



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE/NOAA FISHERIES**  
Pacific Islands Fisheries Science Center  
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August 1, 2007

**MEMORANDUM FOR:** Rodney Weiher, Ph.D.  
NOAA NEPA Coordinator

**FROM:** Samuel G. Pooley, Ph.D. *SG Pooley*  
Director

**SUBJECT:** Finding of No Significant Impact for the Programmatic  
Environmental Assessment for Research Programs on Spiny  
and Slipper Lobster, Bottomfish, and Deepwater Shrimp --  
DECISION MEMORANDUM

Based on the subject environmental assessment, I have determined that no significant environmental impacts will result from the proposed action. I request your concurrence in this determination by signing below. Please return this memorandum for our files.

1. I concur. *R. Merkin* *8/3/07* Date

2. I do not concur. \_\_\_\_\_ Date

Attachments \_\_\_\_\_ Date



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

To All Interested Government Agencies and Public Groups:

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

**TITLE:** Programmatic Environmental Assessment of the Research Programs on Spiny and Slipper Lobster, Bottomfish, and Deepwater Shrimp at the Pacific Islands Fisheries Science Center

**LOCATION:** Marine waters surrounding the Hawaiian Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands

**SUMMARY:** This programmatic Environmental Assessment provides the detailed descriptions of existing and proposed National Oceanic and Atmospheric Administration research conducted by the Pacific Island Fisheries Science Center (PIFSC) for continuing the long-term studies on population dynamics of spiny and slipper lobsters in the Northwestern Hawaiian Islands (NWHI) and bottomfish in the Hawaiian Archipelago, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (CNMI). It also includes possible basic research on age and growth population characteristics of several species of deepwater shrimp species (*Heterocarpus* spp.) within the same geographic scope as the bottomfish for contribution to stock assessments. Such work is dependent on the approval of Amendment 13 to the Fishery Management Plan for Crustaceans in the Western Pacific Ocean, which would establish a management regime for this fishery and mandate stock assessments for deepwater shrimp species. The purpose of such research is to determine the population dynamics of lobster, bottomfish, and shrimp species to support management of the commercial fisheries of these species.

**Lobsters.** Approximately 50 non-tagged lobsters from each bank sampled in the NWHI during the tagging cruise are processed, retained and brought back to PIFSC annually for further analysis. The same number of lobster samples are collected and returned to PIFSC during the annual lobster survey, resulting in a total sample size of 100 lobsters per bank. This research sample size, even if collected every year as planned, is a small fraction of what could be safely removed annually from each bank. Therefore, this number of removals will have no detectable impact on the sustainability of lobster stocks, either annually or cumulatively. Bycatch associated with these lobster trapping research operations is extremely low and historical research efforts have not significantly affected bycatch species.

**Bottomfish.** Fewer than 200 bottomfish (approximately 14,000 lbs) will be collected from the NWHI annually. This represents 3% of the total allowable catch and therefore does not pose a significant impact on bottomfish populations. Data collection in the main Hawaiian Islands (MHI) will be constrained to purchasing fish from commercial fishermen conducting normal fishing operations. Therefore, no additional fish would be taken from the MHI populations over that already routinely taken as part of the commercial fishery.



Bycatch in the NWHI commercial bottomfish fishery is low. Of 2,700 fish caught in 2004, 2,000 were released alive. Of those released, 1,800 were species that do not experience barotraumas and have excellent chance of survival.

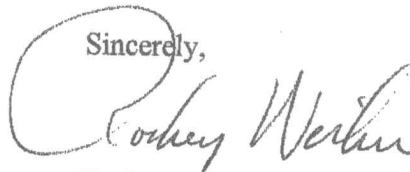
**Deepwater Shrimp.** The limited existing deepwater shrimp fishery in the waters of Hawaii and the CNMI is not currently known to be depleting the populations, although little information is available. Lacking basic information on population characteristics, including growth and age, recruitment, and age at sexual maturity, results in the inability to actually estimate biological reference points, including total allowable catch levels. However, the existing limited fisheries are not known to adversely affect proposed essential fish habitat for *Heterocarpus* species. As exploited populations appear to rebound in a relatively short period of time, taking limited numbers of individuals necessary for obtaining a sufficient sample size for basic population evaluation for stock assessments would not adversely impact any populations.

RESPONSIBLE OFFICIAL: Dr. Samuel Pooley, Director  
Pacific Islands Fisheries Science Center  
2570 Dole Street, Honolulu, HI 96822  
(808) 983-5303

The environmental review process led us to conclude that this action will not have a significant effect on the human environment. Therefore, an environmental impact statement will not be prepared. A copy of the finding of no significant impact (FONSI) including the supporting EA 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,



Dr. Rodney F. Weiher, Ph.D.  
NOAA NEPA Coordinator

Enclosure

**Finding of No Significant Impact**  
**Programmatic Environmental Assessment**  
**Research Programs on Spiny and Slipper Lobster, Bottomfish, and**  
**Deepwater Shrimp**  
**National Marine Fisheries Service, Pacific Islands Fisheries Science Center**  
**Honolulu, Hawaii**

## **1. Introduction**

National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action, which are based on the Council on Environmental Quality regulations at 40 C.F.R. §1508.27. The evaluation of whether the impacts identified in the Programmatic Environmental Assessment (PEA) are significant is based on these criteria in Sections 5.3, 6.3, and 7.3 of this document.

## **2. Scope of the Programmatic Environmental Assessment**

The PEA analyzes the alternatives and associated impacts for each of three research programs conducted by the National Marine Fisheries Service's (NMFS) Pacific Islands Fisheries Science Center (PIFSC):

- **Spiny and Slipper Lobster.** Continuing research on spiny lobster stocks of the Family Palinuridae and slipper lobster stocks of the Family Scyllaridae within the Hawaiian archipelago, species included in the Crustaceans Fishery Management Plan (FMP);
- **Bottomfish.** Continuing research on 17 species of bottomfish, excluding species of seamount groundfish within the Hawaiian archipelago and outside of the archipelago within areas of the Pacific Ocean under United States (US) jurisdiction (within the Exclusive Economic Zone (EEZ));
- **Deepwater Shrimp (*Heterocarpus* spp.)** Initiating research on the deepwater shrimp of the genus *Heterocarpus* within areas off the Hawaiian archipelago and the Western Pacific Ocean under US jurisdiction (within the EEZ) included in the Crustaceans FMP Amendment 13, if approved.

The scope of the PEA is limited to assessment of potential environmental effects of conducting research related to pertinent population dynamics considerations that may ultimately be used to assist in determination of maximum sustained yield (MSY) and associated management strategies for the three groups of marine biota. It is not intended to and does not address potential environmental or economic impacts of any actual fishing activities at levels determined using any of the data obtained from the research.

## **3. Subsequent Site Specific Analyses**

The PEA is intended to provide the basis for long-term continuation and potential expansion of existing research and provide the foundation for additional research. As long as individual



research projects are conducted as described in Sections 2.1, 3.1, and 4.1; the actual impacts associated with implementation remain within the range of impacts as identified in Sections 2.3, 3.3, and 4.3 of the PEA; and no new information is available that could change the conclusions about the scope or severity of impacts, this document will remain current. Per NOAA policy, the Finding of No Significant Impact (FONSI) for this PEA will be reviewed for consistency and appropriateness at least every 5 years.

Any individual projects implemented within the described program and documented as consistent with this PEA and its associated decision can be implemented without further National Environmental Policy Act (NEPA) analysis.

Any site-specific or project-specific actions that are not covered in this PEA and that would not have any additional environmental considerations can be addressed in the research project implementation plan and protocol for the specific research project. Possible examples include computer modeling, visual or camera surveys that do not involve capturing or handling animals, and data analysis.

#### **4. Format of this Document and Issues Not Considered in Detail**

Each research category considered multiple alternatives and was evaluated independently in the PEA. Therefore, this document will evaluate the potential for significant impacts independently, with three separate findings.

None of the proposed or continuing research would affect or is affecting the following resources for the documented reasons:

**4.1. Archaeological, Social or Cultural Resources.** In Hawaiian traditions, the Northwestern Hawaiian Islands (NWHI) is considered a sacred place. Native Hawaiians remain deeply connected to the NWHI on genealogical, cultural, and spiritual levels. In addition, maritime activities following Western contact with the Hawaiian Islands have left behind the historical and archaeological traces of a unique past. Currently, there are over 60 known ship losses and/or confirmed sites among the NWHI, the earliest loss dating back to 1818. This, combined with 67 known aircraft crashes, gives a total of over 120 potential maritime heritage resource sites. Importantly, implementation of the proposed action would have no adverse effect on the above resources. Because none of the proposed research would be conducted on land, none of the cultural resources associated with Native Hawaiian ancestry on NWHI lands would be affected. All research would be conducted in the deeper ocean, outside of shallow areas where shipwrecks or downed planes are typically found. As a result, the research would not have an adverse effect on Native Hawaiian or maritime heritage resource sites.

In addition, it would not have a disproportionate effect on low-income or minority populations, nor would it impinge on the religious freedom of any group.

**4.2. Public Health and Safety.** The proposed action is to conduct focused research on population dynamics and ecological changes in deep ocean areas. Use of chartered commercial fishing vessels would involve actions in which the ship and her crew routinely are engaged, with the inherent challenges involved. These actions do not involve the public in any way and as such would have no effect on public health or safety, including that of low-income or minority populations.

**4.3. National Marine Sanctuaries and Protected Areas.** No significant impacts on sanctuaries or protected areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii Coastal Zone Management Programs as no actions would be taken within the 3 nm Coastal Zone Management Act (CZMA) boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument (Monument) is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

**4.4. Cetaceans Protected under the Endangered Species Act and/or Marine Mammal Protection Act.** Although six species of cetaceans listed under the Endangered Species Act (ESA) are in the Western Pacific Ocean, no reported or observed adverse interactions with research activities associated with lobster, bottomfish or deepwater shrimp (*Heterocarpus* spp.) have been observed or reported and no future adverse interactions are anticipated. Therefore, no impact to listed species of cetaceans will occur. The same is expected for the remaining 17 species protected under the Marine Mammal Protection Act (MMPA), despite observed dolphin stealing fish from bottomfish fishery hooks in the Main Hawaiian Islands (MHI) and NWHI with no observations of actual hooking (Kobayashi and Kawamoto 1995, Nitta and Henderson 1993).

**4.5. Threatened and Endangered Sea Turtles.** No reported or observed interactions between trap fisheries (lobster and deepwater shrimp) and sea turtles have occurred, including interactions with the deep-diving but surface-feeding leatherback (*Dermochelys coriacea*). Bottomfishing gear is highly selective and sea turtles have not been documented as bycatch in the bottomfishing industry (pers. comm., Kurt Kawamoto PIFSC 2007). Therefore, no impact to threatened or endangered sea turtles would occur.

**4.6. Endangered Monk Seals.** One monk seal became entangled in the bridle rope of a lobster trap in 1986 and died (NMFS, unpub. data, 1986). Since monk seal protective measures were implemented in an amendment to the Crustaceans FMP, no subsequent reports of interactions have occurred. Therefore, no impact to the endangered Hawaiian monk seal from lobster research in the NWHI would occur. PIFSC ongoing food habits research (evaluating fatty acids in seal blubber) indicates that lobsters may be an extremely minor component of monk seal diet.

Although two monk seals were observed with bottomfish hooks in their mouths (one was removed and the other apparently disengaged itself without human intervention with no observable effects), actual monk seal hooking by bottomfishing gear has not been verified. Where hooks have been removed from monk seals and examined, they have been determined to be shore casting hooks, not bottomfishing hooks. Furthermore, bottomfish observer programs conducted in the early 1990s and again in the early 2000s have reported no monk seal interactions other than taking fish off lines (Kobayashi and Kawamoto 1995). Therefore, no impact to the endangered monk seal in the NWHI or MHI from bottomfishing research would occur.

No evidence exists that Hawaiian monk seals feed on *Heterocarpus* spp. shrimp and no reports of monk seal interactions with shrimp gear in the Western Pacific exist. No expectations of interactions between monk seals and shrimp fishing gear exist and therefore, no impact to the

endangered Hawaiian monk seal in the NWHI or MHI from *Heterocarpus* research is anticipated.

**4.7. Spread of Invasive Species.** Mitigation measures to prevent the spread of the invasive species to Papahānaumokuākea Marine National Monument, including marine algae *Hypnea musciformis* as recommended by Dr. Isabella Abbott of the University of Hawaii Department of Botany, will be continually implemented, making it unlikely that any invasive species will be introduced to the Monument.

**4.8. Domestic and Foreign Economic Resources.** Because economic analyses under NEPA are focused on U.S. economies, principal weight is given to analysis of potential economic effects on domestic fisheries, including fisheries in Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (CNMI). The lobster fishery in the Papahānaumokuākea Marine National Monument is permanently closed and the bottomfish fishery in the same area will be closed by 2011 per Presidential Proclamation. Remaining fisheries within the scope of this PEA may be modified in the future based on data collected during the research, but this research will not directly result in any major adverse impacts to domestic fisheries. Data collection would not involve foreign fisheries in any way.

**4.9. Air and Water Quality.** Due to the nature of the proposed actions, there would not be any adverse effects on air or water quality. All vessels used for NMFS research follow local, Federal, and international laws, regulations, and requirements for discharge of waste. The research vessel, R/V *Oscar Elton Sette*, has wastewater treatment capabilities and releases the treated wastewater outside of the Resource Preservation Areas (RPAs) of the Monument. Vessels chartered for in this research by NMFS typically do not have treatment capabilities. Each night the chartered vessel transits to a minimum of 914 meters depth and outside of the Monument and, while traveling at a speed of no less than 6 knots, the holding tank is emptied. Given the number of people on board (less than 8), the depth and the speed of the discharge any impacts are in compliance with Monument requirements and local, federal, and international laws.

**4.10. Geology and Soils.** Due to the nature of the proposed research, there would not be any effects on geology or soils.

## **5. Spiny and Slipper Lobster Research**

As the analysis in the PEA of Alternative 3 estimates the maximum impacts as it includes continuation of the current level of research (the no action alternative, Alternative 1) and expands the research (Alternative 3), and as ceasing research would have no impacts, the following analyses for the potential for significant impacts for Alternative 3 will include those for Alternatives 1 and 2.

The criteria listed below are relevant to making a FONSII per NAO 216-6:

### ***5.1. Can the proposed action be expected to jeopardize the sustainability of any target species that may be affected by the action?***

No. Per Section 2.3.1 of the PEA, the research sample size collected, even if collected every year as planned, is a small fraction of the number that could be safely removed annually from each bank in the NWHI and therefore will have no detectable impact on the sustainability of lobster stocks in the NWHI either annually or cumulatively.

Within the MHI, the status of lobster stocks is unknown, but it is possible that the populations are stressed. In order to determine stock sustainability, 50 animals would need to be collected annually; if data indicate a concern with sustainability, NMFS will cease lethal collection, notify the State of Hawaii and cooperate to address the concern. Therefore, collection of basic population data from a limited number of lobsters would not contribute to a long-term concern with population sustainability. Under Alternatives 1 and 2, no collections of lobsters would be made in the MHI and therefore the status of stocks would remain unknown, which could be a concern if current non-NMFS take is stressing the population and is allowed to continue.

Per Section 2.3.3 and 2.3.4 of the PEA, preliminary analysis of recapture information indicates that handling, tagging, and releasing lobsters according to standard operating procedures enables long-term recovery of individual lobsters. Preliminary analysis of laboratory research data also indicates that tagging and trapping does not negatively impact the growth of individual lobsters. Therefore trapping, handling, and tagging does not contribute to lowering population sustainability.

***5.2. Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?***

No. Per Section 2.3.2 of the PEA, bycatch associated with lobster trapping is low and population abundances of non-targeted species have not shown declines over the 20-year time series of data (Moffitt et al. 2006). Lobster traps have proven to be target-species specific. All invertebrates (target and non-target) captured are released alive at the site of capture via a specially-designed cage that releases animals on or near the seafloor to reduce potential for predation and animal stress. All fish are released alive at the surface.

***5.3. Can the proposed action reasonably be 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 Fishery Management Plans (FMPs)?***

No. Per Section 2.3.5 of the PEA, essential fish habitat (EFH) for juvenile and adult spiny and slipper lobsters is designated as bottom habitat from shoreline to a depth of 100 m and for planktonic eggs and larvae as the water column down to 150 m. Habitat Areas of Particular Concern (HAPC) include all the banks in the NWHI with summits less than 30 m tall. Trap fishing for lobsters would not adversely affect the hard bedrock bottom characteristic of lobster habitat. Therefore, no adverse impact to spiny or slipper lobster EFH would occur. In addition, because impacts to the environment are negligible, no adverse impact to EFH of other species is anticipated.

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

No. Per the responses to Criteria 5.1 through 5.3, the alternatives are not expected to have substantial impacts on biodiversity or ecosystem function because research is conducted primarily on individual animals with small numbers collected, rather than at the ecosystem level. Additionally, per Section 2.3.6 of the PEA, lobster trapping operations are generally conducted over low relief pavement (bedrock with little topographical relief) and sand bottoms either lacking or with extremely low abundance of coral, and therefore do not typically damage living coral or other living biota on the ocean floor. The traps are not set in areas of high relief for a

myriad of reasons, including low catch rates in these areas and gear damage and loss. Trap loss on previous cruises has been minimal and studies have shown that “ghost fishing” by lost gear does not occur. Therefore, any sampling or involvement at the ecosystem level is extremely limited, resulting in no adverse impacts.

***5.5. Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?***

No. The proposed action is to conduct focused research on population dynamics and ecological changes in deep ocean areas. Use of chartered commercial fishing vessels would involve actions in which the ship and her crew routinely are engaged, with the inherent challenges involved. These actions do not involve the public in any way and as such would have no effect on public health or safety, including that of low-income or minority populations.

***5.6. Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?***

No. Although six species of cetaceans listed under the ESA are in the Western Pacific Ocean, no reported or observed adverse interactions with lobster have been observed or reported and no future adverse interactions are anticipated. Therefore, no impact to listed species of cetaceans will occur. The same is expected for the remaining 17 species protected under the MMPA. In addition, no reported or observed sea turtle interactions with lobster trap fisheries have occurred, including the deep-diving but surface-feeding leatherback (*Dermochelys coriacea*). Therefore, no impact to threatened or endangered sea turtles would occur. With respect to Hawaiian monk seals, one monk seal became entangled in the bridle rope of a lobster trap in 1986 and died (NMFS, unpub. data, 1986). Since monk seal protective measures were implemented in an amendment to the Crustaceans FMP, no subsequent reports of interactions have occurred. Therefore, no impact to the endangered Hawaiian monk seal from lobster research in the NWHI would occur. PIFSC ongoing food habits research (evaluating fatty acids in seal blubber) indicates that lobsters may be an extremely minor component of monk seal diet.

***5.7. Are significant social or economic impacts interrelated with natural or physical environmental effects?***

No. Because economic analyses under NEPA are focused on US economies, principal weight is given to analysis of potential economic effects on domestic fisheries, including fisheries in Guam, American Samoa, and CNMI. The lobster fishery in the Papahānaumokuākea Marine National Monument is permanently closed. Remaining fisheries within the scope of this PEA may be modified in the future based on data collected during the research, but this research will not directly result in any major adverse impacts to domestic fisheries. Data collection would not involve foreign fisheries in any way.

***5.8. Are the effects on the quality of the human environment likely to be highly controversial?***

No. None of the effects on the quality of the human environment as a result of alternatives would be controversial. The research has been ongoing in the NWHI with no controversy nor adverse impacts to the environment, and the expansion of the research to the MHI would contribute to understanding the status of the lobster populations in the MHI, leading to improved management if necessary.



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

No significant impacts on sanctuaries or protected or unique areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii Coastal Zone Management Programs as no actions would be taken within the 3 nm CZMA boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

***5.10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?***

No. The procedures, methods, and mitigation measures that are used in the existing research and that would be used in the proposed expansion are accepted standard operating procedures in the scientific community and proven to be effective with no detectable adverse impacts to populations and individuals.

***5.11. Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?***

No. Per Sections 2.3.1, 2.3.2, and 5.0 of the PEA and Criteria 5.1, 5.2, 5.3, and 5.4 of this document, none of the alternatives would have adverse cumulatively significant impacts on populations of target and nontarget species or the environment. Although assessing the cumulative effects of field research projects undertaken is speculative, the past, present, and future research activities of the PIFSC research are not likely to have had or have any significant adverse cumulative effects on the environment. This is because: (1) the scope and magnitude of field research is focused on index sites in the field that by themselves represent reasonable coverage, however, the scale of the field research is small in relation to the geographic area of the species' ranges; (2) the PIFSC research is the only research being conducted and therefore no other research exists to magnify possible consequences; and (3) applicable permit requirements provide "checks-and-balances" safeguards.

***5.12. 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?***

No significant impacts on sanctuaries or protected or unique areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii Coastal Zone Management Programs as no actions would be taken within the 3 nm CZMA boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

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

No. Mitigation measures to prevent the spread of the invasive species to the Papahānaumokuākea Marine National Monument, including marine algae *Hypnea musciformis* as recommended by Dr. Isabella Abbott of the University of Hawaii Department of Botany, will be continually implemented, making it unlikely that any invasive species will be introduced to the Monument.

***5.14. Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?***

No. The research is ongoing in the NWHI (Alternative 1) and could be initiated in the MHI to determine the status of the stocks there (Alternative 3). Any decisions regarding consumptive use of those stocks made by the Western Pacific Regional Fishery Management Council (WPRFMC) would use the data collected as well as other data and information and are independent of the research itself.

***5.15. Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?***

No. The alternatives operate with all the necessary and required permits and approvals from federal, state, local, and foreign agencies and the Papahānaumokuākea Marine National Monument (see Section 2.4 of the PEA) and thus would not violate such laws and requirements.

***5.16. 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?***

No. Past research activities associated with lobster and bottomfish have had no measurable impact on local ecosystems. Because the magnitude and scope of historical research activities were significantly higher compared to current activity levels, and assuming that the past activity levels represent an upper limit of allowable activities in the future, increasing current levels will have no measurable ecological impact and therefore would not create a significant cumulative impact. Because of the stringent permitting controls on activities proposed within the Papahānaumokuākea Marine National Monument, any permitted lobster, bottomfish, and deepwater shrimp research taking place within the Monument would not create a significant cumulative impact. In the MHI, American Samoa, Guam, and CNMI, no major existing or proposed new activities are anticipated that would have a large effect on the affected environment; because the effect of the proposed research activities is also small, the cumulative effect on the environment in these areas is anticipated to be negligible.

## **6. Bottomfish Research**

As the analyses in the PEA of Alternative 3 provides the maximum impacts as it includes continuation of the current level of research (the no action alternative, Alternative 1) and the expanded research in Alternative 2 does not increase any lethal take in the MHI beyond the existing commercial take, the following analyses for the potential for significant impacts for Alternative 3 will include those for Alternatives 1 and 2.

The criteria listed below are relevant to making a FONSI per NAO 216-6:

**6.1. *Can the proposed action be expected to jeopardize the sustainability of any target species that may be affected by the action?***

No. Per Section 3.3.1 of the PEA, the research sample size collected, even if collected every year as planned, is a small fraction of the commercial fishery take and, when added to that take, is still well below the MSY for the NWHI. Similarly, in Guam, American Samoa, and CNMI, bottomfish stocks are healthy and current landings are well below estimates of MSY. For Guam, American Samoa, CNMI, and NWHI, total cumulative catch, including commercial and research catch, will not exceed estimated MSY.

**6.2. *Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?***

No. Per Sections 3.3.2 and 3.3.3 of the PEA, bycatch associated with bottomfishing is very low. Particular species of bottomfish can be targeted with great success by selection of certain habitats and depths and highly selective gear. Some of the bycatch species, such as jacks, do not suffer barotrauma and can be released alive at the surface with an excellent chance of survival. Others, such as snappers and groupers, generally suffer severe barotrauma and are highly unlikely to survive release without puncturing their air bladder and repositioning their stomach. However, survivability can be relatively high with this procedure. Therefore, the extremely low level of bycatch, the high level of live releases for most species, and the stock levels of the bycatch species indicates that no adverse impacts to populations of bycatch would occur.

**6.3. *Can the proposed action reasonably be 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 Fishery Management Plans (FMPs)?***

No. Per Section 3.3.4 of the PEA, EFH for bottomfish species in the aggregate include the water column and bottom habitat out to a depth of 400 m for adults and juveniles (settled) and the water column down to 400 m for eggs and larvae. HAPC include all escarpments and slopes between 40 and 280 m, and three known areas of juvenile opakapaka habitat in the MHI. Bottomfishing would not adversely affect the hard bedrock bottom and slopes characteristic of adult bottomfish EFH habitat. Therefore, no impact to bottomfish EFH would occur. In addition, because impacts to the environment are negligible, no adverse impact to EFH of other species is anticipated.

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

No. Per the responses to Criteria 6.1 through 6.3, the alternatives are not expected to have substantial impacts on biodiversity or ecosystem function because research is conducted on small numbers of collected individual animals rather than at the ecosystem level. Additionally, per Sections 3.3.1 and 3.3.5 of the PEA, bottomfishing is conducted in areas of expansive hard-bottom ocean floor on high relief areas such as rocky ledges, undersea cliffs, topographical dropoffs, pinnacles, and holes using a hook and line. Based on submersible submarine surveys, corals at bottomfishing depths were very sparsely distributed and no evidence of damaged colonies was observed. No potential for "ghost fishing" occurs. Therefore, any sampling or involvement at the ecosystem level is extremely limited, resulting in no adverse impacts.



***6.5. Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?***

No. The proposed action is to conduct focused research on population dynamics and ecological changes in deep ocean areas. Use of chartered commercial fishing vessels would involve actions in which the ship and her crew routinely are engaged, with the inherent challenges involved. These actions do not involve the public in any way and as such would have no effect on public health or safety, including that of low-income or minority populations.

***6.6. Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?***

No. Although six species of cetaceans listed under the ESA are in the Western Pacific Ocean, no reported or observed adverse interactions with bottomfish gear have been observed or reported and no future adverse interactions are anticipated. Therefore, no impact to listed species of cetaceans will occur. The same is expected for the remaining 17 species protected under the MMPA, despite observed dolphin stealing fish from bottomfish fishery hooks in the MHI and NWHI with no observations of actual hooking (Kobayashi and Kawamoto 1995, Nitta and Henderson 1993). In addition, sea turtles have not been documented as bycatch in the bottomfishing industry (pers. comm., Kurt Kawamoto PIFSC 2007). Therefore, no impact to threatened or endangered sea turtles would occur. With respect to Hawaiian monk seals, although two monk seals were observed with bottomfish hooks in their mouths (one was removed and the other disengaged itself without human intervention with no observable effects), actual monk seal hooking by bottomfishing gear has not been verified. Where hooks have been removed from monk seals and examined, they have been determined to be shore casting hooks, not bottomfishing hooks. Furthermore, bottomfish observer programs conducted in the early 1990s and again in the early 2000s have reported no monk seal interactions other than taking fish off lines (Kobayashi and Kawamoto 1995). Therefore, no impact to the endangered monk seal in the NWHI or MHI from bottomfishing research would occur.

***6.7. Are significant social or economic impacts interrelated with natural or physical environmental effects?***

No. Because economic analyses under NEPA are focused on US economies, principal weight is given to analysis of potential economic effects on domestic fisheries, including fisheries in Guam, American Samoa, and CNMI. The bottomfish fishery in the NWHI will be closed by 2011 per Presidential Proclamation. Remaining fisheries within the scope of this PEA may be modified in the future based on data collected during the research, but this research will not directly result in any major adverse impacts to domestic fisheries. Data collection would not involve foreign fisheries in any way.

***6.8. Are the effects on the quality of the human environment likely to be highly controversial?***

No. None of the effects on the quality of the human environment as a result of any of the alternatives would be controversial. The research has been ongoing in the NWHI with no controversy nor adverse impacts on the environment, and the expansion of the research to other areas in the Pacific Ocean under the jurisdiction of the US within the EEZ would contribute to understanding the status of the bottomfish populations, leading to improved management if necessary.

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

No significant impacts on sanctuaries or protected or unique areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii Coastal Zone Management Programs as no actions would be taken within the 3 nm CZMA boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

***6.10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?***

No. The procedures, methods, and mitigation measures that are used in the existing research and that would be used in the proposed expansion are accepted standard operating procedures in the scientific community and proven to be effective with no detectable adverse impacts to populations and individuals.

***6.11. Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?***

No. Per Sections 3.3.1, 3.3.2, and 5.0 of the PEA and Criteria 6.1, 6.2, 6.3, and 6.4 of this document, none of the alternatives would have adverse cumulatively significant impacts on populations of target and nontarget species or the environment. Although assessing the cumulative effects of field research projects undertaken is speculative, the past, present, and future PIFSC research activities are not likely to have had or have any significant adverse cumulative effects on the environment. This is because: (1) the scope and magnitude of field research is focused on index sites in the field that by themselves represent reasonable coverage, however, the scale of the field research is small in relation to the geographic area of the species' ranges; (2) PIFSC research is the only research being conducted and therefore no other research exists to magnify possible consequences; and (3) applicable permit requirements provide "checks-and-balances" safeguards.

***6.12. 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?***

No significant impacts on sanctuaries or protected or unique areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii Coastal Zone Management Programs as no actions would be taken within the 3 nm CZMA boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

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

No. Mitigation measures to prevent the spread of the invasive species to the Papahānaumokuākea Marine National Monument, including marine algae *Hypnea musciformis* as recommended by Dr. Isabella Abbott of the University of Hawaii Department of Botany, will be continually implemented, making it unlikely that any invasive species will be introduced to the Monument.

**6.14. Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?**

No. The research is ongoing in the NWHI (Alternative 1) and commercial fishing is ongoing in both the MHI (Alternative 2) and areas in the Pacific Ocean under the jurisdiction of the US (Alternative 3). Any decisions regarding consumptive use of those stocks by the WPRFMC would use the data collected as well as other data and information and is independent of the research itself.

**6.15. Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?**

No. The alternatives operate with all the necessary and required permits and approvals from Federal, state, local, and foreign agencies and the Northwestern Hawaiian Island National Monument (see Section 3.4 of the PEA) and thus would not violate such laws and requirements.

**6.16. 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?**

No. Past research activities associated with bottomfish have had no measurable impact on local ecosystems. Because the magnitude and scope of historical research activities were significantly higher compared to current activity levels, and assuming that the past activity levels represent an upper limit of allowable activities in the future, increasing current levels will have no measurable ecological impact and therefore would not create a significant cumulative impact. Because of the stringent permitting controls on activities proposed within the Papahānaumokuākea Marine National Monument, any permitted bottomfish research taking place within the Monument would not create a significant cumulative impact. In the MHI, American Samoa, Guam, and CNMI, no major existing or proposed new activities are anticipated that would have a large effect on the affected environment; because the effect of the proposed research activities is also small, the cumulative effect on the environment in these areas is anticipated to be negligible.

## **7. Deepwater Shrimp (*Heterocarpus* spp.) Research**

As the analyses in the PEA of Alternative 2 provides the maximum impacts as it initiates research on the deepwater shrimp stocks in Hawaiian waters and in the Western Pacific Ocean that does not currently occur, the following analyses for the potential for significant impacts applies to Alternative 2.

The criteria listed below are relevant to making a FONSI NAO 216-6:

**7.1. Can the proposed action be expected to jeopardize the sustainability of any target species that may be affected by the action?**

No. Per Section 4.3.1 of the PEA, the research sample size collected, even if collected every year as planned, is a small fraction of the commercial fishery take which itself is not known to be depleting populations in waters off Hawaii and the Western Pacific Ocean under the jurisdiction of the United States. As exploited populations appear to rebound in a relatively short period of time, taking limited numbers of individuals necessary for obtaining a sufficient sample size for basic population evaluation for stock assessments would not potentially adversely impact any populations.

***7.2. Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?***

No. Per Section 4.3.2 of the PEA, deepwater shrimp fishery gear is highly selective for the target species with extremely limited bycatch of a few deepwater eels and dogfish sharks, and some marketable Geryonid crabs. Therefore, there are no adverse impacts to bycatch species populations from the deepwater shrimp fisheries, as the traps are highly selective and do not catch sufficiently large number of nontarget species to adversely affect populations.

***7.3. Can the proposed action reasonably be 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 Fishery Management Plans (FMPs)?***

No. Per Section 4.3.3 of the PEA, EFH for deepwater shrimp has been suggested for the complete assemblage (all species of the genus *Heterocarpus*) as the water column and associated outer reef slopes between 350 and 700 meters around every island and submerged banks in the Western Pacific Region. Limited trapping would not adversely impact proposed *Heterocarpus* spp. EFH. In addition, because impacts to the environment are negligible, no adverse impact to EFH of other species is anticipated.

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

No. Per the responses to Criteria 7.1 through 7.3, the alternative is not expected to have substantial impacts on biodiversity or ecosystem function because research would be conducted on small numbers of individual animals collected rather than at the ecosystem level. Additionally, per Section 4.3.3 of the PEA, shrimp trapping is conducted in the deepwater column nearshore and submerged banks in the ocean. Therefore, any sampling or involvement at the ecosystem level is extremely limited, resulting in no adverse impacts.

***7.5. Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?***

No. The proposed action is to conduct focused research on population dynamics and ecological changes in deep ocean areas. Use of chartered commercial fishing vessels would involve actions in which the ship and her crew routinely are engaged, with the inherent challenges involved. These actions do not involve the public in any way and as such would have no effect on public health or safety, including that of low-income or minority populations.

***7.6. Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?***

No. Although six species of cetaceans listed under the ESA are in the Western Pacific Ocean, no reported or observed interactions with deepwater shrimp (*Heterocarpus* spp.) have been observed or reported and no future interactions are anticipated. Therefore, no impact to listed species of cetaceans will occur. The same is expected for the remaining 17 species protected under the MMPA. In addition, no reported or observed sea turtle interactions with deepwater shrimp trap fisheries have occurred, including the deep-diving but surface-feeding leatherback (*Dermochelys coriacea*). Therefore, no impact to threatened or endangered sea turtles would occur. Finally, no evidence exists that Hawaiian monk seals feed on *Heterocarpus* spp. shrimp and no reports of monk seal interactions with shrimp gear in the Western Pacific exist. No expectations of interactions between monk seals and shrimp fishing gear exist and therefore, no impact to the endangered Hawaiian monk seal in the NWHI or MHI from *Heterocarpus* research will occur.

***7.7. Are significant social or economic impacts interrelated with natural or physical environmental effects?***

No. Because economic analyses under the NEPA are focused on US economies, principal weight is given to analysis of potential economic effects on domestic fisheries, including fisheries in Guam, American Samoa, and CNMI. This research will not directly result in any major adverse impacts to domestic fisheries, including the deepwater shrimp fishery. Data collection would not involve foreign fisheries in any way.

***7.8. Are the effects on the quality of the human environment likely to be highly controversial?***

No. None of the effects on the quality of the human environment as a result of alternatives would be controversial because of the small number of shrimp taken in highly selective gear.

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

No significant impacts on sanctuaries or protected or unique areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii CZMA Programs as no actions would be taken within the 3 nm CZMA boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

***7.10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?***

No. The procedures, methods, and mitigation measures that are used in the existing research and that would be used in the proposed expansion are accepted standard operating procedures in the scientific community and proven to be effective with no detectable adverse impacts to populations and individuals.

***7.11. Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?***



No. Per Sections 4.3.1, 4.3.2, and 5.0 of the PEA and Criteria 7.1, 7.2, 7.3, and 7.4 of this document, none of the alternatives would have adverse cumulatively significant impacts on populations of target and nontarget species or the environment. Although assessing the cumulative effects of field research projects undertaken is speculative, the past, present, and future research activities of PIFSC research are not likely to have had or have any significant adverse cumulative effects on the environment. This is because: (1) the scope and magnitude of field research is focused on index sites in the field that by themselves represent reasonable coverage, however, the scale of the field research is small in relation to the geographic area of the species' ranges; (2) the PIFSC research is the only research being conducted and therefore no other research exists to magnify possible consequences; and (3) applicable permit requirements provide "checks-and-balances" safeguards.

***7.12. 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?***

No significant impacts on sanctuaries or protected or unique areas are anticipated. The proposed actions in the NWHI would not conflict with the Hawaii CZMA Programs as no actions would be taken within the 3 nm CZMA boundary in the NWHI. No actions would be taken in any waters under the jurisdiction of the US Department of the Interior, US Fish and Wildlife Service, including the Midway National Wildlife Refuge, Hawaiian Islands National Wildlife Refuge, and the Battle of Midway National Memorial. No actions would be taken with any waters under the jurisdiction of the Department of Defense. The analysis of consistency with the criteria for the Papahānaumokuākea Marine National Monument is evaluated for each species group in its appropriate section (Sections 2.4, 3.4, and 4.4 of the PEA).

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

No. Mitigation measures to prevent the spread of the invasive species to the Papahānaumokuākea Marine National Monument, including marine algae *Hypnea musciformis* as recommended by Dr. Isabella Abbott of the University of Hawaii Department of Botany, will be continually implemented, making it unlikely that any invasive species will be introduced to the Monument.

***7.14. Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?***

No. Any decisions regarding consumptive use of those stocks by the WPRFMC would use the data collected as well as other data and information and is independent of the research itself.

***7.15. Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?***

No. The alternatives operate with all the necessary and required permits and approvals from federal, state, local, and foreign agencies and thus would not violate such laws and requirements.

***7.16. 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?***

No. Past research activities associated with lobster and bottomfish have had no measurable impact on local ecosystems. Because the magnitude and scope of historical research activities

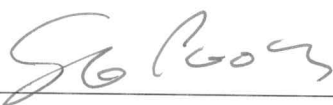
were significantly higher compared to current activity levels, and assuming that the past activity levels represent an upper limit of allowable activities in the future, increasing current levels will have no measurable ecological impact and therefore would not create a significant cumulative impact. Because of the stringent permitting controls on activities proposed within the Papahānaumokuākea Marine National Monument, any permitted lobster, bottomfish, and deepwater shrimp research taking place within the Monument would not create a significant cumulative impact. In the MHI, American Samoa, Guam, and CNMI, no major existing or proposed new activities are anticipated that would have a large effect on the affected environment; because the effect of the proposed research activities is also small, the cumulative effect on the environment in these areas is anticipated to be negligible.

## Finding of No Significant Environmental Impact

The intent of the research on spiny and slipper lobsters, bottomfish, and deepwater shrimp is to support the management and, if necessary recovery of the evaluated species. The attached PEA addresses specific research activities to be conducted by the Pacific Islands Fisheries Science Center. Based on the analyses in Sections 5, 6, and 7 of this document, the research described in Sections 2.2, 3.2, and 4.2 of the PEA at the maximum take levels and effort levels would not have significant impacts on the environment as evaluated in Sections 2.3, 3.3, and 4.3 of the PEA and in Sections 5, 6, and 7 above. The RPM can, therefore, select the alternatives individually or in combination at this time. Any alternatives not selected at this time can be selected by the RPM in the future without further NEPA analysis, as long as alternative descriptions and associated impacts remain consistent with those predicted in this PEA.

Consequently, this PEA will streamline the overall NEPA review process and eliminate duplicative documentation as long as the research is conducted as described by in Sections 2.2, 3.2, and 4.2 of the PEA and the impacts are consistent with those evaluated in Sections 2.3, 3.3, and 4.3 of the PEA. The PEA can be supplemented as needed should additional projects with potential environmental considerations be added to the research program or the research methods change in ways having adverse environmental impacts not evaluated in this PEA. The analyses in Sections 2.4, 3.4, and 4.4 of the PEA also indicate that all research is consistent with the purposes for which the Papahānaumokuākea Marine National Monument was created as well as its policies and requirements.

In view of the information presented in this document and the analysis contained in the attached PEA, it is hereby determined that none of the alternatives for research on spiny and slipper lobsters, bottomfish, and deepwater shrimp as described in the PEA will significantly impact the quality of the human environment. Therefore, preparation of an Environmental Impact Statement for this action is not necessary.



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Samuel Pooley, Ph.D.  
Pacific Islands Fisheries Science Center, Director

1 August 2007

Date