NORTH PACIFIC RESEARCH BOARD

"Building a clear understanding of the North Pacific, Bering Sea, and Arctic Ocean ecosystems that enables effective management and sustainable use of marine resources."

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Marine Research Projects Approved by the North Pacific Research Board for 2002-2004

The North Pacific Research Board has approved 61 projects totaling $11.8 million in new marine research supported by the Environmental Improvement and Restoration Fund. The selections focus on addressing pressing fisheries and marine ecosystems information needs and fall into seven broad categories of research:

Categories of Research	Number of Projects	Total Funding	Percent
Oceanic and Estuarine Salmon	8	$2.19 million	19
Fisheries Habitat	6	$2.19 million	19
Other Fisheries-Related Research	18	$2.14 million	18
Marine Mammal	6	$953,000	8
Marine Food Web Ecological Studies	16	$3.58 million	30
Education and Outreach and Synthesis Information	5	$623,000	5
Contaminants	2	$157,000	1

All research is performed in the Alaska region, but principal investigators come from the broader research community throughout the nation. Most hail from Alaska and along the West Coast:

Alaska
Alaska Department of Fish and Game
Alaska Longline Fishermen's Association – Sitka
Alaska Sea Grant – UAF
Alaska SeaLife Center – Seward
Bristol Bay Science & Research. Inst. – Dillingham
Central Bering Sea Fishermen's Assoc. – St. Paul
NOAA
- Auke Bay Laboratory – Juneau
- Kodiak Fisheries Science Center

Prince William Sound Science Center
U.S. Fish and Wildlife Service – Anchorage
U.S. Geological Survey – Anchorage
University of Alaska Anchorage
University of Alaska Fairbanks, Juneau & Sitka
URS Alaska Operations

Washington
International Pacific Halibut Commission - Seattle
Natural Resources Consultants – Seattle
NOAA (Seattle)
- Alaska Fisheries Science Center
- National Marine Mammal Laboratory
- Northwest Fisheries Science Center
- Pacific Marine Environmental Laboratory

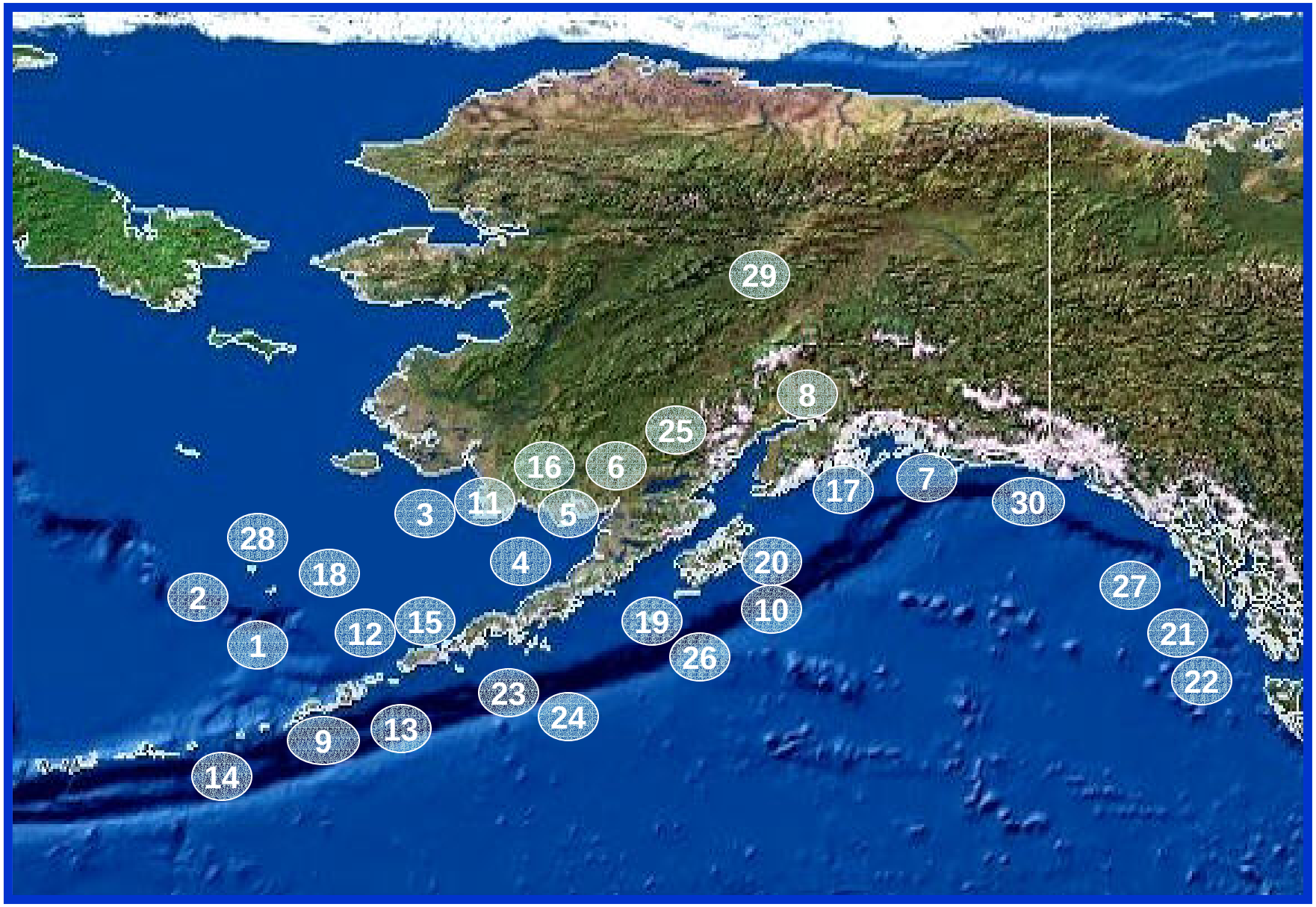
University of Washington – Seattle

Other States
NOAA Environ. Technology Lab – Boulder, CO
Louisiana State University – Baton Rouge, LA
Old Dominion University – Norfolk, VA

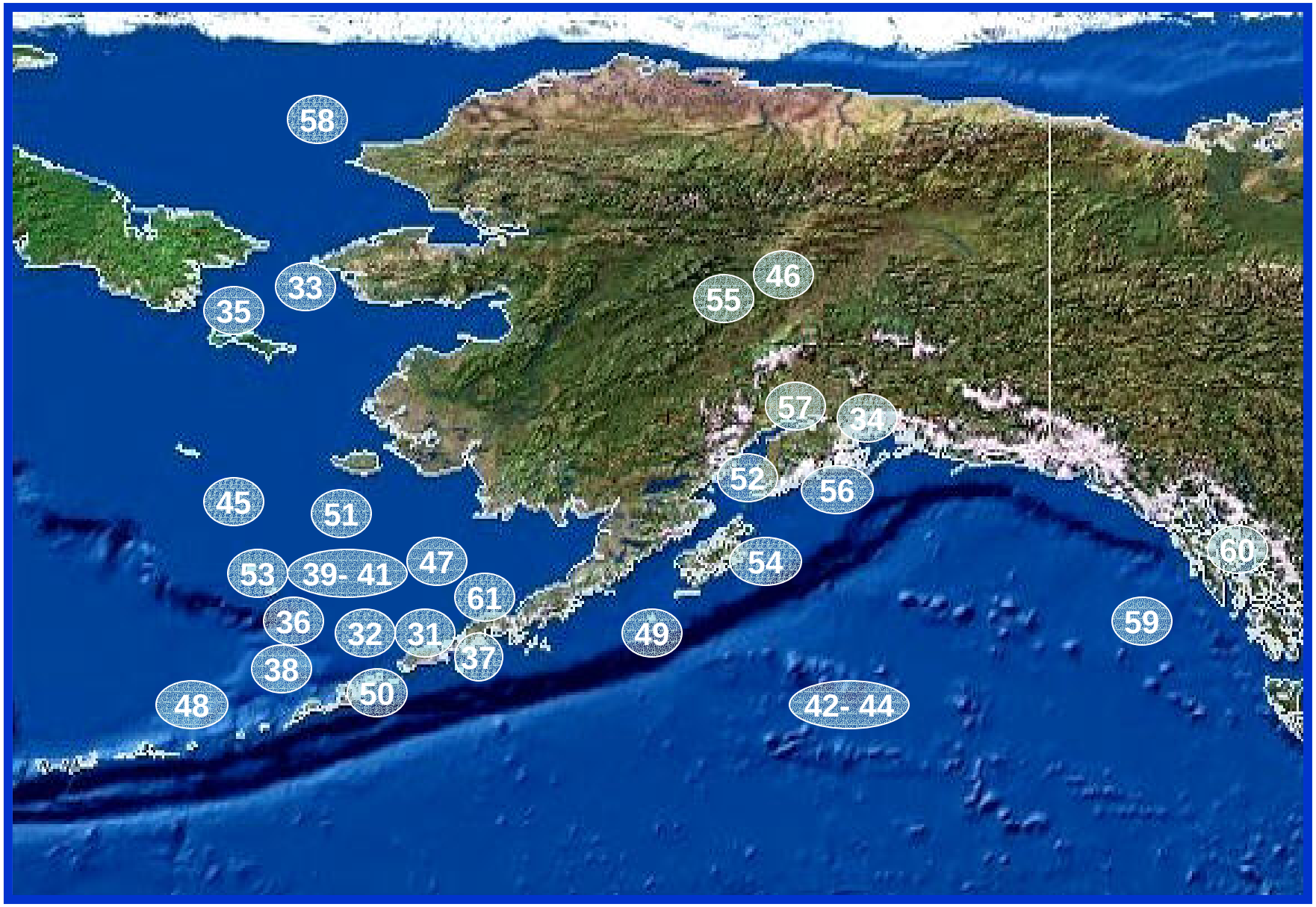
Oregon and California
Hatfield Marine Science Center – Newport
Oregon State University - Corvallis
Hubbs SeaWorld Research Institute – San Diego
NOAA SW Fisheries Science Center – San Diego
Scripps Institute of Oceanography – La Jolla
Pt. Reyes Bird Observatory (PRBO) – Stinson Beach
University of California – Davis & San Diego

Canada
Department of Fisheries and Oceans
North Pacific Anadromous Fish Commission
Sir A. Hardy Foundation for Ocean Sciences
Simon Fraser University – BC
Coastal and Ocean Resources, Inc. – BC

North Pacific Research Board: Projects 1-30



North Pacific Research Board: Projects 31-61



Oceanic and Estuarine Salmon Research: $2.19 million

1. NPAFC salmon tagging and genetics in the Bering Sea ($190,800)
(R0204)

North Pacific Anadromous Fish Commission. Salmon tagging and genetics research to understand the distribution patterns, habitat utilization, and movements of Bering Sea salmon stocks through an at-sea tagging program of immature and maturing fish.

2. Open ocean salmon stock structure and dynamics in the Bering Sea ($500,000)
(R0303)

North Pacific Anadromous Fish Commission. Will provide better understanding of salmon community structure and improve ability to predict effects of short- and long-term climate change on ocean production of regional salmon stocks. International in scope, involving US, Canada, Russia and Japan. Includes genetic stock identification and early marine survival of chum, chinook, and sockeye salmon. Continuation of R0204.

3. Early marine ecology of juvenile chums in Kuskokwim Bay ($624,025)
(R0327)

University of Alaska Fairbanks and USGS. Goal is to assess effects of physical and biological environmental factors on feeding, condition, and growth of juvenile chum salmon using a bioenergetically-based food web model coupled with directed sampling for diet composition, growth, size structure, and energy content.

4. Evaluation of alternative reasons for collapse of Kvichak sockeye runs ($192,850)
(R0321)

Bristol Bay Science and Research Institute will host series of annual technical workshops to describe changes in enumeration programs for Kvichak sockeye over the past 30 years to determine whether the recent collapse was related to freshwater or marine factors. Will conduct comparative analysis of dynamics and age structure of several Bristol Bay sockeye salmon populations.

5. Run-timing analysis for Bristol Bay sockeye ($24,930)
(R0317)

Natural Resources Consultants, Seattle. Update and publish migration timing model that quantifies effects of oceanographic conditions and biological variables on Bristol Bay salmon migration timing and provide forecast of Bristol Bay and Kvichak River sockeye migration timing in 2003.

6. Genetic stock identification of Western Alaska sockeye salmon ($216,515)
(R0205)

NOAA Auke Bay Lab and Alaska Department of Fish and Game. Use of gene markers to track migration and relative survival of populations of sockeye salmon juveniles exiting Bristol Bay and the eastern Bering Sea.

7. Sockeye and coho juvenile survival in estuarine waters of the Copper River Delta ($400,000)
(R0310)

Prince William Sound Science Center. Couples intensive field surveys and otolith studies to quantify ages of outmigration and estuarine residence time for coho and sockeye within the Copper River Delta. Will provide information on survival rates in estuarine areas which are seldom studied.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

8. Statewide data warehouse of salmon size, age and growth records ($43,066)
(R0311)

Alaska Department of Fish and Game. Will start process for establishing an electronic data warehouse environment through which historical salmon sampling and scale pattern data for salmon size, age and growth records can be maintained and updated annually from collections throughout the state.

Fisheries Habitat Research: $2.19 million

9. Mapping deep sea coral distributions in the Aleutians ($1,303,001)
(R0304)

University of Alaska Fairbanks, NOAA Auke Bay Lab and Alaska Department of Fish and Game. Detailed mapping of coral and sponge habitats in Aleutians and develop statistical model to predict coral and sponge distribution as a function of measurable environmental characteristics. Determine importance to commercially valuable fish and invertebrates and provide information to North Pacific Fishery Management Council.

10. Evaluation of essential fish habitat for juvenile flatfish around Kodiak ($261,102)
(R0301)

Oregon State University and NOAA Alaska Fisheries Science Center. Integrated research program, combining small-mesh trawl surveys, higher resolution/spatially explicit camera sled surveys, and field experiments to examine importance of emergent structure in the behavior, ecology and survival of juvenile halibut and northern rock sole near Kodiak Island.

11. Pilot nearshore habitat mapping using acoustic and visual techniques ($120,000)
(R0201)

Coastal and Ocean Resources, Inc. Pilot biophysical mapping project using a combination of acoustic and visual tools for habitat delineation, including both biological and substrate characteristics in Togiak Bay.

12. Investigations of a skate nursery ($140,936)
(F0415)

NOAA Alaska Fisheries Science Center. Will investigate potential skate nursery area in southeastern Bering Sea where fishery data suggest an area of heavy use by skates for the deposition of egg cases.

13. Ecological value of juvenile rockfish habitat ($163,402)
(F0416)

NOAA Alaska Fisheries Science Center. Will assess the value of habitat in the Aleutian Islands to juvenile rockfish by examining abundance, condition and growth in five study areas using two acoustical techniques to map habitat.

14. Reproductive ecology of Atka mackerel ($200,000)
(F0417)

NOAA Alaska Fisheries Science Center and University of Alaska Fairbanks. Will locate and characterize Atka mackerel nesting habitat, analyze the spatio-temporal distribution of populations, produce an embryonic development series, investigate the temporality of spawning, nesting, hatching, and the annual and spatial variation in reproductive output.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

Other Fisheries-Related Research: $2.14 million

15. Application of new sonar technology to reducing salmon bycatch in pollock fisheries ($121,918)
(R0202)

NOAA Alaska Fisheries Science Center. New sonar developed to study the dynamic behavior of salmon caught in trawl nets to help in developing effective excluders that may be used to reduce salmon bycatch in the pollock fishery.

16. Environmental cues for herring spawning ($131,408)
(R0208)

University of Alaska Fairbanks and Juneau. Will develop predictive models for Pacific herring spawning at Togiak for use by managers. Will include spatially explicit models to predict interannual variability of spawning events, particularly timing and location.

17. Two species of rougheye rockfish in Northern Gulf of Alaska ($76,776)
(R0209)

University of Alaska Fairbanks. Microsatellite and DNA analysis of rougheye rockfish sampled in Prince William Sound, Cook Inlet, and inside waters of Southeast Alaska to learn whether one rockfish type is associated with nearshore or inside waters.

18. Predator-prey relationships for groundfish and forage fish ($350,000)
(R0305)

NOAA Alaska Fisheries Science Center. Continue time series of fish food habits data in the North Pacific by further collection of groundfish stomach samples during groundfish bottom and midwater trawl surveys. Analyze fish stomachs collected in 2000-2002 and update Bering Sea multispecies virtual population analysis model to provide more current advice on implications of fishing strategies on the ecosystem via the Ecosystems Chapter in the stock assessment documents for the North Pacific Fishery Management Council.

19. Causes of bitter crab disease in Tanner crab ($99,805)
(R0306)

University of Washington, NOAA Alaska Fisheries Science Center, Alaska Department of Fish and Game. Investigate impact of bitter crab syndrome on North Pacific Tanner crab populations, elucidate the life history of the parasitic dinoflagellate *Hematodinium* and determine whether one or more species of parasitic dinoflagellates cause the syndrome.

20. Cultivation techniques for Blue King Crab larvae ($85,561)
(R0316)

NOAA Kodiak Fisheries Science Center. Cultivation and settlement of blue king crab larvae and verification of ability to raise them in laboratory and optimum conditions for cultivation. Will study settlement behavior and habitat selection, survival of larval and juvenile stages, and competitive interactions with red king crab.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

21. Sperm whale interactions with longline fisheries off Southeast Alaska ($184,518)
(R0309)

University of Alaska Southeast Sitka Campus, Alaska Department of Fish and Game, Hubbs-SeaWorld, Alaska Longline Fishermen's Association. Collect information, working with local fishermen, on the timing of interactions seasonally and diurnally, and identify sperm whales occurring on the fishing grounds through photographic identification and genetic samples. Will provide information to help minimize sperm whale depredation on longline gear and sablefish. This project is related to F0412)

22. Sperm whale and longline fisheries interactions - passive acoustic component ($68,626)
(F0412)

University of Alaska Southeast Sitka Campus and Scripps Institute of Oceanography. Will attach a set of autonomic acoustic recorders to anchor lines of a longline deployment, converting the fishing gear into a vertical acoustic array. This project is related to R0309.

23. Short-tailed albatross interactions with North Pacific commercial fisheries ($99,321)
(R0322)

Oregon State University and U.S. Fish and Wildlife Service. Capture up to 15 short-tailed albatrosses and attach satellite transmitters for 4-6 months to learn about migrations and interactions with commercial fisheries. Characterize oceanographic habitats exploited by foraging albatrosses and quantify overlap with fisheries areas.

24. Assessment of trawl third wires as a threat to seabirds and short-tailed albatrosses ($100,000)
(R0323)

NOAA Alaska Fisheries Science Center. Identify extent of use of trawler sonar cables (third wires) and interactions with seabirds. Provide risk profiles to albatrosses and ways to reduce mortalities.

25. Studies of fishing communities in Alaska ($45,000)
(R0318)

EDAW, Inc. Produce a template for collection and analysis of community profile information for fishing communities in the North Pacific and use it to construct four key fishing community profiles. Information will be used in various socioeconomic analyses required under NEPA and MSA. Joint funding support from NPRB and NPFMC.

26. Video monitoring on factory trawlers ($165,000)
(R0325)

Digital Observer LLC, Kodiak. Will experiment with using video monitoring gear to develop a verifiable method of enumerating bycatch aboard factory trawlers. Assess suitability of information to supplement onboard fisheries observer data.

27. Health of Pacific herring ($68,198)
(R0319)

University of California. Study disease in Prince William Sound and Sitka Sound herring and the role of pigmented macrophage aggregates to determine relative effects of age, season and gender of herring.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

28. Thermal habitat preferences of Pribilof Island halibut ($92,920)
(R0314)

International Pacific Halibut Commission and Central Bering Sea Fishermen's Association. Will determine whether average sea bottom temperature and its temporal variability correlate with catch rates in the halibut fishery of St. Paul Island. Hope to explain what causes movement and distribution patterns of halibut in shallow coastal waters of Pribilofs and throughout western Alaska.

29. Supply and demand model for king crab and snow crab ($80,000)
(F0423)

University of Alaska Fairbanks. An international econometric model will be constructed, estimated and simulated to target the primary and most important determinants of demand, estimate the relationship between North America crab landings and the resulting prices and revenues received for the crab, and set a foundation and educate fishery managers and industry participants on market factors which affect price.

30. Spiny Dogfish off Alaska ($171,000)
(F0418)

University of Alaska Fairbanks and University of Washington. Will collect information on life history, ecology, population dynamics, and fisheries bycatch for spiny dogfish in Alaska.

31. Modeling multispecies groundfish interactions ($90,000)
(F0419)

NOAA Alaska Fisheries Science Center. Work will focus on the update and further development of the Multispecies Statistical Model. This approach will make available the tools used in single-species stock assessment in a multispecies context, providing probabilistic statements on the future state of some commercially important components of the ecosystem.

32. Young of the year Pacific ocean perch genetics ($105,000)
(F0420)

University of Alaska Fairbanks. Will compare the genetic compositions of previously collected young of the year Pacific ocean perch with adult geographic population genetic structure.

Marine Mammal Research: $953,000

33. Ecology of ice seals in the Bering-Chukchi Seas ($150,000)
(R0312)

Alaska Department of Fish and Game. Will develop monitoring program of population status of ringed, bearded, spotted, and ribbon seals in conjunction with annual subsistence seal harvest.

34. Feeding ecology and distribution of harbor seals in Prince William Sound ($172,886)
(R0313)

Alaska Department of Fish and Game and Simon Fraser University (BC). Will examine prey availability and predation risk to the population dynamics of harbor seals in Prince William Sound. Will also explore how alternative fisheries scenarios might influence foraging ecology and demography of seals.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

35. Bering Sea wintering grounds of beluga whales ($161,700)
(R0324)

NOAA National Marine Mammal Laboratory. Will conduct field work in several small bays and inlets on Chukotsk Peninsula and attach satellite transmitters to indicate winter movements and diving behavior. Biopsies will be used for genetic stock identification and to determine diet and contaminant load. Will identify beluga stocks that are vulnerable to harvest in Russian as well as U.S. and Canadian waters.

36. Bering Sea right whale distribution ($56,117)
(R0307)

Scripps Institute of Oceanography. Will continue processing acoustic data from SE Bering Sea and combine with other data to characterize baleen whale abundance, distribution, calling behavior, and habitat preferences.

37. Dietary specialization of Bering Sea and Aleutian Islands killer whales ($168,000)
(F0411)

NOAA National Marine Mammal Laboratory and Northwest Fisheries Science Center, and University of Alaska Fairbanks. Will investigate the dietary specialization of killer whales in the BSAI region through the use of stable isotope and fatty acid analysis.

38. Fur seal foraging strategies and consequences ($244,000)
(F0414)

NOAA National Marine Mammal Laboratory and University of Alaska Fairbanks. Will compare consequences of foraging in different habitats of the Bering Sea (Pribilofs vs. Bogoslof) in summer versus that of winter foraging in the North Pacific.

Marine Food Web Ecological Studies: $3.58 million

39. Monitoring of biophysical moorings in the Bering Sea ($120,690)
(R0203)

NOAA Pacific Marine Environmental Laboratory and Alaska Fisheries Science Center and University of Alaska Fairbanks. This study continues the long-term monitoring of ocean and biological variables at biophysical moorings 2 and 4 on the Bering Sea shelf to lay the foundation for a knowledgeable forecast of how future changes in the climate may impact this ecosystem, its living marine resources and protected marine species.

40. Monitoring of biophysical moorings in the Bering Sea ($320,000)
(R0315)

NOAA Pacific Marine Environmental Laboratory and University of Alaska Fairbanks. Will continue two years of monitoring of physical and biological environment of the southeastern Bering Sea. This will provide essential information during this period of change in the North Pacific and elucidate how the marine ecosystem is changing. This is a continuation of project R0203.

41. Monitoring of biophysical moorings in the Bering Sea ($170,204)
(F0410)

NOAA Pacific Marine Environmental Laboratory and Alaska Fisheries Science Center and University of Alaska Fairbanks. Will continue one year of monitoring of physical and biological environment of the southeaster Bering Sea. This is a continuation of projects R0203 and R0315.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

42. Plankton surveys across the North Pacific ($180,000)
(R0302)

Sir Alister Hardy Foundation for Ocean Science and DFO-Canada. Will sample plankton using ships of opportunity crossing the North Pacific and characterize associated environmental conditions. Will enhance interpretation of plankton, marine bird and mammal data and improve understanding of marine ecosystem.

43. Marine bird/mammal observations and continuous plankton recorder program ($60,009)
(R0206)

Pt. Reyes Bird Observatory Conservation Science. Augment and enhance the existing continuous plankton recording program on ships of opportunity to conduct observations of marine mammals and seabirds along the CPR survey lines. Related to R0302.

44. Marine bird/mammal observations and continuous plankton recorder program ($255,690)
(F0409)

Pt. Reyes Bird Observatory Conservation Science and Duke University Marine Laboratory. Will continue two years of integrated marine birds, mammals and plankton monitoring program in order to assess yearly variability in seabird and marine mammal distributions relative to CPR derived plankton communities, temperature and chlorophyll. Continuation of R0206.

45. Detecting change in the Bering Sea ecosystem ($124,084)
(R0207)

NOAA Pacific Marine Environmental Laboratory and Alaska Fisheries Science Center. Develop measures of ecosystem status for the Bering Sea based on retrospective data and design a protocol that will test the hypothesis that the effects of environmental change in the Bering Sea often occur from single strong forcing events in the atmosphere and ocean, which lead to an ecosystem reorganization that persists for many years.

46. Nutritional quality of Alaskan fish for predators ($24,782)
(R0210)

University of Alaska Fairbanks. Funding will support purchase and set-up of equipment to measure the caloric density of fish and other prey items to enhance understanding of trophic dynamics and predator-prey relationships.

47. Sinking particles/pelagic food webs in the SE Bering Sea ($21,661)
(R0211)

University of Alaska Fairbanks. Supports the continued monitoring of zooplankton in the Bering Sea by using sediment traps on biophysical moorings 2 and 4 on the Bering Sea shelf. Related to R0203.

48. Seabird studies on kittiwakes, murres, auklets, and short-tailed albatross ($900,000)
(R0320)

University of Alaska Fairbanks. Will study feeding ecology of seabirds in southeastern Bering Sea, Pribilofs and Aleutians to determine food availability and stress patterns. Will provide insight on relationships between climate and food web dynamics and a better understanding of how the marine ecosystem may change in response to long-term climate changes and global warming.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

49. Forage fish studies near Kodiak ($320,000)
(R0308)

NOAA Alaska Fisheries Science Center. Will determine relationship of zooplankton prey and forage fishes in western Gulf of Alaska near Kodiak and how winter conditions influence the prey field and feeding opportunities for juvenile Pollock.

50. Forage fish assessment to support integrated BSAI ecosystem study ($500,000)
(F0401)

NOAA Alaska Fisheries Science Center and Environmental Technology Laboratory, University of Alaska Fairbanks, University of Washington, and Louisiana State University. Will assess abundance, distribution, diet, and condition of forage fish species and their prey, by assessing abundance, examining food web relationships, testing a potential monitoring program, using underwater acoustics, and airborne visual and remote sensing of a nearshore section from Dutch Harbor to Port Moller.

51. Ocean circulation models ($75,000)
(F0402)

University of Alaska Fairbanks and NOAA Pacific Marine Environmental Laboratory. Will convene a workshop on the present state of ocean circulation modeling for the Bering Sea and Aleutian Island (BSAI) region of the North Pacific.

52. Kelp-grazer interactions ($188,963)
(F0407)

University of Alaska Fairbanks. Will study kelp-grazer interactions with emphasis on grazing activity, significance of chemical defenses and resource allocation strategies in dominant kelp species in Kachemak Bay.

53. Bering Sea variability and coupling ($191,158)
(F0408)

Old Dominion University Research Foundation (Norfolk, VA). Will utilize co-registered satellite imagery from multiple sensors to examine temporal and spatial variability of environmental parameters throughout the Bering Sea and to evaluate the response of phytoplankton to locally variable forcing.

54. Tufted Puffins as bioindicators ($131,476)
(F0413)

University of Alaska Fairbanks. Will utilize quantitative fatty acid signature analysis and stable isotope analysis to estimate the diets of tufted puffins breeding in Chiniak Bay, Kodiak, Alaska.

Education and Outreach and Synthesis Information: $623,000

55. Support participation in the Alaska Regional National Ocean Sciences Bowl ($100,000)
(R0326)

Alaska Sea Grant at University of Alaska Fairbanks. Will provide travel funds for participating teams from Alaska communities off the road system and support regional workshops with interested rural teachers and students. Alaska Regional National Ocean Sciences Bowl provides for public involvement in marine resource issues and in capacity building for dealing with those issues in rural communities.

(Note: Project numbers in parentheses may be used to learn more about each project at www.nprb.org under "Research.")

56. NPRB education and outreach ($103,000)
(F0403)

Alaska SeaLife Center. Will disseminate information on the Board's marine research priorities, projects and results through a variety of venues and media.

57. Alaska Marine Information System ($150,000)
(F0404)

University of California, San Diego and System Science Applications. Will develop a system for access to and long term data archive of marine data for Alaska and the North Pacific Ocean, Bering Sea and Arctic Ocean.

58. Arctic Ocean information synthesis ($150,000)
(F0405)

LGL Ecological Research Associates, Inc. (Texas) and URS Alaska Operations. Will prepare an integrated synthesis of the biological and oceanographic information available on the Beaufort and Chukchi Seas, including Russian research.

59. Southeast Alaska synthesis ($120,000)
(F0406)

University of Alaska Southeast. Will organize a workshop in which experts in marine biology and oceanography of Southeast Alaska will present syntheses of the progress made in specific areas, including biological, physical, and chemical oceanography, climatic forcing, and the temporal and spatial variability in a variety of marine populations with different life histories, including fished species.

Contaminants: $157,000

60. PBDE levels in estuarine ecosystems ($48,402)
(F0421)

University of Alaska Southeast. Will identify and quantify polybrominated biphenyl ethers (flame retardant derivatives) in sediment and tissue samples of organisms inhabiting estuarine habitats near a landfill in Southeast Alaska and compare them to samples obtained from a more pristine estuarine habitat.

61. Hydrocarbons in Nelson Lagoon ($108,820)
(F0422)

Anchorage Fish and Wildlife Field Office. Will monitor hydrocarbon contamination using passive water sampling devices and blue mussels as bioindicators to establish baseline measurements of petroleum contaminants in Nelson Lagoon.

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