

10/11/12

Dan Wolford
Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

Dear Chair Wolford and Council Members,

We appreciate the opportunity to submit the attached application for an Exempted Fishing Permit (EFP) for the 2013 and 2014 groundfish seasons.

Over the last ten years the Rockfish Conservation Area (RCA) has been an important tool in minimizing the catch of depleted species. However, we believe that not enough has been done to study its role in advancing rebuilding of depleted stocks through increased production. At the same time, it's also a coarse tool and may close some areas unnecessarily, especially given the assurances that come from the trawl rationalization program's Individual Fishing Quotas (IFQ) hard bycatch caps, observer coverage, and strong fishermen incentives. In addition, there are stocks of some species such as chillipepper, yellowtail rockfish, and lingcod that are difficult to access due to their proximity to the RCA. Currently, we do not know enough about the distribution of these rebuilding stocks to inform bycatch avoidance plans and promote fishing opportunities for underutilized stocks.

We are therefore working with the EFP partners and others on a collaborative research plan that includes conducting a spatial analysis of fisheries independent data to identify trends in size and abundance for rebuilding species as well as identify the areas that are predicted to be "hotspots" and "coldspots" for these species. We will conduct focused surveys with a Remotely Operated Vehicle (ROV) to groundtruth those predicted "hotspots" and "coldspots" within the Central Coast of California.

However, to both supplement and further groundtruth this analysis, we are requesting permission to conduct hook and line and trap fishing within the RCA off the Central Coast. In conjunction with ROV surveys, we will test the conclusions of the spatial analysis with respect to constraining species abundance, length, and habitat. We will also collect important biological information such as maturity, fecundity, and ageing. As funding permits, we will also explore the use of descending devices to test survivorship from barotraumas at depths within the RCA. Exact sampling locations will depend on the results of the spatial analysis which is not yet complete; however, we anticipate that we can provide coordinates by either the March or April Council meeting, depending on how far along the analysis is.

All quota needs, research, and observer costs will be covered by the EFP partners.

We believe that this information will have coast wide and fleet wide value and can, 1) be used in stock assessments and to potentially reduce uncertainty buffers, 2) inform any reconfiguration of the RCA that may occur, and 3) help guide fishing plans and bycatch avoidance efforts. This project achieves the priority considerations for EFP proposals.

We are excited that this project represents an opportunity to bring together a range of partners and data sources to meaningfully inform science, management, and fishing effort and we respectfully request the Council's consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Roger Cullen". The signature is fluid and cursive, with the first name "Roger" and last name "Cullen" clearly distinguishable.

Roger Cullen
President
Central Coast Sustainable Groundfish Association

Application for an Exempted Fishing Permit (EFP)

Title: Supporting a spatial analysis of the distribution and size of rebuilding stocks in the Rockfish Conservation Area through directed fishing surveys

a) Date of Application: October 13, 2011

b) Applicant: Central Coast Sustainable Groundfish Association (Roger Cullen [President], Chris Kubiak)

Project Partners:

The Nature Conservancy (Dr. Mary Gleason, Michael Bell, Steve Rienecke)

Environmental Defense Fund (Shems Jud, Dr. Rod Fujita, Huff McGonigal)

Academic Science advisors and partners:

Dr. Jono Wilson (University of California, Santa Barbara)

Dr. James Lindholm (California State University Monterey Bay)

Dr. Rick Starr (Moss Landing Marine Laboratory / California Sea Grant)

Dr. Dean Wendt (California Polytechnic University)

Dr. John Field (NMFS/SWFSC)

SUMMARY

Fishing opportunities, and the economic and social benefits associated with them, may be unnecessarily constrained in the groundfish fishery due to a lack of understanding of whether and how the RCAs are contributing to the rebuilding of depleted stocks. This EFP will result in a synthesis of existing data (best available information regarding the spatial distribution of depleted stocks) that will help fishermen avoid hot spots of depleted species, and new data on the status of stocks (abundance and productivity) within the RCAs that will inform stock assessments to more accurately reflect stock status. This information is critical for science-based management, including adjustments to rebuilding schedules, precautionary buffers, and ACLs that may be necessary. Moreover, fishermen are currently constrained by the potential economic burden of encountering rebuilding species during exploratory fishing or fishing near the RCAs and other depth-related closures. For this reason, landings of many targeted species (eg. lingcod, yellowtail rockfish, and chilipepper) are significantly lower than quota allocations due to efforts to avoid bycatch near the RCA. Using a combination of spatial modeling, fishermen knowledge, and scientific experimentation, the opportunity exists to increase the potential for fishermen to meet target quotas and reduce interactions with rebuilding species. Specifically, we request permission to conduct

fishing surveys within the RCAs to generate new data on the presence of rebuilding stocks and their stock status. This EFP has three broad goals:

- Inform our understanding of the contribution of RCA toward rebuilding populations of depleted stocks.
- Integrate data of various types and scales to build best available map of distribution of rebuilding stocks.
- Inform fishing opportunities and bycatch avoidance plans.

c) Statement of Purpose and Goals:

The Rockfish Conservation Areas (RCAs) were implemented in 2002 as depth-based closures aimed at minimizing the potential to catch overfished species (eg. yelloweye rockfish, canary rockfish, widow rockfish, dark-blotched rockfish, cowcod, and bocaccio) that constrain the groundfish fishery, and they have largely been effective at achieving that purpose. However, the larger goal of the RCAs was to help these depleted stocks rebuild so that the fishery can become less constrained. Many factors need to be examined in order to determine whether the RCAs have in fact contributed to stock rebuilding, including the biological status (abundance, size structure, and productivity) of stocks within the RCAs; collecting biological data from within the RCA would help to inform stock assessments and setting uncertainty buffers by managers.

The recent transition of the trawl sector of the groundfish fishery to a catch share management system and the associated hard caps for these rebuilding species has created strong new incentives for fishermen to avoid these species on their own. Given these incentives and the fact that Annual Catch Limits (ACLs) for these rebuilding species are not to be exceeded, there has been a growing interest in developing better spatial maps of the distribution of these rebuilding species to inform fishing activities (ie. bycatch avoidance plans, risk pools, etc.) and management efforts (including potentially a reexamination of the role and configuration of the trawl RCA). In addition, there are other species, such as lingcod, yellowtail rockfish, and chilipepper rockfish that could be more fully utilized if fishermen could fish "cleaner" near the trawl RCA with reduced risk of bycatch of rebuilding species.

This Exempted Fishing Permit (EFP) application to conduct directed fishing activities (hook & line and trap surveys) within the RCA is a critical part of a larger effort to address these factors comprehensively; we plan to map the distribution of rebuilding species and collect biological information on stock status to inform spatial fishing plans, any potential future reconfiguration of the RCA, and stock assessments. The data collected under the proposed EFP are an important part of a broader collaborative research effort to bring together the best available scientific data, local knowledge, and new data collected through focused field research. Together these data will allow us to create and refine spatial maps of areas of predicted high and low density (as well as length frequency distributions) for rebuilding species.

Partners on this EFP include fishermen, The Nature Conservancy (TNC), Environmental Defense Fund (EDF), academic science advisors and partners from the University of California Santa Barbara, California State University Monterey Bay, Moss Landing Marine Laboratory, California Polytechnic State University, and also federal agency science advisors from the National Marine Fisheries Service Southwest Fisheries Science Center (NMFS/SWFSC) Santa Cruz lab. As part of our larger collaborative research effort in which this EFP is nested, we are conducting spatial analyses and modeling of existing fisheries-dependent and fisheries-independent data, in combination with local knowledge and best available habitat data, to identify areas of predicted high and low density (“hotspots” and “coldspots”, respectively) of rebuilding species coast-wide. We will also be conducting visual surveys using a Remotely Operated Vehicle (ROV) at priority sites inside and near the trawl RCA in the Central Coast (Half Moon Bay to Point Buchon area) of California to assess rebuilding species density and habitat-associations as a first step toward ground-truthing the spatial analysis at a finer spatial scale. While the focus will be on rebuilding species, similar analyses can be conducted on an opportunistic basis for target species, as time and funding allow.

This EFP application is focused on gaining permission to use directed fishing surveys using vertical hook & line (targeting subadults and adults) and traps (targeting juveniles) inside the trawl RCA and non-trawl RCA to ground-truth the spatial analysis and ROV survey data. This study will be conducted in Central Coast fishing grounds between Half Moon Bay and Pt. Buchon; exact locations and study design for the directed fishing effort will be determined after the spatial analysis of existing data. All rebuilding species sampled from hook & line and trap surveys will be retained for biological analyses of growth, maturity, and fecundity. Efforts to ground-truth cold spots will target all species equally to confirm that they are in fact areas of low density for all rebuilding species, including yelloweye rockfish and cowcod. However, efforts to ground-truth hotspots, as well as to analyze growth, maturity, and fecundity patterns, will target canary rockfish, widow rockfish, and bocaccio and will aim to avoid cowcod and yelloweye rockfish (to the extent possible) due to the limited quota available. Therefore the results of the biological analysis portion of study will be most relevant to informing our understanding of the distribution of canary rockfish, widow rockfish, and bocaccio. **The quota needed to prosecute the EFP will be provided by the applicants and partners, and is described below.**

Broad goals of the EFP:

- 1) **Inform our understanding of the contribution of RCA toward rebuilding populations of depleted stocks:** To better understand the contribution of the RCA towards rebuilding depleted populations of formally declared overfished species, we will conduct a coast-wide spatial analysis of existing fisheries-dependent and fisheries-independent data to identify “cold spots” (ie. predicted low abundance of rebuilding stocks) and “hot spots” (ie. predicted moderate-high abundance of rebuilding stocks) in and near the RCA. We will then assess fish densities, length frequencies, and habitat associations of these rebuilding species inside and seaward/shoreward of the trawl RCA using visual ROV surveys at selected sites in the Central Coast. Finally, we will ground-truth these visual surveys with hook & line and trap surveys targeting selected

rebuilding species (with a focus on canary rockfish, widow rockfish, and bocaccio) inside and adjacent (seaward and shoreward) to the trawl RCA in these same sites; fishing shoreward of the trawl RCA at <100 fathoms will necessitate some fishing effort in the non-trawl RCA. All rebuilding species caught will be retained and length, weight, and biological samples will be provided to NMFS/SWFSC. These biological samples will potentially inform stock assessments and may provide a basis for reducing uncertainty buffers through the understanding of demographic patterns for rebuilding species within and adjacent to RCA.

- 2) **Integrate data of various types and scales to build best available map of distribution of rebuilding stocks:** We aim to test an approach for combining and integrating the best available scientific data (fisheries independent and fisheries-dependent data, available habitat data) with local knowledge and new data from focused field surveys (ROV and directed fishing effort) to develop the most accurate map possible of the distribution of rebuilding species with the goals of improving bycatch avoidance plans and to enhance fishing opportunities near the RCA. This ground-truthed spatial analysis will provide important information on the validity of this approach of integrating different types and scales of data that will be relevant coast-wide. Our enhanced understanding of the distribution of these species inside and near the RCAs will help to inform any future management discussions concerning reconfiguration of the RCAs.
- 3) **Inform fishing opportunities and bycatch avoidance plans:** The directed fishing research effort will inform spatial fishing plans and fishing opportunities in the Central Coast with the goal of reducing bycatch of rebuilding species and improving fishing opportunities for areas that can be targeted “cleanly” near the RCA.

Disposition of all species: Target species (listed below) not needed for biological analyses would be sold commercially. Biological samples from rebuilding species would be provided to NMFS/SWFSC for analysis of biological parameters. If funding allows, we may also explore the efficacy of descending devices for both rebuilding species and target species; however, all species caught would be counted against available quota.

d) Justification:

Fishing opportunities, and the economic and social benefits associated with them, may be unnecessarily constrained in the groundfish fishery due to a lack of understanding of whether and how the RCAs are contributing to the rebuilding of depleted stocks. This EFP will result in a synthesis of existing data (best available information regarding the spatial distribution of depleted stocks) that will help fishermen avoid hot spots of depleted species, and new data on the status of stocks within the RCAs that will make possible updated assessments that will more accurately reflect stock status. This information is critical for science-based management, including adjustments to rebuilding schedules, precautionary buffers, and ACLs that may be necessary.

This EFP is necessary because, while we can and will synthesize existing data to try to identify hot and cold spots of rebuilding species, a paucity of data exists. Our planned ROV surveys will help correct this deficiency, but the fishing surveys that this EFP would make possible would provide further ground-truthing and the biological samples necessary to accurately estimate fish sizes and productivity.

In order to create the most accurate map of spatial distribution of rebuilding species to inform fishing activities and fisheries management, we need to demonstrate that we can combine all of the best available scientific information, local knowledge, and strategic and focused surveys using visual techniques (ROV) and directed fishing research efforts. The spatial analysis that this EFP will be ground-truthing will complement fishermen's knowledge about where they can fish "cleanly" to avoid bycatch of rebuilding species and inform spatial fishing plans and spatial fisheries management (eg. any future reconfiguration of the RCA) coast-wide.

Gaining an improved understanding and quantitative data about the role of the RCA in helping to rebuild populations of these depleted species, and in particular their demographic patterns within and near the RCA, is critical to informing stock assessments and management for these species. Reviews of recent stock assessments have identified research and data needs for several constraining and target species. Our work in this EFP will contribute much needed life history, demographic information, and habitat associations of constraining species, as well as quantify survey selectivity for hook & line and trap methods. These needs are universal across species, and in many cases are lacking for depleted populations. Such data is integral to informing stock assessments and results will be communicated directly with stock assessment authors. Additionally, if larger individuals within the RCA are generating increased egg production leading in turn to increased recruitment, studies such as this can lead to a decrease of the uncertainty buffers used to establish ACLs.

Fishermen are currently constrained by the potential economic burden of encountering rebuilding species during exploratory fishing or fishing near the RCAs and other depth-related closures. For this reason, landings of many targeted species (eg. lingcod, yellowtail rockfish, and chilipepper) are significantly lower than quota allocations due to efforts to avoid bycatch near the RCA. Using a combination of spatial modeling, fishermen knowledge, and scientific experimentation, the opportunity exists to increase the potential for fishermen to meet target quotas and reduce interactions with rebuilding species.

e) Broader significance:

This project will promote understanding of the role of closed areas, like the RCAs, in contributing to the rebuilding of overfished species, as well as provide tangible evidence for areas that can be fished more cleanly to inform fishing opportunities. It will help inform stock assessments and may provide a basis for reducing uncertainty buffers. In addition, the results will inform future spatial management decisions, including any reconfiguration of the RCA that is considered. This project is also part of a larger collaborative research effort among many partners (fishermen, NGOs, academic, and agency) and will aim to demonstrate the benefits of combining different types of data and survey techniques to build the

most accurate picture of the distribution of depleted stocks needed to improve fishery performance. This project achieves the priority considerations for EFP proposals.

f) Duration of EFP: 2013 and 2014 fishing seasons. The directed fishing effort will be initiated late in the year (fall) of 2013 and will extend into 2014 as needed to complete the sampling, given the available quota.

g) Number of vessels covered: We anticipate engaging between 2 and 4 fixed gear fishing vessels from Central Coast ports.

h) Species to be harvested and harvest estimates:

We envision sequencing the research activities in a manner such that fishing activities with a low risk of encounter with rebuilding species are completed first, with riskier activities conducted subsequently. Specifically, we will do the ROV surveys first, then the directed fishing near and inside “coldspots”, then the directed fishing near and inside “hotspots” so that we can collect as much data as possible before any EFP hard caps or quota limits are reached.

The project partners will provide the quota needed for the research effort. The species we anticipate encountering and the estimated harvest amounts are as follows:

	Species to be Harvested	Harvest Estimates in quota pounds
Rebuilding species	Cowcod	Up 200 lbs
	Yelloweye rockfish	Up to 34 lbs
	Canary rockfish	Up to 500 lbs (est. 200 lbs.)
	Widow rockfish	Up to 1,500 lbs (est. 300 lbs.)
	Dark-blotched rockfish	Up to 500 lbs (est. 200 lbs.)
	Bocaccio	Up to 1,000 lbs (est. 400 lbs.)
Other Species	Chilipepper rockfish Lingcod Minor shelf rockfish Minor slope rockfish Splitnose rockfish Yellowtail rockfish Other flatfish Pacific whiting Dover sole English sole Petrale sole	Harvest estimates difficult to make at this time; however, harvest amounts will be covered by quota from project partners.

i) Monitoring:

All vessels engaged in the EFP directed fishing will have 100% human observer coverage. Project partners will fund the observer costs during research fishing trips.

j) Data collection and analysis methodology - This EFP application is focused on gaining permission for the collaborative fishing surveys within the RCA that are part of the broader collaborative research effort described above. Under this proposed EFP, we will conduct directed fishing (hook & line and trap) to measure encounter rates and collect biological samples of rebuilding species inside the trawl and non-trawl RCAs. The exact number and locations to be surveyed will be based on the results of the spatial analysis and preliminary ROV surveys in 2012; a subset of “hotspots” and “coldspots” in the Central Coast will be identified for the directed fishing activity. With a focus on widow rockfish, bocaccio, and canary rockfish we will identify a subset of research sites that span the 50-175 fathom depth range within the trawl RCA and non-trawl RCA. These sites will be visually surveyed using a ROV to assess fish densities and fish-habitat associations. Concurrently, we will conduct collaborative hook & line and trap sampling in “coldspots” and then “hotspots” within and adjacent to (shoreward and seaward) the trawl RCA to assess catch per unit effort, abundance and demographic patterns of constraining and target species. In the sections below, we detail the analyses to be conducted using these data that may help address pressing needs of stock assessment scientists, managers, and commercial fishermen.

Ground-truthing “hot” and “cold” spots – The groundtruthing of spatial data analysis will entail two types of surveys inside and adjacent to the trawl RCA at selected locations in the Central Coast: ROV visual surveys and directed fishing effort. We will collect GPS locations of every fish sighted with the ROV and landed with hook & line or trap. Precise length measurements will be made for all fish landed, and binned length measurements to the nearest 5 cm will be made for fish clearly sighted in the ROV surveys.

- **ROV Surveys** - The specific design of the ROV surveys will be based on the results of the spatial analysis of existing data combined with available habitat maps and local knowledge. We will conduct ROV visual surveys inside and outside the trawl RCA at (3-4) “hotspots” and (3-4) “coldspots” in the Central Coast as identified by the spatial analysis. The ROV surveys will be initiated in 2012 to do preliminary habitat assessments of selected studies sites and then will continue through 2013 to be coincident with the directed fishing activities. ROV surveys will be performed in the range of representative habitats (soft bottom, hard bottom, canyon head) found within the specified depth zones inside and adjacent to the trawl-RCA.
- **Directed Fishing Effort Surveys (under this EFP):** To further ground-truth the hot and cold spots for rebuilding species identified through spatial analysis and ROV surveys, we will use vertical hook & line (for adults and subadults) and trap (for juveniles) gear in targeted locations inside

the trawl RCA and adjacent to it (shoreward and seaward).. The specific sites for the directed fishing effort will be determined after the spatial analysis is completed along with some initial ROV surveys in 2012. The directed fishing effort will be conducted coincident with more focused ROV surveys of selected areas in 2013. Specific predictions will arise from results of the spatial analyses and ROV surveys and we will generally seek to test the probability of encounter in relation to the probability of the area being categorized as a hot or cold spot.

For ground-truthing cold spots we will target all rebuilding species. For purposes of collecting biological data and for ground-truthing hotspots, we will target bocaccio, canary rockfish, and widow rockfish and aim to minimize encounter with yelloweye and cowcod due to low quota amounts. Our systematic sampling approach will begin with ROV work, transition to hook & line and trap sampling in cold spots, and end with hook & line and trap sampling in hot spots. We will focus the initial fishing effort deeper than 100 fathoms to minimize the chance of encounters with yelloweye rockfish until the majority of our proposed work is completed. In addition, we plan to phase the fishing effort over 2013-2014, starting at the end the 2013 fishing seasons to avail ourselves of remaining quota and extending into 2014, as needed.

Results from the hot and cold spot survey analyses will be used to further explore the habitat associations of rebuilding species. For instance, the recent stock assessment for canary rockfish suggested that abundance estimates could be improved through a better understanding of habitat affinities. These results will also be used to explore the relationship between the selectivity of the three survey methodologies (NMFS trawl survey data, ROV visual surveys, fishing effort surveys). Our surveys using ROV and hook & line and trap will take place in a stratified random design based on the spatial analysis. Survey selectivities of the different survey methods will be quantified and made available for use in stock assessments.

Biological Sample Analysis: We will collect biological samples from the fish caught using hook & line and trap sampling – especially targeting widow rockfish, canary rockfish and bocaccio. These biological data will be used to collect life history and demographic information for these rebuilding species. In order to ensure that our sampling can contribute to stock assessments, we will be in regular communication with the stock assessment authors and NMFS.

The biological samples will provide stock assessors with critical information on the Central Coast stocks. In particular, the following data have been identified as priority research areas for rebuilding species in the 2009 stock assessments.

- a) Canary rockfish: Updated information on reproductive maturity and fecundity is needed.
- b) Bocaccio: We will collect samples for length, weight, gonad staging, and aging. Aging analyses will be coordinated with emerging protocols developed for the northern range of the stock and all analyses will be coordinated with researchers along the entire West Coast.
- c) Widow rockfish: The need exists to increase sample sizes for length and age measurements for the next stock assessment cycle. Furthermore, there is little reliable

data on the weight-fecundity relationship in the southern range of the stock. We will improve the understanding of life history characteristics through our research.

All biological analyses will conform to accepted protocols identified by NMFS and will be performed at the NMFS/SWFSC Santa Cruz, CA lab.

Our results will potentially help inform stock assessments and may also help identify the contribution of the RCAs to egg production of these rebuilding stocks. Our data will contribute to understanding demographic changes inside the RCAs as a result of a reduction in fishing mortality since closures were put in place. These data can be used to parameterize cohort models such as analyses of the spawning potential ratio. Through studies such as these, progress can be made towards understanding the role of closed areas in rebuilding overfished species.

As part of our larger collaborative research effort, the partners will also be working with managers to collect additional biological information from constraining and target species caught by members of the fishing association near the RCA as part of normal fishing operations outside of this EFP.

k) How vessels will be chosen

Vessels that have the appropriate gear, research experience, and local knowledge will be selected by the EFP applicant and project partners.

l) Time / Place / Gear Used in Fishing:

The ROV surveys will be conducted in the fall of 2013 and directed fishing activity will take place in the fall and winter seasons spanning from July 2013 - June 2014 fishing seasons (between October 2013 – March 2014). To provide for contingency and efficiency in planning and operations we request an EFP approval from July 1, 2013 to December 31, 2014.

The directed fishing effort will take place at 6-8 sites (3-4 hotspots and 3-4 cold spots as identified by the spatial analysis) in and adjacent to the trawl RCA between Half Moon Bay and Pt. Buchon, California. Fishing will occur inside the trawl RCA (100-150 fathoms), seaward of the trawl RCA (>150 fathoms) and potentially shoreward of the trawl RCA (50-100 fathoms) in the non-trawl RCA.

The gear to be used will include:

- Vertical hook and line gear: (eg. Hydraulic snapper reel gear or other to be specified at a later date)
- Traps: To survey juveniles that may not take a hook we will use conventional 2 chamber 1"X1" wire coated spot prawn traps with 3 and 1/4" round tunnel entrances (overall trap size 24" X 28" X 10"). Baited traps will be set in strings of approximately 12 traps, with 7 fathoms between

each trap, and a 24 hour soak time (consistent with a protocol used prior with California Department of Fish and Game).

m) Signature of applicant

Signature  _____

Date: 10/12/11

Roger Cullen, President

Central Coast Sustainable Groundfish Association