DEPARTMENT OF COMMERCE

National Ocean and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 120807313–2313–01]

RIN 0648–XC154

Endangered and Threatened Wildlife; 90-Day Finding on Petitions To List the Northeastern Pacific Ocean Distinct Population Segment of Great White Shark as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: 90-day petition finding, request for information, and initiation of status review.

SUMMARY: We, NMFS, announce a 90-day finding on two petitions received to list the northeastern Pacific Ocean population of great white shark (*Carcharodon carcharias*) as a threatened or endangered distinct population segment (DPS) under the Endangered Species Act (ESA) and to designate critical habitat concurrently with the listing. We find that the petitions and information in our files present substantial scientific or commercial information indicating that the petitioned action may be warranted. We will conduct a status review of the species to determine if the petitioned action is warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information pertaining to this species from any interested party.

DATES: Information and comments on the subject action must be received by November 27, 2012.

ADDRESSES: You may submit comments, information, or data, identified by ''NOAA–NMFS–2012–0176'' by any one of the following methods:

- *Electronic Submissions:* Submit all electronic comments via the Federal eRulemaking Portal *http://www.regulations.gov*. To submit comments via the e-Rulemaking Portal, first click the ''submit a comment'' icon, then enter ''NOAA–NMFS–2012–0176'' in the keyword search. Locate the document you wish to comment on from the resulting list and click on the ''Submit a Comment'' icon on the right of that line.
- *Mail or hand-delivery:* Protected Resources Division, Southwest Region, NMFS, 501 West Ocean Blvd., Suite 4200, Long Beach, CA 90802–4213.

Instructions: All comments received are a part of the public record and may be posted to *http://www.regulations.gov* without change. All personally identifiable information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or other information you wish to protect from public disclosure. NMFS will accept anonymous comments. Attachments to electronic comments will be accepted in Microsoft Word, Excel, Corel WordPerfect, or Adobe PDF file formats only.

FOR FURTHER INFORMATION CONTACT: Craig Wingert, NMFS, Southwest Region, (562) 980–4021; or Marta Nammack, NMFS, Office of Protected Resources, (301) 427–8469.

SUPPLEMENTARY INFORMATION:

Background

On June 25, 2012, we received a petition from WildEarth Guardians to list the northeastern Pacific Ocean DPS of great white shark (*Carcharodon carcharias*) as threatened or endangered under the ESA. The petitioners also requested that critical habitat be designated for this DPS under the ESA. On August 13, 2012, we received a second petition, filed jointly by Oceana, Center for Biological Diversity (CBD), and Shark Stewards, to list the northeastern Pacific Ocean DPS of white shark (another common name for the great white shark) under the ESA and designate critical habitat. Both petitions bring forth much of the same or related factual information on the biology and ecology of great white sharks, and raise several identical or similar issues related to potential factors affecting this species. As a result, we are considering both petitions simultaneously in this 90-day finding. Copies of the petitions are available upon request (see **ADDRESSES,** above).

ESA Statutory, Regulatory, and Policy Provisions and Evaluation Framework

Section 4(b)(3)(A) of the ESA of 1973, as amended (16 U.S.C. 1531 *et seq.*), requires, to the maximum extent practicable, that within 90 days of receipt of a petition to list a species as threatened or endangered, the Secretary of Commerce make a finding on whether that petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, and to promptly publish such finding in the **Federal Register** (16 U.S.C. 1533(b)(3)(A)). When it is found that substantial scientific or commercial information in a petition indicates the petitioned action may be warranted (a ''positive 90-day finding''), we are required to promptly commence a review of the status of the species concerned during which we will conduct a comprehensive review of the best available scientific and commercial information. In such cases, we conclude the status review with a finding published in the **Federal Register** as to whether or not the petitioned action is warranted within 12 months of receipt of the petition. Because the finding at the 12-month stage is based on a thorough review of the available information, as compared to the more limited scope of review at the 90-day stage, a ''may be warranted'' finding does not prejudge the outcome of the status review.

Under the ESA, a listing determination may address a species, which is defined to also include any subspecies and, for vertebrate species, any DPS which interbreeds when mature (16 U.S.C. 1532(16)). A joint NMFS-U.S. Fish and Wildlife Service (USFWS) (jointly, ''the Services'') policy clarifies the agencies' interpretation of the phrase ''distinct population segment'' for the purposes of listing, delisting, and reclassifying a species under the ESA (61 FR 4722; February 7, 1996). A species, subspecies, or DPS is ''endangered'' if it is in danger of extinction throughout all or a significant portion of its range, and ''threatened'' if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (16 U.S.C. 1532(6) and (20)). Pursuant to the ESA and our implementing regulations, we determine whether species are threatened or endangered based on any one or a combination of the following factors: (1) The present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) any other natural or manmade factors affecting the species' continued existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)).

ESA implementing regulations define ''substantial information'' in the context of reviewing a petition to list, delist, or reclassify a species as the amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted (50 CFR 424.14(b)). In evaluating whether substantial information is contained in a petition, the Secretary must consider whether the petition: (1) Clearly indicates the administrative measure recommended

and gives the scientific and any common name of the species involved; (2) contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species; (3) provides information regarding the status of the species over all or a significant portion of its range; and (4) is accompanied by the appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps (50 CFR 424.14(b)(2)).

Judicial decisions have clarified the appropriate scope and limitations of the Services' review of petitions at the 90-day finding stage, in making a determination that a petitioned action ''may be'' warranted. As a general matter, these decisions hold that a petition need not establish a ''strong likelihood'' or a ''high probability'' that a species is either threatened or endangered to support a positive 90-day finding.

We evaluate the petitioners' request based upon the information in the petition including its references and the information readily available in our files. We do not conduct additional research and we do not solicit information from parties outside the agency to help us in evaluating the petition. We will accept the petitioners' sources and characterizations of the information presented if they appear to be based on accepted scientific principles, unless we have specific information in our files indicating the petition's information is incorrect, unreliable, obsolete, or otherwise irrelevant to the requested action. Information that is susceptible to more than one interpretation or that is contradicted by other available information will not be dismissed at the 90-day finding stage, so long as it is reliable and a reasonable person would conclude it supports the petitioners' assertions. In other words, conclusive information indicating the species may meet the ESA's requirements for listing is not required to make a positive 90-day finding. We will not conclude that a lack of specific information negates a positive 90-day finding if a reasonable person would conclude that the uncertainty from the lack of information suggests an extinction risk of concern for the species at issue.

To make a 90-day finding on a petition to list a species, we evaluate whether the petition presents substantial scientific or commercial information indicating the subject species may be either threatened or endangered, as defined by the ESA. First, we evaluate whether the information presented in the petition, along with the information readily available in our files, indicates that the petitioned entity constitutes a ''species'' eligible for listing under the ESA. Next, we evaluate whether the information indicates that the species faces an extinction risk that is cause for concern; this may be indicated in information expressly discussing the species' status and trends, or in information describing impacts and threats to the species. We evaluate any information on specific demographic factors pertinent to evaluating extinction risk for the species (e.g., population abundance and trends, productivity, spatial structure, age structure, sex ratio, diversity, current and historical range, habitat integrity or fragmentation), and the potential contribution of identified demographic risks to extinction risk for the species. We then evaluate the potential links between these demographic risks and the causative impacts and threats identified in section 4(a)(1).

Information presented on impacts or threats should be specific to the species and should reasonably suggest that one or more of these factors may be operative threats that act or have acted on the species to the point that it may warrant protection under the ESA. Broad statements about generalized threats to the species, or identification of factors that could negatively impact a species, do not constitute substantial information indicating that listing may be warranted. We look for information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

Many petitions identify risk classifications made by non-governmental organizations, such as the International Union on the Conservation of Nature (IUCN), the American Fisheries Society, or NatureServe, as evidence of extinction risk for a species. Risk classifications by other organizations or made under other Federal or state statutes may be informative, but the classification alone does not provide the rationale for a positive 90-day finding under the ESA. For example, as explained by NatureServe, their assessments of a species' conservation status do ''not constitute a recommendation by NatureServe for listing under the U.S. Endangered Species Act'' because NatureServe assessments ''have different criteria, evidence requirements, purposes and taxonomic coverage than government lists of endangered and threatened species, and therefore these two types of lists should not be expected to coincide'' (*http://www.natureserve.org/prodServices/statusAssessment.jsp*). Thus, when a petition cites such classifications, we will evaluate the source of information that the classification is based upon in light of the standards on extinction risk and impacts or threats discussed above.

Distribution and Life History of the Great White Shark

The great white shark (also known as ''white shark'') is a circumglobal species that resides primarily in temperate and sub-tropical waters (Compagno *et al.,* 1997; Domeier and Nasby-Lucas, 2006; Domeier *et al.,* 2012). White sharks commonly inhabit coastal and continental shelf waters, although they have been observed entering marine bays, estuaries, lagoons, and harbors (Compagno *et al.,* 1997). Recent studies suggest that these sharks also spend considerable amount of time in open ocean habitats thousands of kilometers from shore (Domeier, 2012). Areas likely to attract adult white sharks include coastal waters adjacent to pinniped colonies or haulout sites, as these are favored prey species (Klimley *et al.,* 1996; Hussey *et al.,* 2012). Known prey of white sharks also includes a wide range of other species from smaller demersal fish, such as rockfish, to giant pelagic species, such as tuna and swordfish, as well as sea turtles, seabirds, cetaceans, and other species of sharks (Fergusson, 1996; Long and Jones, 1996; Wilson and Patyten, 2008; IUCN, 2009; Santana-Morales *et al.,* 2012). White sharks are recognized as apex predators throughout the oceanic and coastal marine environments where they occur, and may play an important role in ecosystem balance and population control for a number of other marine species (Myers *et al.,* 2007; Wilson and Patyten, 2008). White sharks demonstrate the ability to undertake transoceanic migrations to specific locations in patterns that appear to be predictable (Boustany *et al.,* 2002; Jorgensen *et al.,* 2010; Chapple *et al.,* 2011; Domeier, 2012).

Great white sharks are distinguished by their stout spindle-shaped body, moderately long and bluntly conical snout, five long gill slits, large falcate first dorsal fin with free rear tip located over the pectoral inner margins, pivoting second dorsal and anal fins, white ventral body color, and lack of any secondary keels on the base of the caudal fin. The teeth are large, flat, and triangular shaped, with blade-like serrations, although teeth in the rear of

the mouth get progressively smaller and sometimes lack serration, especially in younger sharks (Compagno *et al.,* 1997; FAO, 2012). The maximum size of this species has not been established, but has been estimated at about 6 m (19 ft), and possibly up to 6.4 m (21 ft), or more (Cailliet *et al.,* 1985; Wilson and Patyten, 2008; IUCN, 2009). Estimated weight of the largest individuals is nearly 3,000 kg (6,600 lbs) (Cailliet *et al.,* 1985; Anderson *et al.,* 2011).

Available information on the general life history pattern of white sharks suggests that females mature at about 12–14 years of age, and about 4–5 m (13–16 ft) in length. Males mature at 9–10 years old, and about 3.5–4.1 m (11.5–13.5 ft) in length (Compagno *et al.,* 1997). It is believed that females give birth at 2 or 3-year intervals to litters of 2–10 pups that are 1–1.5 m (3.3–4.9 ft) in length after a 12–22 month gestation (Francis, 1996; Wilson and Patyten, 2008; Domeier, 2012). Embryos are oophagus, meaning they consume and store yolk in their stomachs (Francis, 1996; Uchida *et al.,* 1996), and viviparous (live) birth of pups likely occurs sometime between May and October (Domeier, 2012). Specific knowledge of pup survival rates is not available, but is estimated to be low (CITES, 2004).

Primary concentrations of white sharks occur in South Africa, Australia and New Zealand, and the northeastern Pacific Ocean, with other white sharks observed in the north Atlantic and the Mediterranean (Boustany *et al.,* 2002; Domeier and Nasby-Lucas, 2006; Weng *et al.,* 2007; Jorgensen *et al.,* 2010). Genetic and migration studies provide evidence that these may represent separate populations (Jorgensen *et al.,* 2010). Mitochondrial DNA suggests at least three matrilineal populations: South Africa/northwest Atlantic; southwest Pacific; and northeastern Pacific (Gubili *et al.,* 2012). Although the southwestern Pacific and northeastern Pacific populations could potentially interbreed, the genetic sampling indicates that these two populations are largely reproductively isolated. It has been suggested that the northeastern Pacific population was founded by relatively few sharks within the last 200,000 years, and hasn't mixed with other shark populations near Australia or South Africa since (Hance, 2009; Jorgensen *et al.,* 2010).

White sharks in the northeastern Pacific Ocean have been observed from Baja California to the Bering Sea (Kato, 1965; COSEWIC, 2006) and offshore out to Hawaii. Using satellite and acoustic telemetry, researchers have followed movements of white sharks in the northeastern Pacific Ocean and discovered patterns of site fidelity and repeated homing in structured seasonal migrations, including fixed destinations, schedules, and routes (Boustany *et al.,* 2002; Jorgensen *et al.,* 2010). As a result, three core areas have been identified in the central and northeastern Pacific: (1) North American shelf waters; (2) slope and offshore waters of Hawaii; and (3) an area between the North American coast and Hawaii termed the ''white shark café'' or Shared Offshore Foraging Area (SOFA) (Jorgensen *et al.,* 2010; Anderson *et al.,* 2011; Domeier, 2012). Each winter, great white sharks leave coastal aggregation sites off of central California (Farallon Islands/Año Nuevo/Point Reyes) and migrate 2000–5000 km offshore to subtropical and tropical pelagic habitats, returning to coastal aggregation sites in late summer. Site fidelity in North American coastal hotspots has also been documented using photo-identification (Jorgensen *et al.,* 2010; Chapple *et al.,* 2011; Sosa-Nishizaki *et al.,* 2012). Guadalupe Island, located 250 miles off the coast of Baja California, Mexico, is also a preferred aggregation site for adults (Sosa-Nishizaki *et al.,* 2012). Adult males annually migrate from preferred aggregation sites to the SOFA/white shark café. Females have been observed to migrate biennially between preferred aggregation sites and the area surrounding the SOFA/white shark café, usually after males have returned to coastal aggregation sites (Domeier, 2012).

The coastal areas of southern California and Baja California, Mexico, appear to be important nursery areas hosting large concentrations of young-of-the-year (YOY) and juvenile great white sharks (Dewar *et al.* 2004; Weng *et al.,* 2007; Galván-Magaña *et al.,* 2011; Domeier, 2012; Santana-Morales *et al.,* 2012). Information gained from the records of white shark bycatch in California and Baja fisheries, including gillnet, seine-net, and hook and line fisheries (Lowe *et al.,* 2012; Santana-Morales *et al.,* 2012), along with relatively consistent reporting of juvenile white shark observations along the southern California coast, lend support to the assertion that this area is important developmental habitat for white sharks before they mature into larger adults. Estimates of abundance have not been available historically, but recent studies have suggested the population size at two known aggregation sites (Farallon Islands/Central California and Guadalupe Island) in the northeastern Pacific Ocean is around 340 sub-adults and adults (Chapple *et al.,* 2011; Sosa-Nishizaki *et al.,* 2012).

Analysis of the Petitions and Information Readily Available in NMFS Files

The two petitions request the same action, to list the northeastern Pacific Ocean (NEP) DPS of great white shark (or white shark) as endangered or threatened under the ESA and to designate critical habitat for the DPS. Therefore, we evaluated the information provided in both petitions and readily available in our files to determine if the petitions presented substantial scientific or commercial information indicating that the petitioned action may be warranted. Both petitions contain information on the species, including the taxonomy, species description, geographic distribution, habitat, population status and trends, and factors contributing to the species' decline. Both petitions state that a primary threat to the NEP population of white shark is exploitation by fishing (historical and current) and bycatch in fisheries. Both petitions also assert that the lack of adequate regulatory protection worldwide, bioaccumulation of contaminants, and habitat degradation, as well as the species' biological constraints, increase the susceptibility of the NEP population of white shark to extinction.

According to both petitions, the NEP population of white shark qualifies as a DPS because the NEP population is both discrete and significant, as defined under the Services' DPS policy (61 FR 4722; February 7, 1996). The WildEarth Guardians petition asserts that all of the five causal factors in section 4(a)(1) of the ESA are adversely affecting the continued existence of the NEP population, whereas the Oceana *et al.* petition does not discuss disease and predation as a factor that is adversely affecting the NEP population. In the following sections, we analyze the information presented by the petitions and in our files on the qualification of the NEP population of white shark as a DPS and the specific ESA section 4(a)(1) factors affecting the population's risk of extinction.

Qualification of Northeastern Pacific Ocean Population as a DPS

Both petitions assert that the NEP population of white shark qualifies as a DPS, because it is both a discrete and significant population segment of the species, as defined in the NMFS and USFWS policy on DPSs (61 FR 4722; February 7, 1996). First, the petitions state that the NEP population is discrete based on both genetic and spatial

separation from other populations of white shark. Genetic analyses indicate that the NEP population of white sharks is similar to and descended from the Australian/New Zealand (ANZ) population (Jorgensen *et al.,* 2010; Gubili *et al.,* 2012). The NEP population was likely established during the Late Pleistocene, from a limited number of founders from the ANZ population, but has since had little gene flow with the ANZ population (Jorgensen *et al.,* 2010). Thus, although the two populations can interbreed, they are thought to be largely reproductively isolated (Jorgensen *et al.,* 2010).

In addition to genetic separation, the NEP population is geographically separated from other populations, adheres to predictable seasonal migratory routes, and exhibits strong site fidelity within the NEP. As discussed above, white sharks in the NEP population range from Baja California to the Bering Sea, and out to Hawaii. Tagged white sharks from the NEP population consistently used three core areas within the northeastern and central Pacific ocean: (a) The coastal shelf waters of North America (primarily from central California to Baja California); (b) the slope and offshore waters of the Hawaiian archipelago; and (c) offshore waters between California and Hawaii, including an offshore habitat approximately halfway between California and Hawaii referred to as the SOFA/white shark café, used primarily by adults (Boustany *et al.,* 2002; Jorgensen *et al.,* 2010; Domeier, 2012). The individuals followed seasonal migratory patterns, generally moving offshore starting in winter and returning to the California and Baja California coast in the late summer (Jorgensen *et al.,* 2010; Domeier, 2012). Tagged individuals from the NEP population did not show any straying or spatial overlap with the ANZ population (Jorgensen *et al.,* 2010). YOY and juvenile white sharks also stay within the geographic boundaries of the NEP population, likely using nearshore, shallow waters of the Southern California Bight and Baja California as nursery habitats, with adults likely aggregating at sites off central California and at Guadalupe Island (off Baja California) to mate (Domeier, 2012). Thus, the available information on migratory behavior and habitat use indicates that the NEP population is geographically separated from other white shark populations.

Second, the petitions state that the NEP population is discrete because of international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA (i.e., the inadequacy of existing regulatory mechanisms as a factor to consider in determining whether a species is endangered or threatened). The petitions state that a large portion of the NEP population's habitat is within U.S. waters, highlighting the importance of U.S. protections for the species. The petitions also argue that the NEP population is discrete because it ranges internationally into waters with differing management regimes, particularly when occupying offshore habitats and visiting aggregation sites off Baja California, where it may be subject to exploitation by non-U.S. entities. However, the Services' DPS policy states that a population may be considered discrete if it is separated from other populations by international boundaries within which significant differences in regulatory mechanisms exist. That the NEP population crosses these international boundaries actually argues against considering this population as discrete from other white shark populations. Thus, the NEP population is not considered discrete based on this factor. Nevertheless, the information available in the petitions and in our files provides evidence suggesting the NEP population may be discrete based on both genetic and spatial separation from other populations.

Both petitions make the case that the NEP population is significant to the taxon. As described above, the NEP population does not appear to overlap spatially with other populations (Jorgensen *et al.,* 2010; Domeier, 2012; Gubili *et al.,* 2012). The petitions reason that loss of this population would result in a significant gap in the range of the species because it is unlikely, given the geographic separation of the NEP population from other populations, that sharks from other populations would expand their distribution into the NEP's current habitats. The petitions also state that the NEP population is genetically differentiated from other white shark populations, as described above. In addition, the Oceana *et al.* petition contends that the NEP population occupies an ecological setting that is unique to this species, because they are the only population to occupy coastal waters off California and the SOFA. Overall, the information available in the petitions and in our files suggests that the NEP population of white shark may be significant to the species. The Oceana *et al.* petition also argues that great white sharks play an important ecological role that is essential for the health of the NEP ecosystem, as a top predator that regulates prey populations (e.g., fish, other sharks, and pinnipeds). We do not comment on the merit of this statement, but note that in determining whether a discrete population segment is significant, the NMFS and USFWS policy focuses on the biological and ecological significance of the population segment to the taxon, not to the ecosystem.

Based on the above analysis, we conclude that the information in the two petitions and in our files suggests that the NEP population of white shark may qualify as a DPS under the discreteness and significance requirements.

The Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

Both petitions assert that habitat degradation, largely associated with increasing human activity, poses a threat to the NEP population of white shark, although the two petitions focus on different sources of habitat degradation. The Oceana *et al.* petition briefly mentions that pollutant discharge can degrade coastal aggregation and nursery habitats, whereas the WildEarth Guardians petition goes into more detail on this potential threat. The WildEarth Guardians petition cites urban stormwater runoff and point source discharge as important sources of pollutants (e.g., pesticides, fertilizers, trace metals, synthetic organic compounds, petroleum, and pathogens) into the Southern California Bight (DiGiacomo *et al.,* 2004). The petition states that these pollutants threaten predators like white sharks, primarily through effects on their prey. For example, historical discharges of organochlorines, such as DDT and PCBs, into the Southern California Bight have resulted in high levels of these contaminants in local populations of pinnipeds (Blasius and Goodmanlowe, 2008), one of the prey resources for white sharks. Both petitions cite a recent finding that young white sharks sampled off California have high levels of mercury, DDT, PCBs, and chlordanes that could result in physiological impairment (Mull *et al.,* 2012). The WildEarth Guardians petition briefly states that water quality in areas off Mexico where the NEP population occurs may also be affected by contaminants (Parks Watch, 2004).

The WildEarth Guardians petition also suggests that the concentration of marine debris in the North Pacific Gyre (the ''Great Pacific Garbage Patch'') may

have deleterious effects on offshore habitats, including the SOFA. The main concern expressed in the petition is the concentration of plastic of various sizes in the ''Garbage Patch'' (Algalita, 2009) which could be ingested by white sharks in the area either directly or ingested by their prey. The petition also suggests that accumulation of persistent organic pollutants on the plastic (Algalita, 2009) may pose another threat to the health of white sharks. We note, however, that it appears to be unclear exactly what the adults (primarily males) are preying on in the SOFA (Jorgensen *et al.,* 2010; Domeier, 2012) because the area is devoid of the small marine mammals typically preyed upon by adult white sharks (Domeier, 2012). Adults in the SOFA may be feeding on squid or other species that target squid (Domeier, 2012). Without specific information about the extent to which adults in the SOFA are feeding and what they are feeding on, it is difficult to evaluate the potential effects of plastic marine debris on the NEP population's feeding habitat and prey resources.

The Oceana *et al.* petition focuses on two sources of habitat degradation: (1) Decreased prey resources due to human exploitation; and (2) the effects of ocean acidification on the California Current ecosystem. The WildEarth Guardians petition briefly mentions that fisheries activities in coastal areas may deplete important prey resources for the NEP population (CITES, 2004). The Oceana *et al.* petition provides more detail, stating that human exploitation depleted populations of pinnipeds, an important prey resource for adult white sharks. The petition contends that although pinniped populations are currently increasing, they were depleted for a long period of time and remain below historical levels. We note that the most recent stock assessments estimate that harbor seals may be at carrying capacity (NMFS, 2011a) and that northern elephant seals have almost reached their carrying capacity for pups per year (NMFS, 2007). Population trends have generally been increasing since the 1980s or earlier for harbor seals, California sea lions, and northern elephant seals in California (NMFS, 2007; 2011a; 2011b). Thus, although these prey resources may have been limited in the past when pinniped populations were at historical lows, the populations have been increasing over the last 30 years or more and may not currently be limiting. For example, an increased frequency of observed shark attacks on prey off the South Farallon Islands from 1983 to 1993 indicated a potential increase in the white shark population at the islands, which may be explained by increased recruitment of younger white sharks supported by the increase and stabilization of pinniped prey resources over the 1970s and 1980s (Pyle *et al.,* 1996). Further analysis is needed to evaluate what effect changes in pinniped populations have had on the status of white shark populations over time. The petition also states that there have been and continue to be major commercial fisheries for most of the other prey resources supporting various life stages of white sharks (e.g., fish species, crustaceans, cephalopods; Klimley, 1985; Ellis and McCosker, 1995). Again, further analysis is needed to specifically evaluate the impacts of these fisheries on prey resources for white sharks.

The Oceana *et al.* petition also contends that the effects of ocean acidification could have negative impacts on the marine food web within the California Current ecosystem, including on the NEP population of white shark. The petition cites a model simulation study which predicts that by 2050, the oceanic uptake of increased atmospheric CO_2 will lower the pH and the saturation state of aragonite (a mineral form of calcium carbonate, used by calcifying organisms) in nearshore waters of the California Current system to levels well below the natural range for this area (Gruber *et al.,* 2012). The petition states that these effects of ocean acidification will have negative impacts on fish species, referencing recent studies showing that high CO_2 and low pH levels impair olfactory responses and homing ability in clownfish (Munday *et al.,* 2009) and can lead to cardiac failure in some fish species (Ishimatsu *et al.,* 2004). The petition readily admits, however, that the severity of effects on specific species is uncertain. Some fish species may experience metabolic responses to elevated CO_2 levels at the cellular level, but are able to compensate for those responses at the whole animal level, making them less sensitive to the effects of ocean acidification (Portner, 2008). In addition, extrapolating specific effects at the species levels to the overall ecosystem (e.g., effects on prey availability and predator-prey interactions for top predators like white sharks) is highly uncertain. The petition also states that ocean acidification can potentially affect marine mammals and other marine life by reducing the sound absorption of seawater and allowing sound to travel further (Hester *et al.,* 2008). However, the petition does not explain what the potential effects on marine mammals and other marine life may be or how any such effects relate to the degradation of white shark habitat (e.g., the availability or abundance of prey resources). The available information is not sufficient to determine if ocean acidification may be threatening the habitat of the NEP population of white shark such that listing may be warranted.

We conclude that the information in the petitions and in our files suggests that habitat degradation associated with pollutant discharge in the Southern California Bight may be impacting the health of the NEP population of white shark. Human exploitation may have impacted prey resources (e.g., pinnipeds and fish and invertebrate species) in the past; however, further analyses are needed to evaluate the recent and current impacts on prey resources. In addition, the information provided on the effects of marine debris in the North Pacific Gyre or ocean acidification is insufficient to evaluate whether these factors may be threatening the habitat of the NEP population of white shark such that listing may be warranted.

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Information from both petitions suggests that a primary threat to the NEP population of white shark is from fisheries. The petitions cite information on the effects of fisheries on white sharks worldwide and within the NEP. White sharks are harvested in targeted fisheries and as bycatch and are highly prized for their teeth, jaws, and fins. White sharks are primarily caught incidentally in commercial fisheries using longlines, setlines, gillnets, trawls, fish traps, and other gear (Compagno, 2001; Fowler *et al.,* 2005; Lowe *et al.,* 2012; Santana-Morales *et al.,* 2012). The curious nature of white sharks makes them more vulnerable to incidental capture, and their high value and negative reputation may contribute to the killing of incidentally caught individuals rather than being released alive (Fowler *et al.,* 2005). CITES (2004a) estimated that low to mid hundreds of white sharks are killed annually as bycatch within each major region of the species' range. Targeted sport and commercial fisheries for white sharks also exist worldwide. Targeted sports fisheries may either kill or release sharks alive, but post-release mortality is unknown. It is estimated that tens to low hundreds of white sharks are killed in sports fisheries worldwide each year (CITES, 2004). Targeted commercial fisheries for white sharks are thought to be uncommon and opportunistic when

aggregations are found, but the species' site fidelity and tendency to aggregate in predictable areas make it vulnerable to over-exploitation (CITES, 2004). Targeted commercial fisheries worldwide may also kill tens to low hundreds of white sharks each year (CITES, 2004).

In the NEP Ocean, there is little commercial fishing activity in the SOFA, providing a potential refuge from incidental capture for individuals when they occupy this offshore area (Domeier, 2012). However, the lack of international laws to protect great white sharks in international waters is a potential threat to the species (Domeier, 2012; discussed further under ''Inadequacy of existing regulatory mechanisms''). White sharks are most vulnerable to fisheries capture when occupying nearshore aggregation or nursery habitats, especially YOY and juvenile stages (Domeier, 2012). Off California, there have been no directed fisheries for white sharks, but incidental and targeted catch has occurred (Lowe *et al.,* 2012). An analysis of fishery-dependent catch records for the Southern California Bight from 1936 to 2009 found that the majority of the reported white shark captures (where size was indicated) were of YOY sharks (60 percent), followed by juveniles (32 percent) and subadults/adults (8 percent); however, the proportion of YOY sharks in the reported catch increased to 77 percent after the nearshore gillnet ban was implemented in 1994 (Lowe *et al.,* 2012). Commercial entangling nets (81 percent) and recreational hook-and-line fishing (8 percent) accounted for the majority of the reported white shark captures (Lowe *et al.,* 2012). The number of reported white shark captures in commercial entangling nets has been 20 or less from 1985 through 2009, except in 1985 when 25 captures were reported (Lowe *et al.,* 2012). The analysis suggests that the effects of incidental capture in gillnet fisheries off California have decreased compared to historical effects. As gillnet fishing effort decreased from the mid-1980s to mid-1990s, so did reports of white shark captures (Lowe *et al.,* 2012). However, although gillnet fishing effort remained stable or decreased from the mid-1990s through 2009, reports of white shark captures increased from 2005 through 2009 (Lowe *et al.,* 2012). Increases in the number of reported captures in the gillnet fisheries since 2005, despite stable or decreased effort, may be the result of increased reporting of captures and/or an increase in the abundance of white sharks due to the nearshore gillnet ban and changes in offshore gillnet regulations (Lowe *et al.,* 2012). Also, data from the Monterey Bay Aquarium's Juvenile White Shark Tagging Program indicate that YOY and juvenile white sharks have relatively high post-release survival after being caught in gillnet gear (Lowe *et al.,* 2012).

Incidental catch of white sharks also continues to occur off Baja California. Incidental catch of 111 great white sharks was reported from 1999 through 2010, consisting of YOY (79.8 percent) and juvenile (20.2 percent) sharks (Santana-Morales *et al.,* 2012). Incidental catch primarily occurred in bottom gillnet gear (74.7 percent), but also in drift gillnet (18 percent) and artisanal seine net (4.5 percent) gear (Santana-Morales *et al.,* 2012).

The petitions assert that the continued incidental catch of white sharks poses a threat to the species, because the removal of just a few individuals could have a substantive effect on the local population (Pyle *et al.,* 1996; Chapple, 2011). The petitions also highlight the high value of white shark teeth, jaws, and fins as trophies, curios, and food, stating that this provides a strong monetary incentive to capture and keep white sharks (Clarke, 2004; Shivji *et al.,* 2005; Clarke *et al.,* 2006).

We conclude that the petitions and information in our files present evidence that fisheries impacts continue to affect white shark populations worldwide and in the NEP, primarily due to incidental capture in fisheries and the potential for the high value of great white shark teeth, jaws, and fins to promote keeping incidentally caught individuals rather than releasing them back into the water. This information suggests that fisheries impacts may be affecting the continued existence of the NEP population of white shark. To further evaluate these effects, more information is needed on fisheries impacts specifically within the range of the NEP population, particularly on the capture of white sharks in fisheries in offshore waters and the lethal and sublethal effects of catch and release.

Disease or Predation

The WildEarth Guardians petition asserts that the addition of mercury, organochlorine contaminants, and other pollutants to the ocean and the effects of these pollutants on the NEP population of white sharks may be categorized as disease. The petition does not provide any additional information to support that disease is a factor affecting the NEP population's continued existence such that listing may be warranted. Thus, the available information is insufficient to evaluate if disease may be affecting the continued existence of the NEP population of white shark. The petition more appropriately discusses pollutants and their effects on the NEP population under the habitat degradation and ''other natural or manmade'' factors.

Inadequacy of Existing Regulatory Mechanisms

The petitions assert that the inadequacy of existing Federal, state, or international regulatory mechanisms require that the NEP population of white shark be listed under the ESA. The petitions contend that although Federal, state, and international regulations exist to protect white sharks from targeted capture in some areas, these regulations are insufficient because white sharks in the NEP population are still vulnerable to incidental capture throughout its range, and to exploitation when in international waters. In addition, the WildEarth Guardians petition states that existing regulations do not protect the NEP population's habitat and health from threats such as habitat degradation, pollution, and overfishing of prey resources.

Within the United States, Federal and state regulations to protect white sharks vary. Currently, the retention of white sharks in U.S. Federal waters in the Pacific Ocean is prohibited under the Highly Migratory Species Fishery Management Plan. In California, targeted capture of white sharks is prohibited, but incidentally caught white sharks may be retained under a permit from the California Department of Fish and Game for scientific or educational purposes (14 CCR § 28.06). In Oregon, all white sharks must be released immediately if caught (ODFW, 2012). Washington and Hawaii do not have specific fisheries regulations for white shark. However, both Hawaii and California passed bans making it unlawful to possess, sell, offer for sale, trade, or distribute shark fins, which may provide some protection for white sharks. The petitions argue that despite these protections, the continued incidental capture and mortality of even small numbers of white sharks in U.S. waters, particularly off California, can have a large impact on the local population, citing a study off the Farallon Islands in which the removal of four white sharks from the area in 1982 resulted in significantly fewer sightings of shark attacks on pinnipeds than expected in 1983 to 1985 (Pyle *et al.,* 1996). The petitions also suggest that illegal fishing may be a problem in the United States, citing cases of illegal

fishing and sale of white shark teeth, jaws, and fins in 2003 (CITES, 2004).

Outside of the United States, protections for white sharks also vary. In Mexico, catch and retention of white sharks and the landing of shark fins without carcasses has been banned since 2006 (Lack and Sant, 2011), although incidental capture continues to occur (Galván-Magaña *et al.,* 2010; Santana-Morales *et al.,* 2012). In Canada, there are no specific regulations to protect white sharks, although a ban on shark finning may provide some protection (DFO, 2007). In international waters, white sharks are protected under CITES (Appendix II) and other international agreements, including the Convention on Migratory Species (Appendix I and II) and the United Nations Convention on the Law of the Sea. However, the petitions contend that these protections are not sufficient, given continued trade in white shark products due to poaching and variable enforcement of regulations (CITES, 2004; Clarke, 2004; Shivji *et al.,* 2005; Clarke *et al.,* 2006; Galván-Magaña *et al.,* 2010; Jorgensen *et al.,* 2010; Viegas, 2011).

Based on the information in the petition and in our files as discussed above, we conclude that existing regulatory mechanisms may be inadequate to address threats to the NEP population of white shark. To further evaluate the adequacy of existing regulatory mechanisms, more information is needed regarding the level of illegal fishing and poaching in U.S. and international waters.

Other Natural or Manmade Factors

The two petitions assert that other natural or manmade factors may be affecting the survival and recovery of the NEP population of white shark, including contaminant loads, negative press, life history factors, small population size, and the synergistic effects of all of the threats facing the population. Both petitions cite a study conducted in the Southern California Bight revealing mercury and organochlorines (e.g., DDT, PCBs, and chlordanes) in the tissues of juvenile white sharks at levels that may result in physiological impairment (Mull *et al.,* 2012). Young white sharks are likely bioaccumulating these contaminants (likely from historical discharges in the Southern California Bight) when feeding on prey resources in the area (Blasius and Goodmanlowe, 2008; Mull *et al.,* 2012). The WildEarth Guardian petition also cites negative media attention as a threat to white sharks, especially when shark attacks on humans occur, because this generates general paranoia and encourages targeting of the species for sport or trophy hunting (IUCN, 2009).

The WildEarth Guardians petition asserts that natural factors, including the species' life history characteristics and small population size, also increase the extinction risk of the NEP population of white shark, particularly when considered in combination with other threats to the species. The petition states that the species' life history characteristics (e.g., slow growth, late maturation, long-life, long generation time, small litter size, and low reproductive capacity) make it susceptible to extinction when faced with population declines and continuing threats (Withgott and Brennan, 2007). The petition also contends that the small estimated population size (e.g., approximately 340 subadults and adults in the NEP population; Chapple *et al.,* 2011; Sosa-Nishizaki *et al.,* 2012) makes the population highly susceptible to extinction due to a stochastic event (Brook *et al.,* 2008). We note, however, that this estimate of abundance is based on studies of individuals surveyed in aggregation sites off central California and Guadalupe Island, and do not include YOY and juveniles. Also, without information on the historical abundance of the NEP population, it is difficult to assess what this estimated population size means for the persistence of the population. The low estimated abundance of the population may be the result of anthropogenic pressures on the population or a naturally low carrying capacity (the NEP population is thought to have been established by a limited number of founders from the ANZ population; Jorgensen *et al.,* 2010) (Chapple *et al.,* 2011). Catch ratios of white sharks to all shark species off the U.S. west coast from 1965 (1:67) to 1983 (1:210) suggest a potential decline in abundance (Casey and Pratt, 1985, cited in Fowler *et al.,* 2005). However, recent increases in the incidental capture of white sharks in gillnet fisheries off California, despite stable or decreasing fishing effort, suggest that the population may be increasing (Lowe *et al.,* 2012). In addition, an increased frequency of observed white shark attacks on pinnipeds off the South Farallon Islands over time indicates an increase in the shark population at the islands (Pyle *et al.,* 1996; Pyle *et al.,* 2003). Thus, it is difficult at this time to determine population trends and to evaluate how the estimated size of the NEP population relates to the population's extinction risk.

Overall, the petition and information in our files suggest that effects from bioaccumulation of contaminants and negative media attention, coupled with the life history characteristics of white sharks, may be affecting the survival and recovery of the NEP population. More specific information is needed, however, to assess population trends and to evaluate the population's estimated abundance in terms of the potential effects on the population's survival and recovery.

Summary of Section 4(a)(1) Factors

We conclude that the petition presents substantial scientific or commercial information indicating that multiple section 4(a)(1) factors, as discussed above, may be causing or contributing to an increased risk of extinction for the NEP population of white shark.

Petition Finding

After reviewing the information contained in both petitions, as well as information readily available in our files, we conclude the petitions present substantial scientific information indicating the petitioned action of listing the NEP population of white shark as a threatened or endangered DPS may be warranted. Therefore, in accordance with section 4(b)(3)(A) of the ESA and NMFS' implementing regulations (50 CFR 424.14(b)(3)), we will commence a status review of the species. During the status review, we will determine whether the population identified by the petitioners meets the DPS policy's criteria, and if so, whether the population is in danger of extinction (endangered) or likely to become so within the foreseeable future (threatened) throughout all or a significant portion of its range. We now initiate this review, and thus, the northeastern Pacific Ocean population of white shark is considered to be a candidate species (50 CFR 424.15(b)). Within 12 months of the receipt of the WildEarth Guardians petition (June 25, 2013), we will make a finding as to whether listing the species as endangered or threatened is warranted as required by section 4(b)(3)(B) of the ESA. If listing the species is warranted, we will publish a proposed rule and solicit public comments before developing and publishing a final rule.

Information Solicited

To ensure that the status review is based on the best available scientific and commercial data, we are soliciting information relevant to whether the NEP Ocean population of white sharks is a DPS and whether it is threatened or endangered. Specifically, we are soliciting published and unpublished

information in the following areas: (1) Population structure information in the Pacific Ocean, such as genetics data; particularly any unpublished information; (2) migratory and behavior patterns in the NEP Ocean, particularly any unpublished information; (3) life history and ecology, particularly any unpublished information; (4) historical and current distribution and abundance of this species throughout the NEP Ocean; (5) historical and current population trends in the NEP Ocean; (6) historical and current data on commercial and recreational fisheries directed at white sharks in the NEP Ocean, including Mexican waters; (7) historical and current data on white shark bycatch and retention in commercial and recreational fisheries in the NEP Ocean, including Mexican waters; (8) data on the trade of white shark products, including fins, jaws, and teeth in the NEP Ocean, including Mexico; (9) data or other information on encounter rates with white sharks through ecotourism operations and sightings data, and long-term records of white shark attacks, wounds or scaring of marine mammals; (10) adverse impacts related to coastal habitat degradation and the health of white sharks, including, but not limited to, impacts related to discharge of pollutants, marine debris, or ocean acidification; (11) any current or planned activities that may adversely impact the species; (12) ongoing or planned efforts to protect and restore the species and their habitats; and (12) management, regulatory, and enforcement information.

We also request information on critical habitat for the NEP Ocean population of white sharks. Specifically, we request information on the physical and biological habitat features that are essential to the conservation of the species and identification of habitat areas that include these essential physical and biological features. Essential features include, but are not limited to: (1) Space for individual and population growth and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for reproduction and development of offspring; and (5) habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of the species (50 CFR 424.12). For habitat areas potentially qualifying as critical habitat, we request information describing: (1) The activities that affect the habitat areas or could be affected by the designation; and (2) the economic impacts, impacts to national security, or other relevant impacts of additional requirements of management measures likely to result from the designation.

We request that all information be accompanied by: (1) Supporting documentation such as maps, raw data with associated documentation, bibliographic references, or reprints of pertinent publications; and (2) the submitter's name, mailing address, email address, and any association, institution, or business that the person represents.

References Cited

A complete list of references is available upon request from the NMFS Southwest Regional Office (see **ADDRESSES**).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: September 25, 2012.

Alan D. Risenhoover,

Director, Office of Sustainable Fisheries, performing the functions and duties of the Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

[FR Doc. 2012–23963 Filed 9–27–12; 8:45 am]

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Informational Report 2
November 2012

TERMS OF REFERENCE

FOR THE

GROUNDFISH AND COASTAL PELAGIC SPECIES STOCK ASSESSMENT AND REVIEW PROCESS FOR 2013-2014

DRAFT

OCTOBER, 2012

Published by the Pacific Fishery Management Council

TABLE OF CONTENTS

1. INTRODUCTION

The purpose of this document is to outline the guidelines and procedures for the Pacific Fishery Management Council's (Council) groundfish and coastal pelagic species (CPS) stock assessment review (STAR) process and to clarify expectations and responsibilities of the various participants. This document applies to assessments of species managed under the Pacific Coast Groundfish Fishery Management Plan and Management Plan for the CPS. The STAR process has been designed to provide for peer review as referenced in the 2006 Reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (RMSA), which states that "the Secretary and each Regional Fishery Management Council may establish a peer review process for that Regional Fishery Management Council for scientific information used to advise the Regional Fishery Management Council about the conservation and management of the fishery (see Magnuson-Stevens Act section 302(g)(1)(E))." This peer review process is designed to investigate the technical merits of stock assessments and other scientific information used by the Council's Scientific and Statistical Committee (SSC). The process outlined here is not a substitute for the SSC, but should work in conjunction with the SSC. This document is included in the Council's Statement of Organization, Practices and Procedures as documentation of the review process that underpins scientific advice from the SSC.

The review of stock assessments requires a routine, dedicated effort that simultaneously meets the needs of NMFS, the Council, and others. Program reviews, in-depth external reviews, and peer-reviewed scientific publications are used by federal and state agencies to provide quality assurance for the basic scientific methods employed to produce stock assessments. The extended time frame required for such reviews is not suited to the routine examination of assessments that are, generally, the primary basis for harvest recommendations. The SSC has developed a separate terms of reference for reviewing new methods that might be used in stock assessments, including methods and tools to incorporate ecosystem processes.

The STAR process is a key element in an overall procedure designed to review the technical merits of stock assessments and other relevant scientific information. This process allows the Council to make timely use of new fishery and survey data, analyze and understand these data as thoroughly as possible, provide opportunity for public comment, assure that the results are as accurate and error-free as possible, and identify the best available science for management decisions. Parties involved in implementing the STAR process are Council members, Council staff, members of Council Advisory Bodies, including the SSC, the Groundfish and CPS Management Teams (GMT and CPSMT), the Groundfish Advisory SubPanel (GAP) and CPS Advisory Subpanel (CPSAS), the National Marine Fisheries Service (NMFS), state agencies, and interested persons.

This current version of the STAR terms of reference (TOR) reflects recommendations from previous participants in the STAR process, including STAR panel members, SSC members, stock assessment teams (STATs), Council staff, and Council advisory groups. Nevertheless, no set of guidelines can be expected to deal with every contingency, and all participants should anticipate the need to be flexible and address new issues as they arise.

Stock assessments are conducted to assess the abundance and trends of fish stocks, and provide the fundamental basis for management decisions regarding appropriate harvest levels. Assessments use statistical population models to integrate and simultaneously analyze survey, fishery, and biological data. Environmental and ecosystem data may also be integrated in stock

assessments. Hilborn and Walters (1992)[1] define stock assessments as "the use of various statistical and mathematical calculations to make quantitative predictions about the reactions of fish populations to alternative management choices." In this document, the term "stock assessment" includes activities, analyses and reports, beginning with data collection and continuing through to scientific recommendations presented to the Council and its advisors. To best serve their purpose, stock assessments should attempt to identify and quantify major uncertainties, balance realism and parsimony, and make best use of the available data.

There are four distinct types of assessments, which are subject to different review procedures. A "full assessment" is a new assessment or an assessment that may be substantially different from the previously conducted assessment. A full assessment involves a re-examination of the underlying assumptions, data, and model parameters previously used to assess the stock. Full assessments are reviewed via the full STAR process. There is a limit on the number of full assessments that can be conducted and reviewed during an assessment cycle. Some assessment models have relatively few modeling or data issues and provide relatively stable results as new data are added, such that it is not necessary to develop a completely new assessment every time the species is assessed. In these cases, an "update assessment" may be preferable. An "update assessment" is defined as an assessment that maintains the model structure of the previous full assessment and is generally restricted to the addition of new data to previously evaluated time series that have become available since the last assessment. Update assessments are reviewed by the relevant subcommittee of the SSC (Groundfish or CPS) rather than by a STAR panel. A "data-moderate assessment" is a third type of assessment that incorporates historical catch data and one or more indices of abundance (e.g., trawl survey or fishery CPUE indices). Data-moderate assessments are limited in that compositional data (i.e., length or age data) are restricted from the assessment to make such assessments less complicated and enable more expeditious review. Conceptually, data-moderate assessments are designed for groundfish stocks to be reviewed by the SSC Groundfish Subcommittee. However, in 2013, data-moderate assessments will be reviewed by a full STAR panel since these assessment methodologies will be used for the first time in the Council process. A "catch report" is a fourth type of assessment product that applies when only limited new information is available to inform the assessment. Catch reports are reviewed by the relevant subcommittee of the SSC (Groundfish or CPS).

The RMSA recently changed the terminology and process for determining harvest levels. The previous Allowable/Acceptable Biological Catch (ABC) has been replaced by the Overfishing Limit (OFL). However, the largest allowable harvest level is still the ABC (now "Acceptable Biological Catch"), which is buffered from the OFL based on the risk of overfishing adopted by the Council (which must be less than 50%). The P* (overfishing probability) approach uses a probability of overfishing (which the Council has set to be less than or equal to 45% or 0.45) and a measure of uncertainty in the assessment of current stock status (σ, the standard error of the biomass estimate in log space) to determine the appropriate buffer with which to reduce the harvest level from the OFL to the ABC (Ralston et al. 2011[2]). The Annual Catch Limit (ACL) is equivalent to what the Council previously called the Optimum Yield (OY). For groundfish species, the upper limit for the ACL is calculated using the 40-10 harvest control rule (and 25-5 rule for flatfish species) while for CPS, each species has a specific control rule to calculate the Harvest Guideline (HG), which is the upper limit for the ACL for CPS. The Annual Catch

[1] Hilborn, R., and C. J. Walters. 1992. Quantitative fisheries stock assessment: Choice, dynamics and uncertainty. Chapman and Hall.

[2] Ralston, S., Punt, A.E., Hamel, O.S., DeVore, J. and R.J. Conser. 2011. An approach to quantifying scientific uncertainty in stock assessment. *Fishery Bulletin* 109: 217-231.

Target (ACT) is the targeted catch level, representing a further reduction from the ACL to account for management/implementation uncertainty. The OFL must be given in the stock assessment (along with, in some cases, σ). The ABC is determined from the OFL given σ and P*. For CPS, the assessment reports the application of the HG control rule. The OFL, ABC, ACL, any ACTs, and (for CPS) the HGs are reported in the Council's Stock Assessment and Fishery Evaluation (SAFE) report or the relevant National Environmental Policy Act (NEPA) analysis of alternative harvest specifications.

2. STOCK ASSESSMENT PRIORITIZATION

Stock assessments for Pacific sardine and Pacific mackerel are conducted annually, with full assessments occurring every third year, and update assessments during interim years. Assessments for groundfish species are conducted every other year as part of the biennial harvest specification cycle. A relatively small number of the more than 90 species in Council's Groundfish Fishery Management Plan are selected each cycle for full or update assessments. To implement the RMSA requirements to establish ABCs and OFLs for all species in fishery management plans, simple assessment methods such as Depletion-Corrected Average Catch (DCAC)[3] and Depletion-Based Stock Reduction Analysis (DB-SRA)[4] have now been applied to the majority of groundfish species. It is the goal of the Council to substantially increase the number of groundfish stocks with full assessments.

In April 2006, the SSC recommended, and the Council adopted, a new approach to prioritize groundfish species for full and update stock assessments based on: 1) economic or social importance of the species, 2) vulnerability and resilience of the species, 3) time elapsed since the last assessment (NMFS advises assessments to be updated at least every five years), 4) amount of data available for the assessment, 5) potential risk to the stock from the current or foreseeable management regime, and 6) qualitative trends from surveys (when available). It was also recommended that overfished groundfish stocks that are under rebuilding plans be evaluated each assessment cycle to ensure adequate progress towards achieving stock recovery.

The proposed stocks for full, update, and data-moderate assessments should be discussed and finalized by the Council at least a year in advance of a new assessment cycle to allow sufficient time to assemble relevant data and arrange STAR panels. The 2013 stock assessment plan for groundfish and CPS stocks is provided in Appendix A.

3. STAR GOALS AND OBJECTIVES

The goals and objectives of the groundfish and CPS STAR process are to:

1) ensure that stock assessments represent the best available scientific information and facilitate the use of this information by the Council to adopt OFLs, ABCs, ACLs, (HGs), and ACTs;
2) meet the mandates of the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) and other legal requirements;
3) follow a detailed calendar and fulfill explicit responsibilities for all participants to produce required reports and outcomes;

[3] MacCall, A. D. 2009. Depletion-corrected average catch: a simple formula for estimating sustainable yields in data-poor situations. *ICES Journal of Marine Science* 66: 2267-2271.
[4] Dick, E. J. and A. D. MacCall. 2011. Depletion-Based Stock Reduction Analysis: A catch-based method for determining sustainable yields for data-poor stocks. *Fisheries Research* 110: 331-341.

4) provide an independent external review of stock assessments;
5) increase understanding and acceptance of stock assessments and peer reviews by all members of the Council family;
6) identify research needed to improve assessments, reviews, and fishery management in the future; and
7) use assessment and review resources effectively and efficiently.

4. ROLES AND RESPONSIBILITIES OF STAR PARTICIPANTS

4.1. Shared Responsibilities

All parties have a stake in assuring adequate technical review of stock assessments. NMFS, as the designee of the Secretary of Commerce, must determine that the best scientific advice has been used when it approves fishery management recommendations made by the Council. The Council uses advice from the SSC to determine that the information on which it bases its recommendations represents the best available science. Scientists and fishery managers providing technical documents to the Council for use in management need to assure that their work is technically correct.

The Council, NMFS and the Secretary of Commerce share primary responsibility to create and foster a successful STAR process. The Council oversees the process and involves its standing advisory bodies, especially the SSC. For groundfish, NMFS provides a stock assessment coordinator (SAC) to facilitate and assist in overseeing the process, while for CPS a designated SWFSC staff member performs this role. Together NMFS and the Council consult with all interested parties to plan and prepare TOR, and develop a calendar of events with a list of deliverables for final approval by the Council. NMFS and the Council share fiscal and logistical responsibilities and both should ensure that there are no conflicts of interest in the process[5].

The STAR process is sponsored by the Council, because the Federal Advisory Committee Act (FACA) limits the ability of NMFS to establish advisory committees. FACA specifies a procedure for convening advisory committees that provide consensus recommendations to the federal government. The intent of FACA was three-fold: to limit the number of advisory committees; to ensure that advisory committees fairly represent affected parties; and to ensure that advisory committee meetings, discussions, and reports are carried out and prepared in full public view. Under FACA, advisory committees must be chartered by the Department of Commerce through a rather cumbersome process. However, the Sustainable Fisheries Act exempts the Council from FACA per se, but requires public notice and open meetings similar to

[5] The proposed NS2 guidelines state: "Peer reviewers who are federal employees must comply with all applicable federal ethics requirements. Peer reviewers who are not federal employees must comply with the following provisions. Peer reviewers must not have any real or perceived conflicts of interest with the scientific information, subject matter, or work product under review, or any aspect of the statement of work for the peer review. For purposes of this section, a conflict of interest is any financial or other interest which conflicts with the service of the individual on a review panel because it: (A) Could significantly impair the reviewer's objectivity; or (B) Could create an unfair competitive advantage for a person or organization; (C) Except for those situations in which a conflict of interest is unavoidable, and the conflict is promptly and publicly disclosed, no individual can be appointed to a review panel if that individual has a conflict of interest that is relevant to the functions to be performed. Conflicts of interest include, but are not limited to, the personal financial interests and investments, employer affiliations, and consulting arrangements, grants, or contracts of the individual and of others with whom the individual has substantial common financial interests, if these interests are relevant to the functions to be performed. Potential reviewers must be screened for conflicts of interest in accordance with the procedures set forth in the NOAA Policy on Conflicts of Interest for Peer Review subject to OMB's Peer Review Bulletin."

those under FACA.

4.2. STAR Panel Responsibilities

The role of the STAR panel is to conduct a detailed technical evaluation of a full stock assessment to advance the best available scientific information to the Council. The specific responsibilities of the STAR panel are to:

1) review draft stock assessment documents, data inputs, and analytical models along with other pertinent information (e.g., previous assessments and STAR panel reports, when available);
2) discuss the technical merits and deficiencies of the input data and analytical methods during the open review panel meeting, work with the STATs to correct deficiencies, and, when possible, suggest new tools or analyses to improve future assessments; and
3) develop STAR panel reports for all reviewed species to document meeting discussion and recommendations.

The STAR panel chair has, in addition, the responsibility to: 1) develop a STAR panel meeting agenda; 2) ensure that STAR panel participants follow the TOR; 3) guide the STAR panel and the STAT to mutually agreeable solutions; and 4) coordinate review of revised stock assessment documents before they are forwarded to the SSC.

Groundfish and CPS STAR panels include a chair appointed from the relevant SSC subcommittee (Groundfish or CPS), and three other experienced stock assessment analysts knowledgeable of the specific modeling approaches being reviewed. Of these three other members, at least one should be appointed from the Center for Independent Experts (CIE) and at least one should be familiar with west coast stock assessment practices. Selection of STAR panelists should aim for balance between outside expertise and in-depth knowledge of west coast fisheries, data sets available for those fisheries, and modeling approaches applied to west coast groundfish and CPS. Expertise in ecosystem models or processes, and knowledge of the role of groundfish and CPS in the ecosystem is also desirable, particularly if the assessment includes ecosystem models or environmental processes. Reviewers should not have financial or personal conflicts of interest, either current to the meeting, within the previous year (at minimum), or anticipated. For groundfish, an attempt should be made to identify one reviewer who can consistently attend all STAR panel meetings in an assessment cycle. The pool of qualified technical reviewers is limited; therefore, staffing of STAR panels is subject to constraints that can make it difficult to meet the conditions above.

STAR panel meetings should also include representatives of the relevant management team (MT) and advisory panel (AP), with responsibilities as laid out in these TOR, and a Council staff member to help advise the STAR panel and assist in recording meeting discussions and results. The STAR panel, STATs, the MT and AP representatives, and the public are all legitimate meeting participants who should be accommodated in discussions. It is the STAR panel chair's responsibility to coordinate discussion and public comment so that the assessment review is completed on time.

A STAR panel normally meets for one week. The number of assessments reviewed per panel should not exceed two, except in extraordinary circumstances if the SSC and NMFS agree that it is advisable, feasible, and/or necessary. When separate assessments are conducted at the sub-

stock level (i.e., black rockfish), each assessment is considered an independent full assessment for review purposes. Contested assessments, in which alternative assessments are brought forward by competing STATs using different modeling approaches, would typically require additional time (and/or panel members) to review adequately, and should be scheduled accordingly. While contested assessments are likely to be rare, they can be accommodated within the STAR process. The STAR panel should thoroughly evaluate each analytical approach, comment on the relative merits of each, and, when conflicting results are obtained, identify the reasons for the differences. The STAR panel is also charged with selecting a preferred base model.

STAR Panel Requests for Additional Analyses

STAR panel meetings are not workshops. In the course of a meeting, the panel may ask the STAT for a reasonable number of sensitivity runs, request additional details on the proposed base model presented, or ask for further analyses of alternative runs. It is not unusual for the review to result in a change to the initial base model (given that both the STAR panel and the STAT agree). However, the STAR panel is not authorized to conduct an alternative assessment representing its own views that are distinct from those of the STAT, nor can it impose an alternative assessment on the STAT. Similarly, the panel should not impose their preferred methodologies when this is a matter of professional opinion. Rather, if the panel finds an assessment to be inadequate, it should document its opinion and suggest potential remedial measures for the STAT to take to rectify perceived shortcomings of the assessment. For groundfish species, the SSC reviews the STAR panel report and recommends whether an assessment should be further reviewed at the so-called "mop-up" panel meeting, a meeting of the SSC's Groundfish subcommittee that occurs after all of the STAR panels, primarily to review rebuilding analyses for overfished stocks. If a recommendation on whether to send the assessment to the mop-up panel meeting is needed before the full SSC is able to review the STAR panel report, the SSC Chair, Vice Chair, and Groundfish Subcommittee Chair will make a preliminary decision. This recommendation is subject to confirmation by the full SSC at its next scheduled meeting. For CPS, if an assessment is found not to be acceptable for use in management, a full assessment would be conducted the following year.

The STAR panels are expected to be judicious in their requests of the STATs. Large changes in data (such as wholesale removal of large data sets) or in analytical methods often result in such great changes to the assessment that they cannot be adequately reviewed during the course of the STAR panel meeting. Therefore, caution should be exercised in making such changes, and in many cases such changes should be relegated to future research recommendations and/or methodology review. If a groundfish STAR panel agrees that significant changes are necessary, and the assessment is not otherwise acceptable, a recommendation for further review at the mop-up panel is warranted. Similarly, if the STAR panel agrees that the assessment results strongly indicate that current F_{MSY} value or management target and threshold are inappropriate, it should identify this in its report and recommend further analysis to support a change to more appropriate values.

STAR panel requests to the STAT for additional model runs or data analyses must be clear, explicit, and in writing. They should reflect the consensus opinion of the entire panel and not the minority view of a single individual or individuals. The STAR panel requests and recommendations should be listed within the STAR panel's report along with rationale and the STAT response to each request.

To the extent possible, analyses requested by the STAR panel should be completed by the STAT during the STAR panel meeting. It is the obligation of the STAR panel chair, in consultation with other panel members, to prioritize requests for additional analyses. In situations where a STAT arrives with a well-constructed, thoroughly investigated assessment, it may be that the panel finishes its review earlier than scheduled (i.e., early dismissal of a STAT). If follow-up work by the STAT is required after the review meeting (such as MCMC integration of an alternative model created during the STAR panel meeting), this should be completed before the briefing book deadline for the Council meeting at which the assessment is scheduled for review. It is the STAR panel chair's responsibility to track STAT progress. In particular, the chair is responsible for communicating with the STAT to determine if the revised stock assessment document is complete. Any post-STAR drafts of the stock assessment must be reviewed by the STAR panel chair. The assessment document can only be given to Council staff for distribution after it has been endorsed by the STAR panel chair, and when it is accompanied by a complete and approved STAR panel report. Likewise, the final draft that is published in the Council's SAFE document must also be approved by the STAR panel chair prior to being accepted by Council staff.

For some stocks selected for full assessments, the available data may prove to be insufficient to support a category 1 assessment. In such cases, the STAT should consider whether simpler approaches appropriate for a category 2 assessment can be applied. Simpler approaches usually make stronger assumptions and estimate fewer parameters, but are less demanding of data. It is the responsibility of the STAR panel, in consultation with the STAT, to consider the strength of inferences that can be drawn from analyses presented, and identify major uncertainties. If useful results have been produced, the STAR panel should review the appropriateness and reliability of the methods used to draw conclusions about stock status and/or exploitation rates, and either recommend or reject the analysis on the basis of its ability to provide useful information into the management process. If the STAR panel agrees that important results have been generated, it should forward its findings and conclusions to the SSC and the Council for consideration in setting of OFLs, ABCs, and ACLs (for groundfish) and HGs (for CPS). A key section of the assessment is that on research needed to improve the assessment. Highlighting research priorities should increase the likelihood that future stocks assessments can be raised to category 1.

Uncertainty and Decision Tables in Groundfish Stock Assessments

The STAR panel review focuses on technical aspects of the stock assessment. It is recognized that no model or data set is perfect or issue free. Therefore, outputs of a broad range of model runs should be evaluated to better define the scope of the accepted model results. The panel should strive for a risk-neutral perspective in its deliberations, and discuss the degree to which the accepted base model describes and quantifies the major sources of uncertainty in the assessment. Confidence intervals for model outputs, as well as other measures of uncertainty that could affect management decisions, should be provided in completed stock assessments and the reports prepared by STAR panels. The STAR panel may also provide qualitative comments on the probability of results from various model runs, especially if the panel does not consider the probability distributions calculated by the STAT capture all major sources of uncertainty. However, as a scientific peer review body, the STAR panel should avoid matters of policy. Assessment results from model runs that are technically flawed or questionable on other grounds should be identified by the panel and excluded from the alternatives upon which management

advice is to be developed.

During the review meeting, the STAR panel and the STAT should strive to reach a consensus on a single base model. Once a base model is agreed upon, it is essential that uncertainty around the base model be captured and communicated to managers. One way to accomplish this objective is to bracket the base model with what is agreed to be the major axis of uncertainty (e.g., spawner-recruit steepness, the virgin level of recruitment, the natural mortality rate, survey catchability, etc.; and, less often, recent year-class strength, weights on conflicting CPUE series, etc.). Alternative models should show contrast in their management implications, which, in practical terms, means that that they should result in different estimates of current stock size and status, and the OFL. Markov chain Monte Carlo (MCMC) integration, where possible, is an acceptable method for reporting uncertainty about the base model. However, point estimates from the Maximum Likelihood Estimation (MLE) method should be used for status determinations even when MCMC outputs are available.

Once alternative models, which capture the overall degree of uncertainty in the assessment, are formulated, a 2-way decision table (alternative models versus management actions) should be developed to illustrate the repercussions of uncertainty to managers. The ratio of probabilities of alternative models should be 25:50:25, with the base model being twice as likely as the low and high stock size alternatives. Potential methods for assigning probabilities to alternative models include using the statistical variance of the model estimates of stock size, posterior Monte Carlo simulation, or expert judgment, but other approaches are acceptable as long as they are fully documented. An ideal bracketing of the base model is one for which the geometric mean of the high and low stock size alternative model final biomass levels approximates the base model biomass level. This is because the distribution of possible stock sizes is necessarily bounded at the low end, while the right tail can extend much further from the point estimate, and thus the probability density should look more log-normal than normal. If the bracketing models are far from this ideal (e.g., if the base model is closer to the upper bracketing model in absolute terms than to the lower bracketing model), the three levels should be reconsidered and either one or more of them adjusted (such that, in certain cases, if there is a great deal of confidence in the bracketing models, the base model could be reconsidered), or a justification for the severely non-lognormal structure of alternatives be given. Similarly, if more than one dimension is used to characterize uncertainty, resulting in, for example, a 3-by-3 decision table, careful consideration of how the complete table brackets the uncertainty should be undertaken.

Areas of Disagreement

STATs and STAR panels are required to make an honest attempt to resolve any areas of disagreement during the meeting. Occasionally, fundamental differences of opinions may remain between the STAR panel and STAT that cannot be resolved during the STAR panel meeting. In such cases, the STAR panel must document the areas of disagreement in its report. While identifying areas of disagreement, the following questions should be discussed at the meeting:

1) Are there any differences in opinion about the use or exclusion of data?
2) Are there any differences in opinion about the choice of the base model?
3) Are there any differences in opinion about the characterization of uncertainty?

The STAT may choose to submit a supplemental report supporting its view, but in that case, an

opportunity must be given to the STAR panel to prepare a rebuttal. These documents would then be appended to the STAR panel report as part of the record of the review meeting. In some cases STAR panel members may have fundamental disagreements among themselves that cannot be resolved during the review meeting. In such cases, STAR panel members may prepare a minority report that would also become part of the record of the review meeting. The SSC would then review all information pertaining to STAR panel and STAR panel/STAT disputes, and issue its recommendation.

STAR Panel Report

The STAR panel report should be developed and approved by the full panel shortly after the STAR panel meeting. The STAR panel chair appoints members of the panel to act as rapporteurs and draft the report (or specific sections thereof) according to the STAR panel chair guidance on format and level of detail. The STAR panel chair is responsible for preparing the final draft of the panel report, obtaining panel approval, providing a copy for STAT review and comment, and submitting it to the Council in a timely fashion (i.e., by briefing book deadline).

The STAR panel report should include:

- Summary of the STAR Panel meeting:
    - Names and affiliations of STAR panel members, STAT and STAR panel advisors;
    - Brief overview of the meeting (where the meeting took place, what species was assessed, what was the STAR panel recommendation, etc.);
    - Brief summary of the assessment model and the data used;
    - List of analyses requested by the STAR panel, the rationale for each request, and a brief summary of the STAT response to the request;
- Description of the base model and, for groundfish species, the alternative models used to bracket uncertainty;
- Comments on the technical merits and/or deficiencies in the assessment and recommendations for remedies;
- Areas of disagreement regarding STAR panel recommendations:
    - Between the STAR panel and STAT(s).
    - Among STAR panel members (including concerns raised by MT and AP representatives);
- Unresolved problems and major uncertainties, e.g., any special issues that complicate the assessment and/or interpretation of results;
- Management, data, or fishery issues raised by the MT or AP representatives during the STAR panel; and
- Prioritized recommendations for future research and data collection, including methodology and ecosystem considerations for the subsequent assessment.

For groundfish species, the STAR panel also makes a recommendation on whether the next assessment of the same species should be full or update, and explain reasons for its recommendation.

The STAR panel report should be made available for review by the STAT with adequate time prior to the briefing book deadline (i.e., a week in most circumstances, but at minimum a full 24 hours, in cases when the time between the STAR panel and the deadline is particularly

compressed) so that the STAT can comment on issues of fact or differences in interpretation. If differences of opinion come up during review of the STAR panel report, the STAR panel and STAT should attempt to resolve them. Otherwise, the areas of disagreement must be documented in the STAR panel report.

The chair will also solicit comment on the draft report from the MT and AP representatives. The purpose of this is limited to ensuring that the report is technically accurate and reflects the discussion that occurred at meeting, and should not be viewed as an opportunity to reopen debate on issues. The STAR panel chair is the final arbiter on wording changes suggested by STAT and the MT and AP representatives as the report is the panel's report of the meeting. Any detailed commentary by MT and AP representatives should be drafted separately, reviewed by the full advisory body, and included in the briefing book.

The STAR panel chair is responsible for providing the Council staff with the final version of the STAR panel report. The STAR panel chair is also expected to attend the SSC meeting and, if requested, MT meetings and the relevant portions of the Council meetings, where stock assessments and harvest projections are discussed, explain the reviews, and provide technical information and advice.

4.3. Stock Assessment Team Responsibilities

The STAT is responsible for conducting a complete and technically sound stock assessment that conforms to accepted standards of quality, and in accordance with these TOR. The STAT is responsible for preparing three versions of the stock assessment document:

1) a "draft" for discussion during the STAR panel meeting;
2) a "revised draft" for presentation to the SSC, the Council, and relevant MT and AP; and
3) a "final version" to be published in the Council's SAFE document or posted on the Council's web site.

The draft assessment document should follow the outline in Appendix B with an executive summary as in the template in Appendix C. In the draft document, the STAT should identify a candidate base model, fully-developed and well-documented, for the STAR panel to review. For CPS, the STAT should submit a draft assessment document to the STAR panel chair and Council staff two weeks prior to the STAR panel meeting. For groundfish, a draft assessment document should be submitted by the STAT to the STAR panel chair, Council staff, and the NMFS Stock Assessment Coordinator (SAC) three full weeks prior to the STAR panel meeting, to determine whether the document is sufficiently complete to undergo review. If the draft assessment is judged complete, the draft assessment and supporting materials would be distributed to the STAR panel and relevant MT and AP representatives two weeks prior to the STAR panel meeting. If the assessment document does not meet minimum criteria of the TOR, the review would be postponed to a subsequent assessment cycle or to the mop-up panel. The mop-up panel generally is not able to review more than two assessments. Therefore, the review options are limited for assessments not completed on time. The STAT is also responsible for bringing model files and data (in digital format) to the STAR panel meeting so that they can be analyzed on site.

In most cases, the STAT should produce a revised draft of the assessment document within three weeks of the end of the STAR panel meeting. The revised draft must include a point-by-point

response of the STAT to each of the STAR panel's recommendations. The revised draft must be finalized before the briefing book deadline for the Council meeting at which the assessment is scheduled for review. Post-STAR drafts must be reviewed and approved by the STAR panel chair prior to being submitted to Council staff. This review is limited to editorial issues, verifying that all required elements are included, and confirming that the document reflects the discussion and decisions made during the STAR panel.

The final version of the assessment document is produced after the assessment has been reviewed by the SSC. Other than changes recommended by the SSC, only editorial and other minor alterations should be made to the revised draft for the final version. Electronic versions of the final assessment document, model files, and key output files should be submitted by the STATs to Council staff (for CPS) and to Council staff and the SAC (for groundfish) for inclusion in a stock assessment archive. Any tabular data that are inserted into the final documents in an object format should also be submitted in alternative forms (e.g., spreadsheets), which allow selection of individual data elements.

A STAT for which no base model was endorsed by a STAR panel should, in most cases, provide the pre-STAR draft assessment (or corrected/ updated version thereof, as agreed upon with the STAR panel) to the Council by the briefing book deadline. If the STAR panel, nonetheless, recommends using outputs of certain sensitivity runs to bracket uncertainty in the assessment, the results of those runs should be appended to the draft assessment and provided to the Council and its advisory bodies.

STATs are strongly encouraged to develop assessments in a collaborative environment by forming working groups, holding pre-assessment workshops, and consulting with other stock assessment and ecosystem assessment scientists. STAT meetings with Integrated Ecosystem Assessment (IEA) teams are strongly encouraged to evaluate alternative models and analyses that incorporate ecosystem considerations and cross-FMP interactions that may affect stock dynamics. When new data sources or methods, which could be used in many assessments or are likely contentious, are planned for inclusion in the assessment, they should ideally be reviewed by a methodology panel. STATs should identify whether such new data sources or methods will be proposed for inclusion in assessments as early as feasible so that it is possible to hold a methodology review panel if one is needed. Irrespective of whether a methodology review panel takes place, the STAR panel should be provided with model runs with and without the new data sources so that it can evaluate the sensitivity of model outputs to these data sources.

STATs should coordinate early in the process with state representatives and other data stewards to ensure timely availability of data. STATs are also encouraged to organize independent meetings with industry and interested parties to discuss data and issues. The STAT should initiate contact with the AP representative early in the assessment process, keep the AP informed of the data being used and respond to any concerns that are raised. The STAT should also contact the MT representative for information about changes in fishing regulations that may influence model structure and the way data are used in the assessment. The STAT should be well represented at the STAR panel meeting to ensure timely completion of the STAR panel requests. Barring exceptional circumstances, STAT members who are not attending the STAR panel meeting, should be available remotely to assist with responses when needed. Each STAT conducting a full assessment should appoint a representative to attend the Council meeting where the assessment is scheduled to be reviewed and give presentations of the assessment to the SSC and other Council advisory bodies. In addition, the STAT should be prepared to respond to MT

requests for model projections for the MT's to develop ACL alternatives.

For stocks that are estimated to be below overfished thresholds (or those previously declared overfished and not yet rebuilt), the STAT must complete a rebuilding analysis according to the SSC's TOR for Rebuilding Analyses and prepare a document that summarizes the analysis results. For groundfish, it is recommended that this rebuilding analysis be conducted using the software developed by Dr. André Punt (University of Washington). Groundfish rebuilding analyses are reviewed at the mop-up panel.

4.4. National Marine Fisheries Service Responsibilities

The NMFS Northwest Fisheries Science Center (NWFSC) and the Southwest Fisheries Science Center (SWFSC) assist in organizing stock assessment reviews of groundfish and CPS, respectively. For groundfish, the NMFS provides a stock assessment coordinator (SAC) to facilitate and assist in overseeing the STAR process.

The NMFS (through the SAC for groundfish and a designated SWFSC staff member for CPS) works with the STATs and other STAR process participants to develop a proposed list of stocks to be assessed for the consideration by the Council. NMFS also develops a draft STAR panel schedule for the Council review. NMFS identifies STAR panel members based on criteria for reviewer qualifications, and, for groundfish, makes every effort to designate one independent reviewer who can attend all STAR panel meetings to provide consistency among reviews. The costs associated with these reviewers are borne by the NMFS. The NMFS also helps organize STAR panel meetings and develops meeting schedules.

The NMFS (along with the Council staff and the STAR panel chair) coordinates with the STATs to facilitate delivery of required materials by scheduled deadlines and in compliance with the TOR. The NMFS also assists Council staff and the STAR panel chair in a pre-review of assessment documents, to assure they are received on time and complete, and in a post-STAR review of the revised assessment document for consistency with the TOR.

4.5. Council Staff Responsibilities

The role of Council staff is to coordinate, monitor, and document the STAR process to ensure compliance with these TOR.

Council staff coordinates with the STAR panel chair and the NMFS (the SAC in the case of groundfish; a designated SWFSC staff member for CPS) in a pre-review of assessment documents, to assure they are complete and received on time. If an assessment document is not in compliance with the TOR, Council staff returns the assessment document to the STAT with a list of deficiencies, a notice that the deadline has expired, or both. Council staff also coordinates with the STAR panel chair, STAT, and the NMFS in a post-STAR review of the revised assessment document for consistency with the TOR. When inconsistencies are identified, the STAT is requested to make appropriate revisions in time for briefing book deadlines.

Council staff attends and monitors all STAR panel meetings to ensure continuity and adherence to the TOR and the independent review requirements of Council Operating Procedure 4. If inconsistencies with the TOR occur during STAR panel meetings, Council staff coordinates with the STAR panel chair to develop solutions to correct the inconsistencies. Council staff also attends and monitors the SSC review of stock assessments to ensure compliance with the TOR.

Council staff is responsible for timely issuance of meeting notices and distribution of stock assessments and other appropriate documents to relevant groups. Council staff also collects and maintains electronic copies of assessment documents, STAR panel, SSC, MT and AP reports, as well as letters from the public and any other relevant documents. These documents are typically published in the Council's SAFE document or posted on the Council's web site.

4.6. Management Team Responsibilities

The MT is responsible for identifying and evaluating potential management actions based on the best available scientific information. Particularly, the MT uses stock assessment results and other information to make ACL and ACT recommendations to the Council.

A MT representative, usually appointed by the MT chair, is responsible to attend the STAR panel meeting and serve as advisor to the STAT and STAR panel on changes in fishing regulations that may influence data used in the assessment and the nature of the fishery in the future. The MT representative does not serve as a member of the STAR panel.

Successful separation of science (e.g., STAT and STAR panels) from management (e.g., MT) depends on assessment reviews being completed by the time the MT meets to discuss preliminary ACL and ACT recommendations. The MT should not seek revision or additional review of the stock assessments after they have been endorsed by the STAR panel. The MT chair should communicate any unresolved issues to the SSC for consideration. The MT, however, can request additional model projections from the STAT, to fully evaluate potential management actions.

4.7. Advisory Panel Responsibilities

An AP representative, usually appointed by the AP chair, is responsible to attend the STAR panel meeting and serve as advisor to the STAT and STAR panel. The AP representative should review the data sources being used in the assessment prior to development of the stock assessment model and insure that industry concerns regarding the adequacy of data used by the STAT are communicated and addressed early in the assessment process. The AP representative does not serve as a member of the STAR panel, but, as a legitimate meeting participant, may provide appropriate information and advice to the STAT and STAR panel during the meeting.

The AP representative (along with STAT and STAR panel chair, if requested) is expected to attend the MT meeting at which preliminary ACL and ACT recommendations are developed. The AP representative is also expected to attend subsequent MT and Council meetings where the relevant harvest recommendations are discussed.

4.8. Scientific and Statistical Committee Responsibilities

The Council's SSC plays multiple roles within the STAR process and provides the Council and its advisory bodies with technical advice related to the stock assessments and the STAR process. The SSC assigns a member of its relevant subcommittee (Groundfish or CPS) to act as the STAR panel chair. The STAR panel chair attends the assigned STAR panel meeting and fulfills responsibilities described in the section "STAR Panel Responsibilities".

The STAR panel chair presents the STAR panel report at the SSC and Council meetings at which stock assessments are reviewed. If requested, the STAR panel chair also attends the MT

meeting, at which preliminary ACL and ACT recommendations are developed, to discuss the STAR panel report and assist with interpreting the assessment results.

The full SSC conducts a final review of the stock assessment. This review should not repeat the detailed technical review conducted by the STAR panel. The SSC also reviews the STAR panel recommendations and serves as arbitrator to resolve disagreements between the STAT and the STAR panel if such disagreements occurred during the review meeting. The SSC is responsible for reviewing and endorsing any additional analytical work requested from the STAT by the MT after the stock assessment has been reviewed by the STAR panel. To insure independence in the SSC review, the SSC members who served on the STAT or STAR panel for the stock assessment being reviewed are required to recuse themselves; their involvement in the review being limited to providing factual information and answering questions.

The SSC is responsible for making OFL recommendations to the Council. The SSC is also responsible for assigning groundfish species managed by the Council to a specific category (or tier) based on definitions of species categories in Appendix E. It is also the SSC's responsibility to determine when it is appropriate to make changes to proxies or the use of estimated values of F_{MSY} and B_{MSY}.

5. DATA-MODERATE ASSESSMENTS

Data-moderate assessments are a refinement over the adopted data-poor methods (i.e., Depletion-Corrected Average Catch (DCAC) and Depletion-Based Stock Reduction Analysis (DB-SRA)) that use catch data to inform harvest specifications for category 3 stocks. Data-moderate assessments are used for category 2 stocks; the defining distinction between category 2 and category 3 stocks is that abundance trend information is incorporated in a category 2 assessment (Appendix E).

Two data-moderate assessment methods have been endorsed for the 2013-14 assessment cycle: 1) extended DB-SRA (XDB-SRA) and 2) extended Simple Stock Synthesis (exSSS). In both cases, abundance trend information (e.g., survey or fishery CPUE indices) are included in the assessment. Data-moderate stock assessment reports should follow the template in Appendix D.

ExSSS assumes that recruitment is related deterministically to the stock-recruitment relationship and exSSS allows index data to be used for maximum likelihood status and parameter estimation, rather than randomly drawing depletion values. The Markov chain Monte Carlo (MCMC) or Sample Importance Resample (SIR) algorithm (perhaps implemented using Adaptive Importance Sampling) can be used to quantify uncertainty for exSSS-based assessments. XDB-SRA can be implemented within a Bayesian framework, with the priors for the parameters updated using index data. The additional parameters are the catchability coefficient (q), and the extent of observation variance additional to that inferred from sampling error (a). The priors for these parameters are respectively a weakly informative log-normal distribution and a uniform distribution.

The uncertainty associated with OFL estimates should be computed using the approach applied by Ralston et al. (2011), to provide guidance regarding the extent of error in OFL estimates, which is already present for category 1 assessments. Comparison of OFL estimates from data-moderate and data-poor assessments with those from full assessments may allow informing the additional uncertainty related to the use of these methods.

While data-moderate assessments are less complicated than full assessments, and can potentially be reviewed more expeditiously than full assessments, a full STAR panel is scheduled in 2013 to review data-moderate assessments for the first time (see Appendix A). Comparison of alternative methods (XDB-SRA and exSSS) is encouraged, but it is acceptable to present an assessment using a single modeling approach. The STAR panel can make requests of the STATs for additional runs, but should not impose an alternative method if STATs consider this is not appropriate for the stock concerned. The panel should recommend adoption or rejection of the "best model." The STAR panel is also charged with identifying a preferred approach, in the event that both models are presented.

6. UPDATE ASSESSMENTS

For CPS, update assessments typically occur during two years out of every three. For groundfish, the initial recommendation whether the next assessment should be full or update is made by the STAR panel during the STAR panel meeting. The final recommendation is made by the SSC.

An update assessment is generally restricted to the addition of new data that have become available since the last full assessment. It must carry forward the fundamental structure of the last full assessment reviewed and endorsed by a STAR panel, the SSC, and the Council. Assessment structure here refers to the population dynamics model, data sources used as inputs to the model, the statistical platform used to fit model to the data, and how the management quantities used to set harvest specifications are calculated. Particularly, when an update assessment is developed, no substantial changes should be made to:

1) the particular sources of data used;
2) the software used in programming the assessment;
3) the assumptions and structure of the population dynamics model underlying the stock assessment;
4) the statistical framework for fitting the model to the data and determining goodness of fit; and
5) the analytical treatment of model outputs in determining management reference points.

Major changes to the assessment should be postponed until the next full assessment. Minor alternations to the input data and the assessment can be considered as long as the update assessment clearly documents and justifies the need for such changes. A step-by-step transition (via sensitivity analysis) from the last full assessment to an update assessment under review should be provided. Minor alterations can be considered under only two circumstances: first, when the addition of new data reveals an unanticipated sensitivity of model, and second, when there are clear and straightforward improvements in the input data and how it is processed and analyzed for use in the model. Examples of minor alterations include: 1) changes in how compositional data are pooled across sampling strata; 2) the weighting of the various data components (including the use of methods for tuning the variances of the data components); 3) changes in the time periods for the selectivity blocks; 4) correcting data entry errors; and 5) bug fixes in software programming. This list is not meant to be exhaustive, and other alterations can be considered if warranted. Ideally, improved data or methods used to process and analyze data would be reviewed by the SSC prior to being used in assessments.

Review of Update Assessments

Update assessments are reviewed by members of the relevant SSC subcommittee (Groundfish or CPS), during a single meeting. Review typically requires one or two days with an option of early dismissal of a STAT. The STAT is responsible for producing the update assessment document and submitting it to Council staff in a timely manner, before the relevant SSC subcommittee reviews the assessment. The document should follow the outline in Appendix B. The STAT, however, can reference the last full assessment (or other relevant documentation) for description of methods, data sources, stock structure, etc., given that they have not been changed. Any new information to the assessment must be presented in sufficient detail for the subcommittee to determine whether the update meets the Council's requirement to use the best available scientific information.

The document must include a retrospective analysis illustrating the model performance with and without the most recent data (new to the update assessment) and discuss whether the new data and update assessment results are sufficiently consistent with those from the last full assessment. The assessment document should include a detailed step-by-step transition from the last full assessment to the update under review. The updated decision table, if there is one, should be of the same format as in the last full assessment; it should highlight differences among alternative models defined using the same axes of uncertainty as those in the last full assessment.

In addition to the update assessment document, Council staff will also provide the subcommittee with a copy of the last full stock assessment reviewed via the STAR process and the associated STAR panel report. The chair of the subcommittee designates a lead reviewer from the subcommittee members for each update assessment to document the meeting discussion, produce a review report, and ensure that each review is conducted according to the TOR. MT and the AP representatives also participate in the review.

The review of update assessments is not expected to require additional model runs or extensive analytical requests during the meeting, although changes in assessment outputs may necessitate some model exploration. The review focuses on two main questions:

1) Does the assessment meet the criteria of a stock assessment update?
2) Can the results of the update assessment form the basis of Council decision making?

If the answer to either of these questions is negative, a full stock assessment for the species would typically be recommended for the next assessment cycle (for groundfish) or the next year (for CPS). For groundfish, if the subcommittee agrees that the update assessment results require additional, but limited exploration before being endorsed for management use, further review at the mop-up meeting, at the end of the assessment cycle, could be recommended. In cases like this, the subcommittee needs to develop a list of requests for the STAT to address before the mop-up meeting.

Shortly after the meeting, the subcommittee issues a review report that includes: 1) comments on the technical merits and/or deficiencies of the update assessment; 2) explanation of areas of disagreement between the subcommittee and STAT (if any); and 3) recommendations on the adequacy of the update assessment for use in management. The report may also include subcommittee recommendations for modifications that should be made when the next full assessment is conducted.

The report is reviewed by the full SSC at the next Council meeting. If the subcommittee review concludes that it is not possible to use the update assessment, the SSC is responsible for evaluating all model runs examined during the review meeting and providing recommendations on an appropriate fishing level to the Council.

7. CATCH REPORTS

In certain cases (e.g., cowcod in 2011) only limited new data are available to inform the assessment. In such cases, it is appropriate for the STAT to provide a catch report, which documents recent removals and compares them to the ACLs established for the stock. For a catch report, the STAT does not need to conduct model runs since, if the estimated removals of a species are near the value projected by the previous assessment/rebuilding analysis, no new insight would be obtained by rerunning the assessment model.

Catch reports are reviewed by the relevant SSC subcommittee (Groundfish or CPS) during a single meeting (that during which update assessments are reviewed). The STAT is responsible for producing the catch report and submitting it to Council staff in a timely manner, before the relevant subcommittee reviews it. The report should be brief, but provide enough details on how total removals were estimated. It should provide only essential information about the stock and refer to the last assessment (or other relevant documentation) for full description of methods, data sources, model structure, etc. used to estimate the status of the stock and generate projections.

In common with a review of an assessment update, Council staff will provide the subcommittee with the catch report, along with a copy of the last full stock assessment reviewed via the STAR process, and the associated STAR panel report. The chair of the subcommittee will designate a lead reviewer from the subcommittee members for each catch report to document the meeting discussion, produce a review report, and ensure that each review is conducted according to the TOR. The report is reviewed by the full SSC at the next Council meeting. The MT and AP representatives also participate in the review.

APPENDIX A: 2013 GROUNDFISH AND CPS STOCK ASSESSMENT REVIEW CALENDAR

Note: highlighted items are tentative; CPS STAR panel schedule to be added after this is decided in Nov.

Review Meeting	Document Distribution Dates	STAR Panel Dates	Location	Species
Data-Moderate Panel	April 15	April 29-May 3	Santa Cruz, CA or Seattle, WA	Brown rockfish, China rockfish, copper rockfish, English sole, rex sole, sharpchin rockfish, stripetail rockfish, vermilion rockfish, and yellowtail rockfish
GF Panel 1	April 29	May13-17	Seattle, WA	Petrale sole and darkblotched rockfish
GF Update and catch reports	May 30	June 18	Garden Grove, CA	Bocaccio rockfish update; canary rockfish, Pacific ocean perch, and yelloweye rockfish catch reports
GF Panel 2	June 24	July 8-12	Seattle, WA	Rougheye rockfish and aurora rockfish
GF Panel 3	July 8	July 22-25	Seattle, WA	Shortspine thornyheads and longspine thornyheads
GF Panel 4	July 22	August 5-9	Santa Cruz, CA	Cowcod and Pacific sanddabs
GF Mop-Up Panel	September 9	September 23-27	Seattle, WA	Rebuilding analyses and continuing issues

APPENDIX B: OUTLINE FOR STOCK ASSESSMENT DOCUMENTS

This is a general outline of elements that should be included in stock assessment reports for groundfish and CPS managed by the Pacific Fishery Management Council. Not every item listed in the outline is relevant (or available) for every assessment. Therefore, this outline should be considered a flexible guideline on how to organize and communicate stock assessment results. Items with asterisks (*****) are optional for draft assessment documents prepared for STAR panel meetings but should be included in the final document.

A. Title page and list of preparers – the names and affiliations of the stock assessment team (STAT) either alphabetically or as first and secondary authors.

B. Executive Summary (should follow the template in Appendix B).

C. Introduction
   1. Scientific name, distribution, the basis for the choice of stock structure, including regional differences in life history or other biological characteristics that should form the basis of management units.
   2. A map showing the scope of the assessment and depicting boundaries for fisheries or data collection strata.
   3. Important features of life history that affect management (e.g., migration, sexual dimorphism, bathymetric demography).
   4. Ecosystem considerations (e.g., ecosystem role and trophic relationships of the species, habitat requirements/preferences, relevant data on ecosystem processes that may affect stock or parameters used in the stock assessment, and/or cross-FMP interactions with other fisheries). This section should note if environmental correlations or food web interactions were incorporated into the assessment model. The length and depth of this section would depend on availability of data and reports from the IEA, expertise of the STAT, and whether ecosystem factors are informational to contribute quantitative information to the assessment.
   5. Important features of current fishery and relevant history of fishery.
   6. Summary of management history (e.g., changes in mesh sizes, trip limits, or other management actions that may have significantly altered selection, catch rates, or discards).
   7. Management performance, including a table or tables comparing Overfishing Limit (OFL), Annual Catch Limit (ACL), Harvest Guideline (HG) [CPS only], landings, and catch (i.e., landings plus discard) for each area and year
   8. Description of fisheries for this species off Canada, Alaska and/or Mexico, including references to any recent assessments of those stocks.

D. Assessment
   1. Data
      a. Landings by year and fishery (PacFIN is the standard source for all commercial landings), historical catch estimates, discards (generally specified as a percentage of total catch in weight and in units of mt), catch-at-age, weight-at-age, abundance indices (typically survey and CPUE data), data used to estimate biological parameters (e.g., growth rates, maturity schedules, and natural mortality) with coefficients of variation (CVs) or variances if available. Include complete tables and figures and date of extraction.

b. Sample size information for length and age composition data by area, year, gear, market category, etc., including both the number of trips and fish sampled.
c. All data sources that include the species being assessed, which are used in the assessment, and provide the rationale for data sources that are excluded.
d. Clear description of environmental or ecosystem data if included in the assessment.

2. History of modeling approaches used for this stock – changes between current and previous assessment models
   a. Response to STAR panel recommendations from the most recent previous assessment.
   b. Report of consultations with AP and MT representatives regarding the use of various data sources in the stock assessment.
   c. If environmental or ecosystem data are incorporated, report of consultations with technical teams that evaluated ecosystem data or methodologies used in the assessment.
3. Model description
   a. Complete description of any new modeling approaches.
   b. Definitions of fleets and areas.
   c. Assessment program with last revision date (i.e., date executable program file was compiled).
   d. List and description of all likelihood components in the model.
   e. Constraints on parameters, selectivity assumptions, natural mortality, treatment of age reading bias and/or imprecision, and other fixed parameters.
   f. Description of stock-recruitment constraints or components.
   g. Description of how the first year that is included in the model was selected and how the population state at the time is defined (e.g., B_0, stable age structure, etc.).
   h. Critical assumptions and consequences of assumption failures.
4. Model selection and evaluation
   a. Evidence of search for balance between model realism and parsimony.
   b. Comparison of key model assumptions, include comparisons based on nested models (e.g., asymptotic vs. domed selectivities, constant vs. time-varying selectivities).
   c. Summary of alternate model configurations that were tried but rejected.
   d. Likelihood profile for the base-run (or proposed base-run model for a draft assessment undergoing review) configuration over one or more key parameters (e.g., M, h, Q) to show consistency among input data sources.
   e. Residual analysis for the base-run configuration (or proposed base-run model in a draft assessment undergoing review) e.g., residual plots, time series plots of observed and predicted values, or other approaches. Note that model diagnostics *are* required in draft assessments undergoing review.
   f. Convergence status and convergence criteria for the base-run model (or proposed base-run).
   g. Randomization run results or other evidence of search for global best estimates.
   h. Evaluation of model parameters. Do they make sense? Are they credible?
   i. Are model results consistent with assessments of the same species in Canada and Alaska? Are parameter estimates (e.g., survey catchability) consistent with estimates for related stocks?
5. Point-by-point response to the STAR panel recommendations**.* Not required in draft assessment undergoing review**.

6. Base-model(s) results
    a. Table listing all explicit parameters in the stock assessment model used for base model, their purpose (e.g., recruitment parameter, selectivity parameter) and whether or not the parameter was actually estimated in the stock assessment model.
    b. Population numbers at age × year × sex (if sex-specific *M*, growth, or selectivity) (May be provided as a text or spreadsheet file).*** Not required in draft assessment undergoing review**.
    c. Time-series of total, 1+ (if age 1s are in the model), summary, and spawning biomass (and/or spawning output), depletion relative to B_0, recruitment and fishing mortality or exploitation rate estimates (table and figures).
    d. Selectivity estimates (if not included elsewhere).
    e. Stock-recruitment relationship.
    f. OFL, ABC and ACL (and/or ABC and OY or HG) for recent years.
    g. Clear description of units for all outputs.
    h. Clear description of how discard is included in yield estimates.
    i. Clear description of environmental or ecosystem data if included in the assessment.
7. Uncertainty and sensitivity analyses. The best approach for describing uncertainty and the range of probable biomass estimates in groundfish assessments may depend on the situation. Important factors to consider include:
    a. Parameter uncertainty (variance estimation conditioned on a given model, estimation framework, data set choice, and weighting scheme), including likelihood profiles for important assessment parameters (e.g., natural mortality). This also includes expressing uncertainty in derived outputs of the model and estimating CVs using appropriate methods (e.g., bootstrap, asymptotic methods, Bayesian approaches, such as MCMC). Include the CV of spawning biomass in the first year for which an OFL has not been specified (typically end year +1 or +2).
    b. Sensitivity to data set choice and weighting schemes (e.g., emphasis factors), which may also include a consideration of recent patterns in recruitment.
    c. Sensitivity to assumptions about model structure, i.e., model specification uncertainty.
    d. Retrospective analysis, where the model is fitted to a series of shortened input data sets, with the most recent years of input data being dropped.
    e. Historical analysis (plot of actual estimates from current and previous assessments).
    f. Subjective appraisal of the magnitude and sources of uncertainty.
    g. If a range of model runs is used to characterize uncertainty it is important to provide some qualitative or quantitative information about relative probability of each. If no statements about relative probability can be made, then it is important to state that all scenarios (or all scenarios between the bounds depicted by the runs) are equally likely
    h. If possible, ranges depicting uncertainty should include at least three runs: (a) one judged most probable; (b) at least one that depicts the range of uncertainty in the direction of lower current biomass levels; and (c) one that depicts the range of uncertainty in the direction of higher current biomass levels. The entire range of uncertainty should be carried through stock projections and decision table analyses.

E. Harvest control rules (CPS only)

The OFL, ABC and HG harvest control rules for actively managed species apply to the U.S. (California, Oregon, and Washington) harvest recommended for the next fishing year and are defined as follows:

- OFL = BIOMASS * F_{MSY} * U.S. DISTRIBUTION
- ABC = BIOMASS * BUFFER * F_{MSY} * U.S. DISTRIBUTION
- ACL LESS THAN OR EQUAL TO ABC
- HG = (BIOMASS-CUTOFF)* FRACTION * U.S. DISTRIBUTION
- ACT EQUAL TO HG OR ACL, WHICHEVER VALUE IS LESS

where FMSY is the fishing mortality rate that maximizes catch biomass in the long-term.

Implementation for Pacific Sardine

1. BIOMASS is the estimated stock biomass (ages 1+) at the start of the next year from the current assessment,
2. CUTOFF (150,000 mt) is the lowest level of estimated biomass at which harvest is allowed,
3. FRACTION is an environment-based percentage of biomass above the CUTOFF that can be harvested by the fisheries. Given that the productivity of the sardine stock has been shown to increase during relatively warm-water ocean conditions, the following formula has been used to determine an appropriate (sustainable) FRACTION value:

   FRACTION = $0.248649805(T_2) - 8.190043975(T) + 67.4558326$,

   where T is the running average sea-surface temperature at Scripps Pier, La Jolla, California during the three preceding years. Under the harvest control rule, FRACTION is constrained and ranges between 5% and 15% depending on the value of T.
4. U.S. DISTRIBUTION is the percentage of BIOMASS in U.S. waters (87%).

Implementation for Pacific Mackerel

1. BIOMASS is the estimated stock biomass (ages 1+) at the start of the next year from the current assessment,
2. CUTOFF (18,200 mt) is the lowest level of estimated biomass at which harvest is allowed,
3. FRACTION (30%) is the fraction of biomass above CUTOFF that can be taken by fisheries, and
4. U.S. DISTRIBUTION (70%) is the average fraction of total BIOMASS in U.S. waters.

The CUTOFF and FRACTION values applied in the Council's harvest policy for mackerel are based on simulations published by MacCall et al. in 1985.

F. Reference points (groundfish only)

1. Unfished spawning stock biomass, summary age biomass, and recruitment, along with unfished spawning stock output.
2. Reference points based on $B_{40\%}$ for rockfish and roundfish and on $B_{25\%}$ for flatfish (spawning biomass and/or output, SPR, exploitation rate, equilibrium yield).
3. Reference points based on default SPR proxy (spawning biomass and/or output, SPR, exploitation rate, equilibrium yield).

4. Reference points based on MSY (if estimated) (spawning biomass and/or output, SPR, exploitation rate, equilibrium yield).
5. Equilibrium yield curve showing various B_{MSY} proxies.

G. Harvest projections and decision tables (groundfish only) *** Not required in draft assessment undergoing review**.
    1. Harvest projections and decision tables (i.e., a matrix of alternative models (states of nature) versus management actions) should cover the plausible range of uncertainty about current stock biomass and a set of candidate fishing mortality targets used for the stock. See section "*Uncertainty and Decision Tables in Groundfish Stock Assessment"* (this document, pp.12-13) on how to define alternative states of nature. Management decisions in most cases represent the sequence of catches including estimate of OFL based on F_{MSY} (or its proxy) and those obtained by applying the Council 40-10 harvest policy to each state of nature; however other alternatives may be suggested by the GMT as being more relevant to Council decision making. OFL calculations should be based on the assumption that future catches equal ABCs and not OFLs.
    2. Information presented should include biomass, stock depletion, and yield projections of OFL, ABC and ACL for ten years into the future, beginning with the first year for which management action could be based upon the assessment.

H. Regional management considerations.
    1. For stocks where current practice is to allocate harvests by management area, a recommended method of allocating harvests based on the distribution of biomass should be provided. The MT advisor should be consulted on the appropriate management areas for each stock.
    2. Discuss whether a regional management approach makes sense for the species from a biological perspective.
    3. If there are insufficient data to analyze a regional management approach, what are the research and data needs to answer this question?

I. Research needs (prioritized).

J. Acknowledgments: include STAR panel members and affiliations as well as names and affiliations of persons who contributed data, advice or information but were not part of the assessment team. *** Not required in draft assessment undergoing review.**

K. Literature cited.

L. An appendix with the complete parameter and data in the native code of the stock assessment program. (For a draft assessment undergoing review, these listings can be provided as text files or in spreadsheet format.)

APPENDIX C: TEMPLATE FOR AN EXECUTIVE SUMMARY

Items with asterisks (*****) are optional for draft assessment documents prepared for STAR panel meetings but should be included in the final document.

Stock	Species/area, including an evaluation of any potential biological basis for regional management.
Catches	Trends and current levels - include table for last ten years and graph with long term data.
Data and assessment	Date of last assessment, type of assessment model, data available, new information, and information lacking.
Stock biomass	Trends and current levels relative to virgin or historic levels, description of uncertainty-include table for last 10 years and graph with long term estimates.
Recruitment	Trends and current levels relative to virgin or historic levels-include table for last 10 years and graph with long term estimates
Exploitation status	Exploitation rates (i.e., total catch divided by exploitable biomass, or the annual SPR harvest rate) - include a table with the last 10 years of data and a graph showing the trend in fishing mortality relative to the target (y-axis) plotted against the trend in biomass relative to the target (x-axis).
Ecosystem considerations	A summary of reviewed environmental and ecosystem factors that appear to be correlated with stock dynamics, e.g., variability in the physical environment that directly or indirectly affects the vital rates (growth, survival, productivity/recruitment) of fish stocks, and/or trophic interactions that affect predators and prey. Note what, if any, ecosystem factors are used in the assessment and how.
Reference points (groundfish)/ Harvest control rules (CPS)	Groundfish: Management targets and definition of overfishing, including the harvest rate that brings the stock to equilibrium at $B_{40\%}$ (the B_{MSY} proxy) and the equilibrium stock size that results from fishing at the default harvest rate (the F_{MSY} proxy). Include a summary table that compares estimated reference points for SSB, SPR, Exploitation Rate and Yield based on SSB proxy for MSY, SPR proxy for MSY, and estimated MSY values. CPS: Results of applying the control rule to compute the harvest guideline, including specification of each of the quantities on which the harvest guideline is based (BIOMASS, CUTOFF, FRACTION, U.S. DISTRIBUTION)
Management performance	Catches in comparison to OFL, ABC, [HG], and OY/ACL values for the most recent 10 years (when available), overfishing levels, actual catch and discard. Include OFL (encountered), OFL (retained) and OFL (dead) if different due to discard and discard mortality.
Unresolved problems and major uncertainties	Any special issues that complicate scientific assessment, questions about the best model scenario, etc.
Decision table (groundfish only)*	Projected yields (OFL, ABC and ACL), spawning biomass, and stock depletion levels for each year. OFL calculations should be based on the assumption that future catches equal ABCs and not OFLs.
Research and data needs	Identify information gaps that seriously impede the stock assessment.
Rebuilding Projections*	Reference to the principal results from rebuilding analysis if the stock is overfished. For groundfish, see Rebuilding Analysis terms of reference for detailed information on rebuilding analysis requirements.

APPENDIX D: TEMPLATE FOR A DATA-MODERATE ASSESSMENT

1. Title page and list of preparers – the names and affiliations of the stock assessment team (STAT).
2. Introduction: Scientific name, distribution, basic biology (growth, longevity, ecology), the basis for the choice of stock unit(s)(no more than 1-2 paragraphs).
3. Development of indices (used and rejected). Novel approaches should be fully documented.
4. Survey of other data available for assessment: sample sizes by year and source of lengths, and ages (read and unread)--in case there is interest in conducting a full assessment in the future.
5. Selection of method (exSSS or XDB-SRA; authors "encouraged" to do both).
6. Assessment model
    a. Specification of priors / production function (defaults OK)
    b. Initial runs using catch-only methods (DB-SRA or SSS (or both))
    c. Diagnostics
        i. Evaluation of convergence
        ii. Residual plots
        iii. Posterior predictive intervals (if Bayesian)
        iv. Time-trajectories of biomass, depletion, etc.
        v. Sensitivity analyses using alternative catch streams, alternative priors for depletion, etc.
7. Estimates of OFL (median of the distribution), and
8. Qualitative or quantitative estimates of stock status.

APPENDIX E: DEFINITIONS OF SPECIES CATEGORIES FOR GROUNDFISH ASSESSMENTS

Category 3: Data poor. OFL is derived from historical catch.	**a**	No reliable catch history. No basis for establishing OFL.
	b	Reliable catches estimates only for recent years. OFL is average catch during a period when stock is considered to be stable and close to BMSY equilibrium on the basis of expert judgment.
	c	Reliable aggregate catches during period of fishery development and approximate values for natural mortality. Default analytical approach DCAC.
	d	Reliable annual historical catches and approximate values for natural mortality and age at 50% maturity. Default analytical approach DB-SRA.
Category 2: Data moderate. OFL is derived from model output (or natural mortality).	**a**	M*survey biomass assessment (as in Rogers 1996).
	b	Historical catches, fishery-dependent trend information only. An aggregate population model is fit to the available information.
	c	Historical catches, survey trend information, or at least one absolute abundance estimate. An aggregate population model is fit to the available information.
	d	Full age-structured assessment, but results are substantially more uncertain than assessments used in the calculation of the P* buffer. The SSC will provide a rationale for each stock placed in this category. Reasons could include that assessment results are very sensitive to model and data assumptions, or that the assessment has not been updated for many years.
Category 1: Data rich. OFL is based on F_{MSY} or F_{MSY} proxy from model output. ABC based on P* buffer.	**a**	Reliable compositional (age and/or size) data sufficient to resolve year-class strength and growth characteristics. Only fishery-dependent trend information available. Age/size structured assessment model.
	b	As in 1a, but trend information also available from surveys. Age/size structured assessment model.
	c	Age/size structured assessment model with reliable estimation of the stock-recruit relationship.

Pacific Whiting Conservation Cooperative

Amendment 20 Catcher/Processor Cooperative

Preliminary Annual Report 2012

Submitted to the

Pacific Fishery Management Council

October 2012

Pacific Whiting Conservation Cooperative Preliminary Annual Report for 2012

Introduction

In 1997, the owners of the catcher/processor (C/P) vessels operating in the Pacific whiting fishery formed a fishing cooperative to coordinate harvesting efforts. This research and harvesting cooperative is the Pacific Whiting Conservation Cooperative (PWCC). A private contract dictates the activities of the PWCC and a harvest agreement facilitates efficient management and accurate accounting of harvest by the PWCC and PWCC member companies.

In 2011, rationalization for the groundfish trawl fishery was implemented via Amendments 20 and 21 to the Pacific Coast Groundfish Fishery Management Plan. National Marine Fisheries Service (NMFS) summarized the significant effects of Amendment 20 on the shoreside groundfish trawl and mothership whiting fisheries, as well as the effect on the C/P fishery in the September 2, 2011 proposed rule for the Program Improvement and Enhancement (PIE) Rule:

> "In January 2011, NMFS and the Pacific Fishery Management Council set up a new management program called the trawl rationalization program. This program significantly changes how two of these groups work. Shore trawlers now fish under their own set of individual species quotas by vessel…. [T]he mothership fishery works as a coop where catcher-vessels and motherships work together collectively. The catcher-processor fleet continues as a single coop."

Currently, trawl rationalization regulations require a preliminary report be submitted to the Pacific Fishery Management Council in November of the current year and a final report to NMFS the following March.

Purpose of Report

This report is intended to disclose all information required or identified in Federal Regulations at 50 CFR 660.113(d)(3). The table in this report is largely self-explanatory. The catch data in this report was provided by Sea State, Inc. and was obtained from the NMFS – At-Sea Hake Observer Program. Prior to trawl rationalization, NMFS provided a similar report, but with catch information at the sector level (rather than vessel-by-vessel). Catch information at the C/P-vessel level was and is known by NMFS. Therefore, production of this more detailed report by the PWCC should reduce NMFS work load and cost burden.

Reporting Requirements

Federal regulations (50CFR660.113(d)(3)) detail the report requirements:

"(3) Annual coop report - (i) The designated coop manager for the C/P coop must submit an annual report to the Council for its November meeting each year. The annual coop report will contain information about the current year's fishery, including:

> "(A) The C/P sector's annual allocation of Pacific whiting;

"(B) The C/P coop's actual retained and discarded catch of Pacific whiting, salmon, Pacific halibut, rockfish, groundfish, and other species on a vessel-by-vessel basis;

"(C) A description of the method used by the C/P coop to monitor performance of cooperative vessels that participated in the fishery;

"(D) A description of any actions taken by the C/P coop in response to any vessels that exceed their allowed catch and bycatch; and

"(E) Plans for the next year's C/P coop fishery, including the companies participating in the cooperative, the harvest agreement, and catch monitoring and reporting requirements."

A. C/P Sector's Annual Allocation of Pacific Whiting

In May 2012, NMFS issued the C/P cooperative permit, which was effective on the May 15, 2012. As specified at 50 CFR 660.160(c), the C/P cooperative permit authorized the PWCC to harvest 100 percent of the Pacific whiting and non-whiting groundfish allocated to the C/P sector. For 2012, the C/P sector amounts of Pacific whiting and non-whiting groundfish species with allocations are as follows (per NMFS, :Initial Administrative Determination Notice of Right to Appeal, May 14, 2012):

2012 C/P sector allocations	mt	pounds
Pacific whiting	46,064	101,553,736.5
Pacific ocean perch	10.20	22,487.1
Widow rockfish	86.7	191,140.8
Darkblotched rockfish	8.5	18,739.3
Canary rockfish	5.0	11,023.1

On October 4, 2012, NMFS re-apportioned 28,000 mt of whiting from the Tribal Set Aside to the non-tribal fishery sectors. This action increased the 2012 C/P sector allocation to 55,584 mt.

B. C/P Cooperative's Actual Retained and Discarded Catch of Pacific Whiting, Salmon, Pacific Halibut, Rockfish, Groundfish, and Other Species on a Vessel-by-Vessel Basis

See Table 1. Catch data is current to the time this report was produced. A final C/P Cooperative Annual Report, with complete catch data, will be provided to NMFS in March 2013. Species are grouped per the advice of NMFS.

C. Description of the Method Used by the C/P Cooperative to Monitor Performance of Cooperative Vessels that Participated in the Fishery

Each vessel in the C/P Cooperative carries two NMFS-certified observers to monitor and account for the catch of Pacific whiting and non-whiting groundfish allocations (i.e., canary rockfish, widow rockfish, darkblotched rockfish, and Pacific ocean perch), and to monitor and account for the catch of prohibited species. Observers report each vessel's catch on a daily basis to both the

NMFS Observer Program in Seattle and to Sea State, Inc. (a private, third-party catch monitoring firm).

For 2012, the C/P Cooperative contracted with Sea State, Inc. to process the catch data provided by the observer program and to provide in-season management support. Sea State regularly provides catch reports to each C/P vessel, the C/P fleet, and the C/P Cooperative. These reports may include cumulative fleet-wide and vessel-level catch data as well as tow-by-tow summaries. Fleet managers are able to reconcile the tow-by-tow catch information provided by Sea State against their own catch records to identify possible data errors and ensure accurate catch accounting throughout the fishing season. Sea State reports also provide a mechanism to identify and avoid fishing areas where incidental catch of overfished species and/or prohibited species is occurring. The C/P Cooperative has authorized Sea State, Inc. to identify specific fishing areas to be avoided as a mechanism to reduce catch of overfished species and/or prohibited species.

Catch aboard C/P vessels is weighed using flow scales and motion-compensated platform scales. The flow scale is tested daily by the vessel to ensure the accuracy of the data collected by the NMFS-certified observer. Regulations at 50 CFR 660.15(b)(3) state that the vessel operator is responsible for ensuring the vessel crew performs daily testing of all at-sea scales (belt and/or platform). The species composition of the catch is determined by the NMFS-certified observer. Because two observers are aboard each vessel the number of hauls sampled are high, at or near 100 percent. C/P vessels endeavor to provide conditions that facilitate large samples of individual hauls. The use of two observers, flow and platform scales, and high rates of sampling leads to very accurate catch accounting for Pacific whiting, non-whiting groundfish, and prohibited species.

The C/P Cooperative acknowledges and agrees that minimizing incidental catch of overfished species to the extent practicable is a primary objective of the C/P Cooperative. In general, incidental catch of overfished species in the C/P sector is very low. For 2012, each C/P Cooperative member agreed to employ bycatch avoidance techniques recommended by the PWCC Board of Directors and Sea State, Inc. Non-whiting groundfish species amounts (functionally, "bycatch limits") allocated by NMFS to the C/P sector were assigned to C/P Cooperative members proportional to their Pacific whiting allocations. These hard caps on incidental catch, if exceeded, would cause the C/P sector to cease fishing, thereby ensuring that C/P Cooperative catch of overfished species is minimized to the extent practicable.

D. Description of Any Actions Taken by the C/P Cooperative in Response to Any Vessels that Exceed Their Allowed Catch and Bycatch

As of the date this preliminary report was submitted, no vessels exceeded their allowed catch or bycatch amounts.

E. Plans for the 2013 C/P Cooperative Fishery, Including the Companies Participating in the Cooperative, the Harvest Agreement, and Catch Monitoring and Reporting Requirements

For 2013, companies participating in the C/P Cooperative include:

AMERICAN SEAFOODS COMPANY LLC; GLACIER FISH COMPANY LLC; TRIDENT SEAFOODS CORPORATION

2013 C/P Cooperative Pacific Whiting Harvest Schedule:

Member	Percentage of Annual Catcher Processor Allocation
American Seafoods Company LLC	49.4%
Trident Seafoods Corporation	29.6%
Glacier Fish Company LLC	21.0%

2013 C/P Cooperative Catch Monitoring and Reporting Requirements:

Each member of the C/P Cooperative carries two NMFS-certified observers aboard each of its vessels to monitor and account for total catch, including catch of prohibited species. Observers report each vessel's catch on a daily basis to both the NMFS Observer Program in Seattle and to Sea State.

For 2013, the C/P Cooperative will contract with Sea State, Inc. to process the catch data provided by the observer program and to provide in-season management support. Sea State regularly provides catch reports to each C/P vessel, the C/P fleet, and the C/P Cooperative. These reports may include cumulative fleet-wide and vessel-level catch data as well as tow-by-tow summaries. Fleet managers are able to reconcile the tow-by-tow catch information provided by Sea State against their own catch records to identify possible data errors and ensure accurate catch accounting throughout the fishing season.

Catch aboard C/P vessels is weighed using flow scales and motion-compensated platform scales. The flow scale is tested daily by the vessel to ensure the accuracy of the data collected by the NMFS-certified observer. Regulations at 50 CFR 660.15(b)(3) state that the vessel operator is responsible for ensuring the vessel crew performs daily testing of all at-sea scales (belt and/or platform). The species composition of the catch is determined by the NMFS-certified observer. Because two observers are aboard each vessel the number of hauls sampled are high, at or near 100 percent. C/P vessels endeavor to provide conditions that facilitate large samples of individual hauls. The use of two observers, flow and platform scales, and high rates of sampling leads to very accurate catch accounting for Pacific whiting, non-whiting groundfish, and prohibited species.

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Table 1. C/P Cooperative 2012 Catch by Vessel, as of October 8, 2012

Species	Alaska Ocean	American Dynasty	American Triumph	Island Enterprise	Kodiak Enterprise	Northern Eagle	Northern Jaeger	Pacific Glacier	Seattle Enterprise
ROUNDFISH (mt)									
Whiting	6,023.813	801.467	7,932.981	5,266.704	6,974.269	3,095.516	9,811.935	3,957.466	2,551.878
Pacific Cod					0.004		0.004	0.009	
Lingcod							0.014		
Sablefish	0.363	0.009	2.525	0.023	0.231	0.016	0.763	0.030	0.011
FLATFISH (mt)									
Arrowtooth Flounder	0.150	0.004	0.320	0.222	0.632	0.112	0.612	0.146	0.111
Dover Sole	0.043		0.129		0.045		0.070		
English Sole			0.001	0.001		0.002			0.001
Petrale Sole									
Starry Flounder									
Other Flatfish									
Rex Sole	0.474		1.657		0.134		0.323		
Flatfish Unidentified			0.000						
ROCKFISH (mt)									
Pacific Ocean Perch	0.002		0.171	0.082	1.321	0.736	0.278	0.102	0.349
Shortbelly	0.000						0.002		
Widow	0.191	0.556	0.575	1.444	8.213	0.072	6.513	1.530	1.038
Canary	0.004	0.003	0.014	0.040	0.045	0.023	0.021	0.038	0.047
Chilipepper				0.010					
Splitnose	0.330		5.245	0.001	0.084	0.002	3.423		0.005
Yellowtail		0.069	0.401	1.870	20.938	3.089	0.762	0.793	3.363
Shortspine Thornyhead	0.212		0.116		0.654		0.232		
Longspine Thornyhead	0.002								
Thornyhead, Unid.									
Dark Blotched Rockfish	0.016	0.006	0.175	0.366	0.213	0.117	0.305	0.039	0.119
Yelloweye									
Minor Shelf			0.058	0.097	0.081	0.197	0.132	0.108	0.065
Minor Slope	0.501		5.542	4.710	18.500	3.943	5.262	2.500	1.692
Rockfish Unidentified	0.000					0.002			
REMAINING GROUNDFISH (mt)									
Spiny Dogfish Shark	1.308	1.649	6.748	6.425	59.257	2.822	16.582	8.748	6.755
Longnose Skate	0.028								
Other Groundfish	1.905	0.019	5.671	4.988	2.889	2.232	8.889	0.811	1.497
PROHIBITED and PROTECTED SPP									
Chinook Salmon (numbers of fish)	12	76	62	95	43	87	375	163	70
Chum Salmon (mt)			0.028	0.056	0.032	0.036	0.008	0.049	0.028
Coho Salmon (mt)				0.005		0.003	0.012		0.007
Pink Salmon (mt)				0.017		0.002		0.010	
Sockeye Salmon									
Salmon, Unidentified									
Steelhead									
Pacific Halibut (mt)			0.169	0.055	0.083	0.033	0.041	0.044	0.111
Dungeness Crab									
Eulachon (mt)			0.000		0.001			0.000	
NON-GROUNDFISH SPP (mt)									
American Shad		0.004	0.374	0.007	0.024	0.775	0.575	0.187	0.030
Pacific Herring				0.001	0.001				
Humboldt Squid	0.010		0.003		0.006	0.012			
Squid Unidentified	5.449	1.284	8.786	5.125	5.095	2.672	14.858	5.110	2.328
Jack Mackerel	0.181		0.023	0.299	0.809		0.196	0.136	
Pacific Mackerel	0.212		0.054	0.004	1.750	0.001	0.067	0.001	
Pacific Sardine	0.000		0.035		0.130		0.001		
All Other Non-Groundfish	0.165		0.150	0.190	0.354	0.063	0.234	0.067	0.031

H. R. 2706

One Hundred Twelfth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Tuesday, the third day of January, two thousand and twelve

An Act

To prohibit the sale of billfish.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Billfish Conservation Act of 2012".

SEC. 2. FINDINGS.

Congress finds the following:

(1) The United States carefully regulates its domestic fisheries for billfish and participates in international fishery management bodies in the Atlantic and Pacific.

(2) Global billfish populations have declined significantly, however, because of overfishing primarily through retention of bycatch by non-United States commercial fishing fleets.

(3) Ending the importation of foreign-caught billfish for sale in the United States aligns with U.S. management measures of billfish and protects the significant economic benefits to the U.S. economy of recreational fishing and marine commerce and the traditional cultural fisheries.

SEC. 3. STATEMENT OF CONSTITUTIONAL AUTHORITY.

The Congress enacts this Act pursuant to clause 3 of section 8 of article I of the Constitution.

SEC. 4. PROHIBITION ON SALE OF BILLFISH.

(a) PROHIBITION.—No person shall offer for sale, sell, or have custody, control, or possession of for purposes of offering for sale or selling billfish or products containing billfish.

(b) PENALTY.—For purposes of section 308(a) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1858(a)), a violation of this section shall be treated as an act prohibited by section 307 of that Act (16 U.S.C. 1857).

(c) EXEMPTIONS FOR TRADITIONAL FISHERIES AND MARKETS.—

(1) Subsection (a) does not apply to billfish caught by US fishing vessels and landed in the State of Hawaii or Pacific Insular Areas as defined in section 3(35) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1802(35)).

(2) Subsection (a) does not apply to billfish landed by foreign fishing vessels in the Pacific Insular Areas when the foreign caught billfish is exported to non-US markets or

retained within Hawaii and the Pacific Insular Areas for local consumption.

(d) BILLFISH DEFINED.—In this section the term "billfish"—

(1) means any fish of the species—

(A) Makaira nigricans (blue marlin);

(B) Kajikia audax (striped marlin);

(C) Istiompax indica (black marlin);

(D) Istiophorus platypterus (sailfish);

(E) Tetrapturus angustirostris (shortbill spearfish);

(F) Kajikia albida (white marlin);

(G) Tetrapturus georgii (roundscale spearfish);

(H) Tetrapturus belone (Mediterranean spearfish); and

(I) Tetrapturus pfluegeri (longbill spearfish); and

(2) does not include the species Xiphias gladius (swordfish).

Speaker of the House of Representatives.

Vice President of the United States and
President of the Senate.

STATUS REPORT OF THE 2012 OCEAN SALMON FISHERIES OFF WASHINGTON, OREGON, and CALIFORNIA.

Preliminary Data Through October 31, 2012[a/]

Fishery and Area	Season Dates	Effort Days Fished	CHINOOK Catch	CHINOOK Quota	CHINOOK Percent	COHO[b/] Catch	COHO Quota	COHO Percent
COMMERCIAL								
Treaty Indian[c/]	*5/1-6/30*	415	26,328	26,598	99%		Non-Retention	
	7/1-9/15	520	28,165	28,402	99%	37,037	47,500	78%
Non-Indian North of Cape Falcon[d/]	*5/1-6/30*	1,467	30,784	31,700	97%		Non-Retention	
	7/1-9/6[e/]	852	13,791	16,650	99%	2,466	11,780	21%
Cape Falcon to Cape Alava	*9/7-9/17*[f/]	137	2,770			1,291	5,800	22%
Cape Falcon - Humbug Mt.	*4/1-8/29*	3,735	35,177	None	NA		Non-Retention	
	9/5-10/31	1,263	36,530	None	NA		Non-Retention	
Humbug Mt. - OR/CA Border	*4/1-5/31*	7	46	NA	NA		Non-Retention	
	6/1-6/30	122	1,515	2,000	76%		Non-Retention	
	7/1-7/31	97	1,928	1,500	129%		Non-Retention	
	8/1-8/31[g/]	44	1,009	915	110%		Non-Retention	
	9/5-9/30	38	866	1,000	87%		Non-Retention	
OR/CA Border - Humboldt S. Jetty	*9/15-9/19*	300	5,300	6,000	88%		Non-Retention	
Humboldt S. Jetty - Horse Mt.				Closed				
Horse Mt. - Pt. Arena	*7/11-8/29*	1,700	36,400	None	NA		Non-Retention	
	9/1-30	280	1,700	None	NA		Non-Retention	
Pt. Arena - Pt. Sur	*5/1-6/4*	4,050	67,600	None	NA		Non-Retention	
	6/27-8/29	3,500	84,000	None	NA		Non-Retention	
	9/1-30	400	3,200	None	NA		Non-Retention	
Pt. Reyes-Pt. San Pedro	*10/1-12*	120	1,400	None	NA		Non-Retention	
Pt.Sur - U.S./Mexico Border	*5/1-8/29*	1,050	11,700	None	NA		Non-Retention	
	9/1-30	50	130	None	NA		Non-Retention	
RECREATIONAL								
U.S./Canada Border - Queets River[h/]	*6/16-30*	1,446	897	8,000	95%		Non-Retention	
Queets River - Leadbetter Point[h/]	*6/9-23*	5,558	5,404				Non-Retention	
Leadbetter Point - Cape Falcon[h/]	*6/9-22*	1,101	1,283				Non-Retention	
U.S./Canada Border - Cape Alava[i/]	*7/1-9/23*	12,068	4,699	4,700	100%	7,555	8,200	92%
Cape Alava-Queets River[j/]	*7/1-9/23*	3,286	1,045	2,050	51%	2,216	2,160	103%
	9/29-10/14	386	139	50	NA	22	50	NA
Queets River - Leadbetter Pt.	*6/24-8/31*	25,772	12,868	25,600	55%	6,725	25,800	26%
	9/1-9/23[k/]	6,107	1,173			5,240	9,000	58%
Leadbetter Pt.-Cape Falcon	*6/23-9/2*	23,497	7,507	11,100	70%	9,555	34,860	27%
	9/3-9/30[l/]	2,916	262			1,658	9,500	17%
Cape Falcon - Humbug Mt.	*3/15-10/31*	43,603	7,734	None	NA		Non-Retention	
Cape Falcon to OR/CA Border	*7/1-31*	Included Above		NA	NA	2,914	8,000	36%
Cape Falcon to Humbug Mt.[m/]	*9/1-22*	Included Above		NA	NA	11,493	11,800	97%
Humbug Mt. - OR/CA Border (OR-KMZ)	*5/1-9/9*	15,147	8,790	None	NA		Included Above	
OR/CA Border - Horse Mt. (CA-KMZ)	*5/1-9/9*	31,100	39,050	None	NA		Non-Retention	
Horse Mt. - Pt. Arena (Ft. Bragg)	*4/7-10/15*	14,300	7,700	None	NA		Non-Retention	
Pt. Arena - Pigeon Pt. (San Francisco)	*4/7-10/15*	54,150	44,250	None	NA		Non-Retention	
Pigeon Pt. - U.S./Mexico Border (Monterey)	*4/7-10/7*	43,450	29,300	None	NA		Non-Retention	

TOTALS TO DATE (through 10/31)	Effort 2012	Effort 2011	Effort 2010	Chinook Catch 2012	Chinook Catch 2011	Chinook Catch 2010	Coho Catch 2012	Coho Catch 2011	Coho Catch 2010
TROLL									
Treaty Indian	**935**	879	1,008	**54,493**	34,575	34,078	**37,037**	13,615	11,438
Washington Non-Indian	**2,045**	2,352	3,070	**39,039**	29,738	56,219	**3,166**	3,517	3,142
Oregon	**5,717**	3,197	3,391	**85,377**	25,575	26,398	**591**	0	0
California	**11,450**	6,875	1,975	**211,430**	69,783	15,088	**0**	0	0
Total Troll	**20,147**	13,303	9,444	**390,339**	159,671	131,783	**40,794**	17,132	14,580
RECREATIONAL									
Washington	**77,131**	73,596	80,955	**33,387**	29,203	36,874	**31,326**	39,582	36,278
Oregon	**63,756**	48,740	53,319	**18,414**	5,157	4,967	**16,052**	18,839	18,295
California	**143,000**	91,098	48,667	**120,300**	49,020	14,809	**0**	316	175
Total Recreational	**283,887**	213,434	182,941	**172,101**	83,380	56,650	**47,378**	58,737	54,748
PFMC Total	**N/A**	N/A	N/A	**562,440**	243,051	188,433	**88,172**	75,869	69,328

a/ Inseason estimates are preliminary.

b/ All non-Indian coho fisheries are mark-selective except recreational fisheries in Westport (beginning September 1), Columbia River (beginning September 3) and Cape Falcon t Humbug Mountain (beginning Septermber 1) and the commercial troll fishery in Cape Falcon to Cape Alava (beginning September 7).

c/ Treaty Indian effort is reported as landings. Chinook quotas include an inseason roll-over of 902 from May-June to July 1 - Sept 15

d/ Numbers shown as Chinook quotas for non-Indian troll and rec. fisheries North of Falcon are guidelines not quotas; only the total Chinook allowable catch is a quota.

e/ 13,280 preseason coho quota minus transfers of 1,000 and 500 to the recreational fisheries in Neah Bay (800 and 300) and La Push (200 and 200).

f/ 9,757 coho remainder of the 11,780 mark-selective coho quota converted to an impact equivalent non-mark-selective coho quota quota of 5,800.

g/ 1,000 preseason chinook quota plus impact neutral roll-over from June and July overage in the Humbug Mt. to OR/CA border commmercial troll fishery.

h/ Mark-selective fishery for Chinook

i/ 7,250 preseason quota plus transfers of 800 and 300 coho from the non-Indian commercial troll fishery.

j/ 1,760 preseason quota plus transfers of 200 and 200 coho from the non-Indian commercial troll fishery.

k/ 19,075 coho remainder of the 25,800 mark-selective coho quota converted to an impact equivalent non-mark-selective coho quota of 9,000.

l/ 25,305 coho remainder of the 34,860 mark-selective coho quota converted to an impact equivalent non-mark-selective coho quota of 9,500.

m/ 10,000 preseason quota plus 1,800 impact equivalent roll-over from the July Cape Falcon to OR/CA border mark-selective recreational coho fishery.

Supplemental Informational Report 5
November 2012

Whiting Mothership Cooperative

An Amendment 20 Mothership Catcher Vessel Cooperative

Preliminary Report on the 2012 Pacific Whiting Fishery

Prepared by: dave fraser, WMC Coop Manager

Submitted to the PFMC

Preliminary WMC Report on the Current Year Pacific Whiting Fishery

Introduction

In March of 2011, the owners of the thirty seven trawl limited entry catcher vessel permits (MS/CV LEPs) endorsed for operation in the Mothership sector of the Pacific whiting fishery formed a fishing cooperative to coordinate harvesting efforts. This cooperative is the Whiting Mothership Cooperative (WMC). The owners of all of the MS/CV LEPs remain members in good standing of the WMC for the 2012 fishing year.

The WMC receives an allocation of whiting based on the cumulative catch histories of the members of the cooperative. The WMC operates under the WMC Membership Agreement contract which allocates whiting to members proportionate to the contribution to the cooperative's allocation made by NMFS on the basis of the whiting catch history assigned to the Cooperative by the members.

One of the primary purposes of the WMC cooperative is the management of bycatch of the four allocated overfished rockfish species and Chinook salmon. To that end the members of the WMC have all signed a WMC Bycatch Agreement that sets out the rules for modification of fishing behaviour with which members are obligated to comply.

Purpose of Report

This report is intended to disclose all information required or identified in Federal Regulations at 50 CFR 660.113(d)(3). The catch data in this preliminary report is for the 2012 fishing year beginning May 15th up through October. The catch data was provided by Sea State,, Inc. and was obtained from the NMFS – At-Sea Hake Observer Program.

Reporting Requirements

The required Annual Report elements (A-E) are found in the 50 CFR 660.113(d)(3)

> *(3) Annual coop report—(i) The designated coop manager for the mothership coop must submit an annual report to the Pacific Fishery Management Council for their November meeting each year. The annual coop report will contain information about the current year's fishery, including:*

(A) The mothership sector's annual allocation of Pacific whiting and the permitted mothership coop allocation;
(B) The mothership coop's actual retained and discarded catch of Pacific whiting, salmon, Pacific halibut, rockfish, groundfish, and other species on a vessel-by-vessel basis;
(C) A description of the method used by the mothership coop to monitor performance of coop vessels that participated in the fishery;
(D) A description of any actions taken by the mothership coop in response to any vessels that exceed their allowed catch and bycatch; and
(E) Plans for the next year's mothership coop fishery, including the companies participating in the cooperative, the harvest agreement, and catch monitoring and reporting requirements.

(A) Annual allocation of Pacific whiting to the WMC coop

The Mothership sector of the Pacific Whiting fishery was initially allocated 32,515 tons of whiting, followed by a re-apportionment in October of 6,720 tons. 100% of the Mothership sector whiting was allocated to the Whiting Mothership Cooperative.

(B) The Mothership coop's actual retained and discarded catch of Pacific whiting, salmon, Pacific halibut, rockfish, groundfish, and other species on a vessel-by-vessel basis

All thirty seven of the MS/CV endorsed trawl limited entry permit holders joined the Whiting Mothership Cooperative (WMC).

As of October 8th, seventeen MS/CVs have fished in the MS sector of the whiting fishery.

Data on the catch, as of October 8th 2012, of Whiting, Salmon, Halibut, Rockfish, Groundfish and Other Species, is shown in the tables attached tables #1 & 2(a-f) (Attachment 1). The table #1 shows the aggregate fleet catch, with a breakdown of each species category. The following tables #2(a-f) show the vessel by vessel catch for each species category. In interpreting the tables a cell with "0.00 mt" indicates at least a trace amount of this species was caught; a blank cell indicates no amount of that species was caught.

(C) A description of the method used by the mothership coop to monitor performance of coop vessels that participated in the fishery

The WMC retained Sea State, Inc. Inc. as the Monitoring Agent for the coop. All WMC members provide NMFS and the VMS providers with the needed

confidentiality waivers to allow Sea State, Inc. to access both Observer data and VMS data in real time.

The WMC provided Sea State, Inc. with a harvest schedule of each MS/CVs share of whiting and pro-rata portion of the allocated bycatch species. Sea State, Inc. queries the NORPAC observer database to obtain the Mothership observer reports on a daily basis. Sea State, Inc. uses this data to produce daily reports which are distributed by email to all WMC members, the Coop manager, and to the Mothership processors.

The Sea State, Inc. report shows several tables of information, including:

- the daily catch and bycatch amounts for the fleet as a whole for most recent 10 days
- the overall YTD rates and percent of whiting quota and bycatch harvested for the fleet in aggregate
- the YTD bycatch rates for each Mothership's fleet
- the YTD bycatch rates and amounts for each vessel
- the percent and amounts of whiting quota and bycatch allocations harvested by each seasonal pool
- the balance of whiting available in each seasonal pool by vessel

As MS/CV observers are debriefed, their data is incorporated into NORPAC and Sea State, Inc. updates its accounting accordingly. On the basis of the Sea State, Inc. data, the Coop manger audits vessel harvest amounts relative to the individual members' share of the quota and transfers between members to see that the coop's allocations are not exceeded.

A sample copy of a recent daily report of the season is included as Attachment 2.

(D) A description of any actions taken by the mothership coop in response to any vessels that exceed their allowed catch and bycatch

As of October 8th, no vessels have exceeded their allowed catch amounts under the Coop Agreement. The coop makes vessel specific whiting allocations, however, the bycatch allocations are managed as a common pool resource. This is not to say that vessels are not subject to individual accountability for bycatch performance.

The Coop agreement includes a variety of measures that serve to mitigate against the possibility of exceeding allowed catch and bycatch limits. These include:

- Precautionary closures of past bycatch hotspots.
- Night fishing restrictions
- Fleet relocation triggers and fleet to fleet reporting

- In season "hot spot" closure authority
- Seasonal apportionments ("pools") of whiting and bycatch allowances
- Sanctions against vessels that have exceeded a bycatch rate within a seasonal pool.

Precautionary Closures of Past Bycatch Hotspots

Prior to the beginning of the 2011 whiting fishery, the WMC created a "Bycatch Committee" which met several times to develop proposed closures that would apply seasonally. The committee reviewed GIS analysis of 10 years of at-sea observer data overlaid on fine scale bathymetry. The analysis included bycatch rates and amounts as well as amounts of whiting. VMS tracklines of high bycatch tows were also incorporated in the review. Additionally, the committee reviewed logbook information from individual captains' historic directed rockfish experience, which provided insight into habitat associations for rockfish species.

The committee ended up recommending closure of 9 areas, totaling nearly 2000 km^2 which were adopted by the WMC board. The board also identified several other "cautionary" areas.

The bycatch committee met again prior to the 2012 fishing season and recommended retaining the 2011 bycatch avoidance measures. The recommendations were adopted by the board. The bycatch committee has met since the beginning of the season to review whether to modify or maintain the closures. One additional cautionary area was adopted by the board subsequent to the opening of the 2012 season.

Night Fishing

Based on the recommendations of the bycatch committee the board adopted a restriction on night fishing between 10:00 PM and 5:30 AM prior to September 1st. The board modified the night fishing restriction for the fall, restricting night fishing inside 100 fathoms between 7:00 PM and 7:00 AM.

Fleet Relocation and Real Time Fleet to Fleet Reporting

The Coop established Base Rates which were based on the pro-rata amounts of bycatch allocations relative to whiting allocations to the MS sector. Each Mothership processor maintains a spreadsheet reporting its fleet performance, measured against the Base Rates. The spreadsheet reports are shared each day between all the processing ships.

Each fleet's performance relative to the Base Rates constitutes a trigger requiring the fleet to relocate if they encounter a bycatch "hotspot". Relocation is required in the event of any of the following situations:

- If a fleet's three day rolling average rate of exceeds the Base Rate for any bycatch species, and that Fleet's cumulative year to date bycatch rate exceeds half of the Base Rate for that species,

- If a fleet's three day rolling average rate of exceeds 125% of the Base Rate for a bycatch species

- If a fleet's bycatch rate during any single day exceeds twice the Base Rate for a bycatch species,

This real time mechanism for response to bycatch encounters coupled with a requirement for test tows upon entering a new area, has served to avoid using up bycatch allocations.

In-season Hot Spot Closures

The WMC board delegated authority to Sea State, Inc. to impose In-season Hot Spot closures if they perceive a problem. However, the 'relocation' triggers described above have pre-empted the need to use this authority so far this season.

Seasonal Pools

The Coop divides the whiting allocation into 4 pools with various start dates. Each pool received a share of the bycatch allocations pro-rata to whiting. The Coop Agreement provides that if a pool reaches its share of the bycatch prior to harvesting its whiting allocation, the members of the pool must cease fishing.

Sanctions Against Member Vessels

In the event that a pool closes because of bycatch, members of that pool whose cumulative bycatch rate exceeded their pro-rata share by 25%, that vessel is restricted from harvesting additional whiting in a subsequent seasonal pool.

As of October 8th, no pool had been closed due to bycatch, nor have there been any violations of the WMC Bycatch Agreement.

(E) Plans for the next year's mothership coop fishery, including the companies participating in the cooperative, the harvest agreement, and catch monitoring and reporting requirements

The WMC provides that membership in the Coop continues in the following year unless a member provides notice of intent to withdraw before November 1st. At this time, no members have filed notice of intent to withdraw. The only changes in membership between 2011 and 2012 were the result of changes of ownership of two permits. Therefore the member permits will continue as in 2013, as shown in Exhibit A of the WMC Membership Agreement (Attachment 3) filed with the MS cooperative permit application NMFS for the 2012 season.

There have been no changes to the 2012 harvest agreement, catch monitoring, or reporting requirements. The board will review the Membership Agreement and consider modifications prior to the Coop Permit Renewal deadline in 2013.

Attachment 1

Table 1 (part 1)

SpeciesName	Code		WMC FLEET TOTALS			
ROUNDFISH	Code		Retained mt	Discard mt	Total	# of Vessels
PACIFIC HAKE	206		18,599.23	99.88	18699.11	17
PACIFIC COD	202		0	0	0.00	2
SABLEFISH (BLACK COD)	203		0.08	0.26	0.34	8
LINGCOD	603		0.08	0.05	0.13	5
FLATFISH	Code					
REX SOLE	105		0.06	0.16	0.23	6
DOVER SOLE	107		0.01	0.02	0.03	3
ARROWTOOTH FLOUNDER (TURBOT)	141		0.92	0.84	1.76	16
KAMCHATKA FLOUNDER	147		0	0	0.00	1
ROCKFISH	Code					
PACIFIC OCEAN PERCH	301		0.41	0.77	1.18	15
WIDOW ROCKFISH	305		5.39	19.82	25.21	17
DARK BLOTCHED ROCKFISH	311		0.01	0.02	0.03	3
CANARY ROCKFISH	314		0	0.08	0.08	6
BOCACCIO	302		0	0	0.00	1
ROUGHEYE ROCKFISH	307		0.07	0.04	0.11	8
RED BANDED ROCKFISH	308		0.35	0.44	0.79	16
SILVERGRAY ROCKFISH	310		7.75	3.87	11.63	16
SPLITNOSE ROCKFISH	315		0.07	2.29	2.36	13
SHORTBELLY ROCKFISH	318		0	0	0.00	1
YELLOWMOUTH ROCKFISH	320		0.04	0	0.04	3
YELLOWTAIL ROCKFISH	321		0.92	8.9	9.82	13
REDSTRIPE ROCKFISH	324		0	0.01	0.01	3
CHILIPEPPER ROCKFISH	325		0	0	0.00	1
SHORTRAKER ROCKFISH	326		0.01	0	0.01	1
AURORA ROCKFISH	334		0	0.01	0.01	1
BANK ROCKFISH	337		0.01	0	0.01	1
SHORTSPINE THORNYHEAD (IDIOT)	350		0.15	0.35	0.50	9
REMAINING GROUNDFISH SPECIES	Code					
SQUID - UNIDENT.	50		4.43	8.12	12.56	17
OCTOPUS - UNIDENT.	60		0	0	0.00	1
PACIFIC SLEEPER SHARK	62		0	0.1	0.10	4
SOUPFIN SHARK	64		0	0.07	0.07	2
SPINY DOGFISH SHARK	66		3.11	11.82	14.94	16
SALMON SHARK	67		0	1.27	1.27	3
BROWN CAT SHARK	68		0.33	4.41	4.74	11
BLUE SHARK	69		0	0.1	0.10	1
LAMPREY - UNIDENT.	75		0.03	0	0.03	6
RATTAIL (GRENADIER) -UNIDENT.	80		0	0	0.00	3
PACIFIC ELECTRIC RAY	93		0	0.03	0.03	1
BIG SKATE	94		0	0.01	0.01	1
LONGNOSE SKATE	95		0	0.02	0.02	1
PROHIBITED SPECIES - Salmon	Code		#s	#s	Total #s	# of Vessels
CHUM SALMON (DOG)	221				2	1
KING SALMON (CHINOOK)	222				196	10
SILVER SALMON (COHO)	223				4	2

Table 1 (part 2)

SpeciesName	Code		WMC FLEET TOTALS			
PROHIBITED SPECIES - Other	Code		Retained mt	Discard mt	Total	# of Vessels
PACIFIC HALIBUT	101		0	0.1	0.10	6
NON-GROUNDFISH SPECIES	Code					
JELLYFISH - UNIDENT.	35		0	0.36	0.36	13
CHUB MACKEREL (PACIFIC)	199		0.01	0.66	0.67	6
JACK MACKEREL	207		0.15	8.01	8.16	9
RAGFISH	280		0.3	0.44	0.74	8
OPAH	297		0	0.02	0.02	1
HUMBOLDT SQUID	511		0	0.01	0.01	2
RIBBONFISH - UNIDENT.	563		0	0.04	0.04	2
AMERICAN SHAD	606		0.15	0.03	0.18	9
KING-OF-THE-SALMON	608		0.15	0.22	0.37	10
PACIFIC SARDINE	614		0.01	0.01	0.01	4
LANTERNFISH - UNIDENT.	700		0	0	0.00	2
DUCKBILL BARRACUDINA	769		0.01	0.04	0.05	6
BARRACUDINA - UNIDENT.	770		0	0	0.00	1
PACIFIC POMFRET	775		0	0.01	0.01	2
MEDUSAFISH	776		0	0	0.00	2
TUBESHOULDER - UNIDENT	807		0	0	0.00	1
OCEAN SUNFISH	810		0.02	0.01	0.03	3
FISH WASTE (HEADS, DECOMP,ETC)	899		0	0	0.00	1
MISC - UNIDENT.	900		0	0	0.00	6
FISH - UNIDENT.	901		0	0.02	0.02	1
INVERTEBRATE - UNIDENT.	902		0	0.01	0.01	2

Table 2a (part 1)

SpeciesName	ARCTIC FURY		BAY ISLANDER		BLUE FOX	
ROUNDFISH	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HAKE	2148.383	0.000	950.969	0.000	189.135	0.000
PACIFIC COD	0.000	0.003				
SABLEFISH (BLACK COD)	0.024	0.077				
LINGCOD			0.004	0.000		
FLATFISH						
REX SOLE	0.000	0.071				
DOVER SOLE	0.000	0.008				
ARROWTOOTH FLOUNDER (TURBOT)	0.000	0.233	0.124	0.000	0.003	0.000
KAMCHATKA FLOUNDER						
ROCKFISH						
PACIFIC OCEAN PERCH	0.000	0.129	0.023	0.000	0.000	0.021
WIDOW ROCKFISH	0.104	0.428	0.270	0.000	0.260	14.807
DARK BLOTCHED ROCKFISH	0.000	0.043	0.169	0.000	0.000	0.011
CANARY ROCKFISH	0.000	0.009				
BOCACCIO						
ROUGHEYE ROCKFISH	0.054	0.913	1.843	0.000	0.000	0.056
RED BANDED ROCKFISH						
SILVERGRAY ROCKFISH			0.021	0.000		
SPLITNOSE ROCKFISH	0.000	1.733			0.034	0.077
SHORTBELLY ROCKFISH						
YELLOWMOUTH ROCKFISH						
YELLOWTAIL ROCKFISH	0.000	0.845	0.576	0.000		
REDSTRIPE ROCKFISH						
CHILIPEPPER ROCKFISH						
SHORTRAKER ROCKFISH			0.012	0.000		
AURORA ROCKFISH						
BANK ROCKFISH						
SHORTSPINE THORNYHEAD (IDIOT)	0.035	0.101				
REMAINING GROUNDFISH SPECIES						
SQUID - UNIDENT.	0.006	2.751	0.432	0.000	0.080	0.000
OCTOPUS - UNIDENT.						
PACIFIC SLEEPER SHARK	0.000	0.014				
SOUPFIN SHARK						
SPINY DOGFISH SHARK	0.000	3.126	0.025	0.813	0.000	0.061
SALMON SHARK			0.000	0.127		
BROWN CAT SHARK	0.000	1.542	0.000	0.005		
BLUE SHARK						
LAMPREY - UNIDENT.	0.000	0.001				
RATTAIL (GRENADIER) -UNIDENT.						
PACIFIC ELECTRIC RAY						
BIG SKATE						
LONGNOSE SKATE	0.000	0.015				
PROHIBITED SPECIES - Salmon		Total #s		Total #s		Total #s
CHUM SALMON (DOG)				2		
KING SALMON (CHINOOK)		11		13		
SILVER SALMON (COHO)				2		

Table 2a (part 2)

SpeciesName	ARCTIC FURY		BAY ISLANDER		BLUE FOX	
PROHIBITED SPECIES - Other	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HALIBUT			0.000	0.027		
NON-GROUNDFISH SPECIES						
JELLYFISH - UNIDENT.	0.000	0.069			0.000	0.004
CHUB MACKEREL (PACIFIC)	0.000	0.012				
JACK MACKEREL	0.078	0.581			0.000	0.547
RAGFISH	0.000	0.075	0.000	0.056		
OPAH						
HUMBOLDT SQUID	0.000	0.009				
RIBBONFISH - UNIDENT.	0.000	0.013				
AMERICAN SHAD			0.005	0.000		
KING-OF-THE-SALMON	0.000	0.046			0.000	0.014
PACIFIC SARDINE	0.000	0.001				
LANTERNFISH - UNIDENT.	0.000	0.001				
DUCKBILL BARRACUDINA	0.000	0.018				
BARRACUDINA - UNIDENT.						
PACIFIC POMFRET	0.000	0.003				
MEDUSAFISH	0.000	0.005				
TUBESHOULDER - UNIDENT						
OCEAN SUNFISH	0.000	0.011				
FISH WASTE (HEADS, DECOMP,ETC)						
MISC - UNIDENT.			0.000	0.001		
FISH - UNIDENT.						
INVERTEBRATE - UNIDENT.	0.000	0.002				

Table 2b (part 1)

SpeciesName	LISA MELINDA		MARATHON		MARK I	
ROUNDFISH	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HAKE	1695.644	99.155	990.479	0.000	2926.497	0.000
PACIFIC COD						
SABLEFISH (BLACK COD)	0.019	0.052			0.000	0.033
LINGCOD	0.013	0.006				
FLATFISH						
REX SOLE	0.064	0.051			0.000	0.008
DOVER SOLE	0.010	0.007				
ARROWTOOTH FLOUNDER (TURBOT)	0.142	0.077	0.116	0.000	0.000	0.236
KAMCHATKA FLOUNDER						
ROCKFISH						
PACIFIC OCEAN PERCH	0.349	0.002	0.026	0.000	0.002	0.062
WIDOW ROCKFISH	1.564	0.022	0.244	0.000	0.201	2.318
DARK BLOTCHED ROCKFISH	0.029	0.006	0.092	0.000	0.001	0.031
CANARY ROCKFISH					0.000	0.005
BOCACCIO	0.000	0.005				
ROUGHEYE ROCKFISH	2.064	0.083	1.292	0.000	0.162	0.860
RED BANDED ROCKFISH					0.000	0.005
SILVERGRAY ROCKFISH	0.027	0.002	0.015	0.000	0.000	0.015
SPLITNOSE ROCKFISH	0.035	0.002			0.000	0.042
SHORTBELLY ROCKFISH						
YELLOWMOUTH ROCKFISH	0.033	0.000				
YELLOWTAIL ROCKFISH	0.153	0.157	0.150	0.000	0.000	3.060
REDSTRIPE ROCKFISH					0.000	0.006
CHILIPEPPER ROCKFISH						
SHORTRAKER ROCKFISH						
AURORA ROCKFISH	0.000	0.007				
BANK ROCKFISH	0.007	0.000				
SHORTSPINE THORNYHEAD (IDIOT)	0.093	0.105	0.009	0.000	0.000	0.009
REMAINING GROUNDFISH SPECIES						
SQUID - UNIDENT.	0.474	0.580	0.583	0.000	0.016	2.288
OCTOPUS - UNIDENT.						
PACIFIC SLEEPER SHARK	0.000	0.040				
SOUPFIN SHARK					0.000	0.022
SPINY DOGFISH SHARK	0.649	0.177	0.000	0.812	0.000	3.219
SALMON SHARK						
BROWN CAT SHARK	0.108	1.631	0.000	0.006	0.000	0.285
BLUE SHARK					0.000	0.104
LAMPREY - UNIDENT.	0.000	0.001				
RATTAIL (GRENADIER) -UNIDENT.	0.000	0.001			0.000	0.002
PACIFIC ELECTRIC RAY	0.000	0.027				
BIG SKATE						
LONGNOSE SKATE						
PROHIBITED SPECIES - Salmon		Total #s		Total #s		Total #s
CHUM SALMON (DOG)						
KING SALMON (CHINOOK)		41				43
SILVER SALMON (COHO)						

Table 2b (part 2)

SpeciesName	LISA MELINDA		MARATHON		MARK I	
PROHIBITED SPECIES - Other	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HALIBUT					0.000	0.001
NON-GROUNDFISH SPECIES						
JELLYFISH - UNIDENT.	0.001	0.143			0.000	0.063
CHUB MACKEREL (PACIFIC)					0.000	0.409
JACK MACKEREL	0.005	0.000			0.047	0.144
RAGFISH	0.000	0.062	0.000	0.106		
OPAH					0.000	0.018
HUMBOLDT SQUID					0.000	0.004
RIBBONFISH - UNIDENT.					0.000	0.025
AMERICAN SHAD	0.023	0.000	0.068	0.000	0.010	0.009
KING-OF-THE-SALMON	0.053	0.002			0.000	0.090
PACIFIC SARDINE					0.006	0.006
LANTERNFISH - UNIDENT.	0.000	0.002				
DUCKBILL BARRACUDINA	0.000	0.009			0.000	0.009
BARRACUDINA - UNIDENT.						
PACIFIC POMFRET						
MEDUSAFISH	0.000	0.004				
TUBESHOULDER - UNIDENT	0.000	0.002				
OCEAN SUNFISH					0.000	0.004
FISH WASTE (HEADS, DECOMP,ETC)					0.000	0.004
MISC - UNIDENT.	0.000	0.005	0.000	0.002		
FISH - UNIDENT.						
INVERTEBRATE - UNIDENT.					0.000	0.008

Table 2c (part 1)

SpeciesName	MISS BERDIE		MUIR MILACH		PACIFIC PRINCE	
ROUNDFISH	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HAKE	1746.061	0.000	1285.036	0.722	1017.398	0.000
PACIFIC COD						
SABLEFISH (BLACK COD)	0.000	0.102	0.001	0.000	0.010	0.000
LINGCOD						
FLATFISH						
REX SOLE	0.000	0.027			0.003	0.000
DOVER SOLE	0.000	0.001				
ARROWTOOTH FLOUNDER (TURBOT)	0.000	0.274	0.176	0.000	0.011	0.000
KAMCHATKA FLOUNDER						
ROCKFISH						
PACIFIC OCEAN PERCH	0.000	0.499	0.010	0.000	0.004	0.000
WIDOW ROCKFISH	0.000	0.296	1.486	0.001	0.901	0.000
DARK BLOTCHED ROCKFISH	0.000	0.029	0.008	0.000	0.016	0.000
CANARY ROCKFISH	0.000	0.023			0.004	0.000
BOCACCIO			0.012	0.000		
ROUGHEYE ROCKFISH	0.000	1.750	1.147	0.000	0.393	0.000
RED BANDED ROCKFISH						
SILVERGRAY ROCKFISH			0.006	0.000		
SPLITNOSE ROCKFISH	0.000	0.037	0.012	0.002	0.003	0.000
SHORTBELLY ROCKFISH						
YELLOWMOUTH ROCKFISH			0.006	0.000	0.003	0.000
YELLOWTAIL ROCKFISH	0.000	2.157	0.024	0.001		
REDSTRIPE ROCKFISH						
CHILIPEPPER ROCKFISH						
SHORTRAKER ROCKFISH						
AURORA ROCKFISH						
BANK ROCKFISH						
SHORTSPINE THORNYHEAD (IDIOT)	0.000	0.107	0.001	0.000	0.007	0.000
REMAINING GROUNDFISH SPECIES						
SQUID - UNIDENT.	0.000	1.012	0.876	0.068	1.034	0.067
OCTOPUS - UNIDENT.			0.004	0.000		
PACIFIC SLEEPER SHARK						
SOUPFIN SHARK						
SPINY DOGFISH SHARK	0.019	2.011	1.870	0.005	0.330	0.003
SALMON SHARK						
BROWN CAT SHARK	0.000	0.822	0.065	0.000	0.153	0.000
BLUE SHARK						
LAMPREY - UNIDENT.						
RATTAIL (GRENADIER) -UNIDENT.	0.000	0.002				
PACIFIC ELECTRIC RAY						
BIG SKATE						
LONGNOSE SKATE						
PROHIBITED SPECIES - Salmon		Total #s		Total #s		Total #s
CHUM SALMON (DOG)						
KING SALMON (CHINOOK)				13		11
SILVER SALMON (COHO)						10

Table 2c (part 2)

SpeciesName	MISS BERDIE		MUIR MILACH		PACIFIC PRINCE	
PROHIBITED SPECIES - Other	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HALIBUT	0.000	0.037	0.000	0.010	0.000	0.012
NON-GROUNDFISH SPECIES						
JELLYFISH - UNIDENT.	0.000	0.018	0.002	0.020	0.000	0.014
CHUB MACKEREL (PACIFIC)	0.000	0.003			0.006	0.000
JACK MACKEREL	0.000	0.151			0.008	0.000
RAGFISH						
OPAH						
HUMBOLDT SQUID						
RIBBONFISH - UNIDENT.						
AMERICAN SHAD	0.000	0.019	0.009	0.000		
KING-OF-THE-SALMON	0.000	0.053	0.062	0.000	0.038	0.000
PACIFIC SARDINE	0.000	0.001				
LANTERNFISH - UNIDENT.						
DUCKBILL BARRACUDINA	0.000	0.005			0.010	0.000
BARRACUDINA - UNIDENT.	0.000	0.002				
PACIFIC POMFRET	0.000	0.006				
MEDUSAFISH						
TUBESHOULDER - UNIDENT						
OCEAN SUNFISH			0.015	0.000		
FISH WASTE (HEADS, DECOMP,ETC)						
MISC - UNIDENT.			0.000	0.003	0.000	0.001
FISH - UNIDENT.	0.000	0.018				
INVERTEBRATE - UNIDENT.						

Table 2d (part 1)

SpeciesName	PEGASUS		PERSEVERANCE		SEADAWN	
ROUNDFISH	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HAKE	888.475	0.000	1169.873	0.000	1626.211	0.000
PACIFIC COD						
SABLEFISH (BLACK COD)	0.034	0.000				
LINGCOD			0.027	0.010	0.000	0.026
FLATFISH						
REX SOLE	0.000	0.002				
DOVER SOLE						
ARROWTOOTH FLOUNDER (TURBOT)	0.000	0.024	0.165	0.000	0.070	0.004
KAMCHATKA FLOUNDER						
ROCKFISH						
PACIFIC OCEAN PERCH			0.000	0.019	0.003	0.011
WIDOW ROCKFISH	0.358	0.454	0.000	0.258	0.013	0.528
DARK BLOTCHED ROCKFISH	0.000	0.017	0.000	0.073	0.029	0.138
CANARY ROCKFISH	0.000	0.138	0.000	0.016	0.000	0.011
BOCACCIO	0.000	0.014				
ROUGHEYE ROCKFISH	0.240	0.097	0.000	0.088	0.558	0.023
RED BANDED ROCKFISH						
SILVERGRAY ROCKFISH			0.000	0.005	0.000	0.011
SPLITNOSE ROCKFISH	0.000	0.001	0.000	0.002	0.000	0.002
SHORTBELLY ROCKFISH						
YELLOWMOUTH ROCKFISH						
YELLOWTAIL ROCKFISH			0.000	1.009	0.023	0.163
REDSTRIPE ROCKFISH						
CHILIPEPPER ROCKFISH			0.000	0.001		
SHORTRAKER ROCKFISH						
AURORA ROCKFISH						
BANK ROCKFISH						
SHORTSPINE THORNYHEAD (IDIOT)	0.000	0.024				
REMAINING GROUNDFISH SPECIES						
SQUID - UNIDENT.	0.042	1.342	0.035	0.023	0.149	0.000
OCTOPUS - UNIDENT.						
PACIFIC SLEEPER SHARK						
SOUPFIN SHARK						
SPINY DOGFISH SHARK	0.000	0.206	0.000	0.327	0.222	0.349
SALMON SHARK					0.000	0.634
BROWN CAT SHARK	0.000	0.113				
BLUE SHARK						
LAMPREY - UNIDENT.	0.000	0.001	0.006	0.000	0.006	0.000
RATTAIL (GRENADIER) -UNIDENT.						
PACIFIC ELECTRIC RAY						
BIG SKATE			0.000	0.007		
LONGNOSE SKATE						
PROHIBITED SPECIES - Salmon		Total #s		Total #s		Total #s
CHUM SALMON (DOG)						
KING SALMON (CHINOOK)		31		14		8
SILVER SALMON (COHO)		2				2

Table 2d (part 2)

SpeciesName	PEGASUS		PERSEVERANCE		SEADAWN	
PROHIBITED SPECIES - Other	Retained mt	Discard mt	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HALIBUT	0.000	0.013				
NON-GROUNDFISH SPECIES						
JELLYFISH - UNIDENT.	0.000	0.013			0.002	0.000
CHUB MACKEREL (PACIFIC)	0.000	0.234				
JACK MACKEREL	0.000	0.025				
RAGFISH						
OPAH						
HUMBOLDT SQUID						
RIBBONFISH - UNIDENT.						
AMERICAN SHAD			0.005	0.000		
KING-OF-THE-SALMON					0.026	0.000
PACIFIC SARDINE						
LANTERNFISH - UNIDENT.						
DUCKBILL BARRACUDINA	0.000	0.002				
BARRACUDINA - UNIDENT.						
PACIFIC POMFRET						
MEDUSAFISH						
TUBESHOULDER - UNIDENT						
OCEAN SUNFISH						
FISH WASTE (HEADS, DECOMP,ETC)						
MISC - UNIDENT.						
FISH - UNIDENT.						
INVERTEBRATE - UNIDENT.						

Table 2e (part 1)

SpeciesName	SEA STORM		SEEKER	
ROUNDFISH	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HAKE	369.823	0.000	1595.249	0.000
PACIFIC COD				
SABLEFISH (BLACK COD)				
LINGCOD			0.045	0.000
FLATFISH				
REX SOLE				
DOVER SOLE				
ARROWTOOTH FLOUNDER (TURBOT)	0.000	0.003	0.120	0.000
KAMCHATKA FLOUNDER			0.004	0.000
ROCKFISH				
PACIFIC OCEAN PERCH	0.000	0.002	0.000	0.027
WIDOW ROCKFISH	0.000	0.062	0.000	0.642
DARK BLOTCHED ROCKFISH	0.000	0.034	0.000	0.060
CANARY ROCKFISH			0.000	0.025
BOCACCIO				
ROUGHEYE ROCKFISH			0.000	0.002
RED BANDED ROCKFISH				
SILVERGRAY ROCKFISH			0.000	0.012
SPLITNOSE ROCKFISH	0.000	0.025	0.000	0.234
SHORTBELLY ROCKFISH				
YELLOWMOUTH ROCKFISH				
YELLOWTAIL ROCKFISH			0.000	1.505
REDSTRIPE ROCKFISH			0.000	0.001
CHILIPEPPER ROCKFISH				
SHORTRAKER ROCKFISH				
AURORA ROCKFISH				
BANK ROCKFISH				
SHORTSPINE THORNYHEAD (IDIOT)				
REMAINING GROUNDFISH SPECIES				
SQUID - UNIDENT.	0.481	0.000	0.231	0.000
OCTOPUS - UNIDENT.				
PACIFIC SLEEPER SHARK			0.000	0.045
SOUPFIN SHARK			0.000	0.050
SPINY DOGFISH SHARK	0.000	0.092	0.000	0.628
SALMON SHARK			0.000	0.507
BROWN CAT SHARK			0.000	0.003
BLUE SHARK				
LAMPREY - UNIDENT.			0.009	0.001
RATTAIL (GRENADIER) -UNIDENT.				
PACIFIC ELECTRIC RAY				
BIG SKATE				
LONGNOSE SKATE				
PROHIBITED SPECIES - Salmon		Total #s		Total #s
CHUM SALMON (DOG)				
KING SALMON (CHINOOK)				11
SILVER SALMON (COHO)				2

Table 2e (part 2)

SpeciesName	SEA STORM		SEEKER	
PROHIBITED SPECIES - Other	Retained mt	Discard mt	Retained mt	Discard mt
PACIFIC HALIBUT				
NON-GROUNDFISH SPECIES				
JELLYFISH - UNIDENT.	0.000	0.006	0.000	0.008
CHUB MACKEREL (PACIFIC)	0.000	0.006	0.000	0.005
JACK MACKEREL	0.000	4.542	0.000	2.022
RAGFISH				
OPAH				
HUMBOLDT SQUID				
RIBBONFISH - UNIDENT.				
AMERICAN SHAD				
KING-OF-THE-SALMON	0.000	0.014	0.000	0.012
PACIFIC SARDINE			0.001	0.000
LANTERNFISH - UNIDENT.				
DUCKBILL BARRACUDINA				
BARRACUDINA - UNIDENT.				
PACIFIC POMFRET				
MEDUSAFISH				
TUBESHOULDER - UNIDENT				
OCEAN SUNFISH				
FISH WASTE (HEADS, DECOMP,ETC)				
MISC - UNIDENT.				
FISH - UNIDENT.				
INVERTEBRATE - UNIDENT.				

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October 8, 2012

Mothership whiting coop – Prior 10 day's catch and bycatch year to date

Date	Whiting	Canary	Widow	Dark blotched	POP	Chinook
9/28/12	328	0.00	3.37	0.01	0.00	39
9/29/12	522	0.00	0.17	0.00	0.00	4
9/30/12	432	0.00	0.05	0.01	0.00	8
10/1/12	395	0.00	0.03	0.00	0.00	4
10/2/12	253	0.00	0.85	0.00	0.00	2
10/3/12	656	0.00	1.63	0.02	0.00	5
10/4/12	565	0.00	14.40	0.04	0.00	10
10/5/12	405	0.00	0.01	0.00	0.00	2
10/6/12	745	0.00	0.13	0.00	0.01	43
10/7/12	149	0.00	0.94	0.01	0.02	2
Totals year to date	18,699	0.09	25.22	0.79	1.19	196
Rate year to date		0.00	1.35	0.04	0.06	0.01
2012 Allocation for Motherships	39,235	3.60	61.20	6.00	7.20	1,923
Percentage Taken	47.7%	2.5%	41.2%	13.1%	16.5%	

	Whiting	Canary	Widow	Dark blotched	POP	Chinook
1st seasonal pool total catch	9,608	0.05	18.85	0.63	0.47	96
1st pool allocation	12,741	1.17	19.87	1.95	2.34	624
Percentage Taken	75.4%	4.4%	94.9%	32.4%	20.0%	

2nd seasonal pool total catch	7,709	0.04	4.16	0.12	0.69	85
2nd pool allocation	13,237	1.22	20.65	2.02	2.43	649
Percentage Taken	58.2%	3.0%	20.1%	6.0%	28.5%	

3rd seasonal pool total catch	1,381	0.00	2.21	0.03	0.03	15
3rd pool allocation	13,256	1.22	20.68	2.03	2.43	
Percentage Taken	10.4%	0.0%	10.7%	1.6%	1.1%	

Fleet rates (year to date) – use for test i (red/yellow fails test i)

Fleet	Canary rate	Widow rate	Dark blotched rate	POP rate	Chinook rate
ARCTIC STORM	0.011	3.456	0.066	0.016	0.007
EXCELLENCE	0.005	0.539	0.016	0.090	0.011
GOLDEN ALASKA	0.000	0.265	0.135	0.025	0.007
KATIE ANN	0.000	0.034	0.008	0.508	0.000
OCEAN ROVER	0.000	1.106	0.023	0.007	0.018

Fleet rates (3-day average) – use for test i and ii. (red/yellow means fails test ii)

Fleet	Canary rate	Widow rate	Dark blotched rate	POP rate	Chinook rate
ARCTIC STORM	0.000	1.962	0.020	0.042	0.000
EXCELLENCE	0.000	0.057	0.000	0.000	0.136
OCEAN ROVER	0.000	0.015	0.000	0.004	0.027

Daily Fleet rates - use for test iii. . (red/yellow means fails test iii)

Date	Vessel Name	Canary rate	Widow rate	Dark blotched rate	POP rate	Chinook rate
10/6/12	ARCTIC STORM	0.000	0.467	0.017	0.020	0.000
10/6/12	EXCELLENCE	0.000	0.057	0.000	0.000	0.136
10/6/12	OCEAN ROVER	0.000	0.030	0.000	0.008	0.037

Vessel rates YTD by pool

Pool	Harvesting vessel	Canary rate	Widow rate	Dark blotched rate	POP rate	Chinook rate
1	BAY ISLANDER	0.000	0.284	0.178	0.024	0.014
1	BLUE FOX	0.000	820.317	0.000	0.000	0.000
1	LISA MELINDA	0.000	0.884	0.019	0.195	0.023
1	MARATHON	0.000	0.247	0.093	0.026	0.000
1	MUIR MILACH	0.000	1.156	0.006	0.007	0.010
1	PERSEVERANCE	0.013	0.221	0.063	0.016	0.012
1	SEA STORM	0.000	0.168	0.091	0.004	0.000
1	SEADAWN	0.007	0.333	0.103	0.009	0.005
1	SEEKER	0.018	0.250	0.038	0.017	0.005
2	ARCTIC FURY	0.004	0.247	0.020	0.060	0.005
2	MARK I	0.002	0.861	0.011	0.022	0.015
2	MISS BERDIE	0.013	0.169	0.017	0.286	0.000
2	PEGASUS	0.000	0.914	0.020	0.000	0.035
3	BLUE FOX	0.000	5.964	0.063	0.122	0.000
3	PACIFIC PRINCE	0.000	0.886	0.015	0.004	0.011
3	SEEKER	0.000	1.456	0.032	0.011	0.020

Vessels catch YTD by pool

Pool	Harvesting vessel	Whiting (ytd)	Canary (ytd)	Widow (ytd)	Dark blotched (ytd)	POP (ytd)	Chinook (ytd)
1	BAY ISLANDER	951	0.00	0.27	0.17	0.02	13
1	BLUE FOX	17	0.00	14.04	0.00	0.00	0
1	LISA MELINDA	1,795	0.00	1.59	0.03	0.35	41
1	MARATHON	990	0.00	0.24	0.09	0.03	0
1	MUIR MILACH	1,286	0.00	1.49	0.01	0.01	13
1	PERSEVERANCE	1,170	0.02	0.26	0.07	0.02	14
1	SEA STORM	370	0.00	0.06	0.03	0.00	0
1	SEADAWN	1,626	0.01	0.54	0.17	0.01	8
1	SEEKER	1,394	0.02	0.35	0.05	0.02	7
2	ARCTIC FURY	2,148	0.01	0.53	0.04	0.13	11
2	MARK I	2,926	0.00	2.52	0.03	0.06	43
2	MISS BERDIE	1,746	0.02	0.30	0.03	0.50	0
2	PEGASUS	888	0.00	0.81	0.02	0.00	31
3	BLUE FOX	172	0.00	1.03	0.01	0.02	0
3	PACIFIC PRINCE	1,017	0.00	0.90	0.02	0.00	11
3	SEEKER	201	0.00	0.29	0.01	0.00	4

Remaining quota for 1st Pool

YTD Percentage	Whiting
Bay Islander	85.4
Blue Fox	2.9
Lisa Melinda	568
Marathon	396
Muir Milach	1,325
Perseverence	191.8
Seadawn	314.7
Sea Storm	255.6
Seeker	2.6

Remaining quota for 2nd Pool

YTD Percentage	Whiting
Arctic Fury	899
Mark I	2,347
Pegasus	1,814
Miss Berdie	467

Remaining quota for 3rd Pool

YTD Percentage	Whiting
Bay Islander	421
Blue Fox	1,121
Muir Milach	1,111
Pacific Challenger	1,178
Pacific Prince	2,885
Seastorm	2,233
Seeker	1,128
Western Dawn	1,789

4.3 Relocation of Fishing Effort. If
(i) a Fleet's three (3) day rolling average bycatch rate of Overfished Species or Chinook salmon exceeds the Base Rate for any such species, and that Fleet's cumulative annual bycatch rate for such species exceeds fifty percent (50%) of the Base Rate for such species,
(ii) a Fleet's three (3) day rolling average bycatch rate for any of such species exceeds one-hundred twenty-five percent (125%) of the Base Rate for such species, or
(iii) a Fleet's bycatch rate during any single day exceeds two-hundred percent (200%) of the Base Rate for such species, then that Fleet and the Mothership to which it delivers shall relocate their fishing effort to an area where that Fleet could reasonably expect to achieve a lower Overfished Species and Chinook salmon bycatch rate.
Note: Movement based on chinook: No move required until 50% of pro-rata share of chinook has been used. Then base rate is .06 unless fleet rate is less than .06, in which case the base rate for the fleet in question is .09.

Multiples of the base rate and their usage for movement tests.

Base rate multiple	Canary	Widow	Dark blotched	POP	Chinook	Movement test
100% (=base)	0.11	1.88	0.19	0.22	0.060	i
50%	0.05	0.94	0.09	0.11	0.030	i
125%	0.14	2.35	0.23	0.28	0.075	ii
150%	0.16	2.82	0.28	0.33	0.090	iii
200%	0.22	3.76	0.37	0.44	0.120	

Report elevated tow if rate greater than base but less than 150%. Report high tow if rate > 150% of base.

Exhibit A

WHITING MOTHERSHIP COOPERATIVE
Members as of ___March___, 2012

Permit Owner and Contact	*Permit Number*	*Mailing Address*
American Seafoods Company LLC Mike Hyde Jan Jacobs	GF0351	2025 First Avenue West Suite 900 Seattle, WA 98121
Bay Islander, Inc. Craig Cochran	GF0320	7563 Yaquina Bay Road Newport, OR 97365
Calamari LLC Craig Urness	GF0272	P.O. Box 5583 Charleston, OR 97420
Cooper, Mark E. Mark Cooper	GF0254	P.O. Box 428 Newport, OR 97365
EX-1 Corporation Mike Retherford	GF0810	880 N.E. Sturdevant Road Toledo, OR 97391
Fury Group, Inc. Michael Stone	GF0051 GF0675	4005 20th Avenue West Suite 207 Seattle, WA 98199
F/V Leslie Lee, Inc. Raymond Hall Danny Hall Skip Woodard	GF0144	P.O. Box 2276 Newport, OR 97365
F/V Neahkahnie LLC Dale Myer Donna Parker	GF0374	2727 Alaskan Way, Pier 69 Seattle, WA 98121
Isabella Fisheries LLC Marion Larkin	GF0013	1900 W Nickerson St. Suite 213 Seattle, WA 98199
F/V Seeker, Inc. Jim Seavers	GF0109	1121 S.E. First Street Newport, OR 97365

Permit Owner and Contact	*Permit Number*	*Mailing Address*
FY Fisheries, Inc. Blue Dawn Fisheries, Inc. Harvest Moon Fisheries, Inc. Yaquina Sea Dawn, Inc. Jincks, Inc. Fred Yeck	GF0572	P.O. Box 352 Newport, OR 97365
Larkin, Marion Jean	GF0136	19737 Trophy Lane Mount Vernon, WA 98274
Lisa Melinda Fisheries, Inc. David Smith Jerry Bates	GF0010	P.O. Box 1650 Newport, OR 97365
Marathon Fisheries, Inc. Kurt Cochran Craig Cochran	GF0105	P.O. Box 290 Siletz, OR 97380
MAR-GUN Fisheries, Inc. Gunnar Ildhuso, Jr.	GF0438	101 Nickerson Street Suite 340 Seattle, WA 98109
Mark I, Inc. J. Christopher Garbrick	GF0043	4225 23rd Avenue West Suite 103 Seattle, WA 98199
Miss Berdie, Inc. TS Fisheries, Inc. Stan Schones Tom Stam	GF0517	1483 Old River Road N.E. Siletz, OR 97380
Muir Milach, Inc. Dave Fraser Dave Willmore	GF0795	P.O. Box 954 Mercer Island, WA 98040
New Life Fisheries, Inc. Kurt Cochran	GF0321	P.O. Box 290 Siletz, OR 97380

Permit Owner and Contact	*Permit Number*	*Mailing Address*
Nicole Fisheries LLC Don Jester David Lethin	GF0052	112 Harrison Avenue Centralia, WA 98531
North Sea, Inc. Brian North Mike Storey	GF0132	P.O. Box 207 Chinook, WA 98614
Ocean Ballad, Inc. Don Jester David Lethin	GF708	112 Harrison Avenue Centralia, WA 98531
Pacific Dawn LLC Burt Parker Chris Peterson	GF0273	2324 N.W. 90th Street Seattle, WA 98117
Pacific Draggers, Inc. HB Lee, Inc. David Jincks Fred Yeck	GF0090	P.O. Box 352 Newport, OR 97365
Patience Fisheries, Inc. Mark E. Cooper	GF0256	P.O. Box 428 Newport, OR 97365
Phoenix Processor Limited Partnership Joe Bersch	GF0362	111 West Harrison Street Seattle, WA 98119
Retherford, Mike and Kelly	GF0515	880 N.E. Sturdevant Road Toledo, OR 97391
Sea Clipper LLC (Ocean Gold) Rich Carrol	GF0433	P.O. Box 1104 Westport , WA 98595
Sea Storm Fisheries, Inc. Arctic Storm, Inc. Dale Myer Donna Parker	GF0210	2727 Alaskan Way, Pier 69 Seattle, WA 98121

Permit Owner and Contact	*Permit Number*	*Mailing Address*
Traveler Fisheries LLC J. Christopher Garbrick	GF0111	4225 23rd Avenue West Suite 103 Seattle, WA 98199
Trident Seafoods Corporation Christian Asay	GF0205	5303 Shilshole Ave. NW Seattle, WA 98117
West Coast Fishery Investments LLC (Aleutian Spray) Craig Cross	GF0154 GF0904 GF0971	5470 Shilshole Avenue N.W. Suite 300 Seattle , WA 98107
Whaley, Lloyd D. and Todd	GF0220	PO Box 310 Brookings, OR 97415
Yaquina Trawlers, Inc. Raven Enterprises, Inc. DASL, Inc. Lyle Yeck Robert Smith	GF0124	1676 N.E. Yaquina Heights Drive Newport, OR 97365