AGENDA C-2
Supplemental
FEBRUARY 2009

January 21, 2009

Mr. Eric Olson, Chairman
North Pacific Fishery Management Council
605 West Fourth Avenue, Ste 306
Anchorage, AK 99501-2252

Dear Chairman Olson:

I am writing to thank the North Pacific Fishery Management Council for developing a forward-looking Fishery Management Plan (FMP) for U.S. waters in the Arctic and to urgently ask the Council to continue to exercise leadership on this issue by adopting Alternative 2 of the proposed Arctic FMP.

Alternative 2 would protect the health of the Arctic ecosystem by closing the entire region north of the Bering Strait to all commercial fishing until it can be shown that commercial fishing can occur without harming the health of the marine ecosystem or the subsistence way of life.

The Arctic Ocean is facing changes unparalleled on the planet. Over the last 100 years, the Arctic has warmed twice as fast as the rest of the planet. Since the 1950s, an area of sea ice about half as big as the land area of the United States has been lost.

As the Council has recognized, global climate change is already having profound effects on the marine environment of the Arctic. Foremost of these has been the rapid loss of sea ice cover and the increase in ocean temperature. These and other related changes are placing great stress on the Arctic ecosystems and the thousands of people who live there.

Polar bears, walruses, whales, seabirds and other Arctic animals are struggling to adapt to rapid changes, and would face new threats if additional human industrial activities were added to the stress of climate change.

Relatively little is known about the abundance, distribution, and role of fish and other marine species in the Chukchi and Beaufort ecosystems. There is no way to anticipate the degree to which commercial fishing may impact these ecosystems.

In light of these uncertainties and the unprecedented pressures on the Arctic Ocean ecosystem, I urgently ask the council to take a precautionary approach and adopt Alternative 2 of the Arctic FMP at its February meeting in Seattle.

By adopting Alternative 2, the Council will lead the world in protecting Arctic fishery resources and set a precedent for how other agencies responsible for the Arctic Ocean can proceed.

It is important that we develop a careful science-based approach for this fragile environment.

Thank you for your help on behalf of our world's treasured and irreplaceable Arctic ecosystem.

Respectfully,

J. Capozzelli
New York

To whom it may concern,

I urge you to adopt Alternative 2 for the Arctic Fishery Management Plan to close all US Arctic waters to industrial fishing. Please help protect the Oceans!

Joen McDuff

CLOSE THE U.S. ARCTIC TO INDUSTRIAL FISHING

Virginia Ransom
855 Catalpa Court
Charlottesville, VA
P 401-323-1321
f 703-940-2250

January 16, 2009

North Pacific Fishery Management Council
605 West 4th
Suite 306
Anchorage, Alaska 99501-2252
p 907-271-2809
f 907-271-2817

Dear Mr. Olsen, Chairman NPFMC; and anyone else to whom it may concern:

I am writing to urge you to please adopt Alternative 2 to **close the entire Arctic Management Area to commercial fishing**.

Thank you for your continuing efforts to establish a science-based and precautionary approach for protecting the Arctic from industrial fishing. The North Pacific Council again has the chance to lead the way in protecting Alaska's incredible ocean ecosystems and vibrant fisheries, as well as to demonstrate how we can manage the Arctic Ocean responsibly in the face of climate change. I urge you to adopt Alternative 2 for the Arctic Fishery Management Plan to close all U.S. Arctic waters to industrial fishing.

The Arctic is already facing incredible stresses from climate change. Arctic animals like the polar bear, walrus and bowhead whale are struggling to adapt to the rapid changes already happening in the Arctic. Adding industrial fishing pressures would threaten the fragile Arctic food web that these and other animals rely on for survival.

In addition, thousands of people live in the U.S. Arctic and rely on healthy ocean ecosystems, and we cannot afford to add any industrial fishing pressures that could further threaten the health of those ecosystems.

Given the extreme threats to the Arctic, there must be a science-based and extremely precautionary approach in place before any new industrialization – including industrial fishing – expands into the Arctic Ocean. I commend you for taking a responsible course to protect the health of the Arctic for this and future generations as part of our responsibility to our children and as part of our shared natural heritage.

Please adopt Alternative 2 to close the entire Arctic Management Area to commercial fishing.

Sincerely,

Virginia Ransom

CLOSE THE U.S. ARCTIC TO INDUSTRIAL FISHING

Patrick Heraghty
855 Catalpa Court
Charlottesville, VA
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f 703-940-2250

January 16, 2009

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605 West 4th
Suite 306
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Please adopt Alternative 2 to close the entire Arctic Management Area to commercial fishing.

Sincerely,

Patrick Heraghty

NORTHWEST ARCTIC BOROUGH

P.O. Box 1110

Kotzebue, Alaska 99752

(907) 442.2500 or (800) 478.1110

Fax: (907) 442.3740 or 2930

January 20, 2009

Bill Wilson
North Pacific Fishery Management Council
605 W. 4th Ave., Suite 306
Anchorage, AK 99501

Dear Mr. Wilson:

Attached for your information and sharing with the North Pacific Fisheries Management Council is borough planning commission resolution 09-05 relating to the Arctic Fisheries Management Plan.

I look forward to continuing our work together. Please feel free to contact me at (907) 442-2500, extension 109, or via e-mail at tokleasik@nwabor.org.

Sincerely,

Ukallaysaaq Tom Okleasik,
Planning Director

Cc: Mayor Siikauraq Whiting
John Chase, Community Planner and Coastal Area Specialist

NORTHWEST ARCTIC BOROUGH PLANNING COMMISSION
RESOLUTION PC-09-05

A RESOLUTION OF THE NORTHWEST ARCTIC BOROUGH REGARDING THE DRAFT ARCTIC FISHERY MANAGEMENT PLAN

WHEREAS: The Northwest Arctic Borough Planning Commission was established under title 8 of borough code for the purposes of administering measures adopted by the assembly for implementation of the borough comprehensive plan and coastal management program; and

WHEREAS, The North Pacific Fisheries Management Council is drafting an Environmental Assessment and Arctic Fishery Management Plan in response to global warming and growing interest among global commercial fishing corporations in Arctic waters; and

WHEREAS, The residents of the Borough depend heavily on subsistence resources, and the Arctic fisheries provide healthy food and a spiritual connection to the people who permanently inhabit it; and

WHEREAS, At the same time, the productivity of the Arctic environment to support the subsistence economy is extremely sensitive, and the safe and available harvest on these coastal resources are necessary for survival at a time when the costs of living are continuing to increase; and

WHEREAS, If commercial fisheries are to be managed and approved for Arctic waters, the Borough residents are concerned that the people of the region would be subject to all of the environmental risks with commercial fisheries but practically none of the financial benefits.

NOW THEREFORE BE IT RESOLVED, The Northwest Arctic Borough Planning Commission supports the following:

- Supports the development of an Arctic Fishery Management Plan and urges the North Pacific Fisheries Management Council to adopt it in a timely manner.
- Supports the proposed alternative 2 in the December 2008 public review draft of the Arctic FMP EA/RIR/IRFA.

BE IT FURTHER RESOLVED, The Planning Commission requests the following:

- Requests that local Boroughs, Cities, residents, and fishermen be involved in developing future fisheries in the Arctic Management Area, including involvement in the Arctic planning team, crab and ground fish teams, and other fisheries planning/management teams/committees for the Arctic.
- Requests that any future commercial fisheries in the Arctic Management Area be allocated such that Arctic residents and communities benefit first and to the greatest extent.
- Requests the North Pacific Fisheries Management Council to schedule annual community level meetings in Kotzebue, Kivalina and Deering regarding fisheries issues and provide the opportunity for public/community input.

PASSED AND ADOPTED THIS 15TH DAY OF JANUARY, 2009.

Raven Sheldon, Borough Planning Commission Chair

SIGNED AND ATTESTED TO THIS 15TH DAY OF JANUARY, 2009.

Helena Hildreth, Borough Clerk

Cruise Report for the 2008 Beaufort Sea Survey

July 27 – August 30, 2008

F/V *Ocean Explorer*

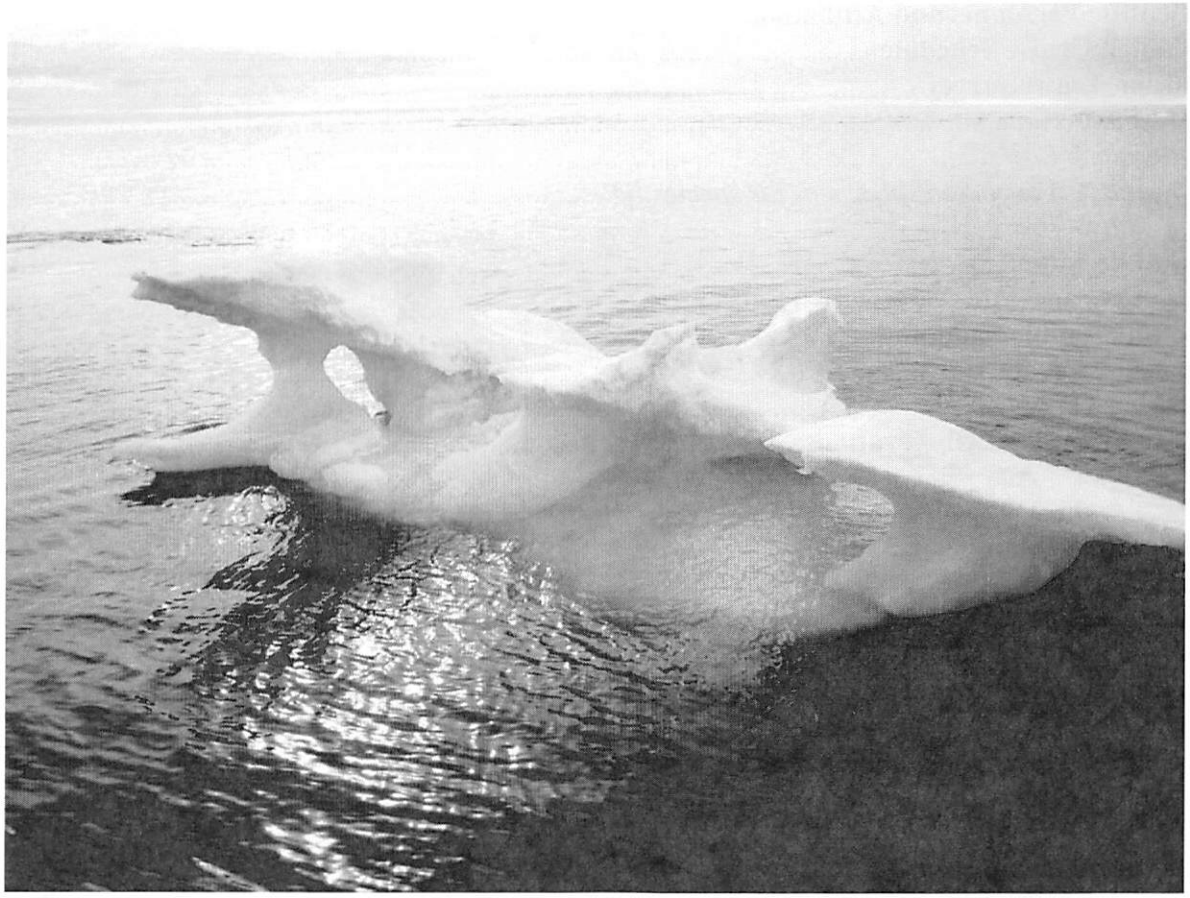

Photo credit: All vessel and scientific crew

NOAA – U.S. Department of Commerce
National Marine Fisheries Service
Alaska Fisheries Science Center (AFSC)

MMS – U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

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Overview

The Alaska Fisheries Science Center's Status of Stocks and Multispecies Assessment (SSMA) Program's Fishery Interaction Team (FIT) conducted a fish survey in the marine offshore waters of the Beaufort Sea (155°W to 152°W) during the month of August, 2008. The Mineral Management Service (MMS) provided funding for the survey. The results of the survey will provide estimates of abundance, species composition and biological information of marine fish and invertebrates, oceanographic properties and information on the macro- and micro-zooplankton communities.

The F/V *Ocean Explorer* (Darin Vanderpol, captain) was charted to conduct the survey; operations began and ended in Dutch Harbor, Alaska.

Objectives

1. To quantify the distribution, abundance, and biological condition of important offshore marine fish species.

2. To assess the biology, behavior, and dynamics of key ecosystem components for ongoing scientific research.

3. Based on results of the survey, recommend methods for future monitoring that could provide time-series and data trend information necessary to support offshore development decisions and serve as a proto-type fisheries component of future MMS or other ocean observing systems.

General Sampling Methods

Bottom trawl survey
The distribution and abundance of adult and juvenile demersal fish and their dominant benthic invertebrate prey in offshore habitats (20 m to the shelf break) was assessed with 83-112 eastern otter trawls, the standard for AFSC bottom trawl surveys of the Bering Sea shelf. AFSC standard survey methods were followed including maintaining a constant vessel speed and monitoring of vertical and horizontal net openings with net sounders. A stratified sampling plan was employed with survey effort distributed among three strata defined by water depth: 20 – 50 m, 50 – 100 m, and 100 m – 500 m, which correspond to documented changes in water masses in the Beaufort Sea that are likely to affect the distribution of fish and their prey.

Acoustic survey
The distribution and abundance of pelagic fish were assessed using acoustic methods (limited to times and areas that did not conflict with subsistence whaling operations). Adult and juvenile fish were surveyed with echo integration trawl (EIT) survey methods similar to those used during other routine AFSC acoustic surveys. 7 parallel transects oriented inshore to offshore from the 20m to the 500m isobath were surveyed. The transects were approx 30 nmi long and spaced 10 nmi apart. Mid-water trawl hauls were conducted with a Marinovich net when and where significant amounts of fish were detected by the acoustic system to determine the species

composition and to collect other biological information from the sound reflecting layers (a.k.a. "backscattering").

Oceanography
Physical and biological oceanographic data were collected to assess water column properties and the food fields upon which the fish depend. The water column properties measured were the distribution of water mass types defined by temperature, salinity and density profiles, and the flow fields setting the boundaries and distribution of the water masses. The physical information was provided by CTD (conductivity – temperature – depth) measurements. Plankton tows using bongo nets were completed in conjunction with the CTD measurements. These tows collected the samples needed to quantify the species composition, abundance and biomass of the zooplankton available to the fish. The shipboard physical oceanographic sampling and zooplankton sampling took place along the transects described above, often at the same locations as the bottom trawl sampling.

Scientific Personnel and Affiliations

Elizabeth Logerwell (Field Party Chief; FPC)	Alaska Fisheries Science Center (AFSC)
Kimberly Rand	Alaska Fisheries Science Center (AFSC)
Sandra Parker-Stetter	University of Washington (UW)
Erika Acuna	Alaska Fisheries Science Center (AFSC)
Jennifer Nomura	Alaska Fisheries Science Center (AFSC)
Heloise Chenelot	University of Alaska Fairbanks (UAF)

Detailed Cruise Schedule

Charter start date	7/27/2008
Unpack and set-up	7/27/2008
Acoustic calibration	7/28-29/2008
Leave Dutch Harbor	7/30/2008
Mark wires	8/1/2008
Arrive survey grounds	8/6/2008
Finish survey	8/22/2008
Return Dutch Harbor	8/27/2008
Acoustic calibration	8/28/2008
Pack-up and load gear	8/29/2008
Charter end date	8/30/2008

Bottom Trawl Survey

Methods

Figure 1 and Table 1 show the location of the bottom trawl stations sampled during the cruise. The original survey plan called for stations to be distributed among depth strata (20-50 m, 50-100 m, 100-500 m) on every other transect (4 of the total 7 transects). Stations were to be occupied along each transect in its entirety starting at the westernmost transect and proceeding to the east. However, the presence of sea ice in the study area required a modification of the original plan. Dense sea ice covered the inner- and mid-shelf strata (20-100 m) when the vessel arrived on the grounds on August 6 and persisted for six days. On August 12 it was possible to trawl at mid-shelf stations (less than 100 m water depth), although it required navigating through ice to reach open water, and fishing operations were conducted within 0.5 to 3 nmi of the ice. However, the next day (August 13), the mid-shelf region was mostly clear of ice, and ice was not encountered in densities requiring a change in survey plans for the remainder of the cruise.

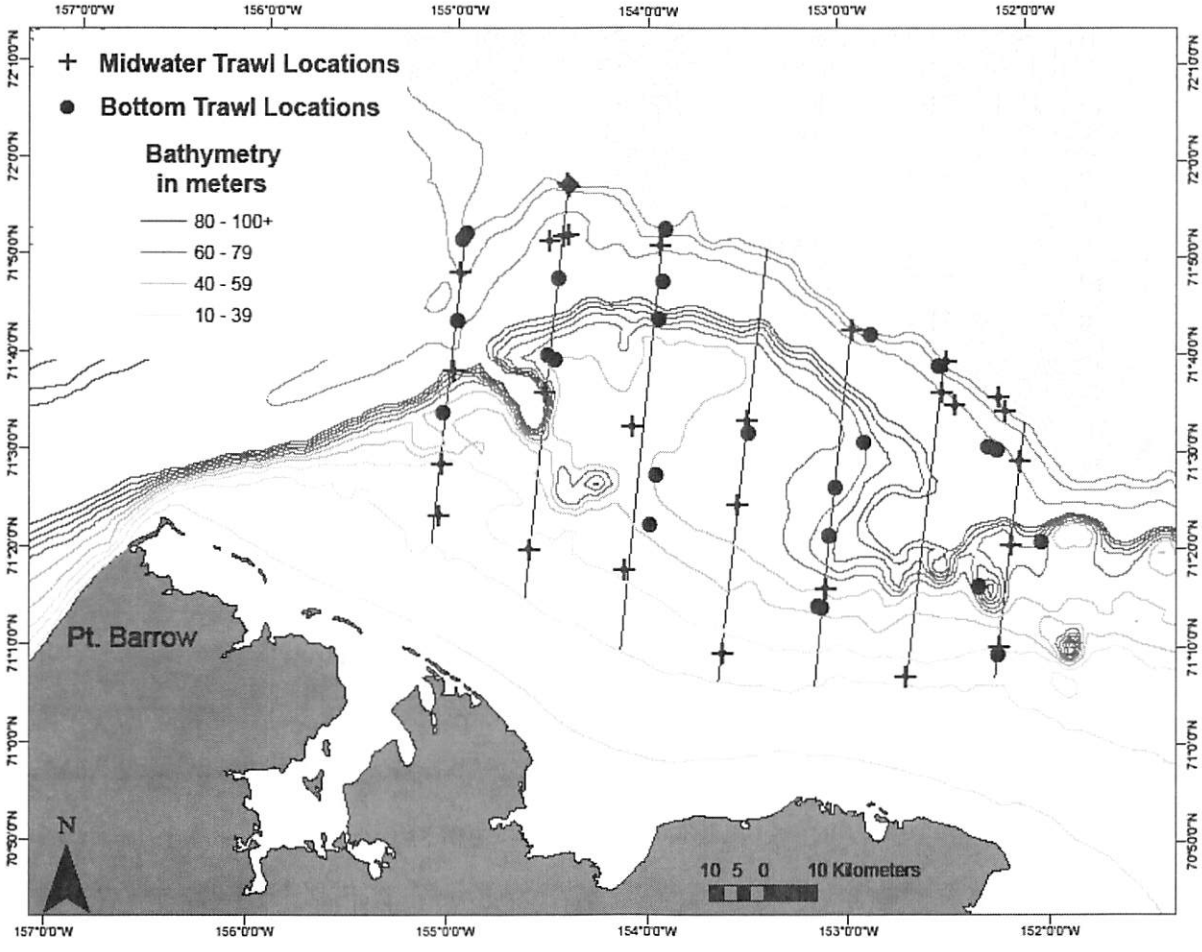


Figure 1. Bottom (solid red circles) and midwater (black crosses) trawl locations, Beaufort sea.

Table 1. Position, bottom depth, qualitative bottom type and total catch weight for all bottom trawls conducted.

Bottom Haul no.	Latitude	Longitude	Bottom Depth	Bottom Type	Total Catch Weight (kg)
1	71.88	-154.97	407	mud	no catch
2	71.89	-154.95	478	mud	694.93
3	71.74	-154.99	200	rocks	751.34
4	71.90	-153.91	356		1881.89
5	71.81	-153.92	144	rocks	1846.51
6	71.81	-154.46	159	mud	9502.65
7	71.98	-154.41	334		2028.50
8	71.72	-152.84	320	mud	1382.47
9	71.66	-152.49	306	mud	1984.08
10	71.52	-152.25	182	mud	2359.84
11	71.75	-153.94	66	rocks	419.10
12	71.69	-154.52	51	rocks	251.08
13	71.48	-153.96	50	mud	339.30
14	71.39	-153.99	44	mud	no catch
15	71.25	-153.13	41	rocks	no catch
16	71.25	-153.11	41	rocks	19.45
17	71.37	-153.07	75	rocks	256.35
18	71.46	-153.04	64	hard	87.81
19	71.16	-152.23	30	mud	no catch
20	71.28	-152.31	51	rocks	38.74
21	71.35	-151.99	84	rocks	27.45
22	71.51	-152.20	182		77.74
23	71.58	-155.05	45	rocks	43.05
24	71.68	-154.48	49	rocks	52.78
25	71.53	-152.89	60	hard	35.52
26	71.55	-153.48	53	hard	10.59

The RACE Division of AFSC provided standardized trawls, bridles, and trawl doors for the survey. Trawling procedures followed the protocols established by Stauffer (2004, NOAA protocols for groundfish bottom trawl surveys of the nation's fishery resources. NOAA Tech. Memo. NMFS-SPO-65, 205p). The trawls were conducted at a speed of 3.0 kt at each station. Stations were initially sampled using a modified 83-112 eastern bottom trawl, with an 83' headrope and a 112' footrope; the net modification includes was as follows:

Excerpted from the RACE ADP CODE BOOK, March 2008 *In* Supplementary Tables – Gear Accessories codes, code 122):

> *A tickler chain, hula, and 1.5" liner covering the entire bottom body, both bottom wings and complete coverage top and bottom of the intermediate and cod end (with 30 mesh*

overlap with standard 1.25" liner extending 65 meshes up from the terminus of the cod end.

The trawls were towed behind 1.83 x 2.75 m (6x9 ft) - 816 kg steel V-doors and paired 180.1' dandylines. Acoustic net mensuration equipment (Netmind) was deployed on the net at all stations for *in situ* net configuration monitoring and area-swept determinations. A bathythermograph was deployed on the headrope of the trawl to collect depth and temperature data for the duration of the tow. Additionally, a bottom contact sensor (inclinometer) was deployed on the footrope to determine the interval the trawl was actually on-bottom in a fishing configuration.

The first three bottom trawls were deployed for 30 minutes of bottom contact time. However, the nets were damaged by large catches of invertebrates and/or rocks and the tow time was reduced to 15 minutes. Continued difficulty with large catches of rocks and mud and subsequent net loss or damage resulted in further limitation of tow time to 5 minutes. On the 15th trawl, the third and final modified (lined) 83-112 net on board was irreparably damaged so the remaining 11 stations were sampled with a standard (un-lined) 83-112. Two stations were re-sampled with the un-lined net so that a qualitative comparison between the catch of the lined and un-lined nets could be made.

11 stations were sampled in the offshore stratum (100-500 m) and 9 stations were sampled in the mid-shelf stratum (50-100 m), see Figure 1. Especially rocky and muddy bottom in the shallowest survey depths made it difficult to fully sample the nearshore stratum (20-50 m). Only 6 stations were sampled at depths less than 50 m, and no bottom trawls were conducted at depths less than 30 m.

Results – Fish

Fish comprised 6% of the total weight captured in the bottom tows of which 38 species of fish were identified. Several species could only be identified to the genus or family level in the field. Of the total weight of fish captured in the bottom tows, 80% was Arctic cod and several species of eelpouts made up 13% of the total weight. The total number and weight of each species is summarized in Table 2. Arctic cod occurred at all bottom trawl stations; percent Arctic cod per haul is summarized in Figure 2. Note: the species listed are preliminary field identifications. All species were vouchered and will be confirmed and/or identified in the laboratory at the Alaska Fisheries Science Center in Seattle. In Table 2, the total numbers and weights for each haul have been combined by species; this includes the extrapolated numbers and weights from hauls that were subsampled and the actual numbers and weights from hauls that were entirely processed; hauls 1 – 15 were subsampled due to the large number and diversity of invertebrates and hauls 16 – 26 were relatively small catches, therefore were not subsampled.

Arctic cod were also the dominate catch in the mid-water hauls by weight and numbers. A total of 798.49 kg of catch were processed and 764.11 kg was Arctic cod. The second most prevalent species in the mid-water hauls were jellyfish (*Chrysaora* sp., *Cyanea* sp., and jellyfish unid.) at 22.73 kg total for all mid-water hauls combined.

Table 2. List of fish species (common name in parenthesis) captured in the bottom trawls, their total numbers and total weight (kg). Species in BOLD may be range extension from the Bering and Chuckchi seas.

Species	Total numbers	Total weight (kg)
Boreogadus saida (Arctic cod)	64,144	1241.95
Lycodes raridens (marbled eelpout)	1,348	119.51
Lycodes sp. (6 species)	513	53.46
Hippoglossoides robustus (Bering flounder)	231	34.62
Theragra chalcogramma (walleye pollock)	1,082	34
Lycodes polaris (polar eelpout)	658	20.58
Reinhardtius hippoglossoides (Greenland halibut)	221	11.55
Liparis gibbus (variegated snailfish)	151	10.47
Lycodes seminudus (longear eelpout)	44	6.4
Liparis fabricii (gelatinous seasnail)	162	4.87
Lycodes rossi? (threespot eelpout)	19	4.33
Triglops pingeli (ribbed sculpin)	219	1.29
Myoxocephalus verrucosus	36	1.25
Gadus macrocephalus (Pacific cod)	5	1.02
Lumpenus maculatus (prickleback)	208	0.95
Artediellus scaber (hamecon)	154	0.94
Mallotus villosus (capelin)	9	0.86
Gymnocanthus tricuspis (Arctic staghorn sculpin)	77	0.84
Family Liparidae (snailfish unid.)	69	0.62
Myoxocephalus sp. (sculpin unid.)	106	0.44
Careproctus sp. (snailfish unid.)	4	0.33
Careproctus rastrinus (salmon snailfish)	9	0.33
Triglops nybelini (bigeye sculpin)	71	0.21
Lumpenus fabricii (slender eelblenny)	30	0.19
Leptagonus sp. (poacher)	3	0.1
Icelus spatula (spatulate sculpin)	9	0.08
Icelus sp. (sculpin unid.)	12	0.06
Eleginus gracilis (saffron cod)	4	0.06
Gymnelus sp. (eelpout unid.)	1	0.05
Icelinus borealis (northern sculpin)	3	0.02
Eumicrotremus derjugini (leatherfin lumpsucker)	6	0.01
Liparis sp. (snailfish unid.)	3	0.01
Nautichthys pribilovius (eyeshade sculpin)	1	0.01

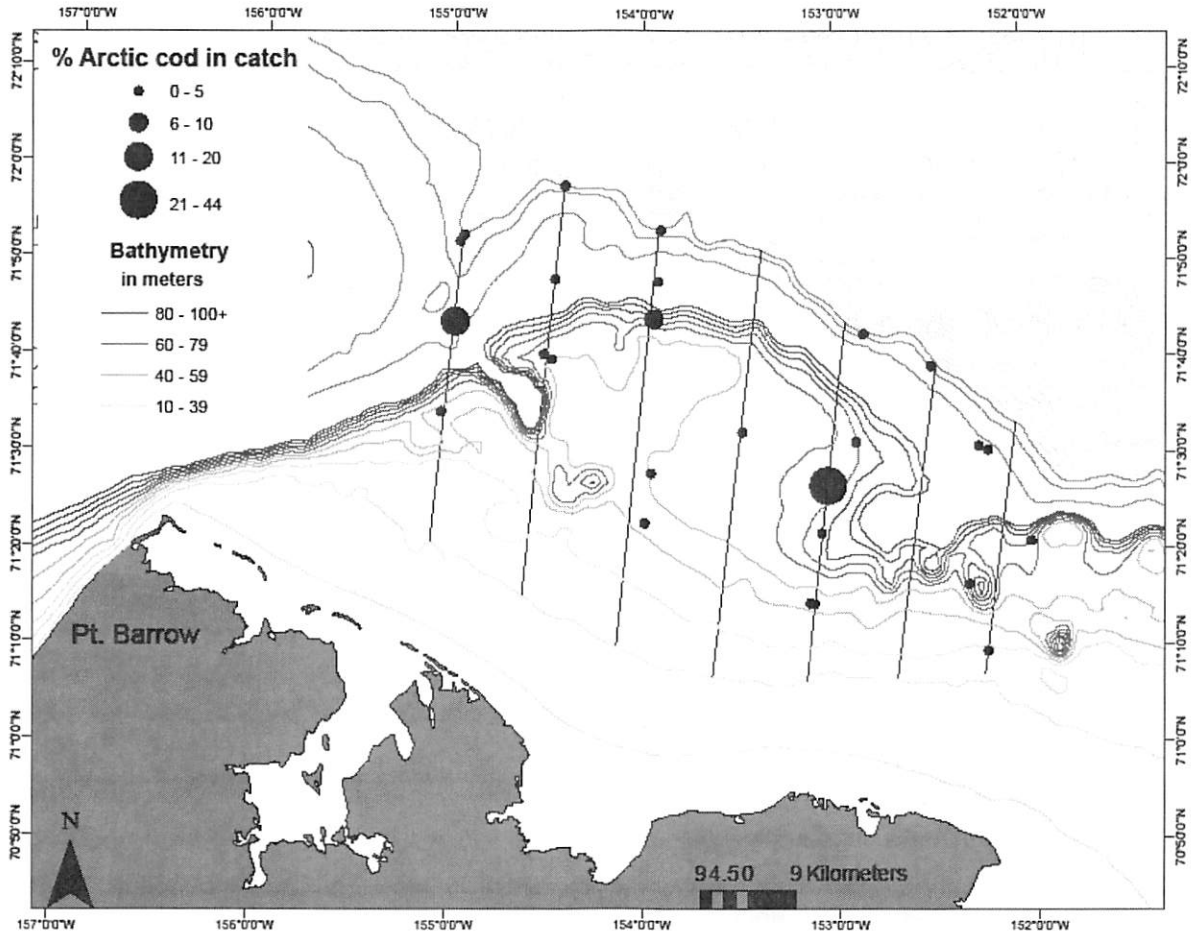


Figure 2. Percent Arctic cod present in bottom trawl locations, Beaufort sea.

Results – Vouchered specimens for species ID

Preliminary results suggest that six species (see BOLD in Table 2) have extended their range into the Beaufort sea from the Chukchi and/or Bering sea. Approximately 38 species of fish were identified from which 400+ specimens were collected for laboratory identification and future distribution to taxonomic collections.

Results – Invertebrates

Invertebrates made up 94% of the total weight captured in the bottom tows of which approximately 174 species were identified. Similar to fish, all invertebrates were identified to the lowest taxonomic level possible in the field (family, genus or species). Of the invertebrates, *Ophiura sarsi* (brittlestar) made up 41% and *Chionoecetes opilio* made up 10% of the total weight. Approximately 95% of the total invertebrate weight is summarized by species in Table 3. In Table 3, the total weight from each haul has been combined by species; the weight per species

includes the extrapolated weights from hauls that were subsampled and the actual weights from hauls that were entirely processed; hauls 1 – 15 were subsampled due to the large number and diversity of invertebrates and hauls 16 – 26 were relatively small catches, therefore were not subsampled.

Table 3. List of invertebrate species (common name in parenthesis) captured in the bottom trawls, their total numbers and total weight (kg).

Species	Total weight (kg)
Ophiura sarsi (brittle star)	9775.94
Empty shells (bivalve/gastropod)	3916.97
Chionoecetes opilio (crab)	2362.39
Musculus niger (mollusk)	1424.95
Ctenodiscus crispatus (starfish)	940.07
Urticina lofotensis (sea anemone)	488.22
Strongylocentrotus sp. (sea urchin)	418.61
Psolus squamatus (sea cucumber)	352.89
Buccinum polare (snail)	213.27
Snail eggs unid.	208.49
Pyrulofusus sp. (snail)	176.72
Neptunea sp. (snail)	154.28
Phascolosomatidae (worms)	149.47
Gorgonocephalus eucnemis (basketstar)	142.96
Gersemia sp. (soft coral)	125.35
Psolus phantapus (sea cucumber)	123.21

Results – Biologicals

Arctic cod from every bottom and mid-water haul were sexed and lengthed. Greenland halibut, Bering flounder, Pacific cod and walleye pollock were also sexed and lengthed when encountered. We sexed and lengthed 2,938 Arctic cod, 99 walleye pollock, 27 Bering flounder, 10 Greenland halibut and 2 Pacific cod. All Bering flounder and Greenland halibut were collected for identification vouchers or food habits analysis. All walleye pollock (and the two specimens of Pacific cod) were lengthed and frozen for otoliths, food habits and genetic analysis. Of the 2,938 Arctic cod (Figure 3), the mode for both females and males was 100 mm; the average length for females was 118 mm and the average length for males was 109 mm.

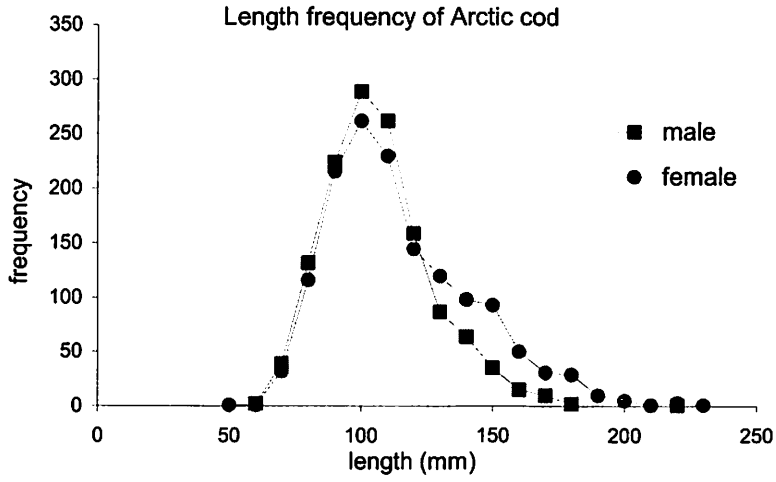


Figure 3. Length frequency of Arctic cod captured in the bottom trawls by sex.

Approximately 1,213 Arctic cod were sexed, lengthed, weighed and their otoliths (age structures) were collected. Within this same collection, approximately 10 females per bottom or mid-water tow had their ovaries removed and preserved in 10% formalin. Within each bottom tow, between 10 and 15 fish were collected for food habits analysis. In conjunction, several specimens of Arctic cod were frozen for future stable isotope analysis. Collections from the micro- and macro- zooplankton Bongo tows (~20 samples) were also frozen for stable isotope analysis.

Acoustics and Mid-water Trawl Survey

Methods

Acoustic transect locations are shown in Figure 1 (black line). Mid-water trawl locations are also shown in Figure 1 (symbol) and are listed in Table 4. Acoustic data began when the vessel departed the dock in Dutch Harbor and continued until the vessel returned to Dutch Harbor at the end of the survey. In the study region, data were collected along the acoustic transects, beginning on the easternmost transect, on August 16 after most bottom trawl operations had been completed. Over 250 nautical mile (nmi) of data were collected along transects.

Acoustic data were collected with the vessel's hull-mounted Simrad ES60 38 kHz (model 380) transducer. Prior to the scientific party's arrival in Dutch Harbor, the Captain collected some specified data to determine whether electrical or mechanical noise was present in the acoustic data. As a result, the acoustic transceiver and data cables were moved prior to the survey. This modification greatly reduced the presence of noise in the data. The echosounder was tested in a partial calibration (on-axis only with some swing data to verify that all quadrants were active) prior to the survey and a full calibration, including data to measure beam angles, was collected upon return to Dutch Harbor.

A Marinovich mid-water net was provided to the survey by the RACE Division of AFSC. The same V-doors and dandylines that were used for the bottom trawl were also used for the Marinovich net. A vessel speed of 2-4 kt was maintained during the tow and tows lasted between 10-60 minutes depending on acoustic target density. The vessel's third wire system (Simrad Mesotech FS903) was used to monitor the net headrope position during the deployment and an autonomous bathythermograph was attached to the headrope to collect temperature and depth data.

The Marinovich mid-water net, with average fishing dimensions during the survey of 3 m vertical by 6 m horizontal, was used to identify targets observed on the acoustics. Of the twenty-eight mid-water trawls that were completed (Figure 1, Table 4), 6 were completed along the ice edge prior to the start of the acoustic transects. When the acoustic signal suggested that large zooplankton were present, a 20 cm and 60 cm bongo net were also deployed to identify targets.

Table 4. Midwater haul number, its latitude and longitude.

Midwater Haul no.	Latitude	Longitude
1	71.97	-154.41
2	71.98	-154.42
3	71.89	-154.44
4	71.88	-154.51
5	71.89	-154.41
6	71.59	-152.42
7	71.56	-154.08
8	71.32	-154.12
9	71.50	-155.06
10	71.62	-154.53
11	71.87	-153.94
12	71.17	-153.62
13	71.43	-153.54
14	71.57	-153.49
15	71.73	-152.94
16	71.28	-153.09
17	71.13	-152.69
18	71.67	-152.46
19	71.61	-152.48
20	71.18	-152.22
21	71.35	-152.15
22	71.49	-152.09
23	71.60	-152.19
24	71.58	-152.16
25	71.35	-154.61
26	71.41	-155.07
27	71.66	-155.00
28	71.82	-154.98

Oceanographic Sampling

Figure 4 and Table 5 show the location of CTD casts and zooplankton (bongo net) tows. CTDs and bongo nets were deployed at nearly every bottom trawl station and at some mid-water stations (depending on the distribution and characteristics of the acoustic scattering). Additional CTD and bongo sampling was conducted at close spacing (approx. 4-5 km) along two transects in order to quantify fine-scale changes in water mass properties across the shelf. A total of 56 CTDs and 38 bongo tows were successfully completed.

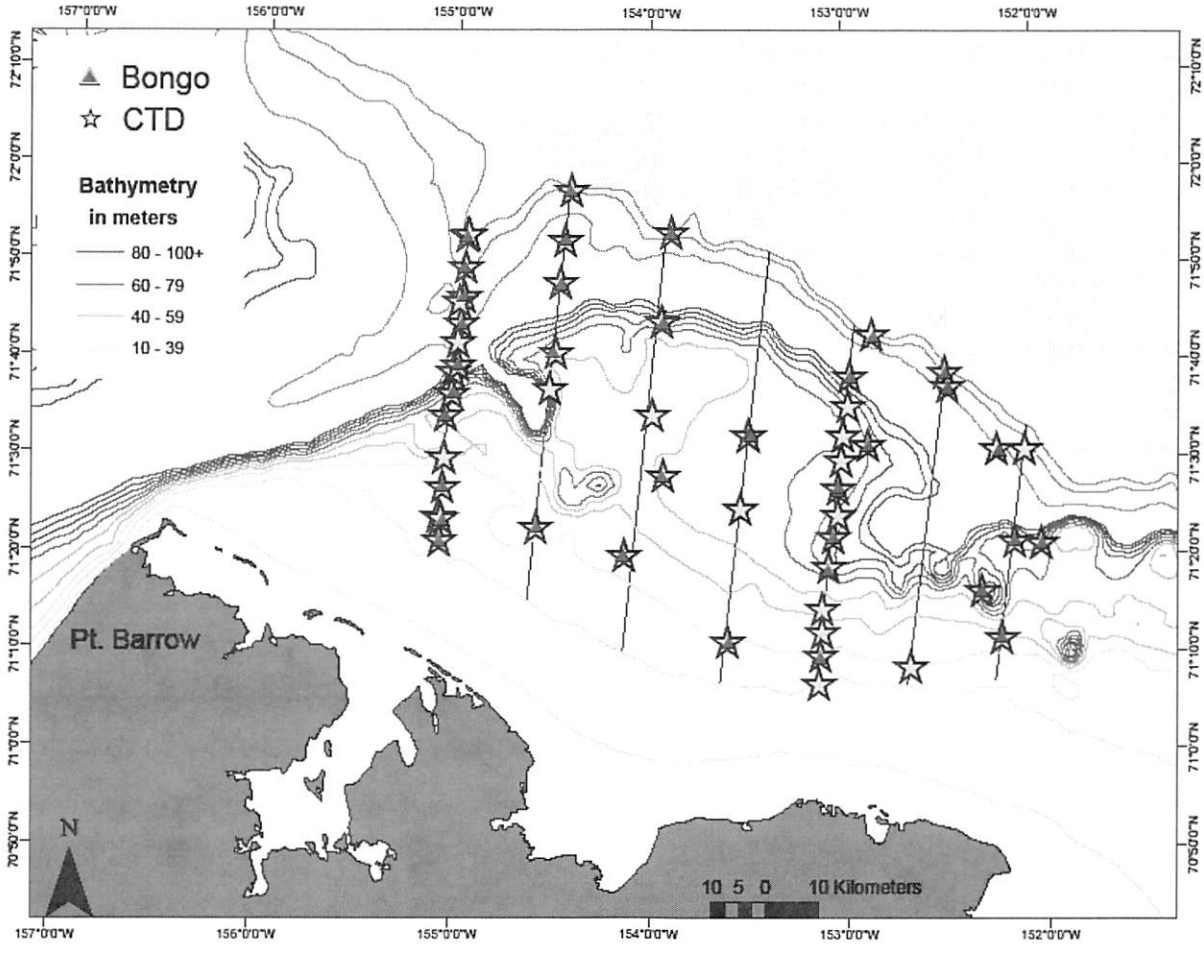


Figure 4. Bongo (red triangle) and CTD (yellow star) stations, Beaufort sea.

Table 5. Date, time, bottom depth, and position of all CTD and zooplankton (bongo) tows during cruise

Station	CTD #	Bongo #	Date (GMT)	Time (GMT)	Bottom Depth (m)	Latitude	Longitude
1	CTD001	BON001	8/6/2008	23:49	445	71.89	-154.95
2	CTD002	BON002	8/7/2008	4:20	300	71.84	-154.96
3	CTD003	BON003	8/7/2008	5:19	300	71.79	-154.97
4	CTD004	BON004	8/7/2008	18:21	200	71.74	-154.98
5	CTD005	BON005	8/8/2008	1:44	357	71.90	-153.89
7	CTD006	BON006	8/9/2008	2:24	158	71.81	-154.46
9	CTD008	BON007	8/10/2008	1:00	275	71.97	-154.41
13	CTD009	BON009	8/10/2008	18:53	190	71.88	-154.45
15	CTD010	BON010	8/11/2008	3:38	333	71.72	-152.85
16	CTD011	BON011	8/11/2008	18:41	333	71.66	-152.48
18	CTD012	BON012	8/12/2008	1:41	187	71.52	-152.21
19	CTD013	BON013	8/12/2008	21:45	66	71.75	-153.94
20	CTD014	BON014	8/13/2008	2:10	50	71.69	-154.49
21	CTD015		8/13/2008	17:50	47	71.59	-153.99
22	CTD016	BON015	8/13/2008	20:56	47	71.48	-153.94
24	CTD017	BON016	8/14/2008	3:48	31	71.35	-154.13
25	CTD018		8/14/2008	17:53	40	71.25	-153.12
26	CTD019	BON017	8/14/2008	22:50	75	71.37	-153.06
27	CTD020	BON018	8/15/2008	0:16	72	71.32	-153.09
28		BON019	8/15/2008	2:22	64	71.45	-153.03
29	CTD022		8/15/2008	2:54	72	71.41	-153.04
30	CTD023		8/15/2008	3:44	60	71.50	-153.01
31	CTD024		8/15/2008	4:11	58	71.55	-153.00
32	CTD025		8/15/2008	4:42	63	71.60	-152.98
34	CTD026	BON020	8/15/2008	19:03	49	71.28	-152.30
35	CTD027	BON021	8/15/2008	22:09	85	71.36	-151.99
37	CTD028	BON022	8/16/2008	16:22	44	71.58	-155.06
38	CTD029	BON023	8/16/2008	18:36	20	71.37	-155.08
39	CTD030		8/16/2008	19:16	21	71.41	-155.08
40	CTD031	BON024	8/16/2008	19:45	24	71.46	-155.06
41	CTD032		8/16/2008	20:30	27	71.51	-155.06
42	CTD033	BON025	8/16/2008	21:33	56	71.62	-155.03
43	CTD034		8/16/2008	22:07	90	71.66	-156.00
44	CTD035		8/16/2008	22:42	150	71.71	-154.99
46	CTD036		8/17/2008	3:14	457	71.89	-154.95
47	CTD037		8/17/2008	16:40	26	71.51	-155.06
48	CTD038		8/17/2008	22:21	42	71.63	-154.52
49	CTD039	BON026	8/18/2008	19:01	25	71.20	-153.60
51	CTD040		8/18/2008	22:07	57	71.42	-153.53
52	CTD041	BON027	8/19/2008	0:07	52	71.55	-153.49
53	CTD042	BON028	8/19/2008	4:05	112	71.65	-152.97
55	CTD043	BON029	8/19/2008	16:28	63	71.46	-153.04
57	CTD044		8/19/2008	20:33	32	71.21	-153.12
58	CTD045	BON030	8/19/2008	21:00	26	71.17	-153.13
59	CTD046		8/19/2008	21:36	22	71.12	-153.14
60	CTD047		8/19/2008	23:19	25	71.15	-152.68
61	CTD048	BON031	8/20/2008	5:14	225	71.63	-152.46

Station	CTD #	Bongo #	Date (GMT)	Time (GMT)	Bottom Depth (m)	Latitude	Longitude
62	CTD049	BON032	8/20/2008	16:35	36	71.20	-152.21
63	CTD050	BON033	8/20/2008	18:37	63	71.36	-152.13
64	CTD051		8/20/2008	21:42	267	71.52	-152.07
66	CTD052	BON034	8/21/2008	3:28	59	71.53	-152.87
67	CTD053	BON035	8/21/2008	15:33	52	71.55	-153.49
68	CTD054	BON036	8/21/2008	19:37	26	71.39	-154.58
69	CTD055	BON037	8/21/2008	21:40	21	71.41	-155.07
70	CTD056	BON038	8/22/2008	0:39	102	71.67	-154.99
71	CTD057		8/22/2008	4:30	297	71.78	-154.99

CTD casts were made using an SBE 19*plus* and the NMFS – FOCI winch, which was installed on the "helo" deck on the stern of the vessel. The CTD was deployed to a depth of 1 to 2 m off bottom (depending on sea state), at a rate of no more than 30 m/min.

Zooplankton samples were collected with two bongo net frames assembled on one cable and deployed with the NMFS – FOCI winch. The top frame had two 20-cm hoops and 153 μm mesh nets. The bottom frame (one meter away) had two 60-cm hoops with 333-μm mesh nets. Flow meters were mounted in the center of the net mouth openings so that volume sampled could be calculated. During deployment, the vessel speed was maintained such that the wire angle during deployment and retrieval was close to 45°. Wire out rate was 30 m/min and wire in rate was 20 m/min. Samples were rinsed out of the bongo cod-ends and poured into 32 oz jars, preserved by the addition of 50 ml 37% formaldehyde and 20 ml saturated sodium borate.

Temperature-depth data were also collected with a trawl-mounted microbathythermograph (MBT) on all bottom and mid-water trawls. Figure 5 shows bottom temperature at all bottom trawl locations. Bottom temperatures ranged from -1.4 to 1.7 °C. The coldest bottom water appeared to be found depths ranging from around 70 m to 300 m, with warmer water inshore and offshore of those depths.

Continuous sea surface temperature and salinity data were collected with a Seabird SBE45 at one-minute intervals, indexed to location with a GPS. Data were collected 24 hours a day during most of the transit to and from the survey area and during the entire survey (from 4-25 August).

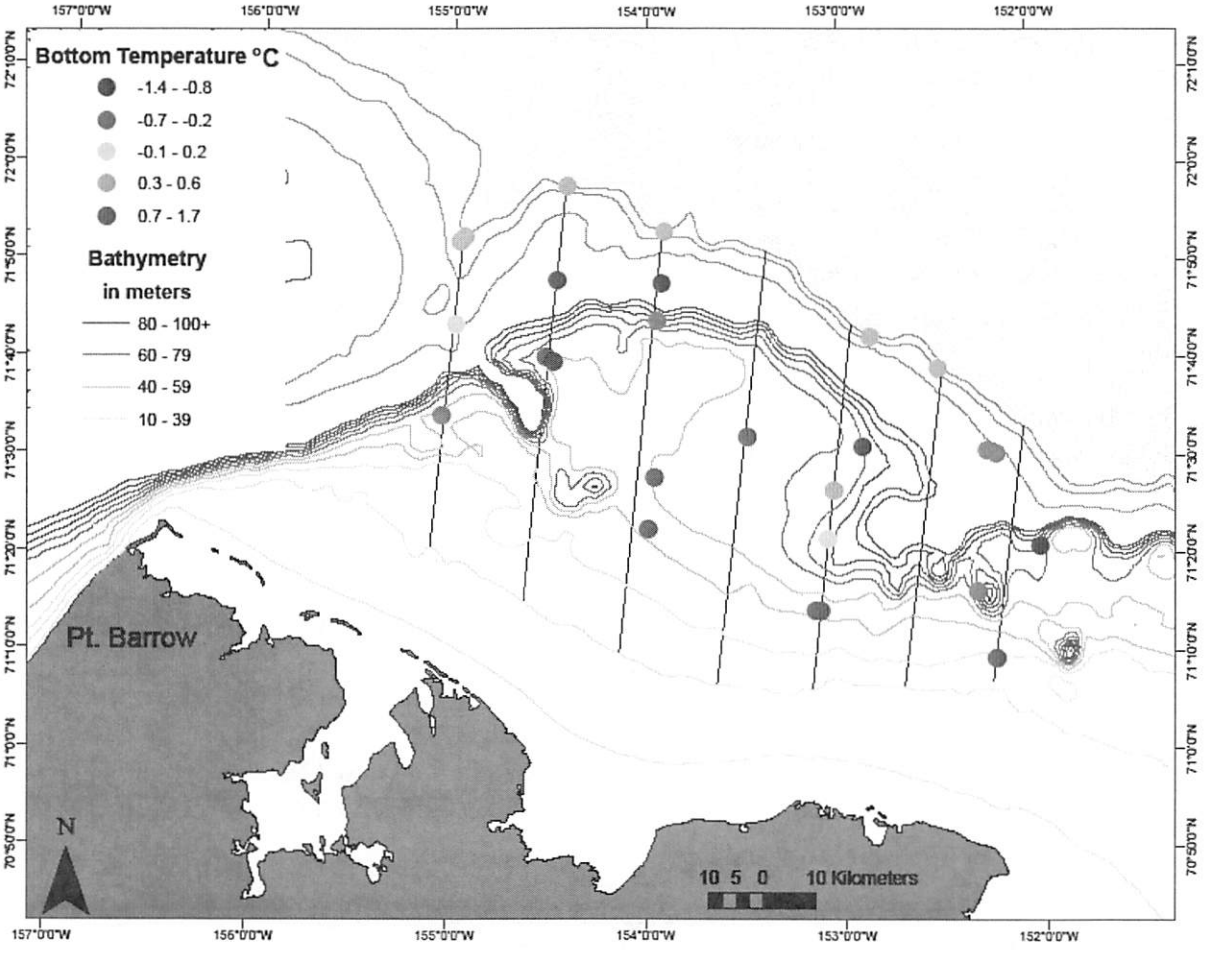


Figure 5. Bottom temperatures as collected from the net mounted microbathythermograph (MBT).

Special Projects

We were able to accommodate 4 special projects. Several of the projects requested entailed collection of species that were not encountered during the survey; therefore they were not completed. The number of individuals per species (other than Arctic cod) was often low, sometimes only 1 or 2 individuals per species were encountered during the entire survey. Approximately 90 *Chionoecetes opilio* and 50 *Hyas coarctatus* were collected for the Alaska Fisheries Science Center; specimens will be examined for the presence of Bitter Crab Syndrome. Arctic cod was collected for the Marine Gene Probe Lab at Dalhousie University as part of a genetic analysis examining transarctic exchange between marine fish species in the Pacific and Atlantic oceans. Approximately 15 species (1-10 individuals per species) were collected for genetic bar coding at the Point Stephens Research Lab in Auke Bay, Alaska. A small collection of juvenile Arctic cod was requested by Minerals Management Service, Anchorage, Alaska.

Seabird Survey

Data on the distribution and abundance of seabirds were collected during the transit to and from Dutch Harbor and during the acoustic transects, when conditions allowed. This project was a collaboration with US Fish and Wildlife Service. Continuous "strip transects" up to 300 meters wide (depending on visibility) were conducted by a single observer, looking on one side of the vessel (the starboard side). Birds were identified to species, when possible, and counted. Observations were entered into a laptop computer using a program (Dlog2) that assigned time and position to each observation (using a GPS receiver). Table 6 shows the species observed in the study area only (during the acoustic transects) in descending order of abundance (although note that these are raw counts, not densities and therefore do not account for changes in transect width due to changes in visibility). Arctic terns, black-legged kittiwakes and phalaropes were the top three seabirds in terms of abundance. Figure 6 shows the distribution of these three species. Terns appeared to be distributed primarily in the offshore stratum (approx. 100-500 m), whereas kittiwakes were most abundant in the mid- and inner-shelf strata (20-100 m). Phalaropes were very patchy, being observed in high abundances at just two locations in the mid-shelf area.

Table 6. Summary of seabird species observed in study area

Species	Total number
Arctic Tern	261
Black-legged Kittiwake	181
Unidentified Phalarope	113
Unidentified Shorebird	35
Glaucous Gull	35
Unidentified Tern	24
Unidentified Murre	16
Unidentified Gull	7
Parasitic Jaeger	6
Unidentified Jaeger	4
Sabine's Gull	4
Thick-billed Murre	2
Surf Scoter	2
Unidentified Loon	2
Total Birds	**692**

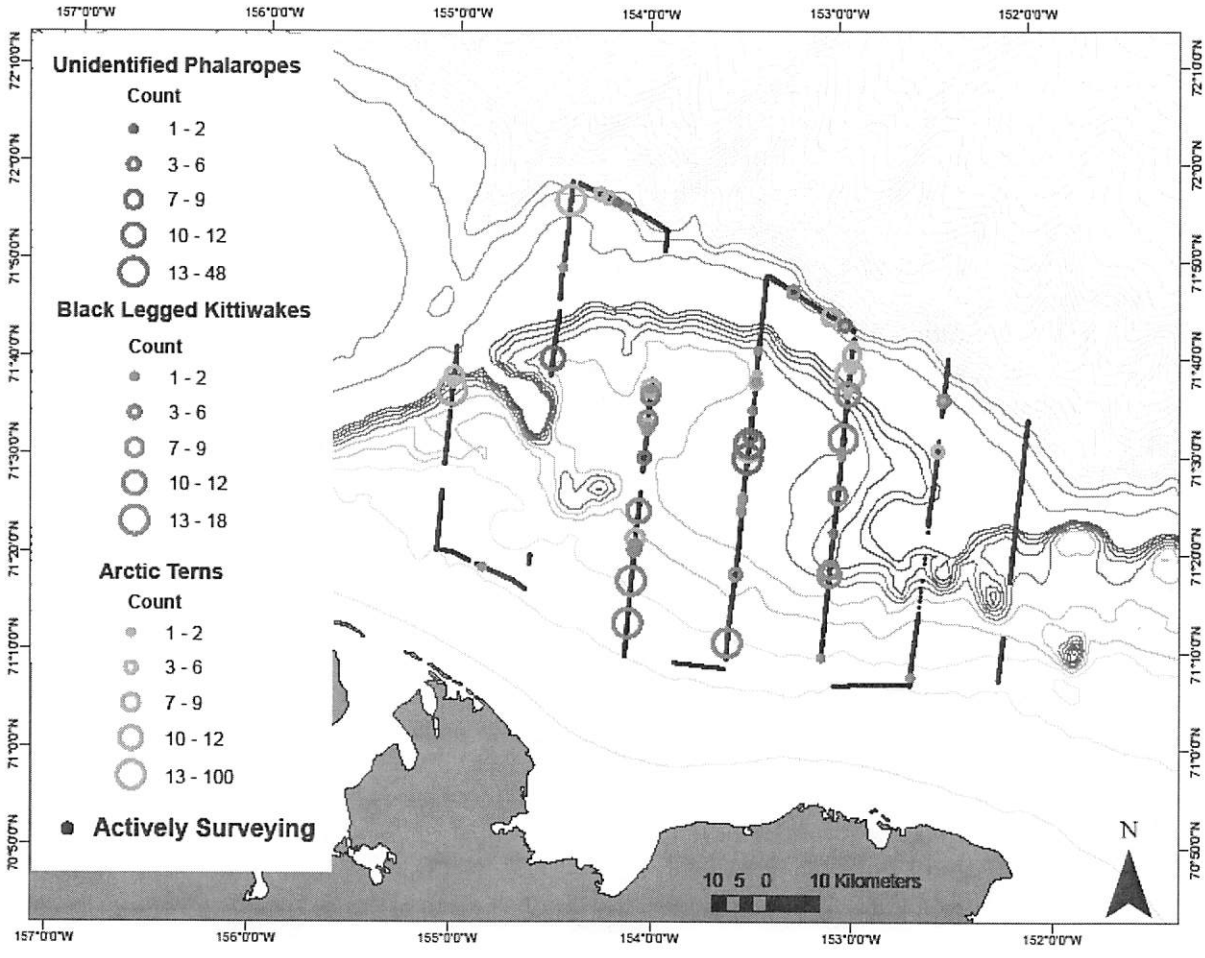


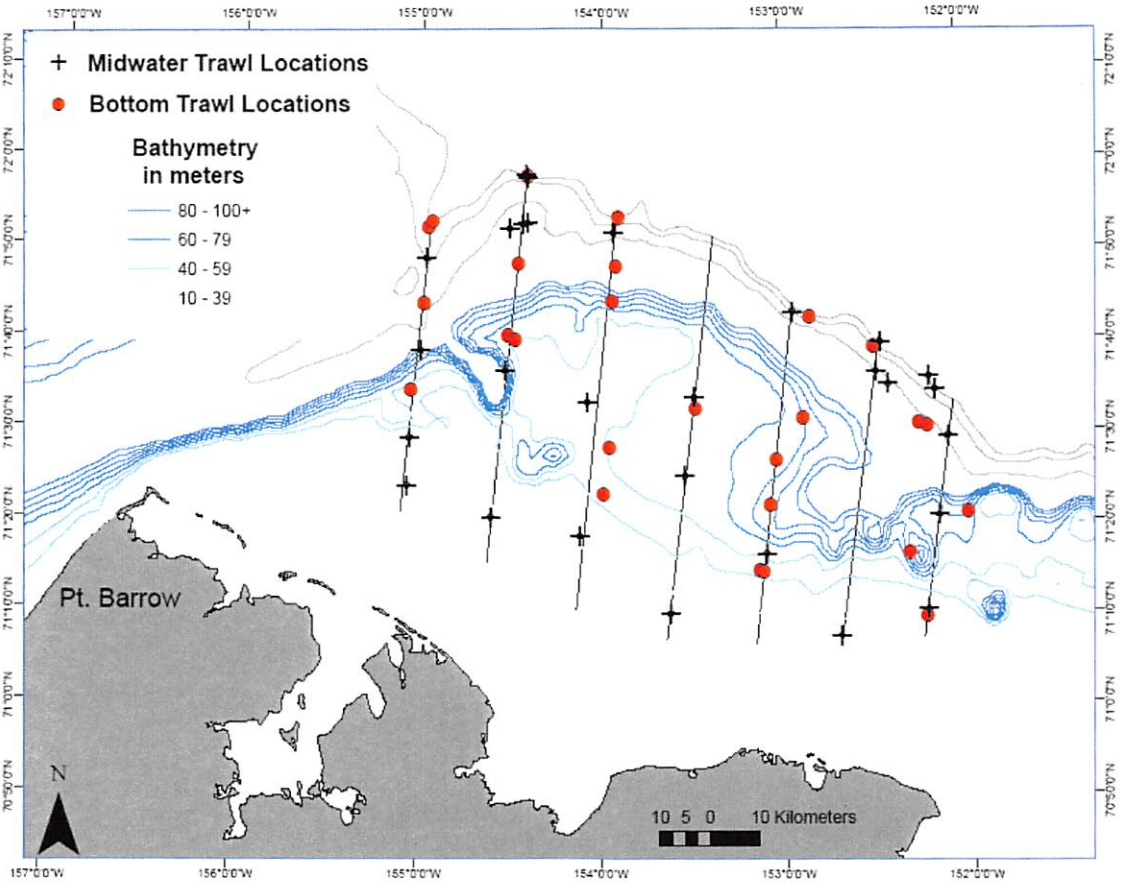
Figure 6. The top 3 most abundant seabirds observed while on seabird observing transects.

Marine Mammal Observations

Opportunistic marine mammal sightings were recorded in collaboration with the Platforms of Opportunity program at the National Marine Mammal Laboratory. The date, time, location, species and number of animals observed was recorded whenever possible. Highlights included an adult polar bear (presumably female) and two cubs on the ice near Pt. Barrow. A swimming polar bear was also observed in the same area. Large numbers of gray whales were observed during the transit to and from the study area, in the Chukchi Sea/Bering Strait area. They appeared to be feeding. No confirmed bowhead whale sightings were made during the transit or in the study area.

C-2

Libby Loggerwell, AFSC



Late Comments
on

Arctic FMP

and

Salmon Bycatch
(copies made for Council only)

Native Village of Kotzebue
Kotzebue IRA

January 28, 2009

Robert D. Mecum, Acting Administrator
National Marine Fisheries Service
Alaska Region
P.O. Box 21668
Juneau, AK 99802

Knowledge of Language
Knowledge of Family Tree
Sharing
Humility
Respect for Others
Love for Children
Cooperation
Hard Work
Respect for Elders
Respect for Nature
Avoid Conflict
Family Roles
Humor
Spirituality
Domestic Skills
Hunter Success
Responsibility to Tribe

RE: Arctic FMP EA/RIR/IRFA Public Review Draft January 2009

Dear Administrator Mecum,

The Native Village of Kotzebue (NVOK) has taken the opportunity to review the above referenced draft EA. The NVOK appreciates the response to its call last year for the Council to be responsive to what we assert is its responsibility as an extension of NMFS and NOAA's federal trust obligations to Tribes when making agency decisions that uniquely affect Tribes and the environment and resources they depend on. While the NPFMC fell short of admitting an obligation under Executive Orders and Memorandum that are in place to direct federal agencies in their responsibility and interactions with Tribes, they did acknowledged that these directives do exist and that the NPFMC intends on at least recognizing the reason the Executive branch of the Federal Government put in place such directives by following the spirit of them. The Tribe continues to assert that Federal Agencies (and by extension their policy development and implementation vehicles such as the NPFMC) are obligated to special consideration of Tribes and their needs and concerns and will expect NMFS to carry out their responsibility by making sure that extra attention is given to the Tribal communities bordering the Arctic EEZ as the Arctic FMP process moves forward.

In regards to the specifics of the Arctic FMP EA, the Tribe finds that an adequate EA has been assembled and that it is sufficient in regards to including the necessary items, topics, and concerns that need to be included in an Arctic FMP. The Tribe would draw attention to the ringed seal section in particular and make the Council aware that the Tribe has completed two seasons of satellite tagging ringed seals (for a total of 26) and that this information, like that found under the similar bearded seal effort alluded to in the draft EA, can be found at the Tribes website www.kotzebueira.org under current projects link. The Tribe expects that papers discussing the findings of both the bearded seal and ringed seal tagging projects will be published and accessible to the public in the near future and will make the Council aware of such items so they can be incorporated in future deliberations over the Arctic EEZ and Arctic FMP.

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The Tribe believes that the Council should select Alternative 3, which would notably allow for the continuation of the State of Alaska to manage the low level red king crab harvest that occurs in Kotzebue Sound and that to date has only involved members of the NVOK. However, if a large scale non-local red king crab fishery were to be discussed in the future the Tribe believes that reconsideration of this State of Alaska only management regime be allowed and an Arctic Crab FMP be put back on the table for consideration. The Tribe also believes the Option 3 would be the best option to pick in addition to Alternative 3.

The Tribe continues to be concerned about the future implications of industrial scale trawling in the Chukchi Sea, especially as the three target species mentioned are extremely critical to the continued health and viability of Arctic marine mammal species found in the Chukchi Sea and on which our member's depend for their continued cultural, nutritional, and spiritual survival. While the premise underlying this whole effort (i.e. future environmental changes creating an ecological shift providing commercially exploitable levels of target species) seems on the surface reasonable, as such regime shifts have been documented as having previously occurred in the Bering Sea and North Atlantic, it is the Tribes belief that the shift in the Chukchi will be more complicated by additional factors not previously part of the past shifts (e.g. increased acidity of ocean water) and thus will not be as linear as asserted. As we pointed out in our original letter on behalf of this effort there are numerous and myriad threats that the Chukchi Sea is facing many of which are unknowable at this point. This is why we believe it is extremely important to take an extreme amount of care and consideration in furthering any effort to allow large scale commercial fishing to occur in the Chukchi Sea. It is also our belief that "no-trawling zones" should be considered in the Arctic EEZ as part of the development of an Arctic FMP and the Tribe will be following up on this item in the future to explore the feasibility of setting up such protective zones for those areas which provide critical habitat for species the coastal Tribal communities of the Alaska Arctic depend on.

The Tribe appreciates the outreach effort that has occurred as part of this Arctic FMP development and would encourage the NMFS and the NPFMC to continue in such efforts and take every possible opportunity to communicate with Tribes and understand and address their needs and concerns as this process moves forward.

Thank you for your consideration of our comments.

Sincerely,

Alex Whiting
Environmental Specialist

Linda Joule
Executive Director

Alaska Marine Conservation Council

January 28, 2009

Eric Olson, Chair
North Pacific Fishery Management Council
605 W. 4th Ave.
Anchorage, AK 99501

RE: Agenda Item C-2, Arctic FMP

Dear Chairman Olson and Members of the Council,

The Alaska Marine Conservation Council strongly supports establishing an Arctic fishery management plan that prevents development of new commercial fisheries in the Beaufort and Chukchi seas unless and until new information shows that such fishing can be conducted without harming the health of the ecosystem or opportunities for the subsistence way of life. We urge you to select Alternative 2, Option 3 in the Arctic FMP EA.

Global Climate Change is Altering the Arctic Ecosystem

The Arctic Ocean is experiencing rapid alteration as a result of global climate change. A broad consensus of scientists around the world agrees that the preponderance of evidence shows the burning of fossil fuels for energy is increasing levels of carbon dioxide and other gases in the atmosphere causing warming in the Arctic.[1] Among many consequences is a rapid loss of sea ice. Warming in the Arctic is occurring at twice the rate of most other parts of the planet.[2] The last two summers represent the years of greatest sea ice melting on record.[3] In 2007 an unusual combination of warm temperatures and persistent south winds created a 'perfect storm' of events that accelerated melting not only of annual ice but also of thicker multi-year ice. In 2008 even under average atmospheric conditions, a similar amount of melting occurred compounding loss of multi-year ice. As a result of significant and continuing loss of multi-year ice and thinning of what ice remains, scientists report that it is highly unlikely that the Arctic can return to more stable ice cover in the future.[4, 5]

Rapid Change, Ecological Stress and Lack of Knowledge Warrants a Precautionary Approach

The Arctic is a harsh yet fragile ecosystem. There are large gaps in understanding about the arctic marine food web and ecosystem functions, and how they will be transformed by the loss of sea ice. Warming and the retreat of ice in summer is threatening the survival of marine mammals such as ice seals, polar bears and walrus that rely on the ice platform for feeding, breeding, resting and nursing their young. Equally critical is the rate of change which may be too rapid for species currently occupying the Arctic to adapt.

Meanwhile, the ice-free Arctic is becoming accessible to a host of new industries, including potential commercial fisheries. Given the rapid change, ecological stress and lack of knowledge,

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it is especially appropriate to ensure new commercial fisheries do not further compound problems in the Arctic. We applaud the NPFMC for recognizing the value in taking a proactive and precautionary approach to the potential exploitation of fishery resources.

Cultural Perspectives Must be an Important Feature of Ecosystem-Based Management

Ensuring that cultural considerations are a central part of any future decision to allow new fisheries is a fundamental component to a forward looking plan. Currently there is insufficient information to establish new fisheries but if this situation changes and new fisheries can be contemplated, we encourage the Council to explicitly incorporate local and traditional knowledge in the development of management measures and in your deliberations, and to seek equitable opportunities for residents of the Arctic to participate in fisheries. A critical consideration in developing fisheries is to ensure that subsistence resources and opportunities are not harmed.

The Arctic FMP and future Northern Bering Sea Research Plan together represent a commitment to ensuring fisheries are ecologically sustainable and to incorporate Alaska Native tribal perspectives into your decisions in advance of new commercial fisheries developing. This approach reverses the burden of proof, a distinct departure from the way most fisheries have developed globally. We appreciate and congratulate the Council in taking this important step.

Sincerely,

Dorothy Childers
Fisheries Program Director

---

[1] International Panel on Climate Change. 2007. Climate Change 2007, The Fourth Assessment Report (AR4). 17 Nov. 2007. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

[2] *Ibid.*

[3] National Snow & Ice Data Center. 2 Oct 2008. Arctic Sea Ice Down to Second-Lowest Extent; Likely Record-Low Volume – Despite cooler temperatures and ice-favoring conditions, long-term decline continues. Press release. http://www.nsidc.org/news/press/20081002_seaice_pressrelease.html

[4] Study of Environmental Arctic Change. 3 Dec 2008. Sea Ice Outlook, Summary Report. ARCUS. http://www.arcus.org/search/seaiceoutlook/summary_report.php

> The Outlook process confirmed that 2007 and 2008 were unusual compared to 1980s–1990s conditions and that it will likely be difficult for the Arctic to return to these previous conditions in the near future. Preliminary interpretation of data and models suggest that we may remain near current conditions until another warm year takes place to provide another rapid area loss.

[5] J. Richter-Menge, J. Comiso, W. Meier, S. Nghiem, and D. Perovich. 2008. Sea Ice Cover. Arctic Report Card 2008, NOAA. http://www.arctic.noaa.gov/reportcard/seaice.html

Summary

The continued significant reduction in the extent of the summer sea ice cover is a dramatic illustration of the pronounced impact increased global temperatures are having on the Arctic regions. There has also been a significant reduction in the relative amount of older, thicker ice.

Seasonal versus perennial ice

The Arctic sea ice cover is composed of perennial ice (the ice that survives year-round) and seasonal ice (the ice that melts during the summer). Consistent with the diminishing trends in the extent and thickness of the cover is a significant loss of the older, thicker perennial ice in the Arctic (Fig. S4). Data from the NASA QuikSCAT launched in 1999 and a buoy-based Drift-Age Model indicate that the amount of perennial ice in the March ice cover has decreased from approximately 5.5 to 3.0 million km^2 over the period 1958–2007. While there is considerable interannual variability, an overall downward trend in the amount of perennial ice began in the early 1970s. This trend appears to coincide with a general increase in the Arctic-wide, annually averaged surface air temperature, which in the amount of older, thicker perennial ice has been increasing, and now very little ice older than 5 yr remains.

Many authors have recently acknowledged that a relatively younger, thinner ice cover is more susceptible to the effects of atmospheric and oceanic forcing. In the face of the predictions for continued warming temperatures, the persistence of recent atmospheric and oceanic circulation patterns, and the amplification of these effects through the ice albedo feedback mechanism, it is becoming increasingly likely that the Arctic will change from a perennially ice-covered to an ice-free ocean in the summer.

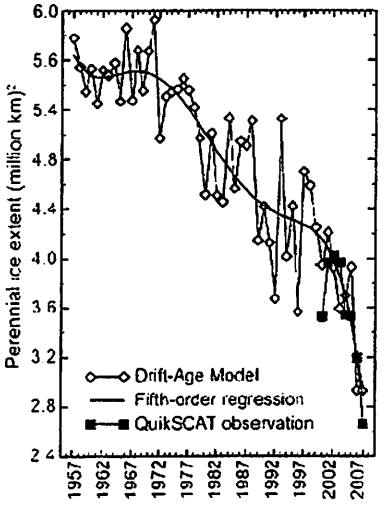

Figure S4. Time series of area of perennial sea ice extent in March of each year estimated by the Drift-Age Model and observed by QuikSCAT satellite scatterometer within the model domain. In each year, the model result was an average over March, and the satellite observation was on the spring equinox (21 Mar). (Adapted from Nghiem et al. 2007)

World Wildlife Fund
406 G. Street, Suite 303,
Anchorage, AK 99501 USA

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www.worldwildlife.org

FAX

To:	NPFMC	**Recipient Fax Number:**	271-2817
From:	Verner Wilson, WWF	**Number of pages:**	— (includes cover sheet)
Date:	1/28/2009	**Copies to:**	
Subject:	Council Letters		

Dear NPFMC,

I accidently sent you the wrong version of WWF's Arctic FMP letter yesterday (1/27). Here is the Correct letter, as well as our salmon bycatch letter. I realize submitting them to you now is past the deadline, so please let me know if we have to provide the copies. Thank you.

Sincerely,

Verner Wilson III
verner.wilson@wwfus.org

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January 28, 2009

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 W. 4th Street, Suite 306
Anchorage, AK 99501-2252

Mr. Doug Mecum, Acting Regional Administrator
NOAA Fisheries, Alaska Region
709 W. 9th Street
Juneau, AK 99802-1668

Re: Arctic Fisheries Management C-2

Dear Mr. Olson and Mr. Mecum,

On behalf of World Wildlife Fund (WWF), I am pleased to submit comments regarding the North Pacific Fishery Management Council's (Council) consideration to adopt the Arctic Fishery Management Plan (FMP) at this historic meeting. WWF has continuously supported the Council's Arctic FMP proposal, Agenda Item C-2. Among the highest priorities for WWF's Bering Sea program is achieving and maintaining sustainable management of the Arctic ecosystem. We view the Arctic FMP as an important step in keeping the Bering and Chukchi ecosystems healthy for the future.

Given the rapid changes underway in our marine environment, and particularly in the Arctic, taking a precautionary approach to managing our nation's fisheries is more important than ever. WWF believes that the Council's development of an Arctic FMP represents a critical precautionary step. Setting aside sensitive Arctic areas to allow for rigorous scientific studies on the resiliency and productivity of the ecosystem prior to commercial fishing activity sets an excellent example for other nations in the circumpolar region, and even in the high seas of the Arctic.

We have seen firsthand the effects of unregulated fishing in the Bering Sea Donut Hole and the resulting pollock fishery collapse in that region in 1992. Pollock fisheries and the ecosystem have still not recovered fully in the Donut Hole. We must not allow those events to recur in the Arctic. Therefore, the Council must act with reasonable haste.

We underscore the importance of this action as it relates to the broader international perspective of fisheries in the Arctic. We have recently seen the Council's progressive approach reflected in documents distributed in the European Union. The actions of the Council on this issue could position the United States as a leader for establishing the kind of management necessary for the Arctic.

The Council's willingness to proactively address this issue is timely. As the United States National Snow and Ice Data Center recently reported, summer Arctic sea ice extent was the second lowest on record in 2008, following the record lowest Arctic summer sea ice extent in 2007. Thus, the Arctic environment may very soon see substantially increased cumulative

impacts from shipping and mineral extraction activities in Arctic Seas as a consequence of diminishing ice cover.

The global community is escalating its interest in the Arctic for transportation and natural resource extraction, as demonstrated by Russia's recent move to increase its Arctic claims. Thus, it is important for the Council to move forward with its current planned schedule on the Arctic FMP. Moreover, it is important that the Council continue to provide the leadership example to stakeholders nationally and internationally of moving cautiously in the absence of science and great uncertainty with respect to activities that may have significant effects on a fragile ecosystem that is slow to change and slow to recover from disruptions or damage.

Therefore, WWF encourages the Council to take necessary steps to forward its final action on adopting Arctic FMP Agenda Item C-2. Setting aside the Arctic will help protect the resilience of Arctic ecosystems, prevent additional pressure on currently-stressed wildlife and important marine habitat areas, and ensure the continued productivity of the Arctic's adjacent seas. More importantly, the implementation of the Arctic FMP would constitute a milestone in the history of fisheries management and exemplify the progressive and proactive reputation of the Council.

Thank you for your time and consideration of these comments.

Respectfully,

Alfred Lee "Bubba" Cook Jr.
Kamchatka/Bering Sea Ecoregion Senior Fisheries Program Officer
World Wildlife Fund

World Wildlife Fund
Kamchatka/Bering Sea Ecoregion
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January 28, 2009

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 W. 4th Street, Suite 306
Anchorage, AK 99501-2252

Mr. Doug Mecum
Acting Regional Administrator
NOAA Fisheries, Alaska Region
709 W. 9th Street
Juneau, AK 99802-1668

Re: Salmon Bycatch C-3

Dear Mr. Olson and Mr. Mecum,

The World Wildlife Fund (WWF) appreciates the opportunity to comment on the salmon bycatch reduction measures being considered for analysis by the North Pacific Fishery Management Council (Council). We submit this letter in continued support of salmon bycatch reduction efforts in the Bering Sea and Aleutian Islands (BSAI) pollock fisheries. We continue to recommend that the Council expedite the analysis of caps and other mechanisms to minimize and reduce salmon bycatch in the BSAI pollock fishery and take the urgent action necessary to protect salmon stocks throughout the North Pacific.

Although salmon bycatch appears to have retreated substantially in 2008, this should not be reason for inaction or consideration of diluted measures. With respect to potential or already occurring cumulative environmental impacts on BSAI salmon populations, such as changes in climate and marine species distribution, impacts of ocean acidification, and planned offshore oil and gas development in Arctic waters and the Bering Sea, it is especially important to implement measures to further reduce and prevent salmon bycatch. Cumulative impacts on salmon populations, coupled with a lack of a cap on bycatch for BSAI salmon can potentially be devastating to local communities, especially indigenous peoples throughout Alaska, Russia and Canada as well as Pacific Northwest residents who were dramatically affected by the Pacific Coast salmon fishery shutdown in 2008.

As evidenced by the historic inattention that led to excessive bycatch of salmon in the pollock fishery in the 2007 season, we cannot simply go back to business as usual because salmon bycatch was lower in 2008. Although a reduction in overall salmon bycatch levels has occurred, the Council must take decisive action to prevent future excessive bycatch of salmon stocks throughout the North Pacific. The best way to achieve that protection is through the implementation of an adequate precautionary cap.

We encourage the pollock fleet to continue to seek measures and techniques to reduce salmon bycatch independent of regulatory requirements. WWF continues to support a rigorous analysis of a reasonable range of reasonable alternatives to reduce salmon bycatch while minimizing the economic impact to the pollock fleet. We recommend the Council adopt Alternative 2, Suboption vii, a hard cap of no more than 32,500 Chinook salmon bycatch. Implementing a hard cap of 32,500 would provide a level of assurance to communities

throughout the North Pacific, many of which were affected by low Chinook salmon returns in 2008 and may have to face projected equal or lower returns in 2009. This proposed hard cap is also the ten year average of bycatch prior to the signing of the Yukon River Salmon Agreement of 2002. When considering other potential impacts to these fisheries, such as climate change, it is important that we implement a precautionary approach in salmon bycatch reduction to protect cultures and livelihoods throughout the North Pacific. However, we recommend that the Council not consider the proposed 32,500 maximum cap as a goal to be met, but an absolute value in a range that must not be exceeded under any circumstance. The Council should continue forward with actions to further reduce bycatch under this level. Furthermore, the Council should carefully consider the recommendations of the Yukon River Panel, Federal Subsistence Board, the US Fish and Wildlife Service, the Community Development Quota groups, and the Regional Advisory Councils in developing the maximum cap for salmon bycatch.

In conclusion, WWF again encourages the Council to move quickly to finalize alternatives for the Salmon Bycatch agenda item C-3 in order to achieve an effective solution as soon as possible. Most importantly, flexibility in the strategy is important to minimize adverse effects on the pollock fishery, but should not preclude decisive action to protect salmon stocks and the communities, commercial fisheries, and subsistence fisheries that depend on them.

Thank you for your time and consideration of these comments.

Respectfully,

Alfred Lee "Bubba" Cook Jr.
Kamchatka/Bering Sea Ecoregion Senior Fisheries Program Officer
World Wildlife Fund

Alakanuk Tribal Council
P.O. Box 49 Alakanuk, AK 99554

January 23, 2009

North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

Re: Chinook Salmon Bycatch EIS

Dear Mr. Chairman:

I am writing to comment on the Draft Environmental Impact Statement (DEIS) on salmon bycatch reduction measures in the Bering Sea management area. The high salmon bycatch numbers of recent years in the Pollock fishery, threaten our salmon and our way of life. Salmon serves an important cultural and economic role in my community and throughout Western Alaska. Salmon provides a primary source of food for us, and the commercial salmon harvest provides the only means of income for many who live in the remote villages of the Yukon River. Salmon is an irreplaceable resource that must be protected by all means. Once again the lower Yukon River villages will be carrying the burden of conservation, even though the causes of salmon decline is not the result of subsistence users along the river. To our understanding, there may not be enough Chinook salmon for subsistence users this coming summer.

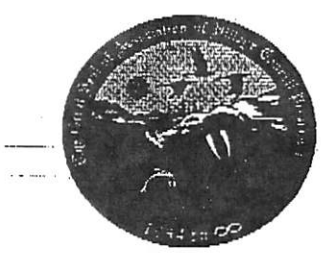
The model utilized in the DEIS drastically underestimates the impacts to Western Alaska Chinook salmon stocks, and to Chinook users. We have been dealing with rebuilding our salmon stocks since the mid-80's. To our understanding, we are still trying to rebuild the salmon stocks by reducing the amount of fishing time for subsistence. There were no commercial fishing for Chinook salmon in 2008. Our people are struggling to make ends meet with the added burden of high fuel costs to heat homes, high transportation costs, and high electricity costs.

We recommend that the Council and NMFS should set a hard cap of the lowest number of salmon bycatch immediately to protect Western Alaska Chinook salmon. We also recommend that the Council look at all means of reducing salmon bycatch, even to consider closing Pollock fishing to rebuild the Chinook salmon.

Sincerely,

Benjamin B. Phillip
President

[redacted]
roney@avcp.org



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JAN 2009

N.P.F.M.C.

January 27, 2009

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 W. Fourth Avenue, Suite 306
Anchorage, AK 99501-2252

Mr. Doug Mecum, Regional Administrator
NOAA Fisheries, Alaska Region
709 W. Ninth Street
Juneau, AK 99802-1668

RE: Salmon Bycatch in the Bering Sea Pollock Fishery

Dear Mr. Olson and Mr. Mecum:

Collectively, we have submitted dozens of letters and testified on numerous occasions over the years to express our concerns about salmon bycatch in the Bering Sea pollock fishery. Currently, it is our understanding that in-the-water regulations to control salmon bycatch, if there are any, would not be enacted until 2011. The purpose of this letter is to help you hasten your rule-making by clearly articulating our position on key points, in particular the critical importance of implementing a hard salmon bycatch cap and establishing a comprehensive salmon research and management program.

First and foremost, the North Pacific Fishery Management Council (NPFMC) and the National Marine Fisheries Service (NMFS) must take immediate action to minimize the wasteful bycatch of Chinook salmon in the groundfish fisheries that you manage. We strongly urge you to set an absolute limit, a hard cap, to the number of Chinook salmon that can be killed annually by the Bering Sea pollock fishery. For the Bering Sea pollock fishery, we believe the Chinook hard cap should be no greater than 32,500, and we support the Alaska Federation of Natives (AFN) Resolution 08-17 to establish an annual hard bycatch cap of no more than 30,000 Chinook salmon, based in part on the 2009 Alaska Department of Fish and Game Yukon River Chinook salmon forecast and the US-Canada treaty obligations under the Pacific Salmon Treaty.

Setting an annual hard bycatch cap of no more than 32,500 Chinook salmon is a first step. The goal must be to further minimize and reduce salmon bycatch. Thus, the Chinook bycatch cap should be a declining cap, subject to annual review for the amount by which the cap should be decreased. This review should include information on escapement goals and success in meeting those goals, reports on the status of subsistence, commercial and personal use salmon harvests, updates on the stock-of-origin of the bycatch, and new insights in ocean research.

The challenge of managing salmon bycatch exemplifies the need to develop and fund a comprehensive research program to adaptively manage salmon at all life-stages. This gravel-to-gravel research plan which would emphasize hiring and development of local expertise would include community-based salmon research like habitat assessments, integration of traditional

knowledge, in-river and ocean sampling for genetic stock identification, and the temporal and spatial use of ocean habitat.

Further, regarding the pollock industry's proposal for internally-managed programs to control salmon bycatch, we do not support any program that allows for the taking of any more than 32,500 Chinook salmon. The current ICA proposals before you suffer from a failure of transparency, public participation, scientific rigor and management oversight and offer no assurance that salmon bycatch will be reduced. We recognize that there are a variety of programs – including incentive programs, gear modifications, and time and area closures – that may have promise for managing bycatch, but all must operate under an annual hard cap of no more than 32,500 Chinook salmon with annual review as above for declining bycatch allowances. Finally, under no circumstances should NMFS and the Council imply or confer ownership rights of the Chinook salmon resource to the pollock fleet.

In summary, we support action to:

1. **Immediately establish a hard bycatch cap no greater than 32,500 Chinook salmon, and preferably as low as the Alaska Federation of Natives (AFN) Resolution 08-17 to establish an annual hard bycatch cap of no more than 30,000 Chinook salmon for the Bering Sea pollock fishery.**

2. **Ensure that such cap does not confer to the pollock fleet ownership of, nor the right to take, salmon.**

3. **Develop and secure funding for a comprehensive salmon gravel-to-gravel research plan to support management needs. This plan must include community-based research initiatives as well as identification of the stock-of-origin and age of all Chinook salmon caught as bycatch.**

4. **Secure adequate funds to ensure rebuilding and sustainable Chinook escapement through comprehensive management and co-management of salmon by managing for all life-stages of salmon from in-river to estuary to ocean and return.**

5. **Mandate appropriate consultation with Alaskan tribal governments and organizations on resource issues affecting Alaska Natives.**

Sincerely,

Jim Ayers
Vice President, Oceana

Myron Naneng
President, Association of
Village Council Presidents

Melanie Edwards on behalf of
Loretta Bullard
President, Kawerak Inc.

Steve Osborne
Interim Executive Director,
Alaska Inter-Tribal Council

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February 4, 2009

Protect the Health of the Arctic Marine Ecosystem

The Arctic Ocean is facing changes unparalleled on the planet. Over the last 100 years, the Arctic has warmed twice as fast as the rest of the planet. Since the 1950s, an area of sea ice about half as big as the land area of the United States has been lost. But the rapid loss of sea ice is creating the potential for commercial fisheries in the Arctic Ocean. It is important that we develop a careful science-based approach for this fragile environment.

The undersigned have expressed their support for the attached letter to urge the North Pacific Fishery Management Council to adopt the Arctic Fishery Management Plan, Alternative Two—to close the Arctic to commercial fishing until or unless it can be shown that it can occur without harming the health of the marine ecosystem.

The letter attached was signed by 25,750 people. All fifty States, the US territories and the District of Columbia are represented. Their full addresses are available upon request.

For further information, please contact Marilyn Heiman, Director of the Pew Environment Group US Arctic Ocean Program at MHeiman@pewtrusts.org.

February 4, 2009

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 W. Fourth Avenue, Suite 306
Anchorage, AK 99501-2252

Dear Chairman Olson:

I am writing to thank the North Pacific Fishery Management Council for developing a forward-looking Fishery Management Plan (FMP) for U.S. waters in the Arctic. I strongly urge the Council to continue to exercise leadership on this issue by adopting Alternative 2 of the proposed Arctic FMP. Alternative 2 would protect the health of the Arctic ecosystem by closing the entire region north of the Bering Strait to all commercial fishing until it can be shown that commercial fishing can occur without harming the health of the marine ecosystem or the subsistence way of life.

As the Council has recognized, global climate change is already having profound effects on the marine environment of the Arctic. Foremost of these has been the rapid loss of sea ice cover and the increase in ocean temperature. These and other related changes are placing great stress on the Arctic ecosystems and the thousands of people who live there. Polar bears, walruses, whales, seabirds and other Arctic animals are struggling to adapt to rapid changes, and would face new threats if additional human industrial activities were added to the stress of climate change.

Relatively little is known about the abundance, distribution, and role of fish and other marine species in the Chukchi and Beaufort ecosystems, there is no way to anticipate the degree to which commercial fishing may impact these ecosystems. In light of these uncertainties and the unprecedented pressures on the Arctic Ocean ecosystem, I urge the council to take a precautionary approach and adopt Alternative 2 of the Arctic FMP at its February meeting in Seattle. By adopting Alternative 2, the Council will lead the world in protecting Arctic fishery resources and set a precedent for how other agencies responsible for the Arctic Ocean can proceed.

Sincerely,

Handout

THE PEW CHARITABLE TRUSTS

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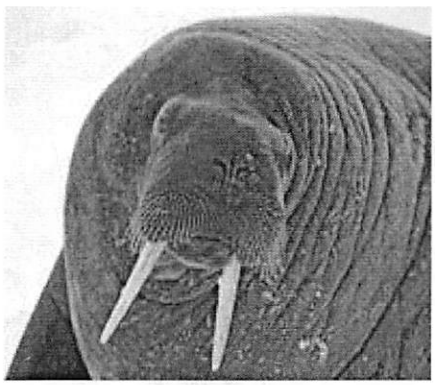
February 4, 2009

Protect the Health of the Arctic Marine Ecosystem



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