AGENDA D-1(c)
MARCH/APRIL 2012

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
(All D-1 Items)
6 HOURS

DATE: March 22, 2012

SUBJECT: Miscellaneous Issues - Programmatic Groundfish SEIS

ACTION REQUIRED

(c) Programmatic Groundfish SEIS: Public stakeholder session and SSC evaluation (only)

BACKGROUND

The Council is evaluating the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS), completed in 2004. The 2004 Groundfish PSEIS was a comprehensive review of the BSAI and GOA groundfish fisheries which evaluated the cumulative changes in the management of the groundfish fisheries since the implementation of the Fishery Management Plans (FMPs) around 1980, and considered a broad array of policy-level, programmatic alternatives. On the basis of the analysis, the Council adopted a management approach statement, and 9 policy goal statements, with 45 accompanying objectives (Item D-1(c)(1)).

For the Council and the Advisory Panel, a discussion of the Programmatic Groundfish SEIS is **not** on the agenda for this meeting. Instead, a comprehensive discussion of the PSEIS is planned for the June Council meeting, which will take into account stakeholder and SSC input from the March/April meeting (see below), as well as other discussion items.

Public stakeholder listening session – Thursday, March 29, 5:30-8pm, in the AP room

The Council is considering whether the time is right to revise the 2004 Groundfish PSEIS. The decision will take into account many different factors, but one important element is whether the Council wants to change the objectives, policy statements, or overall management approach for the groundfish fisheries (see Item D-1(c)(1)). The Council has scheduled a listening session during the March/April Council meeting, on the evening of Thursday, March 29 (see Item D-1(c)(2) for agenda). The Council's objective is to solicit comment from stakeholders. Written comments may also be submitted to the Council office until May 1st. Staff will compile any comments offered by members of the public into a written report, which will be presented to the Council at the June Council meeting, when a comprehensive Council discussion of the PSEIS is scheduled.

The Council has posed the following questions for stakeholders:

- Are the Council's current groundfish management approach, policy goal statements, and objectives still relevant?
- How is the Council doing relative to achieving its groundfish management objectives?
- Are there new objectives that ought to become part of the groundfish management policy?

SSC evaluation of 2004 Groundfish PSEIS

In order to provide a different perspective on the question of whether the Council should consider revising the groundfish PSEIS, the Council also requested that the SSC provide scientific guidance on the continued relevance of the analysis in the 2004 Groundfish PSEIS.

In order to assist with the SSC's review, staff has prepared various briefing documents. Item D-1(c)(3) provides some context and background to the Council's request for SSC evaluation, and identifies major environmental analyses of the groundfish program that have been undertaken since the completion of the Groundfish PSEIS. Item D-1(c)(4) provides excerpts from recent Council reports evaluating groundfish and environmental conditions. Item D-1(c)(5) provides a brief primer on the 2004 Groundfish PSEIS document.

2.2 Management Approach for the BSAI [GOA] Groundfish Fisheries

The Council's policy is to apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, proactively rather than reactively, to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations. The productivity of the North Pacific ecosystem is acknowledged to be among the highest in the world. For the past 25 years, the Council management approach has incorporated forward looking conservation measures that address differing levels of uncertainty. This management approach has in recent years been labeled the precautionary approach. Recognizing that potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other, non-fishing activities, the Council intends to continue to take appropriate measures to insure the continued sustainability of the managed species. It will carry out this objective by considering reasonable, adaptive management measures, as described in the Magnuson-Stevens Act and in conformance with the National Standards, the Endangered Species Act (ESA), the National Environmental Policy Act, and other applicable law. This management approach takes into account the National Academy of Science's recommendations on Sustainable Fisheries Policy.

As part of its policy, the Council intends to consider and adopt, as appropriate, measures that accelerate the Council's precautionary, adaptive management approach through community-based or rights-based management, ecosystem-based management principles that protect managed species from overfishing, and where appropriate and practicable, increase habitat protection and bycatch constraints. All management measures will be based on the best scientific information available. Given this intent, the fishery management goal is to provide sound conservation of the living marine resources; provide socially and economically viable fisheries for the well-being of fishing communities; minimize human-caused threats to protected species; maintain a healthy marine resource habitat; and incorporate ecosystem-based considerations into management decisions.

This management approach recognizes the need to balance many competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the resource and the optimization of yield. This policy will use and improve upon the Council's existing open and transparent process of public involvement in decision-making.

2.2.1 Management Objectives

Adaptive management requires regular and periodic review. Objectives identified in this policy statement will be reviewed annually by the Council. The Council will also review, modify, eliminate, or consider new issues, as appropriate, to best carry out the goals and objectives of this management policy.

To meet the goals of this overall management approach, the Council and NMFS will use the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) (NMFS 2004) as a planning document. To help focus consideration of potential management measures, the Council and NMFS will use the following objectives as guideposts, to be re-evaluated, as amendments to the FMP are considered over the life of the PSEIS.

Prevent Overfishing:

1. Adopt conservative harvest levels for multi-species and single species fisheries and specify optimum yield.
2. Continue to use the 2 million mt optimum yield cap for the BSAI groundfish fisheries. [Continue to use the existing optimum yield cap for the GOA groundfish fisheries.]
3. Provide for adaptive management by continuing to specify optimum yield as a range.
4. Provide for periodic reviews of the adequacy of F_{40} and adopt improvements, as appropriate.
5. Continue to improve the management of species through species categories.

Promote Sustainable Fisheries and Communities:

6. Promote conservation while providing for optimum yield in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities.
7. Promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures.
8. Promote fair and equitable allocation of identified available resources in a manner such that no particular sector, group or entity acquires an excessive share of the privileges.
9. Promote increased safety at sea.

Preserve Food Web:

10. Develop indices of ecosystem health as targets for management.
11. Improve the procedure to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors.
12. Continue to protect the integrity of the food web through limits on harvest of forage species.
13. Incorporate ecosystem-based considerations into fishery management decisions, as appropriate.

Manage Incidental Catch and Reduce Bycatch and Waste:

14. Continue and improve current incidental catch and bycatch management program.
15. Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.
16. Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.
17. Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.
18. Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.

19. Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target, prohibited species catch, and non-commercial species.
20. Control the bycatch of prohibited species through prohibited species catch limits or other appropriate measures.
21. Reduce waste to biologically and socially acceptable levels.

Avoid Impacts to Seabirds and Marine Mammals:

22. Continue to cooperate with U.S. Fish and Wildlife Service (USFWS) to protect ESA-listed species, and if appropriate and practicable, other seabird species.
23. Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions.
24. Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
25. Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

Reduce and Avoid Impacts to Habitat:

26. Review and evaluate efficacy of existing habitat protection measures for managed species.
27. Identify and designate essential fish habitat and habitat areas of particular concern pursuant to Magnuson-Stevens Act rules, and mitigate fishery impacts as necessary and practicable to continue the sustainability of managed species.
28. Develop a Marine Protected Area policy in coordination with national and state policies.
29. Encourage development of a research program to identify regional baseline habitat information and mapping, subject to funding and staff availability.
30. Develop goals, objectives and criteria to evaluate the efficacy and suitable design of marine protected areas and no-take marine reserves as tools to maintain abundance, diversity, and productivity. Implement marine protected areas if and where appropriate.

Promote Equitable and Efficient Use of Fishery Resources:

31. Provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources.
32. Maintain the license limitation program, modified as necessary, and further decrease excess fishing capacity and overcapitalization by eliminating latent licences and extending programs such as community or rights-based management to some or all groundfish fisheries.
33. Provide for adaptive management by periodically evaluating the effectiveness of rationalization programs and the allocation of access rights based on performance.
34. Develop management measures that, when practicable, consider the efficient use of fishery resources taking into account the interest of harvesters, processors, and communities.

Increase Alaska Native Consultation:

35. Continue to incorporate local and traditional knowledge in fishery management.
36. Consider ways to enhance collection of local and traditional knowledge from communities, and incorporate such knowledge in fishery management where appropriate.
37. Increase Alaska Native participation and consultation in fishery management.

Improve Data Quality, Monitoring and Enforcement:

38. Increase the utility of groundfish fishery observer data for the conservation and management of living marine resources.
39. Develop funding mechanisms that achieve equitable costs to the industry for implementation of the North Pacific Groundfish Observer Program.
40. Improve community and regional economic impact costs and benefits through increased data reporting requirements.
41. Increase the quality of monitoring and enforcement data through improved technology.
42. Encourage a coordinated, long-term ecosystem monitoring program to collect baseline information and compile existing information from a variety of ongoing research initiatives, subject to funding and staff availability.
43. Cooperate with research institutions such as the North Pacific Research Board in identifying research needs to address pressing fishery issues.
44. Promote enhanced enforceability.
45. Continue to cooperate and coordinate management and enforcement programs with the Alaska Board of Fish, Alaska Department of Fish and Game, and Alaska Fish and Wildlife Protection, the U.S. Coast Guard, NMFS Enforcement, International Pacific Halibut Commission, Federal agencies, and other organizations to meet conservation requirements; promote economically healthy and sustainable fisheries and fishing communities; and maximize efficiencies in management and enforcement programs through continued consultation, coordination, and cooperation.

Stakeholder listening session on the Groundfish Programmatic SEIS

Thursday, March 29, 2012, 5:30-8pm
Dillingham/Katmai Room (Advisory Panel room), Hilton Hotel, Anchorage, AK

The Council developed its current groundfish management policy in 2004, following a comprehensive review of the BSAI and GOA groundfish fisheries. The Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) evaluated the cumulative changes in the management of the groundfish fisheries since the implementation of the Fishery Management Plans (FMPs) around 1980, and considered a broad array of policy-level, programmatic alternatives. On the basis of the analysis, the Council adopted a management approach statement, and 9 policy goal statements, with 45 accompanying objectives.

The Council is considering whether the time is right to revise the 2004 Groundfish PSEIS. The decision will take into account many different factors, but one important element is whether the Council wants to change the objectives, policy statements, or overall management approach for the groundfish fisheries. The Council has scheduled a listening session at the April Council meeting to solicit comment from stakeholders, and will also accept written comments submitted to the Council office until May 1st. A comprehensive discussion of the PSEIS is planned for the June Council meeting, which will take into account stakeholder input, scientific input from the SSC, and consideration of any benefits and efficiencies that may be gained from a revised PSEIS.

COUNCIL QUESTIONS FOR STAKEHOLDERS

- Are the Council's current groundfish management approach, policy goal statements, and objectives still relevant?
- How is the Council doing relative to achieving its groundfish management objectives?
- Are there new objectives that ought to become part of the groundfish management policy?

DRAFT AGENDA

5:30-6 Introductions
Council's objective for this listening session
Short primer on the Council groundfish management policy and the 2004 Groundfish PSEIS

6-6:15 Questions or discussion

6:15-8 Open mic, opportunity for people to provide input
- there will be a sign up sheet
- depending on the total number of people wanting to comment, we may have a 5 minute time limit
- if everyone has had the opportunity to speak, we will adjourn early

NEXT STEPS

Written report for Council

Staff will compile any comments offered by members of the public at the listening session, or submitted in writing before 5pm, May 1st, into a report for the Council at the June meeting. Written comments will be accepted by mail or fax (see below), or by email to npfmc.comment@noaa.gov. If submitting comment by email, please include PSEIS in the subject line.

June Council discussion

In June, the Council will further consider the Groundfish PSEIS and whether it is in need of revision. The Council has asked for input from several sources to inform their discussions:

- stakeholder input on whether the existing groundfish management objectives continue to be relevant, or are in need of revision
- SSC scientific guidance on whether we understand the environmental impacts of the groundfish management program today, and the continued relevance of the analysis in the 2004 Groundfish PSEIS
- examples of how an updated PSEIS could address efficiencies in our analytical or regulatory process

At that time, the Council will consider what the appropriate process might be for revising the programmatic groundfish SEIS, and when might be the right time for initiating that process.

FURTHER INFORMATION

Various documents are available on the Council website that provide additional information on this topic (www.alaskafisheries.noaa.gov/npfmc/public-meetings/committees-related-meetings.html). These include:

- the Council's groundfish management approach, policy goal statements, and specific objectives
- February 2012 discussion paper that was presented to the Council
- 2004 PSEIS primer (available at April Council meeting)
- April 2012 SSC briefing document (available at April Council meeting)
- 2004 PSEIS (http://alaskafisheries.noaa.gov/sustainablefisheries/seis/default.htm)

SSC Evaluation of PSEIS

Context/Background

The Council developed its current groundfish management policy in 2004, following a comprehensive review of the BSAI and GOA groundfish fisheries. The Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) evaluated the cumulative changes in the management of the groundfish fisheries since the implementation of the Fishery Management Plans (FMPs) around 1980, and considered a broad array of policy-level, programmatic alternatives. On the basis of the analysis, the Council adopted a management approach statement, and 9 policy goal statements, with 45 accompanying objectives.

The Council is considering whether the time is right to revise the 2004 Groundfish PSEIS. The decision will take into account many different factors, including (but not limited to):

1. consideration of how fisheries management has changed since the objectives and analysis were originally prepared,
2. how environmental conditions affecting the fisheries have changed,
3. the status of the fish stocks and other marine life,
4. whether new information has become available which may indicate the necessity for revised analyses, and
5. whether the Council wants to change the objectives, policy statements, or overall management approach for the groundfish fisheries.

The purpose of a programmatic review is to allow decision makers to understand environmental impacts of the program as a whole, in this case the BSAI and GOA groundfish fishery management program. Typically, the Council and NMFS are presented with specific management problems, for which they develop alternatives and adopt solutions. This can result in the implementation of a series of individual management changes, which are each fully analyzed, but which, cumulatively, may change the management program in ways that are not captured in the individual analyses.

Question for the SSC: do we understand the environmental impacts of our groundfish management program today?

To answer this question, it may be helpful to consider separately the influence of any change in the environment, and the effect of the fisheries on the environment.

1. Has the environmental state of the Bering Sea, Aleutian Islands, or Gulf of Alaska changed significantly since the baseline that was analyzed in the 2004 PSEIS? For example, have their been either abrupt shifts (e.g., climate regime change), or long term trends (beyond the expected range of interannual variability) that have resulted in significant change to the environment?

2. Have the cumulative impacts of the groundfish fishery management program on the BSAI or GOA environment changed significantly since the baseline analyzed in the PSEIS, in ways beyond what has been described in subsequent analyses? For example, have there been increases in habitat disturbance from a change in the intensity or spatial distribution of fishing effort; or increases in bycatch or prohibited species catch; or increases in marine mammal and seabird interference?

Major environmental analyses of the groundfish management program

Note, the year listed below indicates the date of Council final action on the analysis. The environmental data that was used in the environmental analysis will generally be from the preceding year.

Subject of review document	**Project / analysis** (note, analysis was an EA unless otherwise noted)
BSAI and GOA groundfish management programs as a whole	2004 Alaska Groundfish Fisheries PSEIS
Fishing effects on benthic habitat	2005 Essential Fish Habitat EIS 2010 EFH 5-year Review *(no associated NEPA analysis)*
Groundfish harvest levels and management categories	2007 Alaska Harvest Specifications EIS 2008-2012 annual Supplemental Information Reports 2010 Annual Catch Limit amendment that assessed groundfish species and placed them in either target or ecosystem component categories
Proposed new management measures that change fishing patterns	*Catch share programs* Central GOA Rockfish Pilot program, and revised program (2005, 2010) BSAI Amendment 80 (2007) *Area closures* AI and GOA EFH and HAPC closures (analyzed in 2005 EFH EIS) BS habitat conservation areas (2007) Crab protection area near Kodiak closed to trawling (2010) *Bycatch restrictions* Revised Chinook salmon PSC limits for BS pollock fishery (2009) New Chinook salmon PSC limits for GOA pollock fishery (2011) *Gear modifications* Sweep elevation requirement for BS flatfish fishery Salmon excluder for BS pollock fishery (voluntary, analyzed with 2009 PSC limits)

Excerpts from Council documents that evaluate groundfish and environmental conditions

Groundfish SAFE reports

The Council's annual Groundfish Stock Assessment and Fishery Evaluation (SAFE) report provides a detailed analysis of the status of groundfish stocks each year. No groundfish species is currently, nor has been, overfished or subject to overfishing, since the analysis that was conducted in the Alaska Groundfish Fisheries Programmatic SEIS. Figure 1 and Figure 2 are summary plots from the 2011 Groundifsh SAFE reports, illustrating the status of age-structured Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) species, using the most recent year's catch, and the projected spawning biomass for the year to come.

Ecosystem Assessment in the annual Groundfish SAFE report

The Alaska Fisheries Science Center prepares an appendix to the annual SAFE reports which provides a comprehensive overview of environmental conditions in the BSAI and GOA on an annual basis. The appendix includes an ecosystem assessment for the Bering Sea, Aleutian Islands and Gulf of Alaska, as well as various data series that are ecosystem status and management indicators.

AFSC staff have developed a format for reporting various indices over time, and comparing the most recent five years against the historical record for each indicator. The first section of the NPFMC Ecosystem Considerations appendix follows this document, which includes abbreviated report cards for the Eastern Bering Sea and the Aleutian Islands (pp 1-6; a report card for the GOA is being prepared in 2012), as well as an executive summary of recent trends (pp 7-21). Figure 6, on page 9 of the report, shows climate indices for the North Pacific, including the Pacific Decadal and Arctic Oscillations, and an eastern Bering Sea ice retreat and cold pool volume indices. All of these are within one standard deviation of the historical mean for the data set. Figure 7-8 (pp 12-13), Figure 9-10 (pp 15-16), and Figure 11 (p 17) show ecosystem indices for the groundfish fishery regions. For almost all of the indices shown, the five year mean is within one standard deviation of the historical mean for the data set. Exceptions in the Bering Sea, are the residual northward displacement index, which shows an increase above the historical mean, and the residual depth displacement index, which shows a decrease. Also, the coastal water zooplankton biomass mean increased well above the historic trend in 2008, and the St Paul northern fur seal pup count has continued to decrease in recent years. Conversely, Bogoslof has seen an increase (above the historical mean) of northern fur seal pups. Figures 12, 13, and 14 (pp 19-21) illustrate fishery indices for the Bering Sea, Gulf of Alaska, and Aleutian Islands. Once again, the five year mean is generally within one standard deviation of the historic mean. There has been a reduction in structural epifauna nontarget catch in the Bering Sea, a reduction in discards in the Aleutian Islands, and a reduction in the number of observed pelagic trawls in the GOA, compared to the historic mean.

2010 EFH 5-year review

Additionally, the 2010 EFH 5-year review (NPFMC and NMFS 2010) evaluated changes in fishing impacts on habitat from the period analyzed in the EFH EIS (and incorporated by reference in the PSEIS) and the subsequent five-year period. Total trawl fishing effort decreased in all regions for pelagic and non-pelagic trawling, between the period analyzed in the EFH EIS (1998-2002) and the subsequent period (2003-2007). The figures from the 5-year report are also attached following this page. The figures plot both the average fishing intensity, by five year period, as well as the difference in intensity between periods.

The principal shifts in fishing intensity are summarized in the following paragraphs.

Bering Sea trawl: There has been no radical shift in the distribution of nonpelagic trawl fishing intensity in the Bering Sea from the period 1998-2002 to the period 2003-2007 (Color figure 1). The large area of the central Bering Sea that was subject to particularly high bottom trawl intensity in 1998 - 2002 received moderately lighter intensity from 2003 - 2007. Four principal areas were subject to increased bottom trawl intensity; 1) along the northwest border of the Pribilof Islands Habitat Conservation Zone, 2) off of Kuskoquim Bay, 3) along the southern border of the King Crab Protection Zone and 4). Most of the increases were moderate, though 2 of 8 blocks in the 4th area along the western side of the Nushagak Peninsula (inner Bristol Bay) had strong increases. The area of high intensity effort north of Akutan Island, Unimak Pass and Unimak Island remained a high intensity area. Many of the shifts within that area registered as moderate or strong changes because of the high absolute levels of fishing intensity. The central Bering Sea showed a pattern of higher intensity in pelagic trawling around a central area of lower intensity near the border of management areas 509 and 513 (Color figure 6). Decreases in fishing intensity occurred on the west side of the Nushagak Peninsula, off of Kuskoquim Bay, northeast of St George Island, and Pervenets Canyon to the far northwest. Intensity dropped in the area north of Akutan Island, Unimak Pass and Unimak Island, while there were increases on the southwest and eastern sides of that area.

Aleutian Islands trawl: There was a trend of decreases in bottom trawl fishing throughout the region, from the 1998-2002 period to the 2003-2007 period, with moderate decreases noted in the Adreanof Islands and Petrel Bank, as well as throughout the western portions of Rat Islands (Color figure 11). Stronger increases in intensity occurred around Buldir Island and west of Tanaga, with moderate increases found in the Near Islands. Pelagic trawling in the Aleutian Islands decreased from 416 blocks fished in the first period, mainly on the 541/518 (Bering Sea) border, to only 16 blocks fished in the most recent period. Fishing intensity for pelagic trawl fisheries in the Aleutian Islands is currently very minor. Consequently, maps are not included for Aleutian Islands pelagic trawl.

Gulf of Alaska trawl: Moderate decreases were seen in intensity of nonpelagic trawl fishing throughout the region, from the earlier (1998-2002) time period to the later (2003-2007), with overall blocks fished decreasing by approximately 40% (Color figure 16). Largest drops in intensity occurred near Chiniak and south of Chirikof Island with moderate increases in intensity to the northwest of Chirikiof Island and south of Ugak Island. Very minor changes in intensity were seen in pelagic trawling in the GOA, with moderate increases in Shelikof Strait, but decreases in intensity in most Kodiak nearshore waters, as well as in isolated areas of 610 and 620 (Color figure 21).

Figure 1 **Summary status of age-structured Gulf of Alaska species relative to 2011 catch levels (vertical axis) and projected 2012 spawning biomass relative to B_{MSY} levels (horizontal axis).** Note that the 2011 MSY level is defined as the 2011 catch at F_{OFL}.

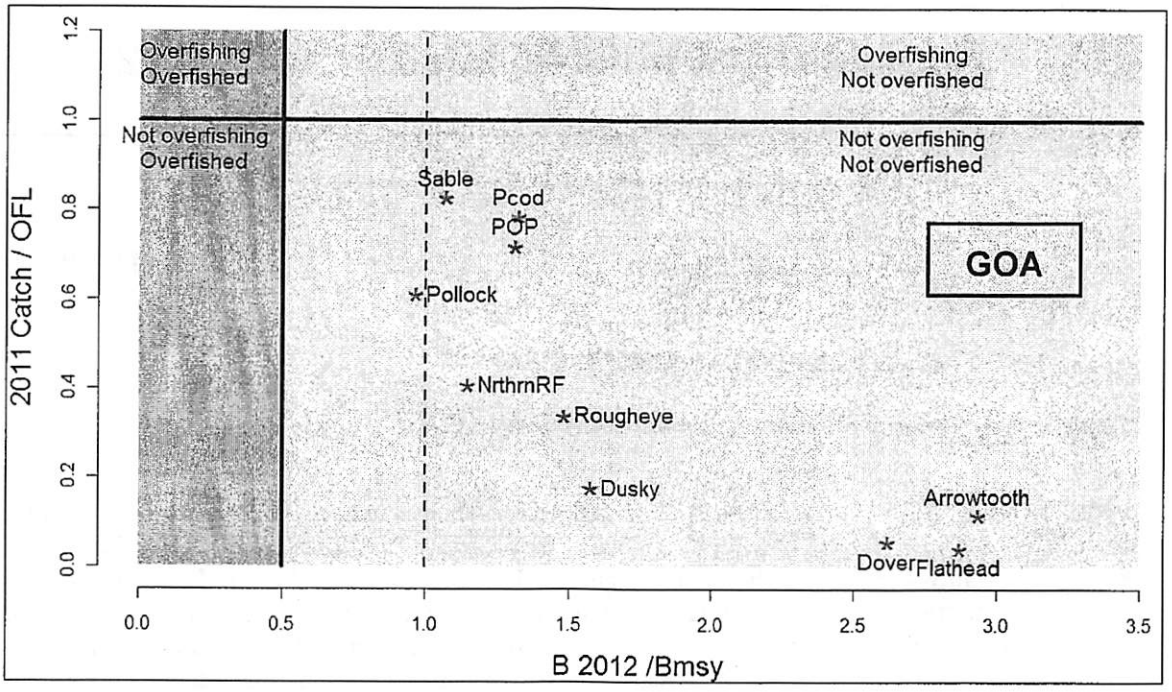
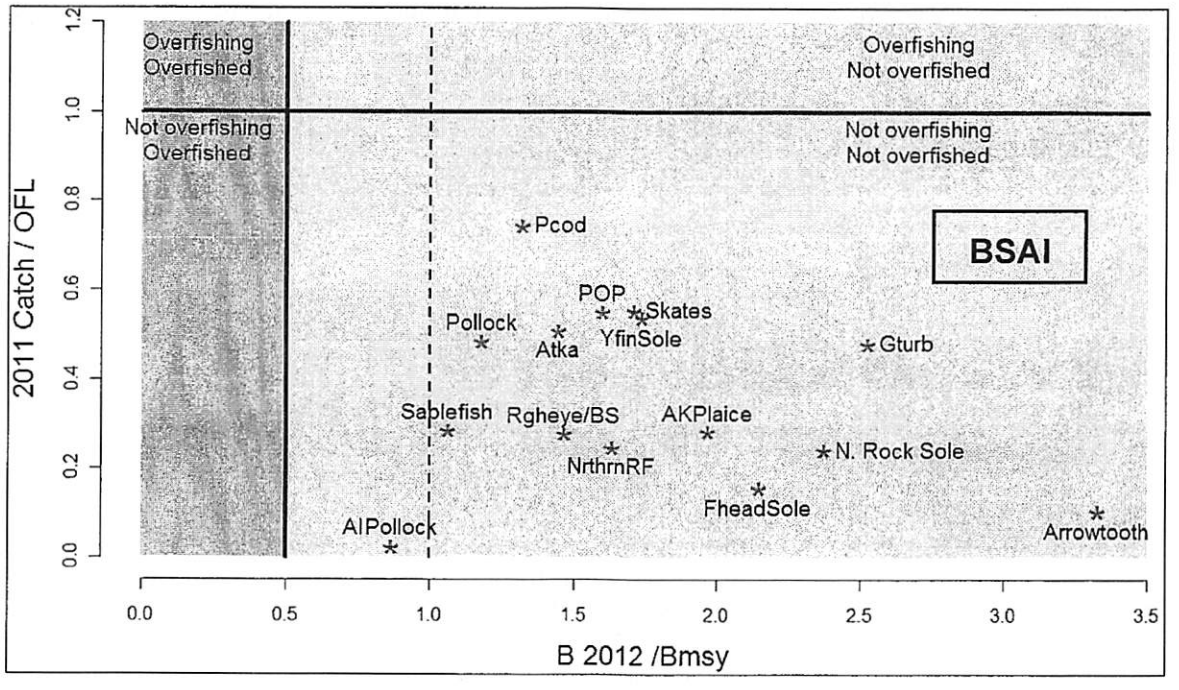


Figure 2 **Summary status of age-structured Bering Sea and Aleutian Islands species, as measured by 2011 catch level relative to OFL (vertical axis) and projected 2012 spawning biomass relative to B_{MSY} levels (horizontal axis).**



ITEM D-1(c)(4)
MARCH/APRIL 2012

APPENDIX C

Ecosystem Considerations for 2012

Edited by:
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Reviewed by:
The Plan Teams for the Groundfish Fisheries of the
Bering Sea, Aleutian Islands, and Gulf of Alaska

November 18, 2011
North Pacific Fishery Management Council
605 W. 4th Avenue, Suite 306
Anchorage, AK 99301

Eastern Bering Sea Report Card

- The North Pacific atmosphere-ocean system reflected a typical response to La Niña. The atmosphere during **summer 2011 was unusually cold.** If these conditions persist into fall, they would promote the relatively early development of sea ice during the **winter of 2011-12, which is predicted to be a neutral to a weak-moderate La Niña.**
- **Sea ice maximum extent was neutral in 2011.**
- The ***Calanus* spp. and euphausiid time series** show significant increases in concentration of large crustacean zooplankton since the recent 2001-2005 warm period. Both time series **showed a small decline in 2010 relative to 2009,** but concentrations remained well above the 2001-2005 levels. This suggests that prey availability for planktivorous fish, seabirds, and mammals continued to be high during the summer of 2010.
- **Thick-billed murre reproductive success on St. George Island was near record low in 2011,** continuing a declining trend since 2009. Most of the loss occured during the egg stage resulting in the lowest hatching success recorded, 0.26 chicks hatched per egg laid.
- **Northern fur seal pup production for St. Paul Island continues a downward trend.** The 2010 pup production estimates for St. Paul and St. George Islands were 8.8% and 1.0% less than the 2008 estimates. In 1916, the northern fur seal population was increasing at approximately 8% per year, while pup production on both islands is currently estimated to be decreasing at 5% per year
- **The area of seafloor habitat disturbed by bottom trawling decreased in 2010** from the previous year. The estimate of 63,249 km^2 was approximately 11% lower than the estimate from 2009.

Foraging guild biomasses were not updated in 2011, but the following summarizes their state through 2010:

- Current (2005-2010) mean biomass, catch, and exploitation rates of motile benthic epifauna and benthic foraging fish have been within ±one standard deviation of 1977-2010 levels. **No trend is apparent in recent years for these foraging guilds.**
- There is a **concern with two of the commercial crab stocks** in the mobile benthic epifauna guild which are overfished. However, this guild appears stable because the guild is dominated by non-target fish and invertebrate biomass.
- There are **no apparent trends in benthic forager catch and exploitation rate.** The benthic foragers guild appears stable.
- Pelagic foragers have biomass below mean and exploitation rate above mean, but increasing trends in biomass and decreasing trends in catch and exploitation rates. The **pelagic foragers guild biomass has been at a historic low,** which has been a recent management concern. However, there are signs of recovery within the guild, as well as increased forage and positive physical conditions to support recovery.
- The **recent increasing trend in the apex predator guild biomass** is driven largely by a decrease in Pacific cod biomass being offset by an increase in arrowtooth flounder biomass. The fish apex predators guild appears stable.

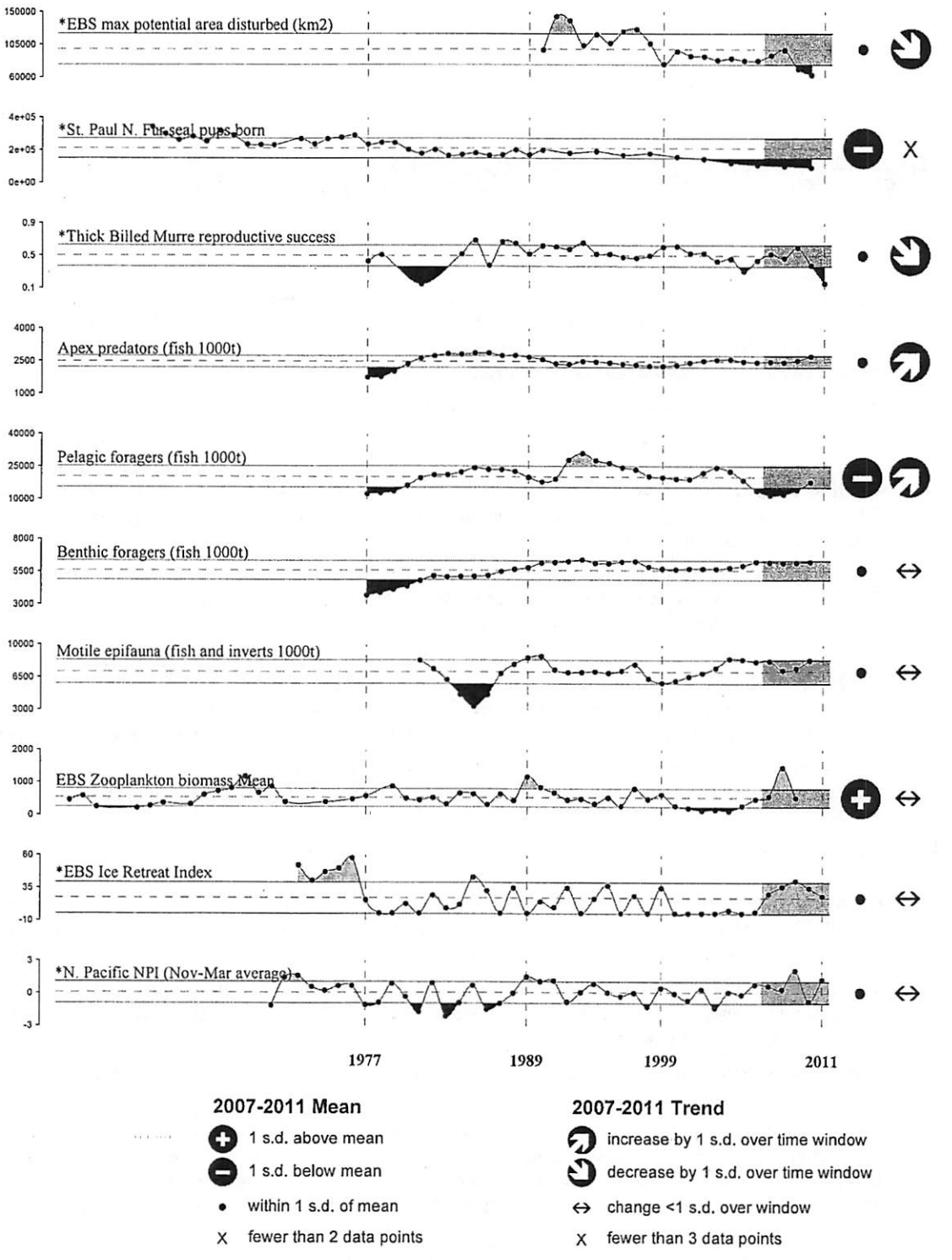


Figure 1: Eastern Bering Sea ecosystem assessment indicators; see text for descriptions. * indicates time series updated in 2011.

Aleutian Islands Report Card

- In 2010/2011, the winter North Pacific Index was positive by more than one standard deviation implying a **weaker Aleutian Low pressure system and less storminess** in the region than average. This is **expected to continue into the winter 2011/2012** due in part to projected la Niña conditions.
- There is an **overall decreasing trend in Pacific cod biomass**, which contributes the largest proportion to the fish apex predator foraging guild. **Arrowtooth flounder, Kamchatka flounder and skates all show an increasing trend.**
- There are several species showing longitudinal trends in the fish pelagic foragers foraging guild: the **biomass of walleye pollock increases towards the east**, whereas that of **northern rockfish and Pacific ocean perch increases towards the west.**
- **Fishing patterns have recently changed throughout the system**, largely in response to increased protection for Steller sea lions, although the final impacts to individual fishing sectors are currently unknown.
- In general, **school enrollment numbers** in the Aleutian Islands region have been **on the decline in the small village schools**, possibly indicating that communities with year-round residents that experience direct interactions with the ecosystem through residential and subsistence activites are faring poorly.

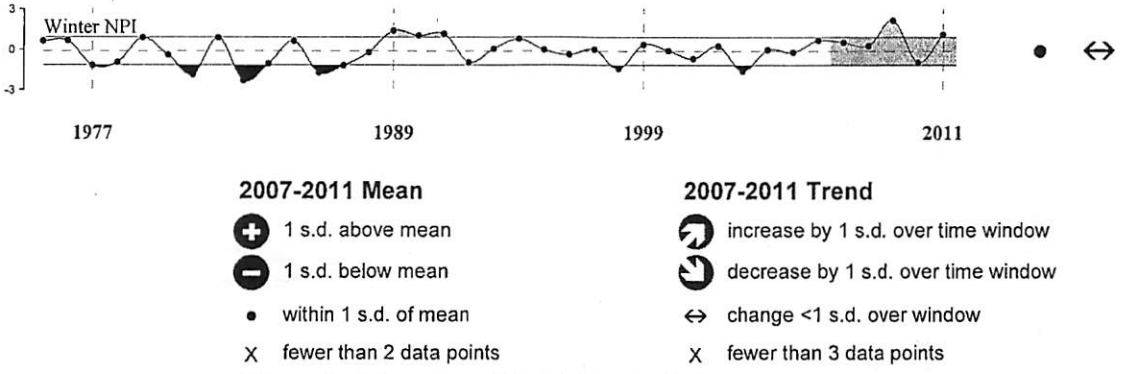


Figure 2: The winter North Pacific Index time series.

Western Ecoregion

- **Reproductive success of planktivorous auklets have been higher than average** for the past five years. Given the negative correlation between the strength of the Aleutian Low and planktivorous seabird productivity, we **anticipate continued favorable conditions** for auklets in this ecoregion.

- The **increase in the fish apex predators foraging guild** apparent in the 2010 trawl survey is driven by Pacific cod, reversing the declining trend in this foraging guild since 2000.
- The **pelagic fish foraging guild biomass has increased** since the last survey in 2006. Pollock, Pacific Ocean perch, northern rockfish, and Atka mackerel all contributed to this trend.
- Recent counts of **otters show no trend**, in contrast to the steep decline during the early 2000s.
- Steller **sea lions continue their decades-long decline** in this ecoregion. Between 1991 and 2008, non-pup counts declined 81%, or at a rate of -10% per year.
- The **amount of area trawled declined dramatically** this year due to recent measures aiming at increasing protection for Steller sea lions.

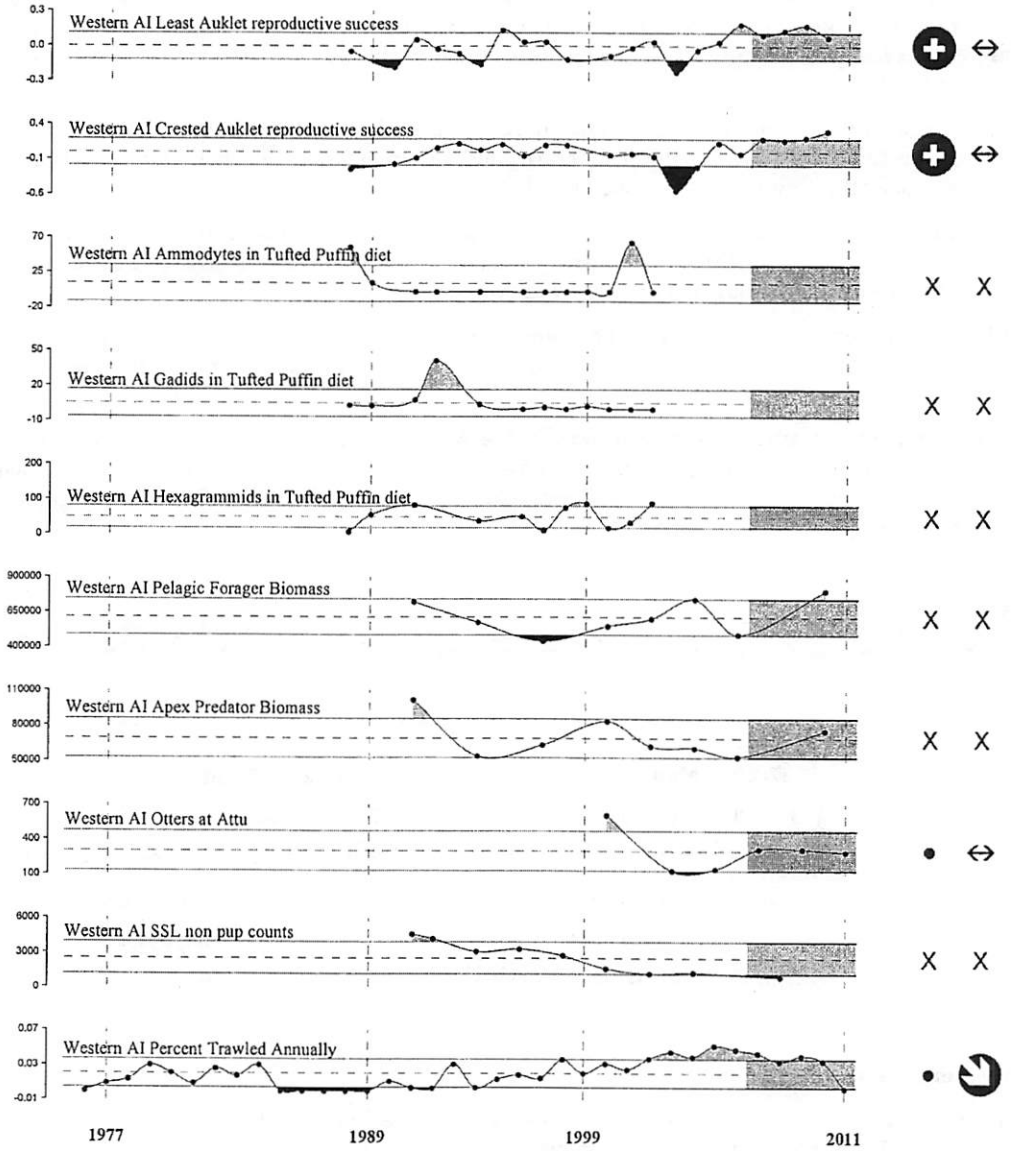


Figure 3: Western Aleutian Islands ecoregion indicators. See Figure 20 for legend.

Central Ecoregion

- Recent trends in auklet reproductive success are unknown but the **predicted continued positive state of the NPI indicates favorable foraging conditions for planktivorous auklets.**
- The **declining fish apex predator trend** is largely driven by Pacific cod. Kamchatka flounder contributes the second largest biomass.
- The **pelagic fish foraging guild biomass declined** since the last survey in 2006, although Pacific ocean perch biomass increased.
- Recent counts of sea **otters continue to decline.**
- **Counts of non-pup Steller sea lions declined** 33% overall between 1991 and 2008, a rate of -2% per year.
- **School enrollment has shown no trend** in recent years, following a decline since peak enrollment in 2000.

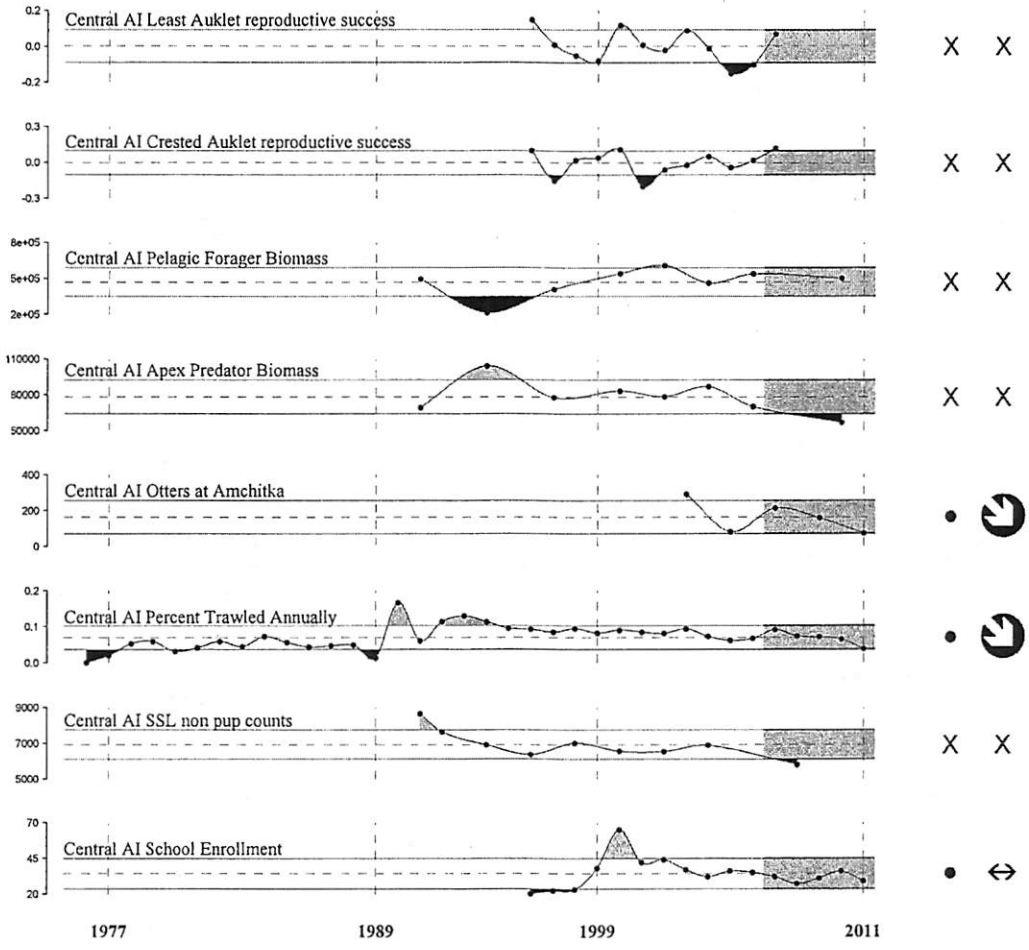


Figure 4: Central Aleutian Islands ecoregion indicators. See Figure 20 for legend.

Eastern Ecoregion

- Although **recent forage fish data are not currently available**, puffins have shown opposite trends in relative abundances of gadids and *Ammodytes* in prey brought back to feed chicks. These patterns suggest puffins are responding to changes in forage fish availability.
- **Fish apex predator biomass declined** relative to past surveys. This trend is driven by arrowtooth flounder jointly, which alternates with Pacific cod as the largest biomass in the area.
- The **fish pelagic forager biomass increased**, but remained below the peak value in 2004. Pollock, Atka mackerel, and Pacific ocean perch all contributed to this trend, but only on the northern side of the islands for Atka mackerel.
- In contrast to the other ecoregions, **non-pup counts of Steller sea lions increased** 21% overall between 1991 and 2008. Counts were largely stable through the 1990s, but increased at a rate of 3% per year between 2000 and 2008.
- **School enrollment has fluctuated** in this ecoregion, but has shown no overall trend in the past five years.

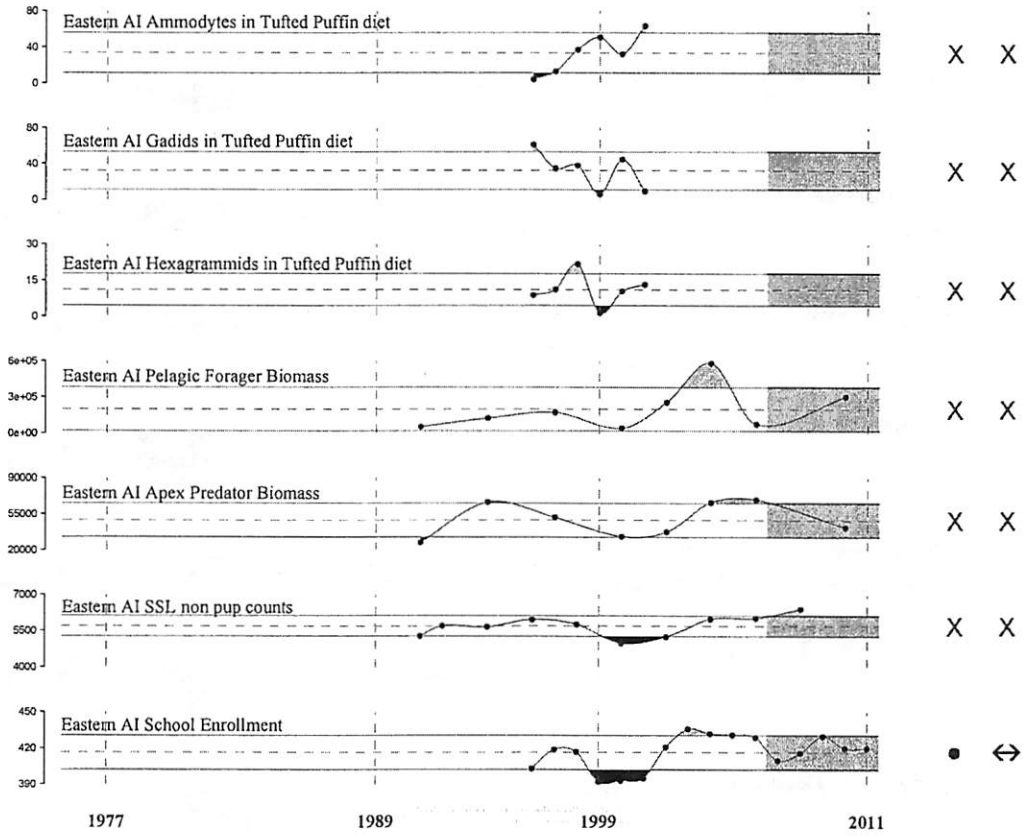


Figure 5: Eastern Aleutian Islands ecoregion indicators. See Figure 20 for legend.

Executive Summary of Recent Trends

Physical and Environmental Trends

- The state of the North Pacific atmosphere-ocean system during 2010-2011 reflected the typical response to La Niña. The Aleutian low was much weaker than usual in the winter of 2010-11, and the sea level pressure was higher than normal in the eastern portion of the basin for the year as a whole (p. 101)
- Cooler than normal upper ocean temperatures prevailed in the eastern portion of the North Pacific and warmer than normal temperatures occurred in the west-central and then central portion of the basin. This pattern reflects a negative sense to the Pacific Decadal Oscillation (PDO) (p. 101)
- Near-normal conditions are present in the tropical Pacific at the current time; the models used to forecast ENSO are indicating outcomes for the winter of 2011-12 ranging from a neutral to a weak-moderate La Niña state (p. 101).

Arctic

- The tendency for reduced sea ice cover in the Arctic during the summer has continued into 2011. The areal coverage in July 2011 was even less than in July 2007, and hence the lowest in the historical record (p. 101).
- It has become clear that the reduced ice cover at the end of the melt season tends to delay the development of ice in marginal seas such as the Bering Sea during the following cold season (p. 101).

Bering Sea

- The Bering Sea shelf experienced another relatively heavy ice year, but not as extreme as those of 2008-09 and 2009-10 (p. 101).
- The average bottom temperature during summer was nearly a degree warmer than 2010 and equal to the grand mean from 1982 to 2011. However, the surface temperature continued to be much lower than the long term mean, reflecting the unusually cold atmospheric conditions during July and August (p. 113).
- Maximum sea ice extent was neutral (p. 109).
- The most important aspects of the physical environment in the eastern Bering Sea during 2011, despite the relatively neutral weather and sea ice conditions during winter and spring, was that cool fall 2010 temperatures and a newly seen cold summer did not allow the multi-year sequential continuation of cold ocean temperatures to come to an end(p. 109).
- The summer of 2011 was relatively cold and stormy (p. 101, 109).
- If cold upper ocean conditions persist into fall, they would promote the relatively early development of sea ice during the winter of 2011-12 (p. 101).

Gulf of Alaska

- The poleward branch of the Alaska Current in the southeastern portion of the Gulf declined considerably over the last 18 months since its peak in the winter of 2009-10. This change is presumably due, at least in part, to the anomalous northerly and northwesterly winds over the interval (p. 101).
- The mixed layer depths in the Gulf have been near their seasonal norms (p. 101).
- Eddy Kinetic Energy (EKE) levels were very low in both NGOA and off Kodiak in 2009 and higher 2010. EKE in both regions was approximately average for the first six months of 2011 (p. 116).
- The pattern in water temperatures was generally similar to the pattern seen during the 2009 survey. East of 160W, the water column was stratified with relatively warm near-surface waters and temperatures rapidly dropping to 6 C or less in the upper 50 meters. West of 160W, near surface temperatures (<50 m) were much cooler and deeper waters were generally warmer than further east with a prominent inversion pattern noted at most stations.
- Phytoplankton biomass was probably more tightly confined to the shelf during 2009 due to the absence of eddies, while in 2007 and 2010, phytoplankton biomass likely extended farther off the shelf (p. 116).
- Cross-shelf transport of heat, salinity and nutrients were likely to be smaller in 2009 than in 2007 and 2010 (or other years with large persistent eddies) (p. 116).
- PAPA trajectory index trajectories fan out northeastwardly toward the North American continent except for the 2010 trajectory, which resulted in the westernmost trajectory endpoint for the entire set of model runs (1902-2011) (p. 119).

Alaska Peninsula and Aleutian Islands

- Westerly wind anomalies have prevailed in this region during the past year, except during spring 2011. These anomalies have served to suppress the northward transport through Unimak Pass and perhaps also the Aleutian North Slope Current (p. 101).
- The wind anomalies during spring 2011 were weak, but since they were easterly they would have acted to enhance upwelling during that season along the north side of the Alaska Peninsula and Aleutian Islands (p. 101).
- Particularly strong eddies were observed south of Amukta Pass in 1997/1998, 1999, 2004, 2006/2007, and 2009/2010. Eddy energy in the region has been low from the spring of 2010 through the first 6 months of 2011 (p. 123).
- These trends indicate that higher than average volume, heat, salt, and nutrient fluxes to the Bering Sea through Amukta Pass may have occurred in 1997/1998, 1999, 2004, 2006/2007, and 2009/2010 while these fluxes may be reduced since spring of 2010 (p. 123).

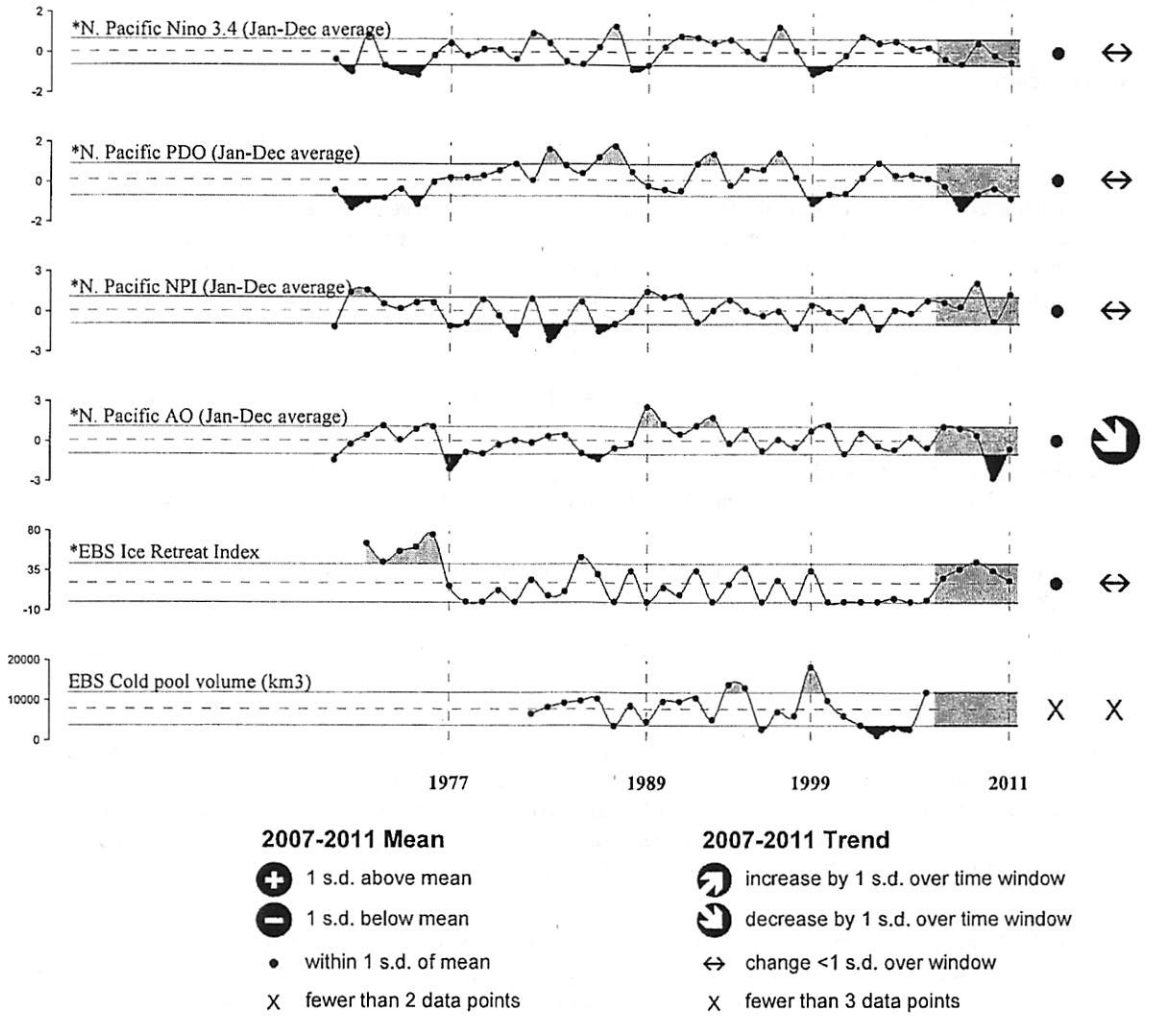


Figure 6: North Pacific and Eastern Bering Sea climate indices. *Time series updated in 2011.

Ecosystem Trends

Bering Sea

- EBS trawl survey structural epifauna showed variable trends: sea anemones may be increasing, while sponges and seapens were higher than in 2010 (p. 128).
- During 2003-2009, highest phytoplankton biomass was observed in the Outer shelf near the Pribilof Islands, and in the south Inner shelf. Lowest biomass was observed in the north Bering and SE Middle shelf (in a region of high stability). Larger phytoplankton were seen on the Inner shelf and near the Pribilofs. Smaller phytoplankton were seen on the SE Middle shelf (an area of lower total chla), and in the Outer shelf (an area of higher total chla) (p. 133).
- In the south Bering Sea, phytoplankton biomass and mean size of assemblages were higher in warm (03-05) than in cold (06-09) years on the Middle shelf. This trend was not observed in the north Bering Sea (p. 133).
- Both large copepod and euphausiid time series show a large increase since 2001-2005 ("warm years") , with the copepod increase lagging that for euphausiids. Both series showed a smaller decline in 2010 but remained well above 2001-2005 levels (p. 59).
- In warm years, the large copepod, *Calanus marshallae*, was in lower abundance than in cold years (p. 137).
- North-south variations in large zooplankton were also observed, with more Cnidaria present in the northern Bering and more polychaeta (in warm years) and pteropods in the southern Bering Sea (p. 137).
- Sandfish were generally in low abundance in EBS trawl surveys, and typically caught in only a few shallow stations. The relative CPUEs of sandlance and Stichaeids was higher prior to 1999. Eulachon relative CPUE increased slightly in 2010 and 2011, and capelin relative CPUE remained relatively low. Arctic cod relative abundance was higher in cold years (1999-2000, 2006-2010) compared to warm years (1996-98, 2002-2005) because of its association with the cold pool on the middle shelf (p. 146).
- Reductions in temperature change index values from 2008 to 2011 suggest that conditions have continued to improve for the overwintering survival of pollock and cod from age-0 to age-1 in the Bering Sea. The 2011 temperature change index value and cold year models predict 48,094 million age-1 pollock and 785 million age-1 cod for 2011 (p. 167).
- Walleye pollock has dominated observed fluctuations in total groundfish biomass, particularly the decreased biomass in recent years(p. 160).
- Several stocks experienced step-changes in survival in the late 1970s and 1980s; however, in general, there was no indication of uniform step changes in all stocks in either time period for the BSAI (p. 160).
- The north-northeast wind drift pattern for 2011 suggests that winter spawning flatfish larvae may have been advected to favorable nursery areas in Bristol Bay. Rock sole recruitment estimates in recent years remain consistent with this larval drift hypothesis. For arrowtooth flounder and flathead sole, the relationship has weakened since the 1990s, suggesting that these species may have different settlement preferences than northern rock role (p. 165).
- Jellyfish relative CPUE during summer 2011 was nearly doubled that of 2009 and 2010 (p. ??).
- During 2010, combined jellyfish species biomass nearly doubled compared to the previous highs of 2004 and 2005. The prominent species, *C. melanaster* continued to increase in 2010, tripling its WPUE compared to 2009. During 2006-2009, biomass of all other species remained low in comparison to previous levels in 2004 and 2005, suggesting the trend for the area has shifted from multiple species to a single species dominant catch (p. 174).

- Eelpouts, poachers, and sea stars show broadly similar time trends in trawl survey CPUE, but no outstanding changes for 2011 (p. 176).
- Species richness and diversity on the Eastern Bering Sea shelf have undergone significant variations from 1982 to 2010. Richness (the average number of species per haul) increased by one to two species from 1995 to 2004 and has remained relatively high since then. The Shannon Index increased from 1985 through 1998 and decreased sharply in 1999. Diversity was low in 2002/03, increased substantially in 2005 and has been decreasing since then (p. 197).
- Total trawl survey CPUE in the EBS shows an apparent long-term increase from 1982-2005, followed by a decrease from 2005 to 2009 and an increase in 2010. Recent changes in CPUE in the EBS have been most pronounced on the middle-shelf, which is occupied by the cold pool during cold years. Higher CPUEs on the middle shelf during the 2001-2005 warm period appeared to be related to the increasing colonization of this area by subarctic demersal species (p. 200).
- A new multivariate seabird index based on 5 seabird species breeding on the Pribilof Islands from 1996-2010 explained 65.6% of the variance in reproductive data. Time series analysis indicate that both prey supply (as measured by age-1 pollock CPUE and recruitment) and bottom temperatures may influence seabird reproductive activity, although the effects may not been seen until the following 1-2 years (p. 189).
- Northern fur seal (listed as depleted under the MMPA) pup production on both Pribilof Islands is estimated to be decreasing at approximately 5% per year (p. 187).

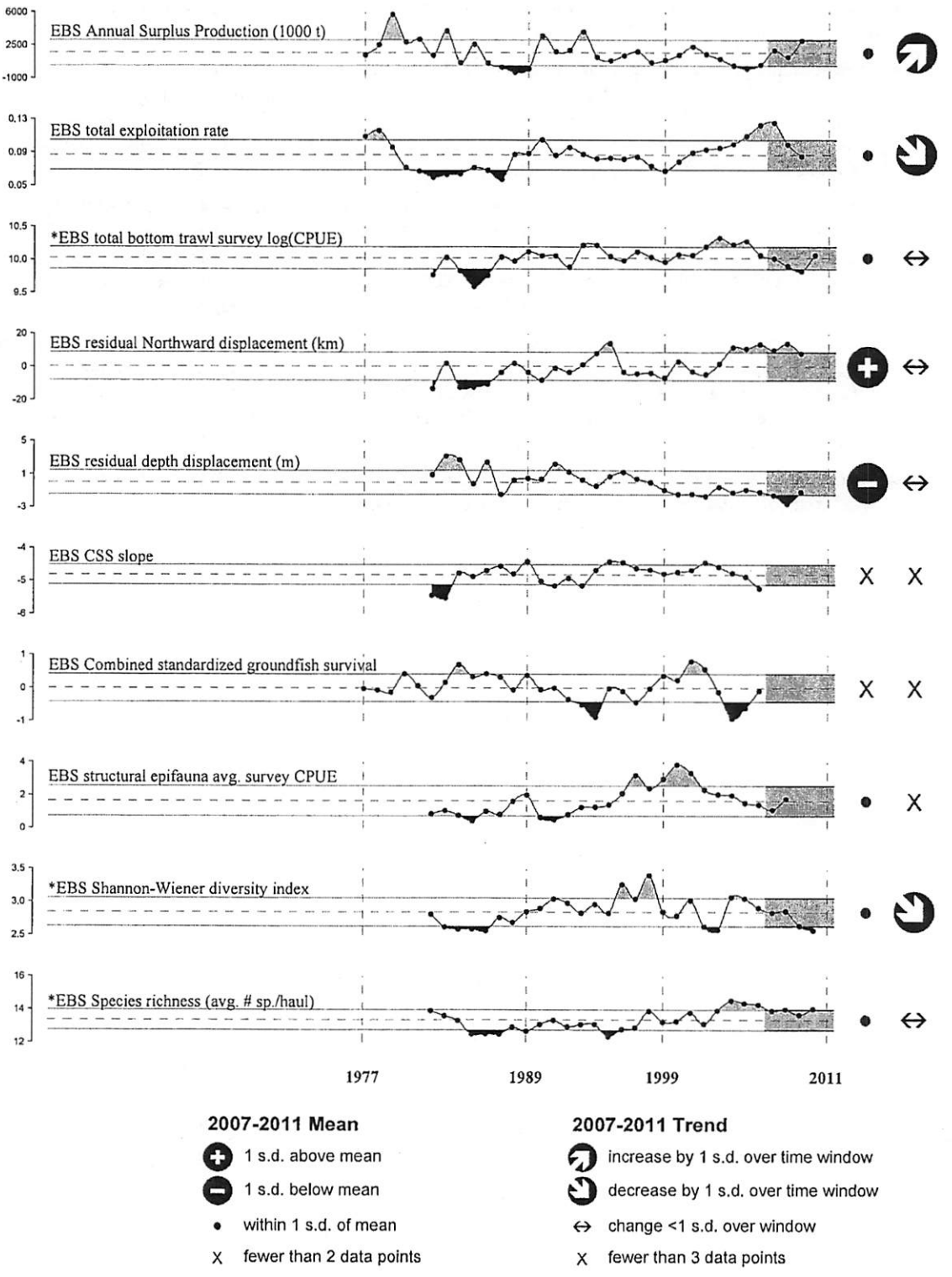


Figure 7: Eastern Bering Sea ecosystem indices. *Time series updated in 2011.

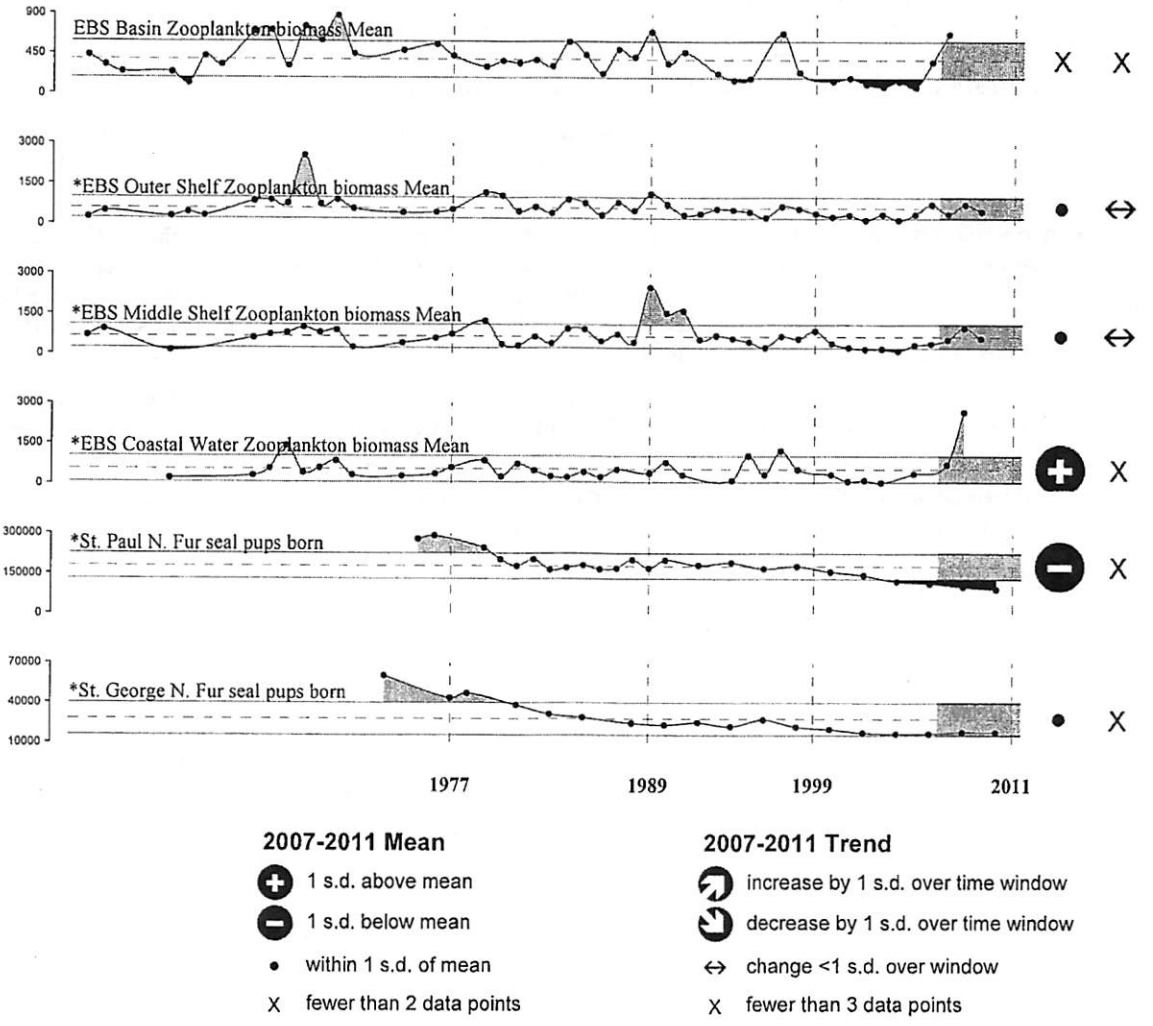


Figure 8: Eastern Bering Sea ecosystem indices. *Time series updated in 2011.

Gulf of Alaska

- Eddy kinetic energey (EKE) levels were very low in both regions in 2009 and higher 2010. EKE in both regions was approximately average for the first six months of 2011(p. 116)
- Within year spatial patterns in chlorophyll a were apparent during a new annual survey off the Alexander Archipelago in 2010. Elevated concentrations of chla were found north of Cross Sound in spring and summer, and north of the entrance to Chatham Strait during summer (p. 136).
- The seasonal cycle of mesozooplankton biomass in the eastern North Pacific during 2010 was average in terms of timing and duration of season. Mesozooplankton community analysis identified transition years: 2003 transitioning from cold to warm, 2006 transitioning from warm to cold, and neutral years in 2009 and 2010 (p. 143).

- GOA groundfish biomass declined after peaking in 1982 at over 6 million metric tons, primarily due to changes in walleye pollock biomass. Pollock were the dominant groundfish species prior to 1986 but arrowtooth flounder has increased in biomass and is now dominant. Pacific halibut biomass increased from 1978 to 1996, and declined slightly during 2001-2004 (p. 160).
- Several stocks experienced step-changes in survival in the late 1970s and 1980s; however, in general, there was no indication of uniform step changes in all stocks in either time period for the GOA (p. 160).
- Arrowtooth flounder, flathead sole, and other flatfish continue to dominate the catches in the ADF&G Kodiak trawl survey. A decrease in overall biomass is apparent from 2007 to 2008 from years of record high catches seen from 2002 to 2005. In 2010, above average anomaly values were recorded for both inshore and offshore skates, and Tanner crabs, while arrowtooth flounder, flathead sole, and Pacific cod have decreased to below average values (p. 177).
- Forage species catch rates in small mesh surveys remain at low levels, one to two orders of magnitude lower than peak values observed in the 1970s and early 1980s. The exception to this trend is eulachon. In recent years including 2010, it has had the highest catch rates of the time series (p. 180).
- Total trawl survey CPUE in the western GOA varied over time with a decrease between 2005 and 2007. The eastern GOA shows a similar patterns with a significantly increasing trend (p. 200).

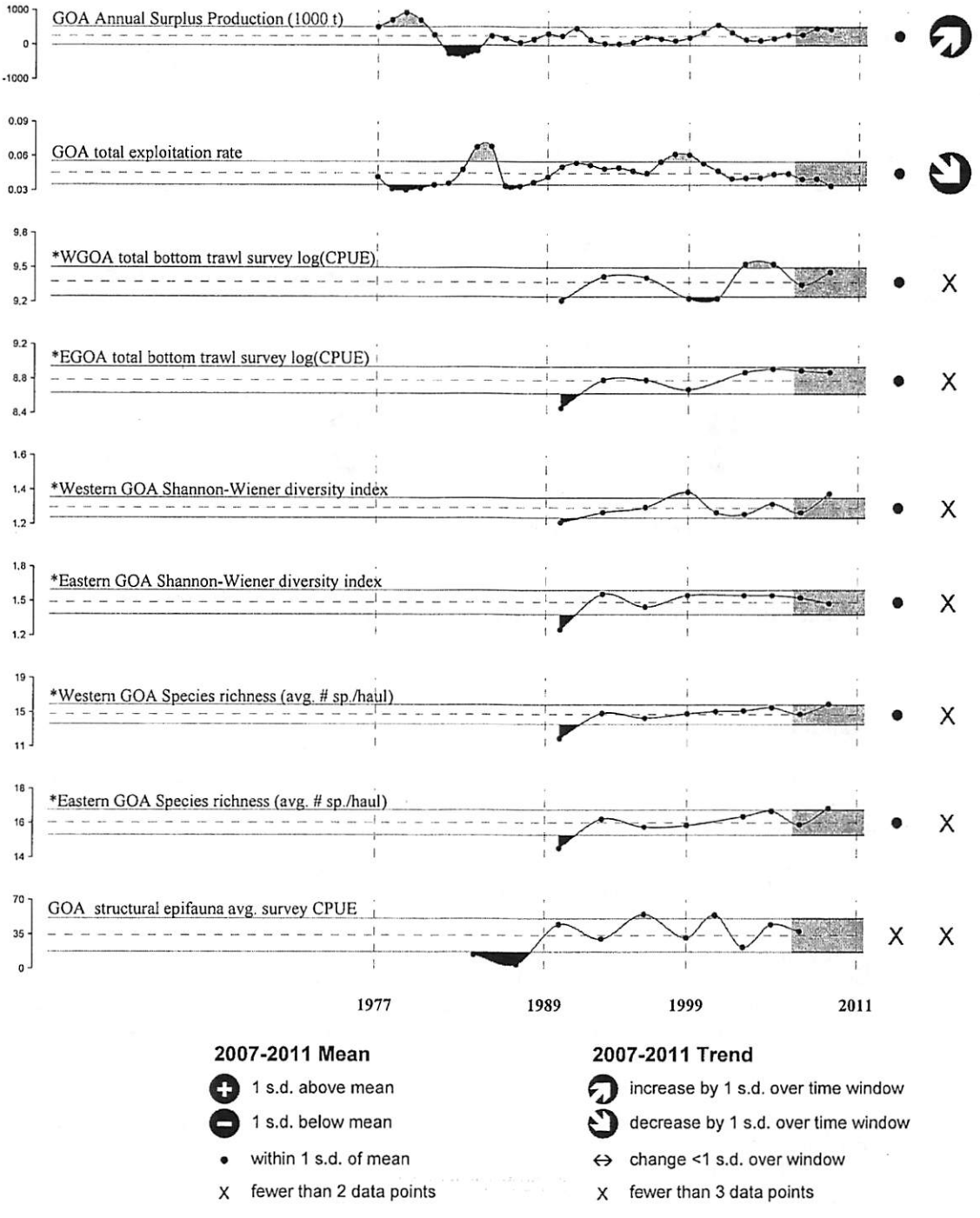


Figure 9: Gulf of Alaska ecosystem indices. *Time series updated in 2011.

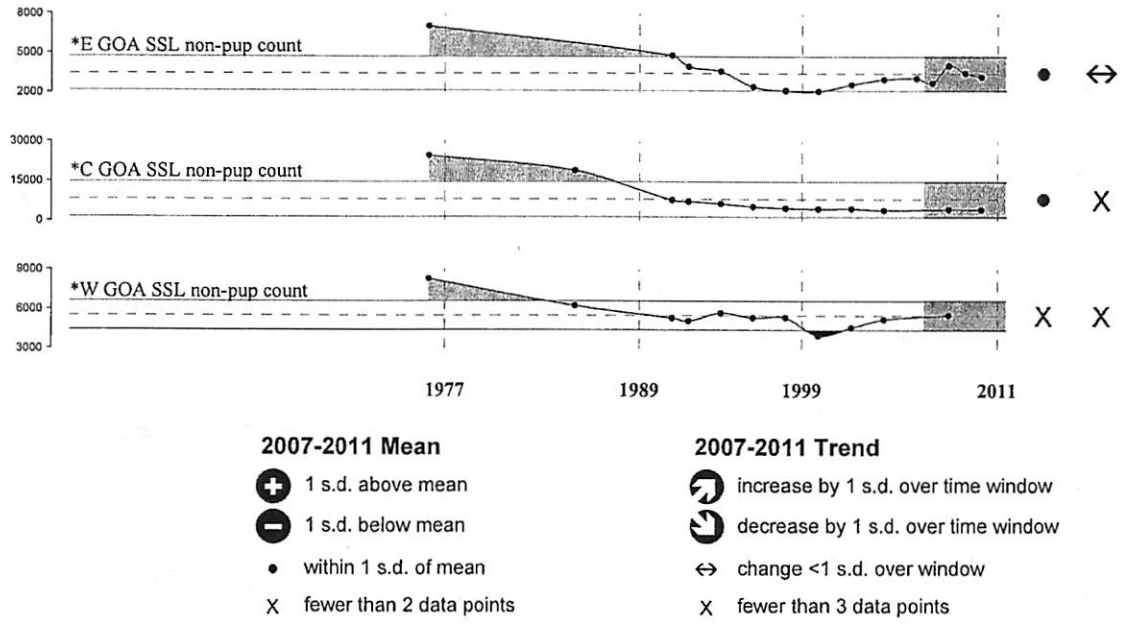


Figure 10: Gulf of Alaska ecosystem indices. *Time series updated in 2011.

Aleutian Islands

- There is an overall decreasing trend in Pacific cod biomass, which contributes the largest proportion to the fish apex predator foraging guild. Arrowtooth flounder, Kamchatka flounder and skates all show an increasing trend.
- There are several species showing longitudinal trends in the fish pelagic foragers foraging guild: the biomass of walleye pollock increases towards the east, whereas that of northern rockfish and Pacific ocean perch increases towards the west.
- In the Western ecoregion, reproductive success of planktivorous auklets have been higher than average for the past five years. The increase in the fish apex predators foraging guild apparent in the 2010 trawl survey is driven by Pacific cod, reversing the declining trend in this foraging guild since 2000. Recent counts of otters show no trend, in contrast to the steep decline during the early 2000s. Steller sea lions continue their decades-long decline in this ecoregion. Between 1991 and 2008, non-pup counts declined 81%, or at a rate of -10% per year (p. 65).
- In the Central ecoregion, the fish apex predator trend is also largely driven by Pacific cod. Kamchatka flounder contributes the second largest biomass. Atka mackerel and Pacific ocean perch drive the biomass trend, making up 80% of the pelagic foragers biomass, with the remaining split between walleye pollock and northern rockfish. Recent counts of sea otters continue to decline. Counts of non-pup Steller sea lions in the central Aleutians declined 33% overall between 1991 and 2008, a rate of -2% per year (p. 65).
- In the Eastern ecoregion, fish apex predator biomass declined relative to past surveys. This trend is driven by Pacific cod and Arrowtooth flounder jointly, which alternate as the largest biomass in the area. More than half the fish pelagic forager biomass is commonly contributed by walleye pollock and Atka mackerel. Atka mackerel show an increasing trend, but only in the data from the northern

portion of the islands. In contrast to the other ecoregions, non-pup counts of Steller sea lions increased 21% overall between 1991 and 2008. Counts were largely stable through the 1990s, but increased at a rate of 3% per year between 2000 and 2008 (p. 65).

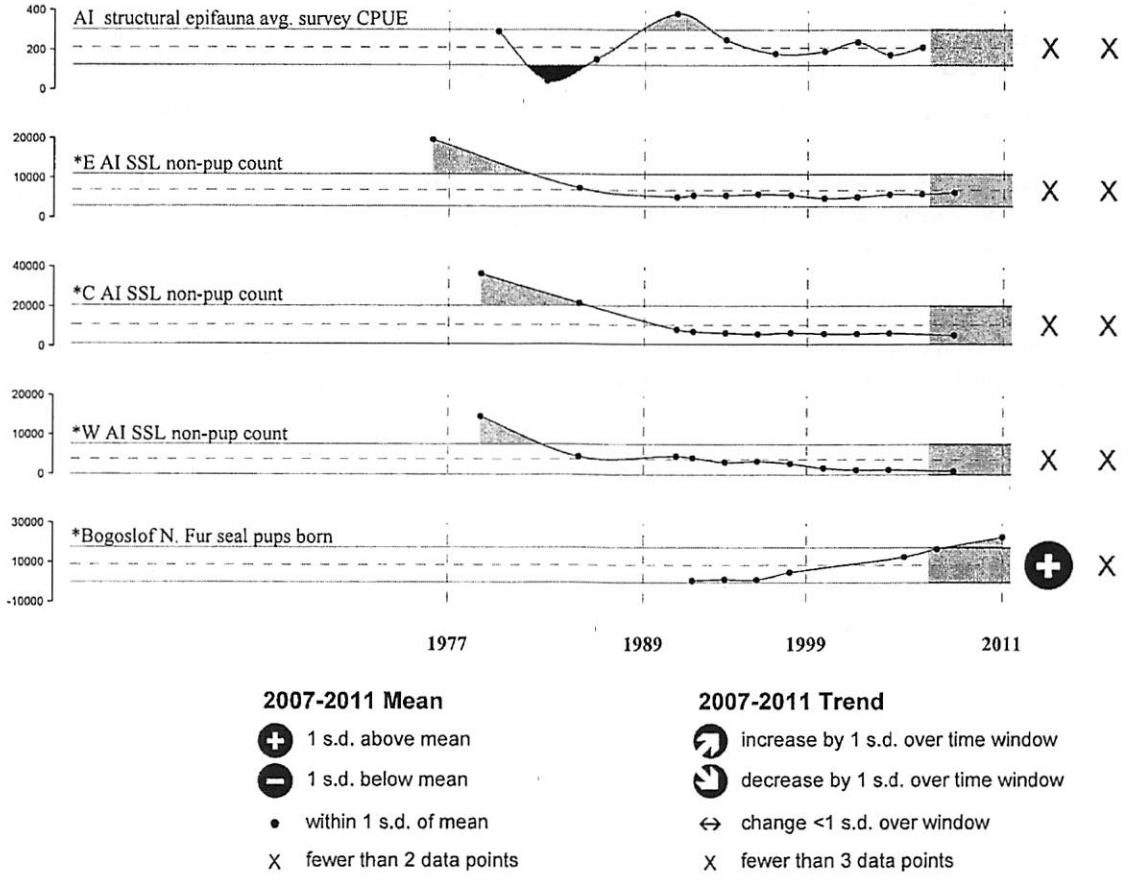


Figure 11: Aleutian Islands ecosystem indices. *Time series updated in 2011.

Fishing and Fisheries Trends

Bering Sea

- At present, no BSAI or GOA groundfish stock or stock complex is overfished and no BSAI or GOA groundfish stock or stock complex is being subjected to overfishing. Stocks that are considered overfished are Pribilof Island blue king crab and BSAI tanner crab. Currently there is no directed fishing for snow crab, and the majority of blue king crab habitat is closed to bottom trawling (p. 230).
- Fishing effort has been stable in recent years, although pelagic trawl fishing effort has declined (p. 210, 226, 215, 221).
- The catch of non-specified species appears to have decreased overall since the late 1990s. The 2008-2009 increase in non-specified catch was driven by jellyfish. HAPC biota catch has generally decreased since 2004. The catch of forage species in the EBS increased in 2006 and 2007 and was comprised mainly of eulachon that was caught primarily in the pollock fishery; however, forage catch decreased in 2008-2010. (p. 204).
- The maximum potential area of seafloor disturbed by trawling had increased slightly in 2007-2008 but continued to decrease in 2010 to below the low point in the time series estimated for 1999 (p. 125).

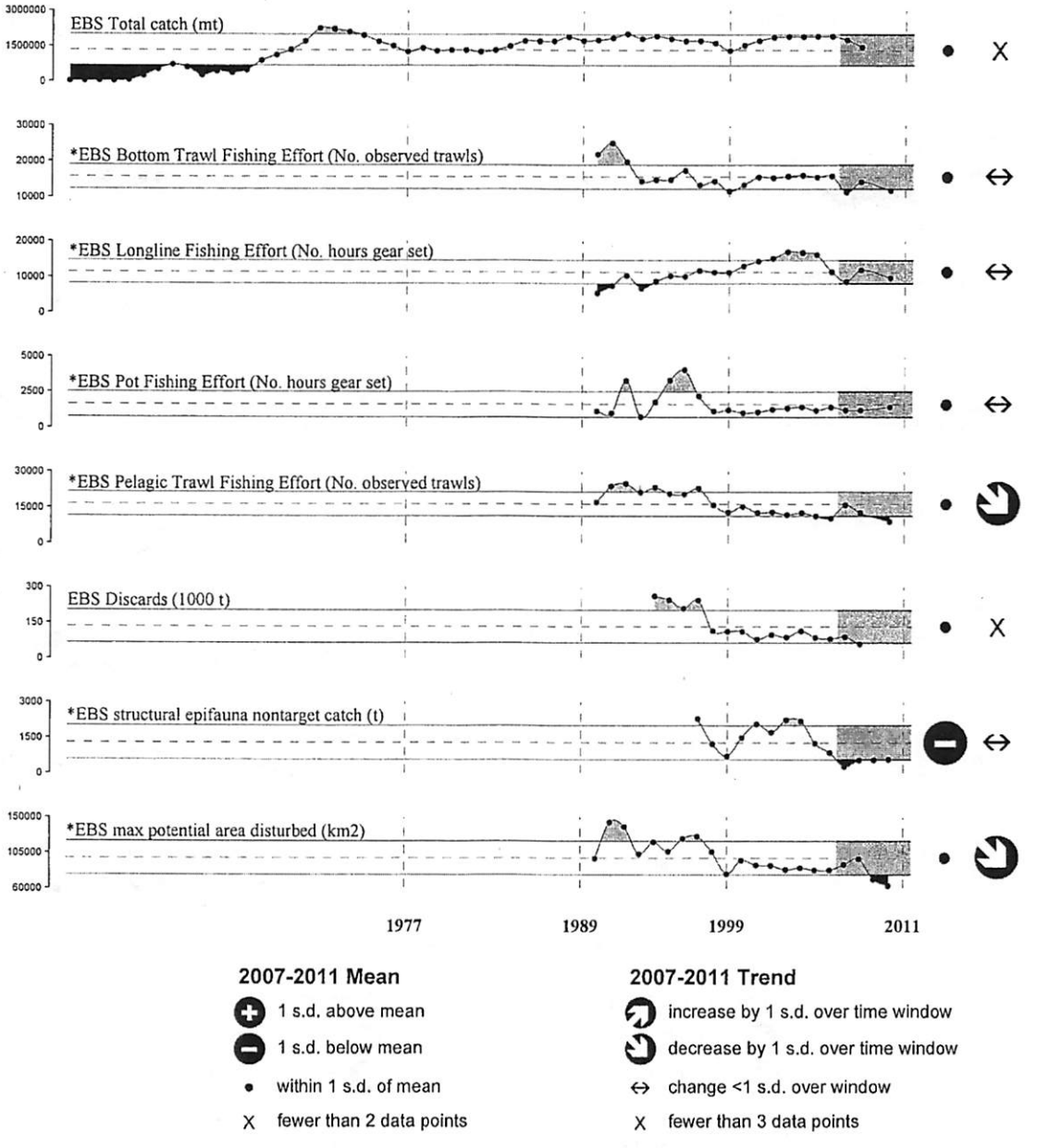


Figure 12: Eastern Bering Sea fisheries indices. *Time series updated in 2011.

Gulf of Alaska

- Bottom and pelagic trawl fishing has remained below the long term mean. Fishing effort with pot gear has declined recently; longline effort is increasing (p. 210, 226, 215, 221).
- Discarded tons of groundfish decreased in 2010, while the discard rate decreased to 10% (p. 204).

- The catch of non-specified species in the GOA has been generally consistent aside from a peak in 1998 and lows in 2009 and 2010. The catch of forage species has undergone large variations, peaking in 2005 and 2008 and decreasing in 2006-2007 and 2009-2010. (p. 204).

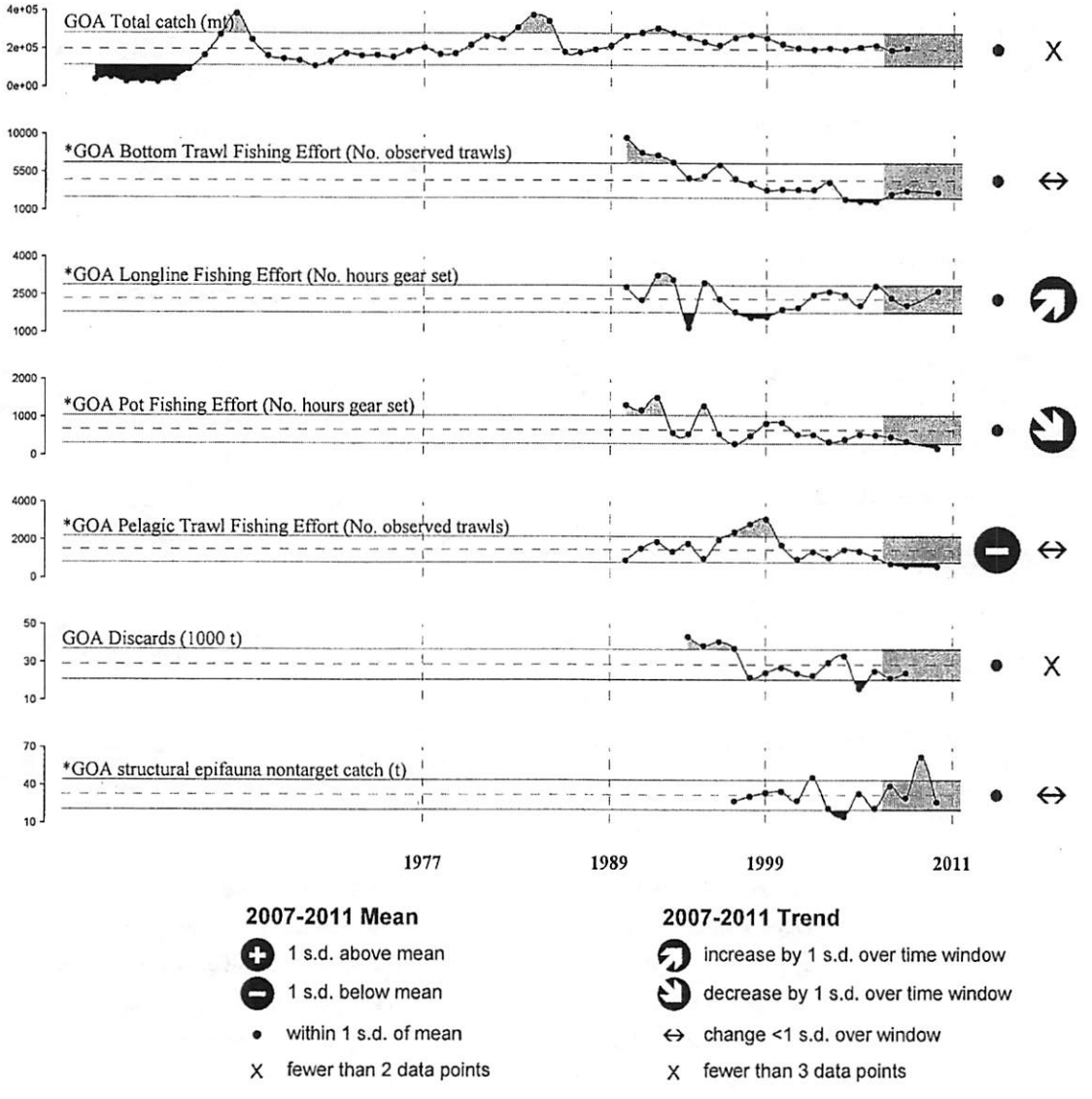


Figure 13: Gulf of Alaska fisheries indices. *Time series updated in 2011.

Aleutian Islands

- Fishing effort by gear type has been stable in recent years, although there was a increase in longline effort (p. 210, 226, 215, 221).

- Discard rates have declined over the past 7 years. Discards and discard rates are much lower now than they were in 1996. (p. 204).
- Catch of non-specified species (primarily grendadiers) shows little trend over time, although the highest catches were recorded in 2009-2010. HAPC catch has been similarly variable over time in the AI, and is driven primarily by sponges caught in the trawl fisheries for Atka mackerel, rockfish and cod. Forage fish catches in the AI are minimal, amounting to less than 1 ton per year, with the exception of 2000 when the catch estimate was 4 tons, driven by (perhaps anomalous) sandfish catch in the Atka mackerel fishery. (p. 204).

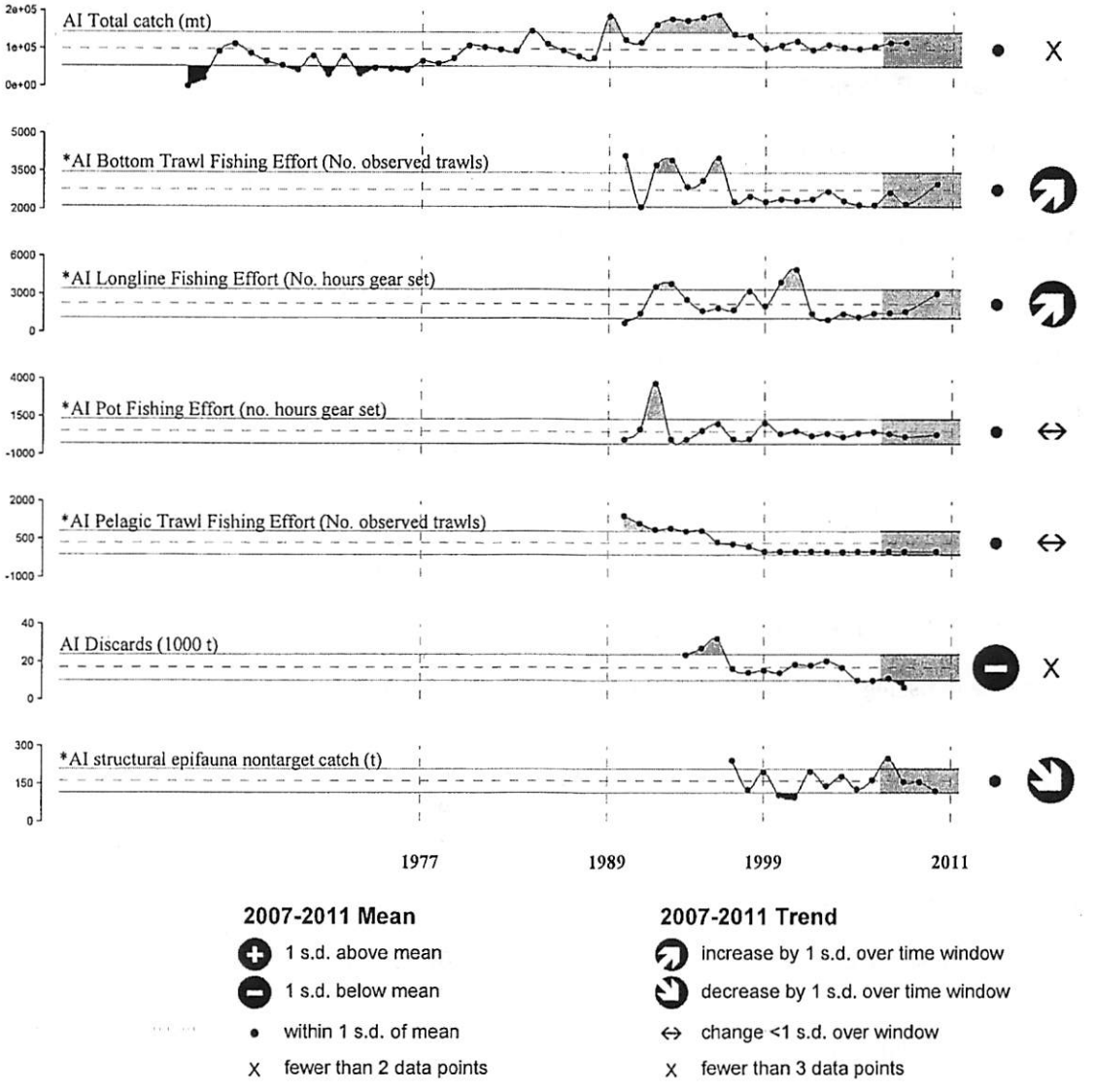


Figure 14: Aleutian Islands fisheries indices. *Time series updated in 2011.

17 Color figures

Bering Sea – Non-pelagic trawl

Difference in fishing intensity between periods:
2003-2007 vs. 1998-2002 ..... B
1998-2002 vs. 1993-1997 ..... B

Average fishing intensity over the five-year period:
2003-2007 C
1998-2002 C
1993-1997 ..... D

Bering Sea – Pelagic Trawl

Difference in fishing intensity between periods:
2003-2007 vs. 1998-2002 ..... E
1998-2002 vs. 1993-1997 ..... E

Average fishing intensity over the five-year period:
2003-2007 ..... F
1998-2002 ..... F
1993-1997 ..... G

Aleutian Islands – Non-pelagic trawl

Difference in fishing intensity between periods:
2003-2007 vs. 1998-2002 ..... H
1998-2002 vs. 1993-1997 ..... H

Average fishing intensity over the five-year period:
2003-2007 I
1998-2002 I
1993-1997 ..... J

Gulf of Alaska – Non-pelagic trawl

Difference in fishing intensity between periods:
2003-2007 vs. 1998-2002 ..... K
1998-2002 vs. 1993-1997 ..... K

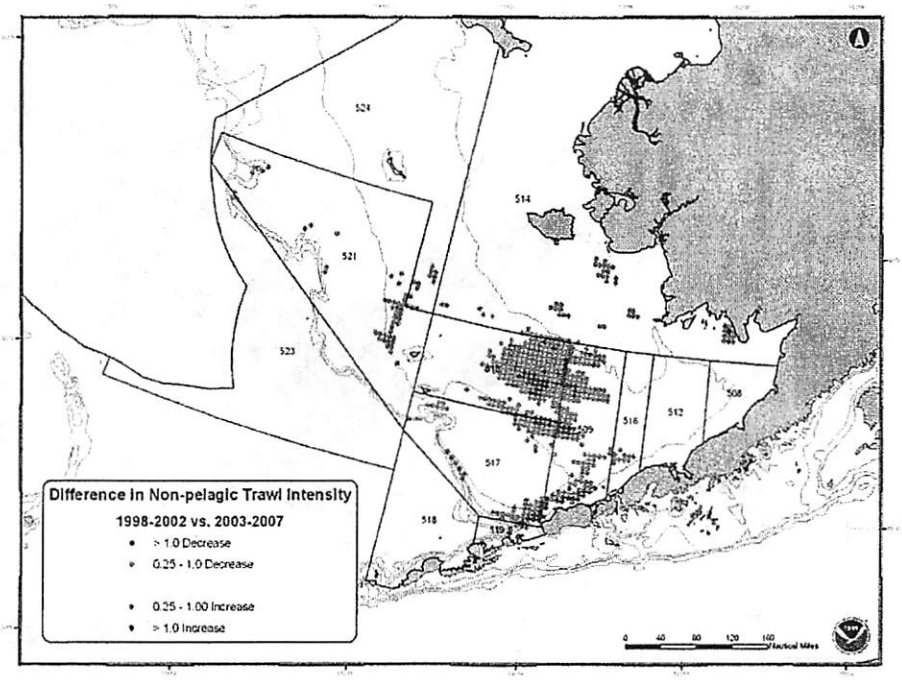
Average fishing intensity over the five-year period:
2003-2007 L
1998-2002 L
1993-1997 ..... M

Gulf of Alaska – Pelagic trawl

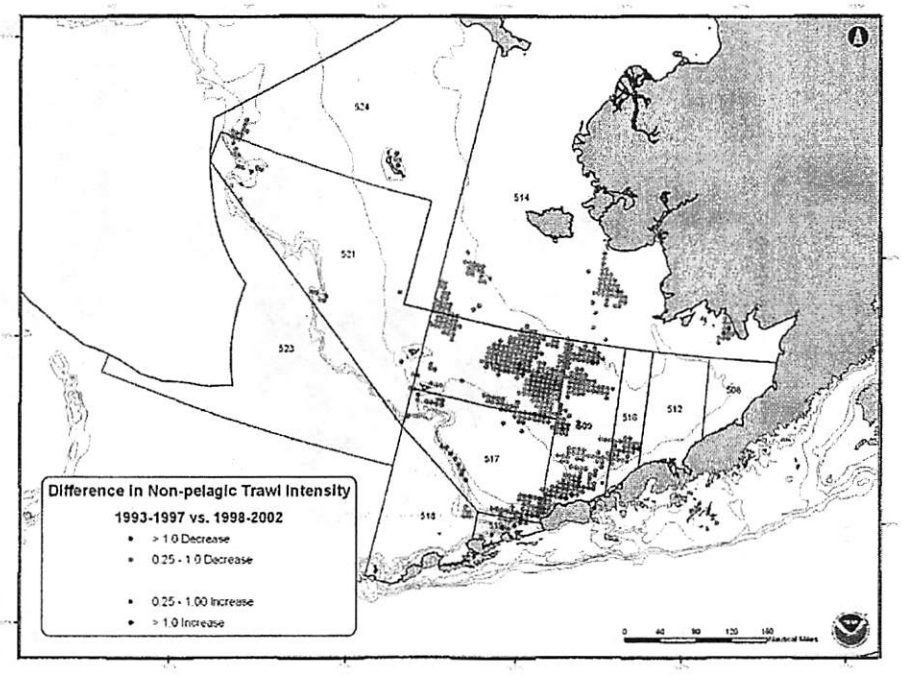
Difference in fishing intensity between periods:
2003-2007 vs. 1998-2002 ..... N
1998-2002 vs. 1993-1997 ..... N

Average fishing intensity over the five-year period:
2003-2007 ..... O
1998-2002 ..... O
1993-1997 ..... P

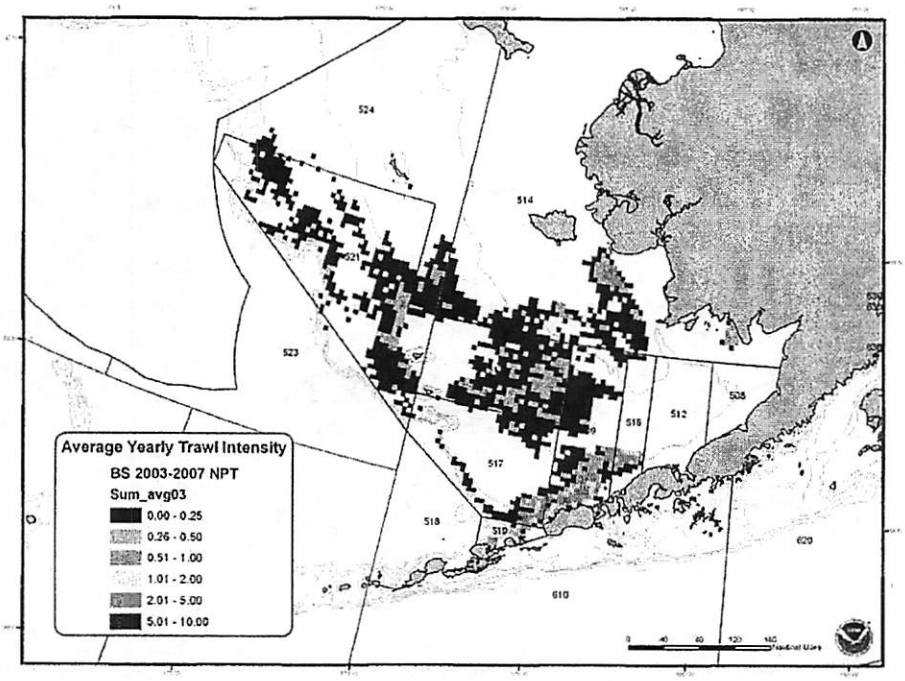
Color figure 1 **Difference in Bering Sea non-pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the more recent period (2003-2007)**



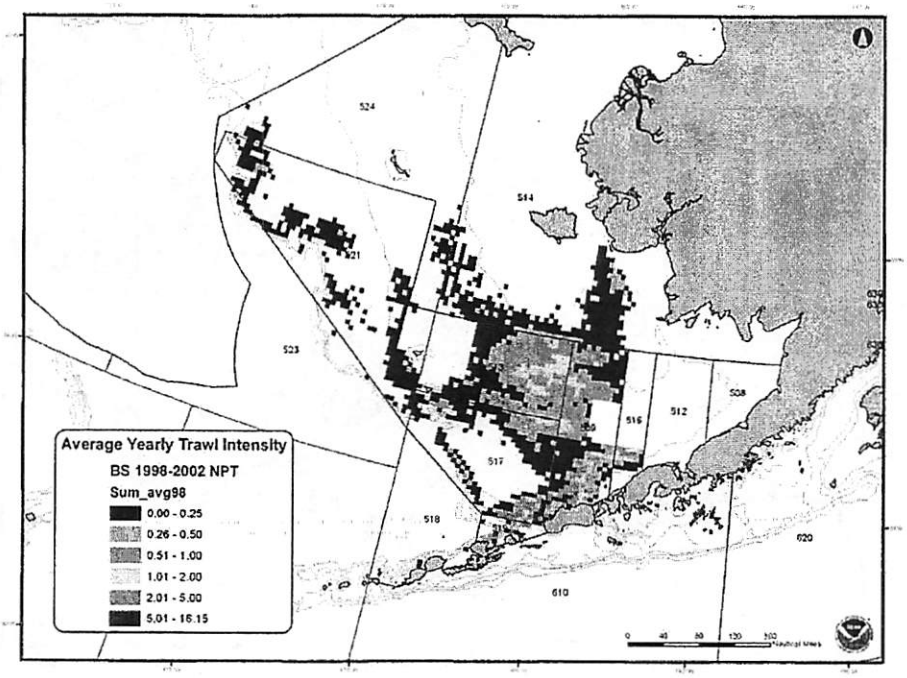
Color figure 2 **Difference in Bering Sea non-pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the previous period (1993-1997)**



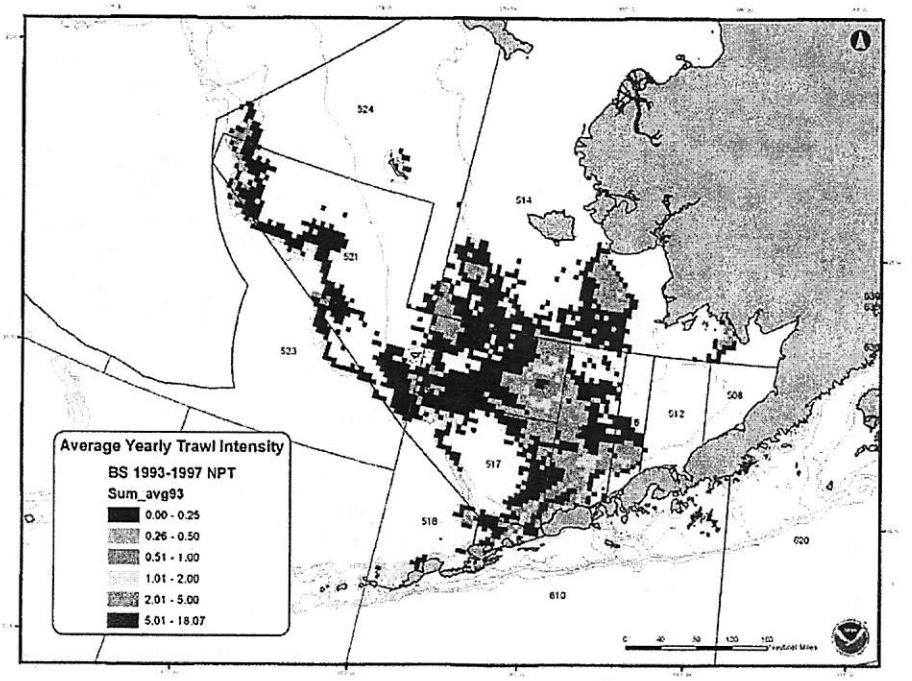
Color figure 3 **Bering Sea non-pelagic trawl average annual fishing intensity over the five-year period 2003-2007**



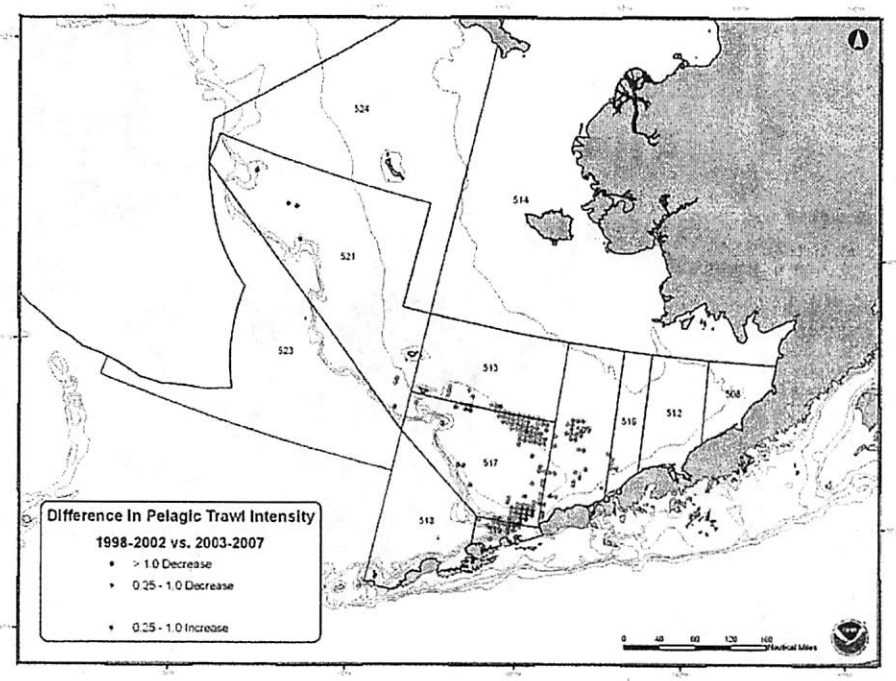
Color figure 4 **Bering Sea non-pelagic trawl average annual fishing intensity over the five-year period 1998-2002**



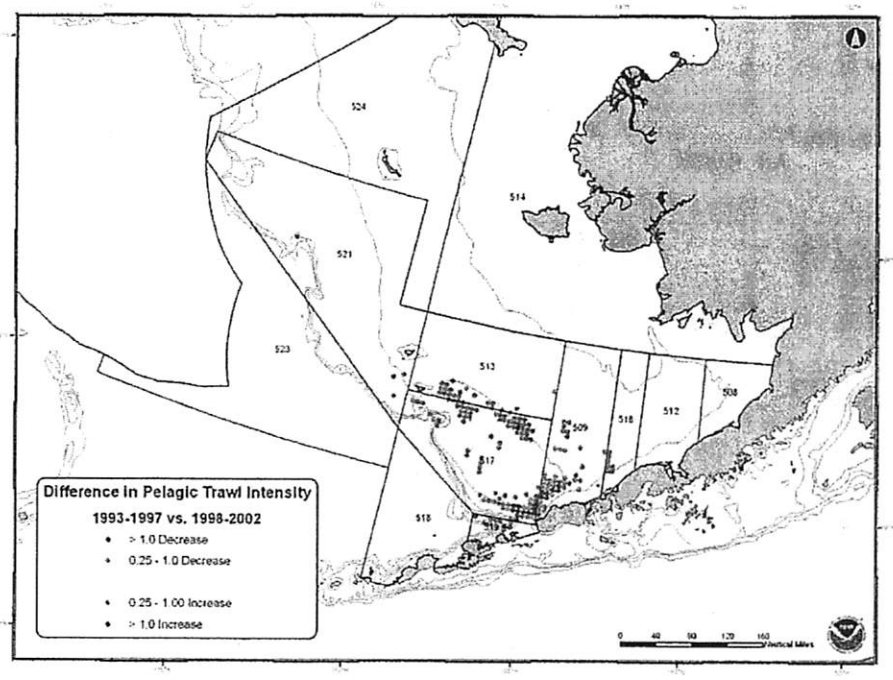
Color figure 5 **Bering Sea non-pelagic trawl average annual fishing intensity over the five-year period 1993-1997**



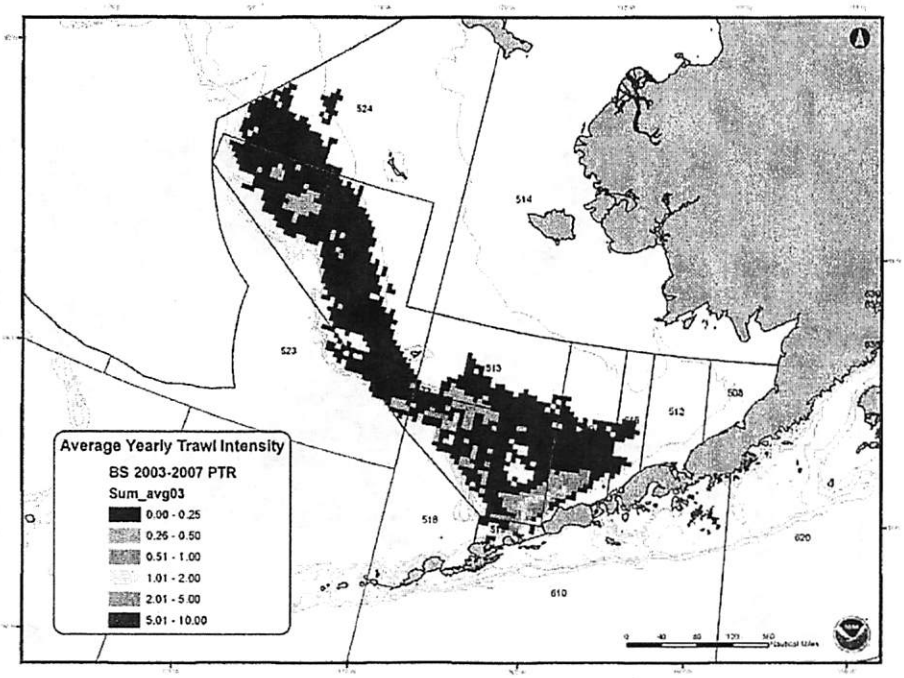
Color figure 6 **Difference in Bering Sea pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the more recent period (2003-2007)**



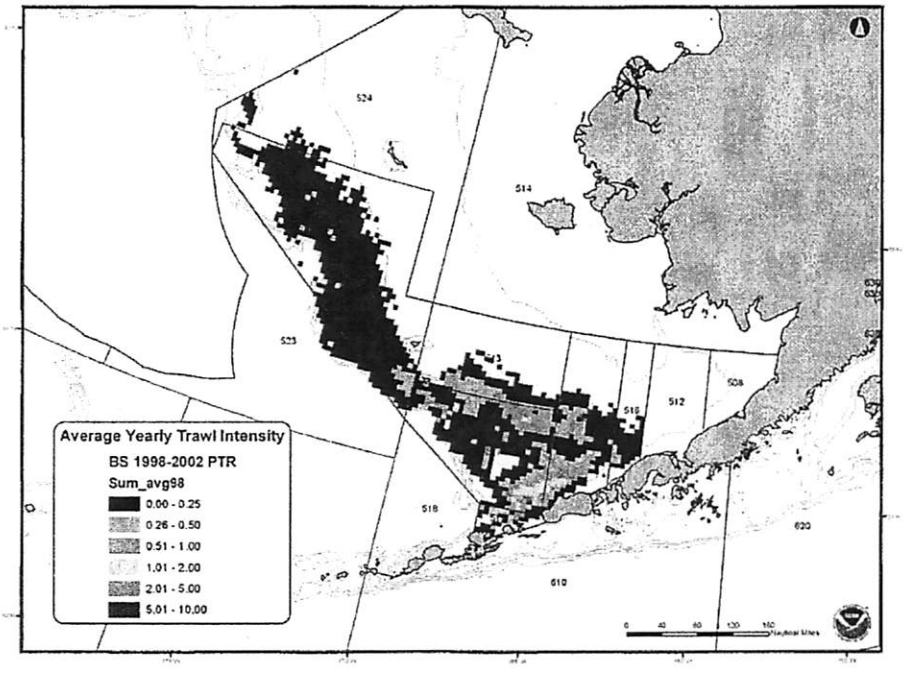
Color figure 7 **Difference in Bering Sea pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the previous period (1993-1997)**



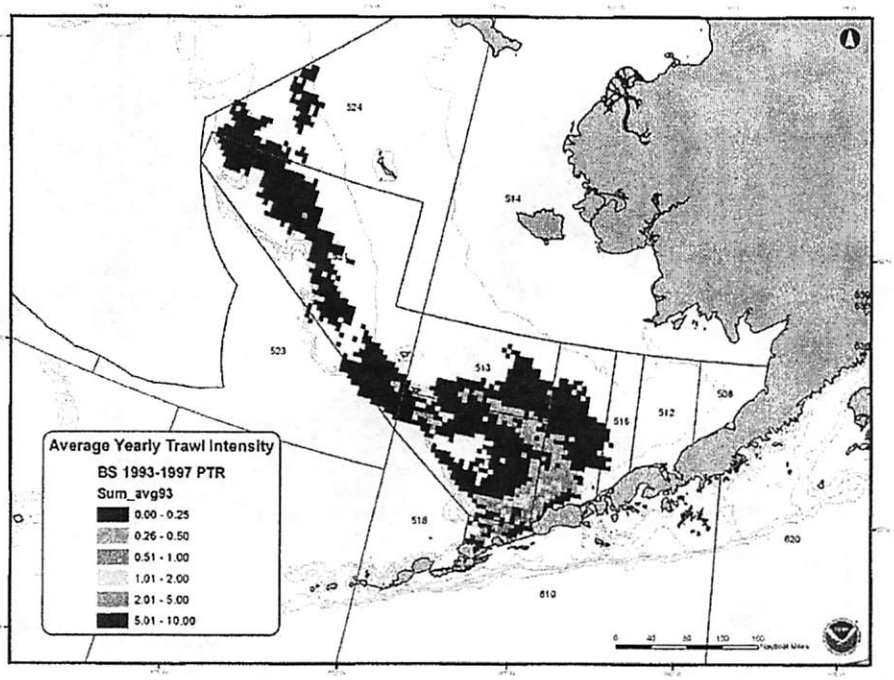
Color figure 8 **Bering Sea pelagic trawl average annual fishing intensity over the five-year period 2003-2007**



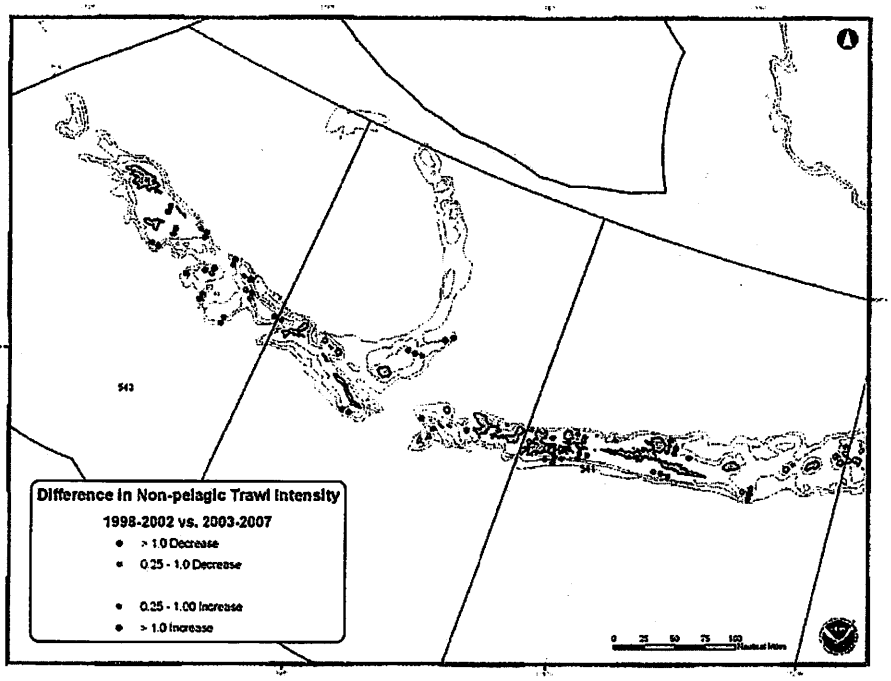
Color figure 9 **Bering Sea pelagic trawl average annual fishing intensity over the five-year period 1998-2002**



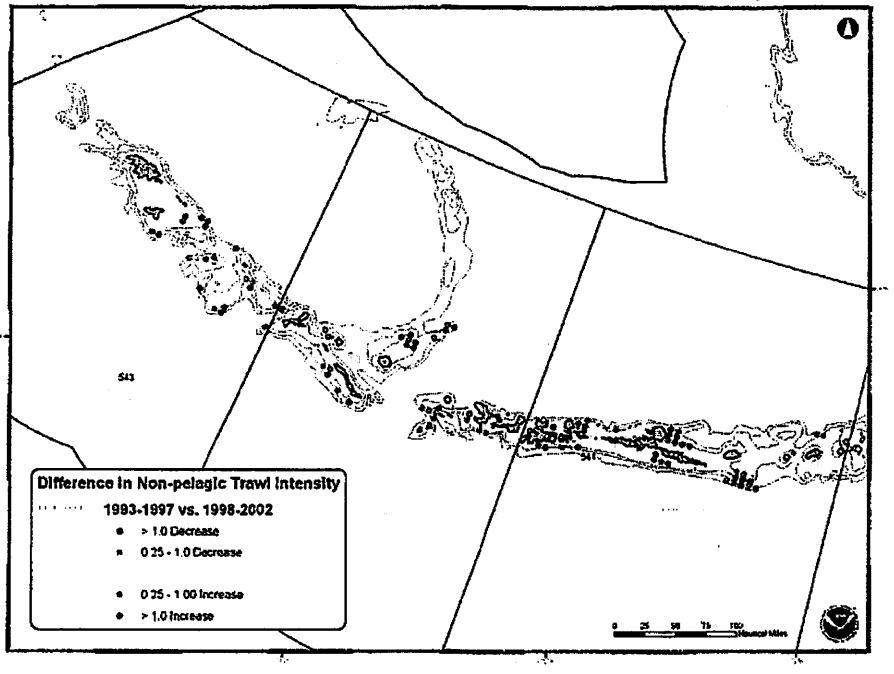
Color figure 10 **Bering Sea pelagic trawl average annual fishing intensity over the five-year period 1993-1997**



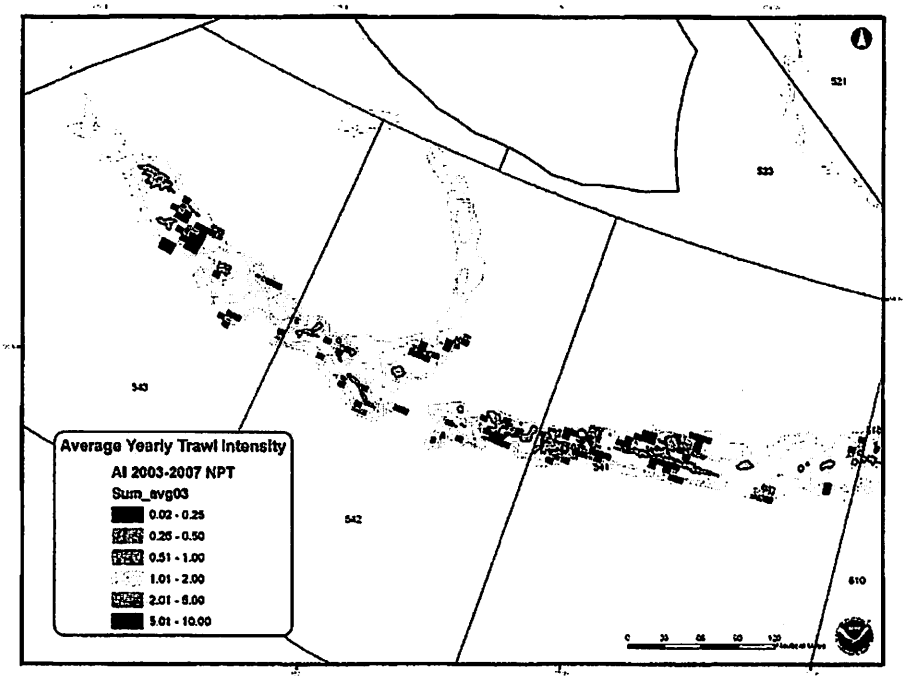
Color figure 11 **Difference in Aleutian Islands non-pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the recent period (2003-2007)**



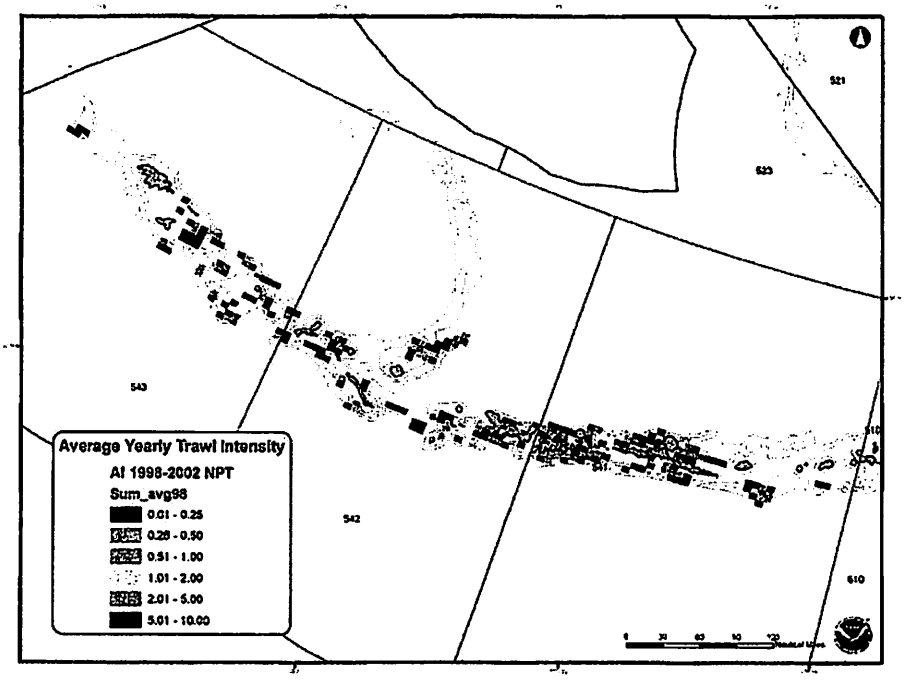
Color figure 12 **Difference in Aleutian Islands non-pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the previous period (1993-1997)**



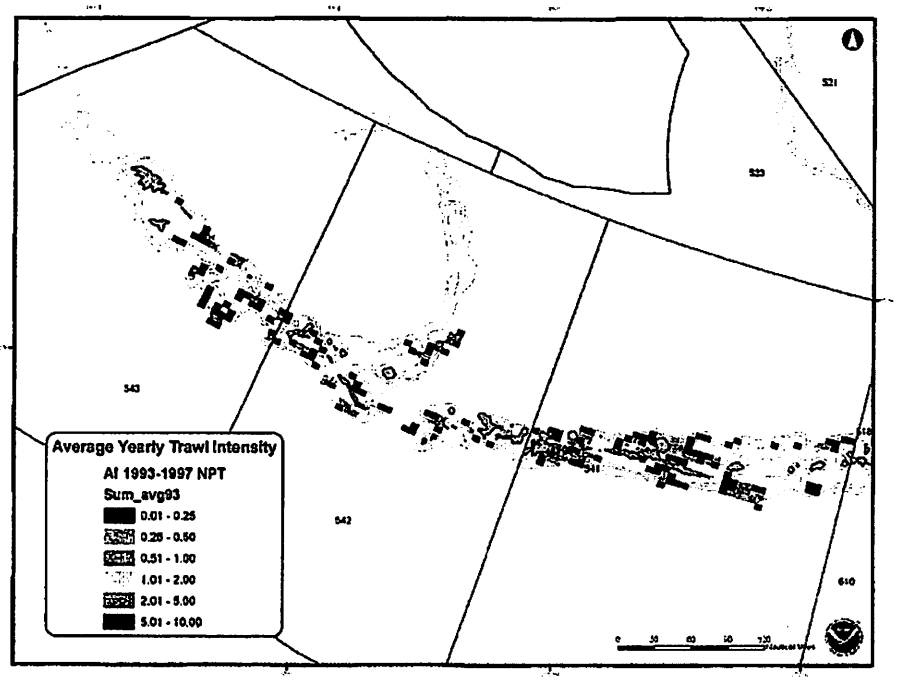
Color figure 13 **Aleutian Islands non-pelagic trawl average annual fishing intensity over the five-year period 2003-2007**



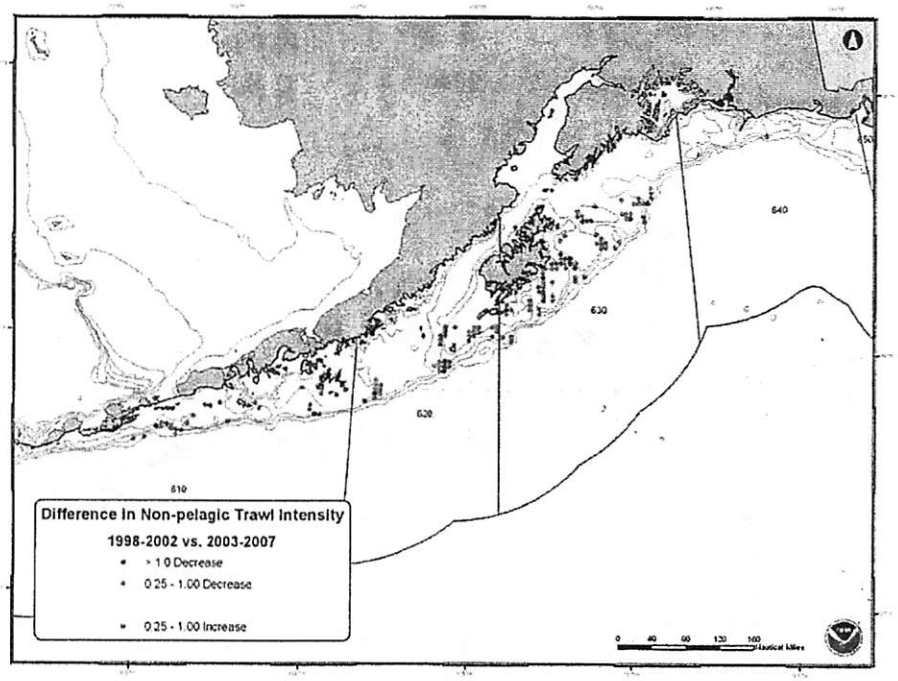
Color figure 14 **Aleutian Islands non-pelagic trawl average annual fishing intensity over the five-year period 1998-2002**



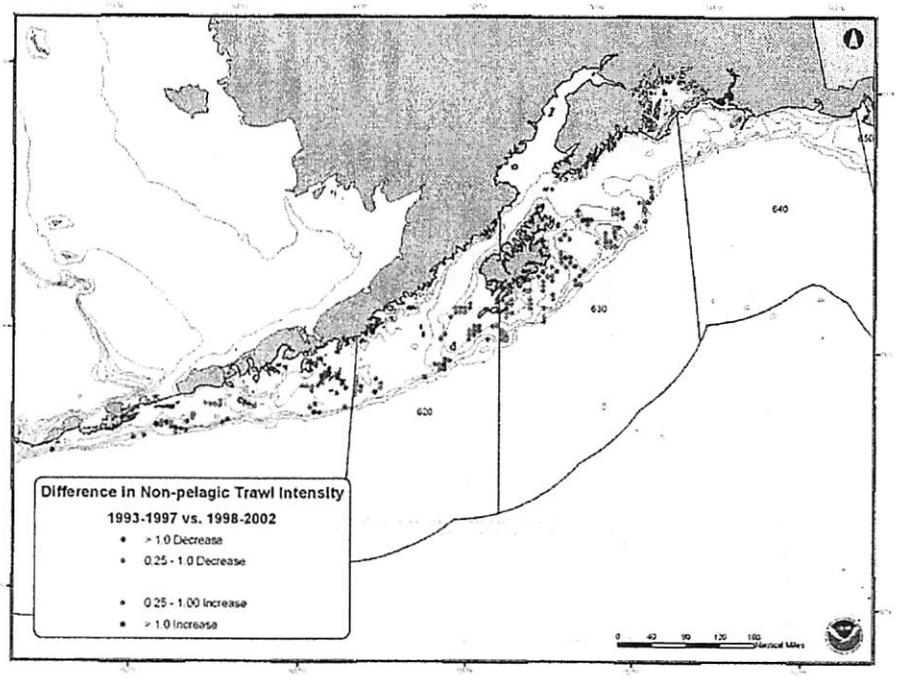
Color figure 15 **Aleutian Islands non-pelagic trawl average annual fishing intensity over the five-year period 1993-1997**



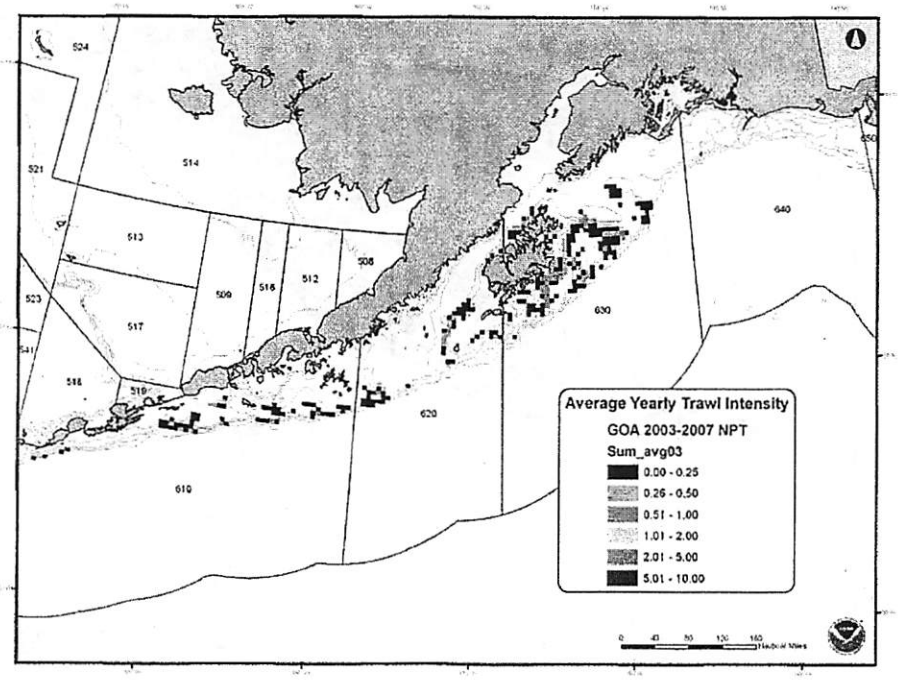
Color figure 16 **Difference in Gulf of Alaska non-pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the recent period (2003-2007)**



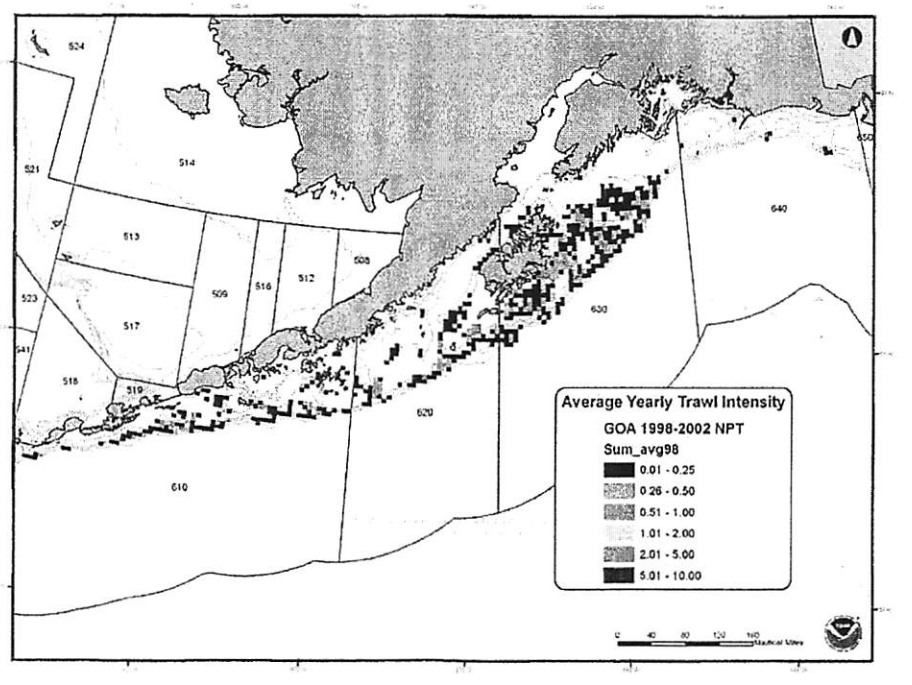
Color figure 17 **Difference in Gulf of Alaska non-pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the previous period (1993-1997)**



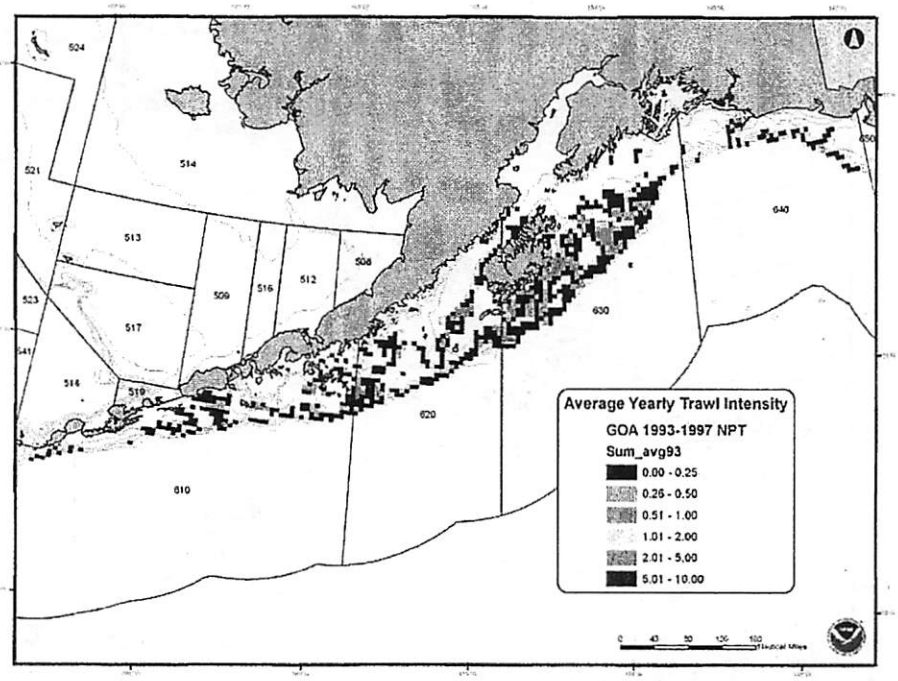
Color figure 18 **Gulf of Alaska non-pelagic trawl average annual fishing intensity over the five-year period 2003-2007**



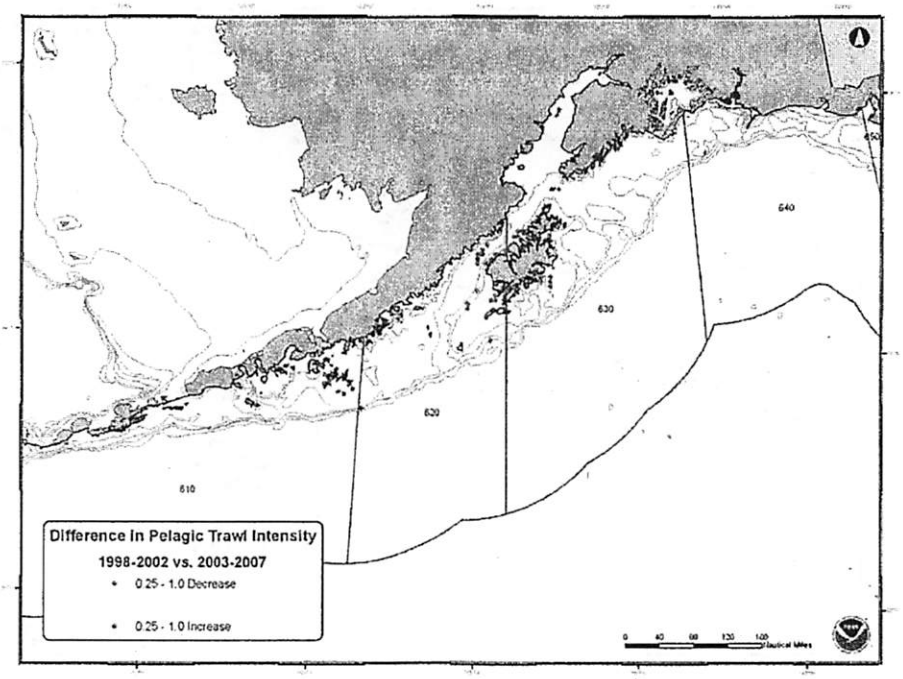
Color figure 19 **Gulf of Alaska non-pelagic trawl average annual fishing intensity over the five-year period 1998-2002**



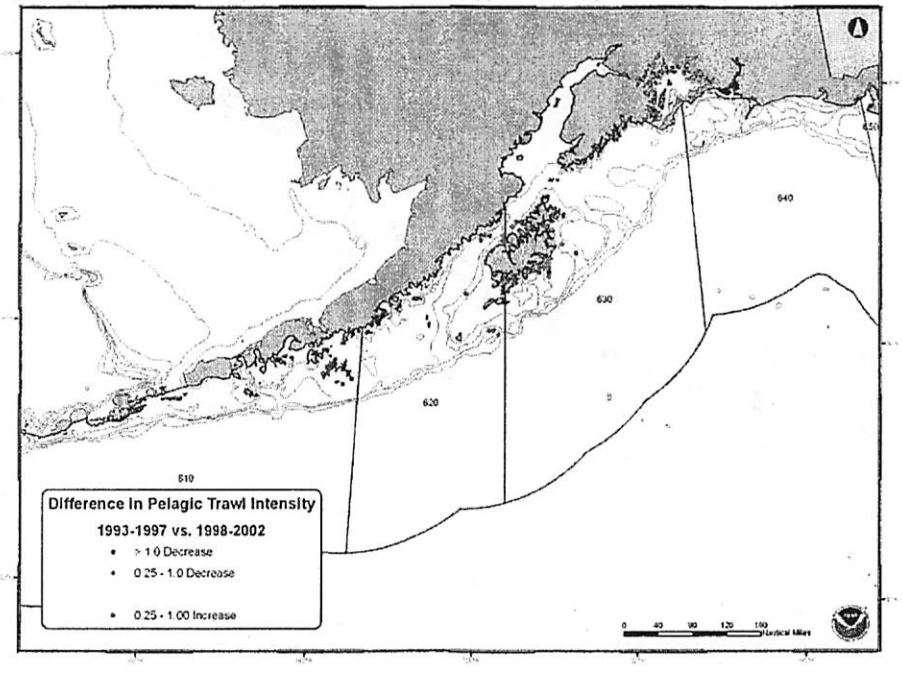
Color figure 20 **Gulf of Alaska non-pelagic trawl average annual fishing intensity over the five-year period 1993-1997**



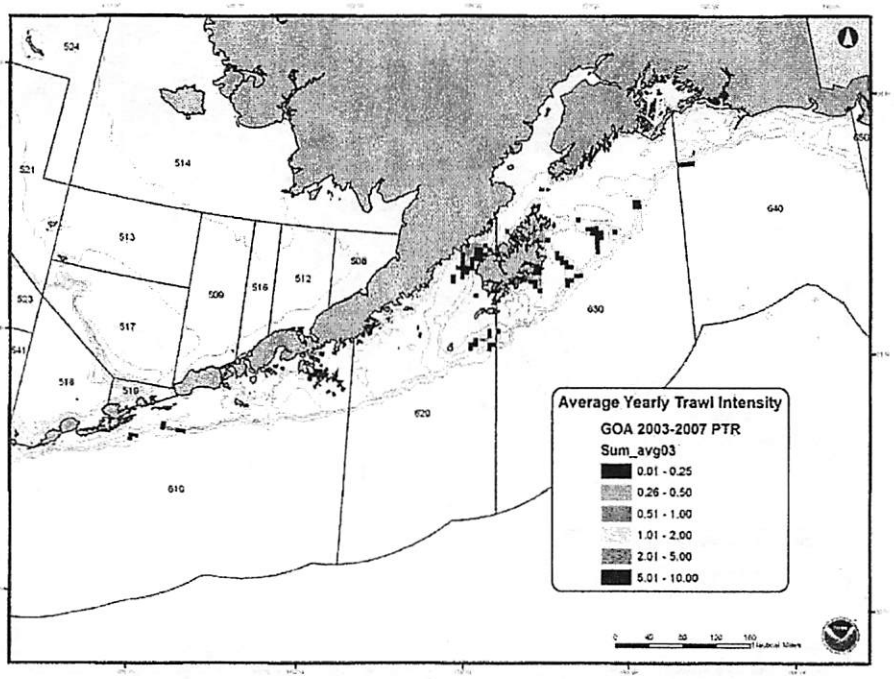
Color figure 21 **Difference in Gulf of Alaska pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the more recent period (2003-2007)**



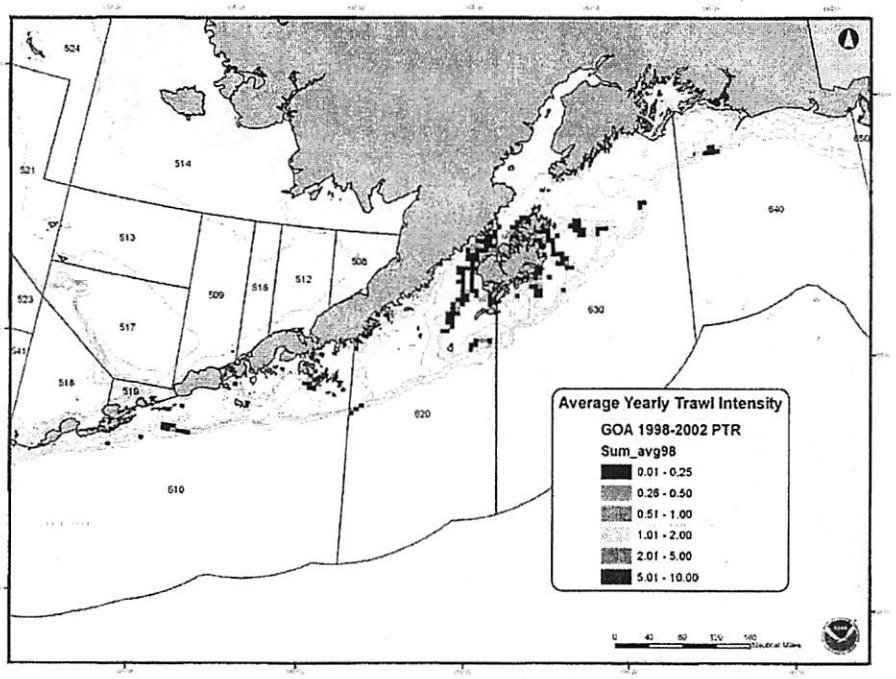
Color figure 22 **Difference in Gulf of Alaska pelagic trawl intensity between the five-year period analyzed in the EFH EIS (1998-2002) and the previous period (1993-1997)**



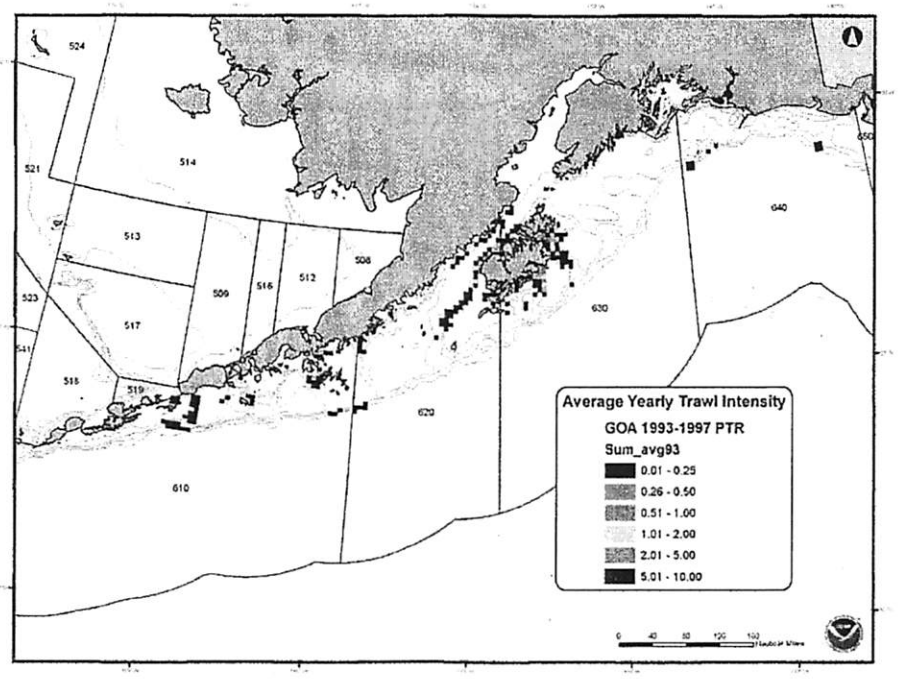
Color figure 23 **Gulf of Alaska pelagic trawl average annual fishing intensity over the five-year period 2003-2007**



Color figure 24 **Gulf of Alaska pelagic trawl average annual fishing intensity over the five-year period 1998-2002**



Color figure 25 **Gulf of Alaska pelagic trawl average annual fishing intensity over the five-year period 1993-1997**



Short primer on the 2004 Groundfish PSEIS

1. History of the 2004 Groundfish PSEIS

In late1990s, NMFS and the Council realized that they needed to take a broader view of the cumulative effects of their management decisions. Typically, the Council addresses a management problem by developing specific solutions. Staff analyzes alternatives to determine their direct effects in a variety of contexts, and the Council shares that analysis with the public prior to making a decision and forwarding that recommendation to the agency and the Secretary of Commerce for final review and approval.

Beginning in 2000, the Council and NMFS conducted a comprehensive, programmatic environmental review of the BSAI and GOA groundfish fishery management plans. The analysis evaluated the management of Alaska's groundfish fisheries from a policy-level perspective, with alternatives ranging from a more aggressive harvest management policy to a highly precautionary one. Each management policy was illustrated and framed with a range of management measures within which the Council would intend to implement the alternative. Published as a final programmatic supplemental environmental impact statement (PSEIS) in June 2004, this document serves the Council and NMFS as the overarching EIS in support of federal authorization of the groundfish fisheries off Alaska. It also described the physical, biological and human environment; every fishery and gear type; and scientific data gaps and research needs.

In April 2004, the Council used this PSEIS as the basis for amending its FMPs to incorporate a new policy statement that communicates its intent to take a more precautionary approach to fishery management decision-making when faced with scientific uncertainty. The Council now routinely reviews its policy goals and objectives when making decisions and when developing its annual workplan.

One aspect of the 2004 PSEIS that made its preparation particularly challenging was that approximately 25 years of management decisions had to be evaluated as a cumulative whole. Both FMPs had over 80 plan amendments that had to be reviewed and analyzed, and the management program had changed substantially during the time period, from a fishery with a large foreign participation, to an exclusively domestic one. The next time it is appropriate to revisit the Council's management policy, and supplement the Alaska groundfish PSEIS, it should be more straightforward, as an environmental baseline has been established, and the new analysis will focus on the actions taken by the Council and NMFS since then.

2. What the 2004 analysis addressed

The Federal action that was analyzed in the 2004 Groundfish PSEIS was the authorization of the groundfish fisheries under the existing management program. There were four policy-level alternatives included in the PSEIS, from which the Council crafted a fifth, preferred alternative. For each alternative, a management approach statement was developed, with accompanying objectives. Example FMPs were included to illustrate how the Council might implement each policy alternative with specific management measures. For all alternatives except the status quo, the policy alternative was illustrated with two example FMPs, which were intended to indicate the range of management measures that might fall within the implementation of that alternative. Although the example FMPs were important to illustrate how a management policy might operate in practice, the adoption of the policy itself was the immediate outcome of the PSEIS. It was intended that the Council would undertake subsequent amendments to fully implement the new management policy, as illustrated in the example FMPs, over the next five to ten years.

Table 1 Alternatives analyzed in the 2004 Groundfish PSEIS

Alternative	Description	Example FMP bookend(s)
Alternative 1	Continue Under the Current Risk Averse Management Policy	FMP 1 – 2002 BSAI and GOA Groundfish FMPs
Alternative 2	Adopt a More Aggressive Harvest Management Policy	Example FMP 2.1 – constraints removed (remove buffer between ABC and OFL, no OY cap, repeal all closures except SSL measures, no PSC or gear restrictions, repeal all catch share programs except AFA and CDQ, repeal observer program and VMS) Example FMP 2.2 – remove OY cap, repeal any bycatch reduction incentives and restrictions except for PSC limits or IR/IU, including seabird avoidance requirements
Alternative 3	Adopt a More Precautionary Management Policy	Example FMP 3.1 – formalize ABC ≥ TAC in FMP, move sharks and skates into target category and develop criteria for all species in 'other species' category, accelerate efforts to develop ecosystem indicators for use in TAC-setting, develop MPA methodology and evaluate efficacy of existing closures, formal procedures to increase Alaska Native participation in management, 0-10% reduction in existing PSC limits, and establish them for salmon/crab in the GOA, improve observer program Example FMP 3.2 – incorporate uncertainty correction into ABC estimation, specify OY separately for each stock rather than for groundfish complex, incorporate stock-specific reference points (e.g. $F_{60\%}$ rather than $F_{40\%}$ for rockfish), move stocks from 'other species' category, close 0-20% of EEZ as an MPA to protect full range of habitats, no bottom trawl for pollock in GOA, comprehensive rationalization of all fisheries, existing PSC limits reduced by 10-30%, GOA salmon and crab PSC limits established, 100% observer coverage on vessels > 60'
Alternative 4	Adopt a Highly Precautionary Management Policy	Example FMP 4.1 – increase buffer between OFL and ABC ($F_{75\%}$ for Steller sea lion prey species and for rockfish, reduce *max* F_{ABC} for stocks based on the lower bound of a confidence interval surrounding the survey biomass estimate), set OY for each stock rather than for the groundfish complex, designate 20-50% of EEZ as no-take marine reserve covering full range of habitats (including AI special management area for coral, and spawning reserves), reduce PSC limits and bycatch by 30-50%, 100% observer coverage on vessels > 60' and 30% coverage on all other vessels, mandatory VMS Example FMP 4.2 – no fishing until target fisheries can be shown to have no adverse effect on the resource and its environment
Preferred Alternative	Adopt a conservative, precautionary approach to ecosystem-based fisheries management	Example FMP PA.1 – formalize ABC ≥ TAC in FMP, use harvest control rules to maintain spawning stock biomass, accelerate efforts to develop ecosystem indicators for use in TAC-setting, develop MPA methodology, consider 0-10% reduction of BSAI PSC limits, establish PSC limits or other measures in GOA for salmon, crab and herring, continue rights-based management as needed, formal procedures to increase Alaska Native participation in management Example FMP PA.2 – incorporate uncertainty correction into ABC estimation, periodically review OY caps to determine their relevancy, develop and implement criteria for use of ecosystem indicators in TAC-setting, develop appropriate harvest strategies for rockfish, develop criteria to manage target and non-target species consistently, re-examine existing closures, consider adopting MPAs (0-20% of EEZ to protect full range of habitats, including as AI management area for coral), no bottom trawl for pollock in GOA, reduce existing PSC limits 0-20%, establish PSC limits in GOA for salmon, crab and herring, comprehensive rationalization of all fisheries, increase consultation with and representation of Alaska Natives in fishery management, improve observer coverage on all vessels, manadatory economic data collection

3. Data used in the PSEIS analysis

The data used in the analysis of biological impacts for groundfish stocks was largely based on 2002 stock assessments, using data from the 2001 and 2002 surveys. For some other seabird and marine mammal species, the most recent assessment data may have been from 2000. For the economic analysis, the most recent year included in the detailed fishery analysis was 2001. This was the basis on which the draft PSEIS was prepared, and issued for public comment in 2003. Some adjustments were subsequently made during the preparation of the Final PSEIS, to take into account more recent information. For example, the results from the new model for assessing impacts of fishing on essential fish habitat were incorporated in the analysis. In general, however, the most recent information in the document dates from 2000 to 2002.

4. Management measures that have been implemented under the groundfish policy

The following section evaluates the Council's management actions since the completion of the Groundfish PSEIS in 2004. The Council's groundfish policy (the approved, preferred alternative from the Groundfish PSEIS) is structured with 9 goal statements, each supported by specific objectives. For each goal statement and set of objectives, we identify the relevant FMP and regulatory amendments implemented over the last eight years, as well as other management steps that the Council has taken with respect to these goals. The discussion in this section is not necessarily comprehensive, as each amendment may be fit to many of the Council's goals and objectives. Rather, it is intended to provide an overview of the major management changes of the last eight years, and how they compare to the management objectives that the Council set for itself in 2004.

Additionally, we have also looked back to the example FMPs that illustrated the preferred alternative analyzed in the Groundfish PSEIS. Given the Council's actions of the last eight years, the current groundfish management program does now fall within the range of example FMPs that were analyzed in the Groundfish PSEIS.

Each of the sections below identifies one of the Council's policy goals. The specific objectives, sometimes abbreviated, linking to that policy goal are listed in a box at the beginning of the section. If the objectives are also linked to a specific item on the Council's workplan[1], that is noted also.

Prevent Overfishing

1. Adopt conservative harvest levels
2. Use existing OY caps.
3. Specify OY as a range.
4. Periodic reviews of F40 and adopt improvements
5. Improve management through species categories *(on workplan)*

FMP amendments related to this goal statement

- revisions to the harvest specifications process (B48/G48)
- moved skates to target category (G63)
- biologically-based specifications for GOA 'other species' category (G69, G79)
- amendments to bring FMPs in line with annual catch limit requirements, including moving other species into target category, and creating an ecosystem component category (B95, G87)

[1] In order to track the implementation of the various management objectives over time, the Council developed a workplan to prioritize issues for consideration. The first draft of the workplan was developed in June 2004, and it has since been once revised, in February 2007. The Council is updated on the status of this workplan at each meeting.

Regulatory amendments related to this goal statement

- Annual specifications for setting harvest levels

Other management actions related to this goal statement

- Regular CIE reviews for stock assessments and harvest strategies
- Upcoming discussion paper to consider grenadiers in the FMP

Promote Sustainable Fisheries and Communities

6. Promote conservation while providing for OY
7. Promote management measures that avoid social and economic disruption
8. Promote fair and equitable allocation
9. Promote safety

These considerations are applied to all management actions

Preserve Food Web

10. Develop indices of ecosystem health *(on workplan)*
11. Improve ABC calculations to account for uncertainty and ecosystem
12. Limit harvest on forage species.
13. Incorporate ecosystem considerations in fishery management

Other management actions related to this goal statement

- Uncertainty and ecosystem considerations taken into account during stock assessment and harvest specifications
- Ecosystem indices reported and assessed in annual ecosystem SAFE report
- Development of the Aleutian Islands Fishery Ecosystem Plan
- Development of ecosystem synthesis reports for the Bering Sea and the Aleutian Islands ecosystem areas

Manage Incidental Catch and Reduce Bycatch and Waste

14. Continue and improve current incidental catch and bycatch program *(on workplan)*
15. Develop incentive programs for bycatch reduction *(on workplan)*
16. Encourage research for non-target species population estimates *(on workplan)*
17. Develop management measures that encourage techniques to reduce bycatch *(on workplan)*
18. Continue to manage incidental catch and bycatch through seasons and areas
19. Account for bycatch mortality in TAC accounting *(on workplan)*
20. Control prohibited species bycatch through PSC limits *(on workplan)*
21. Reduce waste to biologically and socially acceptable levels

FMP amendments related to this goal statement

- Groundfish retention standard (B79) - *upcoming regulatory amendment to remove*
- Bering Sea Chinook salmon bycatch restrictions (B84, B91)
- Trawl sweep elevation requirement in the Bering Sea flatfish fisheries (B94)
- GOA area closures to reduce bairdi crab bycatch (G89) – *Council approved, not yet implemented*
- Establishment of PSC limits for Chinook salmon in the GOA pollock fishery (G93) – *Council approved, not yet implemented*

Regulatory amendments related to this goal statement

- Upcoming regulatory amendment to remove the groundfish retention standard
- Annual specifications for setting prohibited species limits
- Revisions to MRAs
- Revision to regulations for prohibited species donation program and fishmeal

Other management actions related to this goal statement

- Upcoming amendment for trawl sweep elevation in the Central GOA flatfish fisheries
- Upcoming amendment on GOA halibut bycatch
- Upcoming amendment for Bering Sea chum salmon bycatch
- Upcoming discussion paper on PSC limits for Chinook salmon in non-pollock GOA trawl fisheries
- Upcoming discussion paper on BSAI halibut bycatch
- Upcoming discussion paper on BSAI crab bycatch
- Council encourages research through annual research priorities
- NMFS and observer program work on improving statistical methods for bycatch accounting (as part of National Bycatch Report initiative)

Avoid Impacts to Seabirds and Marine Mammals

22. Continue to protect ESA-listed and other seabirds
23. Maintain or adjust SSL protection measures *(on workplan)*
24. Encourage review of marine mammal and fishery interactions
25. Continue to protect ESA-listed and other marine mammals *(on workplan)*

Regulatory amendments related to this goal statement

- Revisions to seabird avoidance measures, including in Area 4E
- Revisions to Steller sea lion closures for pollock and cod fisheries in the GOA
- Revisions to Steller sea lion closures for atka mackerel and cod fisheries in the Aleutian Islands

Other management actions related to this goal statement

- Council receives protected species report at each meeting, monitoring issues with seabirds and marine mammals

Reduce and Avoid Impacts to Habitat

26. Review and evaluate efficacy of habitat protection measures for managed species *(on workplan)*
27. Identify EFH and HAPC, and mitigate fishery impacts as necessary *(on workplan)*
28. Develop MPA policy
29. Encourage research on baseline habitat mapping *(on workplan)*
30. Develop goals and criteria for MPAs; implement as appropriate *(on workplan)*

FMP amendments related to this goal statement

- HAPC (B65/G65) and EFH (B78/G73) amendments, and associated fishery area closures in the GOA and AI
- Bering Sea Habitat Conservation (B89) with area closures for non-pelagic trawling
- Trawl sweep elevation requirement in the Bering Sea flatfish fisheries (B94)
- Update to EFH information with findings from the 2010 EFH 5-year review (B98/G90) – *Council approved, not yet implemented*

Other management actions related to this goal statement

- Upcoming amendment for trawl sweep elevation in the Central GOA flatfish fisheries
- Upcoming amendment for designating skate nurseries as HAPC
- Discussion paper resulting from EFH 5-year review to look at groundfish impacts on crab EFH (especially red king crab in southwestern Bristol Bay)
- Discussion of a Northern Bering Sea Research Area Research Plan
- Council considering nominating Alaska MPAs to national MPA center register
- Council encourages research through annual research priorities

Promote Equitable and Efficient Use of Fishery Resources

31. Provide economic and community stability through fair allocation
32. Maintain LLP and initiate rights-based management programs *(on workplan)*
33. Periodically evaluate effectiveness of rights-based management programs
34. Consider efficiency when adopting management measures *(on workplan)*

FMP amendments related to this goal statement

- Sector allocations for Pacific cod in BSAI and GOA (B85, G83); fixed gear endorsement in GOA (G86)
- Sector allocations for 3 flatfish species, POP, and Atka mackerel in BSAI, head and gut cooperative; vessel replacement and cooperative formation revisions (B80, B90, B93, B97)
- Latent licenses rescinded (B92/82, G86)
- Cooperative program for rockfish in central GOA (G68); program revisions (G78, G85); new program authorized (G88)
- IRIU rescinded in GOA for shallow water flatfish (G72)
- Single geographic location amended for pollock motherships (B62, G62)
- IFQ B quota share holders can fish on any size vessel (G67)
- AI pollock to the Aleut Corporation (B82)

Regulatory amendments related to this goal statement

- BSAI fixed gear parallel fishery management measures
- Minor revisions to AFA, CDQ, IFQ, rockfish programs
- GOA pollock trip limits

Other management actions related to this goal statement

- Permit fee authorization (all FMPs)

Increase Alaska Native Consultation

35. Incorporate local and traditional knowledge into fishery management
36. Consider ways to enhance local and traditional knowledge collection
37. Increase Alaska Native participation in fishery management *(on workplan)*

Other management actions related to this goal statement

- Community outreach and consultation policy adopted by Council in 2008
- Community committee helps prioritize outreach (currently focused on BSAI chum salmon analysis)
- Website redesigned to include a rural outreach component

Improve Data Quality, Monitoring, and Enforcement

38. Increase utility of observer data *(on workplan)*
39. Develop equitable funding mechanisms for the NPGOP *(on workplan)*
40. Increase economic data reporting requirements *(on workplan)*
41. Improve technology for monitoring and enforcement *(on workplan)*
42. Encourage development of an ecosystem monitoring program
43. Cooperate with NPRB to identify needed research
44. Promote enforceability
45. Coordinate management and enforcement programs with Federal, State, international, and local partners

FMP amendments related to this goal statement

- Observer program restructuring (B86/G76) – *approved by Council, not yet implemented*
- Remove dark rockfish from FMP, allow management by State of Alaska (B73/G77)

Regulatory amendments related to this goal statement

- Electronic reporting, online accounting
- Changes to VMS requirements (required for sablefish in BS, no longer required for dinglebar lingcod in GOA)
- Repeal of vessel incentive program
- Changes to observer program to provide flexibility in deployment and improve operational efficiency
- Bering Sea Chinook salmon bycatch economic data collection

Other management actions related to this goal statement

- Upcoming discussion paper on VMS use and requirements
- Council's economic data collection committee
- Video monitoring is being explored as a tool for monitoring and enforcement
- Council encourages research through annual research priorities, cooperates with NPRB
- Council initiated and participates in Alaska Marine Ecosystem Forum, as well as maintaining other relationships with partner entities

D-1(c)

PUBLIC TESTIMONY SIGN-UP SHEET

Agenda Item: ~~D-1(c) Scallops~~ PSEIS

	NAME *(PLEASE PRINT)*	TESTIFYING ON BEHALF OF:
1	Stephanie Madsen	APA
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.