Oregon
Kate Brown, Governor

Department of Fish and Wildlife
Charleston Field Office
63538 Boat Basin Dr.
P.O. Box 5003
Charleston, OR 97420
(541) 888-5515
FAX (541) 888-6860

Date: February 6, 2018

To: Chris Kern, ODFW Salem; Caren Braby, David Fox, Steve Rumrill and Troy Buell, MRP Newport

From: Scott Groth and Katie Gregory, MRP Charleston

Subject: Summary of information regarding Oregon's red abalone recreational fishery.

This document summarizes the information which has been gathered and analyzed in recent months to consider management changes for Oregon's recreational abalone fishery.

Background:

Species:
Abalone are prized by fishermen, typically among the very highest per pound value of all seafood's. Seven species of abalones are found on the West Coast of North America. Oregon falls within the range of three species of abalone.

1. **Red abalone**, *Haliotis rufescens*, ranges from Baja to Coos Bay, Oregon. This is the largest abalone in the world and the subject a robust recreational fishery in California and a very small recreational fishery in Oregon. Red abalone are limited to a few small areas in Oregon.
2. **Flat abalone**, *Haliotis walallensis*, this is a small species (4-7") found in vegetated rock reefs throughout Oregon. Flat abalones were the target of a 2001-2008 commercial fishery in Oregon, closed amid conservation concerns.
3. **Pinto abalone**, *Haliotis kamtschatkana*, a small species which ranges from Baja to Alaska. This species is extremely rare in Oregon (only a few have been found).
4. **Black abalone**, *Haliotis cracherodii*, this species northern range extent is typically reported well south of Oregon (Point Arena, CA), however a few specimens have been found in Oregon, all in the 1950s and 1960s. They are unlikely to currently be found in Oregon.

Abalone fishery status:
Given their popularity, demand for abalone fisheries is high, though sustainability of those fisheries has been difficult to maintain. Abalones are marine snails that are sessile and herbivorous, their reproduction depends on high densities and recruitment is episodic. For these reasons they are: 1) accessible, 2) do not move, 3) important to persist in high densities. While data poor fisheries typically rely on inefficiency, the aforementioned biological factors of abalones are antithetical to fishery inefficiencies; as a result abalone fisheries are typically unsuccessful. While robust and valuable fisheries have occurred upon each of the seven species of abalone on the US West Coast, the result of most of these fisheries has been stock failure. Previously fished species White and Black abalone are ESA listed "Endangered", Pink, Green and Pinto abalone are listed "Species of concern". Red and flat abalone are currently the only two North American abalone with no ESA status.

In Oregon, red abalone were commercially fished for a few years in the 1950s soon after they were "discovered" to be in the area, in 1953. The red abalone commercial fishery was closed due to low numbers of abalone and opposition by recreational harvesters, about 250 abalone were estimated to be harvested in that effort.

Current fisheries:
Three abalone fisheries remain in North America 1) a subsistence fishery for pinto abalone in Alaska (5 a day), 2) a small trophy fishery for red abalone in Oregon, and 3) a robust, highly managed recreational fishery for red abalone in California. Despite highly active management which includes a robust fishery management plan, on December 7, 2017 California Fish and Game Commission (CFGC) unanimously decided to close the recreational red abalone fishery. The closure decision was mostly based on the fishery independent data (CDFW subtidal belt transects) showing densities fell below targets. The lowering of densities were largely attributed to ocean conditions, but also fishery pressure, HABs and competition from purple sea urchins.

History of red abalone fishery management:

Table 1. Relevant management changes to Oregon red abalone fisheries

Year	*Action*
1953	Red abalone "discovered" in Oregon.
1959	Personal use limits set at 3/day (or in any seven consecutive days), 8" minimum size.
1960-62	Commercial harvest began, then disallowed in Oregon
1965-1975	A major part of ODFWs Marine Region was the collection, spawning and out planting of red abalones. The purpose of this work was to enhance the sport fishery, however these efforts did not result in detectably larger populations or the attempting range extension to make a Newport/Depoe Bay area fishery.
1970-1972	An experimental harvest card was used for recreational red abalone harvesters
1994-2002	Collection and spawning program re-initiated, several OR abalones were collected (sea urchin divers were commissioned) then spawned (OSU's molluscan brood stock group). Some small number of young abalones were distributed haphazardly in Coos Bay and Brookings.
1995	ODFW takes red abalone to OFWC proposing full fishery closure given perceived recent reduction of population, poaching, lack of juveniles, etc. Result of OFWC was the reduction from 3/day (weekly limit) to a 1 daily/5 annual limit. It also introduced the free permit.
2006	Eight reporting zones added to the permit.
2013	Given increasing pressure for a commercial rock scallop fishery, reporting of these were added to the free abalone permit.

Table 2. Selected relevant management changes to California red abalone fisheries

Year	*Action*
1949	Commercial harvest disallowed north of Point Lobos, CA.
2000	Annual limit set at 100
2002	Daily limit reduced to 3, annual limit reduced to 24
2014	Annual limit reduced from 18 to 9 (some areas) harvest before to 8am disallowed
2016	Seasons changed to fewer months (May-June and August-October)
2017	Recreational red abalone fishery closed
2019	Sunset of fishery closure in April of 2019

Fishery Independent data:

Little fishery independent data exists for red abalone in Oregon. While staff has conducted many fishery independent projects related to red abalone, most of this work focused on enhancement. One potential source, sea urchin surveys, conducted from the 1980s to present would also enumerate red abalones however, due to the rarity of red abalones combined with their shallow depths, none were ever found in these surveys. Recently, staff has made efforts to produce quantitative measures of red abalone populations.

In 2011 staff conducted two days of pilot abalone surveys using contract divers. This survey helped understand appropriate methods to collect data and yielded size distribution data. On the first day of this two day study we found that red abalone densities were so low that statistically robust, randomized methods would likely not detect any abalones. During a second day, divers performed timed surveys, where contract divers searched for abalones without spatial restriction at sites known to have red abalones, this provided some abundance measure and size distribution data.

In 2015, using a State Wildlife Integrity Grant (SWIG), staff successfully collected relative abundance data on red and flat abalone at sites in Brookings and Port Orford. Using highly specialized knowledge, we were able to identify belt transects within red abalone habitats (19 in Port Orford, 24 in Brookings). Contract divers counted and measured flat and red abalone within each of these subtidal belt transects. At both sites, red abalones were found, but at very low densities (Table 3). At Brookings sites, where size distributions were collected in both surveys (2011 and 2015), the mean shell length was 225 mm, obviously, those differences weren't significant ($p=0.91$). Worth noting is that the densities of red abalones found on this survey ($0.025/m^2$ at Port Orford and $0.04/m^2$ at Brookings) are far lower than the level expected to be sustainable ($0.3/m^2$).

Table 3. Relative abundance survey data from 2015 surveys

Site	Survey Dates	# Transects	Area surveyed (m^2)	# flat abalone	# red abalone
Port Orford	Sep 24 & 25, 2015	19	1,140	21	28
Brookings	Sep 28 & 29, 2015	24	1,440	1	57
Totals:		43	2,580	22	85

In 2017, in the absence of a dive program or available funding for contract divers, staff revisited the idea of performing free dive surveys for abalones. Staff free dove to check in with Whale cove red abalone, the abalones which are there were placed there in the late 1980s, about four remain (the same ones we found 10 years ago!) We also scouted Charleston and Brookings areas. We found that a free dive survey may be possible (abalones were found and measured), but the best conditions would be needed to do this work.

Worth noting, is that many recreational divers have offered to help our survey work. While these offers are genuine and appreciated, the nature of index surveys relies on going back to specific sites; as such, there is concern that showing a harvesters where they can find large abalones will bias future surveys. We strive to find ways to incorporate harvesters into tracking the abalone population, however nothing has come up that may truly be "fishery independent".

Fishery Dependent Data:

Harvest permit background

Following the 1995 OFWC action, a free permit has been required to harvest abalone, starting in 2003, a shellfish license was also required. Throughout this time, key regulations include 1) 1 abalone daily limit, 2) 5 abalone annual limit, 3) 8 inch minimum size, and 4) possession limit of one daily limit. The permit "required" that last year's harvest record must be submitted prior to issuance of new permit; although this requirement had little binding, tendency was for good compliance. Each permit was mailed with instructions and a reporting map. In 2013, rock scallops (also collected by divers) was added to the free permit.

Number of permits:

Since 1996, 4,052 Oregon recreational abalone permits have been issued, averaging 184 permits per year. Permit issuance has risen over time, though these numbers are affected by 1) the introduction of the shellfish license (2004) and the addition of rock scallops to the permit (2013), Figure 1.

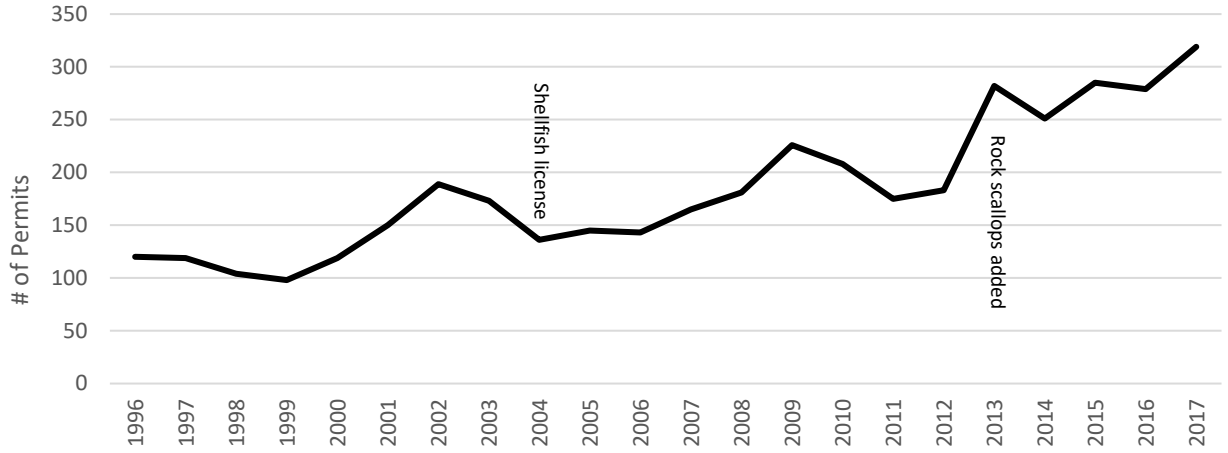

Figure 1. Issuance of Oregon abalone permits by year (1996-2017)

Number of permittees by state

Of the 3,456 abalone permits issued since 1996, for which we have addresses, only 62 have not gone to Oregon or California residents.

Issuance by office

Given the location of abalone habitats, most permits have been issued in South coast offices, Figure 2.

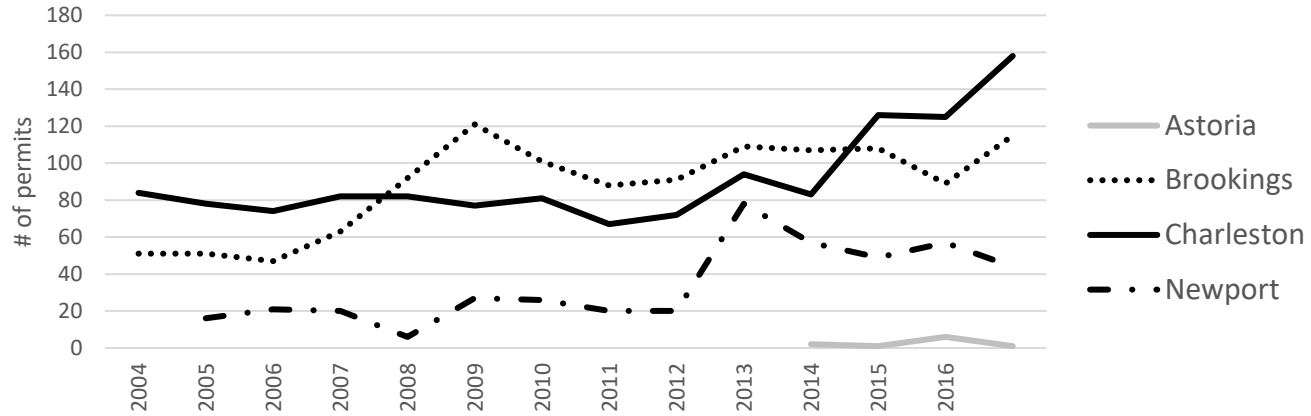

Figure 2. Issuance of Oregon red abalone permits by year, by ODFW office 2004-2017.

Permit compliance

Permit returns have been fairly high given the voluntary nature of this permit, the last 10 years has been about 65% permit return compliance, Figure 3.

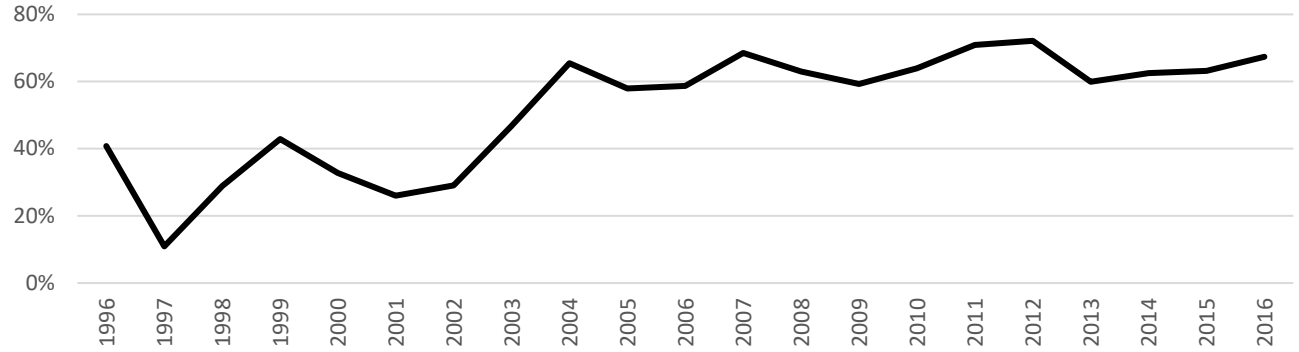

Figure 3. Oregon red abalone permit compliance (i.e. returned permits) by year, 1996-2016.

Harvest data:

Number of abalone harvested by method

Most abalone are harvested via SCUBA, while free dive component is high, shore pick has reduced over time, Figure 4.

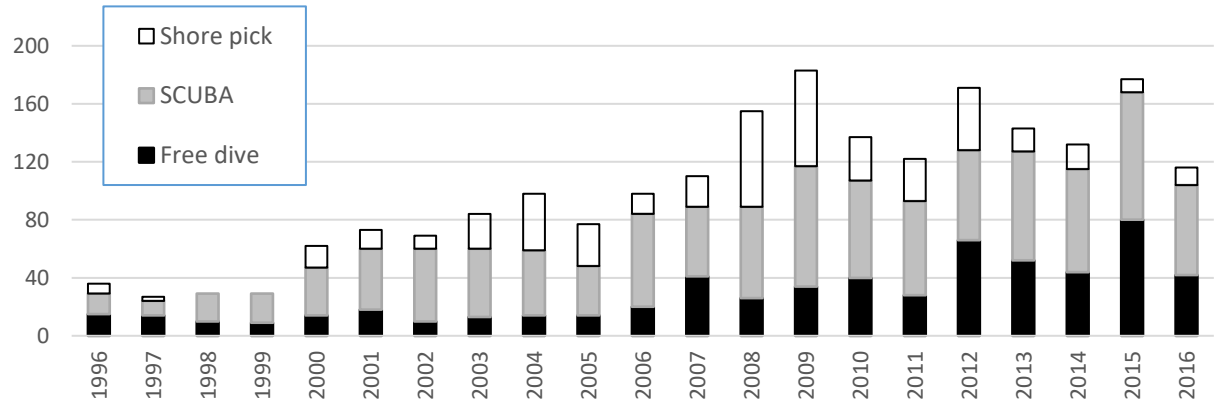

Figure 4. Reported Oregon red abalone harvest by year, by method, 1996-2016.

Harvest by permit holder residence

Most red abalone were harvested by permittees with Oregon addresses, however those from California are beginning to approach similar levels, Figure 5.

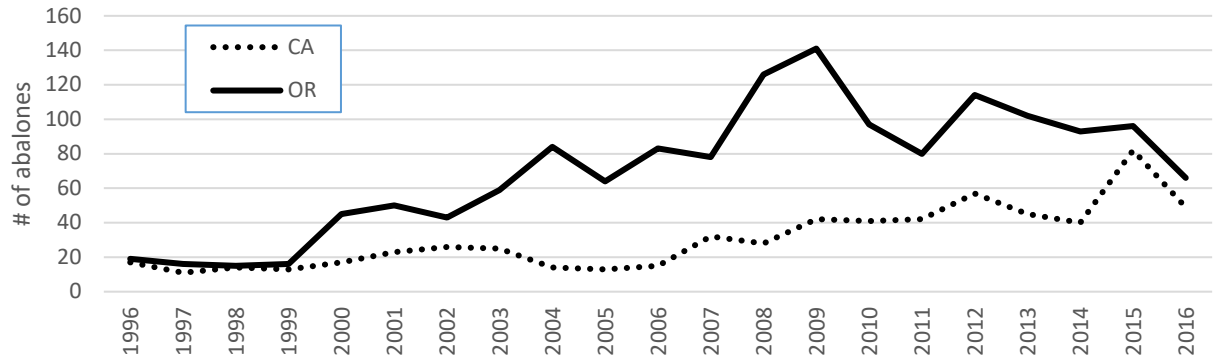

Figure 5. Reported harvest of red abalone by year, by state residence, 1996-2016.

Harvest location (by method)

Of the 1,710 red abalones harvested in Oregon with reported area, most were attributed to a few miles of shoreline in the southern part of the state, Figure 6.

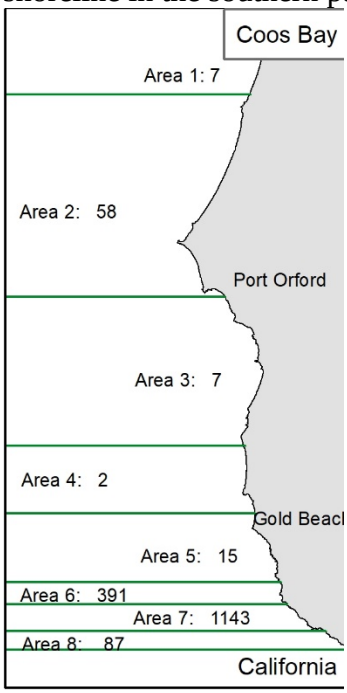

Figure 6. Self reported area of take for red abalone, 1996-2016

Harvest by month:

Harvest is principally in the summer, when marine weather is best, Figure 7.

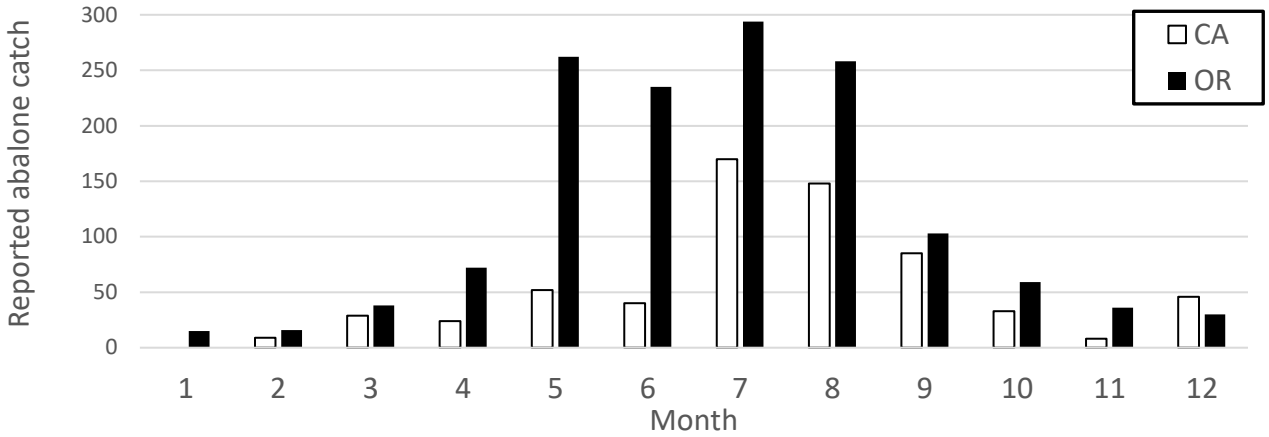

Figure 7. Red abalone catch by month and by state residence

Projections:

Projected effects of changing annual bag limit:

When considering the effects of changing the annual bag limit, we found that changing from 5/year to 3/ year would have little effect, changing to 1/year has a more substantial effect, Figure 8. This projection does not account for changes in effort level.

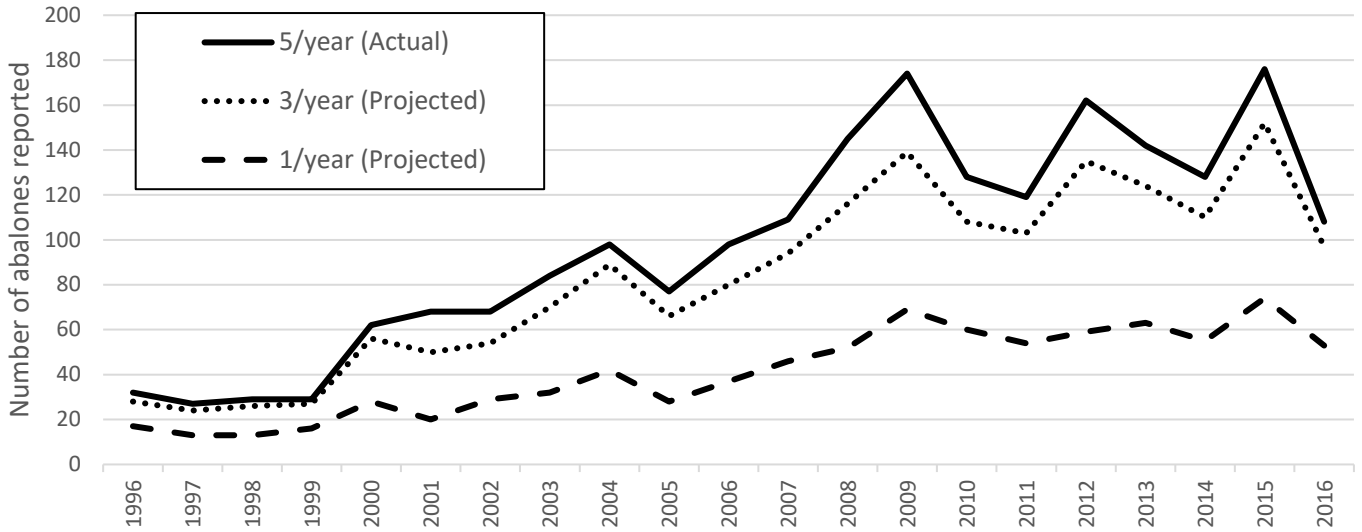

Figure 8. Number of abalone projected to be harvested given changes to annual limits.

Harvest expanded based on reporting compliance:

Analysis in this memo and other recently developed materials discuss harvest numbers, comparing them inter-annually, but do not account for differences in permit reporting, Figure 9.

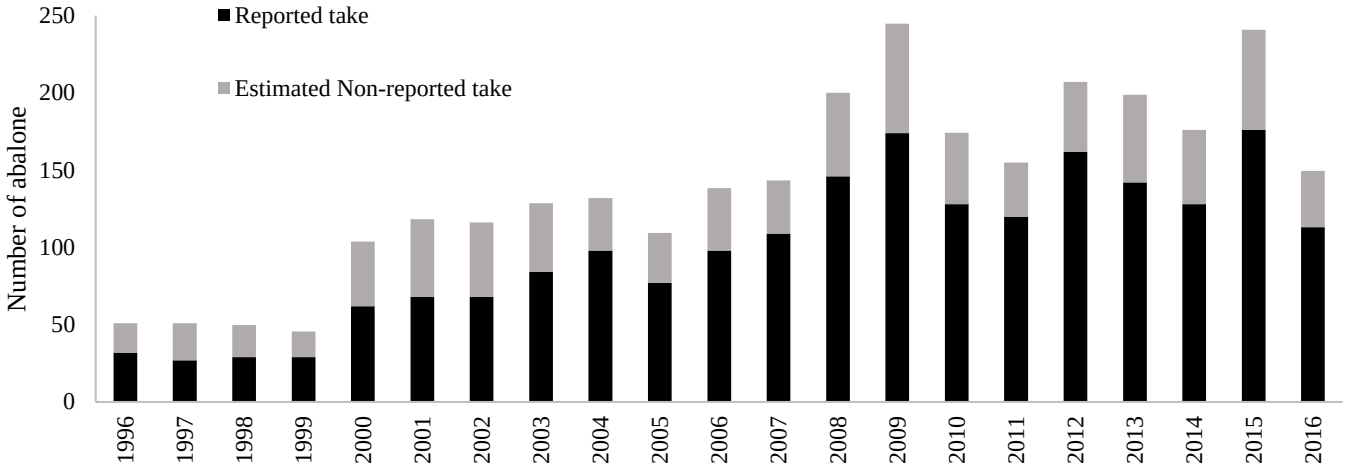

Figure 9. Abalone harvest by year divided into reported and expanded take