

OREGON DEPARTMENT OF FISH AND WILDLIFE REPORT ON THE POTENTIAL  
VIABILITY OF AN OREGON LONGLEADER SPORT FISHERY

Under this agenda item, the National Marine Fisheries Service (NMFS) is seeking further Pacific Fishery Management Council (Council) guidance regarding desired preliminary alternatives for the evaluation of a longleader sport fishery. To assist the Council in refining the preliminary range of alternatives for NMFS, this report provides an analysis of the viability of a longleader fishery off of Oregon based on the results from the longleader test fishery (EFP) conducted in 2009 and 2011.

The longleader fishery was designed to allow anglers opportunity to fish for underutilized midwater rockfish stocks (i.e., widow and yellowtail rockfish) that primarily occur in the deeper areas currently closed to recreational fishing due to yelloweye rockfish bycatch concerns. Since yelloweye rockfish live on the bottom, whereas yellowtail and widow rockfish tend to live higher up in the water column, a gear configuration was developed that keeps hooks at least 30 feet above the bottom. It was hypothesized that this configuration, aptly named “longleader” gear due to the unusual length of line between hooks and sinker, could be an effective method to selectively fish for midwater species in deep water, while still avoiding the more benthic yelloweye rockfish.

During two years of testing, the gear worked exactly as planned: bycatch of yelloweye rockfish was close to zero, and catches of target species were common. However, bycatch of other potentially quota-limiting species (i.e., canary rockfish and blue rockfish) were prevalent. Without the recent rebuilding of the canary rockfish stock (based on the 2015 assessment), there would have been very little potential for a longleader fishery. However, based on the anticipated increased annual catch limit and subsequent sector-specific allocations resulting from the 2015 assessment, a longleader fishery could support up to 25,000-50,000 angler trips annually.

While not many anglers are expected to participate in a longleader fishery under status quo conditions due to a lack of incentives (no increased overall fishing success in deep water, and longer travel time required to reach depths at which the longleader fishery is proposed), the longleader fishery could be valuable in the event of a significant decline in opportunity in any of the other sport fisheries. Since these other fisheries (e.g., salmon, Pacific halibut, and the traditional groundfish fishery) are already at full capacity, there is no room to absorb lost effort due to a reduction or closure in any one of them. A longleader fishery could potentially provide new opportunity for a considerable amount of effort lost from other fisheries if reductions occurred, which would benefit coastal communities.

Further, the longleader fishery could provide immediate relief to ports in Oregon that only have reefs in the deep depths that are currently closed to fishing, during the seasonal depth restrictions. Currently, these ports are vulnerable since they are nearly entirely reliant on the salmon and tuna fisheries, which can vary considerably from year to year.

The primary concern related to a longleader fishery is bycatch of quota limiting stocks, and potential impact to other fisheries that also encounter these species. In order to minimize the

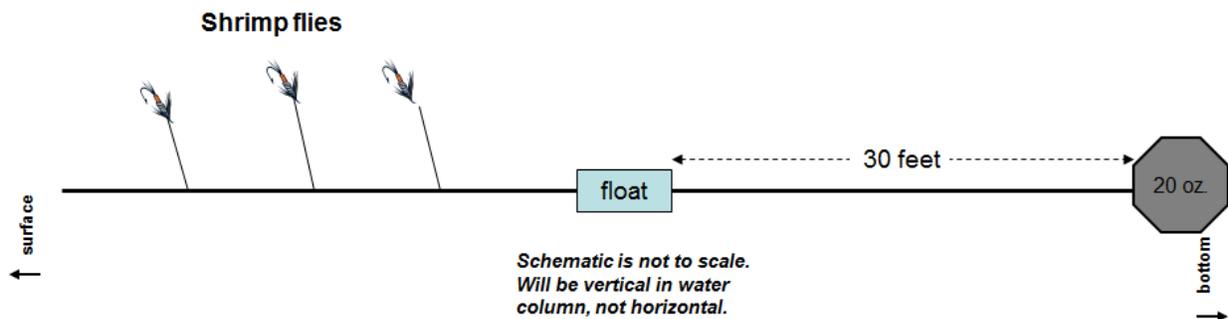
potential for bycatch in the longleader fishery to impact other fisheries, the states could set aside a certain amount of quota of the species of concern for the longleader fishery, and make inseason adjustments (including closure) to the longleader fishery in order to stay under the pre-determined set-aside limit.

## Longleader Background

Since 2004, the Oregon sport groundfish fisheries have been restricted to shallow depths (less than 20-40 fathoms) during the peak months for effort and catch. These shallow water depth restrictions are needed in order to reduce impacts to yelloweye rockfish, an overfished stock limiting both sport and commercial fisheries due to bycatch. In deep water, yelloweye rockfish are encountered more frequently than in shallow water, and have low survival rates when released due to barotrauma-induced injuries.

While the shallow water depth restrictions have been successful for limiting bycatch of yelloweye rockfish, they have also greatly reduced the opportunity for anglers to access healthy and robust deep water stocks, such as yellowtail and widow rockfish. In addition, depth restrictions have eliminated groundfish opportunity for ports without access to shallow rocky reefs, the primary habitat for rockfish and other groundfish species targeted in the sport fishery. And for ports with shallow reef access, the depth restrictions have caused the fisheries to become almost entirely dependent on shallow-water groundfish stocks. Typically 60-70 percent of shallow water groundfish catch is of black rockfish alone. If the black rockfish stock were to decline, it could potentially devastate the fishery, since there are no other shallow water groundfish stocks with “available” quota that could replace the lost catch (harvest of other nearshore groundfish species has been reaching annual quotas already under existing fishery dynamics).

Longleader gear was developed in response to a potential need to help protect the sport groundfish fishery from a decline in shallow water stocks by cleanly targeting healthy and robust rockfish stocks found in deeper waters but not usually comingled with yelloweye rockfish in catches.



**Figure 1. Schematic of the longleader gear. “Longleader” refers to the minimum 30 feet of line between the hooks and the sinker, to ensure the gear is not fished on the bottom.**



**Figure 2.** The longleader gear in use – note the float (yellow circle), shrimp flies (red) and the bucket along the side rail. The bucket was used to contain the 30’ of leader between the sinker and the flies.

Testing of the longleader gear was conducted in 2009 and 2011 on charter vessels (CPFVs) in the deep depths closed to the current groundfish fishery (hereafter traditional groundfish fishery) in northern, central, and southern Oregon (Figure 3). In two years of testing, a total of 35 charter vessel trips were observed, which included 306 different drifts on those trips. During each drift, observers recorded the number and lengths of fish caught by species.

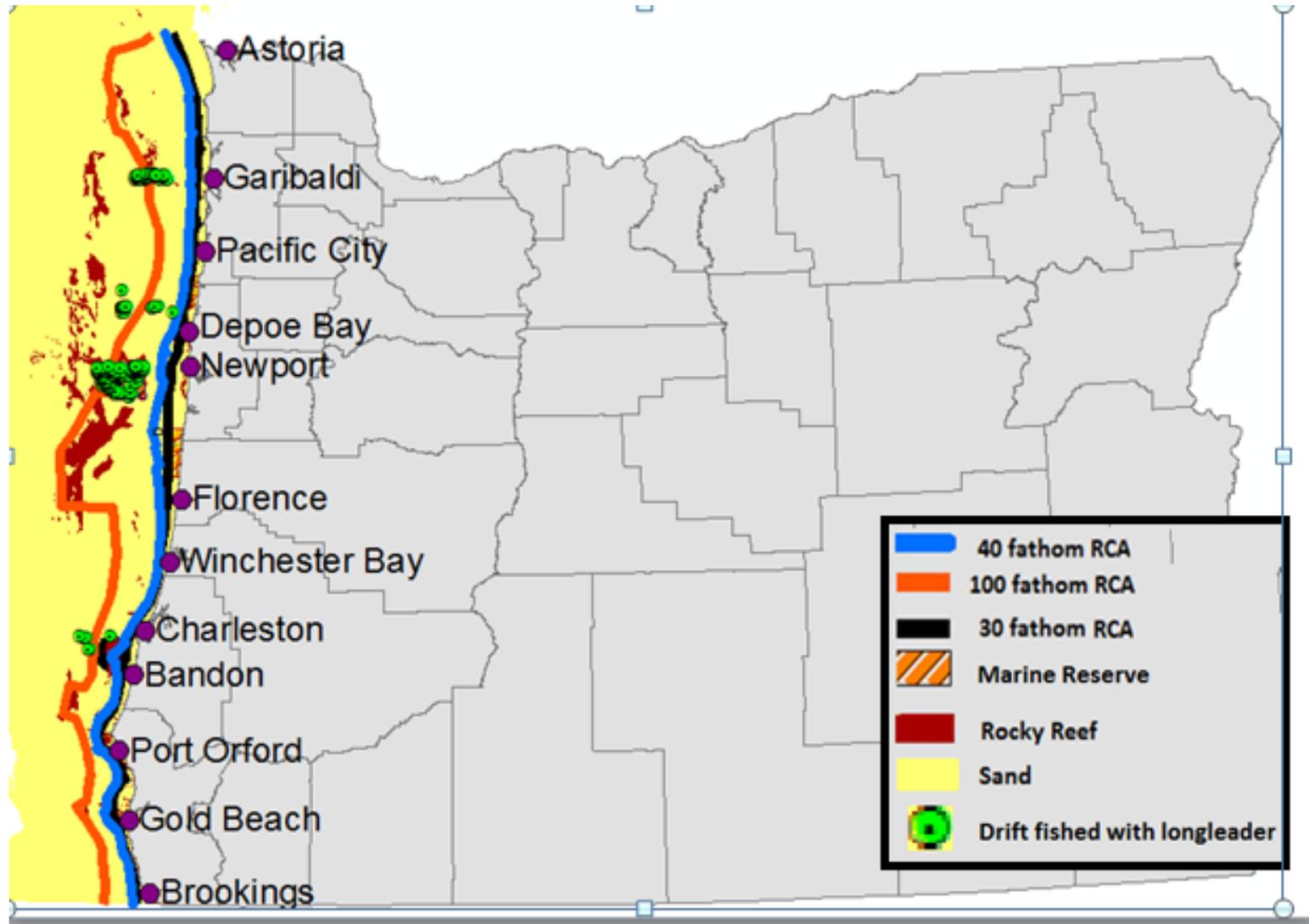


Figure 3. Locations of drifts for the longleader test fishery. The blue and black depth lines (40 and 30 fathoms, respectively) show current and past depth restrictions for the traditional sport groundfish fishery. The 100 fathom orange line is shown for a depth reference, and is not a management boundary for the sport fishery.

## Exempted Fishing Permit Results

The longleader fishery test was successful: catch (Table 1) was dominated by targeted healthy stocks (i.e., yellowtail rockfish and widow rockfish), with very minor catch of yelloweye rockfish—only two of the total catch of ~5,000 fish were yelloweye rockfish.

Although catch of yelloweye rockfish was minor, the longleader gear encountered bycatch of other potential quota limiting species that could restrict the potential size of a future longleader fishery. Of greatest concern was bycatch of canary rockfish, another semi-pelagic species that was considered overfished at the time of the EFP. However, the canary rockfish stock was declared rebuilt in June 2015.

**Table 1. Species composition of longleader catch by numbers of fish and total weight. Canary rockfish were significantly larger and heavier than widow rockfish, thus the reversal in their respective ranking of numbers of fish vs weight.**

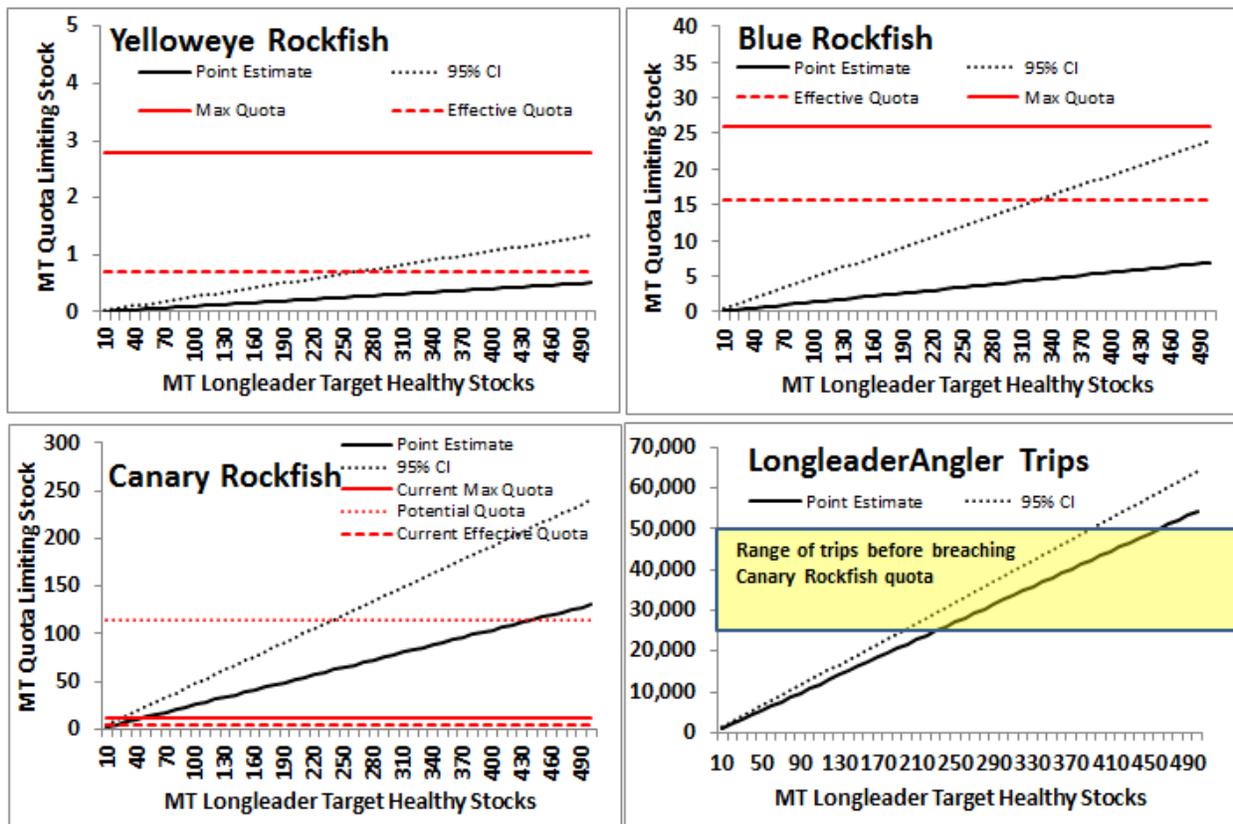
Species	Fish	% of Total	Kg	% of total
Yellowtail RF	2,930	59.2%	3,348	62.1%
Widow RF	1,228	24.8%	816	15.1%
Canary RF	636	12.8%	1,111	20.6%
Blue RF	84	1.7%	58	1.1%
Redstripe RF	40	0.8%	28	0.5%
Silvergray RF	16	0.3%	11	0.2%
Salmon	7	0.1%		0.0%
Bocaccio RF	3	0.1%	4	0.1%
Lingcod	3	0.1%	13	0.2%
Quillback RF	2	0.0%	2	0.0%
Yelloweye RF	2	0.0%	4	0.1%
Total	4,951	100.0%	5,395	100.0%

## Bycatch Discussion

### Potential impacts to quota limiting species

Potential impacts of quota limiting species (yelloweye, canary, and blue rockfish) were modeled for individual species based on their respective ratios to total catch of healthy target stocks from the test fishery (e.g., ~0.13 mt of blue rockfish for 10 mt of target healthy stocks combined). To project total catch of quota limiting species for the longleader fishery, the ratio is applied to possible total catches of targeted healthy species for the longleader fishery as a whole. To frame uncertainty, variances in the ratios from individual trips were used to determine an upper 95% confidence interval, which can provide some information on the potential for higher takes of quota limiting species.

Total catch of targeted healthy species is uncertain because potential participation in the new longleader fishery is unknown; however, the fishery is projected to support a maximum yield of 220-500 mt of targeted healthy species (and 25,000-50,000 trips) before reaching the quotas of limiting stocks (Figure 4).



**Figure 4. Protected maximum size of the longleader fishery (mt of target healthy stocks; angler trips) based on bycatch of quota-limiting stocks (i.e., yelloweye, blue, and canary rockfishes). For example: the longleader fishery could be expected to yield ~450 mt of target healthy stocks before the potential quota resulting from the 2015 assessment of canary rockfish is reached (intersection of the red dotted line of quota and the black solid line of projected catch). The bottom right graph shows that 450 mt of target healthy stocks allows ~50,000 angler trips, based on average catch per angler trip during the test fishery.**

In Figure 4, two different types of quotas are shown: maximum and effective. Maximum quota is the total Oregon sport quota (based on federal and/or state allocations) for all fisheries. However, it is not a good measure of potential quota for the longleader fishery because it does not account for removals by other Oregon sport fisheries, particularly the traditional groundfish fishery.

To account for take in other sport fisheries, an “effective quota” concept was developed as a better measure of the potential amount available for the longleader fishery. Effective quota is not based on current regulations (e.g., bag limits) for quota-limiting species, because their quotas are currently full taken; instead, it is based on the maximum projected amount of quota that could be available by further restricting the other fisheries without major disruption. For example, since the blue rockfish quota is fully taken, the daily bag limit of blue rockfish might have to be reduced to zero (retention prohibited) to provide enough quota to support a longleader fishery (in which retention would also be prohibited – impacts would come from bycatch mortality). The

daily bag limit of canary rockfish<sup>1</sup> in this analysis was reduced from one per day to zero. Without these restrictions, there would be no effective quota of canary rockfish or blue rockfish for the longleader fishery. The potential effects of such restrictions on other fisheries is unknown.

## **Yelloweye Rockfish**

Although bycatch of yelloweye rockfish in the longleader fishery is projected to be minor even with substantial effort and catch of targeted healthy stocks, there is not much margin for additional impacts under status quo conditions since the other sport fisheries currently take almost the entire quota (thus the effective quota is small). Stricter regulations in the other sport fisheries (e.g., shallower depth restrictions in the traditional groundfish fishery) may be necessary to provide effective quota of yelloweye rockfish for the longleader fishery.

In addition, it would be vital for longleader fishery participants to correctly identify canary and yelloweye rockfish, which are similar in appearance. Since angler-reported data (rather than observer data) is used to estimate discards in recreational fisheries, even a small misreporting rate could overestimate yelloweye rockfish mortality in the longleader fishery. This could have severe effects on overall opportunity in the other Oregon sport fisheries that utilize yelloweye rockfish quota. Effective training and outreach in fish identification may be prudent.

## **Canary Rockfish**

Canary rockfish is projected to be the most limiting species to the longleader fishery regardless of the 2015 assessment, because of high encounter rates with this species with longleader gear.

With canary rockfish being declared rebuilt, the quota for Oregon recreational fisheries could increase by nearly tenfold (to 119 mt). If that is the case, then the longleader fishery could be expected to yield up to 440 mt of healthy targeted stocks and up to 50,000 angler trips before exceeding the canary rockfish quota (based on ratios from the EFP). However, with greater bycatch rates, there is a possibility that values could be considerably less (the lower range of the 95% confidence interval = 230 mt, 25,000 trips).

Had the canary rockfish stock not been rebuilt, then bycatch of this species would have severely limited the viability of the longleader fishery. Specifically, at the status quo effective quota of 5 mt, the longleader fishery would be expected to yield less than 10 mt of target healthy stocks and 1,000 angler trips before reaching the canary rockfish quota.

## **Blue Rockfish**

Blue rockfish are also of concern. Although blue rockfish are not federally considered overfished, they are co-managed within the Minor Nearshore Rockfish North of 40° 10' N' latitude complex (Minor Nearshore Rockfish) which has a relatively small harvest guideline for the Oregon sport fisheries (~26 mt). Since the current Oregon sport fisheries are projected to take nearly the entire harvest guideline of this complex, there would be no effective quota to allow a longleader fishery unless actions are taken to reduce mortality of Minor Nearshore Rockfish Complex species. One potential action would be to eliminate retention of all Minor

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<sup>1</sup> The canary rockfish quota used in this analysis is based on the 2015 stock assessment and existing intersector allocation proportions. Under this scenario, the quota for canary rockfish for Oregon sport fisheries could increase from 12 mt (current ACL) to as much as 119 mt, or somewhat less with conservative management buffers.

Nearshore Rockfish complex species, which would decrease the daily bag limit of blue rockfish from three to zero (retention of other species in this complex is prohibited beginning in 2015 under state regulations). Doing so would provide enough additional savings to allow an effective quota of 15 mt of Minor Nearshore Rockfish for the longleader fishery, which should be sufficient to prevent blue rockfish from becoming the most quota limiting species for the longleader fishery (canary rockfish would remain the most limiting species).

### **Additional Uncertainty in Bycatch of Quota Limiting Species**

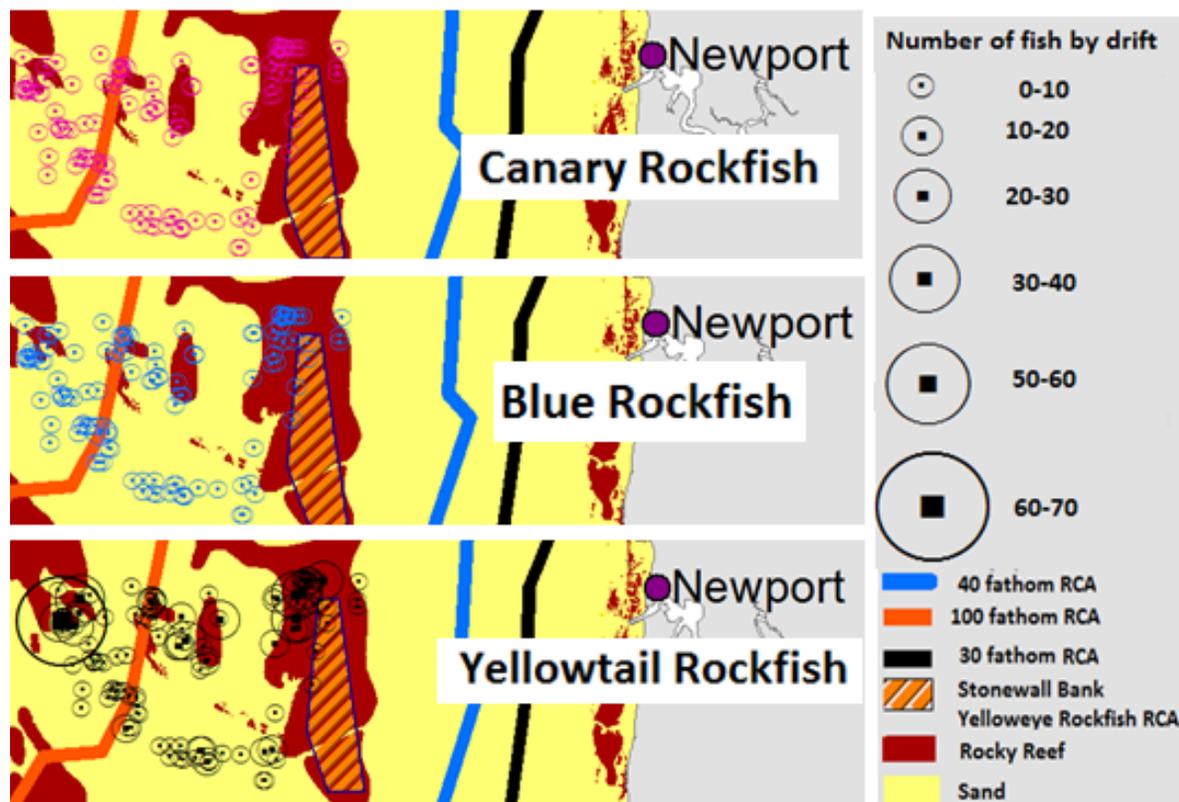
Projections of take of quota limiting species (Figure 4) assume that bycatch ratios in an implemented longleader fishery will be similar to those observed on charter boats under the EFP. However, there may be differences; for example, private boat anglers may have different bycatch ratios than charter anglers. While there is a possibility that non-observed longleader bycatch rates may be greater than those observed during the EFP, actions can be taken to ensure that total bycatch stays within acceptable limits.

First, the states could set aside a portion of the total quotas for limiting species currently allocated to their recreational fisheries, via state processes. For instance, of the ~26 mt harvest guideline for blue rockfish, 10 mt could be set aside for the longleader fishery, and the other 16 mt could be reserved for the traditional groundfish fishery. With inseason monitoring, if the bycatch rates of blue rockfish are unexpectedly high in the longleader fishery, then only the longleader fishery would close early, not all Oregon sport fisheries.

While quota set-asides could be an effective method for limiting mortality from the longleader fishery to pre-specified objectives, these decisions would take place separately via state regulatory processes, not as part of automatic or Council action. The purpose of this analysis is to determine if this new gear holds potential to support a fishery.

Second, prohibiting retention of all benthic species, such as lingcod and cabezon, during participation in the longleader fishery would eliminate incentives for anglers to fish the gear in a way that allows them to catch benthic species. If targeting of benthic species were to occur, then the take of yelloweye rockfish would be greater than projected, and could threaten opportunities in the traditional groundfish fishery and Pacific halibut fishery. Take of pelagic species, such as tuna and salmon, would not be an issue within the guidelines and seasons set forth for these fisheries (gear, area, season, and other salmon-specific restrictions would limit potential retention of salmon).

Spatial closures of “hot-spots” of quota-limiting species have been suggested and considered, but do not appear to be a viable option for limiting take of these species, as the limiting species commonly co-occur with target healthy stocks across all habitat types (Figure 5 ).



**Figure 5. Catch of quota limiting stocks (i.e., canary rockfish and blue rockfish) and the main target healthy stock (i.e., yellowtail rockfish) for individual drifts in the longleader test fishery. This figure shows that spatial “hot-spot” closures do not appear to be a viable tool for limiting mortality of quota-limiting species, as they commonly co-occur with target stocks across all habitat types.**

Note 1: The black line (30 fathoms) is the current depth restriction for the traditional groundfish fishery, and the blue line (40 fathoms) is the proposed shoreward boundary of the longleader fishery (which would extend out to unlimited depths). The buffer zone closed to both fisheries from 30-40 fm is intended to aid at-sea enforcement activities, to eliminate or minimize debate about whether fishers were accidentally just over the line.

Note 2: During two years of study, only two yelloweye rockfish were caught (not shown) despite sampling occurring within a known hotspot, the Stonewall Bank Yelloweye Rockfish Conservation Area (RCA).

In summary, bycatch of quota limiting species is uncertain because potential participation in the longleader fishery is unknown, and because there is a possibility that the bycatch rates may be different in an unobserved fishery than during the test fishery. Observation of a fully-implemented fishery is not feasible, so this uncertainty must be considered in fishery design. With quota set-asides and a prohibition on retention of benthic species, take of quota limiting species in a longleader fishery could be carefully managed to meet specified objectives for all fisheries.

## Angler Participation

### Overview of the Value of Sport Fishing

Angler participation in the longleader fishery could be an important economic benefit to coastal businesses and economies as a whole. During the course of their fishing trips, anglers spend

money on lodging, food, tackle, entertainment, etc. The money anglers spend at these businesses is cycled through other local businesses multiple times, until all of it eventually moves out of the local economy from import purchases (e.g., fuel purchased from outside of the state). Accordingly, the primary spending of anglers and associated “multiplier” effects generate income and jobs in Oregon coastal economies, which are small and heavily dependent on tourism, such as sport fishing, and natural resource extraction (e.g., logging and commercial fishing).

For the longleader fishery to benefit Oregon coastal communities, it must increase net angler trips—meaning it must generate trips that would have not occurred otherwise (for any marine species). This could be a result of either an increase in trips compared to status quo, or preventing a loss of trips due to a decline in an existing fishery (for example, the traditional groundfish fishery or salmon).

Not all participation in the longleader fishery will result in a net increase in trips. Some of the longleader trips would fish for another species even if the longleader fishery is not available; these are known as substitution trips. Some longleader fishing can be expected to occur as an additional activity on trips primarily targeting other species; these are known as combination trips. While substitution and combination longleader trips may have value to individual anglers due to extra opportunity and catch, they do not add value to coastal economies because they do not affect net total effort.

### **Estimated Maximum Allowable Participation in the Longleader Fishery**

The number of anglers who will participate in the longleader fishery is uncertain, since the longleader fishery has not occurred in Oregon (nor in any other state) before, except as an EFP onboard charter vessels. The number of participants in the longleader fishery will likely vary from year to year as incentives to participate in the fishery change. For example, some may choose to fish the first year out of novelty, or in years when opportunities are more limited in other fisheries, such as salmon or tuna.

While actual participation in the longleader fishery is unknown, the maximum allowable effort was modeled in the bycatch section based on the number of trips and yield of healthy target stocks that could be attained before surpassing the quota of any of the quota limiting stocks (Figure 4). Canary rockfish has the potential to be the most quota limiting stock, and it is projected that the longleader fishery could support between 25,000 and 50,000 net (unique) angler trips before reaching the canary quota. For reference, the traditional sport groundfish fishery has typically ranged between 70,000-80,000 trips per year.

### **Projected Longleader Angler Trips Under Status Quo (2015) Conditions:**

Under current (2015) conditions (quotas, regulations, strength of other fisheries), there is not expected to be enough of an incentive for the longleader fishery to significantly increase net effort for most ports (i.e., to result in new trips that would have not otherwise fished for other marine species). First, anglers would have to travel much farther to the offshore grounds (the longleader fishery is proposed to be restricted to depths greater than 40 fathoms) than they do for the traditional shallow water groundfish fishery, which is a highly productive fishery. Second, in a longleader fishery, anglers have to reel up fish from several hundred feet, and anglers typically prefer to fish shallow waters when possible, as it requires less reeling and allows for lighter,

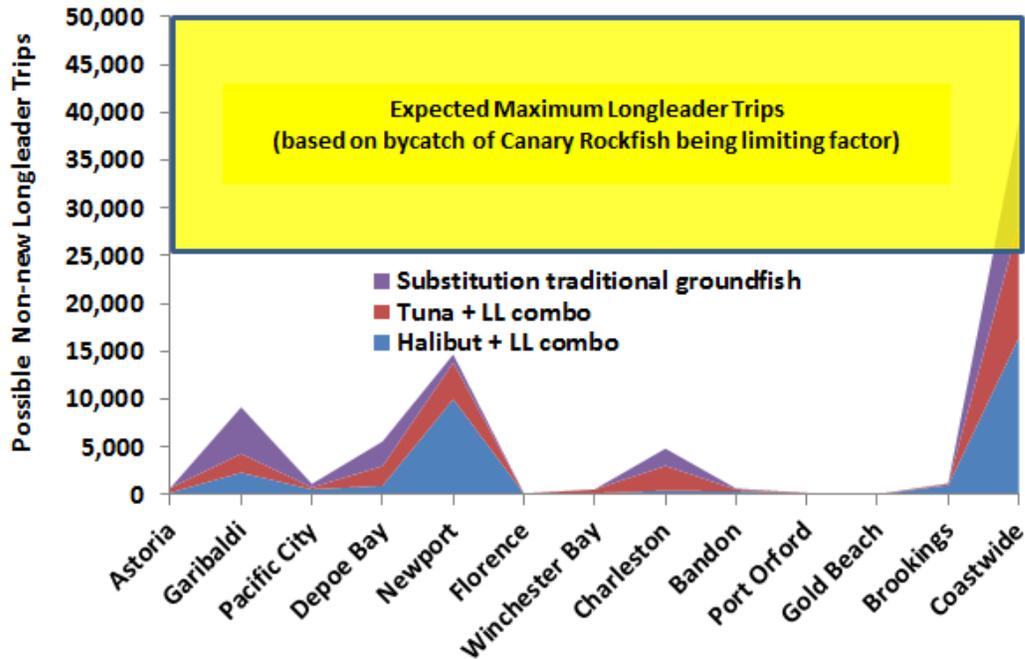
more sporting tackle. There is evidence in the traditional groundfish fishery that anglers prefer to fish shallow because during months when they may fish any depth, only a small proportion choose to fish deep (greater than 40 fathoms).

Although the longleader fishery may not significantly change net effort under current conditions, there is a possibility that anglers will participate in the longleader fishery - not as new trips, but as trips that would have occurred regardless. Some of these non-new trips may be part of combination trips for other far offshore species (i.e., Pacific halibut and albacore tuna), which drew the angler to fish in the same areas open to the longleader fishery. Some of the longleader trips may be from substitutes to trips that otherwise would have fished the traditional groundfish fishery had there not been longleader opportunity.

The amount of non-new effort that will occur in the longleader fishery is difficult to model since the fishery has never occurred before. To account for the uncertainty, an upper range of potential catch was modeled by assuming that all far-offshore trips (i.e., halibut and tuna) would fish combination longleader trips (Figure 6.) In addition, the upper range also included substitute trips from the traditional groundfish fishery, modeled as the proportion of trips that fish beyond 40 fathoms (the proposed longleader shoreward limit) during months when allowed to fish any depth, multiplied by the total trips per year (as trips that fish deep may be more inclined to participate in the longleader fishery when the traditional fishery is restricted).

While non-new effort does not directly benefit communities, it is important to project these trips (substitution and combination) since they could catch the entire quotas set-aside for the longleader fishery (Figure 6). This is very important for fishery managers to consider, given that the longleader fishery could affect opportunities for the traditional groundfish fishery. For example, if blue rockfish is limiting opportunity for the traditional groundfish fishery, shifting those fish to the longleader fishery only for them to be taken during combination halibut-trips that would have occurred without longleader opportunity will not result in a benefit to communities.

As previously mentioned, quota set-asides and their best use should be the decision of state fishery managers and their constituents, not part of this current process. It could be an important option to have available to augment or replace other recreational fishing opportunity. However, allocating quota to the longleader recreational fishery from another recreational fishery should be given careful consideration, and it is important to note that the needs and desires of fishery participants will likely vary by year.

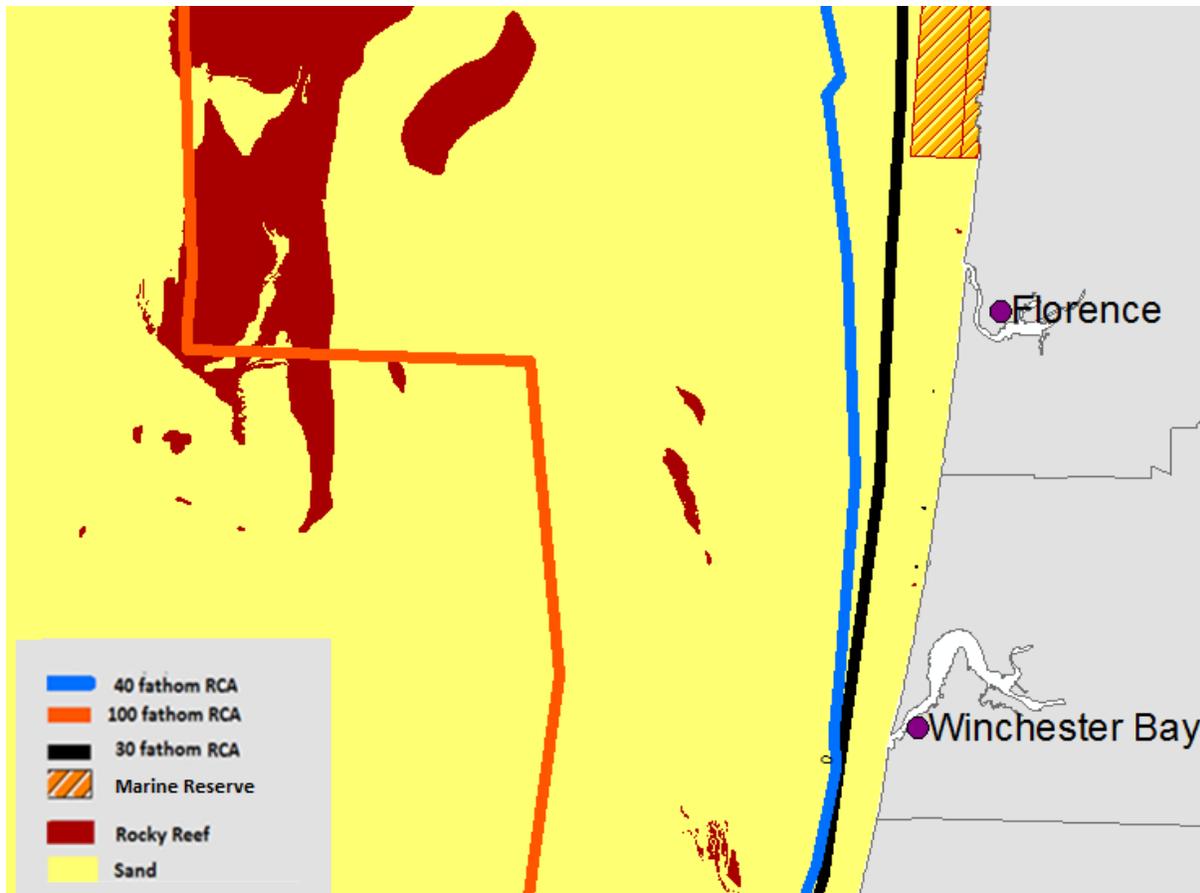


**Figure 6. Potential non-new angler participation (no change to net trips) in the longleader fishery from combination trips with other far offshore fisheries and as substitute trips from the traditional groundfish fishery, by port and coastwide. Non-new trips could exceed the capacity for the longleader fishery (yellow box; 25,000-50,000 trips), although this level of participation is not anticipated unless severe reductions in other opportunities occur.**

### Longleader Could Benefit Ports without Shallow Reefs

While the longleader fishery is not expected to increase net effort for most ports in Oregon under current conditions, it could be of value to ports without shallow reefs. Most notably, Winchester Bay and Florence essentially have no traditional groundfish fishery (less than 30 trips per year for both ports combined) because neither port has reef structure within the shallow water depth restrictions (Figure 7).

However, both Winchester Bay and Florence have deep water reef in close proximity. The longleader fishery could provide new opportunities for these ports, which could benefit those communities. Further, establishment of a longleader fishery could support the return of a charter fishery in Winchester Bay. Once a thriving charter community with 8-10 active vessels, Winchester Bay saw all of its charter businesses close in large part due to not having substitute fisheries following the collapse of the salmon fisheries in the 1980's and 1990's. Although it is unknown whether charters would return if provided longleader opportunity in addition to current salmon and tuna opportunity, the longleader fishery could provide a more stable base for charter businesses than those fisheries, which can be highly variable from year to year.



**Figure 7. Reef habitat near Winchester Bay and Florence. Since these ports only have deep water reefs, they are unable to participate in the traditional groundfish fishery during months with shallow water depth restrictions. A longleader fishery could provide new opportunities for these ports, which could benefit those communities.**

### **Projected Net Longleader Angler Trips Under Other Scenarios:**

While the economic benefit of a longleader fishery may not be significant under current conditions, it could be valuable if a decline in opportunity occurred in one of the existing Oregon sport fisheries. Most of the other sport fisheries are at full capacity (quotas of Pacific halibut, Chinook salmon, coho salmon, and traditional groundfish fisheries are fully used), and reduction or collapse of any of these fisheries could result in substantial decreases in net sport fishing trips in Oregon.

Currently, only the albacore tuna fishery would be able to absorb additional effort to offset potential losses associated with declines in any of the other fisheries. However, the tuna fishery is not commonly available to all ports, varies annually, and requires that anglers have large, expensive boats capable of traveling the typical 40-60 miles offshore to the fishing grounds (for reference, it is only 4-6 miles to reach the 40 fathom shoreward boundary for the longleader fishery).

If any of these fisheries were to suffer a significant decline, the longleader fishery could be expected to absorb at maximum 25,000-50,000 trips, which could provide relief to communities and fishery participants.

The black rockfish stock is of primary concern. The traditional groundfish fishery, which averages 60,000-70,000 trips per year, is heavily dependent on black rockfish (typically 70 percent of fish caught). Since quotas of most other species targeted by the traditional groundfish fishery are fully utilized, a decline in the black rockfish stock could effectively cause the traditional groundfish fishery to close earlier (as occurred in 2004). If that were to occur, a portion of lost trips could potentially be absorbed by the longleader fishery. Note that the 2015 black rockfish stock assessment results are not available at this time since the Oregon model was deferred to the mop-up panel, which will occur after the September Council meeting.

Also of concern is a dramatic decline in the Chinook salmon fishery. Given the drought conditions in California, salmon fishery managers are predicting a severe decline in the upcoming Chinook salmon fisheries; in Oregon, the majority of Chinook salmon landings are from California stocks (i.e., from the Sacramento and Klamath rivers). Once again, the longleader fishery could be used to help absorb lost effort associated with a decline in the Chinook salmon fishery.

## **Conclusion**

The above analysis is intended to assist the Council in selecting a preliminary range of alternatives at the September 2015 meeting. We believe the above analysis can also be incorporated into the environmental analysis (EA) that is to be conducted for the longleader fishery in time for the Council to take final action at the November meeting. Additionally, ODFW staff are willing to assist NMFS in completing the EA, so that the longleader gear/fishery is available to Oregon anglers in 2016.