

## Grass Roots Garbage Gang Beach Cleanup

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## What is the Grass Roots Garbage Gang?

### WHO

- VERY grass-roots: people from all means and all walks of life
- All-volunteer
- Passionate about our beach
- Busy but committed people

### WHAT

- Organize community beach cleanup every Jan, April & July
- Collaboratively play steward to 28 miles of beach on Long Beach Peninsula
- Recognize & support routine self cleaning for regular beach-goers
- Encourage ALL beachgoers to pitch in and pick up
- Discourage beach littering
- Take every opportunity to educate about litter and its impact, especially plastic

### BRIEF HISTORY

- Began in 2001 with a handful of volunteers cleaning just 3 miles of beach
- Pacific County immediate support with bags, picker uppers and dumpster
- City of Long Beach soon made available a dumpster as well

## What's our Circumstance?

First, we are a geographical 'sitting duck':

- Columbia River flows west
- Ocean currents flow north
- Ocean currents occasionally brings in the Garbage Patch

Multiuse beach

- Major fishing, crabbing,
- Shipping; freighters
- Vehicles allowed
- Major tourist attraction: the beach
- 4<sup>th</sup> of July free-for-all

## What's the Problem?



## North Pacific Gyre "Great Pacific Garbage Patch"

In each of our lifetimes,  
we produce .

4 acres ~ 60 tons of garbage

- 15,344 plastic bottles
  - 18,308 plastic bags - 25 minutes
  - 411 trees per person
  - 26,480 aluminum cans
- U.S.
- American toss enough aluminum cans in 3 months to rebuild our entire fleet of planes
  - US produces enough plastic each year to shrink wrap Texas
  - The N Pacific Patch is said to be 2 times the size of Texas, 90 feet deep holding more than 3 million tons of debris.
  - Plastic: 1000 year to decompose

[Video Clip](#)

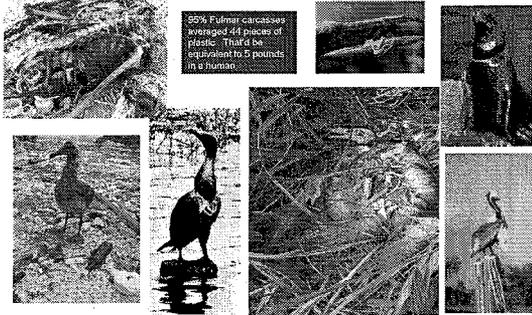
## What's the Volume & Types?

Types & Volume of Garbage  
 1 person, 1 mile, "an hour" collection in 3 hours on 2/8/1112 in Ocean Park, WA



Total Litter Collection in Volume = 796 pieces large and small

## What's the Impact?



## What's our local Solution?



## Beach Cleanup Statistics

01.19.02	12 volunteers	840 lbs
04.06.02	36 volunteers	1,890 lbs
07.07.02	150 volunteers	4 tons
01.18.03	100 volunteers	1 ton
04.25.03	200 volunteers	4 tons
07.06.03	300 volunteers	6 tons
01.23.04	130 volunteers	3 tons
04.25.04	150 volunteers	4 tons
07.05.04	400 volunteers	8 tons
01.15.05	100 volunteers	3 tons
04.23.05	150 volunteers	2.5 tons
07.05.05	200 volunteers	7.5 tons
01.21.06	150 volunteers	5 tons
04.22.06	250 volunteers	4 tons
07.05.06	350 volunteers	4.5 tons
01.13.07	135 volunteers	3.0 tons
04.21.07	150 volunteers	3.25 tons
07.05.07	500 volunteers	10 tons
01.26.08	200 volunteers	2 tons
04.26.08	300 volunteers	2.8 tons

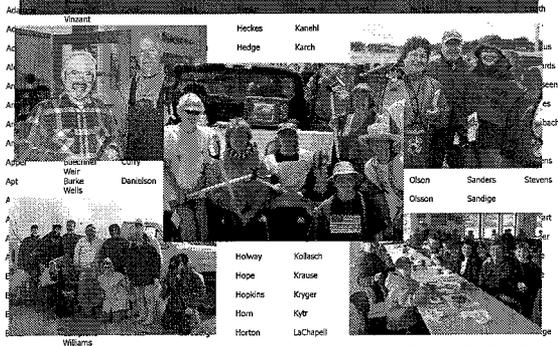


2002 = 7 tons      2005 = 13 tons  
 2003 = 11 tons    2006 = 13.5 tons  
 2004 = 15 tons    2007 = 16.5 tons

## Adopt-a-Beach Groups

- **Seaview Approach:** IHS National Honor Society, Ilwaco-Long Beach Kiwanis, The Frost Family
- **Bolstad Approach:** Peninsula Rotary Charter Communications, Pacific Realty, Friends of Willapa NWR
- **Cranberry Road Approach:** Dave n' Carolyn Cook & Family, Shoalwater Birders, The Schroeders & Lorentes, The Magnusons
- **Klipsan Beach Approach:** Hi Hopes!, Spor seen & Friends, Logan's, Lary & Neighbors, Moens and Robergs, Grover's, Grey and Friends
- **Ocean Park Approach:** N. Ocean Park Neighbors, Char Iton-West Family & Friends, Okie's Sentry Supermarket, Joe Johns Neighbors, Kennedy's
- **Oysterville Approach:** Surfside Home Owners Assoc, The Wheatons, Linda Logan & Bruce Rathbun, The Lewis's and Friends
- **WE NEED MORE ADOPT-A-BEACH GROUPS,** 8 more in January, and countless walk-ins to help keep the debris off our beach

## Some of our Volunteers!



## Current GRGG Yearly Events

- 3 Community Beach Cleanups  
January, April & July 5th  
 Includes: Friday pot luck/speaker  
 Sat morn cleanup  
 Sat noon volunteer soup fed
- Ocean Park's Old Fashioned 4<sup>th</sup> of July Parade
- 42<sup>nd</sup> Street Café October 'Community Night'

## HOW We Do It...

### Community Beach Cleanup consists of Advance Coordination:

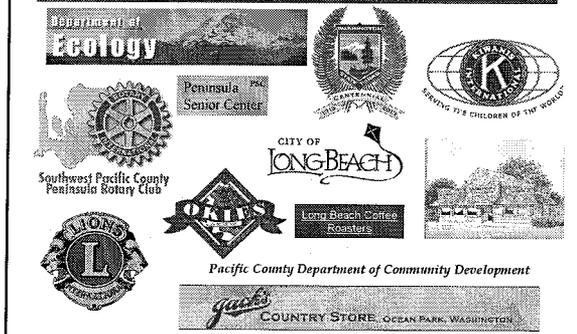
- Advance Communication of Dates (up to a year), work around other activities (clamming)
- Web Site ([www.surbeach.org](http://www.surbeach.org))
- Advance Coordination of Cleanup
  - Securing supplies (good collection bags, signs, picker uppers)
  - Actively promote adopt a section of beach by adopt-a-beach groups
  - Adopt a beach group leaders canvasses for commitment from its members
  - Confirming beach approach coordinators availability & supply needs
  - Confirm dumpsters, trucks, haulers
- Weeks/Days before - Media coverage of all Cleanups
  - Newspaper Articles, Radio announcements Funbeach.com, Community calendars
  - Reader board postings
  - Newsletter posted on web site and emailed to community
  - Community bulletin board/store window postings/banner across main street in Long Beach
  - E-mails
- Logistics for Potluck dinner the evening before the Cleanup
  - Sr. Activity Center requested one year in advance
  - Guest speakers invited
  - Communications via emails newsletters and community calendars
- Logistics for Cleanup Day Thank You Volunteer: Soup Feed
  - Sr. Activity Center requested one year in advance
  - Food, supplies committed (businesses, individuals)
  - Identify volunteers to serve, greet newcomers cleanup crew

## HOW We Do It...

### Community Beach Cleanup consists of:

- Beach Cleanup Work Effort (9:30 am to apx Noon)
  - Consisting of:
    - Adopt a beach groups stewarding own beach section
    - Beach approach coordinators cover beach approaches to greet/direct 'walk-ons'
    - Haulers collect ALL bagged garbage
    - All debris hauled to dumpsters

## Some of our Supporters!



## Our Fear - Sustainability - "Long Term"

### For GRGG:

#### Volunteer Resources

- People, staying committed.
- Replacement bodies and skills as volunteers 'come and go'.

### For a Clean Beach:

#### Pure Funding of

- Daily dump locations
- Event DUMP charges
- GREAT collection bags
- Picker Uppers
- Signs/banners
- Vests
- Printing Costs
- Beach-approach garbage receptacles/ongoing maintenance.

## We Need Our Community

We need our community resources to join us

- commerce (both individual businesses and commerce groups)
- community service groups (both adult and children)
- all levels of governments and governmental agencies
- and educational groups

Help clean the beach - Allocation of funds - Spread the word

The obvious benefit is a more beautiful beach, but the more serious benefit is a healthier marine ecosystem that effects all of us. In an area that relies heavily on fisheries and tourism, these are big benefits



## Next Beach Cleanup

# Saturday July 5th

Grab your friends, co-workers and family & join in !!!

## Grays Harbor County Marine Resources Committee

**Finding the  
right fit...**



Creative Community Solutions  
ccsolympia.com

## History

- › Chapter 36.125 RCW (2007) set up MRCs
- › SSSB 6227 (2008) set up grant opportunities
- › Surfrider Foundation Role
- › February 2008 exploratory interest workshop
  - ❖ Strong interest in potentially having one in county
  - ❖ Lots of questions on structure, function, local control
  - ❖ Ideas for things to do

Creative Community Solutions  
ccsolympia.com



## WDFW Grant

- › Explore establishing a MRC in Grays Harbor County
- › Grays Harbor County hires Creative Community Solutions to facilitate process
- › County vision for final product:  
Create a citizen-based recommendation for a MRC that includes vision, structure, potential projects and partners

Creative Community Solutions  
ccsolympia.com

## Project Process

- › Phase 1: Information Collection
  - Phase 1 Goal: Answer questions from February Workshop
  - ❖ Key informant interviews with 7 MRCs and the Northwest Straits Commission\*
  - ❖ Collation of background data on MRC legislation, structures, type of project work, etc.
  - ❖ Commissioners appoint exploratory committee
  - ❖ Share information through website, written report, & workshop

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## Project Process

- › Phase 2: Developing an Action Strategy
  - Phase 2 Goal: Create detailed recommendation
  - ❖ Crafting a vision for the proposed MRC
  - ❖ Create a MRC structure that matches the vision
  - ❖ Identify projects, partners, and actions that implement vision
  - ❖ Prepare recommendation for Commissioners to consider and take action on

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### Long-term Marine Monitoring in Willapa Bay

WA State Department of Ecology  
Marine Monitoring Program

PSAMP  
Puget Sound Assessment and Monitoring Program

DEPARTMENT OF ECOLOGY  
2006

### Ecology's Marine Waters Monitoring Program

Goal: *establish and maintain baseline environmental data*

- Characterize variability of basic water quality in space and time
- Identify significant changes in trends
- Collect data to support management
- Provide data for modeling and to the public

DEPARTMENT OF ECOLOGY  
2006

### Ecology's role

**Marine sediment monitoring**

- Annual sampling of Puget Sound
  - Water quality, infaunal species, porewater toxicity, heavy metals, and organics

**Marine waters monitoring**

- Monthly surveys by float plane
  - Water quality (e.g. temp, sal, sigma-t, D.O., chl a, pH, turbidity, nutrients, fecal coliform)
  - Profiles using SBE CTD and discrete sampling
- Intensive sampling on cruises for focused projects
- Continuous in-situ data from moorings

Holmes Harbor, Whidbey Island – plankton bloom in Sept. 06; courtesy of J. Bos

DEPARTMENT OF ECOLOGY  
2006

### Long-term marine waters monitoring stations for 2006

- Historical monitoring since 1973
- Mooring data in Willapa Bay since 1997

DEPARTMENT OF ECOLOGY  
2006

### 2008 Marine Profiles 1 - Willapa Bay

### Ecology monitoring stations in Willapa Bay

- = monthly flight station
- △ = continuous mooring station

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2006

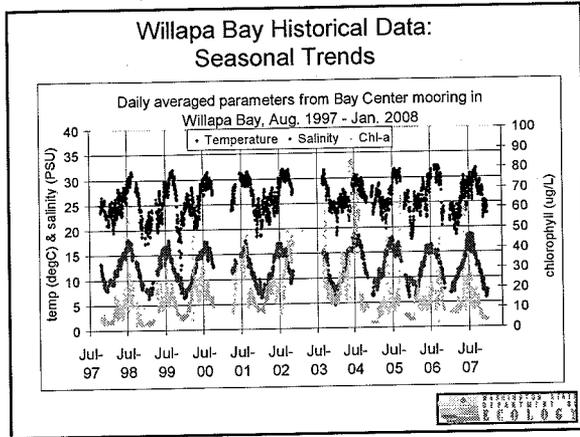
### Willapa Bay Moorings

**Objective**  
Assess tidal and seasonal change due to river and ocean influences

**Method**

- Measure temperature, salinity, & fluorescence (proxy of chlorophyll concentration)
- Moorings sample near-surface every 15-min and travel with tide
- Serviced every 4 – 6 wks

DEPARTMENT OF ECOLOGY  
2006



### Summary of findings for Willapa Bay

- Annual cycle varies much more than Pacific Ocean waters and varies by season.
- Ocean influence in summer and river influence in winter.
- Strongly affected by interannual climate variation, including El Nino and La Nina patterns.

Summaries from (Siegel and Newton, 2001)

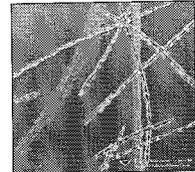
### Summary of findings for Willapa Bay

- The influence of climate conditions show up in the physical data.
- Tides and winds have a strong role in mixing vs. stratification of the water column.
- Low dissolved oxygen does not appear to be a problem in Willapa Bay, but is observed periodically.
- Phosphorus may be important to phytoplankton production.

### One implication of findings...

#### Harmful algal bloom (HAB) development

- Toxic diatom species (*Pseudo-nitzschia spp.*) that produce domoic acid are associated with influx of ocean waters into estuary
- Bloom extent depends on light and nutrient concentrations



Microscope photo of toxic diatom, *Pseudo-nitzschia australis* (from NOAA)

### Another use of data...

environmental data for shellfish growers

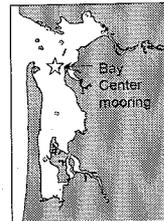
- Temperature related to spawning and mortalities
- Low salinities (more fresh water) can weaken shellfish
- Chlorophyll estimates phytoplankton biomass; food needed for shellfish growth

### Real-time data for public use

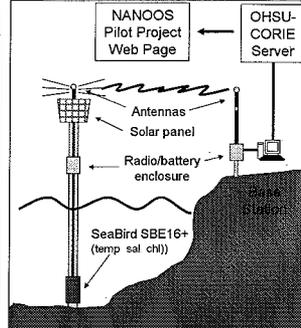
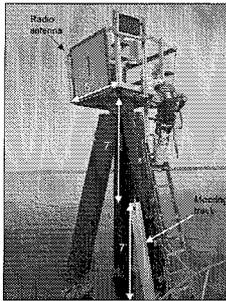


#### Planned addition of Willapa Bay mooring to real-time network

- Using Bluetooth and radio technology to broadcast data to computer and post to internet
- By the end of this summer (2008)



## Telemetry for Bay Center mooring



### For more information:

Stephanie Jaeger  
[sjae461@ecy.wa.gov](mailto:sjae461@ecy.wa.gov)  
(360) 407-6519

Washington Dept. of Ecology  
Environmental Assessment Program



# Real-time Water Quality Data for Shellfish Growers in the Pacific NW

A Pilot Project

Cathy Angell, Coastal Training Program Coordinator  
Padilla Bay NERR

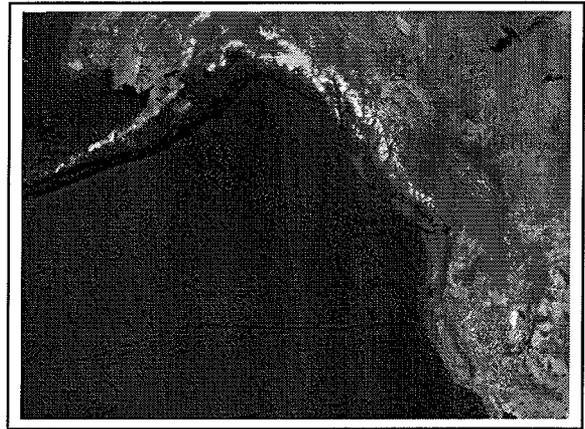
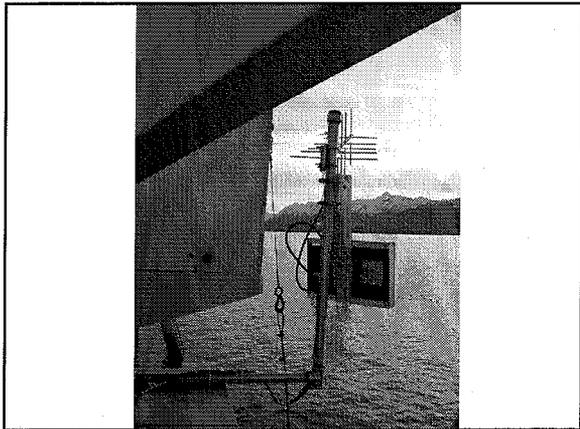


## NATIONAL ESTUARINE RESEARCH RESERVES

A network of 27 protected areas

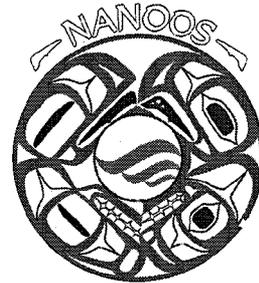
The image shows a map of the United States with 27 small dots indicating the locations of National Estuarine Research Reserves. The map is set against a dark, textured background. Below the map, there is a list of the 27 reserves, organized into four columns.

1. San Francisco Bay	11. San Francisco Bay	21. San Francisco Bay	31. San Francisco Bay
2. San Francisco Bay	12. San Francisco Bay	22. San Francisco Bay	32. San Francisco Bay
3. San Francisco Bay	13. San Francisco Bay	23. San Francisco Bay	33. San Francisco Bay
4. San Francisco Bay	14. San Francisco Bay	24. San Francisco Bay	34. San Francisco Bay
5. San Francisco Bay	15. San Francisco Bay	25. San Francisco Bay	35. San Francisco Bay
6. San Francisco Bay	16. San Francisco Bay	26. San Francisco Bay	36. San Francisco Bay
7. San Francisco Bay	17. San Francisco Bay	27. San Francisco Bay	37. San Francisco Bay
8. San Francisco Bay	18. San Francisco Bay	28. San Francisco Bay	38. San Francisco Bay
9. San Francisco Bay	19. San Francisco Bay	29. San Francisco Bay	39. San Francisco Bay
10. San Francisco Bay	20. San Francisco Bay	30. San Francisco Bay	40. San Francisco Bay

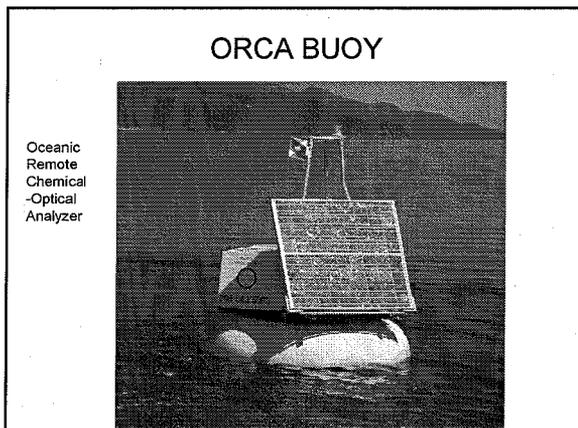
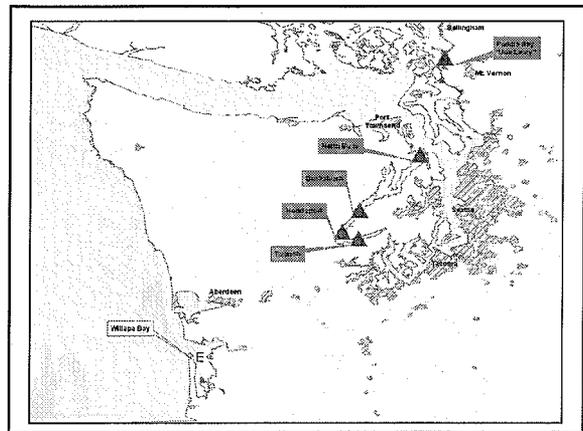
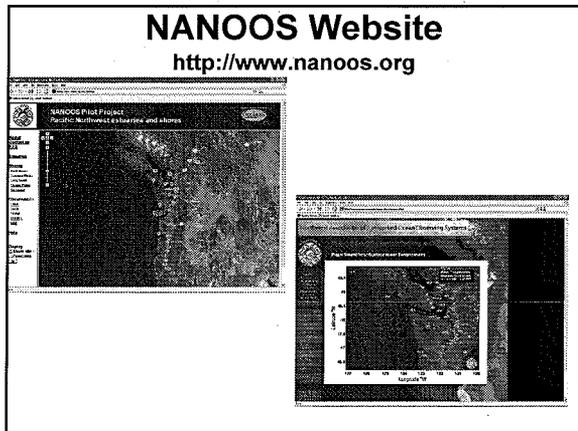


## Pilot Project

Making Real-Time Water Quality Data available to Shellfish Growers



NORTHWEST ASSOCIATION OF NETWORKED OCEAN OBSERVING SYSTEMS



**Pacific Shellfish Institute**

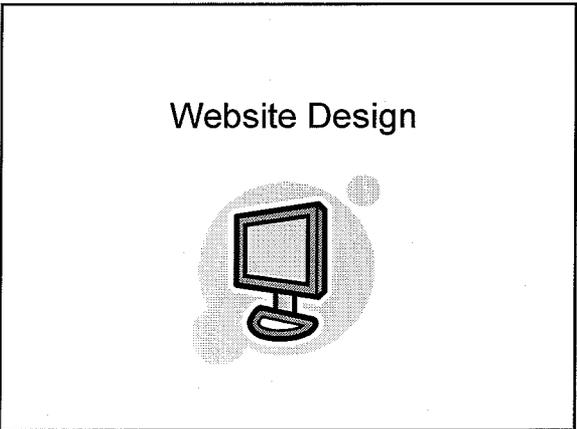
**Pacific Coast  
 Shellfish Grower's Association**

**Needs Assessment Survey**

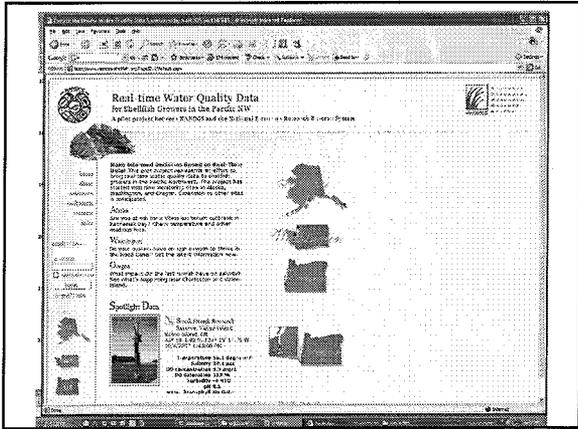
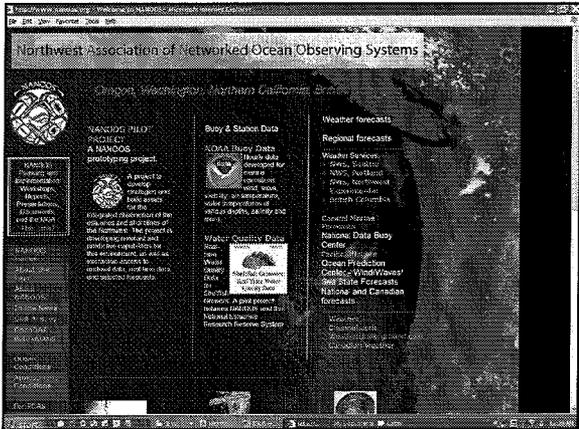
1. Temperature (99%)
2. Dissolved Oxygen (97%)
3. Salinity (96%)
4. Chlorophyll (92%)
5. Turbidity (89%)
6. pH (83%)

- Website with near-real time data (98%)
- Website that graphs historic data (97%)
- Website that plots time-series of recent data (95%)

- Automatic alerts – when conditions rise above or fall below certain thresholds (87%)
- Automatic emails - weekly data (66%)



<http://www.nanoos-shellfish.org/>



Real-time Water Quality Data  
for Shellfish Growers in the Pacific NW  
A joint project between NANOOS and the National Shellfish Research Reserve System

Current Data: Astoria

Temperature: 50.8 F  
Salinity: 30.0  
Dissolved Oxygen: 2.1 mg/L  
Turbidity: 0.1 NTU  
Chlorophyll: 0.1 mg/L  
pH: 7.8

Current Data: Homer Dolphin Deep

Time Period: 12 hrs | 24 hrs | 48 hrs | 72 hrs

Fahrenheit | Celsius

Time Period (click to change): 12 hrs | 24 hrs | 48 hrs | 72 hrs

Current Data: Fernetti

Time Period: 12 hrs | 24 hrs | 48 hrs | 72 hrs

Fahrenheit | Celsius

Time Period (click to change): 12 hrs | 24 hrs | 48 hrs | 72 hrs

Site References: Shallow water temperatures are associated with increased mortality. They also signal seasonal spawning. In the summer, normal temperatures range from 46 to 50 degrees Fahrenheit. If the temperature exceeds 50 degrees for more than 24 hours, this is cause for concern. In the winter, normal temperatures range from 38 to 50 degrees Fahrenheit.

Disclaimer: The following information covers general ranges (Spring - May through October, Winter - November through April).

Temperature: Knowledgeable growers are acquainted with seasonal variations. They also signal spawning. In the summer, normal temperatures range from 46 to 50 degrees Fahrenheit. If the temperature exceeds 50 degrees for more than 24 hours, this is cause for concern. In the winter, normal temperatures range from 38 to 50 degrees Fahrenheit.

Salinity: Low salinity over a long duration can weaken or kill shellfish. Shellfish are intolerant to low salinity increases with increasing water temperatures. In the summer, normal salinity levels range from 28 to 32 parts per thousand (ppt). If the salinity drops below 28 ppt for more than 24 hours, this is cause for concern. In the winter, normal salinity levels range from 28 to 32 ppt. If the salinity drops below 28 ppt for more than 24 hours, this is cause for concern.

Dissolved Oxygen: Very low dissolved oxygen levels will weaken or kill shellfish. High levels are reported to cause "gas bubble" disease. In the summer, normal DO levels range from 5 to 10 mg/L. If the levels fall below 2.0 mg/L for more than 24 hours, this is cause for concern. In the winter, normal DO levels range from 2 to 5 mg/L. If the levels fall below 2.0 mg/L for more than 24 hours, this is cause for concern.

Turbidity: Increases in suspended matter levels will combine with bacteria being most resistant to very high turbidity will reduce feeding rates and growth. Normal levels range from 0 to 100 NTU (Nephelometric Turbidity Units). If the turbidity level rises above 100 NTU for more than 24 hours, this is cause for concern.

Chlorophyll: Excessive algal blooms require sufficient phytoplankton (as measured by chlorophyll) to sustain growth. Very low levels indicate reduced growth potential. Normal levels range from 0 to 100 µg/L (micrograms per liter). If the chlorophyll level drops below 2 µg/L for more than 24 hours, this is cause for concern.

pH: Low or high pH is not unusual in marine waters, but can indicate a serious water quality issue associated, for example, with volcanic acid rain. Normal ranges are 7.5 to 8.5. If the pH falls below 7.5 or rises above 8.5 for more than 12 hours, this is cause for concern.

Fahrenheit | Celsius

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Need to Alert by Email

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Real-time Water Quality Data  
for Shellfish Growers in the Pacific NW  
A joint project between NANOOS and the National Shellfish Research Reserve System

Email Notification Sign-Up Form

You may choose a range of parameters for each station. Email alerts will only go out after the range has been set for a critical period of time.

Please login or sign up to use the email alerts. If you would like to receive automatic email alerts for specific stations, please enter your email address and create a password (we suggest the last four digits of your social security number for easy recall). The information will remain confidential.

Name: \_\_\_\_\_  
Email: \_\_\_\_\_  
Password: \_\_\_\_\_  
Confirm Password: \_\_\_\_\_

Station: \_\_\_\_\_

Parameters: \_\_\_\_\_

Alert Range: \_\_\_\_\_

Alert Period: \_\_\_\_\_

Alert Time: \_\_\_\_\_

Alert Days: \_\_\_\_\_

Alert Frequency: \_\_\_\_\_

Alert Language: \_\_\_\_\_

Alert Format: \_\_\_\_\_

Alert Content: \_\_\_\_\_

Alert Action: \_\_\_\_\_

Alert Status: \_\_\_\_\_

Alert Notes: \_\_\_\_\_

Alert Comments: \_\_\_\_\_

Alert History: \_\_\_\_\_

Alert Settings: \_\_\_\_\_

Alert Help: \_\_\_\_\_

Alert About: \_\_\_\_\_

Alert Contact: \_\_\_\_\_

Alert Support: \_\_\_\_\_

Alert Feedback: \_\_\_\_\_

Alert Privacy: \_\_\_\_\_

Alert Terms: \_\_\_\_\_

Alert Disclaimer: \_\_\_\_\_

Alert Copyright: \_\_\_\_\_

Alert All Rights Reserved: \_\_\_\_\_

Alert No Warrant: \_\_\_\_\_

Alert No Liability: \_\_\_\_\_

Alert No Damages: \_\_\_\_\_

Alert No Infringement: \_\_\_\_\_

Alert No Interference: \_\_\_\_\_

Alert No Disruption: \_\_\_\_\_

Alert No Consequence: \_\_\_\_\_

Alert No Harm: \_\_\_\_\_

Alert No Injury: \_\_\_\_\_

Alert No Loss: \_\_\_\_\_

Alert No Expense: \_\_\_\_\_

Alert No Cost: \_\_\_\_\_

Alert No Compensation: \_\_\_\_\_

Alert No Benefit: \_\_\_\_\_

Alert No Advantage: \_\_\_\_\_

Alert No Right: \_\_\_\_\_

Alert No Interest: \_\_\_\_\_

Alert No Power: \_\_\_\_\_

Alert No Authority: \_\_\_\_\_

Alert No Jurisdiction: \_\_\_\_\_

Alert No Control: \_\_\_\_\_

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Alert No Force: \_\_\_\_\_

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Alert No Authority: \_\_\_\_\_

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Alert No Control: \_\_\_\_\_

Alert No Influence: \_\_\_\_\_

Alert No Effect: \_\_\_\_\_

Alert No Force: \_\_\_\_\_

Real-time Water Quality Data for Shellfish Growers in the Pacific NW  
 A joint project between NANOGS and the National Estuarine Research Reserve System

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### Sign Up for Your New Account

Email Address:

Password (The last 4 digits of your email):

Confirm Password:

Send My Alerts to this Email Address:

This is your Security Question:  What was your first name?

Write your answer:

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### Email Notification Sign-Up Form

You may change a range of parameters for each station. Email alerts will only go out when the range has been surpassed for a certain period of time.

Welcome **cothy angell (cothy@pudlabby.gov)**

Please enter the information below that specifies your preferred email alerts

Send me an alert for:  Chlorination Bridge  Temperature

Or alert below:  Chlorine Below   Degrees F

Or alert above:   12 hours

for more than:

### Your Current Alerts:

1. **Low Leaky Wastewater Temperature** must be above 64 degrees F for 24 hours

2. **Chlorination Bridge** below 30 is the below 12 get for 48 hours

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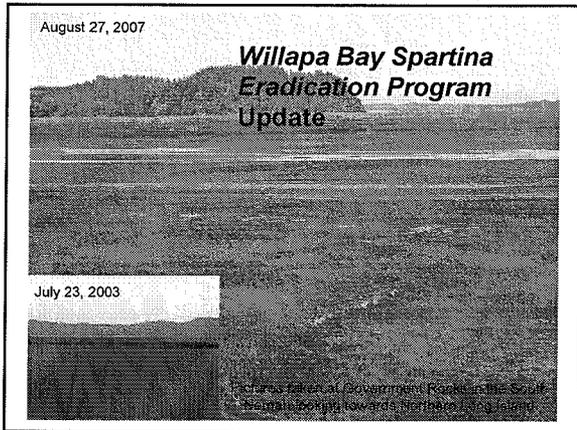
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### Links

The Coastal Data Management Office (CDMO) is housed at the North East-Wirgin Bay NEAB in South Carolina. It was established in support of the National Estuarine Research Reserve's (NERR) System-wide Monitoring Program (OWMP) that is currently implemented at 37 reserves in the US with Puerto Rico. Click here for more information.

The Northwest Association of Networked Ocean Observing Systems (NANOOS) was established to address the ocean observing and monitoring needs of users in the Pacific Northwest.

The Okeanos Research Chemical Analyzer (ORCA) is an autonomous moored and buoy system providing real-time data streams of water and atmospheric conditions. There are currently 4 ORCA moored offshore locations, all in Hood Canal, in Washington state.



### Willapa *Spartina* Eradication Project

**Presentation overview**

- Major Accomplishments
- 2007 Results/2008 Expectations
- *Spartina* Reductions and Projections
- 2008 Treatment Plan

### Willapa *Spartina* Eradication Project

Over the past five years, the cooperative effort to eradicate *Spartina* from Willapa Bay has been extremely successful. From a high of approximately 8,500 solid acres, WSDA estimates that the effort has successfully reduced the overall infestation to approximately 1,150 solid acres. That is a reduction of over 85%.

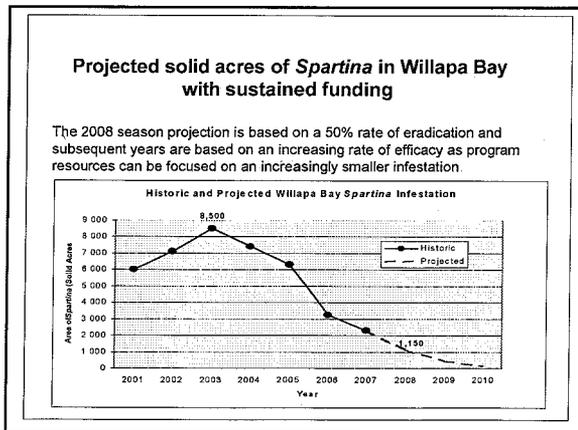
### Willapa *Spartina* Eradication Project

**2007 Season:**

- An estimated 2,310 solid acres of *Spartina* were treated in Willapa Bay during the 2007 treatment season.
- During the 2007 season we saw the beginning of the expected transition from large-scale treatments of meadows to scattered infestations. This transition allowed the cooperators to conduct treatments with exceptional attention to detail.

**2008 Expectations:**

- WSDA is predicting that there will be approximately 1,150 acres of *Spartina* treated in Willapa Bay during the 2008 treatment season.



### Willapa Bay *Spartina* Reductions

Treatment Year	Estimated Solid Acres of <i>Spartina</i>	Reduction From Previous Year	Data Source
2003	8500		Historic
2004	7000	18%	Historic
2005	6300	10%	Historic
2006	3250	48%	Historic
2007	2310	29%	Historic
2008	1150	50%	Estimate
2009	450	61%	Estimate

**2008 Treatment Plan**  
Cooperatively developed at  
the November 20, 2007  
Willapa Spartina Review and  
Planning Workshop, fine  
tuned by the partner  
agencies through the winter  
and spring and reviewed and  
agreed upon at the May 8,  
2008 Technical Committee  
Meeting

