Padilla Bay National Estuarine Research Reserve

Education Market Analysis Report

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ACKNOWLEDGEMENTS

The Padilla Bay National Estuarine Research Reserve in Washington State is part of the National Estuarine Research Reserve System (NERRS), established by Section 315 of the Coastal Zone Management Act, as amended. Additional information about the system can be obtained from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, US Department of Commerce, 1305 East-West Highway – N/ORM5, Silver Spring, MD 20910.

Thanks to the Padilla Bay Reserve Market Analysis/Needs Assessment Work Group: Glen Alexander, Susan Wood, and Cathy Angell. Other people that contributed to the Market Analysis included: Terry Stevens (Reserve Manager), Atziri Ibanez (NOAA/ERD), Bree Murphy (NOAA/ERD), Chris Ellis (Coastal Services Center), Kat Hoffman, Julie Hahn, Nancy Reichley, Raechel Waters (Washington Sea Grant), Margaret Tudor, Lisa Eschenbach (Pacific Education Institute), Gilda Wheeler (OSPI), Joanne Johnson (ESD 189), Mike Thimgan (high school teacher), Kristen Cooley (Puget Sound Partnership), and Justine Asohmbom. Suzanne Shull (PBNERR GIS Analyst) made the map for Figure 1.

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INTRODUCTION

The Padilla Bay National Estuarine Research Reserve (hereafter "Reserve") is one of 28 sites in the National Estuarine Research Reserve System (NERRS). It is managed by the Washington State Department of Ecology and receives grants from the Estuarine Reserves Division at the National Oceanic and Atmospheric Administration (NOAA). The Reserve's main building can be characterized as a nature and environmental education center with museum-type exhibits, including aquaria.

The Reserve provides school programs for elementary, middle and high school levels with experiential education for grades 4-8. We also serve home school groups and provide workshops for preK – high school teachers for Washington clock hour credits. Our programs are somewhat aligned with Washington State education standards. The Reserve education staff members evaluate our school programs through the use of pre- and post-tests administered to students by their teachers who send the results to our education staff. Teachers also evaluate teacher workshops through an evaluation immediately after the workshop and through an evaluation ten months later to see if they are applying what they learned. The Reserve currently markets its school programs through word-of-mouth and through its website (www.padillabay.gov).

On a scale of "moderately-well-thoroughly" the Reserve feels it currently "thoroughly" addresses the following topics: stewardship actions people can take, human impact on the environment, estuaries as nurseries for marine life, conservation, and food webs. Topics addressed "well" include: rivers and watersheds, animal migration, and water pollution.

The Padilla Bay Reserve conducted a market analysis of environmental education programs offered by organizations in a four-county (Whatcom, Skagit, Island, and Snohomish) focus area in Washington State in February 2011 (Fig. 1).

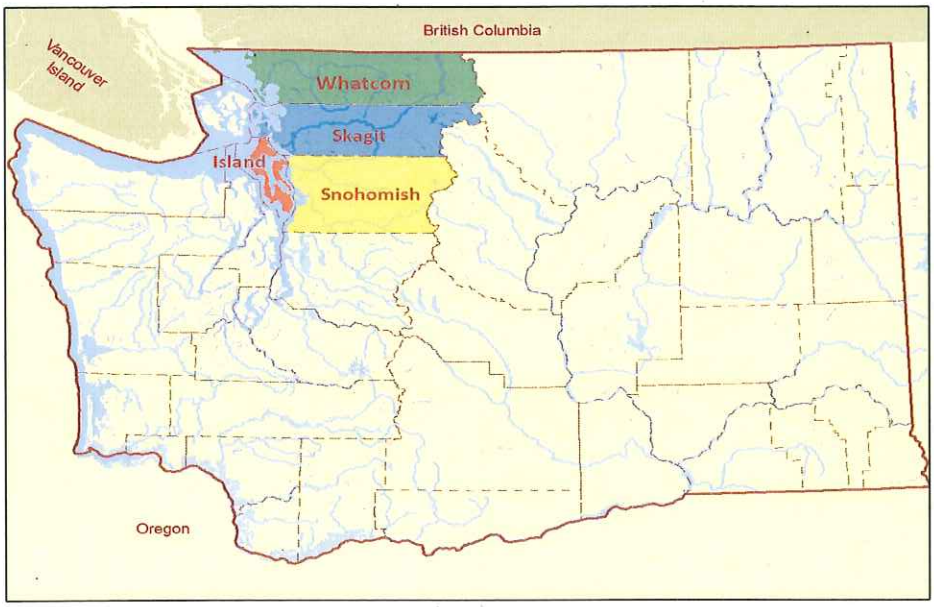


Figure 1. Four-county area used for this market analysis survey.

The primary objectives for this market analysis were to:

- better understand who is offering what kinds of education programs in the focus area,
- identify gaps in estuary education,
- avoid overlap with other organizations' programs,
- identify the target audience and formulate questions for the needs assessment,
- fulfill NOAA requirements, and
- meet K-12 Estuary Education Program (KEEP) requirements for funding.

KEEP is a national education initiative through the NERRS. Two elements required by KEEP in order to be eligible for future funding through that program are an education market analysis and a needs assessment.

Email invitations were sent to individuals representing 88 environmental education organizations in the target area. The organization list was compiled

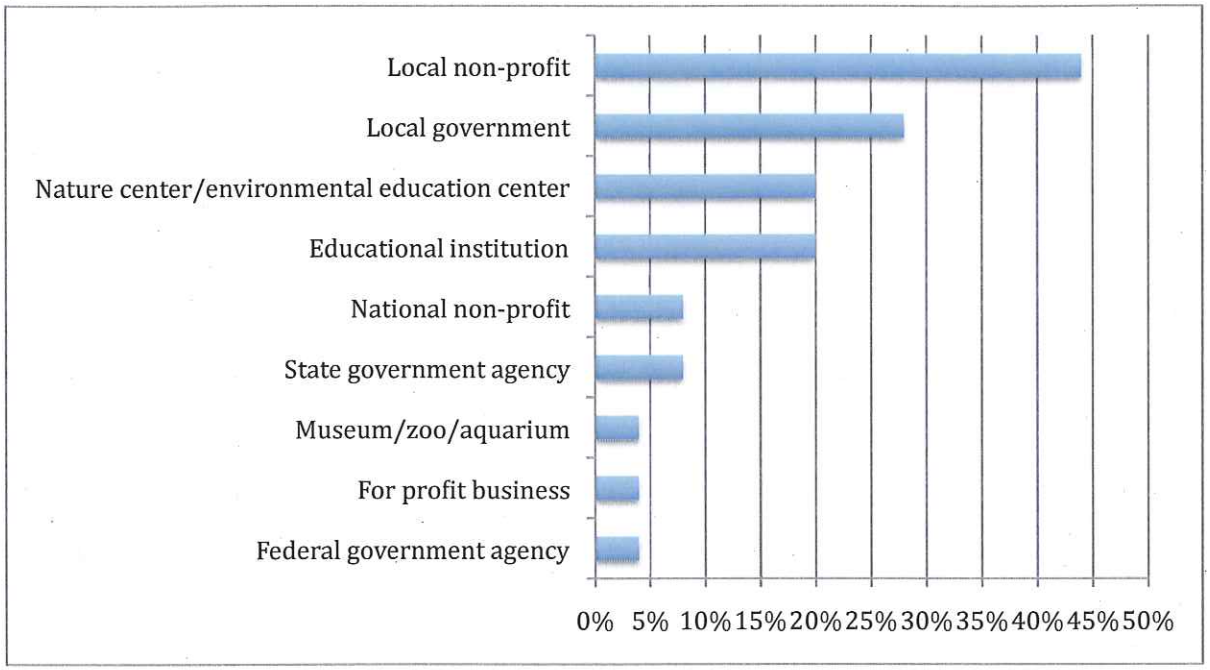
through input from the Reserve's Education Advisory Committee, the Reserve Manager, Office of the Superintendent of Public Instruction (OSPI), Justine Asohmbom, Pacific Education Institute (PEI), a Mount Vernon high school teacher, Educational Service District 189, Puget Sound Partnership, ECO Network, Estuarine Reserves Division/NOAA, Coastal Services Center, Washington Sea Grant and attendance lists from regional workshops such as "Storming the Sound". The survey was accessible to participants through the web-based survey tool Survey Monkey, from February 1 – 18, 2011. A reminder email was sent on February 11 to improve the response rate. Of 88 invitees, 26 responded for a response rate of 29.5%.

Survey questions were developed to collect data on each respondent's organization, affiliation with NOAA, types of education programs they provide, teacher professional development and credit, topics and grade levels addressed, topics needing additional attention by education programs, program alignment with state educational standards, program evaluation, and marketing methods.

RESULTS

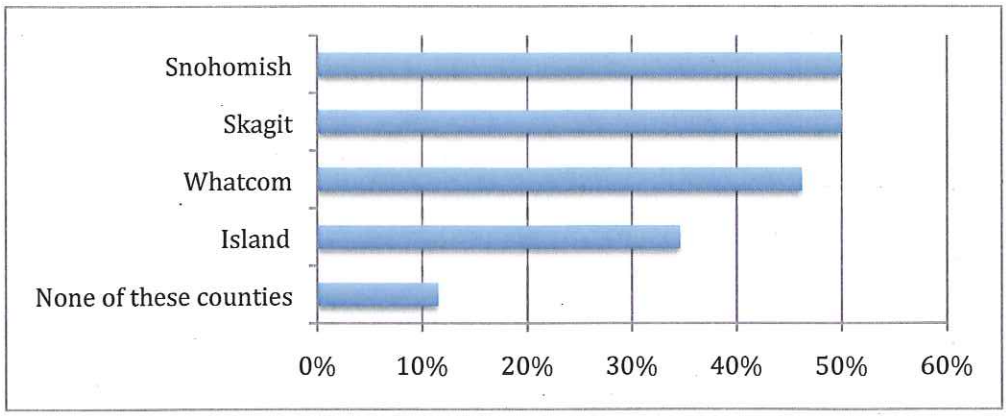
1. How would you classify your organization? Please choose all that apply.

Most of the respondents (44%) identified themselves as local non-profit organizations, 28% were local government, while 20% were educational institutions such as universities or community colleges, and another 20% were nature or environmental education centers.



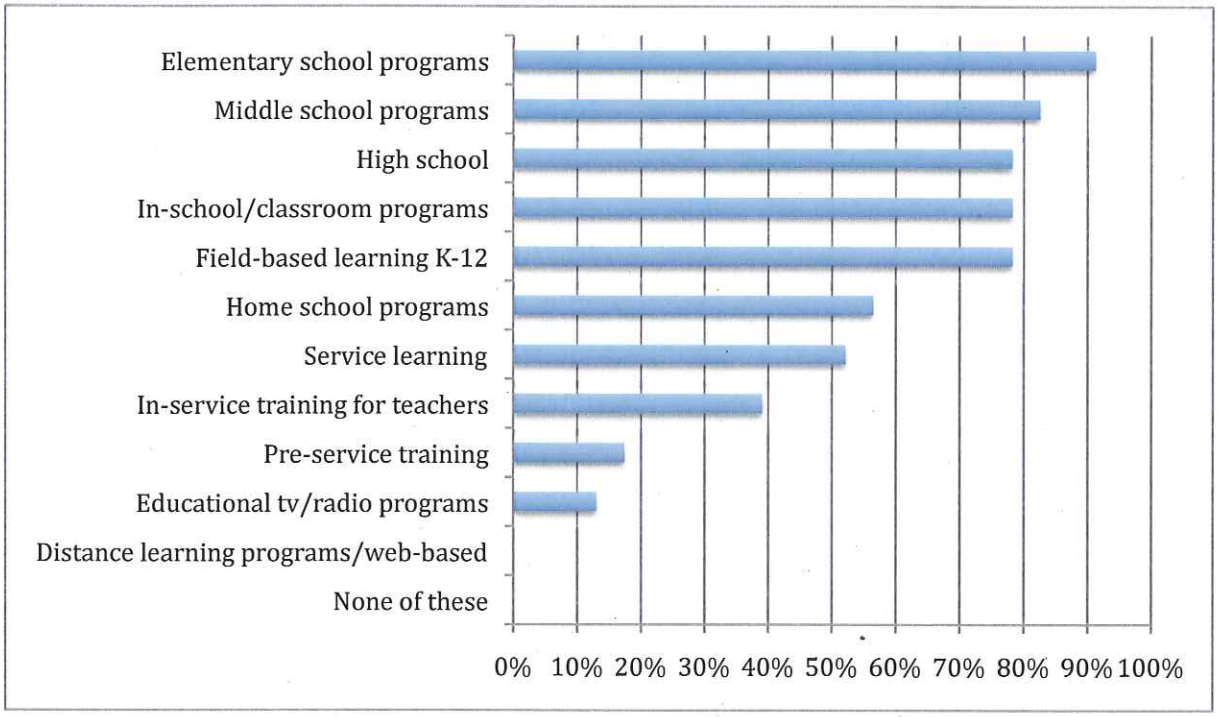
2. Which of the following counties do you serve? Please choose all that apply.

The respondents were given five choices: Skagit, Snohomish, Whatcom, Island, and "none of these." 50% of the respondents served Skagit, 50% Snohomish, 46.2% Whatcom, 34.6% Island and 11.5% served other counties. Some of the respondents serve more than one county.

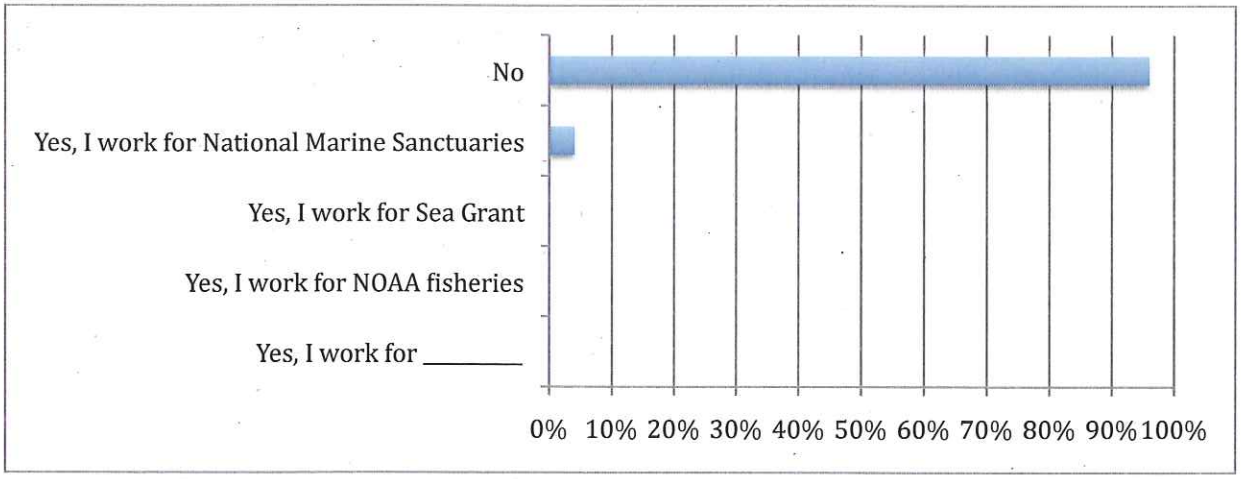


3. What types of educational programs does your organization provide? Please check all that apply.

91.3% chose elementary school programs, followed by middle school (82.6%), high school (78.3%), field trips/field-based learning experiences for K-12 students (78.3%), and in-school/classroom programs (78.3%). Home school programs (56.5%), service learning (52.2%) and in-service training for teachers (39.1%) scored lower.

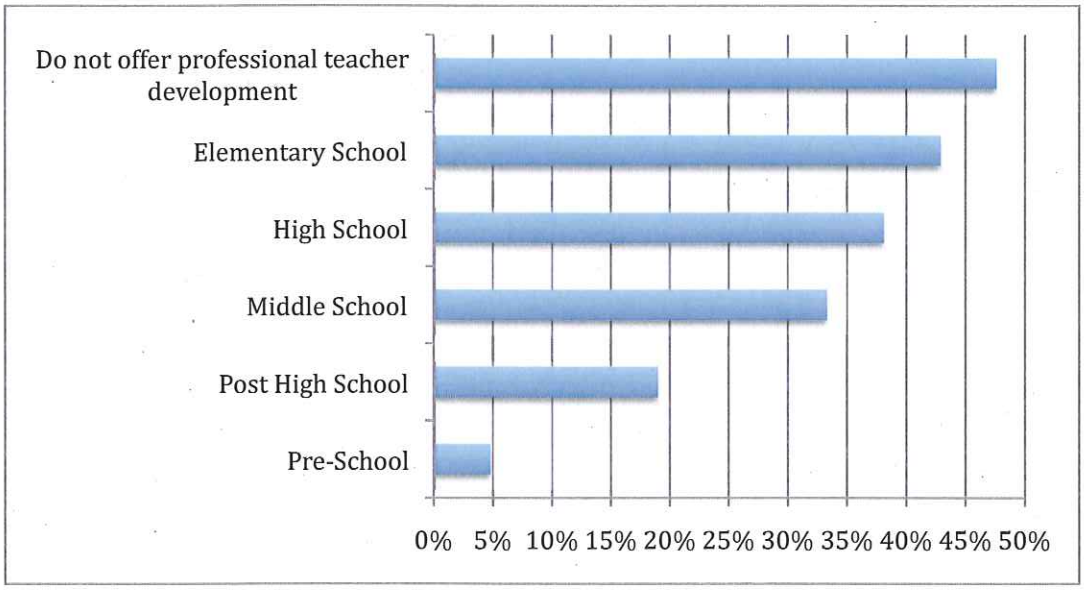


4. Are you part of the NOAA family?



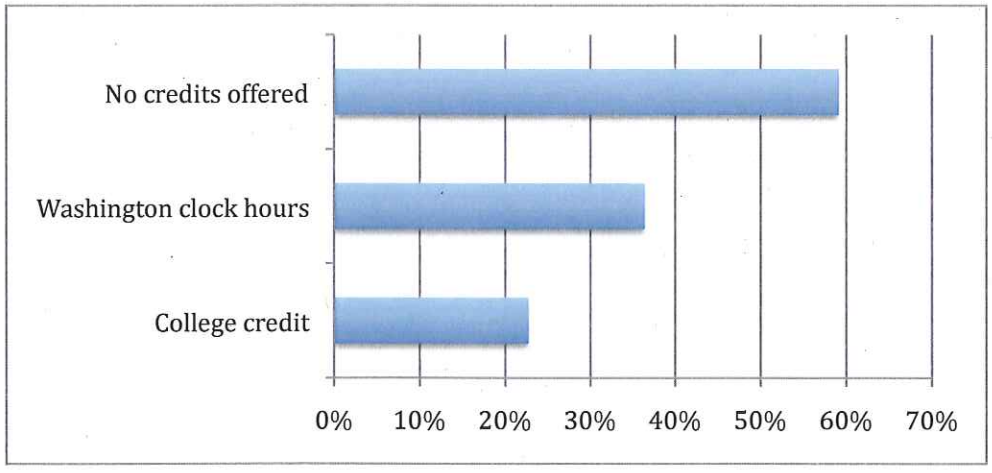
5. If your organization provides teacher professional development, what grade-level educator are your programs targeted? Check all that apply.

The majority of respondents do not offer professional teacher development (47.6%), followed by elementary school (42.9%), high school (38.1%), and middle school (33.3%).



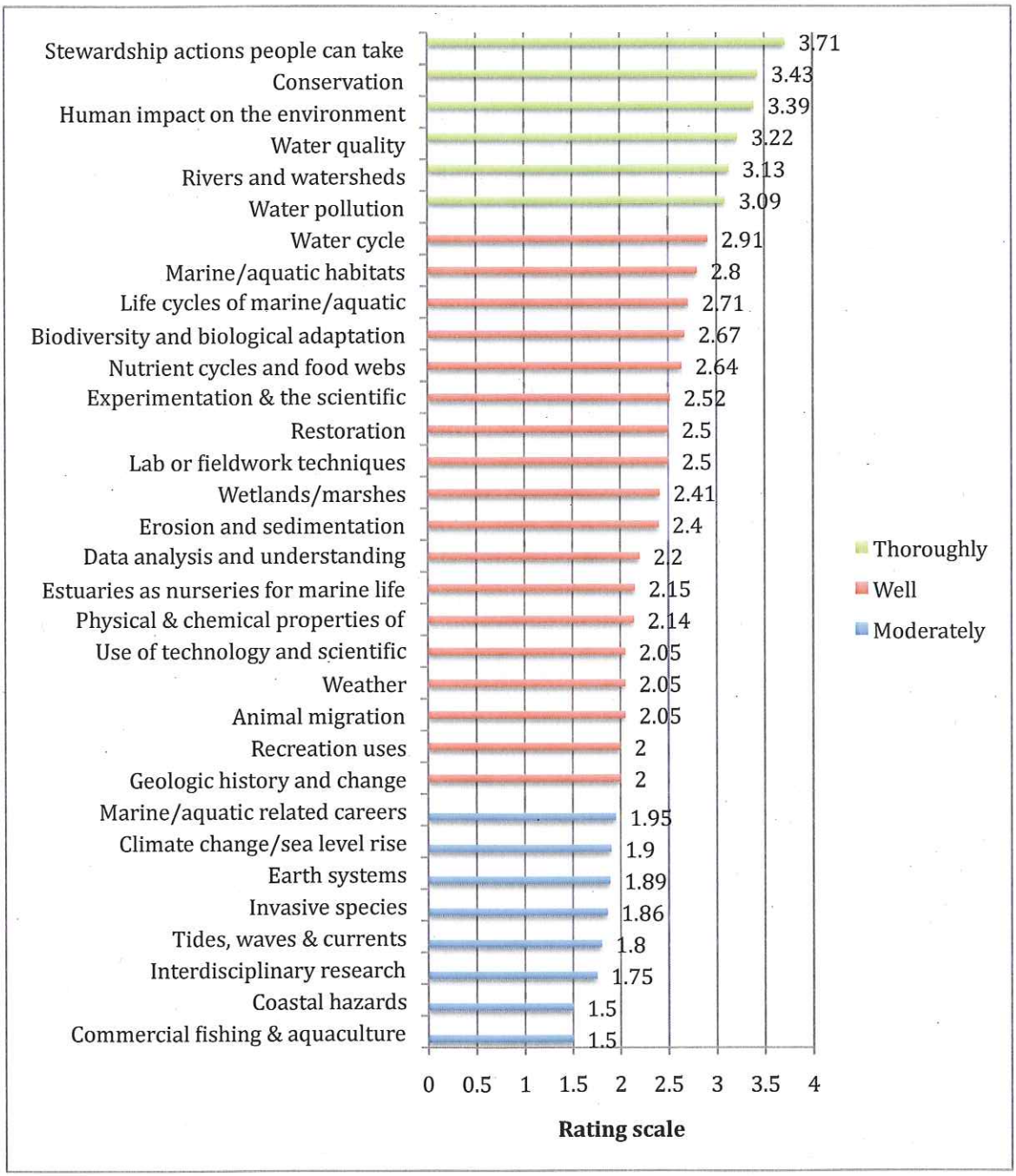
6. What type of professional teacher credit do you offer?

59.1% of the respondents' organizations do not offer credit. Washington clock hours are offered by 36.4% and college credit by 22.7%.



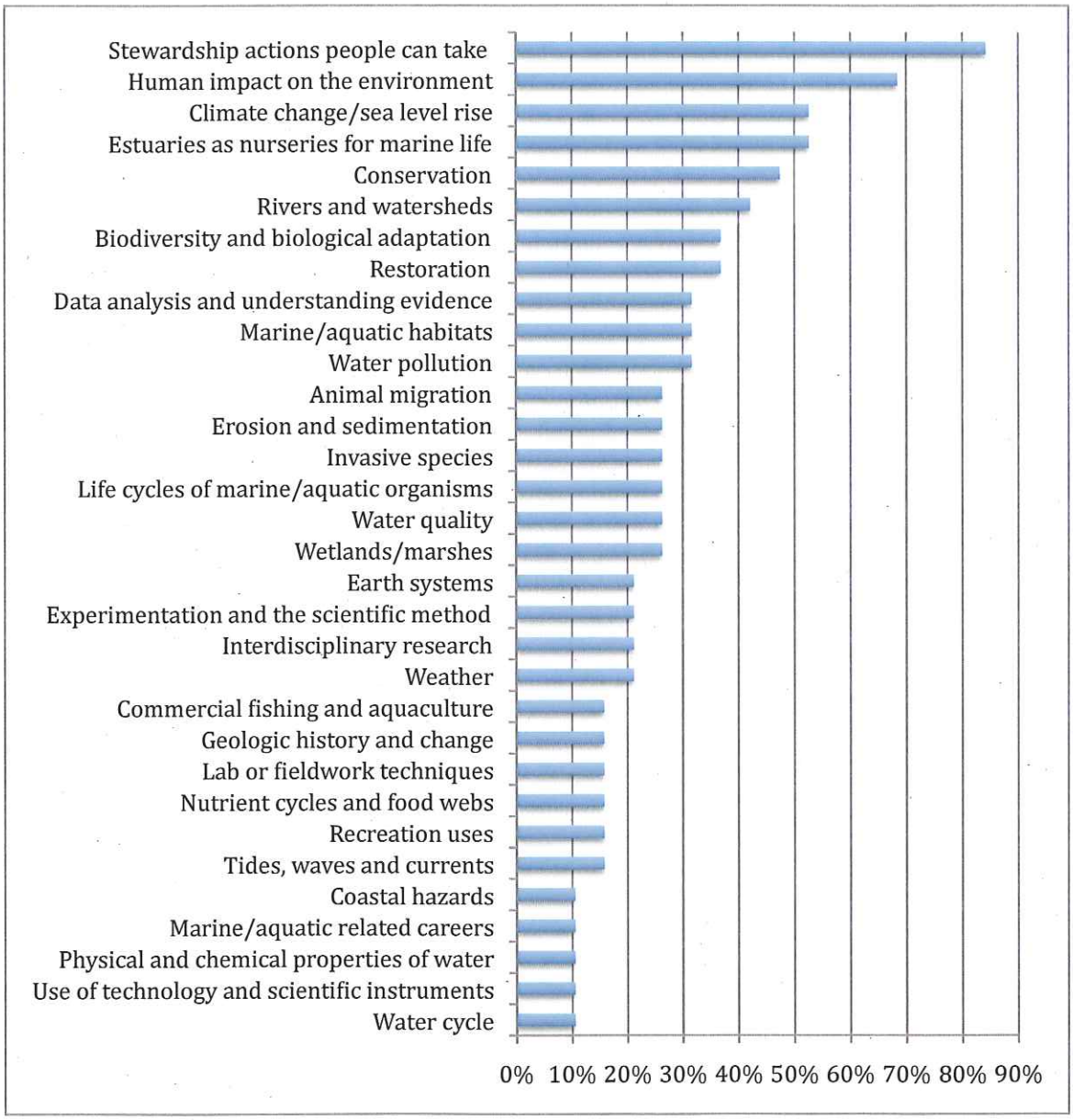
7. Which of the following topics are addressed by your educational programs (including student programs, teacher education, and pre-service education)?

The topics most thoroughly addressed are: stewardship actions people can take, conservation, human impact on the environment, water quality, rivers and watersheds and water pollution.



8. Which topics do you feel need more attention by your organization or any other organization?

The top five topics respondents feel need more attention are: stewardship actions people can take, human impact on the environment, climate change/sea level rise, estuaries as nurseries for marine life, and conservation.

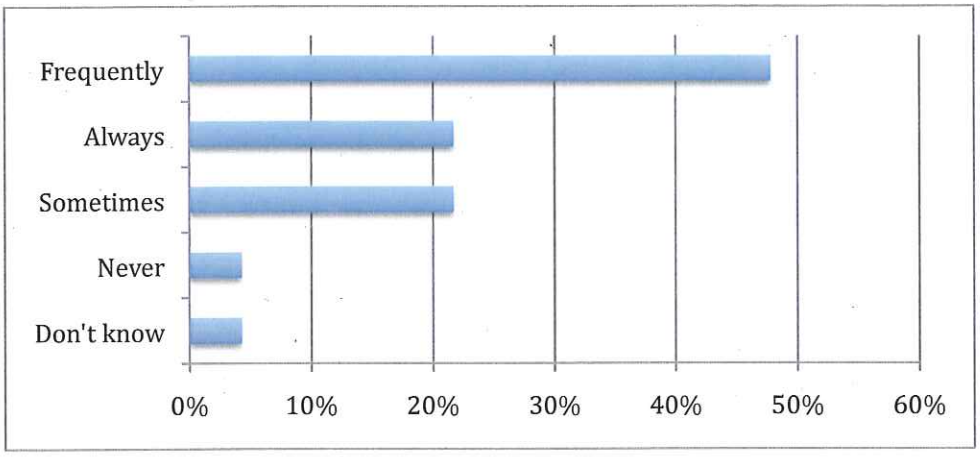


A comparison of "topics being addressed" vs. "topics needing more attention" (charts for Questions 7 and 8) leads to the following observations:

1) Although "stewardship actions people can take" is the number one topic already being addressed, and "human impact on the environment" is the third, respondents feel these topics need more attention, which could be interpreted as "do not stop teaching these subjects" or "these are important to us".
2) "Climate change and sea level rise" and "estuaries as nurseries for marine life" tied for third place in the topics needing more attention. "Climate change and sea level rise" ranked higher than weather, tides/waves/currents, and coastal hazards (all of these topics reside within NOAA offices).
3) Although conservation ranked second highest in topics being addressed, it ranked fourth place in the "needs more attention" category. Rivers and watersheds ranked fifth in topics being addressed and fifth in topics needing more attention. This could be interpreted as respondents feel these are important topics, despite the fact many organizations are teaching about them already.
4) Ranking lower on the "needs more attention" scale were (in order of rankings high to low):
    - Restoration and biodiversity/biological adaptation
    - Marine/aquatic habitats, water pollution, and data analysis/understanding evidence
    - Erosion/sedimentation, water quality, wetlands/marshes, invasive species, and life cycles of marine/aquatic organisms.
    - Weather, interdisciplinary research, experimentation and the scientific method.
    - Tides/waves/currents, geologic history/change, nutrient cycles/food webs, commercial fishing/aquaculture, lab or fieldwork techniques, and recreation uses.
    - Water cycle, physical/chemical properties of water, coastal hazards, use of technology and scientific instruments, and marine/aquatic-related careers.

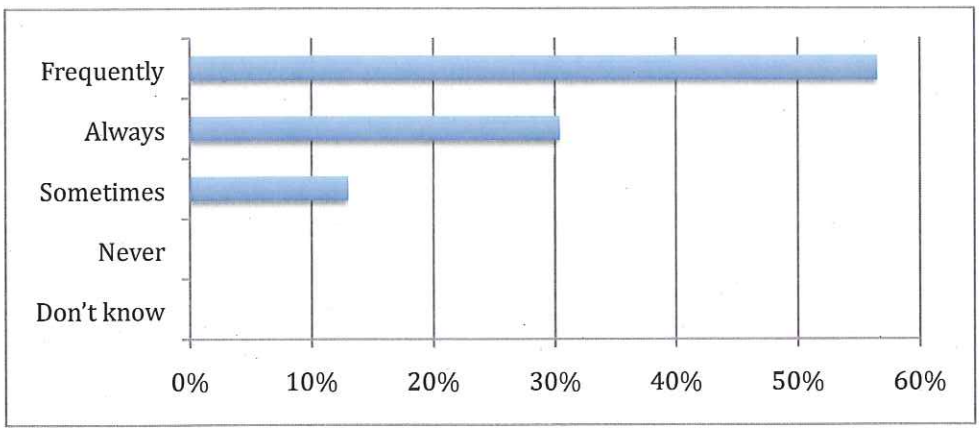
9. Do you specifically align your programs with Washington State Educational Standards?

The respondents' organizations frequently align programs (47.8%), sometimes or always align programs (21.7%) or never align programs with state standards (4.3%).



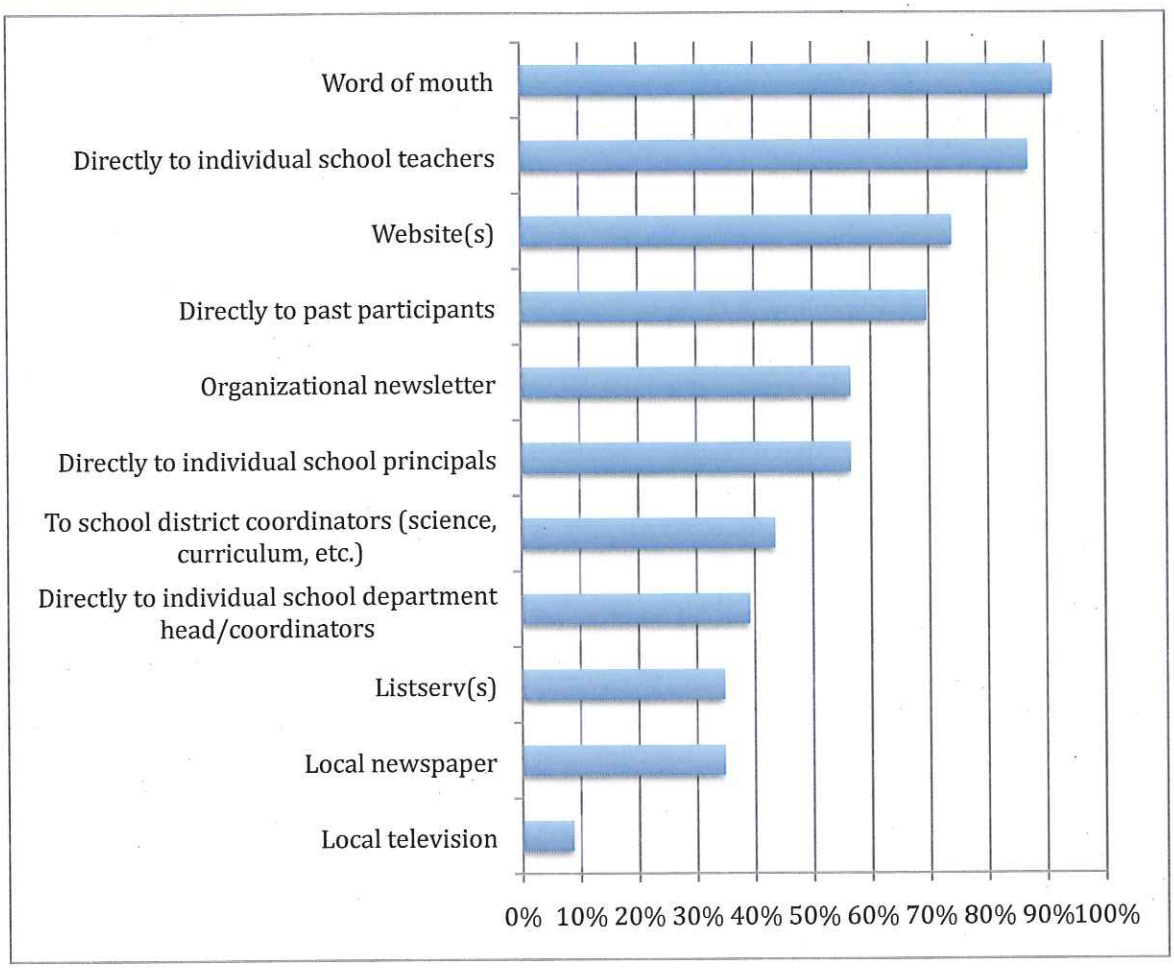
10. Do you evaluate your programs?

56.5% of respondents frequently evaluate their programs, 30.4% always do, 13% sometimes do.



11. How do you market your programs? Check all that apply.

The largest percentage of respondents chose "word of mouth" (91.3%), followed by "directly to individual school teachers" (87%), website(s) (73.9%), "directly to individual school principals" and "organizational newsletter" (56.5%).



Appendix 1: Market Analysis Survey Instrument

1. Your name:_____

2. Title:_____

3. Name of organization:_____

4. Email address:_____

5. How would you classify your organization? Please choose all that apply.

   ❑ Federal government agency
   ❑ State government agency
   ❑ Local government
   ❑ Education institution (university, community college, etc.)
   ❑ National non-profit organization
   ❑ Local non-profit organization
   ❑ For profit business
   ❑ Museum/zoo/aquarium
   ❑ Nature center/environmental education center

6. Which of the following counties do you serve? Please choose all that apply.

   ❑ Whatcom
   ❑ Skagit
   ❑ Snohomish
   ❑ Island
   ❑ None of these counties

7. What types of educational programs does your organization provide? Please check all that apply.

   ❑ Elementary school programs
   ❑ Middle school programs
   ❑ High school programs
   ❑ Field trips/field-based learning experiences for K-12 students
   ❑ In-school/classroom programs
   ❑ In-service training (for teachers)
   ❑ Pre-service training (for teachers in training)
   ❑ Service learning
   ❑ Home school programs
   ❑ Distance learning programs/web-based
   ❑ Educational TV/radio programs
   ❑ None of these

8. If your organization provides teacher professional development, what grade-level educator are your programs targeted? Check all that apply.

   ❑ Pre-School
   ❑ Elementary School
   ❑ Middle School
   ❑ High School
   ❑ Post High School
   ❑ We do not offer professional teacher development

9. Which of the following topics are addressed by your educational programs (including student programs, teacher education, and pre-service education)? Ranking: Thoroughly Addressed (4), Well Addressed (3), Moderately Addressed (2), Not Addressed (1)

Nutrient cycles and food webs	4	3	2	1
Biodiversity and biological adaptation	4	3	2	1
Life cycles of marine/aquatic organisms	4	3	2	1
Marine/aquatic habitats	4	3	2	1
Animal migration	4	3	2	1
Estuaries as nurseries for marine life	4	3	2	1
Invasive species	4	3	2	1
Geologic history and change	4	3	2	1
Tides, waves & currents	4	3	2	1
Rivers and watersheds	4	3	2	1
Erosion and sedimentation	4	3	2	1
Weather	4	3	2	1
Climate change/sea level rise	4	3	2	1
Earth systems	4	3	2	1
Water cycle	4	3	2	1
Physical and chemical properties of water	4	3	2	1
Wetlands/marshes	4	3	2	1
Experimentation & the scientific method	4	3	2	1
Lab or fieldwork techniques	4	3	2	1
Data analysis and understanding evidence	4	3	2	1
Use of technology and scientific instruments	4	3	2	1
Interdisciplinary research	4	3	2	1
Commercial fishing & aquaculture	4	3	2	1
Water pollution	4	3	2	1
Conservation	4	3	2	1
Recreation uses	4	3	2	1
Human impact on the environment	4	3	2	1
Coastal hazards	4	3	2	1
Water quality	4	3	2	1
Restoration	4	3	2	1

Marine/aquatic-related careers	4	3	2	1
Stewardship actions people can take	4	3	2	1

10. Which topics do you feel need more attention by your organization or any other organization?

- ❑ Nutrient cycles and food webs
- ❑ Biodiversity and biological adaptation
- ❑ Life cycles of marine/aquatic organisms
- ❑ Marine/aquatic habitats
- ❑ Animal migration
- ❑ Estuaries as nurseries for marine life
- ❑ Invasive species
- ❑ Geologic history and change
- ❑ Tides, waves & currents
- ❑ Rivers and watersheds
- ❑ Erosion and sedimentation
- ❑ Weather
- ❑ Climate change/sea level rise
- ❑ Earth systems
- ❑ Water cycle
- ❑ Physical and chemical properties of water
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- ❑ Water pollution
- ❑ Conservation
- ❑ Recreation uses
- ❑ Human impact on the environment
- ❑ Coastal hazards
- ❑ Water quality
- ❑ Restoration
- ❑ Marine/aquatic-related careers
- ❑ Stewardship actions people can take

11. What type of professional teacher credit do you offer?

- ❑ Washington clock hours
- ❑ College credit
- ❑ No credits offered

12. Do you specifically align your programs with Washington State Educational Standards?

- ❑ Always
- ❑ Frequently
- ❑ Sometimes
- ❑ Never
- ❑ Don't know

13. Do you evaluate your programs?

- ❑ Always
- ❑ Frequently
- ❑ Sometimes
- ❑ Never
- ❑ Don't know

14. How do you market your programs? Check all that apply.

- ❑ Directly to individual school principals
- ❑ Directly to individual school department head/coordinators
- ❑ Directly to individual school teachers
- ❑ To school district coordinators (science, curriculum, etc.)
- ❑ Word of mouth
- ❑ Organizational newsletter
- ❑ Local newspaper
- ❑ Local television
- ❑ Directly to past participants
- ❑ Websites(s)
- ❑ Listserv(s)

15. Do you have any additional comments?_____

16. Would you like to receive a copy of the results?_____

Appendix 2: Market Analysis Required Data		
1. List of the organizations surveyed	Type of org.	
Adopt-A-Stream Foundation	LNP/NC-EEC	
Anchor Excursions Inc d.b.a. Snow Goose	FPB	
City of Bellingham	LGA	
City of Edmonds	LGA	
City of Everett, Public Works Department	LGA	
City of Oak Harbor	LGA	
Community Arts, Recreation & Education (CARE)	LNP	
Deception Pass State Park	SGA	
Friends of the Forest, Shannon Point Marine Center	LNP/EI	
NatureMapping Program	EI	
NOAA Olympic Coast National Marine Sanctuary	FGA	
Nooksack Salmon Enhancement Association	LNP	
North Cascades Institute	LNP	
Oceans for Youth, WSU BeachWatcher, Washington State Park Volunteer	NNP/EI/SGA	
Pacific Science Center - Mercer Slough Env. Ed. Ctr.	LNP/NC-EEC	
People for Puget Sound	LNP	
Point Defiance Zoo & Aquarium	MZA	
RE Sources for Sustainable Communities	LNP	
Salish Sea Expeditions	LNP	
Seattle Public Utilities, Cedar River Watershed Education Center	LGA	
Skagit Conservation District	SGA subdivision	
Snohomish Conservation District	SGA subdivision	
Snohomish County, Surface Water Management Division	LGA	
Western Washington University	EI	
Wolf Hollow Wildlife Rehabilitation Center	WRC	
WSU Snohomish County Extension	EI	
2. Total number and percentage of organizations surveyed that are:	Total #	%
Federal government agency (FGA)	1	4.0
State government agency (SGA)	2	8.0
Local government/municipal agency (LGA)	7	28.0
Educational institution (EI)	5	20.0
National non-profit organization (NNP)	2	8.0
Local non-profit organization (LNP)	11	44.0
For profit business (FPB)	1	4.0
Museum/zoo/aquarium (MZA)	1	4.0
Nature center/environmental education center (NC/EEC)	5	20.0

2. Total number and percentage of organizations surveyed that are: (cont.)		
Other:		
Political subdivision (PS)	1	4.0
Wildlife rehabilitation center (WRC)	1	4.0
Metro parks system, Tacoma (MPS)	1	4.0
3. Number or percentage of organizations that you surveyed that are part of the NOAA family (Sea Grant, Sanctuaries, Fisheries, etc.):	Total #	%
Sea Grant	0	0.0
National Marine Sanctuaries	1	4.0
NOAA Fisheries	0	0.0
Other NOAA	0	0.0
4. Top five types of educational programming provided by other organizations:	Total #	%
Elementary school programs	21	91.3
Middle school programs	19	82.6
High school programs	18	78.3
Field trips/field-based learning experiences for K-12 students	18	78.3
In-school/classroom programs	18	78.3
Home school programs	13	56.5
Service learning	12	52.2
5. Top five topics addressed by other organizations:	Rating Average	
Stewardship actions people can take	3.55	
Conservation	3.43	
Human impact on the environment	3.39	
Water quality	3.22	
Rivers and watersheds	3.13	
6. Top five topics that other organizations think need more attention:	Total #	%
Stewardship actions people can take	16	84.2
Human impact on the environment	13	68.4
Climate change and sea level rise	10	52.6
Estuarines as nurseries for marine life	10	52.6
Conservation	9	47.4
Rivers and watersheds	8	42.1

7. Number and percent of organizations targeting each grade level:	Total #	%
Elementary school programs	21	91.3
Middle school programs	19	82.6
High school programs	18	78.3
Field trips/field-based learning for K-12	18	78.3
Home school	13	56.5
8. Percent of organizations that offer educational credits:	Total #	%
No credits offered	13	59.1
Washington State clock hours	8	36.4
College credit	5	22.7
9. Top 5 most common methods of marketing programs:	Total #	%
Word of mouth	21	91.3
Directly to individual school teachers	20	87.0
Websites	17	73.9
Directly to past participants	16	69.6
Directly to individual school principals	13	56.5
Organizational newsletter	13	56.5
10. Comparison of counties served by other organizations with those served by your Reserve:	Total #	%
Skagit	13	50.0
Snohomish	13	50.0
Whatcom	12	46.2
Island	9	34.6
Note: Skagit, Snohomish, Whatcom and Island are all served by our Reserve.		