

**4. Cabezon Sportfishing Regulations**  
**(Briefing/Public Hearing/Decision)**

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## Summary

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**Meeting dates:** June 7-8, 2013 Commission Meeting

**Agenda item #4:** Cabezon Sportfishing Regulations – Briefing, Public Hearing and Decision

**Presenter(s):** Craig Burley, Fish Management Division Manager

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**Background:** During the 2013-2014 sportfishing regulation development process, the Commission considered rule-making for cabezon in Puget Sound waters. The Fish and Wildlife Commission held a public hearing on the rule proposals on February 8, and took action on the rules at its March 1 meeting in Moses Lake.

During the sport rules development process, proposal number 65 *Cabezon minimum size requirements* was proposed to implement a minimum size limit of 18 inches in Marine Areas 4-11 and 13. This proposal was designed to provide additional protection by allowing the majority of adult cabezon to mature and reproduce prior to being subjected to harvest.

During the rule-making process, public testimony was received requesting the Commission also adopt regulations reducing the daily limit from 2 to 1, and reducing the season in Marine Area 4 from year-round and in Marine Areas 5-11 and 13 from May 1 –November 30 to a shorter May 1 – June 15 season.

At the March 1<sup>st</sup> public meeting the Commission adopted the following provisions for cabezon - minimum size 18 inches, daily limit 1 and a May 1-June 15 season in Marine Areas 4-11 and 13. Prior to finalizing the sportfishing rules changes, Commissioners were asked to revisit several of the fishing proposals, including cabezon. The Commission also received many new public comments upset with some of its decisions, specifically including cabezon.

On March 15<sup>th</sup>, the Commission revisited several of the sportfishing rule proposals, including cabezon. Regarding cabezon, the Commission revised the adopted rule to provide an 18 inch minimum size and a one fish daily limit. The Straits/Puget Sound cabezon fishing season was not changed from the March 1 decision. However because of the public input recently received about the cabezon fishing season, the commission directed the department to initiate a separate rule process to seek public comments and allow further commission discussion on restricting the cabezon season to May 1 through June 15 in Marine Area 4-11 and 13.

This rule-making proceeding is the Department's follow-up on the Commission request and the Department has proposed recommended cabezon seasons. The rule at issue also addresses bag limit and other restrictions like minimum fish length; however, the Department is not making recommendations for changes to those requirements.

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**Policy issue(s) you are bringing to the Commission for consideration:**

Consider reducing the fishing season for cabezon to May 1 through June 15 in Marine Area 4-11 and 13.

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**Public involvement process used and what you learned:**

Public Comment was solicited through the web based online tool through May 31. A public hearing is scheduled for this meeting.

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**Action requested:**

Request a decision regarding the season length for cabezon in Marine Areas 4-11 and 13.

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**Draft motion language:**

1. I move to adopt WAC 220-56-235 Possession Limits – Bottomfish to reduce the cabezon season in Marine Areas 4-11 and 13 to May 1 through June 15.
  2. I move to retain the current cabezon recreational fishing season of year-round in Marine Area 4 and May 1 through November 30 in Marine Areas 5-11 and 13.
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**Justification for Commission action:**

This action is justified under RCW 77.12.047.

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**Communications Plan:**

News releases and Agency web site.

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*Form revised 12/5/12*



# PROPOSED RULE MAKING

## CR-102 (June 2012)

(Implements RCW 34.05.320)

Do NOT use for expedited rule making

**Agency:** Washington Department of Fish and Wildlife

**Preproposal Statement of Inquiry was filed as WSR 12-18-008 on 8/23/12**  
and WSR 13-06-063 on 3/5/13; or

**Expedited Rule Making--Proposed notice was filed as WSR \_\_\_\_\_; or**

**Proposal is exempt under RCW 34.05.310(4) or 34.05.330(1).**

**Original Notice**

**Supplemental Notice to WSR 13-02-094**

**Continuance of WSR \_\_\_\_\_**

**Title of rule and other identifying information:** (Describe Subject)

WAC 220-56-235, Possession limits – Bottomfish;  
WAC 220-56-310, Shellfish – Daily limits;  
WAC 220-56-390, Squid, octopus;  
WAC 220-20-100, General provisions – Marine protected areas; and  
New sections in chapter 220-16 WAC, including 220-16-881 through 220-16-887.

**Hearing location(s):**

Natural Resources Building, Room 172  
1111 Washington St., SE  
Olympia, WA 98504

Date: June 7-8, 2013 Time: 8:30 a.m.

**Submit written comments to:**

Name: Lori Preuss, Rules Coordinator  
Address: 600 Capitol Way N., Olympia, WA 98501-1091  
e-mail [Lori.Preuss@dfw.wa.gov](mailto:Lori.Preuss@dfw.wa.gov)  
fax (360) 902-2155 by (date) May 31, 2013

**Assistance for persons with disabilities:** Contact

Tami Lininger by May 31, 2013

TTY (360) 902-2207 or (360) 902-2267

**Date of intended adoption:** On or after August 2, 2013

(Note: This is **NOT** the **effective** date)

**Purpose of the proposal and its anticipated effects, including any changes in existing rules:** This proposal contains options for recreational octopus-harvest rules, including changing harvest seasons and/or locations; abolishing octopus harvest; creating new octopus-harvest rules; and making no changes to existing octopus rules. It also contains changes to WAC 220-56-235, Possession limits – Bottomfish, relating to cabezon, shark, lingcod, and rockfish.

The Washington Fish and Wildlife Commission held a public hearing on the cabezon rules in February 2013. However, the Commission delayed adopting the rules to allow additional public comment. Those rules, as well as rules for shark, lingcod and rockfish, were included in WSR 13-02-094. Notice of forthcoming changes to the octopus rules was filed as WSR 13-06-063.

**Reasons supporting proposal:** The Commission directed the department to consider changes to octopus harvest rules based on recommendations from the Giant Pacific Octopus Advisory Group. Changes to the harvest rules for octopus, cabezon, shark, lingcod, and rockfish are needed for species conservation and are based on department data, public feedback, and changes in fish and shellfish populations. The department makes similar adjustments annually to maximize conservation and recreational-fishing opportunity.

**Statutory authority for adoption:** RCW 77.04.012, 77.04.013, 77.04.055, and 77.12.047.

**Statute being implemented:** RCW 77.04.012, 77.04.013, 77.04.055, and 77.12.047.

**Is rule necessary because of a:**

Federal Law?  Yes  No  
Federal Court Decision?  Yes  No  
State Court Decision?  Yes  No  
If yes, CITATION:  Yes  No

**CODE REVISER USE ONLY**

OFFICE OF THE CODE REVISER  
STATE OF WASHINGTON  
FILED

DATE: **May 01, 2013**

TIME: **11:12 AM**

**WSR 13-10-083**

**DATE**

May 1, 2013

**NAME** (type or print)

Joanna Eide

**SIGNATURE**

**TITLE**

Administrative Regulations Analyst

**Agency comments or recommendations, if any, as to statutory language, implementation, enforcement, and fiscal matters:**

None.

**Name of proponent:** (person or organization) Washington Department of Fish and Wildlife

- Private
- Public
- Governmental

**Name of agency personnel responsible for:**

	Name	Office Location	Phone
Drafting.....	Charmane Ashbrook	1111 Washington Street, Olympia	(360) 902-2672
Implementation....	Jim Scott	1111 Washington Street, Olympia	(360) 902-2736
Enforcement.....	Bruce Bjork	1111 Washington Street, Olympia	(360) 902-2373

**Has a small business economic impact statement been prepared under chapter 19.85 RCW or has a school district fiscal impact statement been prepared under section 1, chapter 210, Laws of 2012?**

Yes. Attach copy of small business economic impact statement or school district fiscal impact statement.

A copy of the statement may be obtained by contacting:

Name:

Address:

phone ( ) \_\_\_\_\_

fax ( ) \_\_\_\_\_

e-mail \_\_\_\_\_

No. Explain why no statement was prepared.

The proposed rule amendments do not affect small business and do not directly regulate small business. The rules apply to recreational fishers.

**Is a cost-benefit analysis required under RCW 34.05.328?**

Yes A preliminary cost-benefit analysis may be obtained by contacting:

Name:

Address:

phone ( ) \_\_\_\_\_

fax ( ) \_\_\_\_\_

e-mail \_\_\_\_\_

No: Please explain: These proposals do not affect hydraulics.

## Option B1

AMENDATORY SECTION (Amending Order 09-27, filed 2/25/09, effective 5/1/09)

### **WAC 220-20-100 General provisions--Marine protected areas.**

(1) It is unlawful to fish for or possess fish, shellfish, or wildlife taken from any conservation area defined in chapter 220-16 WAC.

(2) The following marine preserves are closed to the taking of fish, shellfish, and wildlife as indicated:

(a) The Admiralty Head Marine Preserve is closed to the taking of fish and wildlife, and closed to the taking of shellfish except sea cucumbers and sea urchins.

(b) The Colvos Passage Marine Preserve is closed to the taking of shellfish and wildlife, closed to all commercial harvest of fish, and closed to recreational harvest of fish except it is lawful to take salmon for personal use by trolling, defined as fishing from a vessel under power and in gear making forward progress.

(c) The San Juan Island Marine Preserve is closed to the taking of shellfish except it is lawful to take crab from Parks Bay, and closed to the taking of food fish other than salmon except it is lawful to take herring and Yellow and Low Island Preserve is closed to the taking of food fish.

(d) The Titlow Beach Marine Preserve is closed to the taking of shellfish and wildlife, closed to the commercial harvest of all fish, and closed to the recreational harvest of all fish except that it is lawful to take salmon if taken with artificial lures from shore or from a nonmotorized vessel.

(e) The Z's Reef Marine Preserve is closed to the taking of shellfish and wildlife, closed to the commercial harvest of all fish, and closed to the recreational harvest of all fish except that it is lawful to take salmon with fly fishing gear as defined in WAC 220-56-210.

(f) The Seattle city park Marine Preserves (Golden Gardens, Carkeek, Lincoln, Discovery, Emma Schmitz, and Richey Viewpoint) are closed to removal of organisms from the intertidal areas, except that finfish may be harvested using hook and line gear, provided it is lawful under other WDFW fishing regulations. Any organism except finfish taken by hook and line in the intertidal area must be placed unharmed in the location it was found. Removal of organisms of unclassified marine invertebrates in numbers less

than the daily limits is an infraction. All other penalties for larger numbers removed apply.

(g) The Saltwater State Park Marine Preserve is closed to all recreational harvest.

(h) The Redondo Beach Marine Preserve is closed to all recreational harvest.

## Option B2

AMENDATORY SECTION (Amending Order 09-27, filed 2/25/09, effective 5/1/09)

### **WAC 220-20-100 General provisions--Marine protected areas.**

(1) It is unlawful to fish for or possess fish, shellfish, or wildlife taken from any conservation area defined in chapter 220-16 WAC.

(2) The following marine preserves are closed to the taking of fish, shellfish, and wildlife as indicated:

(a) The Admiralty Head Marine Preserve is closed to the taking of fish and wildlife, and closed to the taking of shellfish except sea cucumbers and sea urchins.

(b) The Colvos Passage Marine Preserve is closed to the taking of shellfish and wildlife, closed to all commercial harvest of fish, and closed to recreational harvest of fish except it is lawful to take salmon for personal use by trolling, defined as fishing from a vessel under power and in gear making forward progress.

(c) The San Juan Island Marine Preserve is closed to the taking of shellfish except it is lawful to take crab from Parks Bay, and closed to the taking of food fish other than salmon except it is lawful to take herring and Yellow and Low Island Preserve is closed to the taking of food fish.

(d) The Titlow Beach Marine Preserve is closed to the taking of shellfish and wildlife, closed to the commercial harvest of all fish, and closed to the recreational harvest of all fish except that it is lawful to take salmon if taken with artificial lures from shore or from a nonmotorized vessel.

(e) The Z's Reef Marine Preserve is closed to the taking of shellfish and wildlife, closed to the commercial harvest of all fish, and closed to the recreational harvest of all fish except that it is lawful to take salmon with fly fishing gear as defined in WAC 220-56-210.

(f) The Seattle city park Marine Preserves (Golden Gardens, Carkeek, Lincoln, Discovery, Emma Schmitz, and Richey Viewpoint)



are closed to removal of organisms from the intertidal areas, except that finfish may be harvested using hook and line gear, provided it is lawful under other WDFW fishing regulations. Any organism except finfish taken by hook and line in the intertidal area must be placed unharmed in the location it was found. Removal of organisms of unclassified marine invertebrates in numbers less than the daily limits is an infraction. All other penalties for larger numbers removed apply.

(g) The Saltwater State Park Marine Preserve is closed to all recreational harvest.

(h) The Redondo Beach Marine Preserve is closed to all recreational harvest.

(i) The Alki Beach Seacrest Coves 1, 2, and 3 Marine Preserve is closed to all recreational harvest.

### Option C

AMENDATORY SECTION (Amending Order 09-27, filed 2/25/09, effective 5/1/09)

#### **WAC 220-20-100 General provisions--Marine protected areas.**

(1) It is unlawful to fish for or possess fish, shellfish, or wildlife taken from any conservation area defined in chapter 220-16 WAC.

(2) The following marine preserves are closed to the taking of fish, shellfish, and wildlife as indicated:

(a) The Admiralty Head Marine Preserve is closed to the taking of fish and wildlife, and closed to the taking of shellfish except sea cucumbers and sea urchins.

(b) The Colvos Passage Marine Preserve is closed to the taking of shellfish and wildlife, closed to all commercial harvest of fish, and closed to recreational harvest of fish except it is lawful to take salmon for personal use by trolling, defined as fishing from a vessel under power and in gear making forward progress.

(c) The San Juan Island Marine Preserve is closed to the taking of shellfish except it is lawful to take crab from Parks Bay, and closed to the taking of food fish other than salmon except it is lawful to take herring and Yellow and Low Island Preserve is closed to the taking of food fish.

(d) The Titlow Beach Marine Preserve is closed to the taking of shellfish and wildlife, closed to the commercial harvest of all fish, and closed to the recreational harvest of all fish except that it is lawful to take salmon if taken with artificial lures

from shore or from a nonmotorized vessel.

(e) The Z's Reef Marine Preserve is closed to the taking of shellfish and wildlife, closed to the commercial harvest of all fish, and closed to the recreational harvest of all fish except that it is lawful to take salmon with fly fishing gear as defined in WAC 220-56-210.

(f) The Seattle city park Marine Preserves (Golden Gardens, Carkeek, Lincoln, Discovery, Emma Schmitz, and Richey Viewpoint) are closed to removal of organisms from the intertidal areas, except that finfish may be harvested using hook and line gear, provided it is lawful under other WDFW fishing regulations. Any organism except finfish taken by hook and line in the intertidal area must be placed unharmed in the location it was found. Removal of organisms of unclassified marine invertebrates in numbers less than the daily limits is an infraction. All other penalties for larger numbers removed apply.

(g) The Saltwater State Park Marine Preserve is closed to all recreational harvest.

(h) The Redondo Beach Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

(i) The Three Tree Point Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

(j) The Alki Beach Seacrest Coves 1, 2, and 3 Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

(k) The Les Davis Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

(l) The Alki Beach Junk Yard Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

(m) The Days Island Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

(n) The Deception Pass Marine Preserve is closed to all recreational harvest of giant Pacific octopus.

NEW SECTION

**WAC 220-16-881 Redondo Beach Marine Preserve.** "Redondo Marine Preserve" is defined as the waters, bed lands, and tidelands within the area described by a line starting from shore at 122°19'27.69"W, 47°20'55.64"N; then northwesterly to 122°19'30.77"W, 47°20'56.82"N; then to 122°19'33.84"W, 47°20'57.31"N; then northeasterly to 122°19'29.78"W, 47°21'02.32"N; then returning to shore at 122°19'25.27"W, 47°21'00.64"N.

NEW SECTION

**WAC 220-16-882 Three Tree Point Marine Preserve.** "Three Tree Point Marine Preserve" is defined as the waters, bed lands, and tidelands within the area described by a line starting from shore at 122°22'48.68"W, 47°27'06.46"N; then northwesterly to 122°22'58.06"W, 47°27'15.30"N; then northeasterly to 122°22'36.99"W, 47°27'25.51"N; then returning to shore at 122°22'27.63"W, 47°27'16.67"N.

NEW SECTION

**WAC 220-16-883 Alki Beach Seacrest Coves 1, 2 and 3 Marine Preserve.** "Alki Beach Seacrest Coves 1, 2 and 3 Marine Preserve" is defined as the waters, bed lands, and tidelands within the area described by a line starting from shore at 122°22'38.72"W, 47°35'13.52"N; then northeasterly and offshore to 122°22'34.60"W, 47°35'16.85"N; then northwesterly to 122°22'48.62"W, 47°35'27.55"N; then returning to shore at 122°22'54.02"W, 47°35'26.35"N. The preserve does not include waters within 150 feet of the Seacrest Public Fishing Pier as demarcated at the surface with buoys and on the sea floor by a perimeter line.

NEW SECTION

**WAC 220-16-884 Les Davis Marine Preserve.** "Les Davis Marine Preserve" is defined as the waters, bed lands, and tidelands within the area described by a line starting from shore at 122°29'07.21"W, 47°17'05.15"N; the northeasterly to 122°29'0.97"W, 47°17'10.57"N; then southeasterly to 122°28'53.00"W, 47°17'6.33"N; then returning to shore at 122°28'58.77"W, 47°17'1.07"N.

NEW SECTION

**WAC 220-16-885 Alki Beach Junk Yard Marine Preserve.** "Alki Beach Junk Yard Marine Preserve" is defined as the waters, bed lands, and tidelands within the area described by a line starting from shore at 122°24'57.17"W, 47°34'40.64"N; then northwesterly to 122°25'03.25"W, 47°34'50.03"N; then northeasterly to 122°24'40.68"W, 47°34'56.75"N; then returning to shore at 122°24'34.48"W, 47°34'47.34"N.

NEW SECTION

**WAC 220-16-886 Days Island Marine Preserve.** "Days Island Marine Preserve" is defined as the waters, bed lands, and tidelands within the area described by a line starting from shore at 122°33'49.16"W, 47°14'07.49"N; then west to 122°34'01.41"W, 47°14'07.58"N; then north to 122°34'0.78"W, 47°14'38.37"N; then returning to shore at 122°33'47.22"W, 47°14'38.21"N.

NEW SECTION

**WAC 220-16-887 Deception Pass Marine Preserve.** "Deception Pass Marine Preserve" is defined as the waters, bed lands, and tidelands east of a line starting at 122°39'48.07"W, 48°24'08.05"N and north to 122°39'50.68"W, 48°24'55.51"N; and west of a line starting at 122°36'54.24"W, 48°24'29.52"N; and north to 122°36'54.73"W, 48°24'48.92"N.

AMENDATORY SECTION (Amending Order 12-17, filed 2/16/12, effective 3/18/12)

**WAC 220-56-235 Possession limits--Bottomfish.** It is unlawful to fish for, retain, or possess sixgill, sevendill, or thresher sharks. It is unlawful for any person to take in any day more than the following quantities of bottomfish for personal use. The possession limit at any time (~~shall~~) may not exceed the equivalent of two daily limits in fresh, frozen or processed form. Unless otherwise provided bottomfish fishing is open the entire year.

(1) Coastal (Catch Record Card Areas 1 through 4) (~~(---)~~): Limit 12 fish ((in the aggregate)) total, except limit 10 fish total east of the Bonilla-Tatoosh line(~~(--- 10 fish in the aggregate))~~, of all species and species groups of bottomfish, which may include no more than:

(a) Lingcod (~~(---)~~): 2 fish (~~(+ (i))~~). Minimum length is 22 inches in Catch Record Card Areas 1 through (~~(3))~~ 4.

~~((ii) Minimum length 24 inches in Catch Record Card Area 4.)~~

(b) Rockfish (~~(---)~~): 10 fish. Release all canary and yelloweye rockfish. In Marine Area 4 east of the Bonilla-Tatoosh line: 6 fish. Only black or blue rockfish may be retained.

(c) Wolfeel (~~(---)~~): 0 fish from Catch Record Card Area 4.

(d) Cabezon (~~(---2)~~): 1 fish. In Marine Area 4, the minimum size limit is 18 inches and all cabezon must be released from June 16 through April 30.

(2) Inner Puget Sound (Catch Record Card Areas 5 through 13):

(a) Catch Record Card Areas 5 and 6 (~~(---)~~): 15 fish (~~(in the aggregate)) total~~ of all species and species groups of bottomfish, which may include no more than:

Rockfish in Marine Area 5 except	1 fish May 1 through September 30. <u>Only</u> black or blue rockfish may be retained.
in Marine Area 5 west of Slip Point	3 fish. <u>Only</u> black or blue rockfish may be retained.
in Marine Area 6.	0 fish
Surfperch	10 fish
Pacific cod	2 fish
Pollock	2 fish
Flatfish (except halibut)	15 fish
Lingcod	1 fish
Wolf-eel	0 fish
Cabezon	<del>((2))</del> <u>1</u> fish

Pacific hake 2 fish

(b) Catch Record Card Area 7(~~(---)~~): 15 fish (~~(in the aggregate)~~) total of all species of bottomfish, which may include no more than:

Rockfish	0 fish
Surfperch	10 fish
Pacific cod	2 fish
Flatfish (except halibut)	15 fish
Lingcod	1 fish
Wolf-eel	0 fish
Cabezon	<del>((2))</del> <u>1</u> fish
Pollock	2 fish
Pacific hake	2 fish

(c) Catch Record Card Areas 8-1 through 11 and 13(~~(---)~~): 15 fish (~~(in the aggregate)~~) total of all species and species groups of bottomfish, which may include no more than:

Rockfish	0 fish
Surfperch	10 fish
Pacific cod	0 fish
Pollock	0 fish
Flatfish (except halibut)	15 fish
Lingcod	1 fish
Wolf-eel	0 fish
Cabezon	<del>((2))</del> <u>1</u> fish
Pacific hake	0 fish

(d) Catch Area 12: Closed.

(e) It is unlawful to possess lingcod taken by angling (~~(less than)~~) that are under 26 inches in length or (~~(greater than)~~) over 36 inches in length. It is unlawful to possess lingcod taken by spear fishing (~~(greater than)~~) that are over 36 inches in length.

~~(f) ((It is unlawful to retain cabezon taken from Catch Record Card Areas 5 through 11 and 13 from December 1 through April 30.~~

~~(g) It is unlawful to retain six-gill shark taken from Catch Record Card Areas 5 through 13.~~

~~(h)) In Marine Areas 5 through 11 and 13, the minimum size limit for cabezon is 18 inches. All cabezon must be released in Catch Record Card Areas 5 through 11 and 13 from June 16 through April 30.~~

(g) In Catch Record Card Area 5, the daily limit for rockfish is the first legal rockfish caught, except west of Slip Point the daily limit for rockfish is the first three legal rockfish caught. Only black or blue rockfish may be retained. After the daily limit of rockfish is caught, all subsequent rockfish must be released.

~~((+i))~~ (h) In Catch Record Card Area 5, it is unlawful to take rockfish by spear fishing except when this area is open to spear fishing for lingcod.

## WDFW INTERNAL MEMORANDUM

**DATE:** February 27, 2013

**TO:** Jim Scott and Craig Burley

**FROM:** Dayv Lowry

**RE:** Extraction of cabezon sighting-count trend data from REEF database

### CONCLUSIONS:

- *Considering all surveyed sites together there is a decreasing trend in the frequency of detection of cabezon.*
  - *This trend is most pronounced in the central Sound from Seattle to Tacoma.*
  - *There are 7 sites with steady or increasing detection trends and these are located in the Strait of Juan de Fuca, near Neah Bay, or at the Edmonds Underwater Park north of Seattle.*
  - *A few “suspect” data points (i.e., >100 cabezon in a single dive) were removed from the analysis.*
- *The decreasing occurrence trend is mirrored in estimates of observed counts, when standardized by bottom time.*
- *A **major caveat** to these trends is that REEF data are substantially geographically biased with respect to cabezon, with 81.5% occurring at the Edmonds Underwater Park complex of dive sites.*
  - ***At Edmonds, cabezon appear to have decreased sharply since 1998.***
- *When Edmonds sites are removed from the dataset there is **no apparent trend** in frequency of occurrence or standardized counts at the remaining sites.*
  - *Cabezon have been infrequently encountered (<0.40 fish/hr) at non-Edmonds sites since 2000.*
- ***The REEF database serves as a valid source for qualitatively tracking cabezon presence and count at the Edmonds complex of dive sites but not for the remainder of Puget Sound due to low detection rates.***

**DETAILS:** In an effort to identify trends in cabezon abundance in Puget Sound we were asked to evaluate the data provided to the WDFW in the REEF database, which contains information obtained from volunteer SCUBA survey efforts since 1998. This database contains some 11,646 individual survey reports from 427 stations spanning the entirety of Puget Sound (Figure 1). It should be noted, however, that: 1) site selection is not random; 2) survey effort and timing is haphazard rather than occurring as part of a planned, statistically robust sampling design; and 3) that surveyor experience is not comparable among locations and dates, which may lead to misidentification of fish and other biases. Despite these shortcomings the data could still be useful for detecting large changes in fish presence/absence and, possibly, abundance.

To ensure data were robust enough to allow evaluation of recent trends in fish counts, I eliminated from consideration any site that was not surveyed in 2011 and/or 2012. I then further restricted the list of sites to those that were surveyed in six (6) or more of the years from 2000 to 2010, inclusive. This resulted in a list of 67 sites covering a substantial portion of Puget Sound (Figure 2), of which only 55 (11.7% of the overall sites) contained records of cabezon occurrence. In addition to these survey selection criteria, I dropped two surveys (records 1205544 and 1205550) from the analysis entirely because they recorded cabezon as “abundant” (category 4). That more than 100 cabezon would be seen on a single dive is considered highly unlikely in the view of WDFW’s collective dive experience. Initially, I sought to limit the survey list to only those dives conducted by Expert divers, but over two-thirds of dives at cabezon-containing sties were conducted by Novice divers. As such, I did not attempt to compensate for diver experience in this analysis.

Considering all 55 cabezon-containing sites in total, there has been a substantial historic decrease in the relative proportion of surveys in which cabezon are observed, toward a current ‘floor’ of ~9% (Tables 1 and 2, Grand Total; Figure 3). There are several sites at which cabezon have infrequently been recorded, or at which their sighting frequency changes substantially from year to year, but for those with detections over several years there are 5 sites with clearly declining trends (Tables 1 and 2, blue highlight) and 7 sites with steady or increasing trends (Tables 1 and 2, purple highlight). Four of the five stations with clearly declining detection trends are in central Puget Sound from Seattle to Tacoma (Figure 2, green asterisks), while the fifth such site is near Neah Bay. At several of these sites cabezon detection dropped to zero in 2007 or 2008 and has remained very low. The 7 sites with steady or increasing detection trends are located in the Strait of Juan de Fuca, near Neah Bay, or at the Edmonds Underwater Park north of Seattle (Figure 2, purple stars). Taken together, these patterns in detection frequency suggest that a decrease in cabezon presence has occurred in the central Sound that has not been offset elsewhere, which suggests fish are not relocating to novel SCUBA-accessible locales, with the possible exception of the Edmonds Underwater Park.

Fish abundance in the REEF database is recorded as a categorical index on an approximately logarithmic scale (i.e., single, few [2-10], many [11-100], abundant [ $>100$ ]), rather than a direct estimate of absolute abundance. As such, it is best to consider the REEF cabezon data as broad, qualitative descriptors of abundance trends where both frequency of occurrence relative to the number of surveys conducted, and longitudinal changes in abundance category, *may* indicate population level changes in abundance. Additionally, for the 1325 surveys on which cabezon were detected 602 (45.4%) were recorded as “single fish” and 594 (44.8%) as “few fish.” In order to present approximate trends in abundance that are numeric rather than categorical, the codes used in the REEF database were converted as such: “single” = 1 fish, “few” = 7 fish, and “many” = 12 fish. Though the “many” category may be used for fish counts from 11-100, WDFW’s collective dive experience suggests that seeing more than 12-15 fish during a single dive is highly unlikely. As noted above, the two “abundant” records were previously removed from analysis.

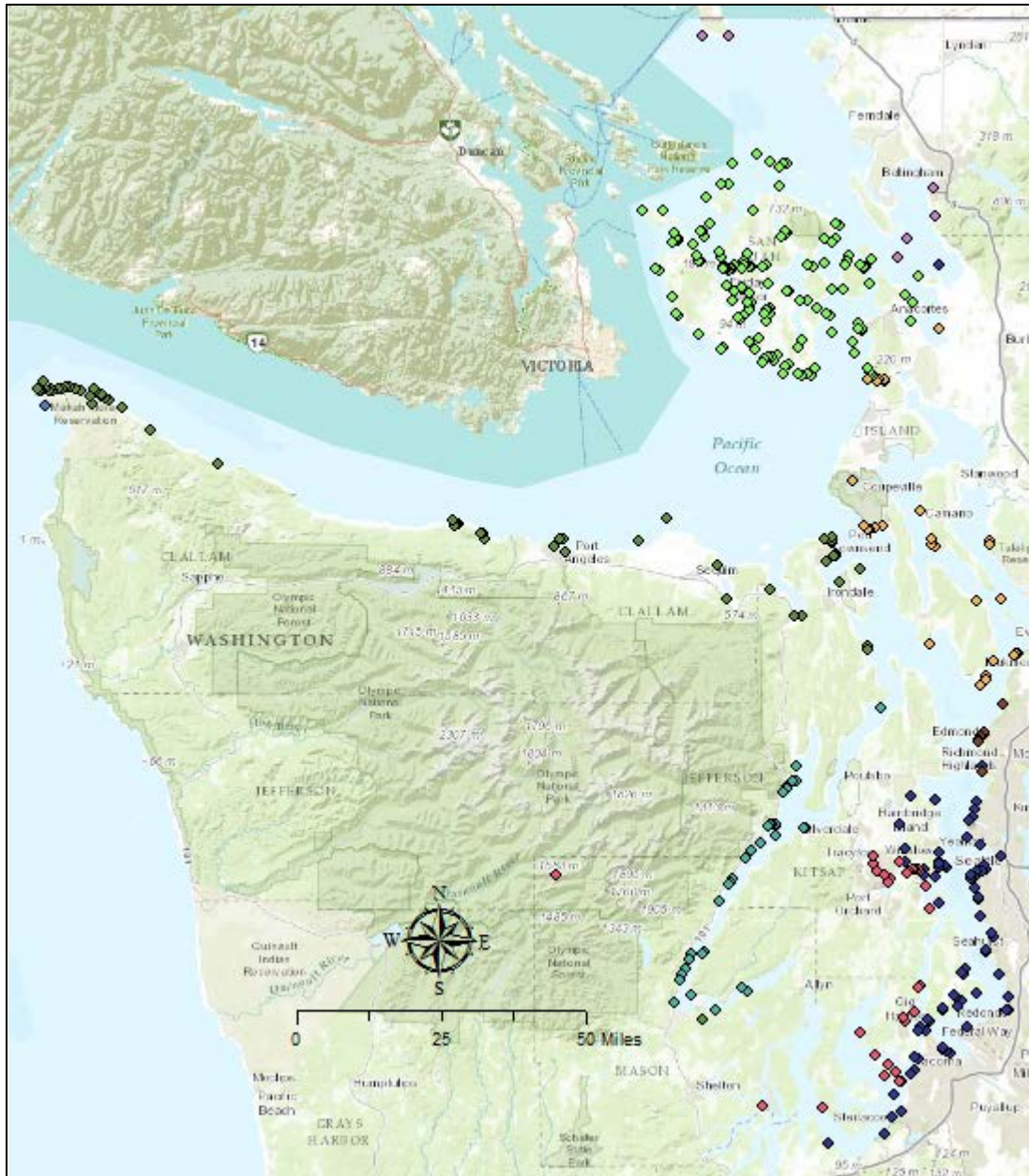
Despite being detected at 55 sites throughout Puget Sound, observed cabezon counts were very low at several of these sites. When sites with fewer than 20 fish observed since 1998 are removed, only 22 locations remain (Table 3). Of the nearly 4000 cabezon estimated to have been observed at these sites, over 2500 were seen at “Edmonds Underwater Park (no site specified),” revealing a clear geographic bias in the collection of data. Approximately an additional 691 fish were recorded at other sites in the Edmonds Underwater Park complex. In total, 81.5% of detected cabezon were recorded at Edmonds Underwater Park complex sites, indicating that the cabezon population in Puget Sound cannot truly be successfully evaluated using the REEF database.

Acknowledging that the available observed count data best represent only the Edmonds Underwater park complex of dive sites, it is still possible to describe the trend in observed counts over time. Figure 4 shows this trend, though the relationship is not significant. Interannual variability in observed count estimates is large, especially from 2000-2008, and the substantial historic decline apparent in the frequency of detection data is no longer apparent. However, when observed counts are standardized by dive bottom time (Table 4), the decreasing occurrence trend noted in the frequency of occurrence data once again manifests (Figure 5). In this case, the number of cabezon per hour of dive bottom time has dropped from a peak of 6.7 fish/hr in 1999 to an average of 0.61 fish/hr from 2006-2012.

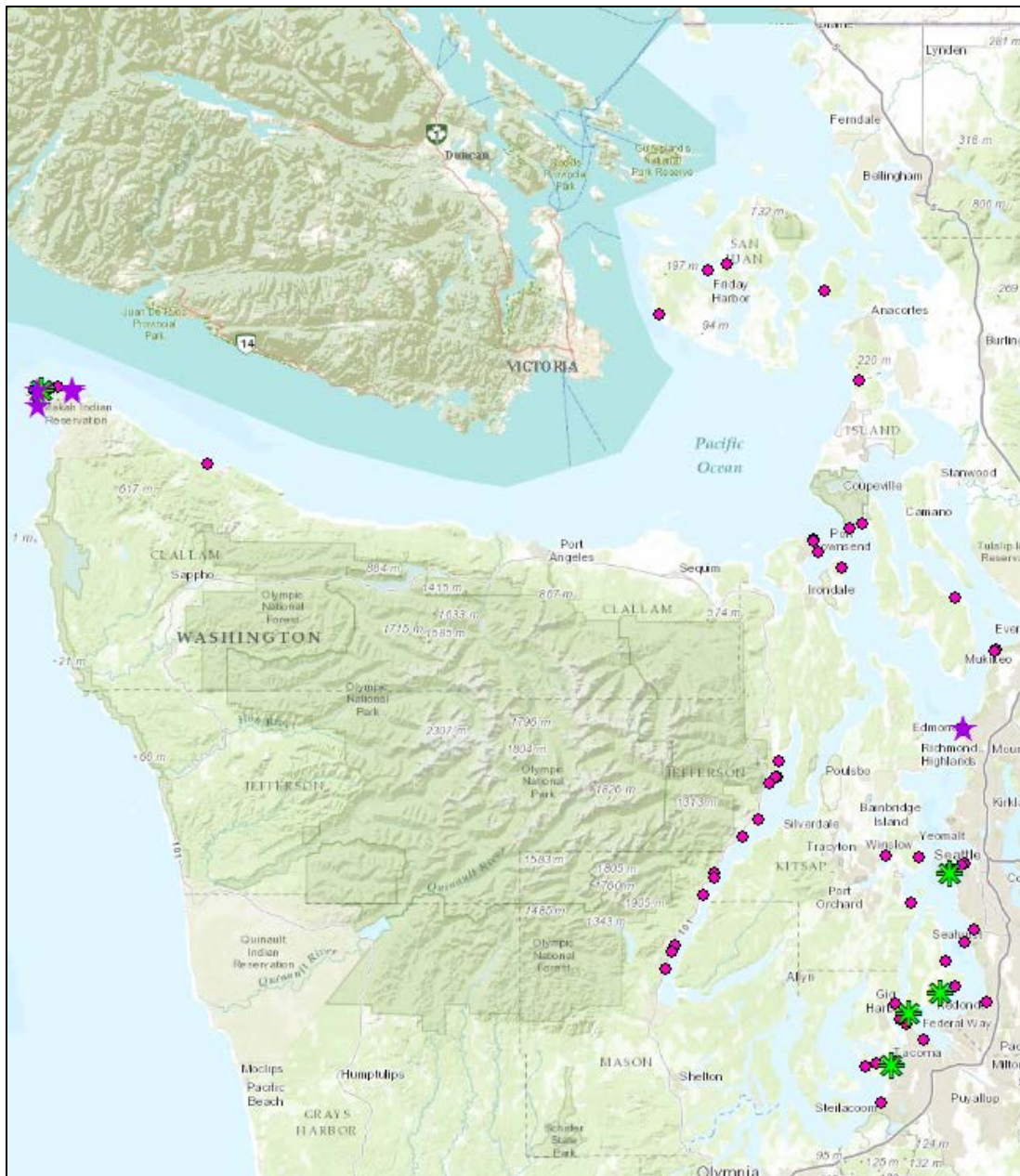
In an effort to evaluate cabezon occurrence on a Sound-wide basis without the heavy geographical bias on the Edmonds Underwater Park complex of dive sites I recalculated annual sighting frequency (Figure 3A) and standardized count data in fish/hr (Figure 5A) after removing all Edmonds sites. Note that this limits the timeframe under consideration because no cabezon were recorded at non-Edmonds sites in 1998 and 1999. In contrast to the clearly declining trend observed when Edmonds data are included, the REEF dataset with Edmonds excluded provides no evidence of a trend in frequency of occurrence (Figure 3A). There is a possible declining trend since approximately 2007 or 2009, but the variability among these observations is well within the variability of the prior years. When Edmonds data are removed from the



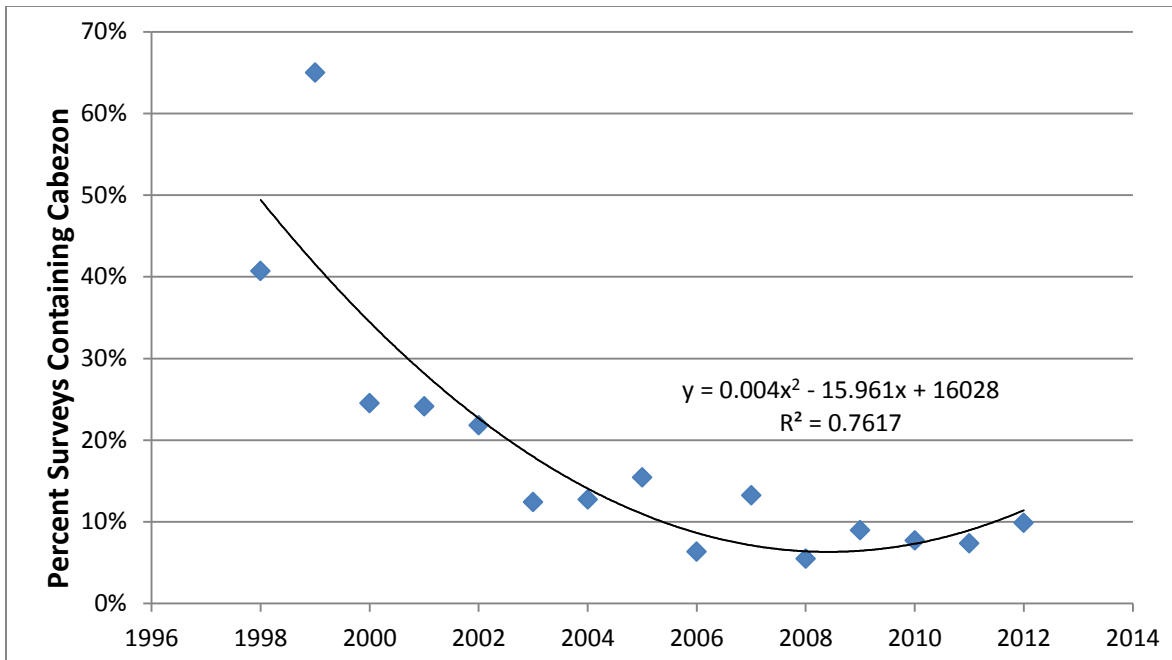
standardized count data (cabezon/hr) a slight declining trend in fish counted is apparent for recent years (Figure 5A). This trend, however, is not statistically significant and indicates that cabezon counts per hour of bottom time on a Sound-wide basis have remained below 0.40 fish/hr since 2000, with the exception of 2001 when counts were anomalously high (1.13 fish/hr).



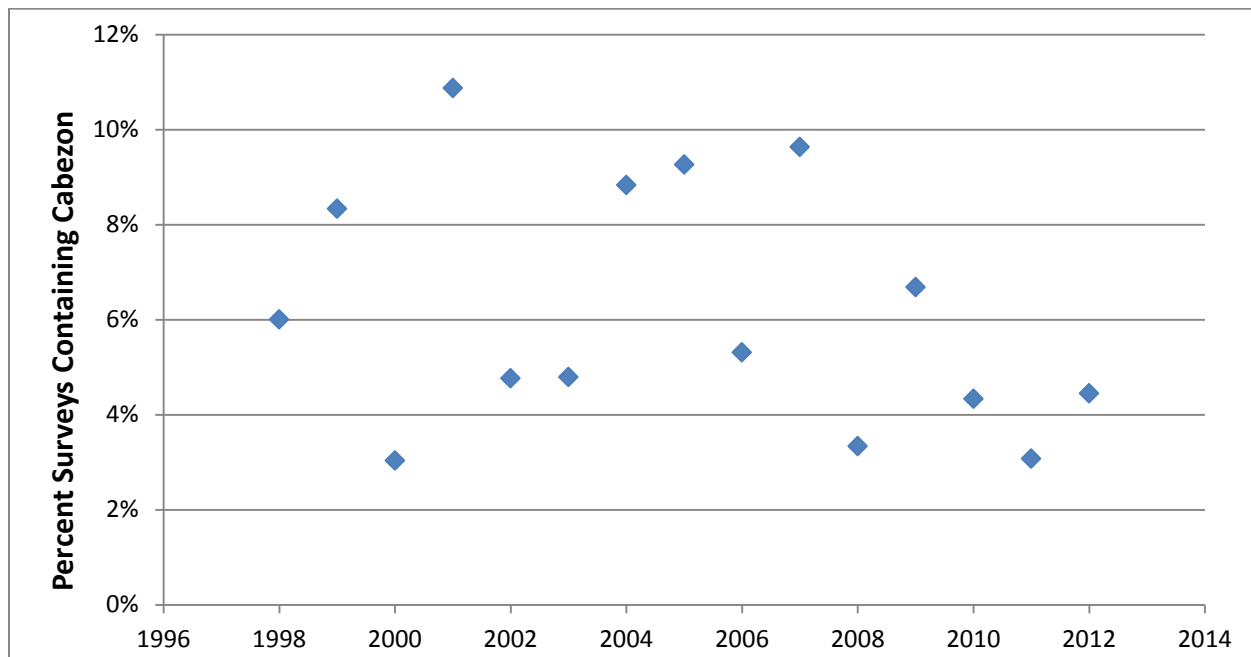
**Figure 1.** REEF dive locations included in the database. Colors represent broad geographic “area codes.” Data are unedited by WDFW.



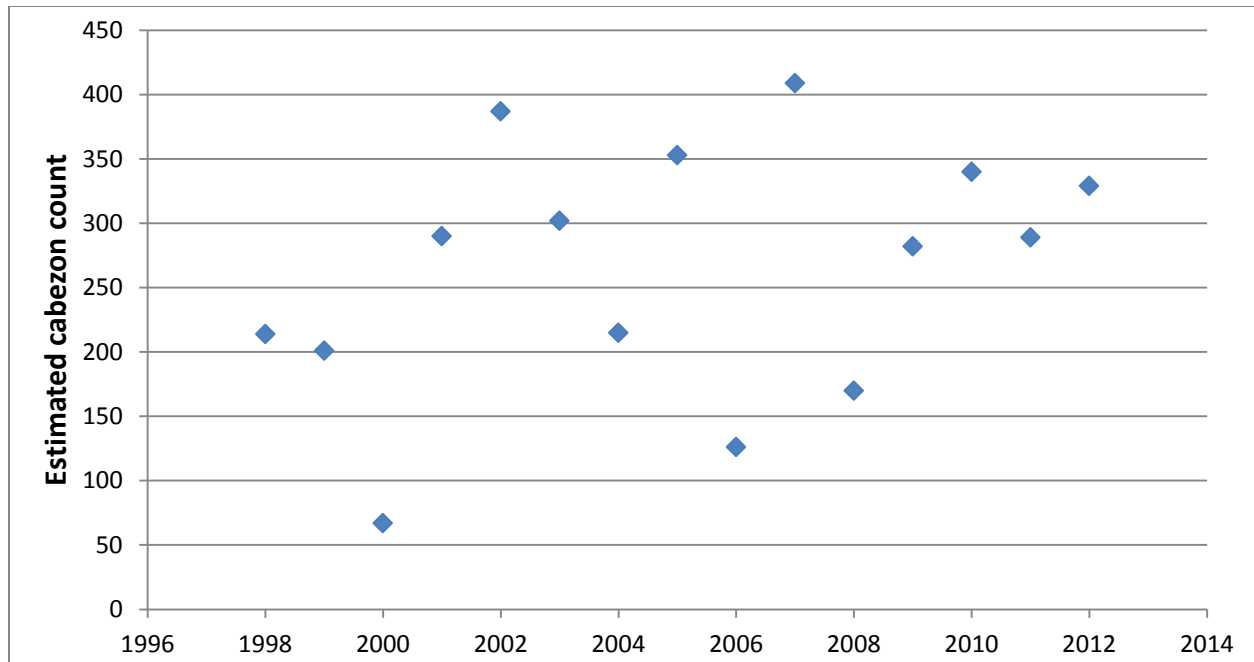
**Figure 2.** Selected REEF dive locations with sufficiently robust data series to evaluate fish presence and counts (pink circles). Sites must have been monitored in 2011 and/or 2012, as well as having been monitored in at least 6 years between 2000 and 2010, inclusive. Sites with strongly declining cabezon trends are shown as green asterisks and sites with increasing or level cabezon trends are shown as purple stars (see Table 1 for site names).



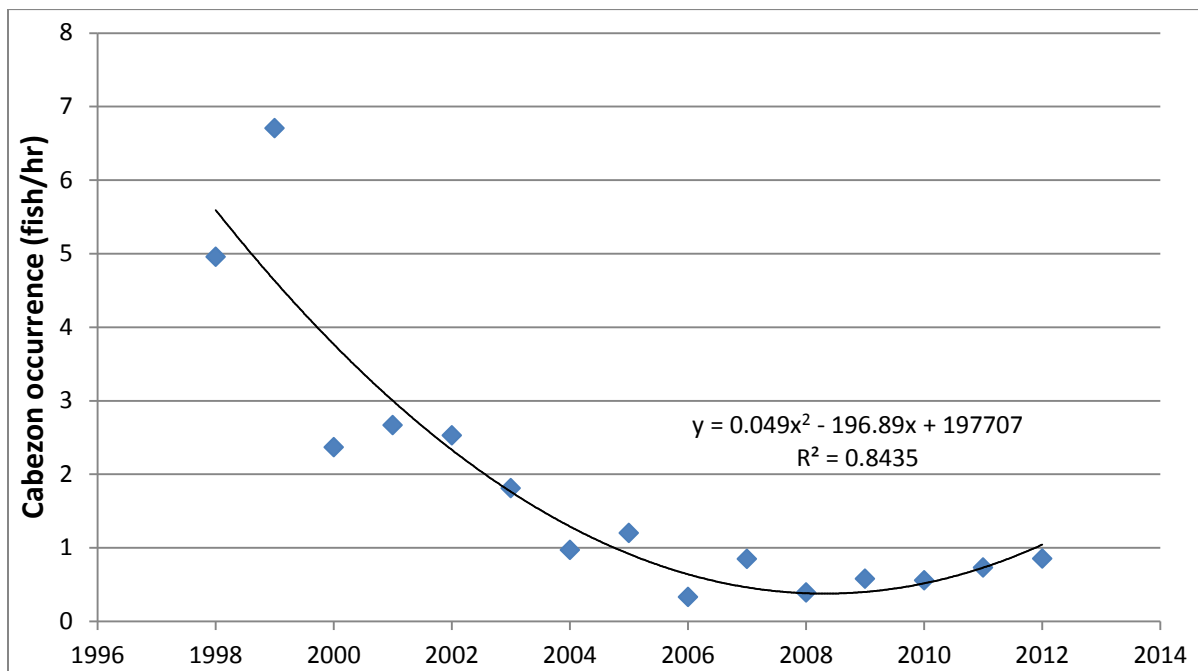
**Figure 3.** Trend in the proportion of surveys containing cabezon since 1998. The frequency of occurrence of cabezon has decreased steadily over time on a Sound-wide basis from a peak of 65% in 1999 to a steady ~9% since 2009.



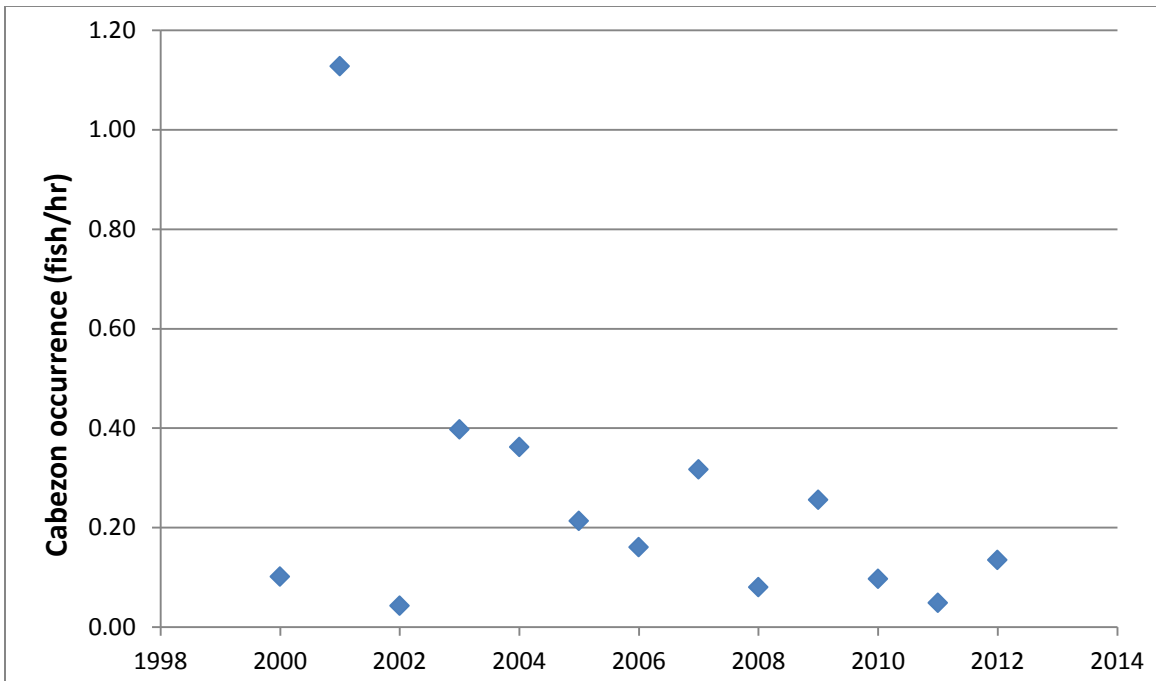
**Figure 3A.** Trend in the proportion of surveys containing cabezon since 1998. *All sites associated with the Edmonds Underwater Park (see Table 3 for list) have been removed.* The frequency of occurrence of cabezon shows no discernible trend using these data.



**Figure 4.** Trend in the Sound-wide observed count of cabezon since 1998. A clear trend is not present, in contrast to the frequency of detection trend shown in Figure 3. Total counts were estimated by converting coded data (see text).



**Figure 5.** Trend in the Sound-wide standardized counts (fish/hr bottom time) of cabezon since 1998. A clear trend is present that mirrors the frequency of detection trend shown in Figure 3. Total counts were estimated by converting coded data (see text), then standardized by total dive bottom time.



**Figure 5A.** Trend in the Sound-wide standardized count (fish/hr bottom time) of cabezon since 2000. *All sites associated with the Edmonds Underwater Park (see Table 3 for list) have been removed.* Total counts were estimated by converting coded data (see text), then standardized by total dive bottom time.



**Table 1.** Ratio of transects in which cabezon were observed (i.e., the denominator is the number of surveys conducted at the site) on an annual, site-specific basis. Sites with strongly decreasing trends are in blue while those with stable or increasing trends over time are in purple.

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Admiralty Beach Coupeville Reef								1/6	0/4	1/8	0/8	0/6	0/2	0/10	0/2
Alki Junk Yard						0/1	0/5	0/5	1/14	4/9	1/8	2/9	0/39	0/31	0/27
Alki Pipeline				3/5	1/3	1/1	0/2	1/3	1/8	0/5	0/2	0/4	0/10	0/12	0/5
Barges (Glacier Gravel Pt)					1/1		0/7	1/2	0/1	1/11	1/11	0/7	0/5	0/1	0/6
Bell Island - West	0/1		0/3	0/3	0/2	0/1	1/9	0/4	3/11	0/1	0/3	0/3	0/5	0/1	0/4
Black Point						0/4	0/1		0/2	1/12	0/2	0/4	0/5	0/10	0/3
Box Canyon (W of Mushroom Rock)						1/6	4/6	3/6	0/6	0/6	2/9	0/12	0/11	1/10	0/11
Cathedrals, Edmonds UWP		8/8	1/1	9/11	12/12	3/3	7/7	3/3		2/2	1/1	1/1	3/3		2/2
Chibahdehl Rocks						1/6	3/7	1/6	0/6	1/6	3/8	3/12	3/11	1/9	1/11
Dalco Wall			0/2	5/5		1/1	1/1	0/1		0/1	1/5	1/5	0/9		0/3
Day Island Wall				0/5	0/2		0/1	2/7	2/12	2/10	0/14	0/4	0/21	0/11	0/9
Deception Pass State Park				0/3	0/1					4/8	0/6	0/2	1/19	0/5	0/3
Ed Munro Seahurst Park			0/2					0/1	0/2	1/4	0/2		0/2	0/2	0/1
Edmonds UW Park (site unspecified)	32/36	15/16	10/18	12/13	34/36	26/27	8/9	26/28	7/9	31/34	15/17	19/22	37/43	38/45	41/43
Fort Worden St Park Artificial Reef	3/11	0/2	0/2	0/3	3/5	0/8	0/1			0/3		0/5		0/5	0/2
Harper Ferry Dock (Yukon Harbor)		0/1		0/5					0/1	2/6	0/8	0/1	1/3	0/1	0/2
Hoodsport						0/2	0/3		0/5	0/5	0/6	1/11	0/2	0/2	
Janna's Joy							0/5	1/6	0/6	0/6	1/8	1/12	0/10		0/10
Keystone State Park Jetty		0/1		0/7	0/13	2/22	1/52	2/29	0/25	8/74	6/72	4/54	0/58	0/33	1/23
Keystone State Park Pilings						1/9	0/14	0/5	0/6	2/18	0/21	2/11	0/15	0/6	0/4
Koitolah Point	0/9					1/6	1/6	2/6	3/6	3/6	0/8	2/12	4/10		1/10
KVI Tower				0/3		0/10	1/13	0/3	0/1	0/1	0/1	1/10	0/7	0/8	0/4
Langley Tire Reef		0/1				0/1	0/6	0/18	0/21	9/40	0/35	1/31	2/52	0/20	0/9
Les Davis Pier Artificial Reef				3/49	0/49	1/48	1/22	0/13	3/29	1/28	0/22	1/46	0/27	0/16	0/22
Maury Island Regional Park Pier		0/1	0/5	5/7	0/8	0/6	0/5	0/3	0/3	0/2		0/8	0/3	0/7	0/3
Mike's Beach Resort					0/6	0/9	1/7	0/1	0/7	0/12	0/2	0/8	1/51	0/77	0/37
Mukilteo Fuel Pier		1/2	0/1	0/9	0/1		1/3	0/2	0/5	0/4		1/1	0/1	1/9	0/1
Mukilteo T - Dock							0/14	2/6		3/11	1/10	3/27	14/65	1/15	0/3

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Mushroom Rock						0/7	1/6	1/6	0/6	0/5	1/8	0/11	0/11	2/9	0/10
Norranders Reef	0/20	0/1		1/5		0/11	0/14	0/3	0/2	1/10	0/10	0/7	1/12	0/3	0/3
Octopus Hole	0/9		0/5	0/2	0/8	0/11	1/5		0/7	0/18	0/11	0/11	0/8	0/11	0/10
Owen Beach					0/1		2/4	0/4	1/27	0/1	0/4		0/1	0/1	0/1
Point Hudson Jetty					0/2		0/1		0/1		0/1	5/42	0/22	0/14	0/10
Point Whitney Shellfish Lab				0/15	2/7	0/19	0/3		1/9	0/17	0/8	0/8	0/9	0/4	0/6
Redondo M.S.C. Pier (MaST)					0/1	0/10	6/66	0/113	2/149	7/125	0/118	2/159	1/142	0/68	0/104
Rosie's Ravine (deep wall)						0/1	0/1	0/4	0/2	0/15			1/3	0/1	
Seacrest Park Cove 2 (Alki)			1/3	0/14	1/4	0/13	3/17	11/34	13/55	7/52	4/41	7/69	5/83	2/74	11/65
Seacrest Park Cove 3 (Alki)				1/1	0/2	0/1	1/1	0/2	0/9	2/4	0/6	1/17	0/13	1/10	0/10
Sekiu Rocks Reef (west of Jetty)			0/1			2/11			0/2	2/9	0/9	0/7	2/7	0/3	0/12
Skagway Rocks						1/7		2/6		1/6	3/8	10/12	3/11	2/10	5/10
Slant Rock						1/7	1/6	0/6	1/6	3/6	0/8	6/12	2/10	1/9	3/11
Strawberry Island					0/1			1/1	0/1		0/1	0/2	0/1	0/2	
Sund Rock (south wall)		0/1		0/5	0/9	0/2	0/24	0/8	0/40	0/29	0/27	1/25	0/80	1/32	0/28
Sund Rock N Wall Marine Preserve				0/5	0/12	0/7	0/11	0/10	0/49	0/39	0/32	0/39	1/74	1/84	0/67
Sunnyside Beach (Steilacoom)				0/14	1/48	0/33	1/23	0/2	0/11	0/14	0/2	0/12	0/5	0/2	0/7
Sunrise Beach County Park		0/1	0/4	1/10	0/5	0/8	1/5	0/4	0/5	0/5	0/16	0/20	2/25	0/14	0/8
Tatoosh (Tatoоче) Island South						2/4		4/6	2/6	3/6	0/1	4/12	3/11	1/10	5/11
The Jetty, Edmonds UWP				0/1	4/4				1/1		1/1	3/3	0/2		2/4
The Pinnacle (Seamount)						0/28	0/9	0/10	0/13	1/12	0/19	0/21	0/38	0/20	0/27
Three Tree Point North			0/1	0/5	0/12	1/18	2/15	1/30	4/69	7/95	0/106	0/80	0/77	2/50	1/49
Titlow Beach		0/1	0/1	1/3	2/28	1/15	3/17	3/26	0/28	0/16	0/12	0/10	0/14	0/11	0/10
Tube Henge, Edmonds UWP		2/4	1/1	14/19	4/5	2/2	4/5	2/2		1/1			2/2	0/1	
Yellow Island - South								0/7	1/21	1/3	1/8	2/9	0/5	5/36	1/38
Yellow Island -northeast								0/4	0/12	0/4	0/4	0/3	0/2	2/21	4/25
Z's Reef / Zees Reef (Fox Island)			0/3	0/1		0/1	0/1	0/2	0/5	0/12	1/18	0/20	2/24	1/13	0/5
<b>Grand Total</b>	<b>35/86</b>	<b>26/40</b>	<b>13/53</b>	<b>55/228</b>	<b>65/298</b>	<b>48/387</b>	<b>56/440</b>	<b>70/454</b>	<b>46/729</b>	<b>112/847</b>	<b>42/768</b>	<b>84/939</b>	<b>91/1181</b>	<b>63/859</b>	<b>78/791</b>

**Table 2.** Percentage of transects in which cabezon were observed on an annual, site-specific basis. Sites with strongly decreasing trends are in blue while those with stable or increasing trends over time are in purple.

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Admiralty Beach Coupeville Reef								17%	0%	13%	0%	0%	0%	0%	0%
Alki Junk Yard						0%	0%	0%	7%	44%	13%	22%	0%	0%	0%
Alki Pipeline				60%	33%	100%	0%	33%	13%	0%	0%	0%	0%	0%	0%
Barges (Glacier Gravel Pt)					100%		0%	50%	0%	9%	0%	0%	0%	0%	0%
Bell Island - West	0%		0%	0%	0%	0%	11%	0%	27%	0%	0%	0%	0%	0%	0%
Black Point						0%	0%		0%	8%	0%	0%	0%	0%	0%
Box Canyon (W of Mushroom Rock)						17%	67%	50%	0%	0%	22%	0%	0%	10%	0%
Cathedrals, Edmonds UWP		100%	100%	82%	100%	100%	100%	100%		100%	100%	100%	100%		100%
Chibahdehl Rocks						17%	43%	17%	0%	17%	38%	25%	27%	11%	9%
Dalco Wall			0%	100%		100%	100%	0%		0%	20%	20%	0%		0%
Day Island Wall				0%	0%		0%	29%	17%	10%	0%	0%	0%	0%	0%
Deception Pass State Park				0%	0%					50%	0%	0%	5%	0%	0%
Ed Munro Seahurst Park			0%					0%	0%	25%	0%		0%	0%	0%
Edmonds UW Park (site unspecified)	89%	94%	56%	92%	74%	96%	89%	93%	78%	91%	88%	86%	86%	84%	95%
Fort Worden St Park Artificial Reef	27%	0%	0%	0%	60%	0%	0%			0%		0%		0%	0%
Harper Ferry Dock (Yukon Harbor)		0%		0%					0%	33%	0%	0%	33%	0%	0%
Hoodsport						0%	0%		0%	0%	0%	9%	0%	0%	
Janna's Joy							0%	17%	0%	0%	13%	8%	0%		0%
Keystone State Park Jetty		0%		0%	0%	9%	2%	7%	0%	11%	8%	7%	0%	0%	4%
Keystone State Park Pilings						11%	0%	0%	0%	11%	0%	18%	0%	0%	0%
Koiltah Point	0%					17%	17%	33%	50%	50%	0%	17%	40%		10%
KVI Tower				0%		0%	8%	0%	0%	0%	0%	10%	0%	0%	0%
Langley Tire Reef		0%				0%	0%	0%	0%	23%	0%	3%	4%	0%	0%
Les Davis Pier Artificial Reef				6%	0%	2%	5%	0%	10%	4%	0%	2%	0%	0%	0%
Maury Island Regional Park Pier		0%	0%	71%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%
Mike's Beach Resort					0%	0%	14%	0%	0%	0%	0%	0%	2%	0%	0%
Mukilteo Fuel Pier		50%	0%	0%	0%		33%	0%	0%	0%		100%	0%	11%	0%
Mukilteo T - Dock							0%	33%		27%	10%	11%	22%	7%	0%
Mushroom Rock						0%	17%	17%	0%	0%	13%	0%	0%	22%	0%



Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norranders Reef	0%	0%		20%		0%	0%	0%	0%	10%	0%	0%	8%	0%	0%
Octopus Hole	0%		0%	0%	0%	0%	20%		0%	0%	0%	0%	0%	0%	0%
Owen Beach					0%		50%	0%	4%	0%	0%		0%	0%	0%
Point Hudson Jetty					0%		0%		0%		0%	12%	0%	0%	0%
Point Whitney Shellfish Lab				0%	29%	0%	0%		11%	0%	0%	0%	0%	0%	0%
Redondo M.S.C. Pier (MaST)					0%	0%	9%	0%	1%	6%	0%	1%	1%	0%	0%
Rosie's Ravine (deep wall)						0%	0%	0%	0%	0%			33%	0%	
Seacrest Park Cove 2 (Alki)			33%	0%	25%	0%	18%	32%	24%	13%	10%	10%	6%	3%	17%
Seacrest Park Cove 3 (Alki)				100%	0%	0%	100%	0%	0%	50%	0%	6%	0%	10%	0%
Seki Rocks Reef (west of Jetty)			0%			18%			0%	22%	0%	0%	29%	0%	0%
Skagway Rocks						14%		33%		17%	38%	83%	27%	20%	50%
Slant Rock						14%	17%	0%	17%	50%	0%	50%	20%	11%	27%
Strawberry Island					0%			100%	0%		0%	0%	0%	0%	
Sund Rock (south wall)		0%		0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	3%	0%
Sund Rock N Wall Marine Preserve				0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%
Sunnyside Beach (Steilacoom)				0%	2%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%
Sunrise Beach County Park		0%	0%	10%	0%	0%	20%	0%	0%	0%	0%	0%	8%	0%	0%
Tatoosh (Tatooshe) Island South						50%		67%	33%	50%	0%	33%	27%	10%	45%
The Jetty, Edmonds UWP				0%	100%				100%		100%	100%	0%		50%
The Pinnacle (Seamount)						0%	0%	0%	0%	8%	0%	0%	0%	0%	0%
Three Tree Point North			0%	0%	0%	6%	13%	3%	6%	7%	0%	0%	0%	4%	2%
Titlow Beach		0%	0%	33%	7%	7%	18%	12%	0%	0%	0%	0%	0%	0%	0%
Tube Henge, Edmonds UWP		50%	100%	74%	80%	100%	80%	100%		100%			100%	0%	
Yellow Island - South								0%	5%	33%	13%	22%	0%	14%	3%
Yellow Island -northeast								0%	0%	0%	0%	0%	0%	10%	16%
Z's Reef / Zees Reef (Fox Island)			0%	0%		0%	0%	0%	0%	0%	6%	0%	8%	8%	0%
<b>Grand Total</b>	<b>41%</b>	<b>65%</b>	<b>25%</b>	<b>24%</b>	<b>22%</b>	<b>12%</b>	<b>13%</b>	<b>15%</b>	<b>6%</b>	<b>13%</b>	<b>5%</b>	<b>9%</b>	<b>8%</b>	<b>7%</b>	<b>10%</b>

**Table 3.** Estimated observed count data for sites at which 20 or more cabezon have been detected since 1998. Observed counts were estimated by converting coded data (see text). Edmonds Underwater Park complex sites are highlighted in yellow.

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Grand Total
Alki Junk Yard						0	0	0	1	10	1	8	0	0	0	20
Alki Pipeline				21	1	1	0	1	1	0	0	0	0	0	0	25
Box Canyon (West of Mushroom Rock)						1	10	9	0	0	2	0	0	1	0	23
Cathedrals, Edmonds UWP		54	1	51	104	21	59	26		24	7	7	26	19	67	399
Chibahdehl Rocks						1	9	1	0	1	3	21	3	1	1	41
Dalco Wall			0	23		7	1	0		0	1	1	0		0	33
Edmonds UW Park (no site specified)	214	133	58	71	223	219	50	257	54	537	123	136	251	272	250	2548
Keystone State Park Jetty		0		0	0	14	1	8	0	26	12	10	0	0	1	72
Koitlah Point	0					1	1	2	15	9	0	2	4		1	35
Langley Tire Reef		0				0	0	0	0	21	0	1	2	0	0	24
Les Davis Pier Artificial Reef				3	0	12	1	0	3	1	0	1	0	0	0	21
Maury Island Regional Park Pier		0	0	23	0	0	0	0	0	0		0	0	0	0	23
Mukilteo T - Dock							0	2		3	1	9	20	1	0	36
Redondo M.S.C. Pier (MaST)					0	0	18	0	2	19	0	8	7	0	0	54
Seacrest Park Cove 2 (Alki)			1	0	1	0	9	11	25	7	4	13	5	2	11	89
Skagway Rocks						1		2		1	9	34	9	8	5	69
Slant Rock						1	1	0	1	15	0	6	2	1	9	36
Tatoosh (Tatooshe) Island South						2		16	8	15	0	4	3	1	17	66
The Jetty, Edmonds UWP				0	28				12		7	21	0		14	82
Three Tree Point North			0	0	0	1	2	1	4	13	0	0	0	2	1	24
Titlow Beach		0	0	7	2	12	20	3	0	0	0	0	0	0	0	44
Tube Henge, Edmonds UWP		14	7	91	28	8	33	14		7			8	0		210
<b>Grand Total</b>	<b>214</b>	<b>201</b>	<b>67</b>	<b>290</b>	<b>387</b>	<b>302</b>	<b>215</b>	<b>353</b>	<b>126</b>	<b>409</b>	<b>170</b>	<b>282</b>	<b>340</b>	<b>289</b>	<b>329</b>	<b>3974</b>

**Table 4.** Standardized observed count data (cabezon/hr) for sites at which 20 or more cabezon have been detected since 1998. Observed counts were estimated by converting coded data (see text above), then standardizing by total bottom time at each site during a given year. Edmonds Underwater Park complex sites are highlighted in yellow.

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Alki Junk Yard						0.00	0.00	0.00	0.10	1.39	0.16	0.99	0.00	0.00	0.00
Alki Pipeline				4.41	0.35	1.11	0.00	0.54	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Box Canyon (West of Mushroom Rock)						0.20	2.01	1.62	0.00	0.00	0.24	0.00	0.00	0.12	0.00
Cathedrals, Edmonds UWP		6.53	0.78	5.63	9.54	7.88	8.47	8.57		10.43	6.36	8.24	9.45		6.95
Chibahdehl Rocks						0.28	1.51	0.22	0.00	0.17	0.43	2.30	0.31	0.12	0.10
Dalco Wall			0.00	8.47		11.35	2.14	0.00		0.00	0.26	0.30	0.00		0.00
Edmonds UW Park (no site specified)	5.61	9.48	3.51	5.56	5.23	8.18	5.63	9.33	6.20	6.64	5.76	6.21	6.28	5.82	6.28
Keystone State Park Jetty		0.00		0.00	0.00	0.69	0.02	0.28	0.00	0.42	0.22	0.24	0.00	0.00	0.05
Koitlah Point	0.00					0.20	0.19	0.33	3.25	1.45	0.00	0.19	0.53		0.10
Langley Tire Reef		0.00				0.00	0.00	0.00	0.00	0.57	0.00	0.04	0.04	0.00	0.00
Les Davis Pier Artificial Reef				0.09	0.00	0.36	0.06	0.00	0.10	0.04	0.00	0.02	0.00	0.00	0.00
Maury Island Regional Park Pier		0.00	0.00	5.63	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Mukilteo T - Dock							0.00	0.38		0.35	0.17	0.52	0.34	0.07	0.00
Redondo M.S.C. Pier (MaST)					0.00	0.00	0.38	0.00	0.01	0.17	0.00	0.06	0.05	0.00	0.00
Seacrest Park Cove 2 (Alki)			0.63	0.00	0.30	0.00	0.59	0.44	0.51	0.15	0.12	0.28	0.07	0.03	0.21
Skagway Rocks						0.24		0.37		0.18	1.27	3.30	0.88	0.87	0.57
Slant Rock						0.19	0.19	0.00	0.23	2.85	0.00	0.66	0.24	0.12	1.03
Tatoosh (Tatoosche) Island South						0.59		2.91	1.75	2.73	0.00	0.41	0.31	0.11	1.72
The Jetty, Edmonds UWP				0.00	9.82				6.86		12.00	6.74	0.00		3.39
Three Tree Point North			0.00	0.00	0.00	0.07	0.17	0.04	0.07	0.15	0.00	0.00	0.00	0.04	0.02
Titlow Beach		0.00	0.00	2.55	0.08	0.79	1.27	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tube Henge, Edmonds UWP		3.31	10.50	5.16	6.86	4.90	8.02	13.13		12.73			4.25	0.00	
<b>Grand Total</b>	4.96	6.70	2.36	2.67	2.53	1.81	0.97	1.20	0.33	0.85	0.39	0.58	0.56	0.73	0.85