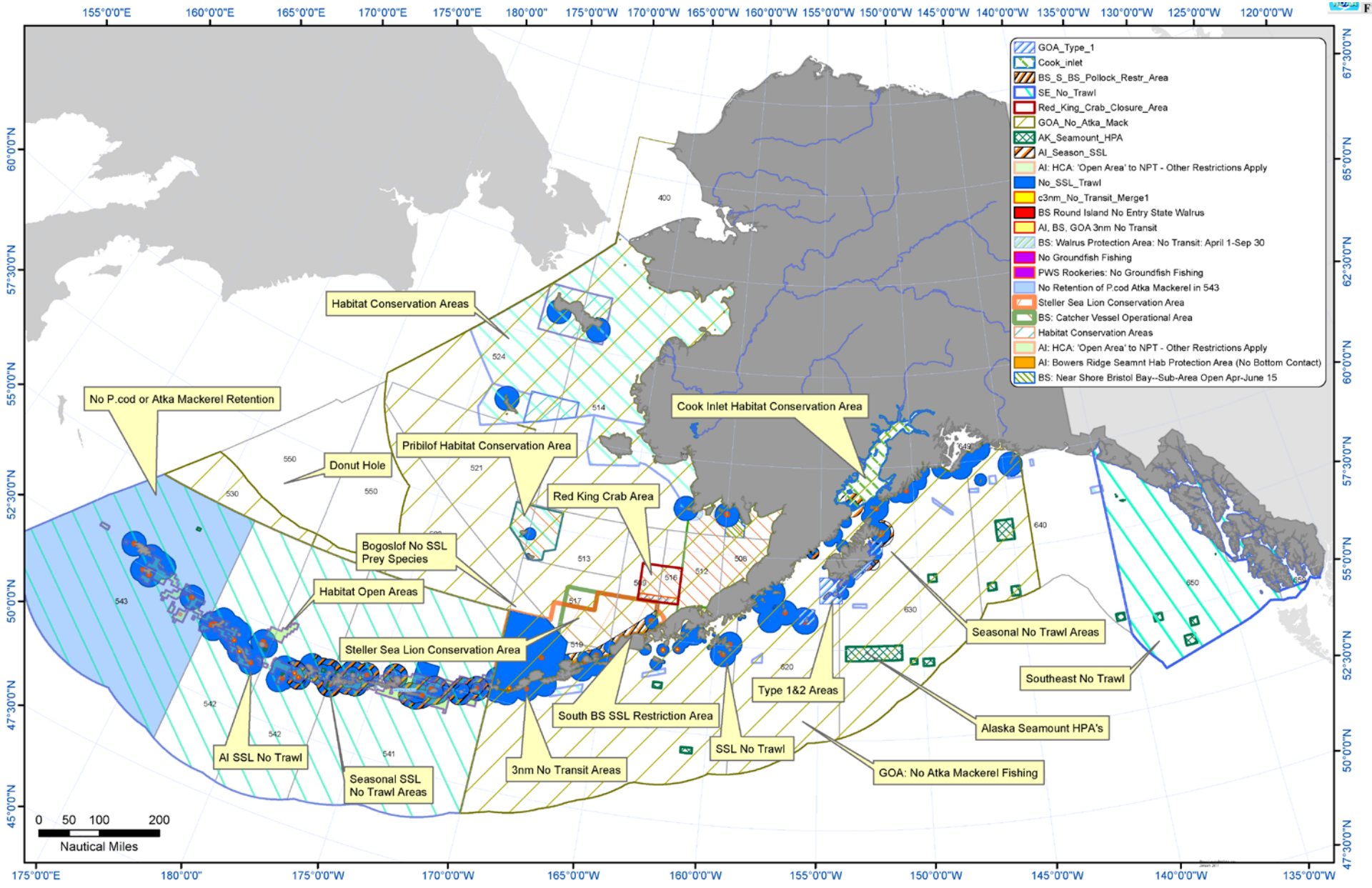


Figure 1. The MSE approach and how climate-induced factors can be used to drive the population dynamics of the operating model. The standard MSE framework is summarized in the box, and the links to environmental variables are indicated in the flowchart on the left side of the plot for the case in which the mechanistic approach is used. Note that the management strategy might make use of environmental data.

Punt et al. In Press, ICES J. Mar. Sci.

Spatial Management



Strengths, challenges, and solutions

- Strengths
  - Open engagement between NPFMC, Region and AFSC to assure management is consistent with National and Regional goals and objectives to move towards EAM.
  - Transparent decision making based on best available science builds confidence in management rationale.
  - Prioritization of frequency and level of assessment based on uncertainty, vulnerability, ecosystem importance and value of resources – consistent with proposed National protocols.
  - Benchmark assessments emerge from scientific reviews, scientific advances that encourage innovation.
- Challenges
  - Annual assessments for priority species to ensure decisions based on best available science.
  - Functional relationships between environmental drivers and key assessment parameters needed to facilitate MSEs.
  - Complex suite of interacting regulations requires careful examination of proposed actions.
- Solutions
  - In-season management dependent on maintenance of in-season catch monitoring.
  - Efficient fishery dependent and fishery independent data collection and processing enterprise.
  - Inter-sessional meetings (groundfish) and workshops (crab) provide opportunities for review of proposed changes to assessments.
  - Exploration of index based time trends in M to estimate time trends in reference points.
  - Development of Fishery Technical Interaction Model to assess “layering effect” of management system.