Mr. Donald O. McIsaac  
Executive Director  
Pacific Fishery Management Council  
2130 SW Fifth Avenue, Suite 224  
Portland, Oregon 97201

Dear Mr. McIsaac:

We are writing in response to the review draft of Amendment 9 to the Coastal Pelagic Species Fishery Management Plan (FMP). We recommend that the Secretary of Commerce and the National Marine Fisheries Service (NMFS) once again reject the alternatives put forth for determining a maximum sustainable yield (MSY) proxy and allowable biological catch (ABC) for market squid.

The proposed MSY proxy calculations for market squid are based on two unsupported beliefs:

a) “The ability of the California market squid fishery to support landings of 112,771 mt in 1996-97 followed by a strong El Niño and then repeat landings of the same magnitude two seasons later suggest that the stock was not being overfished and that the 113,000 mt level achieved is sustainable.” and

b) “…262 unique blocks were recorded on landing receipts [over a period of 20 years]... This number may be used to represent the total available or potential fishing area in the range of the California fishery for any given season... If we assume that market squid had an equal chance of being caught in any of these potential blocks, we can expand the actual catch by the ratio of exploited to unexploited blocks and obtain the maximum catch that might have been caught in that year.”

Regarding the first conclusion, above:  
Numerous California fisheries (white abalone, pink abalone, green abalone, red abalone, black sea bass, rockfish, and Pacific sardines) and non-California fisheries (orange roughy, Chilean seabass, king mackerel in the Gulf of Mexico, Atlantic bluefin tuna) have produced two years of landings that were well above what was truly sustainable. It is untenable to choose the highest harvest year for California market squid and, based on
the fact that a similar level of harvest was achieved three years later, conclude that the
harvest is “sustainable”.

Regarding the second conclusion, above:
“If we assume that market squid had an equal chance of being caught in any of these
potential blocks, we can expand...” is an important assertion that should not be part of the
development of the MSY proxy if it is not grounded in reality. The catch and trawl data
indicate that market squid is not evenly distributed throughout California. There is no
known basis for stating that squid have an equal chance of being caught throughout the
state, irrespective of squid concentrations, ocean conditions, distance from ports, or other
factors. Additionally, it is not evident that summing the distribution of a mobile fish
species over twenty years is a reliable indicator of the distribution of the species in a
single year.

We suggest that the scientific information is not currently available to determine what
level of market squid harvest is sustainable. Additionally, the process for determining an
MSY proxy for squid in Amendment 9 does not take into account the requirements of
marine mammals, seabirds, and other protected resources, as required by the Magnuson-
Stevens Act.

We suggest that, given the substantial lack of knowledge regarding the life history,
ecology, and distribution of market squid, the Pacific Fishery Management Council
should take a precautionary approach to setting interim harvest limits for market squid
while sufficient biological data are collected. As NMFS recognizes, market squid are
forage to many fish, seabird, and marine mammal predators. The harvest of squid
removes protein from the middle of the food chain. The ramifications of taking too much
squid will be substantial if landings are not sustainable and if sufficient food for higher
trophic level animals is not left in the sea. The difficulty of recovering overexploited
fisheries once they have collapsed, many examples of which are unfortunately available

Our points of contact for this issue are Gary Davis and Kate Faulkner who may be
contacted at 805/658-5707 and 805/658-5709. Thank you for this opportunity to
comment and please include us on your mailing list for notice of future fishery
management plans or amendments that affect southern California marine ecosystems

Sincerely,

Kate Faulkner

for
Tim J. Setnicka
Superintendent
September 7, 2000

Pacific Fishery Management Council
2130 SW Fifth Avenue, Suite 224
Portland, OR 97201

Comments on September 2000 PFMC agenda item I. 1, Coastal Pelagic Species FMP Amendment 9: Squid MSY

Chairman Lone and Council members,

The Center for Marine Conservation (CMC) respectfully submits these comments on the issue of setting MSY for market squid (Loligo opalescens), in draft amendment 9 to the Coastal Pelagic Species (CPS) Fishery Management Plan. CMC represents over 20,000 members on the west coast with an interest in healthy ocean ecosystems. We have carefully tracked the development of squid MSY options through participation in the CPS advisory panel and other processes.

SUMMARY OF COMMENTS: The landings expansion (preferred option) should not be used in setting MSY for market squid because it relies on questionable assumptions and inadequate data. Instead, an average of landings over the most recent 5 or 10 years should be used as the MSY proxy in this data-poor situation.

COMMENTS: The scientists who worked on this task have done an admirable job of analyzing the available information and generating useful hypotheses, but the fundamental problem is that the available data are inadequate. It simply isn’t possible to make a credible MSY estimate using such incomplete data. In particular, the preferred option relies on an expansion of landings data to estimate potential squid catch if fishing effort had occurred in unfished areas. Necessary data on squid abundance are lacking, so this estimate of potential landings is forced to rely on two questionable assumptions that lack scientific support:

Assumption 1: squid don’t move away from spawning sites
Assumption 2: CPUE for squid is equal in all areas where squid have ever been caught

Regarding assumption 1, the landings expansion assumes that any recorded catch of squid is evidence of squid spawning in the same areas, essentially assuming that squid don’t move. (draft EA/RIR page 10: “It is further assumed that there is little or no migration from spawning location to midwater trawl capture location.”) However, there is evidence from California and elsewhere that market squid and other closely related species form spawning aggregations in particular areas and that squid populations do not necessarily inhabit these same areas when
they’re not spawning. The squid fishery which targets spawning aggregations also suggests that this assumption is invalid.

Regarding assumption 2, the landings expansion assumes that unutilized areas could produce squid landings equal to areas targeted by the fishery. This approach uses a very crude measure of catch per unit effort (CPUE) in fished areas and applies it across larger unfished areas where no CPUE data are available. The CPUE data used in this analysis are total landings/blocks utilized (100 square mile blocks) which is not an accurate measure of CPUE. Despite this weakness, the crude CPUE data is applied across larger areas (56-90% of the total) where previous squid landings have been recorded but where no squid CPUE data are available. The MSY proxy obtained by this approach is simply a linear expansion of crude CPUE data to large areas where squid have been found. This is a risky approach with little scientific validation and it is contrary to generally accepted scientific standards on the use of CPUE data.

The two assumptions listed above are weakest for the coastwide expansion that relies on squid catch in midwater trawls throughout the range of squid along the US west coast. However, the same problems exist in using these assumptions for the California expansion that relies only on landings data. Some of the reported squid landings are from squid caught incidentally in other fisheries (such as trawl fisheries) and they are not from fisheries that specifically target spawning aggregations of squid. Thus, use of landings data for the California expansion also relies on the assumption that squid don’t move from spawning sites to the locations of capture. Similarly, the use of landings data for the California expansion relies on the assumption that CPUE for squid fishing would be equal in all areas where squid have ever been landed, a questionable assumption without any scientific support.

Another concern with the preferred option for MSY is that squid from unfished areas are counted in developing an MSY for the existing fishery. Local depletion is likely if the entire MSY is taken from the few areas currently fished and squid don’t move from spawning sites (as assumed in the analysis). Alternatively, if squid do move substantial distances from spawning sites, then the landings expansion is not scientifically valid because it may be double counting squid, once in landings data (at spawning sites) and again in trawl bycatch (when squid are not aggregated for spawning).

The most defensible option for squid MSY is an average of landings data over 5 or 10 years, which focuses on the modern fishery over a broad range of environmental conditions. While not a perfect solution, it makes the best use of the available data and is supported by NMFS’ Technical Guidance on the Use of Precautionary Approaches to Implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act (NOAA Technical Memo NMFS-F/SPO-31, August 1998, Restrepo, et al.).

Thank you for the opportunity to comment on these issues,

Mark Powell, Ph.D.
Pacific Fisheries Project Manager
September 11, 2000

Donald O. McIsaac, Executive Director
Jim Lone, Chairman
Pacific Fishery Management Council
2130 SW Fifth Avenue, Suite 224
Portland, OR 97201

Re: Coastal Pelagic Species FMP Amendment 9: Review Draft

Dear Dr. McIsaac & Chairman Lone:

The Natural Resources Defense Council submits this letter as our comments on the market squid portions of the draft Coastal Pelagic Species FMP Amendment 9. NRDC is an environmental organization with over 125,000 members in the Pacific region. We serve on California's Squid Fishery Advisory Committee (SFAC) and helped develop the state laws now governing the market squid fishery. Based on our extensive involvement with this fishery, we have grave concerns about the methods used in the draft FMP to estimate an area-based MSY proxy for squid, and the resulting proposal to set MSY at over 245,000 metric tons (mt). We are also disturbed that the FMP gives minimal consideration to the vital ecosystem role squid play as forage for marine mammals, birds and fish, and to the potential impacts of the fishery on birds.

We agree with statements in the draft amendment that data are lacking to set a well-founded MSY, that an MSY proxy may not be practical for managing squid, and that other measures designed to ensure adequate spawning are more likely to protect squid from overfishing. Unfortunately, the only such measure now in place—a weekend closure—is under attack by squid processors and to a lesser extent by fishermen. Efforts to put long-term management in the hands of Fish and Game Commissioners who are equipped to make such decisions rather than leaving them to the legislature have been thwarted by lobbyists, and the future of state management is unpredictable at best. So, although we support and will continue to work toward sound state management of squid, we believe a proxy for MSY or long-term potential yield may be useful as a trigger for federal involvement in the event that state management efforts fail. It is critical, however, that such a proxy be based on a balanced consideration of risk—risk due to our lack of knowledge about squid populations and risk due to their dependence on ocean conditions. Likewise, the methodology used to set the proxy should minimize the introduction of unnecessary uncertainty. We believe the preferred MSY proxy in Amendment 9 fails these tests.

Our primary concern about the area-based methodology used to estimate the preferred MSY proxy is its dependence on a series of assumptions that appear to be unrealistic, given what we currently know about squid. The methodology first inflates squid landings data by taking all the blocks where squid were caught in the fishery from 1981 to 1999 and assuming that landings could have been as high in every one of those blocks in a single year as they were in the subset of blocks where squid were actually caught that year. For that assumption to be valid, squid would have to be equally dense and equally catchable in all the blocks where the fishery has operated over almost two decades. In fact, data on squid indicate that their distribution and population size shifts over time based on the availability of prey, ocean conditions,
and other factors. Furthermore, if squid were equally dense and catchable over the entire historic range of fishing operations, squid boats would be unlikely to crowd together as they do, risking their safety and the potential for a clearer shot at their catch. In short, the first set of assumptions for expanding landings data is ill-founded.

The methodology then inflates landings data a second time by assuming that the presence of squid in midwater- and bottom-trawl survey tows provides an accurate indicator of squid spawning habitat all along the California coast. Similar assumptions are then used to expand that inflated estimate to a Pacific coast level. In fact, there appears to be little scientific basis for assuming that the presence of a squid (ranging in age from a few weeks to six months old) in a trawl survey indicates a squid spawning area. Available information suggests that squid aggregate in certain areas to spawn. The assumption that each of the 262 blocks where squid were found in a trawl tow has a productivity level equal to the blocks where squid are known to aggregate for spawning is unrealistic and could vastly overestimate the size of the squid population. Another source of data, the CalCOFI larval data base, may shed light on the difference in productivity in the trawl survey blocks where squid were found. This data should be analyzed to help develop more reasonable assumptions.

Because the assumptions used in this particular area-based methodology tend to overestimate squid populations at each stage of the process of inflating landings, the choice of this methodology as the preferred one implicitly leads to risk-prone choices without explicitly revealing the risks involved. To assist managers in making choices, the analysis in the review draft should instead aim to display the risks involved in the various options as clearly as possible.

Fishermen with many years of experience in the squid fishery find the assumptions of this specific area-based method untenable. After listening to a presentation on this method, the industry-dominated Squid Fishery Advisory Committee voted to recommend use of a landings-based approach instead of the area-based approach. A majority of the SFAC endorsed an MSY proxy of about 125,000 mt, about half the preferred 245,000 mt MSY proxy in the Amendment 9 draft. That fact that normally risk-prone fishermen are recommending a much smaller MSY proxy than that proposed in Amendment 9 should give Council members pause about the methodology.

NRDC is also very concerned that the discussion of allowable biological catch (ABC) and environmental effects contained virtually no consideration of the need to sustain the forage role of squid. According to Section 5.2.1, harvests in the realm of 113,000 mt occurring on either side of a two-year hiatus in the fishery suggests that harvests at that level are sustainable. That conclusion focuses only on the sustainability of the squid fishery itself, not on the sustainability of squid as part of a broader ecosystem. (Besides, an alternative conclusion might be that those levels are sustainable as long as a two-year rest period occurs in between). In our view, the critical role squid play as a source of food for marine mammals, fish and birds should receive more attention in the review draft, and ABC should incorporate a reduction from the MSY proxy in recognition of the crucial role squid play in ocean ecosystems.

The bycatch section of the draft should include a more complete discussion of the potential impacts of the squid fishery and lights on marine mammals and bird populations, including brown pelicans and Xantus’ murrelets. We recognize and support the steps California has taken to require hoods and reduce wattage on squid lights. At the same time, the failure to even mention these issues except as part of a list of existing management measures downplays their importance and the need for monitoring to determine whether these measures are sufficient to address the problem.
NRDC is fully aware of the weak basis for setting an MSY proxy, and the desire to avoid triggering federal management based on insufficient data. MSY may never be a useful management tool in this fishery. Nonetheless, we believe there are ways to set a proxy using methods that rely less on unrealistic assumptions and that better display the risks involved in different choices (perhaps by providing a probability distribution rather than a single number for the proxy). We do not reject an area-based approach out of hand, but object to the way it has been applied. At a minimum, we recommend that the draft be expanded to incorporate the kind of analysis proposed by Jon Brodziak in his June 29 comments on the review draft. We also recommend that an MSY or long-term potential yield proxy be adopted with the understanding that it will be modified as more data or better management tools become available.

We appreciate the opportunity to comment on the draft amendment.

Sincerely,

Karen Garrison
Co-Director, NRDC Oceans Program
5 September 2000

Donald O. McIsaac, Executive Director
Jim Lone, Chairman
Pacific Fishery Management Council
2130 SW Fifth Avenue, Suite 224
Portland, OR 97201

Dear Mr. McIsaac & Mr. Lone,

I represent the Pfieger Institute of Environmental Research (PIER). PIER is a non-profit marine fisheries lab that conducts original research relative to important fisheries issues. PIER was among the first institutions to initiate an active California market squid research program. Representatives from PIER have played a role in developing management options through participation in advisory panels. Throughout our extensive field and laboratory experience we have worked closely with fishermen, giving us solid insight into the issues coming before the Pacific Fisheries Management Council (PFMC) with respect to this fishery.

The Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) has included the California market squid (Loligo opalescens) as a monitored species. As such, it has become necessary to establish a level for Maximum Sustainable Yield (MSY) and a level of Allowable Biological Catch (ABC) for this species. Amendment 9 of the CPS FMP proposes several alternatives for MSY; the preferred option of the CPS Management Team (CPSMT) recommends setting MSY at over 245,000 mt. Furthermore, the CPSMT has recommended setting an ABC at 100% of MSY. I believe the model used to establish this MSY level to be based on poor assumptions and the rationale for setting ABC equal to MSY to be absent. This leaves us with an irresponsibly high ABC during a time when we should be using the precautionary approach.

The CPSMT presented three approaches for determining an MSY proxy. The preferred alternative combines data from several different trawl surveys that recorded market squid as bycatch. None of these surveys were designed to sample market squid and many different sampling techniques (gear, depth and tow times) were used. This model, called MSY Based on Coastwide Expansion from Midwater Trawl Data, is entirely dependent on two indefensible assumptions.

1) Midwater and bottom trawl data provide a measure of coastwide spawning area
2) Market squid do not migrate away from the area they hatch
Assuming that the presence of a squid in a fish trawl survey is evidence of squid spawning habitat has absolutely no scientific merit. Many of the squid collected during these trawl surveys had not yet reached sexual maturity. Landings data clearly demonstrate that market squid aggregate to spawn at specific locations. Commercial landings from these known spawning areas are orders of magnitude greater than any incidental landings that occur outside of the spawning areas.

The first assumption is entirely dependent on the second assumption: squid do not migrate from the region they originated (hatched). If this were the case, the waters around some of the Channel Islands would be writhing with squid! Everything we know about squid indicates that they are a highly mobile predator that goes wherever is necessary to find prey, and migrates back to traditional spawning grounds to complete their life cycle. Remember, squid were placed in the Coastal Pelagic Species plan, the word pelagic in itself is contrary to the assumption that these animals do not move. The CPSMT takes a further step by using this assumption to invalidate catch records as a reasonable basis for determining an MSY proxy. The review draft states that since high numbers of squid were found in trawl surveys far from the historic areas targeted by the fishery, that the fishery is an unreliable source of information. By simply accepting the fact that squid migrate, this argument becomes silly.

Another approach discussed in the review draft is also deeply entrenched in an ill-founded assumption:

1) Market squid have an equal chance of being caught in all blocks (California Department of Fish and Game area blocks) that have been documented as the source of a squid landing between 1981-1999.

This assumption also goes against everything we know about this species and its fishery. California Department of Fish and Game (CDFG) landings data clearly show very high density of squid caught at particular locations, again, due to the fact that this species aggregates to spawn at traditional sites. If the above assumption was true, light boats and seiners would not be battling for position over the best sites, instead they would spread themselves out over a huge area and stay out of each other’s way. Fishermen sometimes incidentally catch small quantities of squid using a variety of gears targeting other species. These small landings add a little cash to the pockets of the fishermen, but do not lend themselves to be the basis of a biomass model.

At the most recent meeting of the Squid Fishery Advisory Committee (SFAC), a group of industry representatives appointed by the Director of CDFG, the topic of MSY was discussed. CDFG staff presented their preferred alternative, which is the same MSY based on Coastwide Expansion from Midwater Trawl Data. The assumptions used were discussed and dismissed, and
an MSY proxy based on historic catch levels was recommended to the Director of CDFG. The MSY value recommended by the SFAC was far less than that proposed as the preferred alternative in the review draft. It should cause alarm in each and every PFMC member when the fishery participants are proposing an MSY less than half that proposed by the CDFG and CPSMT.

Both the CPSMT and the SFAC recommend setting ABC at 100% of MSY for their respective recommended levels of MSY. The fishery representatives argue that they have been harvesting squid at a repeatable level and therefore ABC should be 100% of the catch-based MSY proxy. This argument is simple and defensible. On what grounds can the CPSMT justify setting ABC to MSY? There are no scientific grounds for this action! Their preferred MSY alternative is based upon poor guesswork, and we have no historical comfort with harvesting squid at this inflated level. A proxy MSY based on catch records is the only responsible approach at this time. I have attached a copy of the letter from the SFAC to the Director of CDFG. This letter outlines a proposed MSY of the highest catch on record plus 10% and setting ABC equal to MSY. The Pfleger Institute of Environmental Research finds this acceptable at this time, with the caveat that the catches and biomass be monitored closely so that ABC can be adjusted as need be. The population level of market squid is very dynamic and cannot be viewed in a traditional mindset; flexibility will be a key to successful management of this species.

Time permitting I look forward to presenting some new squid data during Friday’s PFMC CPS agenda item. These data were gathered from a preliminary examination of CalCOFI samples, and support the invalidation of some of the assumptions I discussed above.

Sincerely,

Michael L. Dornier, Ph.D. - President
To: Robert C Hight, Director, Cal F&G  
From: Squid Fishery Advisory Committee  
Subject: Maximum Sustainable Yield  
Date: 6/13/00

Dear Mr. Hight

At the June 13 meeting of the SFAC held at the offices of CDF&G in Long Beach we voted on the matter of Maximum Sustainable Yield (MSY) being considered for the Pacific Fishery Management Council amendment 9, of the Coastal Pelagic Species Plan for squid. We feel this may be the biggest issue we have dealt with in our advisory capacity. We are well informed on the squid fishery and ask that you consider our proposal and advance our recommendation to the Pacific Fishery Management Council.

Because squid has many unknown qualifiers as to the size of the biomass available for harvest we are obliged to recommend the Allowable Biological Catch (ABC) be set at the highest catch on record plus 10% and be equal to the Maximum Sustainable Yield. This would take into consideration the fact that most in our industry and the majority of our committee believe that on any given year, considerable amounts of squid were available to harvest but due to market conditions and trip (boat) limits excess available squid were not harvested. This availability of squid above the catch records indicate that the MSY is larger than the harvest and has been the case for many of the past years. Therefore if the Federal regulations MUST implement an MSY and ABC, the volume be sufficient to recognize the harvest potential and allow the industry to realize its potential. For example it is widely believed that the fleet could have harvested twice as much squid this past season (Sept-April) had the boats not been subject to low limits based on unfavorable market conditions. The SFAC does not specify what amount we believe could have been harvested but does acknowledge that the MSY and the ABC should be set high and adjusted up or down as good science becomes available in the future. It is critical to the health of this industry and the thousands of people employed that we not allow the harvest to be unrealistically curtailed and the available healthy harvest of this resource go underutilized.

In closing, it is the request of the SFAC that the ABC be equal to the MSY and that the ABC be set at the highest catch plus 10%.

Sincerely, John Borman  
Co-Chairman, Cal. Squid Fishery Advisory Committee

John Borman
September 11, 2000

Donald O. McIsaac, Executive Director
Jim Lone, Chairman
Pacific Fishery Management Council
2130 SW Fifth Avenue, Suite 224
Portland, OR 97201

Re: Coastal Pelagic Species FMP Amendment 9: Review Draft

Dear Dr. McIsaac & Chairman Lone:

The Natural Resources Defense Council submits this letter as our comments on the market squid portions of the draft Coastal Pelagic Species FMP Amendment 9. NRDC is an environmental organization with over 125,000 members in the Pacific region. We serve on California’s Squid Fishery Advisory Committee (SFAC) and helped develop the state laws now governing the market squid fishery. Based on our extensive involvement with this fishery, we have grave concerns about the methods used in the draft FMP to estimate an area-based MSY proxy for squid, and the resulting proposal to set MSY at over 245,000 metric tons (mt). We are also disturbed that the FMP gives minimal consideration to the vital ecosystem role squid play as forage for marine mammals, birds and fish, and to the potential impacts of the fishery on birds.

We agree with statements in the draft amendment that data are lacking to set a well-founded MSY, that an MSY proxy may not be practical for managing squid, and that other measures designed to ensure adequate spawning are more likely to protect squid from overfishing. Unfortunately, the only such measure now in place—a weekend closure—is under attack by squid processors and to a lesser extent by fishermen. Efforts to put long-term management in the hands of Fish and Game Commissioners who are equipped to make such decisions rather than leaving them to the legislature have been thwarted by lobbyists, and the future of state management is unpredictable at best. So, although we support and will continue to work toward sound state management of squid, we believe a proxy for MSY or long-term potential yield may be useful as a trigger for federal involvement in the event that state management efforts fail. It is critical, however, that such a proxy be based on a balanced consideration of risk—risk due to our lack of knowledge about squid populations and risk due to their dependence on ocean conditions. Likewise, the methodology used to set the proxy should minimize the introduction of unnecessary uncertainty. We believe the preferred MSY proxy in Amendment 9 fails these tests.

Our primary concern about the area-based methodology used to estimate the preferred MSY proxy is its dependence on a series of assumptions that appear to be unrealistic, given what we currently know about squid. The methodology first inflates squid landings data by taking all the blocks where squid were caught in the fishery from 1981 to 1999 and assuming that landings could have been as high in every one of those blocks in a single year as they were in the subset of blocks where squid were actually caught that year. For that assumption to be valid, squid would have to be equally dense and equally catchable in all the blocks where the fishery has operated over almost two decades. In fact, data on squid indicate that their distribution and population size shifts over time based on the availability of prey, ocean conditions,
and other factors. Furthermore, if squid were equally dense and catchable over the entire historic range of fishing operations, squid boats would be unlikely to crowd together as they do, risking their safety and the potential for a clearer shot at their catch. In short, the first set of assumptions for expanding landings data is ill-founded.

The methodology then inflates landings data a second time by assuming that the presence of squid in midwater- and bottom-trawl survey tows provides an accurate indicator of squid spawning habitat all along the California coast. Similar assumptions are then used to expand that inflated estimate to a Pacific coast level. In fact, there appears to be little scientific basis for assuming that the presence of a squid (ranging in age from a few weeks to six months old) in a trawl survey indicates a squid spawning area. Available information suggests that squid aggregate in certain areas to spawn. The assumption that each of the 262 blocks where squid were found in a trawl tow has a productivity level equal to the blocks where squid are known to aggregate for spawning is unrealistic and could vastly overestimate the size of the squid population. Another source of data, the CalCOFI larval data base, may shed light on the difference in productivity in the trawl survey blocks where squid were found. This data should be analyzed to help develop more reasonable assumptions.

Because the assumptions used in this particular area-based methodology tend to overestimate squid populations at each stage of the process of inflating landings, the choice of this methodology as the preferred one implicitly leads to risk-prone choices without explicitly revealing the risks involved. To assist managers in making choices, the analysis in the review draft should instead aim to display the risks involved in the various options as clearly as possible.

Fishermen with many years of experience in the squid fishery find the assumptions of this specific area-based method untenable. After listening to a presentation on this method, the industry-dominated Squid Fishery Advisory Committee voted to recommend use of a landings-based approach instead of the area-based approach. A majority of the SFAC endorsed an MSY proxy of about 125,000 mt, about half the preferred 245,000 mt MSY proxy in the Amendment 9 draft. That fact that normally risk-prone fishermen are recommending a much smaller MSY proxy than that proposed in Amendment 9 should give Council members pause about the methodology.

NRDC is also very concerned that the discussion of allowable biological catch (ABC) and environmental effects contained virtually no consideration of the need to sustain the forage role of squid. According to Section 5.2.1, harvests in the realm of 113,000 mt occurring on either side of a two-year hiatus in the fishery suggests that harvests at that level are sustainable. That conclusion focuses only on the sustainability of the squid fishery itself, not on the sustainability of squid as part of a broader ecosystem. (Besides, an alternative conclusion might be that those levels are sustainable as long as a two-year rest period occurs in between). In our view, the critical role squid play as a source of food for marine mammals, fish and birds should receive more attention in the review draft, and ABC should incorporate a reduction from the MSY proxy in recognition of the crucial role squid play in ocean ecosystems.

The bycatch section of the draft should include a more complete discussion of the potential impacts of the squid fishery and lights on marine mammals and bird populations, including brown pelicans and Xantus’ murrelets. We recognize and support the steps California has taken to require hoods and reduce wattage on squid lights. At the same time, the failure to even mention these issues except as part of a list of existing management measures downplays their importance and the need for monitoring to determine whether these measures are sufficient to address the problem.
NRDC is fully aware of the weak basis for setting an MSY proxy, and the desire to avoid triggering federal management based on insufficient data. MSY may never be a useful management tool in this fishery. Nonetheless, we believe there are ways to set a proxy using methods that rely less on unrealistic assumptions and that better display the risks involved in different choices (perhaps by providing a probability distribution rather than a single number for the proxy). We do not reject an area-based approach out of hand, but object to the way it has been applied. At a minimum, we recommend that the draft be expanded to incorporate the kind of analysis proposed by Jon Brodziak in his June 29 comments on the review draft. We also recommend that an MSY or long-term potential yield proxy be adopted with the understanding that it will be modified as more data or better management tools become available.

We appreciate the opportunity to comment on the draft amendment.

Sincerely,

Karen Garrison
Co-Director, NRDC Oceans Program