UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

MAR 23 2010

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: California Current Ecosystem/Pacific Sardine Biomass Survey to be conducted by NMFS Southwest Fisheries Science Center and the associated scientific research permit.

LOCATION: U.S./Mexico border to San Francisco, CA

SUMMARY: This is an annual research cruise/survey conducted by the Southwest Fisheries Science Center with the primary goal of collecting biological and oceanographic information to be used in developing a biomass estimate for Pacific sardine and provide ecological information on the Southern California Bight.

RESPONSIBLE OFFICIAL: Rodney R. McInnis
National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA)
501 W. Ocean blvd. Suite 4200, Long Beach, CA, 90802
562-980-4055

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

for Paul N. Doremus, Ph. D.
NEPA Coordinator

Enclosure

150413SWR2010SF00082:JBL

Environmental Assessment

Issuance of Scientific Research Permits to the National Marine Fisheries Service Southwest Science Center for California Current Ecosystem surveys and Research Estimating Sardine Abundance and Egg Production off the West Coast

1. Introduction: The National Marine Fisheries Service (NMFS), Southwest Region (SWR) annually issues scientific research permits (SRP) to NMFS Southwest Fisheries Science Center (SWFSC) Fisheries Research Division (FRD) for their California Current Ecosystem (CCE) surveys and associated research on Pacific sardine (*Sardinops sagax*) biomass.

2. Purpose and Need: NMFS is responsible for the management of Federal fishery resources. Scientific research is an important means of gathering valuable information about fish species and is necessary for making informed management decisions on these fish stocks. NMFS conducts Pacific sardine surveys to aid in the development of biomass estimates used to set annual Pacific sardine harvest guidelines as required under the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP). The research program is expected to ultimately contribute to management decisions about Pacific sardine fisheries that would potentially have positive social or economic impacts. The more data available regarding the health of the Pacific sardine stock, the better NMFS is able maintain a productive and sustainable fishery for Pacific sardine balanced with ecosystem needs.

3. Description of the Proposed Action and Alternatives

Two alternatives have been considered: (1) NMFS SWR approves the SRP request enabling the SWFSC to conduct its Pacific Sardine research; (2) NMFS SWR does not approve the SRP request.

3.1 Proposed Action

The proposed action is NMFS SWR under NMFS Policy Directive 01-108 providing the SWFSC with Scientific Research Permit(s) as an acknowledgement of their plans to conduct scientific research. For the purposes of this action, the research is the annual Pacific sardine biomass research cruise and CCE surveys. The proposed research cruises will take place typically some time during the spring (March and April) and last approximately thirty days. Research takes place on NOAA ships or NOAA contracted research vessels and follows designated track lines between San Diego, CA, and the U.S./Canada border. Detailed survey methods and cruise instructions are submitted each year for review, however each survey maintains near exact survey methodologies (2010 instructions attached). The goals of this research are to better understand the physical and biological processes in the California Current and obtain a fishery independent estimate of Pacific sardine spawning biomass. The research will be conducted with an ecosystem approach and typically with the following methods and objectives:

1. To describe the spatial distributions of egg, larvae and adult Pacific sardine, northern anchovy, and jack mackerel
2. To obtain measurements of instantaneous egg production and daily specific fecundity of adults required for an estimate of Pacific sardine spawning biomass
3. To collect environmental data to describe the coastal and offshore habitat. Continuous underway sampling of surface waters will occur with temperature and salinity being automatically logged by computer with the output from the GPS navigational unit
4. To record current profiles throughout the duration of the cruise with the Acoustic Doppler Current Profiler (ADCP)
5. To continue an ongoing assessment of pelagic fish stocks
6. To collect information on sardine reproductive parameters (collect egg, larval and adult specimens), spatial distribution of size, age and abundance of sardine, and acoustics ground truth information using trawling
7. To make continuous observations of sea birds
8. To collect specimens (Pacific sardine and possibly other species of interest such as northern anchovy and jack mackerel) throughout the survey pattern for genetics, microchemistry, age, adult reproductive analyses (sex, size, maturity, spawning frequency, and batch fecundity), and stomach analysis
9. To record continuous acoustic targets obtained with a multi-frequency Simrad EK-60 scientific sounder to acoustically identify and quantify pelagic fish schools during transit

***Minimization and Mitigation Measures*:**
The activities authorized under proposed SRPs, if approved, would follow certain procedures in order to minimize and mitigate potential environmental effects of the proposed action. The following specific research conditions would be placed on the research should when permits are issued to ensure compliance with appropriate research protocols:

1. A marine mammal watch will be initiated 30 minutes before trawling. Trawling will be the first activity on arrival at a trawling station, or will be located away from a previously occupied station to avoid any mammals that may have been attracted to the vessel. The trawl will be fitted with 162 dB source level, variable frequency pingers rated to discourage mammals. If any mammals are detected, the trawl position will be moved to a new area and the mammal watch reinitiated. Any mammal capture will trigger telephone contact to the Division Director of FRD, SWFSC who will take immediate action.
2. To the extent practicable, all efforts should be made to return live salmon immediately to the water with minimal handling.
3. Any salmon that are incidentally killed during the sardine surveys shall be frozen such that future genetic analyses can be conducted on these fish to identify Evolutionarily Significant Units or river area of origin.
4. All bycatch species incidentally taken shall be monitored. Any takes of Endangered Species Act (ESA) listed species, other than Chinook and coho, must immediately be reported Josh Lindsay,

Sustainable Fisheries Division, Southwest Region immediately at (562) 980-4034 or joshua.lindsay@noaa.gov and to the Office of Protected Resources, Southwest Region.

NMFS, Office of Protected Resources
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Long Beach, CA 90802

5. To the extent possible given safety concerns, the survey vessel shall not travel in or transit through Steller sea lion critical habitat. Critical habitat for Steller sea lions is designated at Ano Nuevo Island, Sugarloaf Island, and the southeast Farrallon Islands in California and Pyramid Rock at Rogue Reef and Long Brown Rock and Seal Rock at Orford Reef in Oregon (50 CFR 226, Table 1). Critical habitat includes associated aquatic zones 3,000 feet seaward in State and Federally managed waters from the baseline of each rookery (50 CFR 226.202(b)).
6. If during the survey more than 40 salmon are incidentally killed contact Josh Lindsay, Sustainable Fisheries Division, Southwest Region immediately at (562) 980-4034 or joshua.lindsay@noaa.gov.

In addition to the specified conditions above, the SWFSC will continue the use of a marine mammal excluding device (MMED) with their surface trawls until such time it is determined that they are no longer of necessity or their usability is effecting the quality of data obtained.

3.2 No Action:
Under the no action alternative the NMFS SWR would not issue a SRP to the SWFSC to conduct research on Pacific sardine spawning biomass. No information would be collected to better understand the physical and biological processes in the California Current and to obtain a fishery independent estimate of Pacific sardine spawning biomass.

4. Description of the Affected Environment

Action Area

The proposed research occurs in surface and subsurface waters from the U.S./Mexican border to the U.S./Canada border out to 300 nautical miles. Detailed survey grids are submitted each year, but surveys follow similar track lines as in the attached cruise instructions (Attachment).

4.1 Sardines

A detailed description of the distribution and habitat, life history and abundance, recruitment and population dynamics of Pacific sardines can be found in the Environmental Impact Statement (EIS) prepared for Amendment 8 to the Northern Anchovy FMP, now the CPS FMP (PFMC 1998). Pacific sardine is neither overfished or experiencing overfishing and is considered a healthy stock.

4.2 Other Fish Species

Other species caught during previous surveys include coastal pelagic species such as northern anchovy and jack mackerel. Both these stocks are considered healthy as neither is overfished or experiencing overfishing. Detailed descriptions of these species can be found in the EIS prepared for Amendment 8 to the Northern Anchovy FMP, now the CPS FMP (PFMC 1998). Extremely small catch of other fish species may occur, but of no stocks of concern.
Cruise reports from previous surveys can be found at:
http://swfsc.noaa.gov/textblock.aspx?Division=FRD&ParentMenuId=218&id=1448.

4.3 Invertebrates

A variety of pelagic and mid-water, surface migrating invertebrates are also caught during surface trawling. Catch typically consists of various squids and jelly fish.

4.4 Protected Species

4.4.1 ESA Listed Species

The following list of endangered or threatened species may be present in the action area:

Species		**Status**
Marine Mammals		
Blue whale *(Baleaenoptera musculus)*		Endangered
Fin whale *(Baleranoptera physalus)*		Endangered
Humpback whale (*Megaptera novaeangliae*)		Endangered
Sei whale (*Balaenoptera borealis*)		Endangered
Sperm whale (*Physeter macrocephalus*)		Endangered
Steller sea lion, eastern distinct population segment (DPS) (*Eumetopias jubatus*)		Threatened
Killer whales, southern resident DPS (*Orcinus orca*)		Endangered
Northern Right whale (Eubalaena glacialis)		Endangered
Southern sea otter (*Enhydra lutris nereis*)		Threatened
Birds		
Short-tailed albatross (*Phoebastria albatrus*)		Endangered
California brown pelican (*Pelecanus occidentalis*)		Endangered
Marbled murrelet *(Brachyramphus marmoratus marmoratus)*		Threatened
Bald eagle *(Haliaeetus leucocephalus)*		Threatened
California least-tern *(Sternum antillarum browni)*		Endangered
Xantus's murrelet *(Synthliboramphus hypoleucus)*		Candidate
Sea turtles		
Leatherback turtle (*Dermochelys coriacea*)		Endangered
Loggerhead turtle (*Caretta caretta*)		Threatened
Olive Ridley (*Lepidochelys olivacea*)		Endangered/Threatened
Green Sea Turtle (*Chelonia mydas*)		Endangered/Threatened
Fish		
Green Sturgeon, southern DPS (*Acipenser medirostris*)		Threatened
Salmonids		
Chinook (*Oncorhynchus tshawytscha*)	Puget Sound	Threatened
	Sacramento River winter	Endangered
	Snake River Fall	Threatened

	Snake River Spring/Summer	Threatened
	Lower Columbia River	Threatened
	Upper Willamette River	Threatened
	Upper Columbia River Spring	Endangered
	Central Valley Spring	Threatened
	California Coastal	Threatened
Chum (*Oncorhynchus keta*)	Hood Canal Summer Run	Threatened
	Columbia River	Threatened
Coho (*Oncorhynchus kistuch*)	Central California Coastal	Endangered
	S. Oregon/N. CA Coastal	Threatened
	Lower Columbia River	Threatened
Sockeye (*Oncorhynchus nerka*)	Snake River	Endangered
	Ozette Lake	Threatened
Steelhead (*Oncorhynchus mykiss*)	Southern California	Endangered
	South-Central California	Threatened
	Central California Coast	Threatened
	Upper Columbia River	Endangered
	Snake River Basin	Threatened
	Lower Columbia River	Threatened
	California Central Valley	Threatened
	Upper Williamette River	Threatened
	Middle Columbia River	Threatened
	Northern California	Threatened

4.4.2 Non-ESA Listed Marine Mammals

In addition to the ESA listed marine mammals described above, a number of non-ESA listed marine mammals may also be found in the action area. In particular, previous Pacific sardine research cruises have encountered California sea lions (*Zalophus californianus*), Pacific white-sided dolphins (*Lagenrhynchus obliquendens*), northern fur seals (*Callorhinus ursinus*; San Miguel Island Stock), and northern right-whale dolphins (*Lissodelphis borealis*). None of these stocks are listed as depleted under the Marine Mammal Protection Act (MMPA).

4.5 Essential Fish Habitat (EFH)

The research cruise will be conducted exclusively in pelagic open ocean areas using surface trawl gear and other water sampling equipment; thus there will be no contact with the ocean bottom and because of the physical characteristics of the pelagic habitat no other gear effects. Although there will be an effect of a prey source removal, the amount of take is extremely small and therefore there will be no significant effect to coastal habitat and/or EFH.

4.6 Environmental Consequences

4.6.1. Proposed Action:

Sardines

The research plan includes surface trawling that will occur at night and target Pacific sardine. This is a necessary aspect of the research that allows reproductive analysis to be done on the fish aiding in the determination of the overall spawning biomass. Based on the *Assessment of the Pacific Sardine Stock for U.S. Management in 2010* the age+1 biomass of Pacific sardine is 702,039 metric tons (mt). The 2010 commercial fishery allowable catch for Pacific sardine is 72,039 mt. Pacific sardine are caught as bycatch in other CPS fisheries however these landings are subtracted from annual harvest guideline. Bycatch of Pacific sardine in non-CPS fisheries is extremely low. The approximate total weight of sardines caught during the survey will be 100 kilograms (kg) or less. Therefore, the amount of sardines caught during the cruise will be *de minimus* with regard to the stock overall.

Other Fish Species

Other species caught during previous surveys include coastal pelagic species such as northern anchovy and jack mackerel. During the 2007 and 2008 spring sardine surveys northern anchovy was the most encountered species. Catch was 600 kg and 530 kg respectively. At this time Northern anchovy is a monitored species under the CPS FMP as commercial catch is currently low and the stock is considered healthy. It can be expected that this survey may also incidentally catch anchovy and jack mackerel. Any catch of these species is not expected to be a significant impact.

Invertebrates

A variety of pelagic and mid-water, surface migrating invertebrates are also caught during surface trawling. Catch typically consists of various squids and jelly fish. Catch of such invertebrates is typically very small and there is no environmental concern with such *de minimus* catch.

Protected Species

ESA Listed Species

The Protected Resource Division (PRD) SWR completed a Section 7 ESA biological opinion dated May 08, 2008, that determined that Pacific sardine research cruises carried out in the spring off the coasts of California, Oregon and Washington from 2008 to 2010 were not likely to jeopardize the continued existence of any Chinook or coho salmon. The Sustainable Fisheries Division (SFD), SWR, consulted with PRD because surface trawl data from sardine research conducted off Oregon and Washington in March of 2004 and 2005 had indicated that low numbers of salmon are possible incidental take with these types of tows.

There were no salmon takes during the 2004 through 2008 surveys which were conducted in the off the coast from San Diego to San Francisco, therefore it is not expected that any salmon

interactions will occur during years when the survey only takes place in the area.

Critical habitat for Steller sea lions was also considered in the 2008 biological opinion and it was determined that the action was not likely to adversely affect Steller sea lions or result in the destruction or adverse modification of critical habitat.

No incidental take of ESA-listed sea turtles, marine mammals, abalone or marine fish, have been recorded during past Pacific sardine surveys. Based upon past observations of similar surveys and the lack of take of these ESA-listed species it is unlikely that these species will be taken in this survey or adversely affected by this proposed action.

Non-ESA Listed Marine Mammals

Trawl data from previous surveys shows that the incidental take of non-ESA-listed marine mammals, although unlikely, is possible in the proposed action area. Prior to the April 2008 Pacific sardine cruise, marine mammal interactions had been extremely rare. Similar trawling protocols have been used from 1994 to 2007 with less than five marine mammal interactions occurring. Detailed records exist from April cruises taking place from 2004 to 2007 and show that interactions were rare and intermittent with no interactions occurring in 2004, two interactions occurring in 2005 with either northern fur seals or California sea lions, no interactions occurring in 2006 and one interaction occurring in 2007 (a northern fur seal). In 2008, interactions slightly increased with two interactions with California sea lions (2 separate trawls) and with 3 interactions (2 in one trawl and 1 in another) with Pacific white-sided dolphins. This was the first time dolphins had been encountered in these research cruises.

As with past surveys it is believed that marine mammal takes will continue to be extremely low. Considering the take of the dolphins in 2008 to be an anomaly, average take from 2004 to 2008 was one California sea lion or northern fur seal per year. Currently the estimated annual level of total human-caused mortality and serious injury for these two stocks does not exceed their estimated potential biological removal (PBR) (219 for San Miguel Island northern fur seal stock and 8,511 for California sea lions) level and therefore they are not classified as strategic under the MMPA. If future surveys were to take one California sea lion or one northern fur seal the estimated annual level of take would still be well below the PBR level for both these stocks.

A variety of mitigations measures were employed during the 2009 spring survey (San Diego to San Francisco) that were not used during previous spring sardine cruises. The goal of these mitigation measures was to reduce the risk of marine mammal interactions with the gear. These measures appeared to be successful as no mammals were caught while trawling during this survey. These measures will continue to be used in future surveys. For example, a marine mammal watch will be initiated 30 minutes before trawling. Trawling will be the first activity on arrival at a trawling station, or will be located away from a previously occupied station to avoid any mammals that may have been attracted to the vessel. The trawls will be fitted with 162 dB source level, variable frequency pingers with their emitted sound waves rated to discourage mammals. If any mammals are detected, the trawl position will be moved to a new area and the mammal watch reinitiated. A marine mammal excluder device will also be used on the trawl net.

Because of the continued use of the above measures along with the low occurrence rate of marine mammal interactions prior to 2008 it is expected that any interaction between marine mammals and the survey gear will be highly unlikely.

Essential Fish Habitat (EFH)

The research cruise will be conducted exclusively in pelagic open ocean areas using surface trawl gear and other water sampling equipment; thus there will be no contact with the ocean bottom and because of the physical characteristics of the pelagic habitat no other gear effects. Although there will be an effect of a prey source removal, the amount of take is extremely small and therefore there will be no significant effect to coastal habitat and/or EFH.

Social and Economic

Under the proposed action NMFS SWR would provide NMFS SWFSC a Scientific Research Permit as an acknowledgement of their plans to conduct scientific research aboard a NOAA vessel. Because of the nature of this action it was determined that an analysis of social and economic consequences would not affect the NEPA determination therefore one was not done and is not included here.

4.6.2. No Action:

Under the no action alternative NMFS SWR would not issue the SRP to the SWFSC and subsequently the SWFSC would not carry out their research. This alterative would not have any impacts on the resources described in the affected environment section. However, NMFS would not obtain the data that would contribute to better understanding of sardine life history, abundance, etc and would not provide information to NMFS that is needed to implement management activities. This would prevent the best possible science from being used when making harvest recommendations.

5. Cumulative Impacts:

The proposed action is not likely to result in cumulative impacts to sardines or other resources when added to other past, present, and reasonably foreseeable future actions. The research plan includes surface trawling that will occur at night and target Pacific sardine. This is a necessary aspect of the research that allows reproductive analysis to be done on the fish aiding in the determination of the overall spawning biomass. Pacific sardines are also caught in the commercial west coast fishery and in very small amounts in other non-CPS fisheries. Based on the *Assessment of the Pacific Sardine Stock for U.S. Management in 2010* the age+1 biomass of Pacific sardine is 702,039 metric tons (mt). The 2010 commercial fishery allowable catch for Pacific sardine is 72,039 mt. This catch target is at a level that allows maximum commercial purse-seine use of the Pacific sardine resource yet takes the affected environment into account (by use of “the cutoff” and “the harvest fraction”); therefore avoiding a significant cumulative effect to Pacific sardines or the affected environment. Pacific sardine are caught as bycatch in other CPS fisheries however these landings are subtracted from annual harvest guideline.

Bycatch of Pacific sardine in non-CPS fisheries is extremely low. The approximate total weight of sardines caught during the survey will be 100 kilograms (kg) or less. Therefore, the amount of sardines caught during the cruise will be *de minimus* with regard to the stock overall. Additionally *de minimus* amounts of other fish stocks will be taken for which commercial catch occurs, however the additional impact of this cruise which may be a single individual will not cause a significant cumulative impact.

7.0 Bibliography

Pacific Fishery Management Council. 1998. Amendment 8 to the Northern Anchovy Fishery Management Plan incorporating a name change to: The Coastal Pelagic Species Fisheries Management Plan. Pacific Fishery Management Council, 2130 SW Fifth Ave, Suite 224, Portland, Oregon, 97201.

U.S. DEPARTMENT OF COMMERCE ,National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Science Center; NOAA-TM-NMFS-SWFSC-413; “Assessment of Pacific Sardine Stock for U.S. Management in 2010"; Kevin Hill

List of Preparers

Joshua B. Lindsay

Attachment

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Finding of No Significant Impact
Scientific Research Permits to National Marine Fisheries Service Southwest Fishery Science Center for California Current Ecosystem surveys and Research Estimating Sardine Biomass

National Oceanic and Atmospheric Administration Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 C.F.R. §1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action?

The research includes surface trawling that will occur at night and target Pacific sardine. This is a necessary aspect of the research that allows reproductive analysis to be done on the fish aiding in the determination of the overall spawning biomass. Based on the *Assessment of the Pacific Sardine Stock for U.S. Management in 2010* the age+1 biomass of Pacific sardine is 702,039 metric tons (mt). The 2010 commercial fishery allowable catch for Pacific sardine is 72,039 mt. Pacific sardine are caught as bycatch in other CPS fisheries however these landings are subtracted from annual harvest guideline. Bycatch of Pacific sardine in non-CPS fisheries is extremely low. The approximate total weight of sardines caught during the survey will be 100 kilograms (kg) or less. Therefore, the amount of sardines caught during the cruise will be *de minimus* with regard to the stock overall. Therefore, this action is not likely to jeopardize the sustainability of any target species.

2) Can the proposed action be reasonably expected to jeopardize the sustainability of any non-target species?

Other species caught during previous surveys include coastal pelagic species such as northern anchovy and jack mackerel. During the 2007 and 2008 spring sardine surveys northern anchovy was the most encountered species. Catch was 600 kg and 530 kg respectively. At this time northern anchovy is a monitored species under the CPS FMP as commercial catch is currently low and the stock is considered healthy. It can be expected that this survey may also incidentally catch anchovy and jack mackerel. Any catch of these species is not expected to jeopardize the sustainability of these other fish stocks. Protected species Endangered Species Act (ESA) listed, marine mammals and seabirds) are incidentally caught but considered separately under factor #5.

3) Can the proposed action be reasonably expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

The research cruise will be conducted exclusively in pelagic open ocean areas using surface trawl gear and other water sampling equipment; thus there will be no contact with the ocean bottom and because of the physical characteristics of the pelagic habitat no other gear effects. Although there will be an effect of a prey source removal, the amount of take is extremely small and therefore there will be no significant effect to coastal habitat and/or EFH.

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

The proposed research program is in no way connected with issues of public health or safety for any segment of the human population.

5) Can the proposed action be reasonably expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

The Protected Resource Division (PRD) Southwest Region (SWR) completed a Section 7 ESA biological opinion dated May 08, 2008, that determined that Pacific sardine research cruises carried out in the spring off the coasts of California, Oregon and Washington from 2008 to 2010 were not likely to jeopardize the continued existence of any Chinook or coho salmon. The Sustainable Fisheries Division (SFD), SWR, consulted with PRD because surface trawl data from sardine research conducted off Oregon and Washington in March of 2004 and 2005 had indicated that

low numbers of salmon are possible incidental take with these types of tows.

There were no salmon takes during the 2004 through 2008 surveys which were conducted in the off the coast from San Diego to San Francisco, therefore it is not expected that any salmon interactions will occur during years when the survey only takes place in the area.

Critical habitat for Steller sea lions was also considered in the 2008 biological opinion and it was determined that the action was not likely to adversely affect Steller sea lions or result in the destruction or adverse modification of critical habitat.

No incidental take of ESA-listed sea turtles, marine mammals, abalone or marine fish, have been recorded during past Pacific sardine surveys. Based upon past observations of similar surveys and the lack of take of these ESA-listed species it is unlikely that these species will be taken in this survey or adversely affected by this proposed action.

Trawl data from previous surveys shows that the incidental take of non-ESA-listed marine mammals, although unlikely, is possible in the proposed action area. Prior to the April 2008 Pacific sardine cruise, marine mammal interactions had been extremely rare. Similar trawling protocols have been used from 1994 to 2007 with less than five marine mammal interactions occurring. Detailed records exist from April cruises taking place from 2004 to 2007 and show that interactions were rare and intermittent with no interactions occurring in 2004, two interactions occurring in 2005 with either northern fur seals or California sea lions, no interactions occurring in 2006 and one interaction occurring in 2007 (a northern fur seal). In 2008, interactions slightly increased with two interactions with California sea lions (2 separate trawls) and with 3 interactions (2 in one trawl and 1 in another) with Pacific white-sided dolphins. This was the first time dolphins had been encountered in these research cruises.

As with past surveys it is believed that marine mammal takes will continue to be extremely low. Considering the take of the dolphins in 2008 to be an anomaly, average take from 2004 to 2008 was one California sea lion or northern fur seal per year. Currently the estimated annual level of total human-caused mortality and serious injury for these two stocks does not exceed their estimated potential biological removal (PBR) (219 for San Miguel Island northern fur seal stock and 8,511 for California sea lions) level and therefore they are not classified as strategic under the MMPA. If future surveys were to take one California sea lion or one northern fur seal the estimated annual level of take would still be well below the PBR level

for both these stocks.

A variety of mitigations measures were employed during the 2009 spring survey (San Diego to San Francisco) that were not used during previous spring sardine cruises. The goal of these mitigation measures was to reduce the risk of marine mammal interactions with the gear. These measures appeared to be successful as no mammals were caught within the trawl net while trawling during this survey. These measures will continue to be used in future surveys. For example, a marine mammal watch will be initiated 30 minutes before trawling. Trawling will be the first activity on arrival at a trawling station, or will be located away from a previously occupied station to avoid any mammals that may have been attracted to the vessel. The trawls will be fitted with 162 dB source level, variable frequency pingers with their emitted sound waves rated to discourage mammals. If any mammals are detected, the trawl position will be moved to a new area and the mammal watch reinitiated. A marine mammal excluder device will also be used on the trawl net.

Because of the continued use of the above measures along with the low occurrence rate of marine mammal interactions prior to 2008 it is expected that any interaction between marine mammals and the survey gear will be highly unlikely.

6) Can the proposed action be expected to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

The proposed research program would not involve any substantial impacts to the ecosystem or biodiversity associated with Pacific sardine or any other species. Although sardines are an important prey item for a variety of species the amount of removal will be be *de minimus*. Additionally, this research is being done with and ecosystem approach, therefore data that is collected during the survey will led to a better understanding of the Southern California bight ecosystem.

7) Are significant social or economic impacts interrelated with significant natural or physical environmental effects?

The impact of the proposed research program is expected to ultimately contribute to decisions about Pacific sardine fisheries that would potentially have positive social or economic impacts. The more knowledge about the health of the Pacific sardine stock, the better decision makers are able to sustain a productive fishery for Pacific sardine fishermen.

8) To what degree are the effects on the quality of the human environment likely to be highly controversial?

There is no known opposition or controversy associated with the proposed research plan.

9) Can the proposed action be reasonably expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

The proposed research program requires capture of Pacific sardine eggs, larvae, and adults aboard a scientific research vessel. Pacific sardine in all its life forms are pelagic in nature and the capture of Pacific sardine involves no construction or other disturbance of habitats. Therefore there will be no substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas.

10) To what degree are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The methods of collection and the types of data to be collected are well established and predictable. There are no unique or unknown risks involved.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

The proposed action is not expected to result in cumulative adverse effects that could have a substantial effect on target or non-target species, ESA listed stocks or marine mammals. (see EA Section 4.7 and 5.0).

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

The proposed research program is on Pacific sardine, species that are pelagic and exist in the open waters of the Pacific Ocean. Because of the action area and the nature of the proposed action, historic sites will not be affected by the proposed action.

13) Can the proposed action be reasonably expected to result in the introduction or spread of a non-indigenous species?

There would be no activity associated with this research program that would involve the potential introduction or spread of a non-indigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

This research program has been ongoing since July 2003; the methods and data collected are well established; the application of data to models is not new. The use of the data collected will be used specifically to avoid taking future actions with adverse consequences. Therefore this action is not likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

15) Can the proposed action be reasonably expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

This action does not threaten a violation Federal, State, or local law or requirements imposed for the protection of the environment.

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

The proposed action is not likely to result in cumulative impacts to sardines or other resources when added to other past, present, and reasonably foreseeable future actions. The research plan includes surface trawling that will occur at night and target Pacific sardine. This is a necessary aspect of the research that allows reproductive analysis to be done on the fish aiding in the determination of the overall spawning biomass. Pacific sardines are also caught in the commercial west coast fishery and in very small amounts in other non-CPS fisheries. Based on the *Assessment of the Pacific Sardine Stock for U.S. Management in 2010* the age+1 biomass of Pacific sardine is 702,039 metric tons (mt). The 2010 commercial fishery allowable catch for Pacific sardine is 72,039 mt. This catch target is at a level that allows maximum commercial purse-seine use of the Pacific sardine resource yet takes the affected environment into account (by use of "the cutoff" and "the harvest fraction"); therefore avoiding a significant cumulative effect to Pacific sardines or the affected environment. Pacific sardine are caught as bycatch in other CPS fisheries however these landings are subtracted from

annual harvest guideline. Bycatch of Pacific sardine in non-CPS fisheries is extremely low. The approximate total weight of sardines caught during the survey will be 100 kilograms (kg) or less. Therefore, the amount of sardines caught during the cruise will be *de minimus* with regard to the stock overall. Additionally *de minimus* amounts of other fish stocks will be taken for which commercial catch occurs, however the additional impact of this cruise which may be a single individual will not cause a significant cumulative impact.

DETERMINATION

Based on the information contained in this EA and summarized here, the proposed action will not significantly affect the quality of the human environment, with specific reference to the criteria contained in the Council on Environmental Quality regulations at 40 C.F.R. §1508.27 and in Section 6.02 of NOAA Administrative Order NAO 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act (NEPA). In addition, all impacts to potentially affected areas, including national, regional and local, have been addressed to reach the conclusion of no significant impacts. Accordingly, the preparation of an EIS for the proposed action is not necessary.

Rodney R. McInnis
Regional Administrator

3-22-10
Date