



**South Slough
National Estuarine
Research Reserve**



Oregon Coastal Education Market Analysis and Needs Assessment Study December 2012

Tom Gaskill, Education Program Coordinator
South Slough National Estuarine Research Reserve

Jenna Kulluson, Education Assistant
South Slough National Estuarine Research Reserve

Dan Calvert, PhD candidate
Oregon State University

Table of Contents

1.0 Background.....	7
2.0 Methods.....	10
3.0 Findings and Discussion.....	13
3.1 Market Analysis.....	13
3.2 Needs Assessment.....	26
4.0 Conclusion.....	60
Appendix A – Statistical Analysis of Needs Assessment Results	
Appendix B – Market Analysis Survey Instrument	
Appendix C – Needs Assessment Survey Instrument	

List of Figures

Figure 1	Scope of Market Analysis (MA) and Needs Assessment (NA).....	8
Figure 2	MA – Counties Served.....	13
Figure 3	MA – Organization type.....	14
Figure 4	MA – Organization funding.....	15
Figure 5	MA – Education program types.....	16
Figure 6	MA – Grade levels served.....	17
Figure 7	MA – Topics by grade.....	18
Figure 8	MA – Attention to topics.....	19
Figure 9	MA – Professional development by grade level.....	20
Figure 10	MA – Professional development by type.....	21
Figure 11	MA – Professional development credit.....	22
Figure 12	MA – Marketing methods.....	23
Figure 13	MA – Barriers to participation.....	24
Figure 14	MA – Partnerships.....	25
Figure 15	NA – Teachers by county.....	27
Figure 16	NA – Teachers by grade.....	28
Figure 17	NA – Teachers by experience.....	29
Figure 18	NA – Student ethnicity.....	30
Figure 19	NA – Age of respondents.....	31
Figure 20	NA – Coastal area recreational use.....	32
Figure 21	NA – Awareness of NERR.....	33
Figure 22	NA – Use of educational services and products.....	34
Figure 23	NA – Years teaching estuary, watershed, and ocean topics.....	35

Figure 24	NA – Activity periods of estuary, watershed and/or ocean instruction.....	36
Figure 25	NA – Web resources.....	37
Figure 26	NA – Estuary science teaching requirements.....	38
Figure 27	NA – Emphasis of teaching plans.....	39
Figure 28	NA – English as a Second Language students.....	40
Figure 29	NA – Need for further information and education materials.....	41
Figure 30	NA – Importance of estuary education.....	42
Figure 31	NA – Importance of climate change education.....	43
Figure 32	NA – Help with climate change education.....	45
Figure 33	NA – Use of outdoor experiences.....	46
Figure 34	NA – Frequency of outdoor experiences.....	47
Figure 35	NA – Interest in use of outdoor education in teaching.....	48
Figure 36	NA – Outdoor education assistance.....	49
Figure 37	NA – Real-time/archived data use.....	50
Figure 38	NA – Real-time/archived data synthesis needs.....	51
Figure 39	NA – Professional development participation factors.....	52
Figure 40	NA – Continuing Education Credit importance.....	53
Figure 41	NA – Professional Development Unit importance.....	53
Figure 42	NA – Professional Development workshop barriers.....	54
Figure 43	NA – Distance Learning training participation.....	55
Figure 44	NA – Distance Learning training types.....	55
Figure 45	NA – Hours of professional development in science.....	56
Figure 46	NA – Types of professional development taken.....	57
Figure 47	NA – Types of professional development by interest.....	58

List of Tables found in Appendix A

Table 1	Teacher awareness of the NERR located in Charleston, Coos County, Oregon.
Table 2	Comparison between years of teaching experience and importance of estuary education.
Table 3	Comparison between years of teaching experience and importance of climate change education.
Table 4	Comparison between county and importance of estuary education.
Table 5	Comparison between county and importance of climate change education.
Table 6	Type of help needed to incorporate more discussion about climate change at each grade level.
Table 7	Are estuary related topics a required part of science teaching requirements by county?
Table 8	Are estuary related topics a required part of teaching requirements by grades taught?
Table 9	Teachers who have used outdoor teaching experiences by county.
Table 10	Amount that teachers have used outdoor teaching experiences in the last two years by county.
Table 11	The amount of emphasis placed on outdoor experiential activities by county.
Table 12	The amount of emphasis placed on lab or field work/data collection by county.
Table 13	The amount of emphasis placed on stewardship projects or activities by county.
Table 14	The amount of emphasis placed on data analysis, stats, and probability by county.
Table 15	The amount of emphasis placed on scientific inquiry skills by county.
Table 16	The amount of hours spent on professional development training on estuaries by county.
Table 17	The amount of hours spent on professional development training on watersheds by county.
Table 18	The amount of hours spent on professional development training on oceans by county.
Table 19	Teachers who report using NERR services or products by county.
Table 20	The amount of class activity per year on estuary instruction by grade level.
Table 21	The amount of class activity per year on watershed instruction by grade level.
Table 22	The amount of class activity per year on ocean instruction by grade level.

Table 23	The amount of class activity per year on estuary instruction by county.
Table 24	The amount of class activity per year on watershed instruction by county.
Table 25	The amount of class activity per year on ocean instruction by county.
Table 26	Importance of estuary education across grade levels taught.
Table 27	Importance of climate change education across grade levels taught.
Table 28	Teacher interest in professional development training across grade levels taught.

1.0 Background

Introduction

The South Slough National Estuarine Research Reserve (South Slough NERR), located near Coos Bay, has been working for several years to foster a collaborative approach to coastal and estuarine education in Oregon. Dedicated in 1974 as the first national estuarine sanctuary in the nation, over 5,000 acres of forest uplands, fresh and saltwater wetlands, and waterways provide a natural laboratory to further our understanding Pacific Northwest estuaries and coastal watersheds. Programs of research, monitoring, education, and training advance the stewardship of estuaries throughout the region through engagement with a diverse community of organizations and individuals.

South Slough NERR is one of 28 National Estuarine Research Reserves established by the National Oceanic and Atmospheric Administration - Estuarine Reserves Division (NOAA/ERD). The reserve is administered by the State of Oregon Department of State Lands with headquarters and a research lab located in Charleston on the campus of the Oregon Institute of Marine Biology. An interpretive center housing exhibits, an auditorium, classroom, and gift shop is located 4 miles from Charleston along Seven Devils Rd. adjacent to nearly 5 miles of hiking trails that provide access to the reserve.

This report presents the results of a market analysis and a needs assessment study conducted by South Slough NERR through financial support from NOAA/ERD and the US Bureau of Land Management – Coos Bay District with the fiscal assistance of the Coos Watershed Association. Similar research has been undertaken by NERR educators at a majority of reserves. This effort attempts to advance the understanding of the state of coastal and estuarine education offered by providers (market analysis) and the needs of the audience (needs assessment).

During the fall of 2011 and the spring of 2012, South Slough National Estuarine Research Reserve worked in partnership with the US Bureau of Land Management – Coos Bay District and the Coos Watershed Association to conduct two studies in Oregon. The first study, a market analysis, was designed to better understand the landscape of coastal education providers in Oregon for K-12 audiences. The second study, a needs assessment of 6 coastal counties in southern Oregon and the south Willamette valley, attempted to advance our knowledge of the curricular and professional development needs of K-12 educators in this region.

South Slough NERR and our partners believe that teaching about estuaries, coastal watersheds, the ocean and the rich diversity of life found here is a valuable part of K-12 education in Oregon, and an important dimension of creating a science literate public with the capacity to understand and prepare for future impacts of climate change and improved stewardship of our coastal waters.

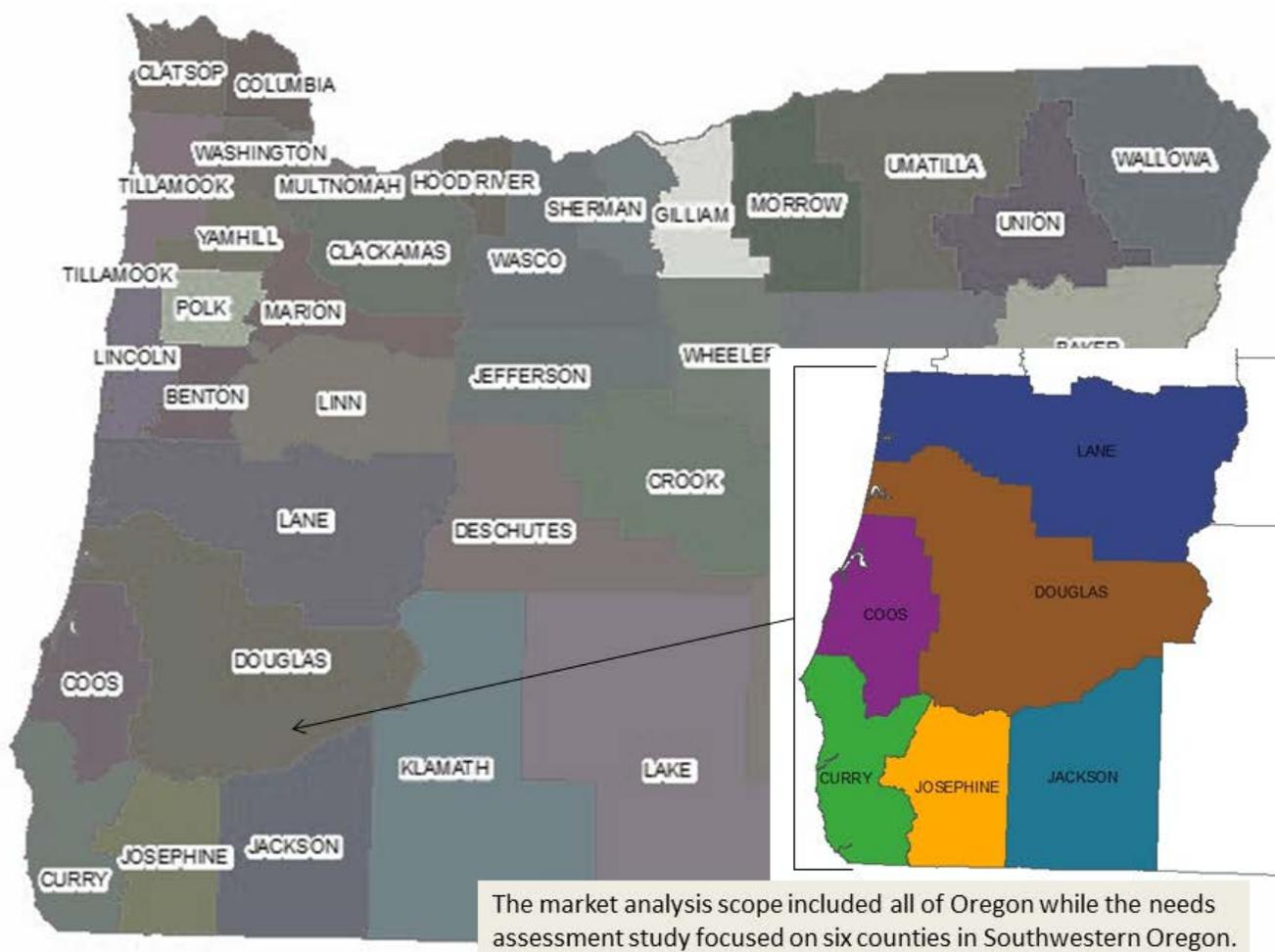


Figure 1: Scope of Market Analysis and Needs Assessment

The term coastal education best describes the efforts of a number of key partners to adopt a holistic view of important concepts and principals involved in understanding relationships between watersheds, estuaries, the ocean and the earth's climate. Through this work, South Slough NERR acknowledges the importance of reaching beyond coastal communities to better understand and, in turn, reach the major population centers in the state with services and products supported by scientific research and best practices in the field of education.

Market Analysis objectives

The market analysis sought to discover specific information about program offerings by various formal and informal institutions providing coastal education activities for K-12 and community college students and teachers. This study collected data about the numbers and types of programs offered, educational objectives, costs, education staff, informational resources, educational methods employed, and potential for partnership.

The scope of the market analysis study area included environmental education providers in Oregon. While this is an expansive geographic area, the population centers are fairly distinct and it is likely that a limited number of K-12 and community college coastal education providers exist. However, the authors acknowledge that the scope of this study is not comprehensive and we support the efforts of groups like the Environmental Education Association of Oregon to canvass and represent a directory of such providers.

The market analysis included focus group meetings and an on-line survey methodology to collect the desired data. The focus group participants were recruited from a number of key stakeholders such as watershed associations, tribal educators, marine and watershed informal educators, relevant private business operators, school district representatives and teachers, and non-governmental and public agencies whose missions reflect a connection to coastal education. These groups provide a collaborative learning environment for idea sharing and information gathering. Additionally, the meetings were used as a means to familiarize participants with the current programs and activities of the South Slough NERR.

Needs Assessment objectives

The scope of the needs assessment targeted three bands of in-service teachers within K-12 schools in southern Oregon and the southern Willamette valley. These potential audiences, of upper elementary (grades 3-5), middle (grades 6-8), and high school (grades 9-12) classes and teachers, have, to varying degrees, accessed South Slough's programs due to geographic proximity for coastal experiences. Given that we currently reach a limited number of classes within this service area, the needs assessment has helped define potential opportunities and mechanisms to broaden the reach of South Slough's educational programs.

Through the Oregon coastal education needs assessment we sought to discover:

- if and how the target audience teaches about the coast and estuaries;
- whether they use ocean and coastal data and research in their classrooms;
- when they do so, if they incorporate field experiences and take trips to the coast;
- whether they include unstructured outdoor learning in their field programs;
- whether they have access to and use a natural area near their school with their students;
- and whether they would be interested in using live distance learning activities and virtual field trips with their students to enhance field experiences.

We also sought to enhance our understanding of the ways in which this type of education is occurring in schools and what teachers need to more effectively offer coastal education to their students. Finally, we attempted to better understand institutional and administrative structures and hurdles that limit the capacity of K-12 educators to deliver rich educational programs that appeal to a broad variety of learning styles.

2.0 Methods

2.1 Market Analysis

The market analysis was conducted using an on-line survey and through several focused meetings with potential providers of coastal education activities for K-12 and other formal education audiences. The on-line survey was developed during the spring and summer of 2011 and initiated in late September. The survey was open to respondents for a period of 5 weeks. Drafts of the survey instrument were vetted with South Slough Education Advisory Group, an ad hoc committee comprised of formal and informal educators from schools, agencies, and organizations familiar with the programs of the reserve. Comments provided by this group were combined with NOAA data requirements to develop the final instrument.

The survey link was sent directly to representatives of 108 organizations and additionally a short invitation was shared via several on-line newsletters and through the South Slough NERR website. Organizations were selected using a variety of resources including membership directories for the Environmental Education Association of Oregon and the Oregon Chapter of the Northwest Aquatic and Marine Educators. An initial invitation sent directly to organizations was followed by a second e-mail 4 weeks later encouraging participation. 16 organizations completed the on-line survey.

Incentives in the form of “coastal education resource kits” were offered to all respondents and provided for first 10 surveys returned. The results of the survey were provided to all participants that indicated interest in receiving them.

Additional meetings were held with two distinct groups of education providers in southern Oregon. A consortium of educators from the Rogue Valley met at Southern Oregon University and provided insight and a high level of interest in expanding coastal and marine education efforts. The group is also actively working to implement Oregon’s Environmental Literacy Plan (2010).

A second meeting held at the South Slough Interpretive Center in June, 2011 included representatives of key environmental education organizations located in communities along the southern Oregon coast. This group shared perspectives on the role that their entities currently play in delivery of coastally-themed education services and needs that they have in advancing the goals of their programs. While partnership and collaboration were repeatedly mentioned during the meeting, no specific actions have been undertaken beyond opportunistic interactions on a program-by-program basis. While somewhat limited, these interactions have been beneficial in fostering a more supportive and collaborative community of environmental education providers in the area. South Slough NERR will continue to work with a variety of partners in the area to further collaborative opportunities and networking.

2.2 Needs Assessment

The survey design was informed by a team including staff from South Slough NERR, the US-BLM Coos Bay, the South Slough Education Advisory Group and a Ph.D. candidate from Oregon State University (OSU). The OSU grad student is enrolled in the Environmental Studies Graduate program and is researching social science dimensions of natural resource management and salmon recovery. He worked with several OSU professors and fellow students in the creation of the survey questions and the analysis. The items chosen for the survey were based on the requirements put forth by NOAA regarding market analysis and need assessment studies, as well as a desire to explore the perceptions and attitudes of teachers relating to estuary and climate change. We were particularly interested in trying to better understand responses according to county, grade taught, and number of years teaching; these represented the primary dependent variables in the analysis.

The final survey instrument was designed utilizing Dillman's Tailored Design Method. The Tailored Design Method is a generally recognized as the survey delivery method designed to generate the greatest response rate and address concerns relating to non-response error. The specific approach is comprised of four steps: (1) an initial notice to potential respondents that they will soon be receiving a survey; (2) potential respondents then receive the actual survey; (3) respondents receive the survey a second time; and (4) potential respondents receive a note reminding them to fill out the survey if they have not already done so.

A sample frame for the survey was identified using historic South Slough NERR records for the primary service area reached by the reserve's site-based education programs. For the scope of this study, a 6 county area was selected to include: Coos, Curry, Douglas, Lane, Jackson, and Josephine counties. 3rd – 12th grade teachers from coastal communities in the Coos Bay/North Bend area (Coos County), the Ashland/Medford area (Jackson County), and the Eugene/Springfield area (Lane County) were included in the study. These three areas within 3 of the 6 counties have populations of approximately 45,000, 100,000, and 200,000 people respectively. At the elementary level, all teachers at any given school were offered the survey since science specialists no longer exist in most school districts so science education is the responsibility of the primary classroom instructor. At the middle school and high school level, science teachers were offered the survey.

The sample frame included six counties in southern Oregon chosen for the study; Coos, Curry, Douglas, Lane, Jackson, and Josephine representing an estimated total population of 832,955 residents. With 54 school districts (including 4 education service districts), 285 public schools and 53 private schools in these six counties, this education community represents approximately 20% of the total K-12 student population in Oregon. During the 2010-2011 school year, Oregon K-12 schools enrolled 561,328 students and employed 28,109 teachers (Full-time equivalent) in 197 districts across the state.

For the purposes of this study, the six counties included were considered most likely to access site-based educational services offered by South Slough NERR and our partners. Distance traveled to coastal sites in terms of time varies from 30 minutes to several hours for schools within this service area and due to the rugged nature of the coastal mountains in southern Oregon, a limited number of likely routes exist.

A database of teachers and administrators at schools within the 6 county sample areas was constructed using the State of Oregon – Department of Education website as the primary source for this information. Secondly, e-mail contacts for individual teachers and administrators were confirmed using websites and phone verification with school classified staff. This database consisted of 267 administrators and 1300 classroom teachers. Administrators were initially sent the survey link with an invitation via e-mail explaining the purpose of the study and making them aware of subsequent contact with the teachers. These administrators were asked to distribute the survey to teachers in their individual schools.

The survey instrument was comprised of 37 distinct questions (Appendix B) and was developed and administered using Survey Monkey. The questions were developed to meet NOAA/Estuarine Reserve Division data collection requirements and additional questions were included based upon the specific interests of South Slough NERR staff and the research team.

Initial distribution of an invitational e-mail including a link to the open survey occurred on May 15, 2012 and the survey was open for a period 45 days extending beyond the end of the school year. A second reminder notice was sent to all teachers and administrators included in the database two weeks after initiation and a final reminder notice was sent 15 days prior to the closing of the survey.

A total of 232 surveys were started and 190 were completed in this period out of 1,300 potential respondents, and a 15% response rate was achieved by the use of the multiple contact survey design. As with all surveys, question wording, refusals, and other difficulties encountered in the implementation of surveys can result in some measure error or unintended bias in responses.

3.0 Findings and Discussion

3.1 Market Analysis

The results displayed in the following figures represent data collected through a series of 19 questions that comprised the on-line survey. Questions from the survey are referenced parenthetically and a blank Market Analysis survey instrument is provided (Appendix B) in this document.

The survey was divided into 5 sections: Background, Educational Programs, Educational Topics, Professional Teacher Development, and Program Development/Marketing.

Background section (*Agency information Q 2.2, 3.1, 3.2*)

Q 2.2

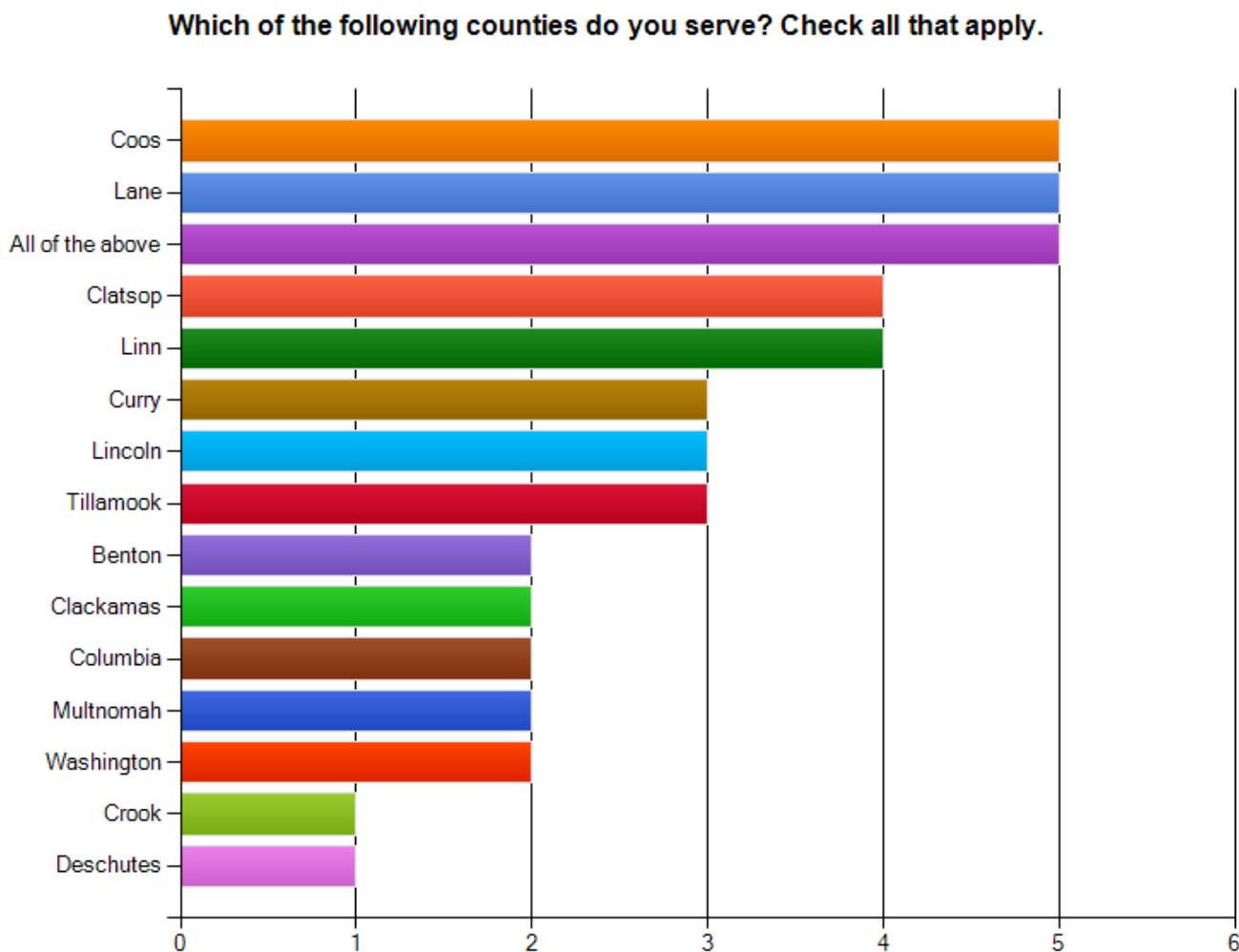


Figure 2: Counties served

Providers responding to the survey were distributed throughout western Oregon and service areas included both coastal and non-coastal counties. 5 respondents (29.4%) indicated state-wide coverage for their programs (labeled all of the above in Figure 1.), while the majority of specific counties served were coastal counties. An exception to this trend was Douglas County which has a coastal reach but is primarily located south of the Willamette valley and extends to the crest of the Cascade Mountains in the east. Given the somewhat limited scope of respondents, this does not necessarily represent a gap in providers of coastal education opportunities although this may be worthy of further investigation.

Q 3.1

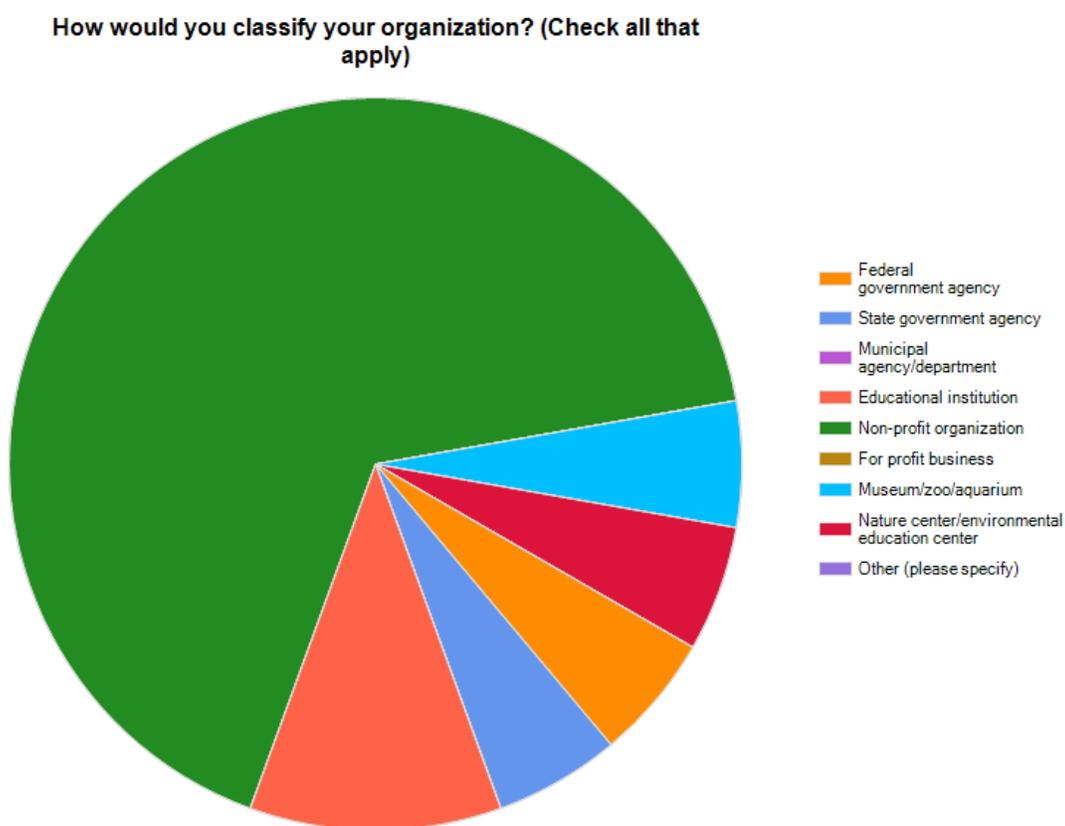


Figure 3: Organization type

Non-profit institutions comprised the majority of respondents (70.6%). Two respondents identified themselves as educational institutions, and one organization identified themselves in each of the following four categories: Federal government agency, State government agency, Nature center/environmental education center, Museum/zoo/aquarium.

Q 3.2

How are your programs funded? (Check all that apply)

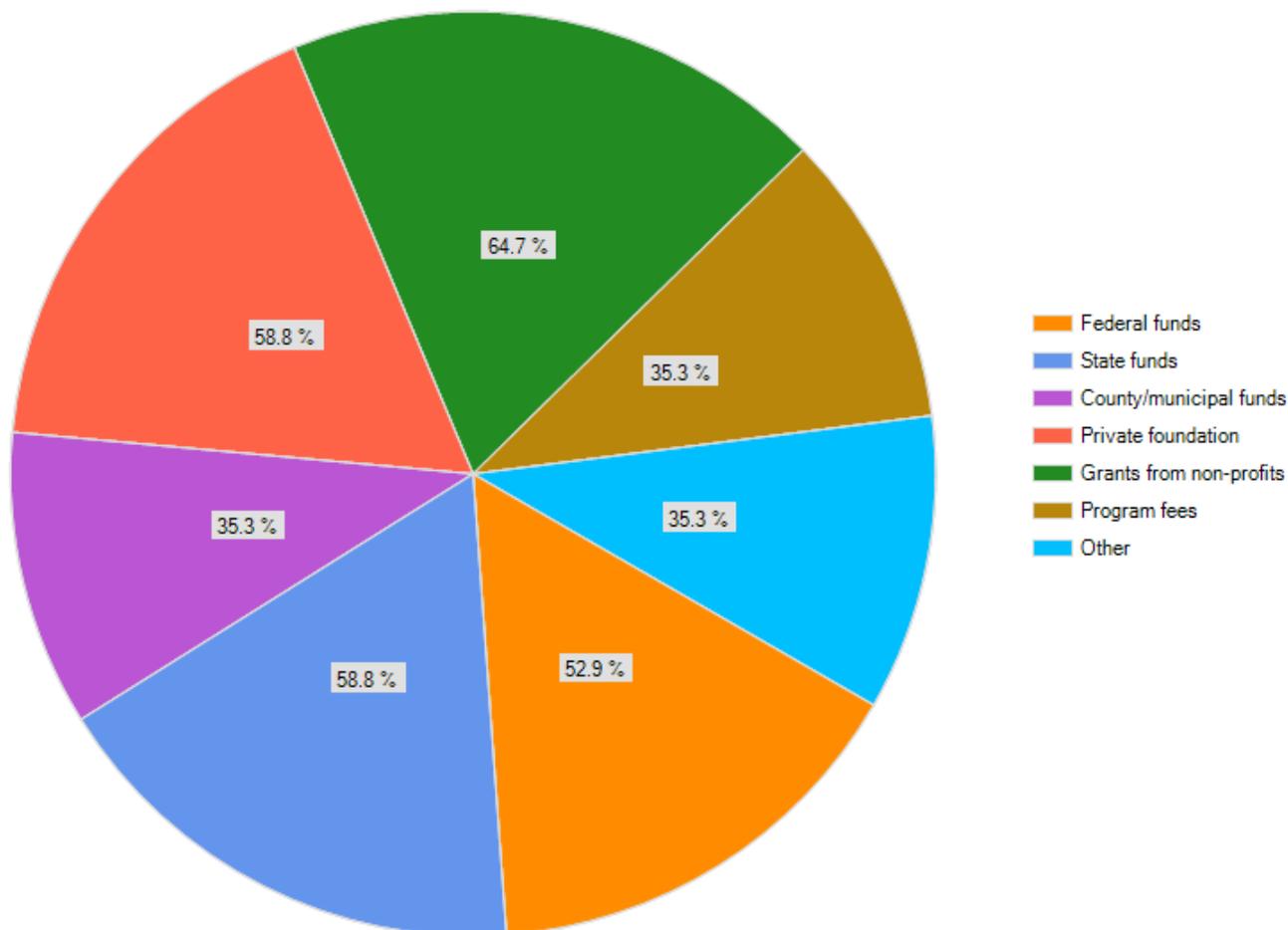


Figure 4: Organization funding

Organizational funding for coastal education programs was largely derived from grants and private foundations (64.7% and 58.8% of respondents respectively) while federal and state funds (52.9% and 58.8% respectively) also played a significant role across all organizations. Program fees, county and municipal funds, donations, memberships, and earned income played a lesser but critical funding role.

Educational Programs (Q 4.1, 4.2)

Q 4.1

What types of educational programs does your organization provide? (Check all that apply)

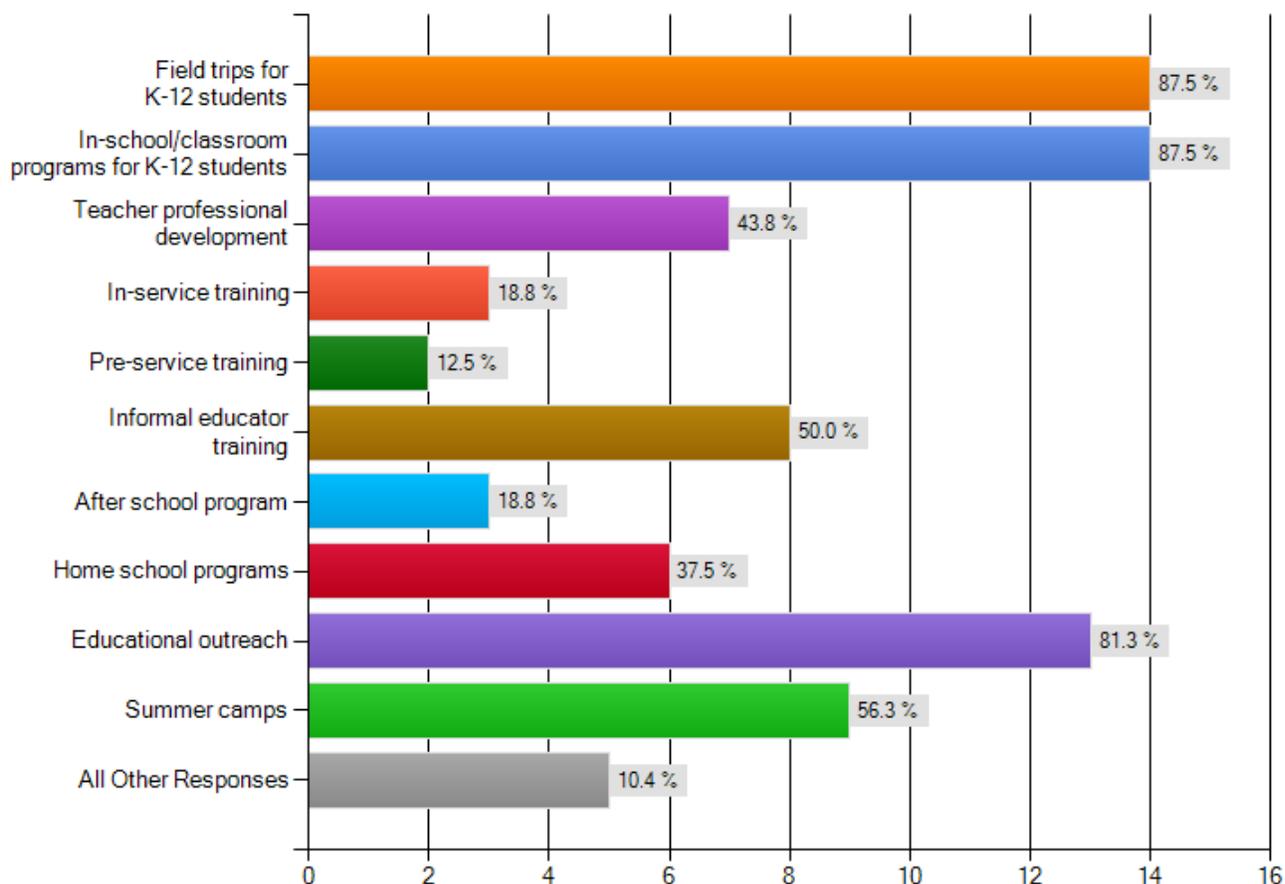


Figure 5: Education program types offered

The majority of respondents (87.5%) indicated that their organizations provide field trips and in-school/classroom programs for K-12 students. Secondly, educational outreach (81.3%) was ranked highly as a service provided. This may indicate that the distinction between classroom programs and educational outreach was not strong in most respondent's minds.

Summer camps (56.3%) were the next most common form of educational program offered followed by home school programs (37.5%) as a form of direct service to students. After school programs (18.8%) were ranked relatively low possibly indicating an underserved niche. A single respondent indicated use of educational TV/radio programs (6.3%) and no respondents identified distance learning programs as a means of reaching either students or teachers.

Other responses were typically elaborations of previously indicated program types. One exception was identification of senior projects and internships as a means of serving students.

Training was also addressed in this question and teacher professional development (43.8%) was most often reported. In-service (18.8%) and pre-service (12.5%) training may have been listed as unique programs or these may represent a more detailed response in addition to the general indication that a teacher professional development program is offered.

Q 4.2

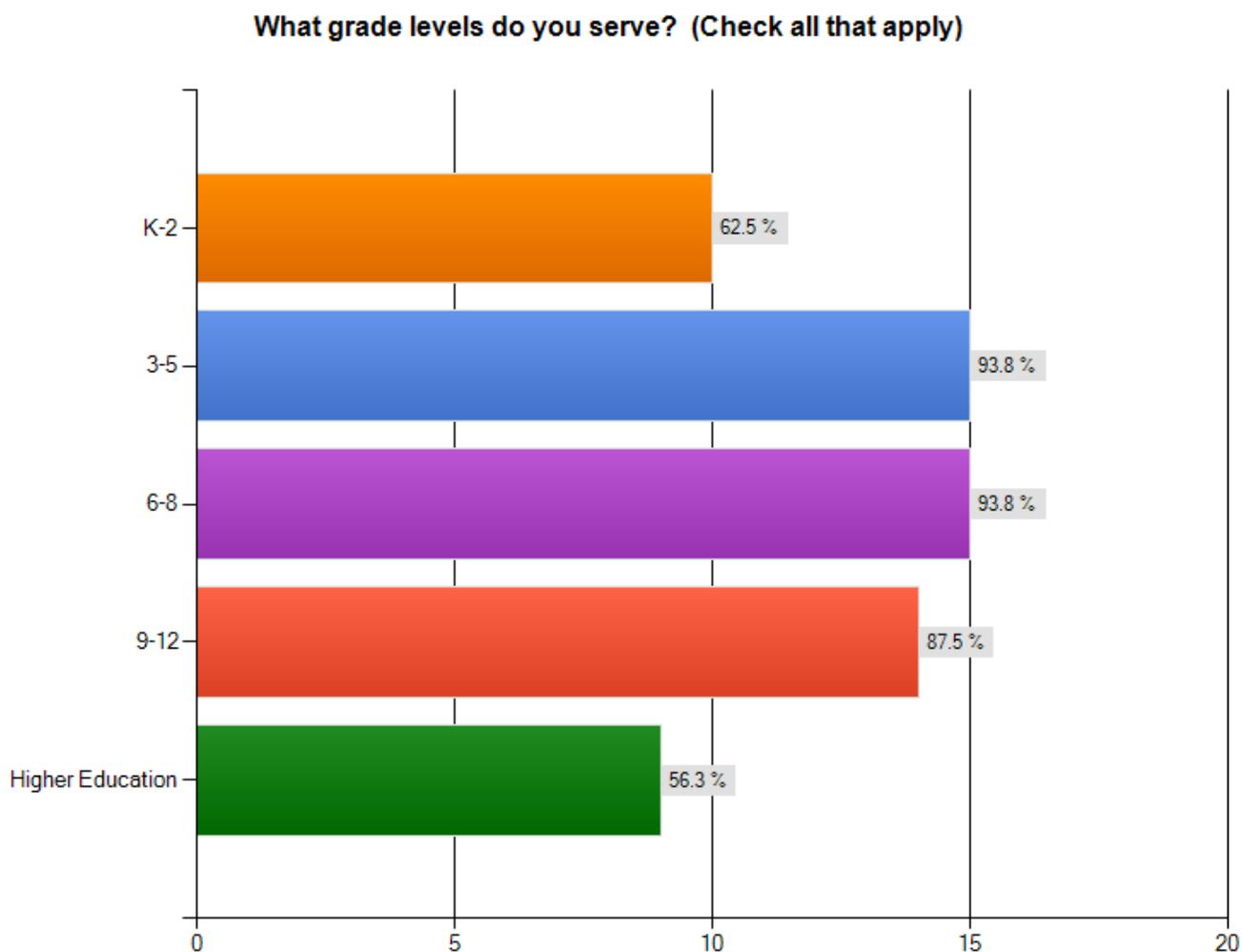


Figure 6: Grade levels served

Both 3rd – 5th grade and 6th – 8th grade levels (93.8% each) were the most frequently indicated levels served. 9th -12th grades (87.5%) followed and K-2nd grades (62.5%) were the next most commonly served audiences. Higher education audiences (56.3%) were also identified as an audience although not as frequently as other groups.

These findings are consistent with experiences at South Slough NERR where field studies have historically been the education program emphasis and elementary classes have typically represented the largest group of formal education participants. However, middle school teachers (6th-8th) typically use the programs offered less frequently than elementary classes. High school teachers (9th-12th) bring classes more often than their middle school counterparts and the results of the market analysis appear to indicate that this audience is currently well served.

Educational Topics (Q 5.1, 5.2)

Q 5.1

Which of the following topics are addressed by your educational programs and for what grade levels? Check all that apply.

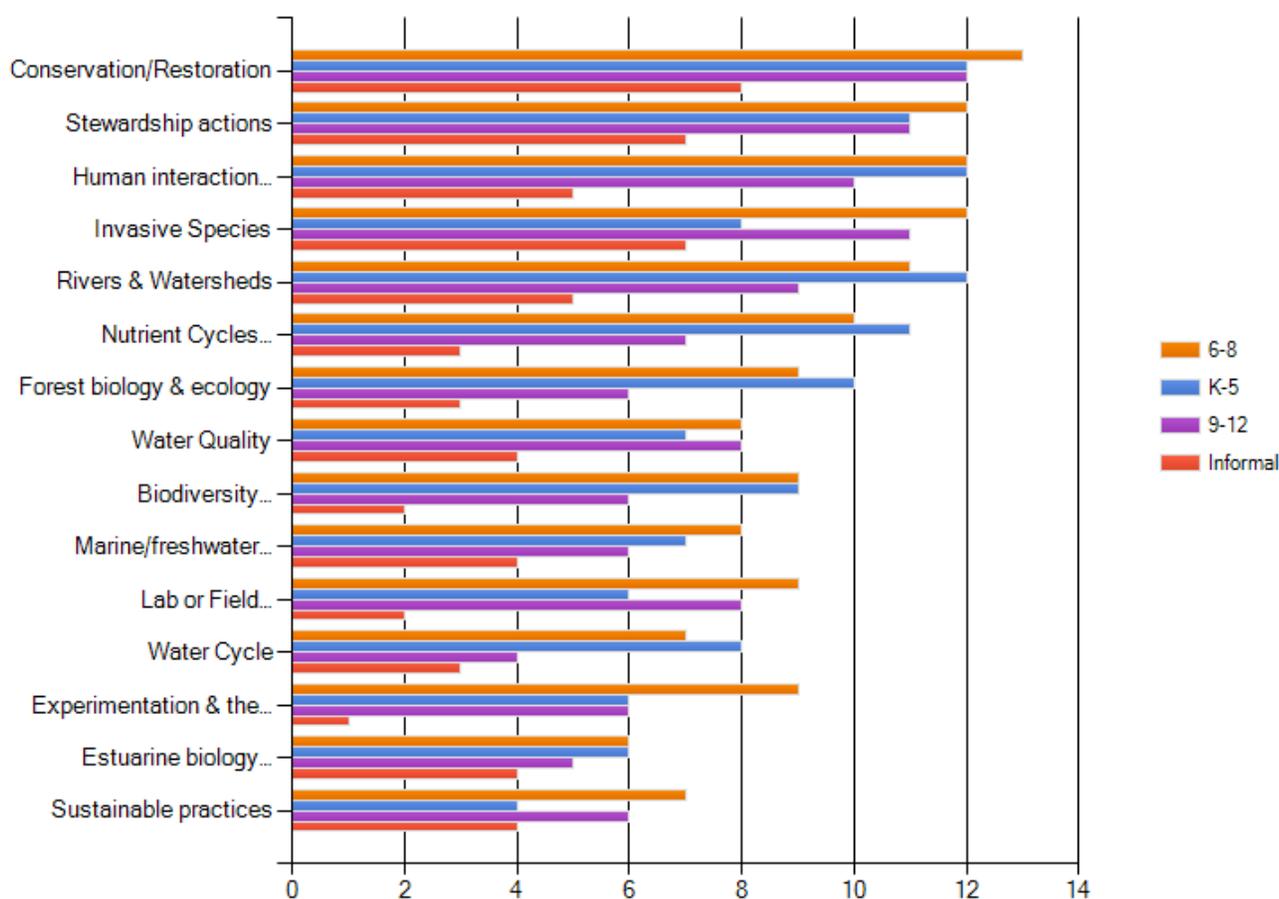


Figure 7: Top 15 topics by grade

Focused programs for K-5th classes most frequently identified topics such as conservation/restoration, stewardship actions, human interactions, rivers and watersheds. Topics such as animal migration, life cycles, the water cycle, biodiversity, and invasive species were also fairly common. Respondents indicated that marine biology and ecology,

commercial fishing, careers in science, recreational fishing, climate change, and weather were less frequently the focal topic of programs for this grade level. No finer resolution data is available for this age group to assist in distinguishing specific results within the range of kindergarten through 5th grade classes. This represents a fairly substantial spectrum of learning.

Middle school (grades 6th – 8th) topic frequencies were similar (conservation/restoration, stewardship actions, human interactions, rivers and watersheds) with the additions of water quality, lab/field experiences, experimentation, data analysis, erosion and estuarine biology included at a fairly high level.

Q 5.2

What topics do you think need more attention in terms of educational programs offered in the region? (Check all that apply)

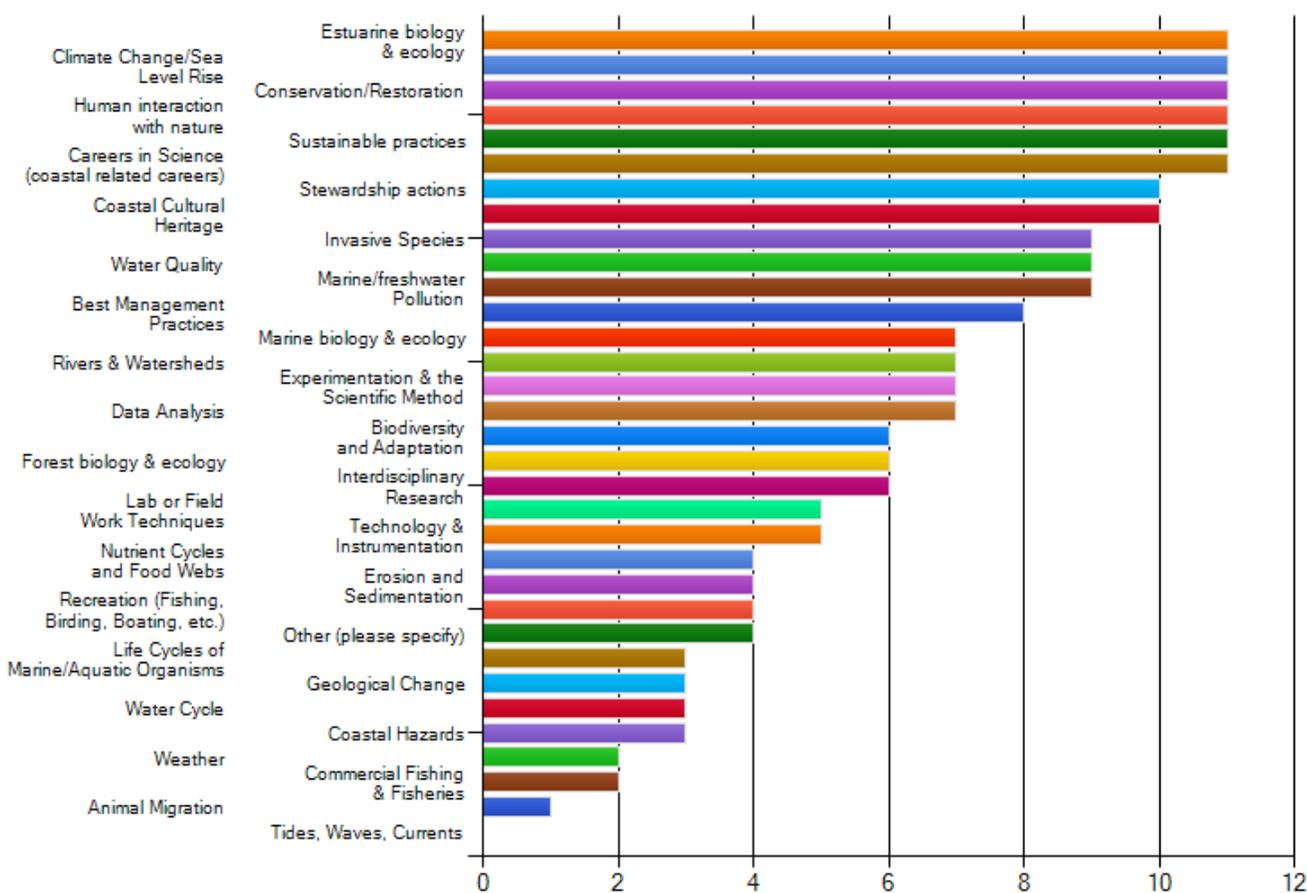


Figure 8: Attention to topics

The highest ranking topics deemed to require more attention by respondents were Estuarine Biology and Ecology, Climate Change and Sea Level Rise, Conservation/Restoration, Human interaction with nature, Sustainable practices, and coastal careers in science. These topic areas present ample opportunities for South Slough NERR and various coastal education partners to work more effectively to leverage resources and content. Stewardship actions and Coastal

Cultural Heritage also ranked highly (at least 50% response rate) followed by Invasive Species, Water Quality, and Marine/freshwater Pollution as topics needing additional attention. These topics are all well represented within the reserve’s goals and the educational themes identified by NOAA and the NERRS.

Teacher Professional Development (Q 6.1, 7.1, 7.2)

Q 6.1

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

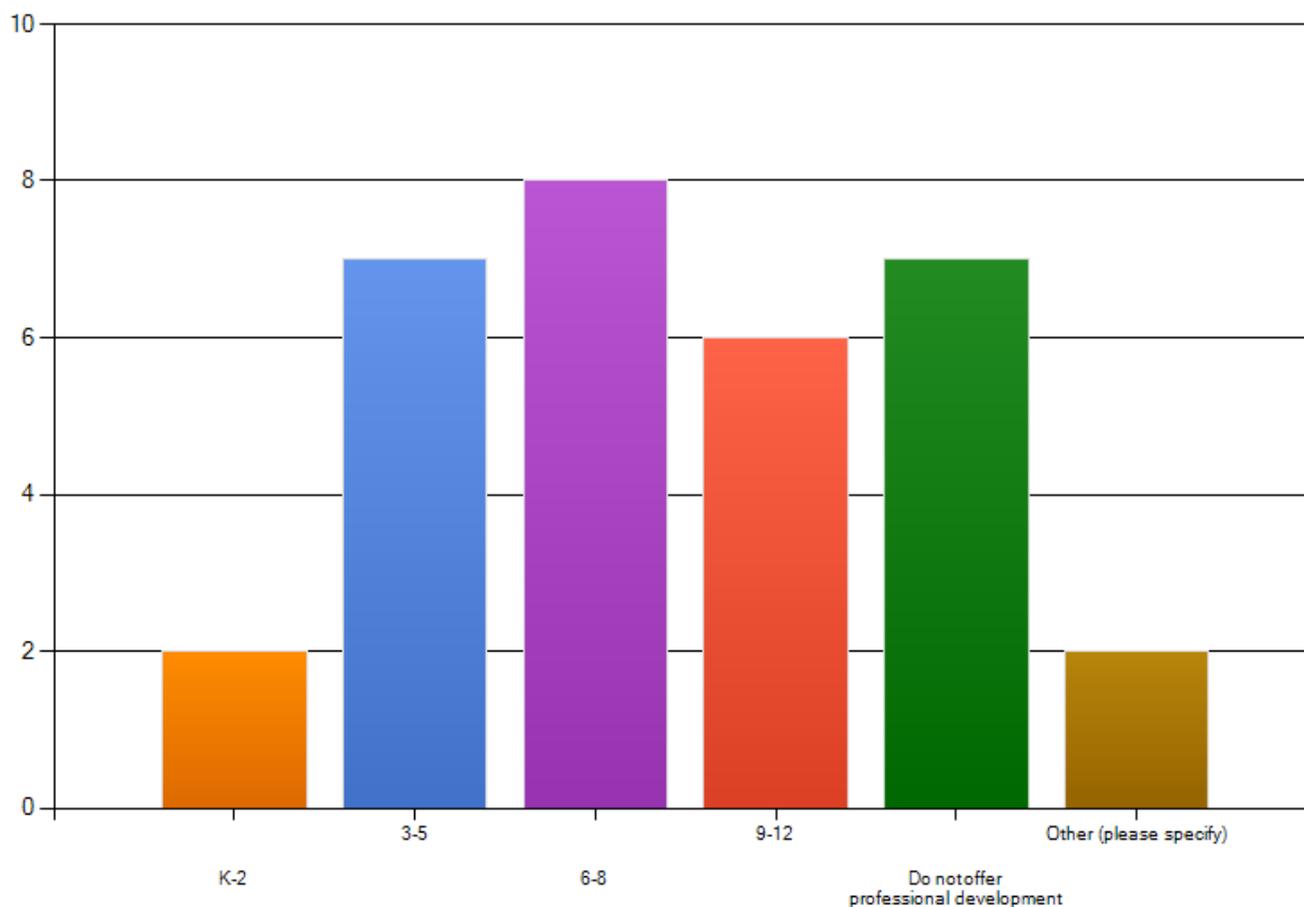


Figure 9: Professional development by grade level

Professional development opportunities were offered by a majority of the respondents. However, 7 respondents (43.8%) do not currently offer teacher professional development, while 1 person indicated an interest in providing a host site for such opportunities and 1 respondent identified university level educators as the target audience. Of the organizations that do offer professional development opportunities, the majority are focused for 3rd through 12th grade

educators, with a minimal provision of services for early childhood educators at the kindergarten through 2nd grade level.

Q 7.1

What type of teacher professional development does your organization provide? (Check all that apply)

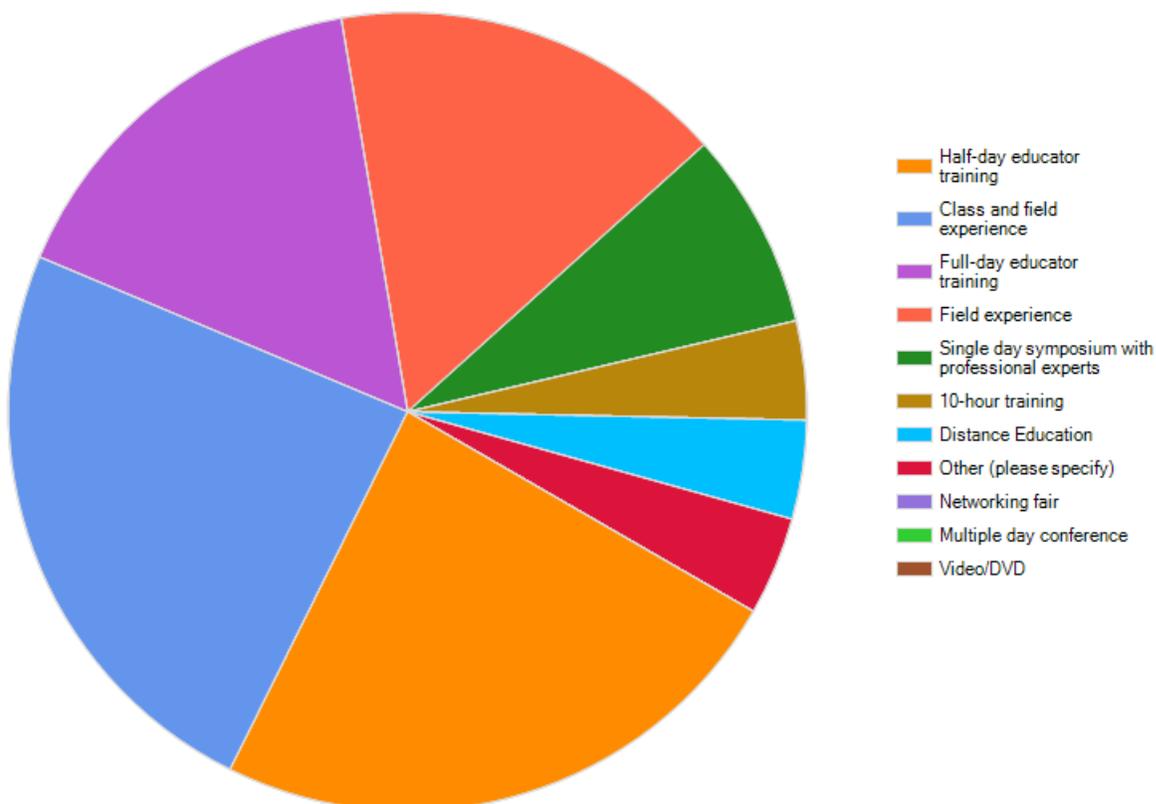


Figure 10: Professional development by type

The most common types of professional development opportunities identified were half-day educator training, and class and field experiences (66.7% each) followed by full-day and field experiences (44.4% each). Single day symposia with professional experts (22.2%) ranked lower and 10-hour training and distance education (11.1% each) were used by only one provider as training techniques.

Notably, a multiple day conference was not identified as an employed technique. Research in the area of best practices in professional educator development indicates that a minimum of 15 hours of contact time is required as a method of ensuring that teachers adopt strategies and incorporate content provided through training. In the article, State of the

Profession – Study Measures Status of Professional Development, the authors state that “Sustained and intensive professional development for teachers is related to student achievement gains.”

Q 7.2

Do you offer teachers educational/professional development credits?

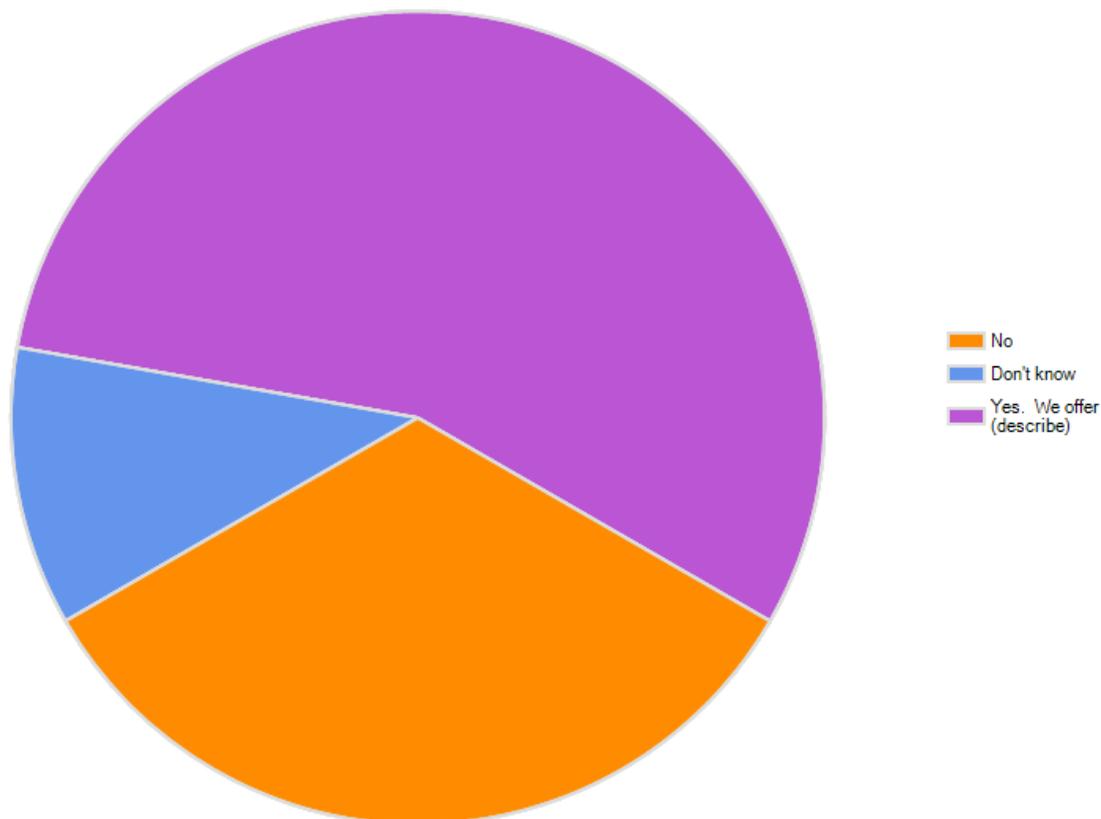


Figure 11: Professional development credit

While most respondents (55.6%) did indicate that credits were offered for their professional development opportunities, the specific types of credits and the level of interest by the teachers in these credits was not described in detail. This may indicate an area for connecting providers with institutions of higher learning that offer teacher education programs and are willing to partner with coastal education organizations.

Program Development/Marketing (Q 8.1, 8.2, 8.3, 8.4)

Q 8.1 & 8.2

Respondents were asked about plans to expand programming for K-12 and teacher audiences. A majority of respondents (75%) were planning to expand programs or activities for K-12 students with various objectives stated.

Several entities identified the need for additional funding as the primary driver enabling the proposed expansion. Other respondents identified mechanisms for expanding services including kits, teacher-led activities, and web resources.

Within teacher professional development, a smaller percentage (25%) of respondents indicated intent to expand services. Additional staffing and funding were identified as needs to conduct the work. Mechanisms such as outreach to school staff and administration and building upon existing successes were described as possible approaches.

Q 8.3

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

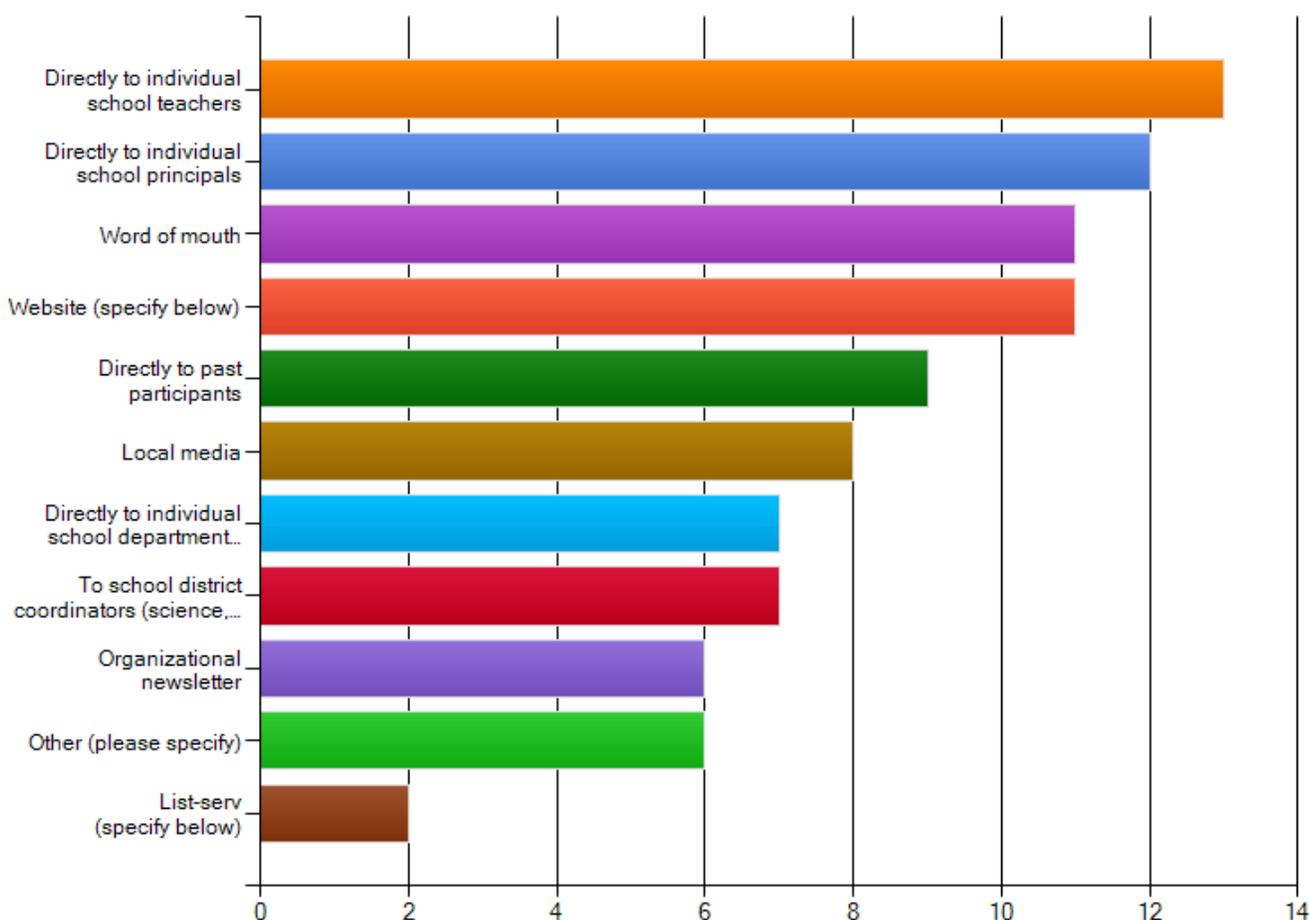


Figure 12 Marketing methods

Marketing approaches varied and most typically included direct marketing to school teachers (81.3%), school principals (75%), and school department head/coordinators (43.8%). Word of mouth also ranked highly (68.8%) as a means of marketing. The same degree of emphasis was indicated for websites (68.8%) while local media (50%) was also

employed. Organizational newsletters (37.5%) were limited in their use and regular postings on Facebook was mentioned by at least one respondent.

Q 8.4

**What are some barriers you've identified to participation in your programs or activities?
(Check all that apply.)**

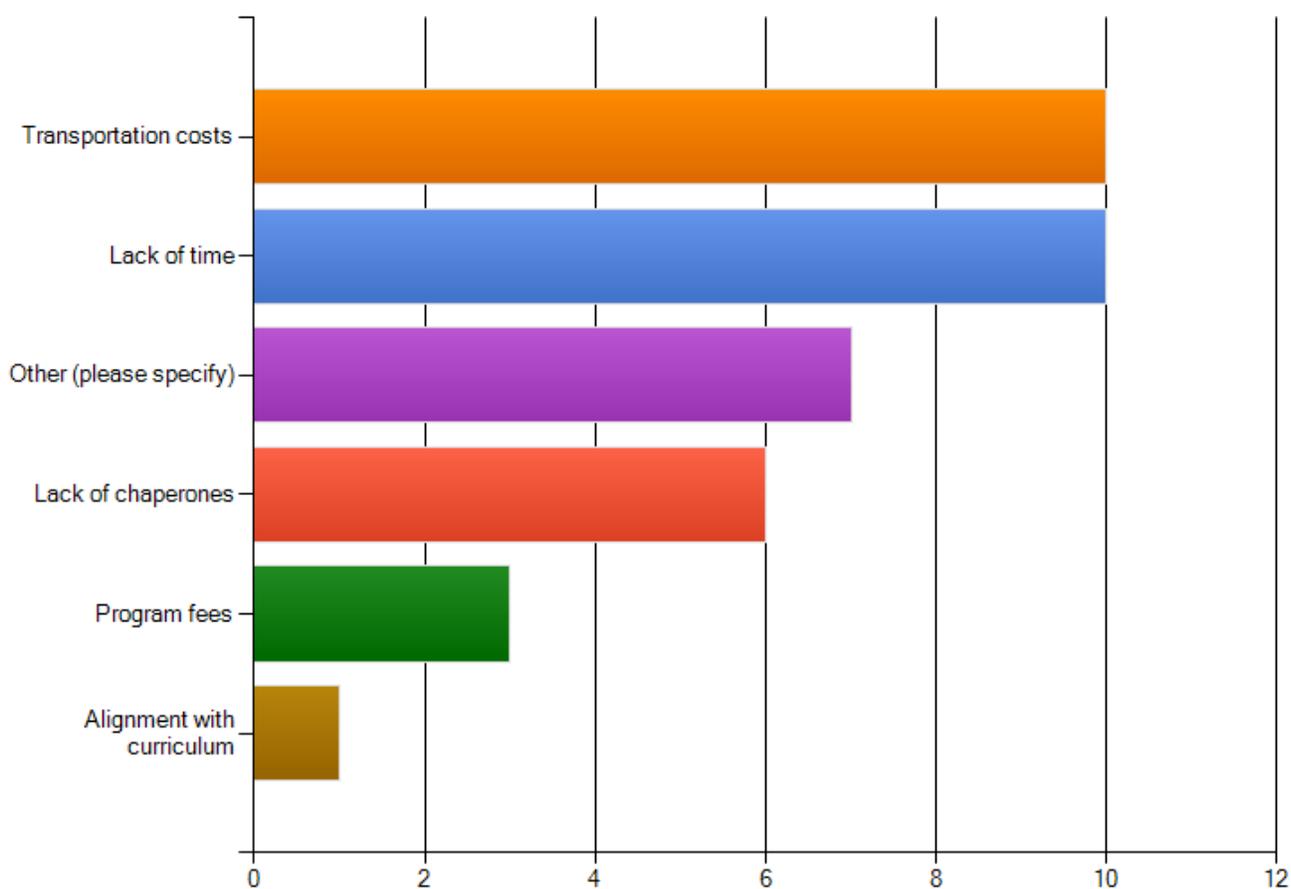


Figure 13: Barriers to participation

While the majority of respondents identified transportation costs (62.5%) and lack of time (62.5%) as primary barriers to participation, the specified responses articulated a frustration with a number of factors related to school administration and policies. Additional barriers identified included a lack of chaperones (37.5%), and specific liability issues, coordination costs, and lack of local support with reference to school policies, and community perception.

In some cases, respondents described barriers such as program fees (18.8%) while another organization that offered to cover costs still had difficulty with school administrators.

Partnerships (Q 9.1)

Q 9.1

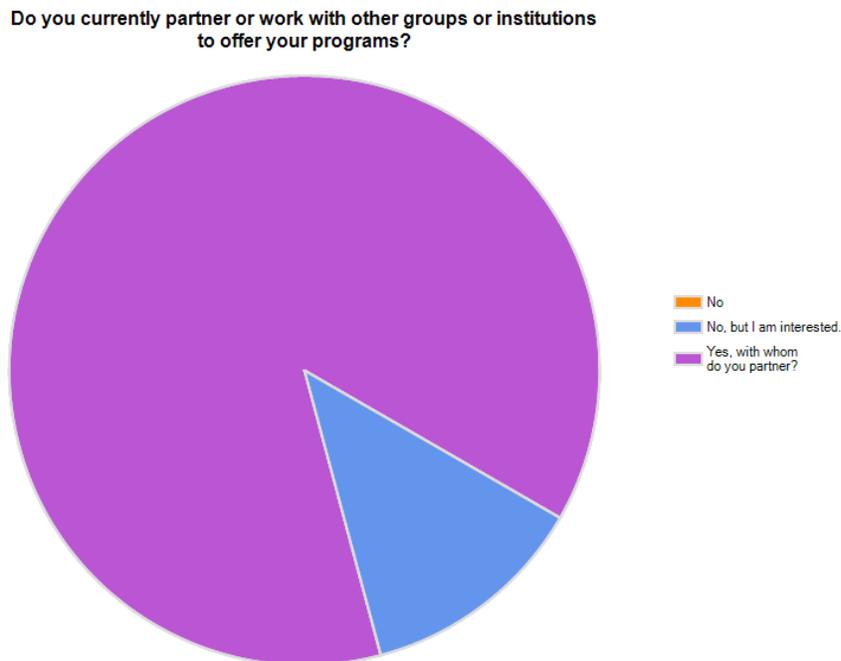


Figure 14 Partnerships

The majority of respondents indicated participation in partnerships. Categories of partners listed included watershed councils, education non-profits, schools and universities, private land owners, Indian tribes and a variety of local, state, and federal government institutions. A land trust was also identified as a partner. Several organizations indicated an interest in developing partnerships.

3.2 Needs Assessment

The results displayed in the following figures represent data collected through a series of 37 questions that comprised the on-line needs assessment survey. Questions from the survey are referenced parenthetically and a blank Needs Assessment survey instrument is provided (Appendix C) in this document.

Analysis

All statistical analyses for this study were conducted using the software, *SPSS*. A majority of the analysis approach involved chi-square tests examining the responses according to the county, years teaching or grade taught. The survey was administered using SurveyMonkey which does basic analysis and compiles and prepares some tables and figures.

Results

For a detailed statistical review of the results, please see appendix A.

The survey was divided into 6 sections. Each section was labeled to organize the data collection process as follows: Background, Educational Topics, Educational Material Development, Outdoor Education, Real/Archived Data Streams, and Professional Development. In some instances the analysis was hampered by respondents who indicated they taught more than one grade.

We must acknowledge it is also possible that despite our best efforts to develop the sampling frame and distribute the survey, non-response error in conjunction with the relatively small sample size (N=232) impacts the reliability and validity of the results. However, despite this possibility we stand firmly behind the results and remain confident we did all that was possible to maximize the distribution and responses. In an effort to increase participation and response several generous incentives were provided to encourage and increase responses.

Please note, for our discussion of the results we defined a p value of <0.05 as being statistically significant.

Background section (Questions 1 – 11)

These questions establish demographic data about the respondents and the degree to which they are aware of the South Slough NERR and the educational resources and programs offered by the reserve.

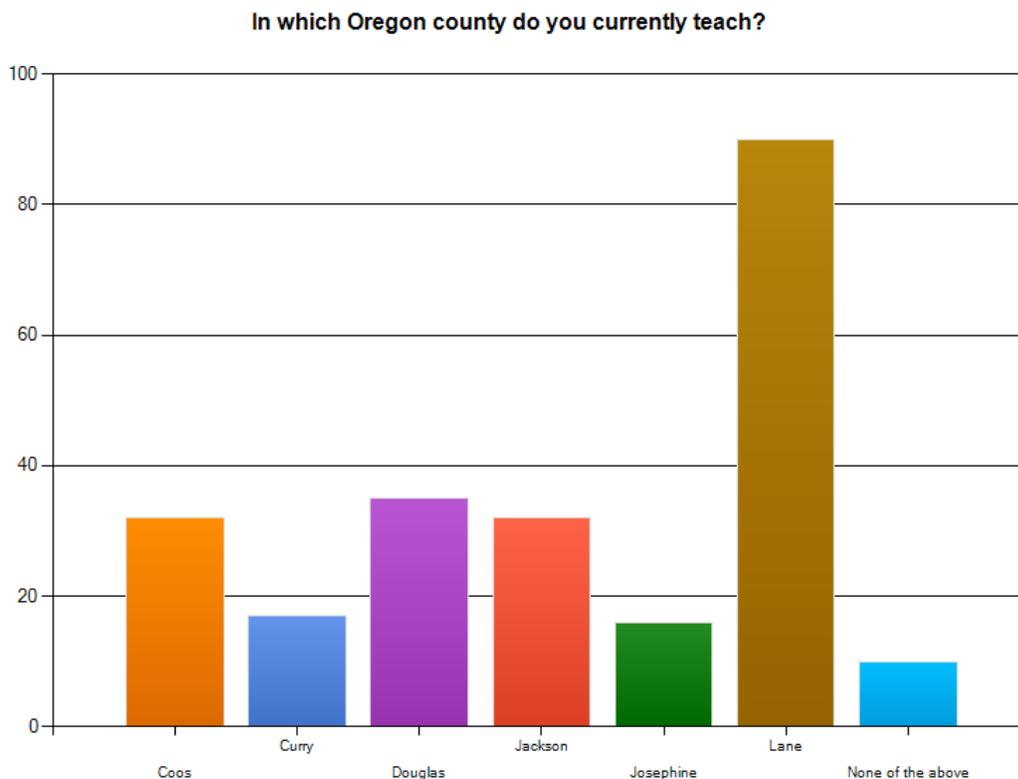
Q 1.0

Figure 15: Respondents by county

The highest number of responses was received from teachers in Lane County which is more heavily populated than the other counties included in the study. Lane County includes the cities of Eugene and Springfield with a combined population exceeding 200,000 people. Jackson and Josephine counties include the southern Oregon valley of the Rogue River and population centers in Medford, Grants Pass, and Ashland. Nearly 200,000 people live in these two non-coastal counties along the Interstate 5 corridor. Limited routes to the coast exist in this part of Oregon due to a complex geography necessitating travel times of well over two hours to reach the ocean.

Coos County is home to South Slough NERR and has a population of just over 60,000 people including the towns of Coos Bay, North Bend, Coquille, Bandon, and Myrtle Point. This has historically been the primary service area for South Slough education programs with a secondary service area reaching schools in Jackson and Douglas counties, while little participation from Josephine County schools has occurred. Curry County, to the south of Coos Bay, is a lightly populated area with several small towns located at the mouths of the area's rivers. Schools in Curry County have historically participated in South Slough programs to varying degrees.

Overall it appears that geographic location plays a role in how aware teachers are of the NERR (see Appendix Table 1), but it does not play a major role in perceptions of how important it is to include information about estuary education (see Appendix Table 4).

Q 2.0

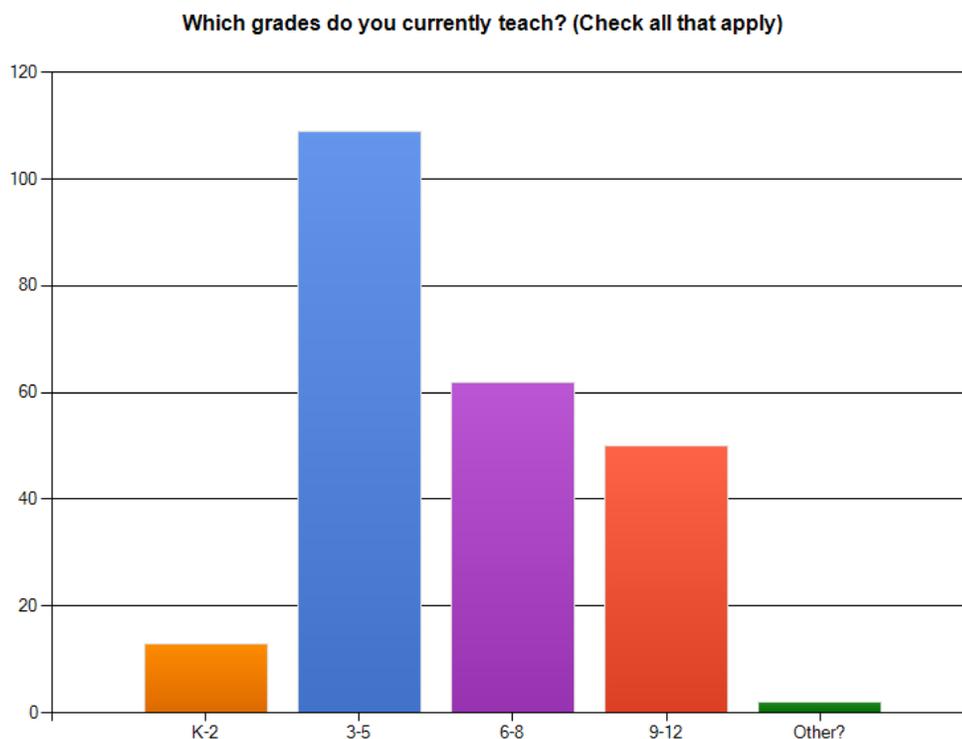


Figure 16: Grade taught

Of the teachers that responded, the majority indicated that they teach within the grade band of 3rd – 5th grade. The upper elementary level is typically a time of greater flexibility for teachers in taking field trips with their students. This is largely due to the fact that each class has a single teacher and that particular grade level teachers at a school may jointly elect to participate in the same field trip program negating the need for substitutes.

Historically, this trend has been evident in the population using South Slough NERR educational services and programs and is reflected in the responses provided to this question in the study.

Q 3.0

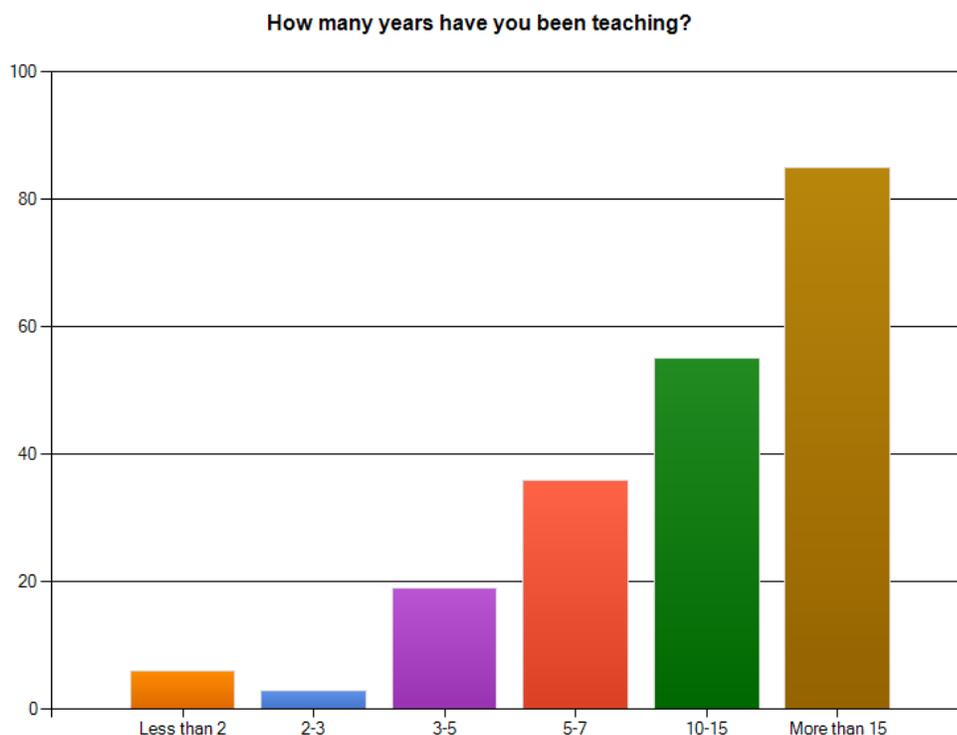


Figure 17: Years teaching

Nearly two-thirds of the teachers who responded to the survey had been teaching for more than ten years (see figure 17). In general, the results indicated that respondents who have been teaching for more than seven years seemed to be more aware of and concerned about including climate change and estuary-based education in their curriculum.

Experience in the classroom may make teachers more comfortable with the use of supplemental materials and services to extend or enhance the curriculum. On the other hand, new teachers may be more open to different approaches to the delivery of educational activities for their students such as distance learning programs. Further work is needed to better understand the different factors that influence teachers in their choice of materials and approaches.

The majority of respondents in this study had at least 5 years of experience (86.3%) with many indicating greater than 15 years teaching (41.7%).

With respect to topics such as climate change education, no significant difference in the identification of the importance of this topic existed within the range of teaching experience (see Appendix Table 3).

Q 4.0

Approximately what percentage (%) of students in your school identify with the following racial/ethnic groups? Please use numerical values for your response.

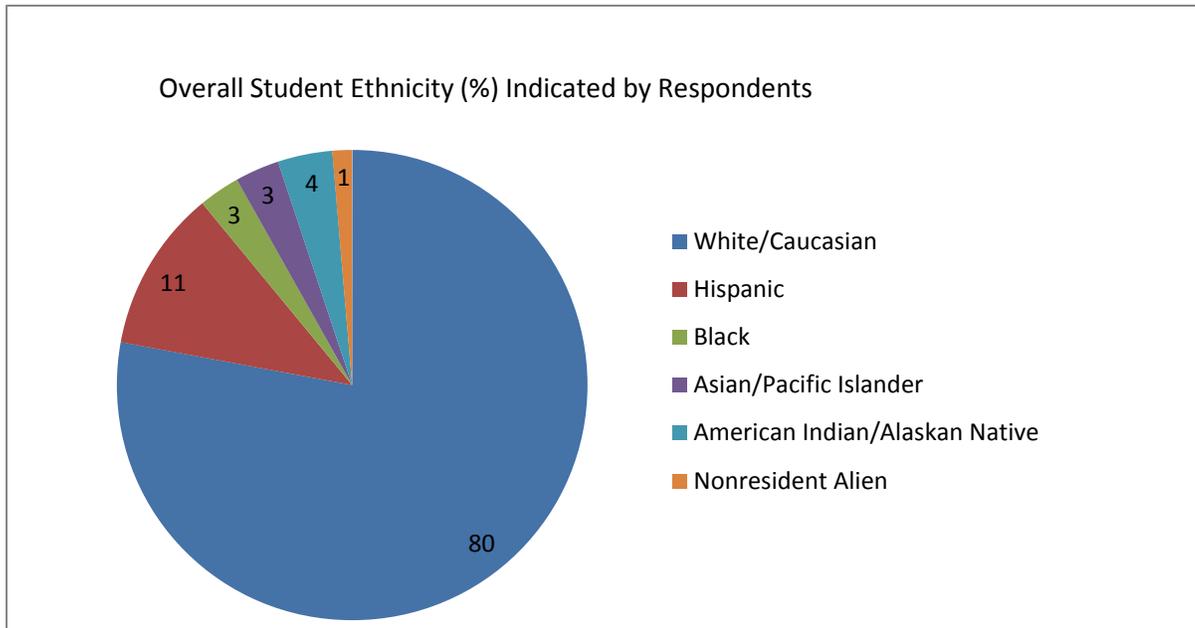


Figure 18: Student ethnicity

The student ethnicity results vary to some degree from available data (US Census Bureau 2011 projected) for each of the six counties represented in the study areas. Within the study area, projected averages for the community at large were as follows: White/Caucasian – 92.6%; Hispanic – 6.9%; Black – .6%; Asian/Pacific Islander – 1.5%; American Indian/Alaskan Native – 1.8%; and Nonresident Alien data was not available.

Projections for 2040 (NOAA Coastal Services Center – Spatial Trends in Coastal Socioeconomics) in the five coastal watersheds contained within the study area anticipate a notable shift in the demographics for two populations. A decrease to 78.83% White/Caucasian and an increase to 18.24% in Hispanic residents are projected. The data available does not include the Willamette Valley where the cities of Eugene and Springfield are located. Shifting demographics in these urban areas may be more dramatic than the results represented in the coastal projections.

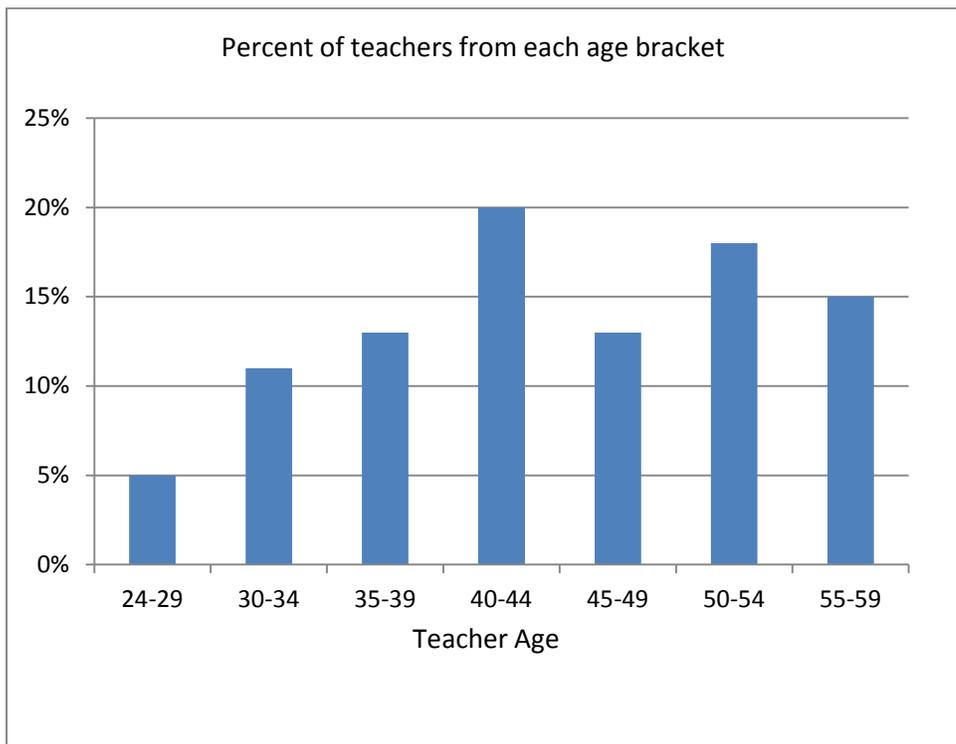
Q. 5.0

Figure 19: Age of respondents

Q 6.0

Of the respondents that elected to indicate gender, 74% were female and 25% were male.

Q 7.0

How often, if ever, do you visit or use Oregon's coastal areas for recreation or leisure time?

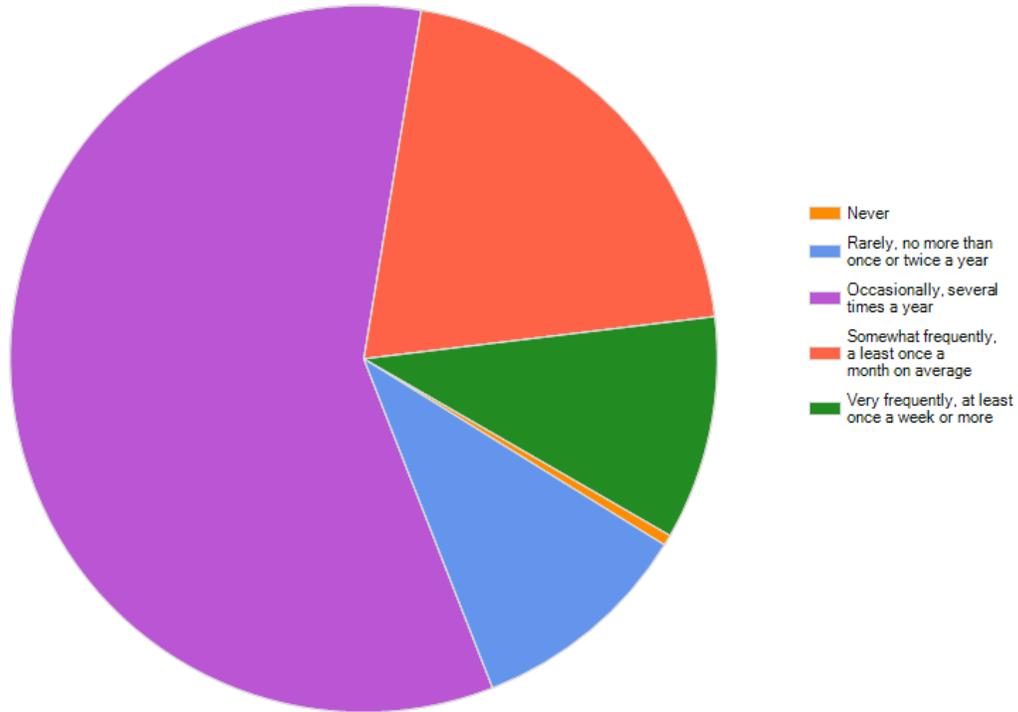


Figure 20: Coastal area recreational use

Access to the coast for the non-coastal populations in the study area typically involves 1 to 3 hours of driving to reach a beach or estuary. Highways between inland valleys and the coast are largely two lanes of traffic and follow the routes of the region's rivers. Over 75% of respondents (coastal and non-coastal) indicated at least occasional use of the coast for recreation or leisure time indicating a fairly strong level of awareness and familiarity with the communities and environment. This factor may be helpful in determining the potential for new programs that provide education about estuaries at sites other than South Slough NERR and in building a stronger constituency interested in using the resources available through the reserve's education program.

Q 8.0, 9.0, 10.0 & 11.0

There is a National Estuarine Research Reserve (NERR) located in Charleston, OR (Coos County) called the South Slough NERR, which is one of 28 Reserves around the country protected for the purposes of education, research, water-quality monitoring and coastal stewardship. Were you aware that your state has a NERR?

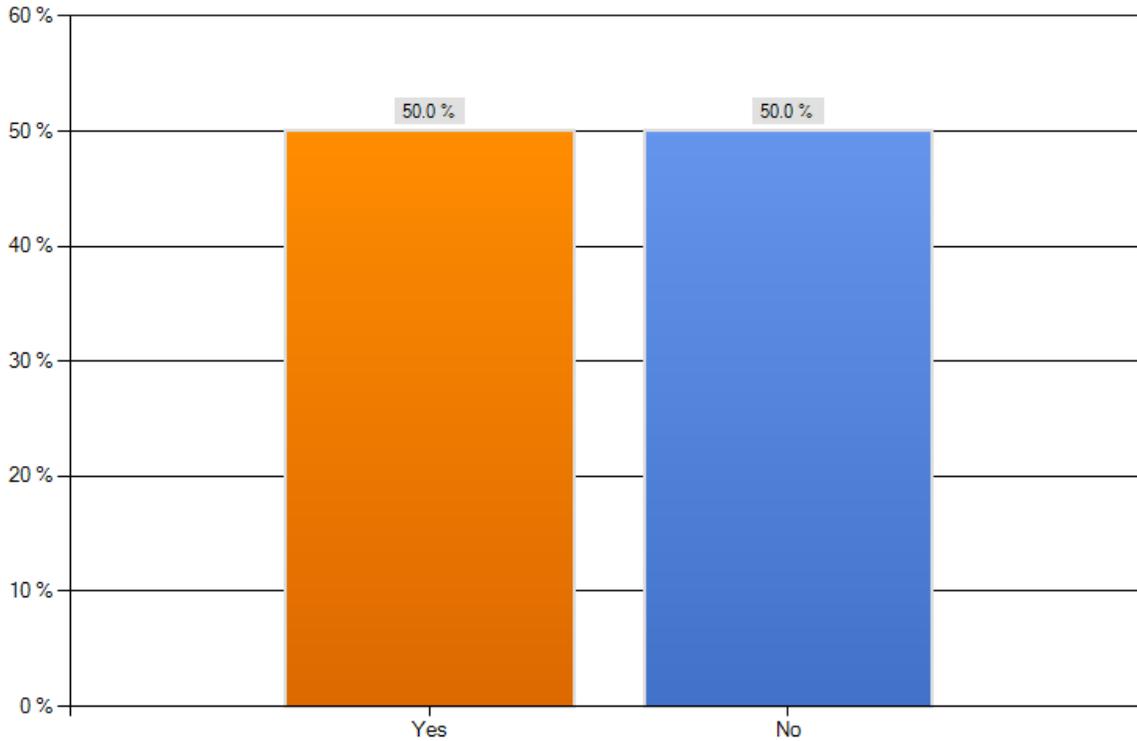


Figure 21: Awareness of NERR

Approximately half of the total respondents were not aware that Oregon is home to a National Estuarine Research Reserve. Given that most of the population of the state lives at least one hour or more from the coast this finding is not surprising. In fact, most of the population is concentrated at between 100 and 250 miles from the reserve and may access coastal locations closer to the population centers in places such as Newport where the Oregon Coast Aquarium and the Hatfield Marine Science Center are located.

If “yes”, have you ever used any of their educational services or products? *Note: Examples of educational services or products include the South Slough website, curriculum, taking students on a field experience, outreach, professional development training, etc.

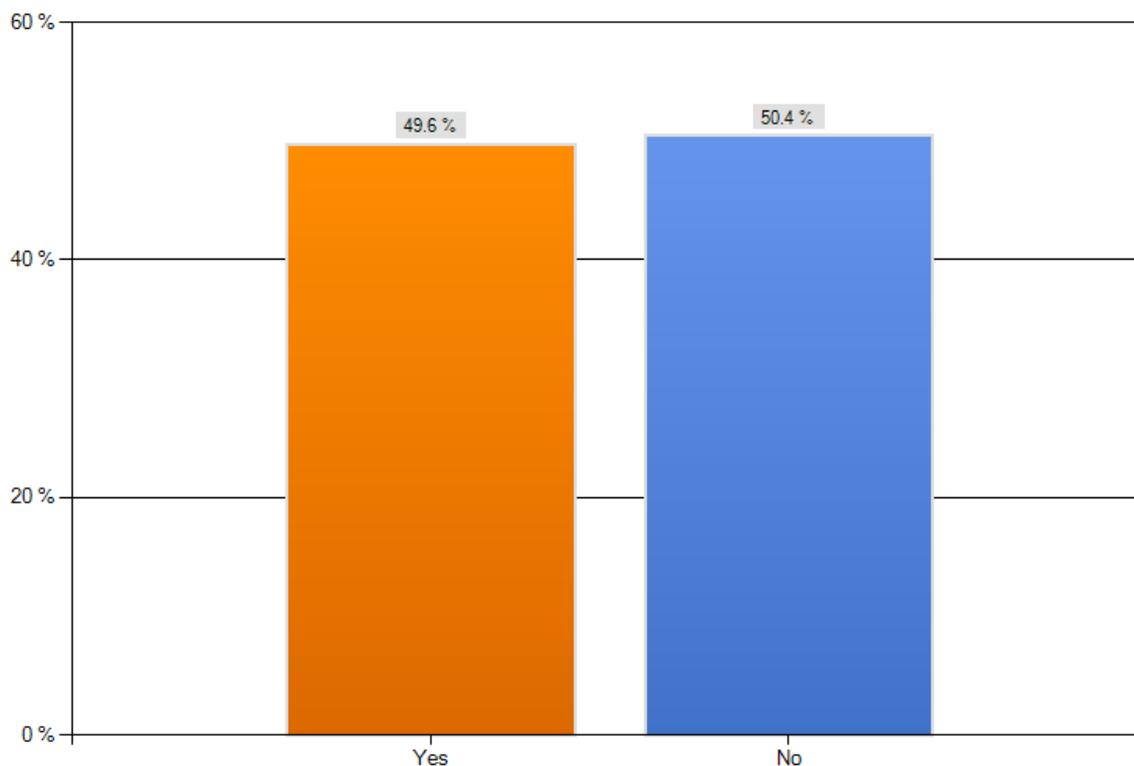


Figure 22: Use of educational services and products

Figure 22 represents a subset of the respondents that indicated awareness of a National Estuarine Research Reserve in Oregon. Awareness and use of NERRS products were almost evenly divided between respondents who were aware of the South Slough NERR and those who had used services. 64 respondents indicated that they had used services provided by the reserve. These services included field trips, tours, demonstrations, curriculum, professional development training, distance education, use of exhibits, videos, and community classes and workshops.

Of the respondents that did not use South Slough NERR products, a lack of awareness was most frequently listed. Time, funding, and logistics of reaching the reserve were also cited as limitations.

Currently, South Slough NERR markets educational programs and services on a limited basis using media and occasional contacts with schools through e-mails and at conferences such as the Oregon Science Teachers Association and the Northwest Aquatic and Marine Educators workshops and annual meetings. Additionally, information about programs is presented on the South Slough NERR website and other affiliated websites. Few regional direct marketing efforts have occurred to build awareness within the K-12 educational community of South Slough NERR's educational services and programs.

Educational Topics section (Questions 12 – 16)

Q 12.0

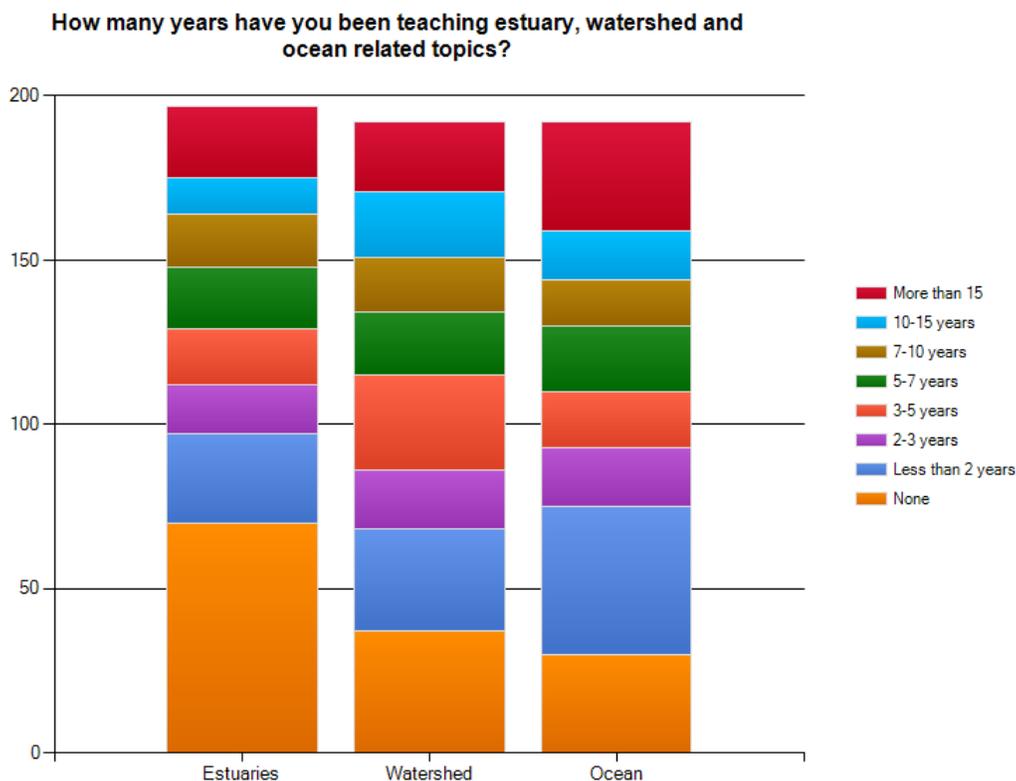


Figure 23: Years teaching estuary, watershed, and ocean topics

Experience teaching a topic is likely to be an indicator of interest and familiarity with related content although it is difficult to determine to what degree any particular area within the broad content areas of estuaries, watershed and ocean is being emphasized. Within the results, a fairly high number of respondents indicated little or no experience teaching about these three content areas.

This presents an opportunity to introduce teachers to new materials, curriculum, resources, and training within and across these content areas. However, a lack of explicit relationship between these content areas and science education standards may account for some of the limited experience recorded. Taken as a whole, the inclusion of content by a significant majority of the respondents in each of the three areas ranging from less than 2 years to more than 15 years is a positive indication that teachers are making a place for estuary, watershed, and ocean related topics in the curriculum.

Q 13.0

How many class or activity periods of estuary, watershed, and/or ocean instruction do your students receive in a typical school year?

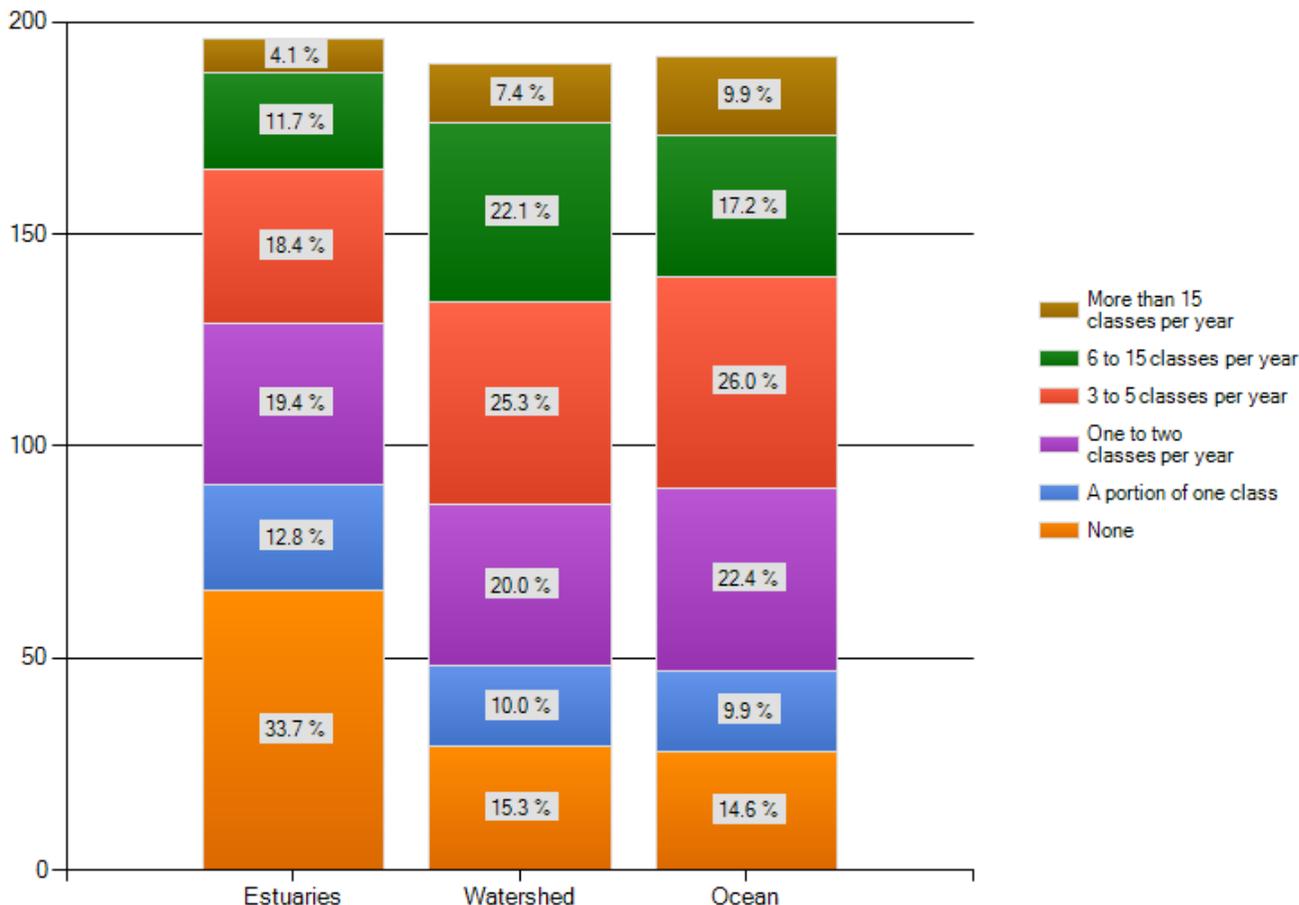


Figure 24: Activity periods of estuary, watershed, and/or ocean instruction per year

Similar to the terms of the previous question, these results show a reasonably high level of commitment to the topics of watersheds and the ocean with a lesser degree of inclusion for estuaries. A more detailed understanding of these responses might be helpful in discovering how classes or activity periods for each of the three content areas are offered by the teacher. For example, do units covering the ocean include discussions of estuary and watershed related topics? This becomes particularly challenging to discern when exploring a topic such as estuaries which, by definition, include ocean and watershed elements.

Within the results, a fairly high percentage of respondents within each topic (Estuaries = 65.9%, Watershed = 45.3%, Ocean = 46.9%) are dedicating two classes or less to each topic. Taken as a whole this represents little more than a week out of the year focused on potentially coastal-related curriculum. The overall result is represents a significant opportunity to expand the role that coastal education can play if relevant and effective standards-based resources and activities can be provided.

Q 14.0

From which web resources do you currently obtain estuary, watersheds, and ocean information for use in your classroom?
Check all that apply.

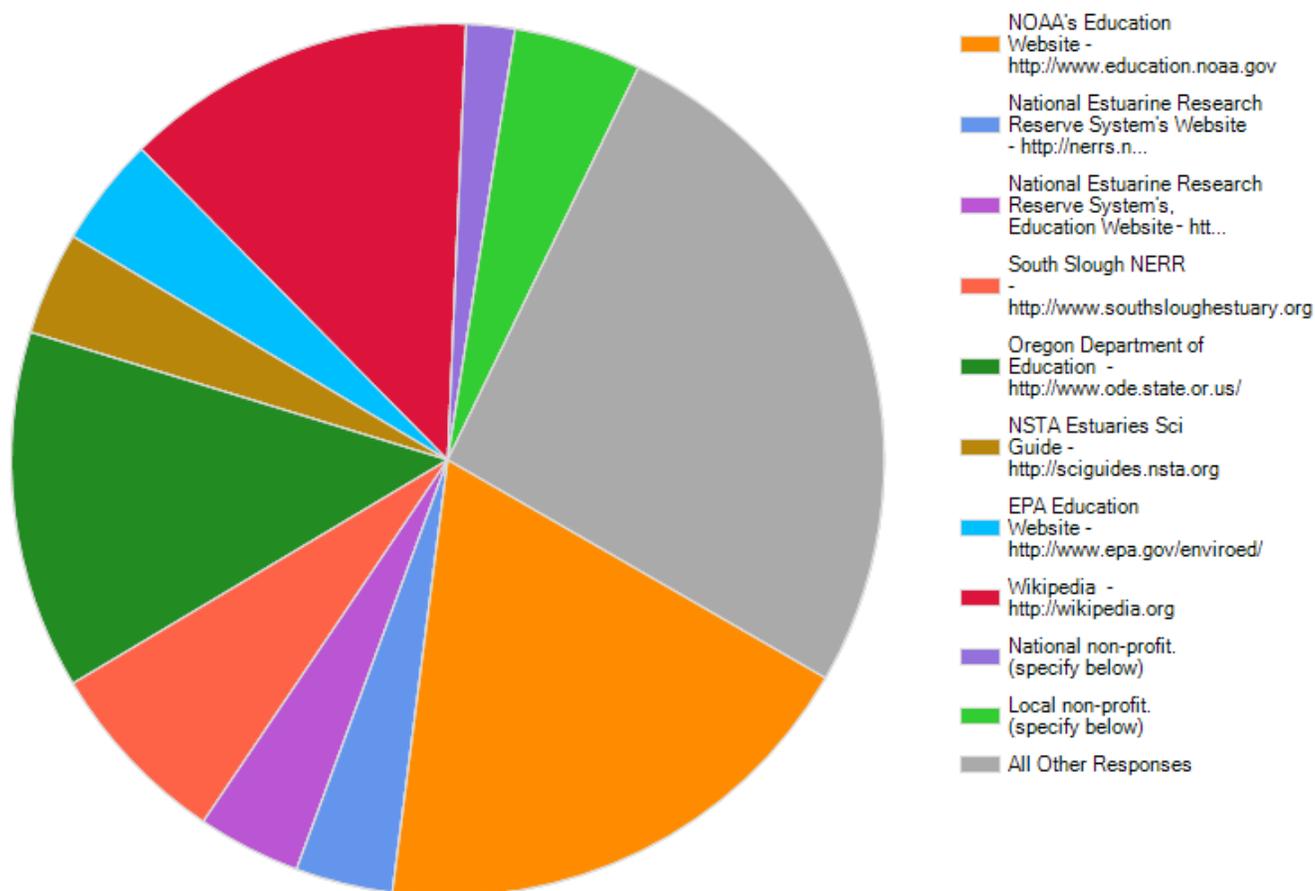


Figure 25: Web resources

This question elicited a response rate in the “other” category (45.8%) that was higher than any of the individual named web resources. Of those web resources identified in the other category a diversity of websites, curriculum, partners and programs were named. This included watershed councils, non-profits, and educational institutions.

Notably, when combining NOAA based assets (the first four resources listed in Figure 25), this represented nearly a quarter of the named resources.

Q 15.0

Are estuary and estuary related topics a required part of your science teaching requirements?

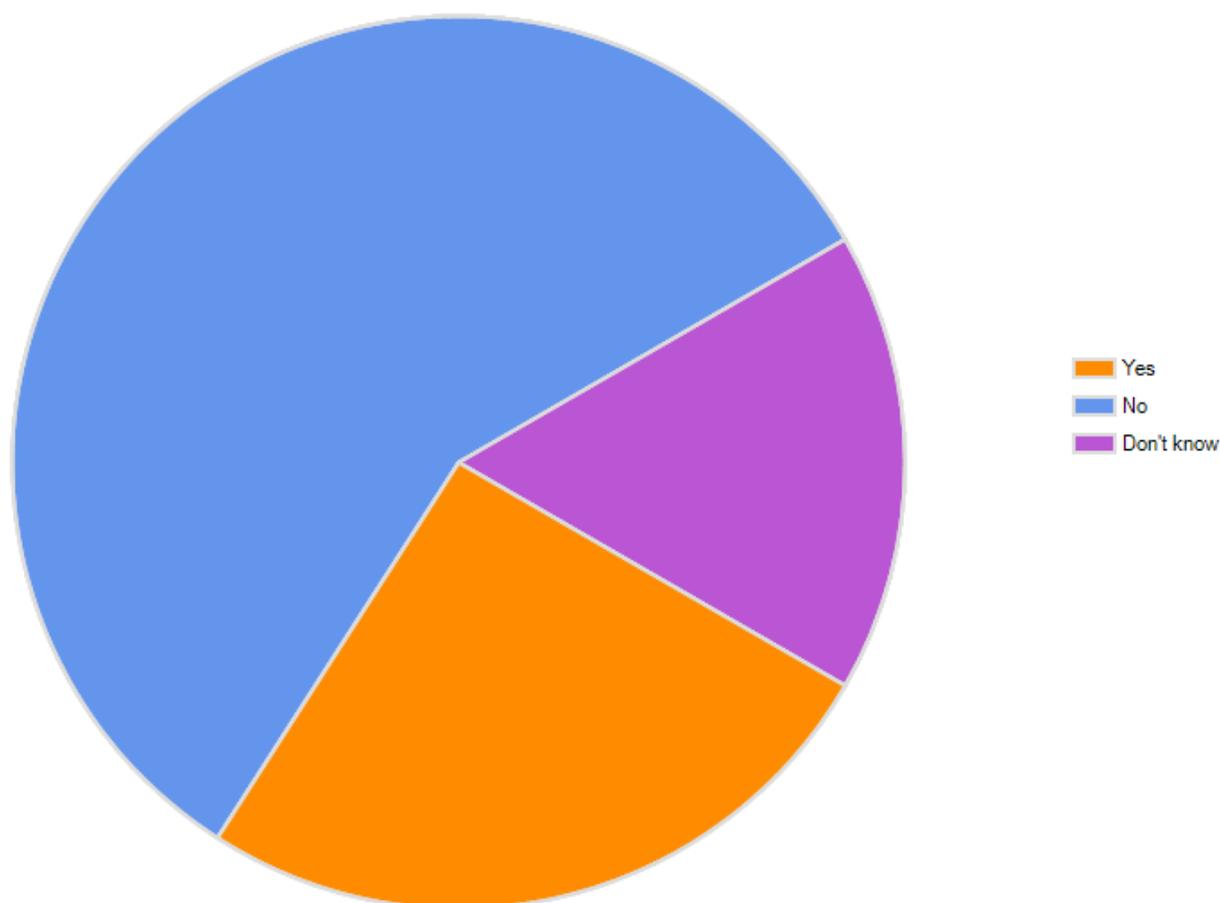


Figure 26: Estuary science teaching requirements

Within the state of Oregon science education standards, estuaries are not explicitly identified as a required topic. In fact, watersheds and the ocean are not named topics either, but rather covered as part of earth systems and within the framework of the natural sciences and biological and physical processes. Respondents that identified these topics as a part of teaching requirements likely chose to interpret the question as an inclusive rather than exclusive statement and may have been referring to requirements that can be related to estuaries.

However, as the state moves to adopt the Next Generation Science Standards along with 25 other states, the potential to incorporate estuary and estuary related topics is more evident. Based on 8 scientific and engineering practices, 7 crosscutting concepts, and 4 disciplinary areas, the new standards will provide ample opportunity to identify ways in which estuaries and estuary related topics can be meaningfully incorporated into school curriculum to help meet content requirements. These standards are currently in review with a second public draft due in early 2013.

Q 16.0

Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following?

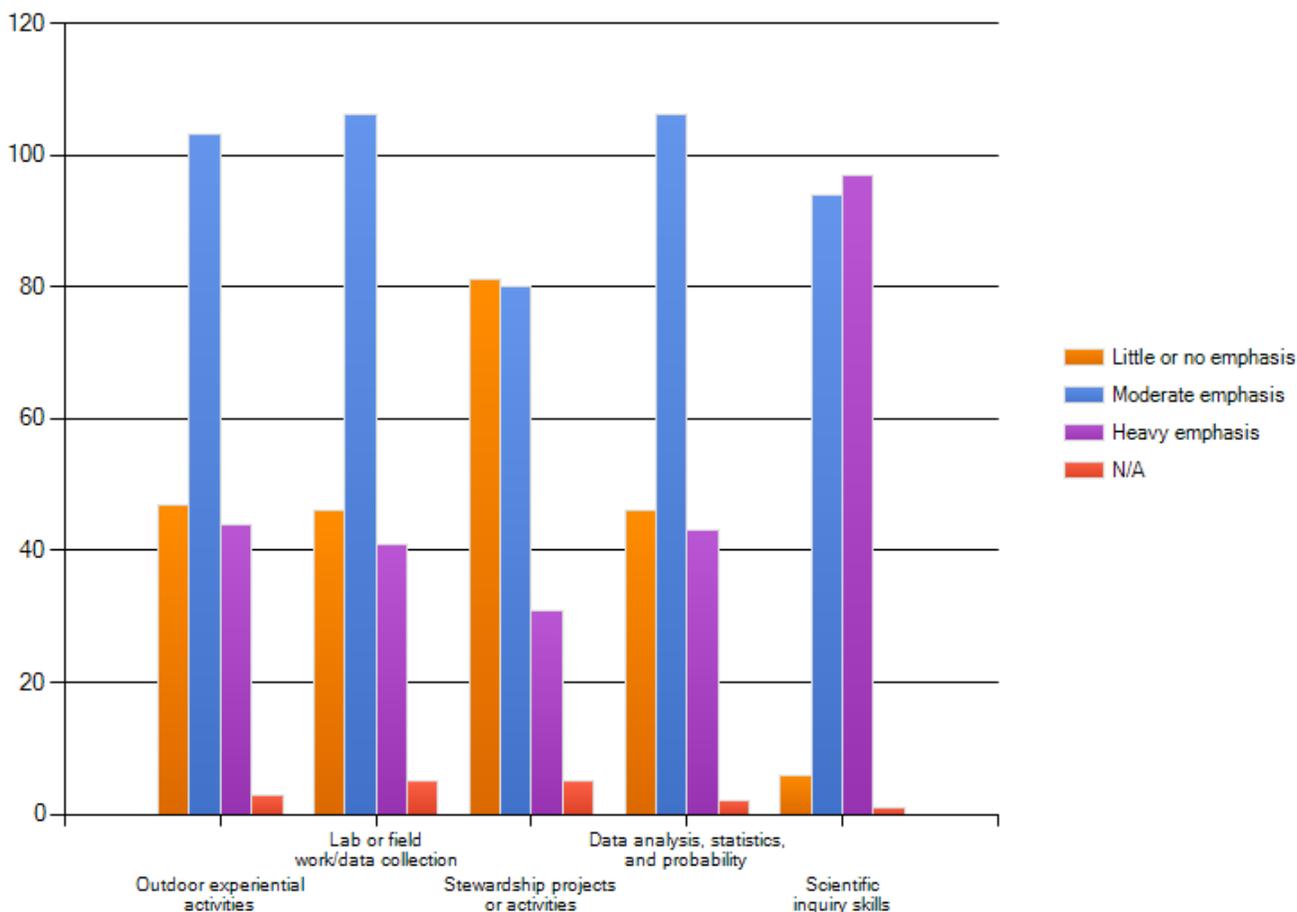


Figure 27: Emphasis of teaching plans

Along the lines of the previous discussion, a high percentage of respondents identified intent to emphasize scientific inquiry skills to a “moderate” or “heavy” level. This reflects a trend in science education to focus on process over content while at the same time facilitating the incorporation of appropriate content into practice by making the content more relevant and meaningful. Results indicating a moderate emphasis in the areas of outdoor experiential activities, lab or field work/data collection, and data analysis, statistics, and probability may identify a niche for South Slough NERR to provide products, activities, curriculum, and training. This may also be linked to the strong emphasis indicated for scientific inquiry skills and, in turn, assistance in building a relationship for teachers between the acquisition and analysis of data and the successful design and monitoring of stewardship projects or activities.

Educational Material Development section (Questions 17 – 22)**Q 17.0**

Of the individuals (183) that answered this question, 59 respondents (32%) foresaw a need for new estuary/coastal watershed related educational materials in different languages. 124 respondents (67.8%) did not foresee such a need. Spanish was consistently identified as the language required for translation while Russian and Samoan were each mentioned once.

According to the NOAA Spatial Trends in Coastal Socioeconomics website, the Hispanic population in the 4 coastal counties (Coos, Curry, Douglas, and Lane) is projected to increase from 7.09% of the population in 2012 to 18.47% of the population in 2040. This growth may indicate an opportunity to provide translated materials for a currently underserved and growing population within the service area. Products such as the International Black Brant Goose Monitoring Project produced by South Slough and Padilla Bay NERRs may provide a pathway to more effectively linking to communities where Spanish is a second language.

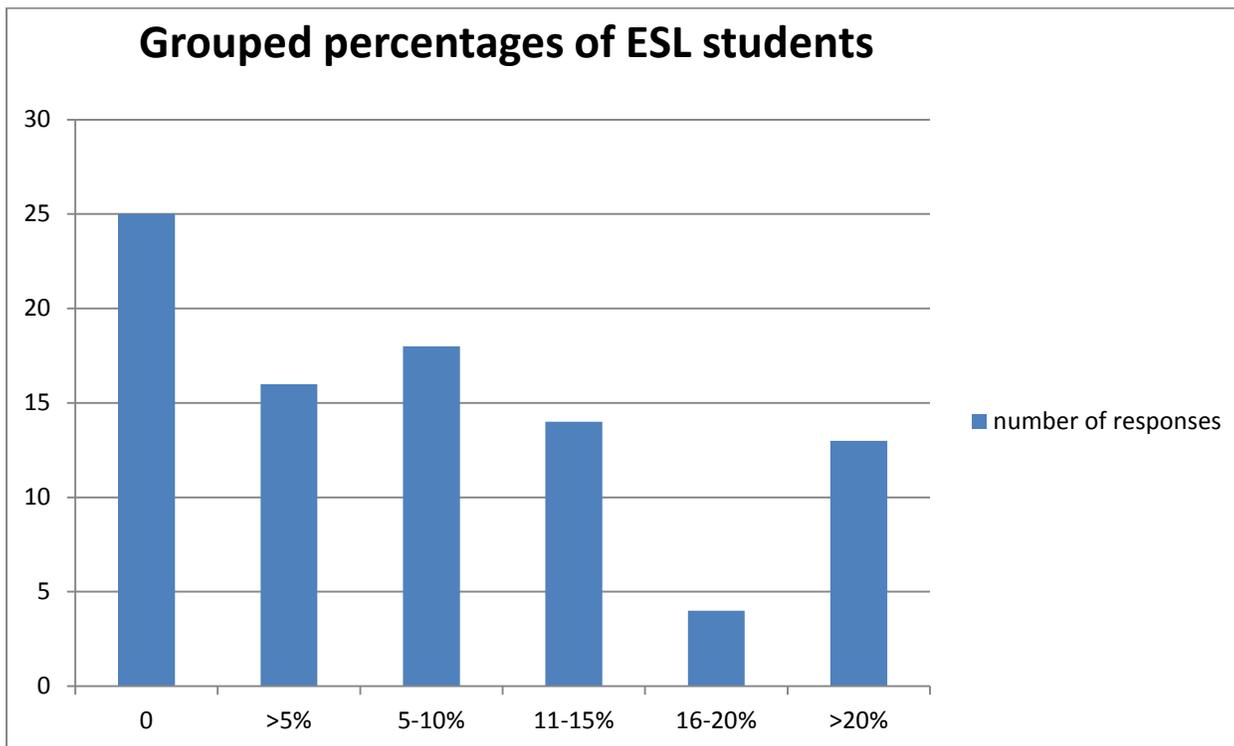
Q 18.0 – What percent of your students are English Second Language (ESL)?

Figure 28: English as a Second Language students

The average of the reported percentages of English as a Second Language (ESL) students at schools within the study area was 6.24%. Records within the >20% group of respondents included at least two reports of 100% ESL students.

Q 19.0

Please rate your level of need for further information and education materials on the following topics:

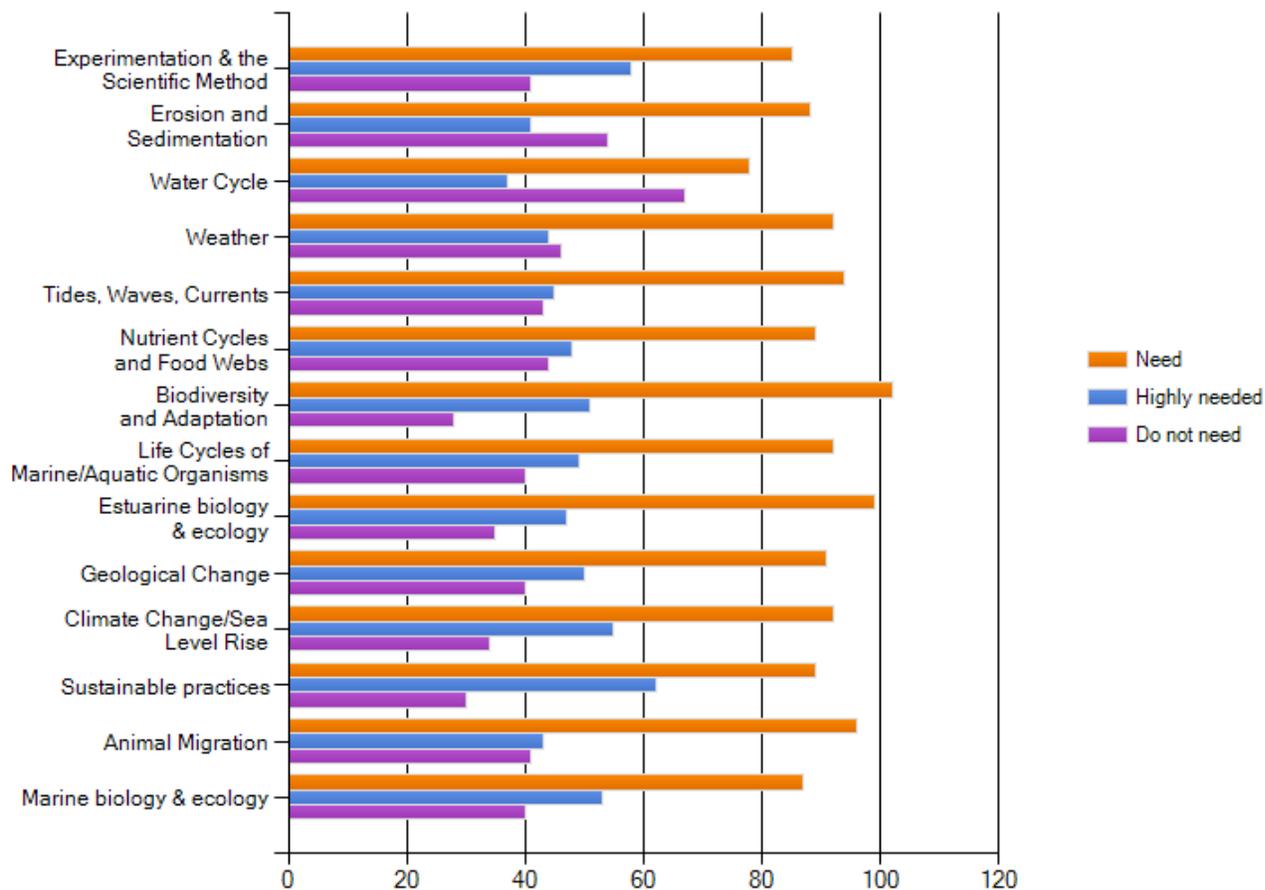


Figure 29: Top 14 topics indicating need for further information and educational materials

The large number of topics identified in this question makes interpretation of the results challenging. However, the expression of “need” or “high need” was most strongly expressed for the following topics: Experimentation & the Scientific Method, Biodiversity and Adaptation, Sustainable practices, Estuarine Biology and Ecology, Weather, and Tides, Waves, and Currents. To a lesser degree a variety of other topics were identified by at least 100 respondents as needs for additional information and education materials.

Topics ranking lowest in terms of need were Recreation (Fishing, Birding, Boating, etc.), Commercial Fishing & Fisheries, and the Water Cycle. This response may indicate that satisfactory materials currently exist for these topics or perhaps that they are a lesser priority. Whichever is the case, the identified areas of highest need provide ample opportunity for making teachers aware of the resources, data, and curriculum that NERRS can provide.

Q 20.0

Thinking about the different science content areas you teach, how important is estuary education?

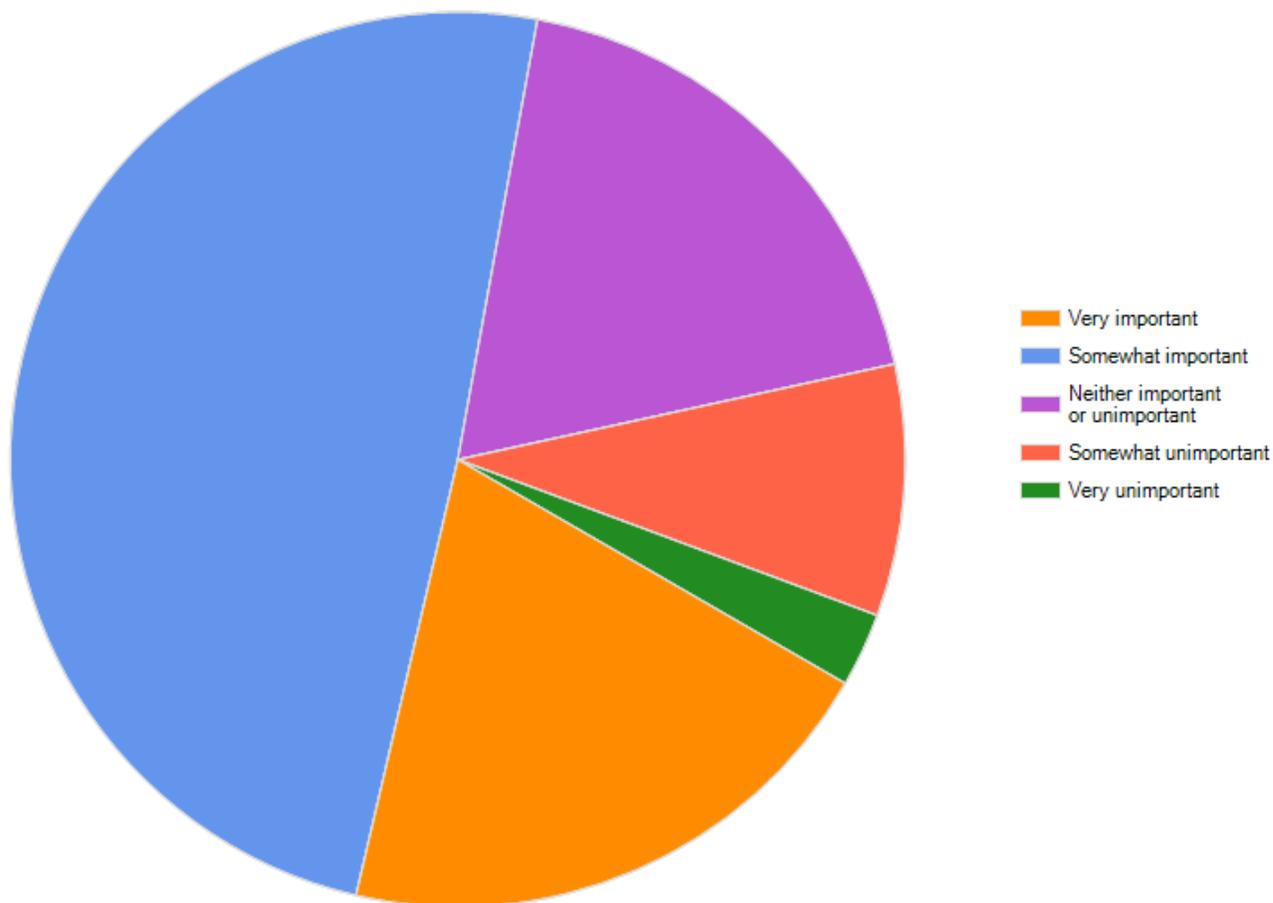


Figure 30: Importance of estuary education

The majority of teachers responding (69.5%) indicated that they see estuary education as somewhat or very important relative to other science content areas. An additional group (18.7%) did not express strong feelings either way. Collectively, these individuals may represent a significant number of teachers that would be likely to participate in training opportunities and benefit from the provision of additional materials and resources to assist them in teaching about estuaries.

Thinking about the different content areas you teach, how important is climate change education?

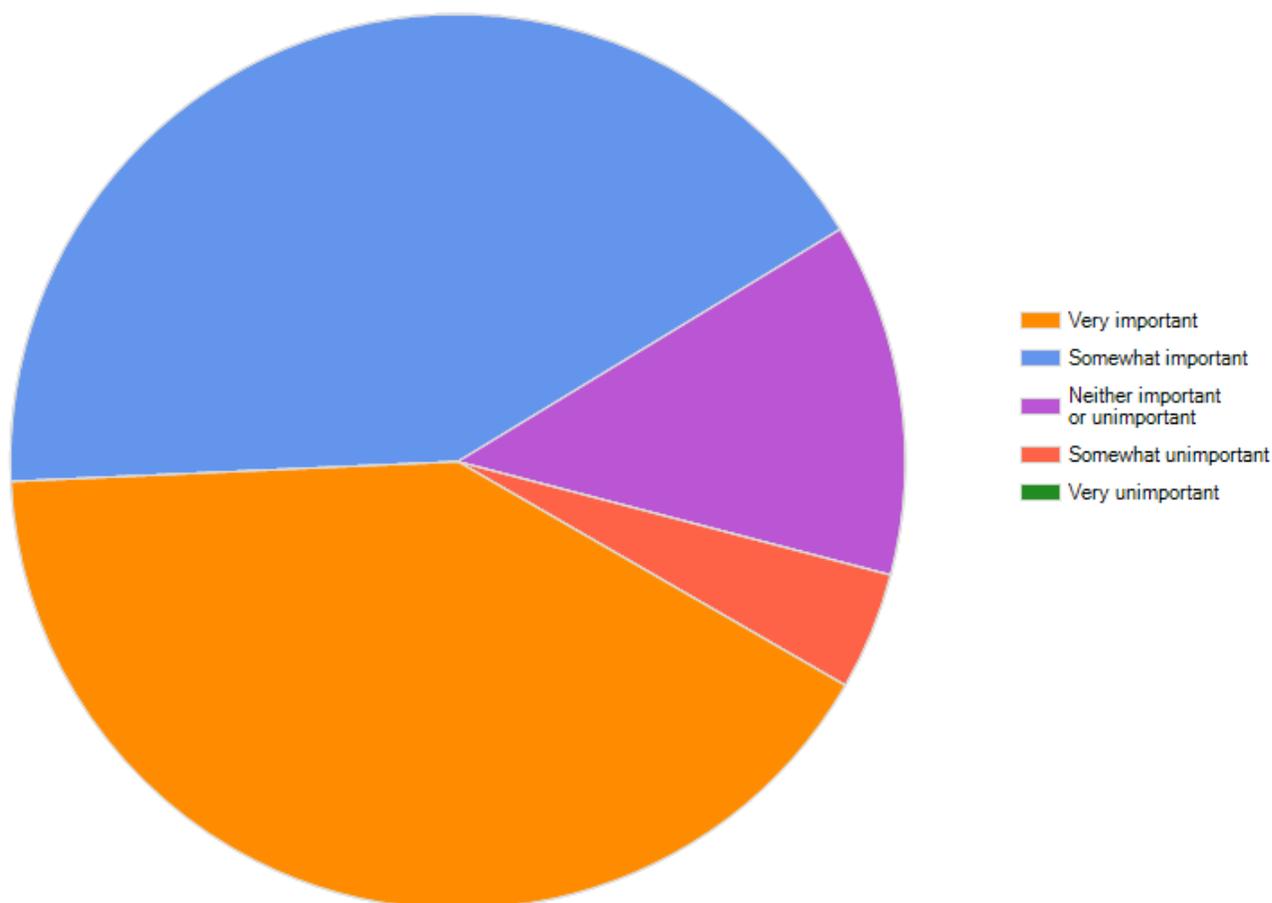


Figure 31: Importance of climate change education

As climate change has become a more prominent topic in the media and the effects are becoming more evident on a national and international scale, the response to this question demonstrates a fairly high level of support for inclusion of this topic within the curriculum. A combined total of 83% of respondents identified this content area as somewhat to very important. Including those who viewed the content as neutral (neither important nor unimportant), 95.8% of the respondents would appear to be open to inclusion of materials and training related to this topic in their work.

We were surprised to note that no statistically significant relationship exists between teacher's perceptions of how important it is to teach about climate change and estuary education. However the fact that 83% of teachers rated the importance of climate change education as very or somewhat important, and 69% of teachers rated the importance of estuary education as very or somewhat important indicates these concepts are important (See figures 3 and 4). This would indicate there is receptivity amongst teachers in these counties to further integrate these concepts into their teachings. While we don't have the data to support the idea that the level of awareness about climate change is actually changing, we still believe it is an important point. These two content areas are closely related and future research should further explore how and why teachers view these areas differently. In general, it is our belief that more funds and resources should be dedicated towards these content areas. While the scope of this study is somewhat limited, the importance of a potential need is clearly indicated.

Q 22.0

What help do you need to incorporate more discussion about the effects of climate change on coastal areas in your classroom?

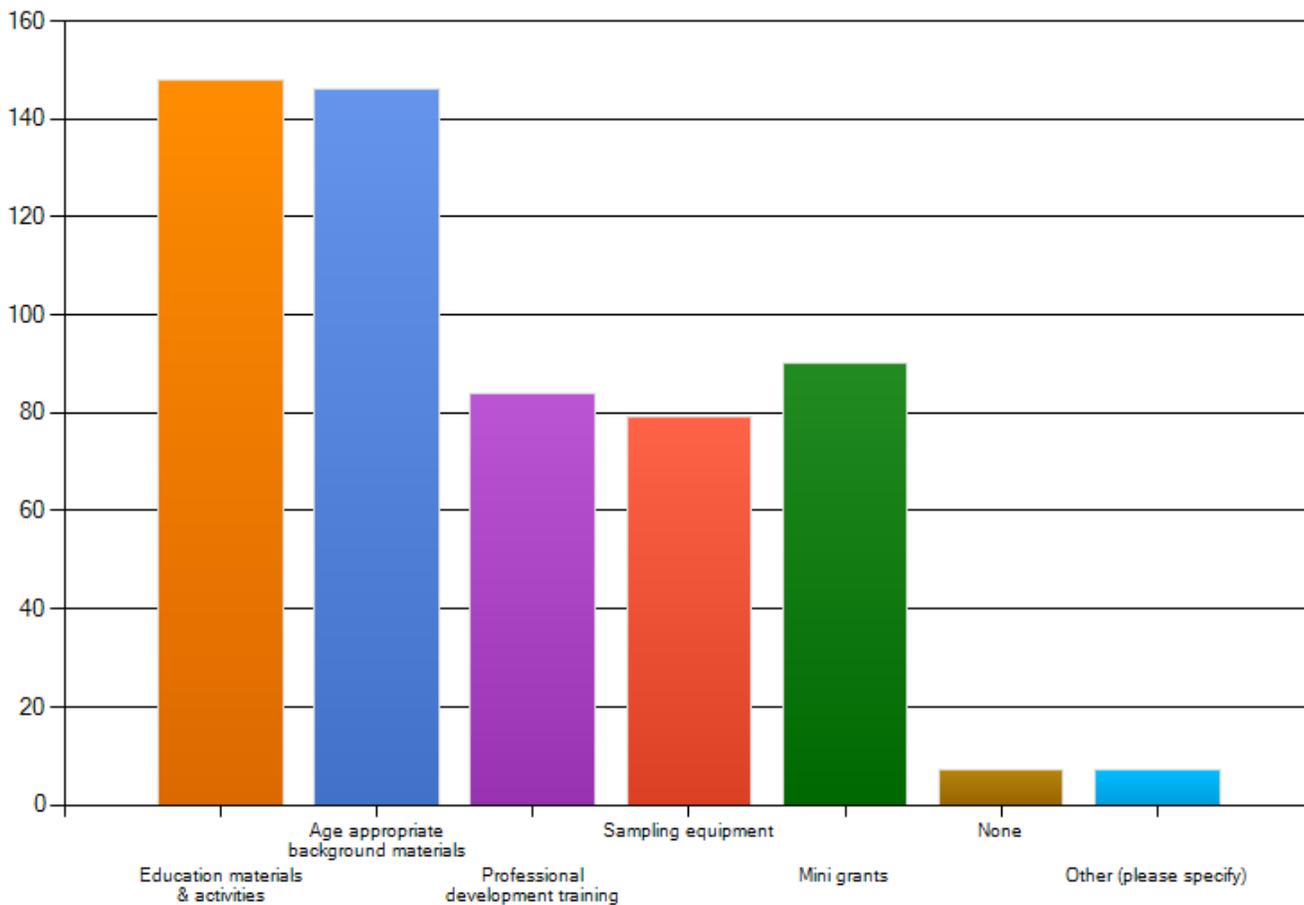


Figure 32: Help with climate change education

Nearly 80% of respondents identified age appropriate background and education materials and activities as needs relative to climate change education. Strong support was also expressed for professional development training, mini-grants and sampling equipment. These needs were further detailed to include guest speakers/presenters, case studies, and DVDs.

South Slough NERR has worked with various partners to explore the professional development opportunities represented by this need. In particular, resources and funding provided by the NOAA Bay Watershed and Education Training program have been instrumental in supporting development in this arena.

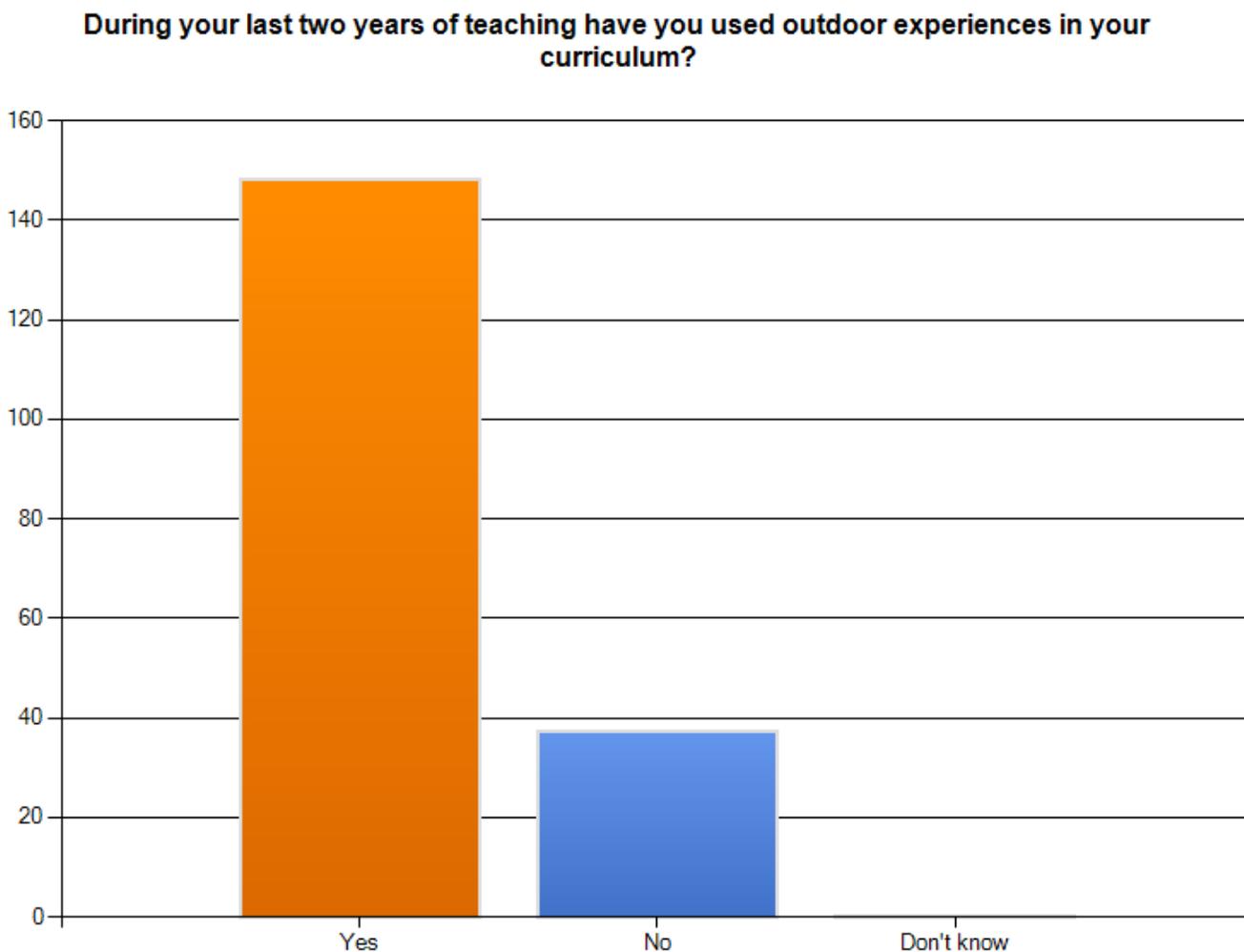
Outdoor Education section (Questions 23 – 26)**Q 23.0**

Figure 33: Use of outdoor experiences

Outdoor education in Oregon has been viewed as an important aspect of school experiences for the past several decades. However, during that same period of time, support for outdoor schools has eroded as financially stressed state budgets have exposed school districts to funding reductions. In many cases, teachers have advanced or maintained outdoor education experiences for their students through class and parent driven fundraising efforts.

The recent adoption of a guiding framework (Oregon Environmental Literacy Plan, 2010) to advance outdoor education experiences in Oregon schools has created a source of justification for teachers by articulating relationships to relevant educational standards and defining best practices for teacher professional development.

The high level of affirmation to the use of outdoor experiences by the respondents in this study suggests that ample opportunity exists to strengthen and advance support for the use of South Slough NERR and other coastal education providers as sites and resources.

Q 24.0

During your last two years of teaching, how often have you used outdoor experiences in your curriculum?

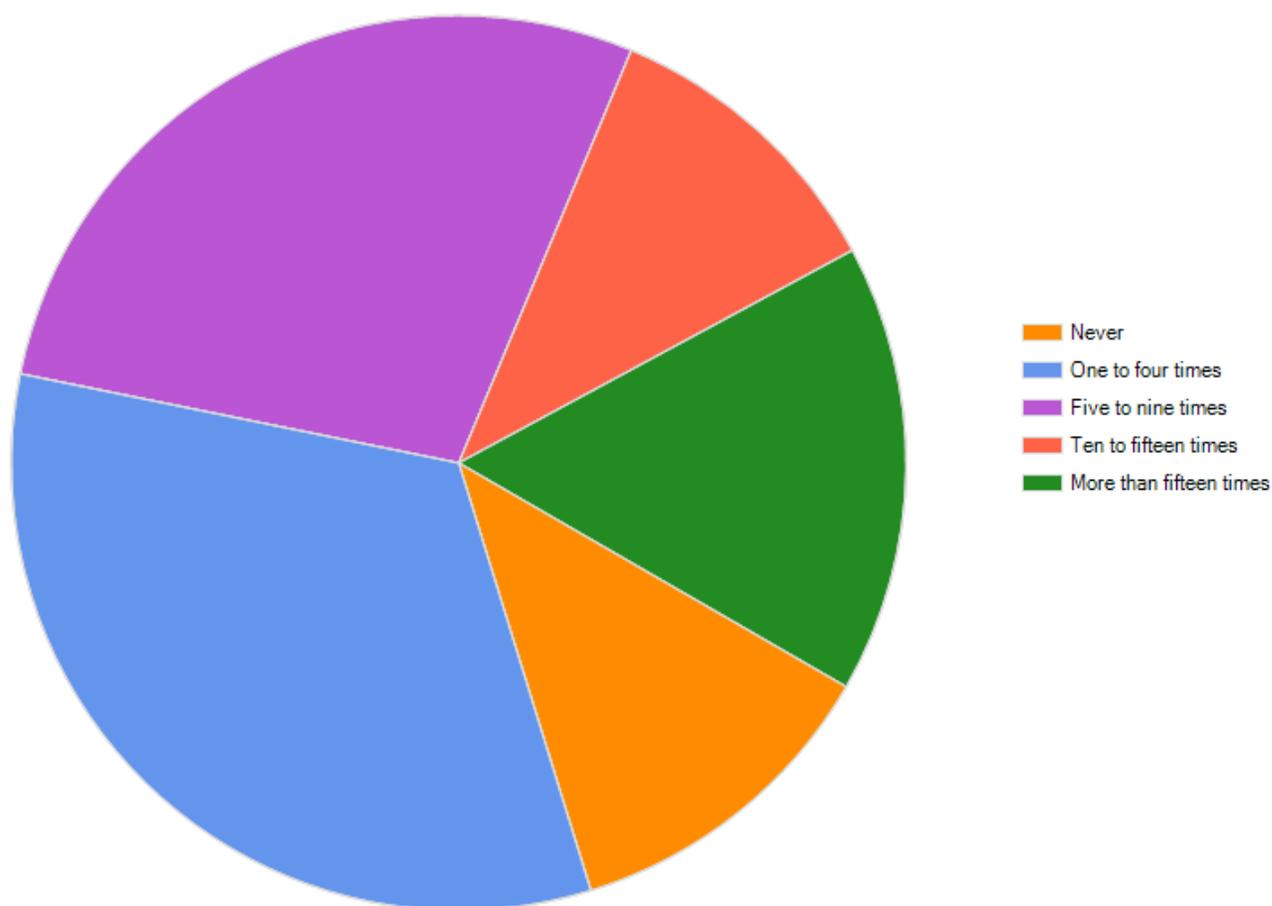


Figure 34: Frequency of outdoor experiences

Given the competing elements and requirements contained within school curriculum, the frequency of outdoor experiences represented by Figure x is not surprising. One area where interpretation of these results may be challenging is in the definition of "outdoor experience". Depending on the campus setting, some teachers have greater access to outdoor spaces that are appropriate for their classes to conduct activities that would otherwise take place indoors. These activities are not typically viewed with the same weighting as field trips in terms of an outdoor experience and therefore may not have registered in the results.

More than a quarter of respondents (27%) reported at least 10 or more outdoor experiences during the last two years. This is a relatively small percentage considering that the average school year represented by this number would translate to five activities within an entire school year for the most ambitious teachers. The complex nature of increasing the frequency of these experiences may involve a high degree of competition for limited time within the school day, the challenges of coordinating with other teachers and seeking administrative support.

Q 25.0

Would you like to incorporate more outdoor education in your teaching?

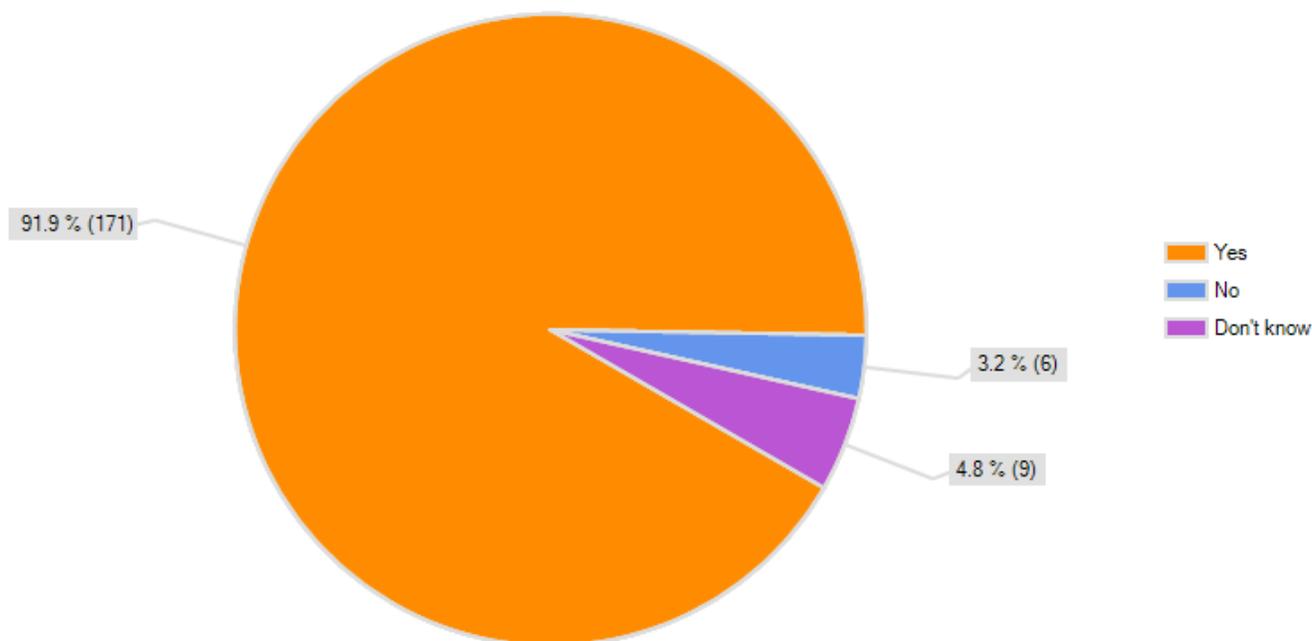


Figure 35: Interest in use of outdoor education in teaching

While the interest (91.9%) articulated by respondents represents an opportunity for South Slough NERR and other coastal education providers to offer programs and support, the challenges are significant. Transportation costs, school schedules, and a crowded curriculum represent a few of the many hurdles that teachers must overcome to provide more outdoor education for their students. In some situations where appropriate campus or near campus natural areas are available; support for place-based educational activities can be used to increase the frequency of the experiences.

Q 26.0

**What help do you need to incorporate more outdoor education in your classroom?
Check all that apply.**

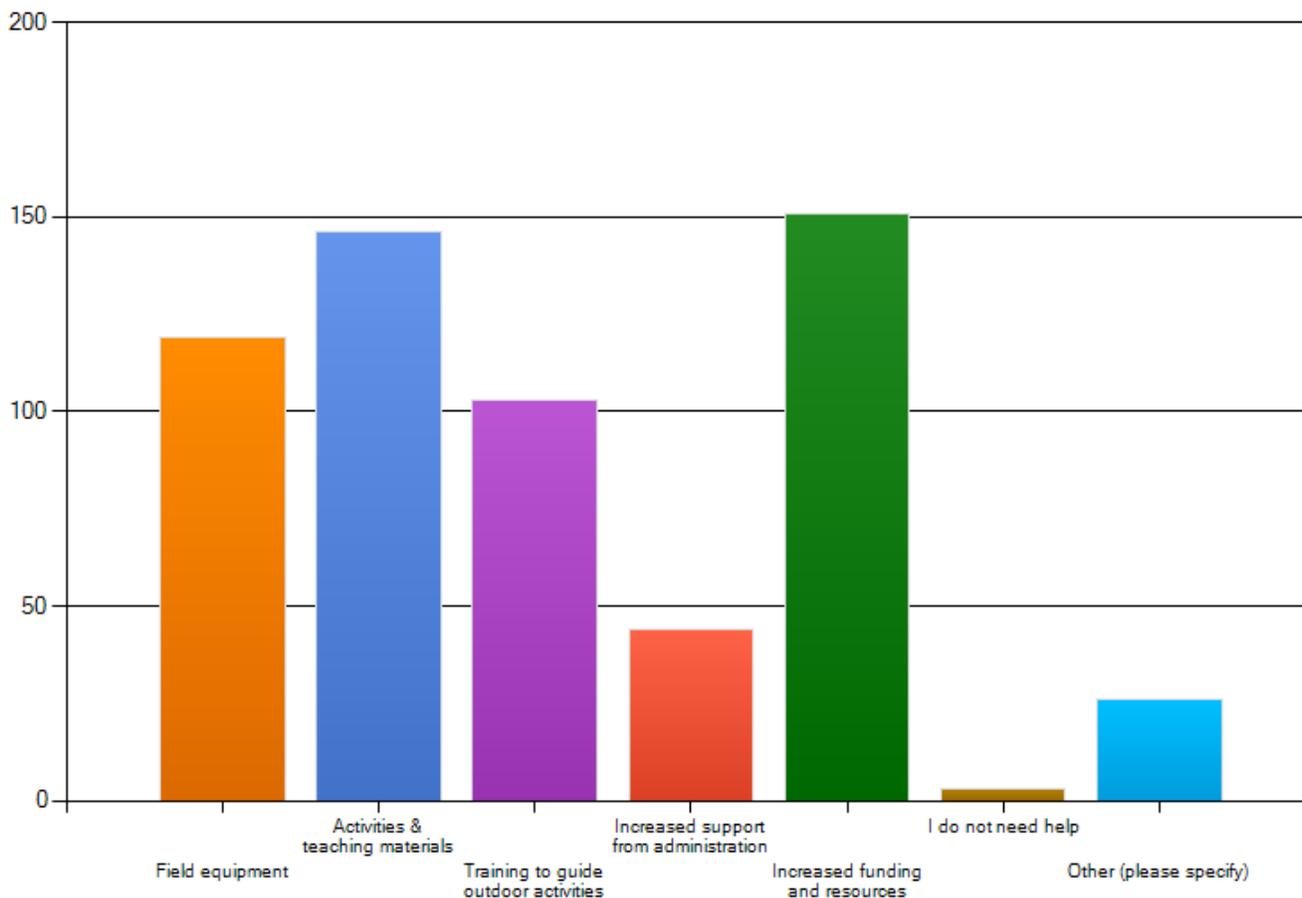


Figure 36 Outdoor education assistance

Highest ranking in terms of need were activities and teaching materials and increased funding and resources. Training did not rank as highly, however, several respondents did articulate the need for professional development more clearly in their description of other needs. The provision of education materials, field equipment and funding as a part of professional development is an approach that South Slough NERR and our partners have been exploring through the NOAA funded Oregon Coast Education Program with some success. Expanding awareness of such opportunities and advancing the capacity of host organizations to provide the training are essential in meeting this need.

Overall 92% of our respondents indicated that they would like to utilize more out of the classroom teaching opportunities. Although the results were not statistically significant, Tables 9.0, 10.0, and 11.0 (see Appendix A) indicate there is a wide disparity across the different counties regarding the use of outdoor, experiential and inquiry based educational activities. This again points to the need to create a uniform approach to encouraging these types of activities. Outdoor experiential education can reach students that respond to a variety of learning styles, and these

types of activities create a rich opportunity for students to learn new skills in a dynamic and fresh format. Inquiry-based education geared more to practical problem solving and critical thinking has become more difficult to integrate with many of the recent educational mandates such as No Child Left Behind requiring teachers to “teach to the test”. The positive impacts of hands-on, experiential educational formats have been well documented and the South Slough NERR provides the perfect venue for teachers to expose themselves and their students to inquiry-based, experiential activities. We believe more resources should be dedicated towards creating a future crop of scientists capable of grappling with the complexities of climate change and other future societal issues and the engagement of dynamic, inquiry-based practice facilitates this result.

Real/Archived Data Streams section (Questions 27 & 28)

Q 27.0

Which real-time/archived science data sets have you used in your teaching related to the following topics? Check all that apply.

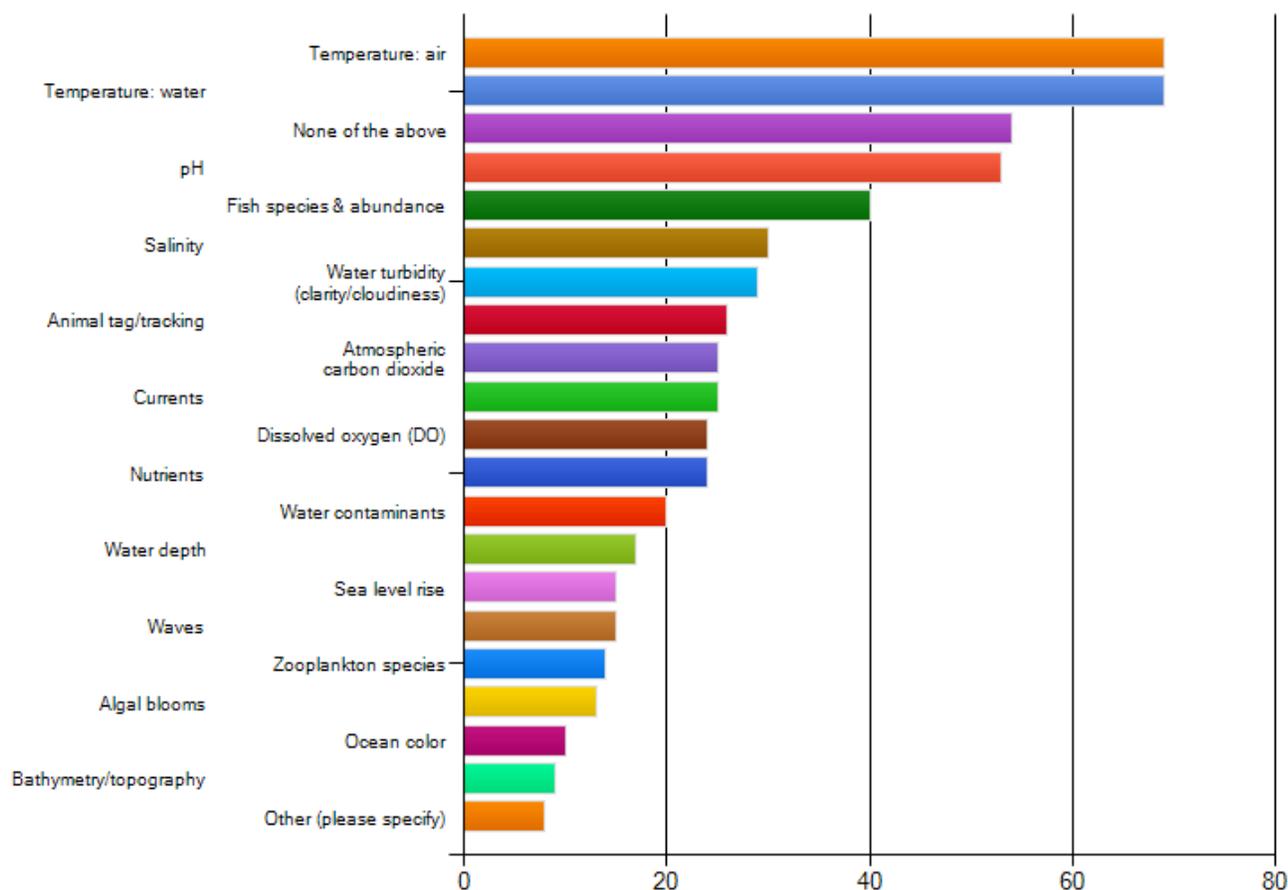


Figure 37 Real-time/archived data use

The use of data sets, whether real-time or archived, by classroom teachers is highly dependent upon the availability of computer labs and training in the interpretation of the data. A total of 176 respondents answered this question. Topics such as water and air temperature were most commonly identified in relation to the use of data and the wide

availability of this data combined with the ease of understanding such data is to be expected. More complexity with advanced concepts such as pH, fish species and abundance, salinity, and turbidity still revealed a fairly high level of reported use. As reported use declined, many of the topics identified present opportunities to link teachers with existing real-time and archived data sets available through the NERRS. Training in the use and interpretation of the data will be critical to ensure that teachers are able to provide meaningful educational opportunities for their students.

Other topics mentioned included macroinvertebrates, tides, bird migration and nest cams, and dew point.

Q 28.0

Which of the following real-time/archived data sets would you need synthesized into age-appropriate learning materials and visualizations for your teaching? Check all that apply.

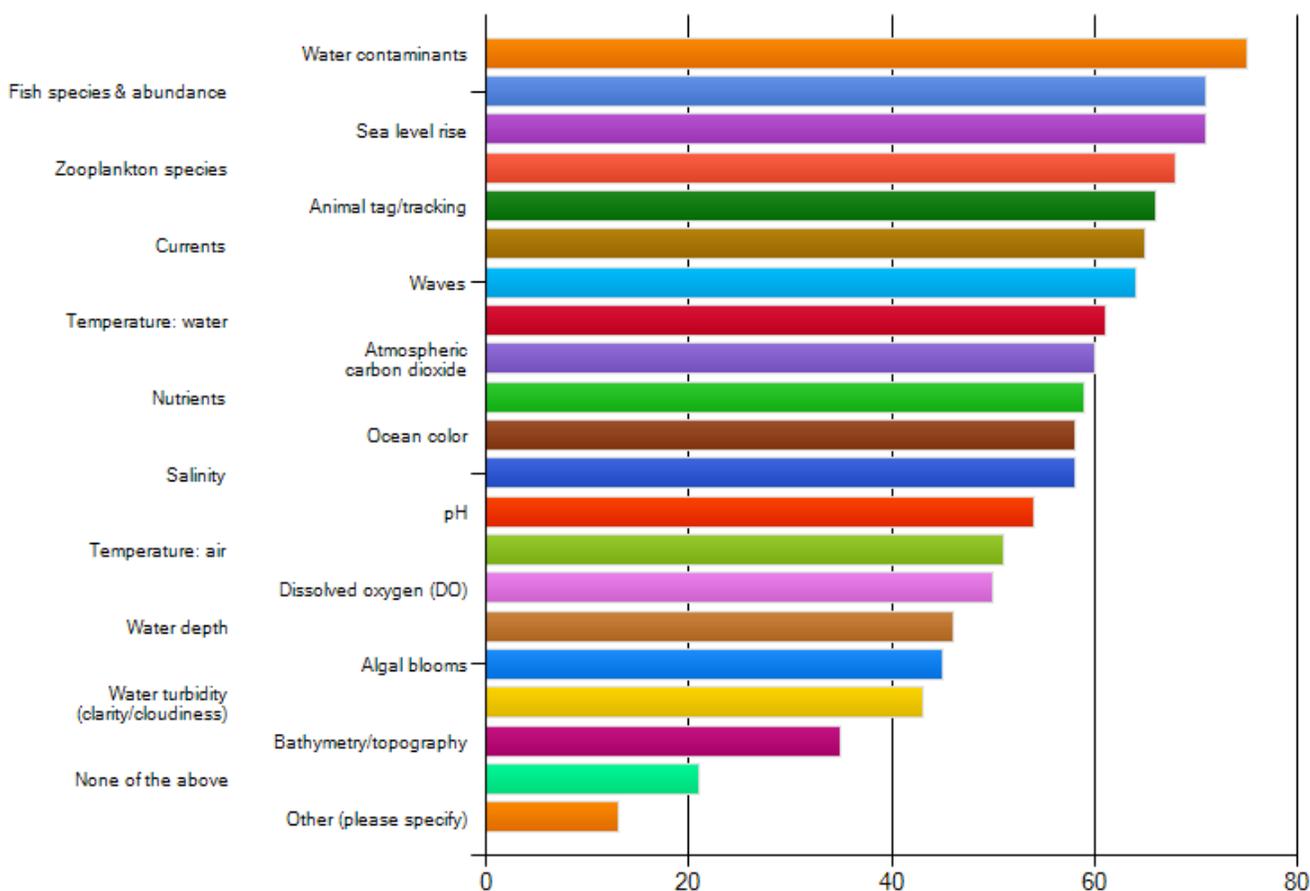


Figure 38 Real-time/archived data synthesis needs

A total of 170 teachers responded to this question. Respondents displayed a fairly strong expression of need for synthesized data sets related to topics and parameters that are currently collected by the NERRS System-wide Monitoring Program. Much of this data is available on-line and in real-time display or as archived data sets. Additionally, many interpretive tools and lesson plans have been developed and are accessible through NOAA and NERRS websites to assist teachers. Training in the use of these tools requires facilities with computer labs and internet access and may be best accomplished as an integrated part of a field and classroom based workshop rather than as a

stand-alone activity. However, South Slough NERR has engaged in limited initial piloting of on-line real-time training methods to share the use of these tools with educators as an alternative method to in person workshops. This may afford an opportunity for periodic training and augmentation of teacher’s experience in the use and interpretation of data.

Professional Development section (Questions 29 - 37)

Q 29.0

What are the reasons you attend professional development opportunities?

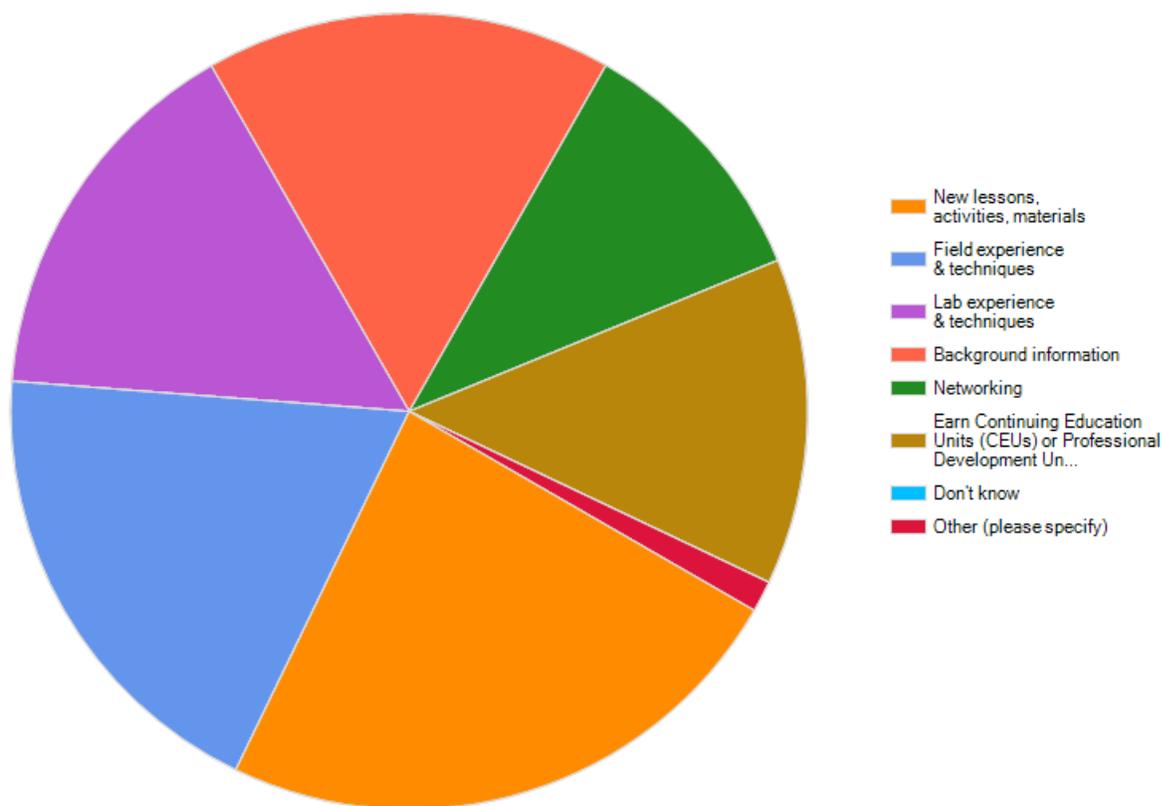


Figure 39 Professional development participation factors

Motivation to attend professional training varies widely and is highly dependent upon the level of experience of teachers, previous training, and specific needs they may have for teaching materials, content or new activities. Since the settings and class sizes within which individuals teach may vary as well, obvious trends or a single strong direction is difficult to discern from the results presented. Most professional development opportunities tend to offer a combination of activities that satisfy the spectrum of interest expressed by these results. Exposure to new lessons and

materials combined with a field-based and lab component represent a strong niche for South Slough NERR and other coastal education partners. The incorporation of relevant and timely scientific research and information as a part of training workshops is also an area where the reserves can play a key role.

The next two questions explore the role that offered educational credit plays in determining the interest of teachers in professional development opportunities. Once again, individual circumstance is a strong factor in determining the importance of this element.

Q 30.0

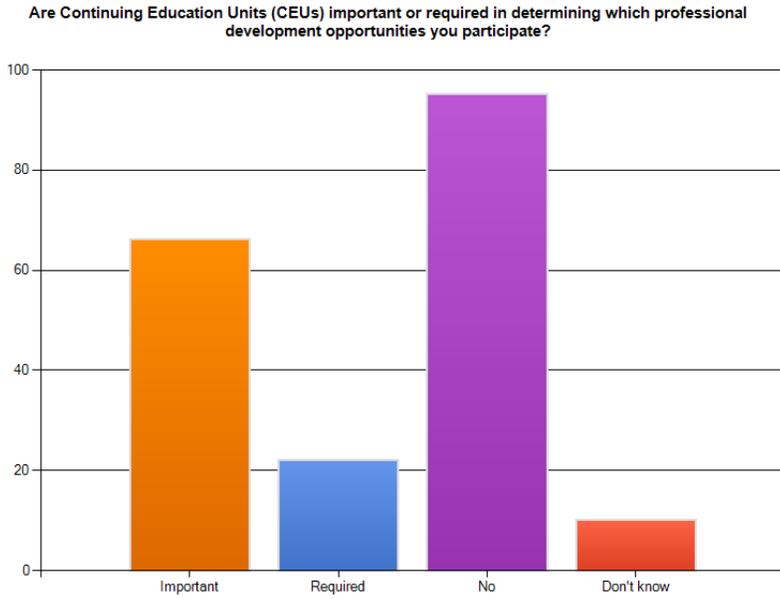


Figure 40 Continuing Education Credit importance

Q 31.0

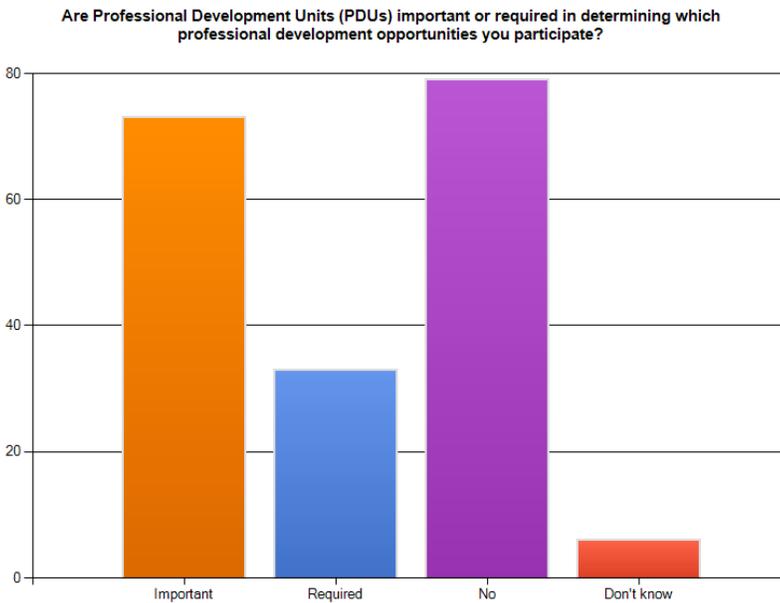


Figure 41 Professional Development Unit importance

Q 32.0

Which of the following factors might prevent you from attending professional teacher development workshops? (Please check the 3 that most commonly occur)

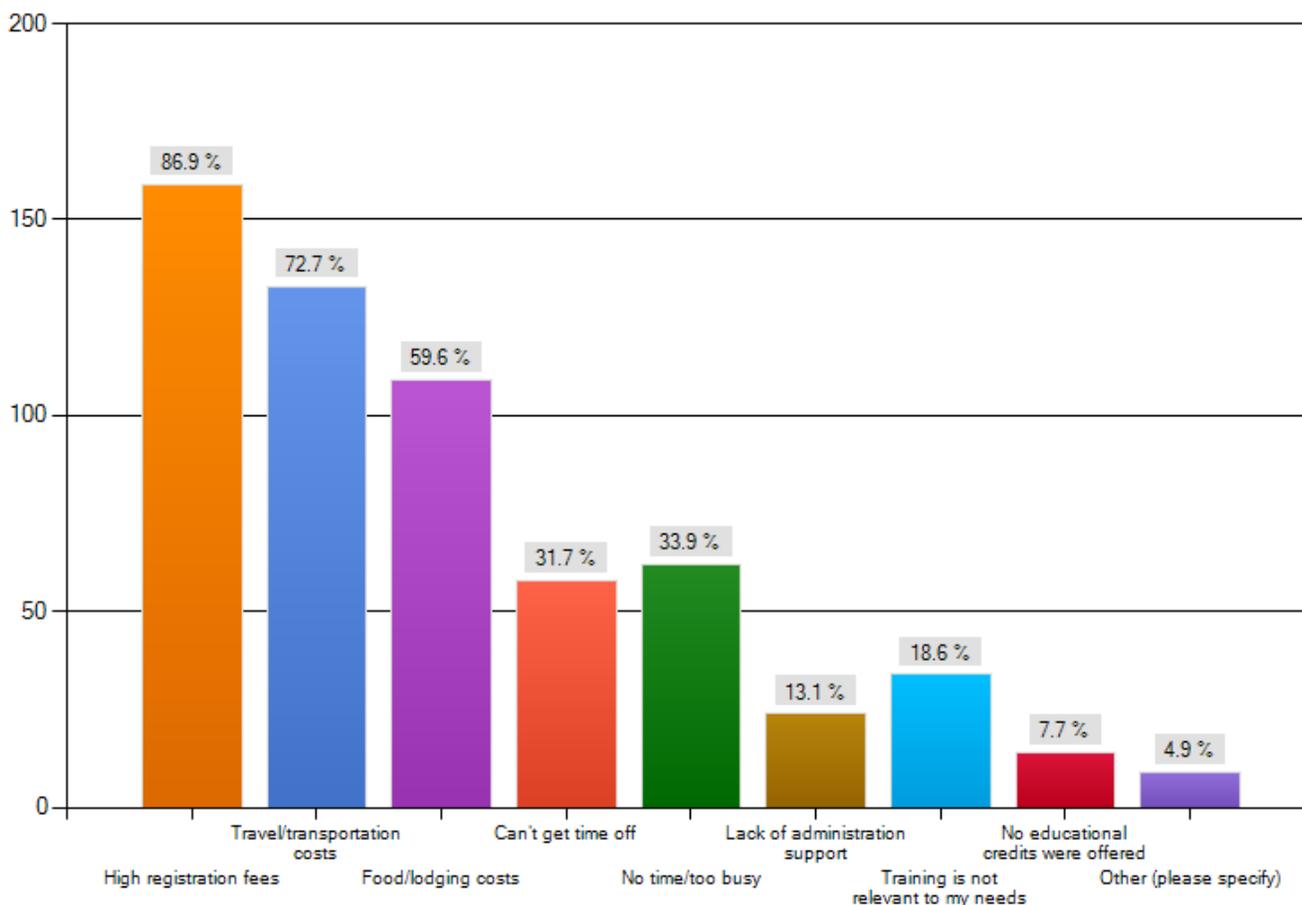


Figure 42 Professional development workshop barriers

Defraying the costs of the three most commonly identified limiting factors is common practice when offering professional development opportunities. In other words, low or waived registration fees, reimbursable travel costs, and provision of food and lodging are often seen as necessary requirements to stimulate attendance. Additionally, stipends may be offered to further entice participants.

The ability to offset these costs for professional development is usually determined by the availability of grant funds and managing the budget to provide a balance between the number of participants receiving full support and the amount of money allocated to each category. The results suggest a strong need for specific funding to address the top three factors and reduce these hurdles for potential participants.

Timing and relevance of professional development opportunities are also key factors in addressing the expressed challenges. Finally, a lack of available time and administrative support may be linked. Administrative priorities for professional development may not mirror the interests of the educators themselves.

Q 33.0 & 34.0



Figure 43 Distance Learning training participation

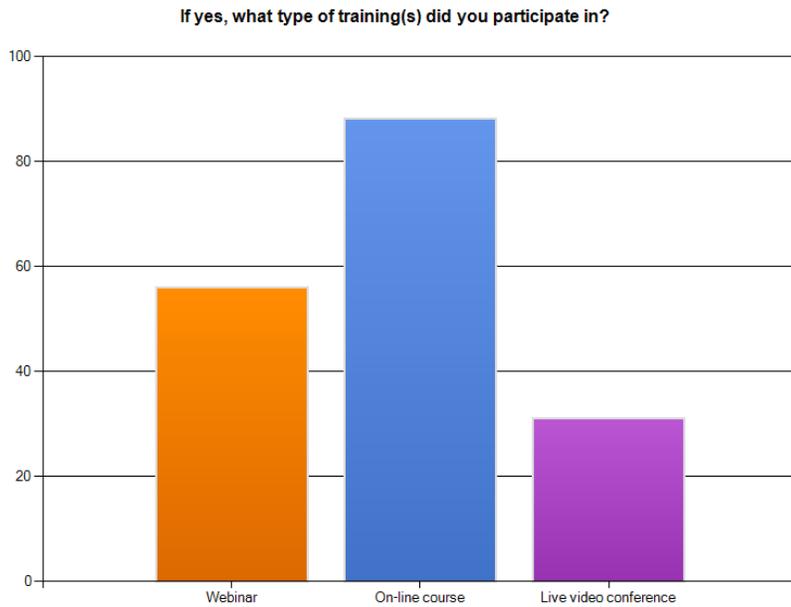


Figure 44 Distance Learning training types

A majority (59.9%) of respondents indicated participation in distance learning training and when asked what type of training, on-line courses ranked highest (82.2%) of the choices available. Higher education has been a primary developer and user of distance education courses, so this result may indicate teachers working on degree programs or other coursework directly related to their teaching credential. Webinar use has gradually been increasing over the past few years as the availability, variety, and ease of use has advanced significantly. Live video conference still remains a technologically challenging method of distance training due primarily to bandwidth constraints.

However, the recent advances in the personal use of products such as Skype and Facetime have increased the comfort level and familiarity of end users (teachers) with this type of technology. Innovation in this field and method of delivery is a niche that South Slough NERR will continue to explore although more assessment work is needed in understanding interest, availability of appropriate facilities and infrastructure, technique preferences, and possible modes of learning.

A small number of respondents misinterpreted this question to mean trainings and activities at some distance away from the location of their school.

Q. 35.0

In the last three years, how many hours of professional development training in science have you obtained related to estuaries, watersheds and the ocean?

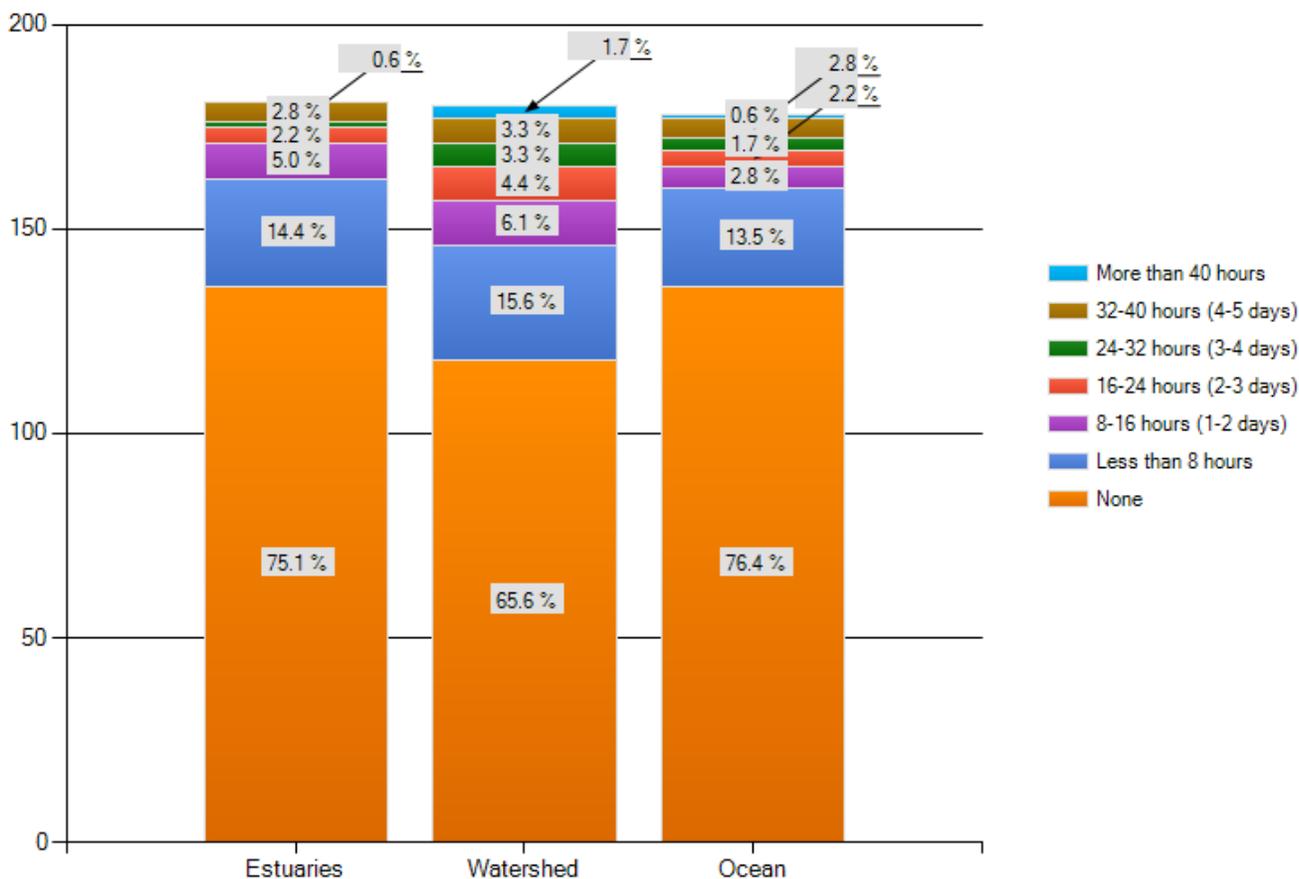


Figure 45 Hours of professional development in science

The results of this question clearly identify an opportunity to advance the skills and content expertise of teachers within the response pool. A strong majority (89.5%) of respondents indicated that they had received less than 8 hours or no training over the last 3 years in science related to coastal education content areas. Within this group, most (75.1%) had received no training at all concerning science in these topics.

Professional development training in science with a coastal emphasis is clearly a niche that South Slough NERR and other coastal education providers are well-suited to support. Challenges in providing this type of training include access to sufficient periods of time to conduct the workshops, funding to adequately overcome identified obstacles, competition with other professional development opportunities, and a lack of support from administrators.

That said, within the study area, a need has been articulated that should be recognized by coastal education providers and methods to engage this audience of teachers in well-planned and meaningful training opportunities should be undertaken.

Q 36.0

Which professional development trainings have you taken to supplement your estuary/watershed/ocean education? Check all that apply.

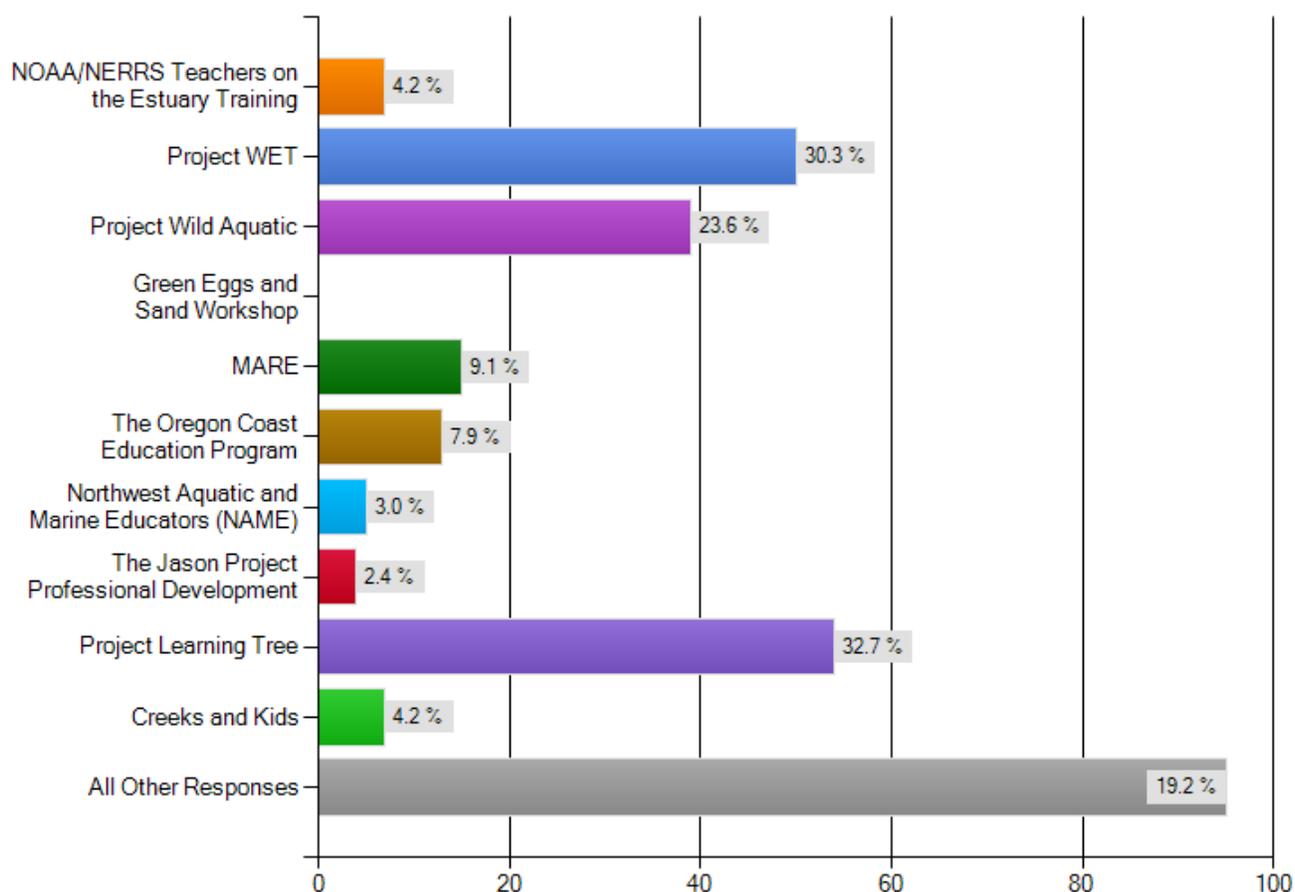


Figure 46 Types of professional development taken

Respondents most frequently identified Project WET/Wild Aquatic/Learning Tree workshops (86.6% combined) as the trainings they had taken to supplement their education about estuaries, watersheds, and the ocean. Other choices listed were varied in response (<10% each) and a fairly large number of respondents (44.9%) selected “None of the above” while only a small fraction (12.7%) described other opportunities.

The presentation of the choices in this question may have been confusing since “None of the above” was mistakenly listed twice in the choice of responses. Other workshops identified were highly variable and did not represent a specific institution or type of workshop but rather a variety of individual opportunities.

South Slough NERR has offered and assisted in the facilitation of many of the types of workshops listed and has also partnered with several of the institutions identified as hosts within the “other” category. The reserve will continue to engage in partnerships that offer training when feasible that supports the educational mission and goals of South Slough. In addition, as the NERRS continue to advance work in providing new professional development opportunities, the reserve will seek to enhance participation and support of partners in these opportunities.

Q 37.0

What type(s) of professional development training interest you?

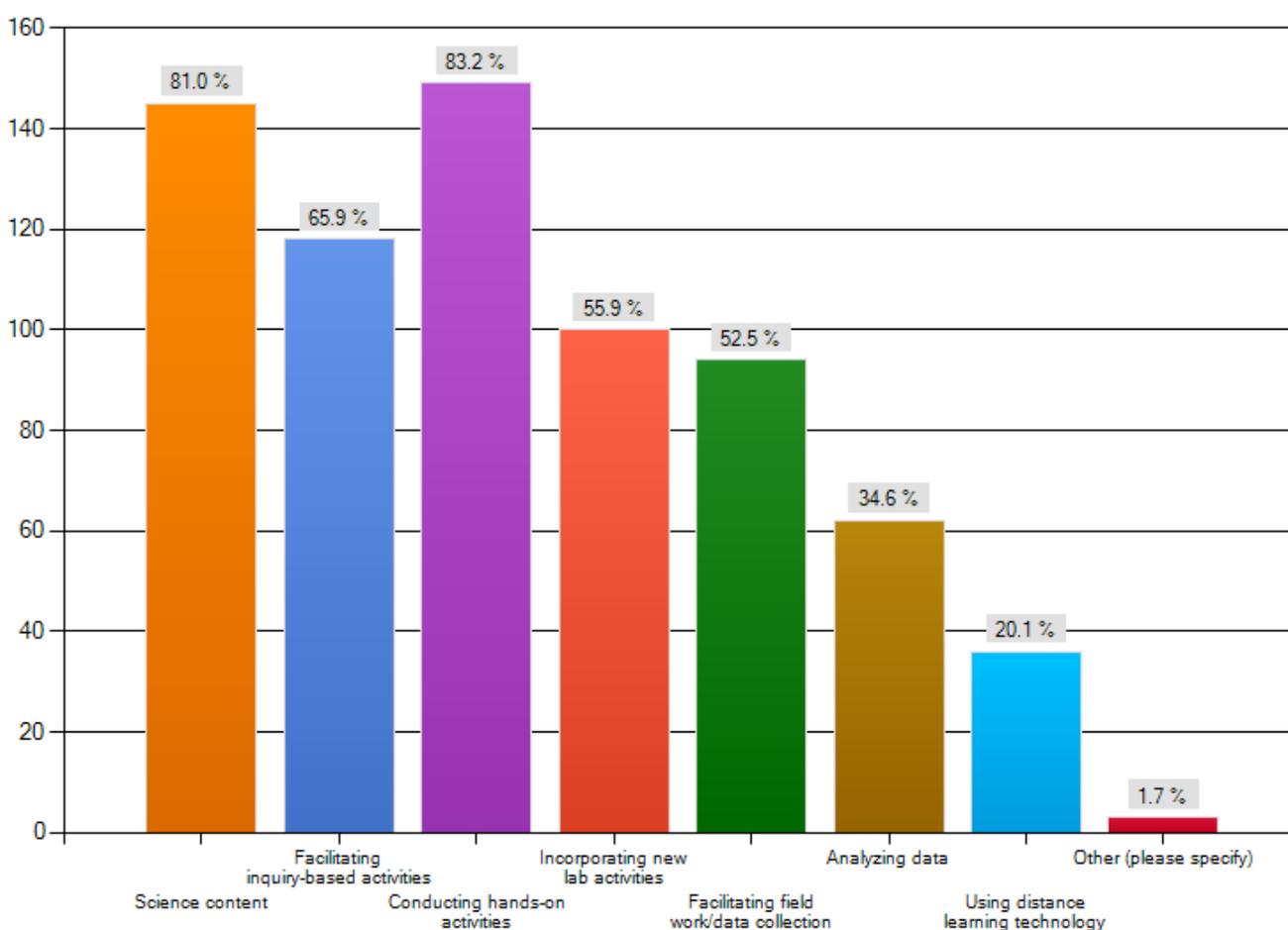


Figure 47 Types of professional development by interest

The most highly ranked interest in specific types of professional development included areas of science content, facilitation of inquiry-based activities, and conducting hands-on activities. These are all forms of training that are well-suited to South Slough NERR and coastal education partners. High levels of interest were also expressed in facilitating

field work/data collection and analyzing data. Once again, the reserve and our partners are well situated to provide this type of professional development opportunity. Respondents did not identify a particularly high level of interest in the use of distance learning technology. However, they did show fairly strong interest in incorporation of new lab activities.

Well-designed professional development provides the potential to combine expressed interests into a robust and meaningful suite of training activities. As South Slough NERR works to explore the development of new opportunities and offer teachers a more substantial and varied set of options for training, these results will be used to inform the planning and delivery of such programs.

Several of the questions sought to understand barriers to participation in extra-curricular trainings for teachers and the creation and delivery of out of the classroom experiences for students. A majority of the respondents showed support and interest in these activities but indicated a dearth of time and financial resources prevented implementation and participation (See figure 5). Responses also indicated that administrative requirements sometimes hampered teachers from engaging in these types of activities.

4.0 Conclusion

The results of the Oregon Coastal Education Market Analysis and Needs Assessment Study provide a substantial body of data and insights with important implications for the K-12 formal education programs offered by South Slough NERR and various partners. Within the state and more specifically within the area of southwestern Oregon targeted by the needs assessment, information generated by this study provides a window into the gaps and resulting opportunities for more accurately developing and offering programs and resources.

The market analysis results represent a fairly limited group of providers and may require substantial additional work to establish a true picture of the numbers and types of institutions that currently offer estuary education. For example, some universities and colleges may offer services to teachers in the form of professional development, but no direct services to K-12 students. If direct services are offered to K-12 students, these may take the form of limited career fair opportunities or support for programs that exist on the campus, but are not directly associated with the higher education institution. Considering the limits of participation, the market analysis results do provide useful information about the organizations that did contribute data.

Most of the respondents did identify field trip experiences, in-classroom work, and outreach as elements of their education programs. To a lesser extent, pre-service and in-service training for teachers was offered, while teacher professional development was identified principally as an area for future growth. The opportunity for partnership with various institutions in developing teacher professional training is one of the most exciting areas for advancement in South Slough NERR's education programs. Collaborating with other coastal education providers has afforded new funding and opportunities to reach new audiences of educators throughout Oregon for South Slough NERR. While these joint trainings are useful to some degree in advancing estuarine literacy and the curriculum products and resources developed by NOAA, the opportunities for emphasis may be limited by the variety of topics and partners involved.

Specific training, whether offered on-site or through distance learning techniques, developed to feature particular aspects of the reserve's science program may be well received and satisfy under-served niches identified in the results. In particular, a number of focal areas such as coastal hazards, marine and estuarine biology and ecology, data analysis, climate change and sea level rise, best management practices, and interdisciplinary research offer possible gaps that may be served by South Slough NERR and partners.

Climate change impacts and coastal areas is a niche where strong interest was expressed by respondents in the needs assessment. The need for education materials and activities, age appropriate background materials, professional development, sampling equipment, and mini-grants all represent opportunities which South Slough NERR is well-positioned to meet. In particular, the high level of importance expressed regarding both climate change and estuary education suggests a strong potential to leverage existing South Slough science and education programs and data to serve an expanded audience provided sufficient resources are obtained to address this opportunity.

Within the various types of professional development identified, field experiences with a multi-day component and the use of distance learning are areas that may offer opportunities for South Slough NERR to work effectively with partners and independently. Prolonged, multi-year interactions with entire schools and districts are emerging areas of professional development that may prove more effective in forming lasting relationships between teachers and providers.

Marketing approaches listed by respondents and identified barriers to program participation reflect a similar set of conditions encountered by South Slough NERR in offering field-based education activities with some exceptions. Recent experience with direct marketing within a targeted region (southwestern Oregon) has yielded improved participation.

However, capacity limits are also a realistic concern as demand increases and a corresponding strategy to offer a suite of educational options is being developed. This includes advancing the investment in professional development and teacher training opportunities focused on broader coastal education goals and less specifically on visits to the reserve.

Within the topic of barriers to participation, transportation costs were identified as frequently as lack of time. While this has proven to be the case for some schools, South Slough NERR has offered funding to potentially offset these costs and in many cases the funding has been requested to address other factors.

Finally, partnerships are clearly an important element of nearly all the programs participating in the market analysis study. With funding and resources becoming increasingly difficult to obtain, this has become a necessary part of the work that environmental educators undertake to support their activities. Partnerships can and should be mutually beneficial. However, any meaningful partnership requires work on the part of all involved parties and a reasonable and periodic assessment of costs as well as benefits is necessary if the relationship is to be sustained.

The results of the market analysis indicate opportunities for South Slough NERR to establish new partnerships that may more efficiently and effectively address opportunities expressed in the needs assessment study. In addition, exploring South Slough's existing partnerships more fully within the context of the information provided by the needs assessment will likely enhance opportunities for collaborative funding and use of resources.

Appendix A. Statistical Analysis

Appendix B. Market Analysis survey instrument

Appendix C. Needs Assessment survey instrument

Appendix A: Statistical Analysis of Needs Assessment Results

Analysis for the Oregon Coastal Education Needs Assessment

Comparison by County – Tables 1, 4, 5, 7, 9 – 22

Comparison by Grade Level – Tables

Comparison by Teaching Experience – Tables 2 & 3

Table 1. Teacher awareness of the NERR located in Charleston, Coos County, Oregon.^a

	Aware	Not Aware	Total (%)
Coos	93	7	14
Curry	69	31	8
Jackson	60	40	14
Douglas	53	47	16
Lane	34	66	41
Josephine	13	88	7

^a $\chi^2 = 46.56, p < .001, V = .45$. Cell entries are percentages.

There is a significant difference between the surveyed counties and their awareness of the South Slough NERR in Coos County ($\chi^2 = 46.56, p < .001$). The effective size is typical ($V=.45$). Coos County teachers are the most aware of the NERR while Josephine County was the least aware of the NERR. Lane county teachers had the most total amount of teacher respondents and the second to least awareness of the NERR.

Table 2. Comparison between years of teaching experience and importance of estuary education.

Years Teaching	Very important	Somewhat important	Neither	Somewhat unimportant	Very unimportant
< 2	50	0	50	0	0
2 – 3	0	67	0	33	0
3 – 5	21	32	32	11	5
5 – 7	24	49	18	6	3
10 – 15	19	50	19	8	4
> 15	20	53	16	10	1
Total	20	49	19	9	3

^a Cell entries are percentages (%).

^a $\chi^2 = 13.09, p = .873, V = .13$

There is no significant difference between the amount of teaching experience and their evaluations regarding the importance of estuary education ($\chi^2 = 13.09, p < .873$). The majority (69%) of teachers found the importance of estuary education as very or somewhat important.

Table 3. Comparison between years of teaching experience and importance of climate change education^a

Years Teaching	Very important	Somewhat important	Neither	Somewhat unimportant	Very unimportant
< 2	50	50	0	0	0
2 – 3	0	100	0	0	0
3 – 5	47	26	16	11	0
5 – 7	46	42	12	0	0
10 – 15	43	39	16	2	0
> 15	38	45	11	6	0
Total	41	42	13	4	0

^a Cell entries are percentages (%).

$$\chi^2 = 14.28, p = .504, V = .13$$

There is no significant difference between the amount of teaching experience and their evaluations on the importance of climate change education ($\chi^2 = 14.28, p < .504$). The majority (83%) of teachers found climate change education very or somewhat important.

Table 4. Comparison between county and importance of estuary education^a

County	Very important	Somewhat important	Neither	Somewhat unimportant	Very unimportant
Curry	46	39	15	0	0
Coos	32	56	8	4	0
Douglas	23	47	20	7	3
Lane	20	41	22	15	3
Jackson	7	74	7	7	7
Josephine	0	43	50	7	0
Total	20	49	19	9	3

^a Cell entries are percentages (%).

$$\chi^2 = 40.51, p = .004, V = .22$$

There is a significant difference between counties and the importance their teachers place on estuary education ($\chi^2 = 40.51, p < .004$). The effect size is minimal to typical ($V = .22$). 85% of teachers in Curry County rate estuary education as very or somewhat important, whereas only 43% of teachers in Josephine County rate estuary education as very or somewhat important. Across all counties surveyed, 69% of teachers rated the importance of estuary education as very or somewhat important.

Table 5. Comparison between county and importance of climate change education^a

County	Very important	Somewhat important	Neither	Somewhat unimportant	Very unimportant
Lane	45	43	11	1	0
Douglas	43	40	10	7	0
Jackson	42	32	13	13	0
Curry	39	54	8	0	0
Coos	32	44	20	4	0
Josephine	29	50	21	0	0
Total	41	42	13	4	0

^a Cell entries are percentages (%).

$\chi^2 = 13.50, p = .564, V = .16$

There is no significant difference between counties and the importance their teachers place on climate change education ($\chi^2 = 13.50, p = .564$). However, across all counties surveyed, 83% of teachers rated the importance of climate change education as very or somewhat important.

Table 6. Type of help needed to incorporate more discussion about climate change at each grade level^a

Help needed with	Grade Taught ^a				Total
	K – 2	3 – 5	6 – 8	9 – 12	
Education materials	62	78	82	88	79
Age appropriate materials	100	85	75	60	78
Professional development training	54	47	45	41	45
Sampling equipment	23	40	46	43	42
Mini grants	31	38	59	62	48
None	0	5	2	2	4
Other ^b	0	3	5	5	4

^a Cell entries are percentages (%). Percentages do not sum to 100% because respondents could check more than one activity from the list.

^b Other help that teachers suggested included: DVD's, guest speakers, and field trips.

Table 7. Are estuary related topics a required part of science teaching requirements by county ^a?

	Yes	No	Don't know
Coos	33	37	30
Curry	43	36	21
Douglas	19	65	16
Jackson	29	58	13
Josephine	27	60	13
Lane	21	65	14
Total	26	58	17

^a $\chi^2 = 11.04$, $p = .354$, $V = .169$. Cell entries are percentages.

There is no significant difference between counties and the science teaching requirement of estuary related topics ($\chi^2 = 11.04$, $p = .354$). Curry county (43%) reported the highest percentage of teachers who state that estuary related topics are a required part of their science teaching requirements. Lane county (21%) reported the lowest percentage of teachers who state that estuary related topics are a required part of their science teaching requirements.

Table 8. Are estuary related topics a required part of teaching requirements by grades taught ^a?

	Yes	No	Don't know	χ^2 value	p value	V
K – 2	23	23	54	11.26	.004	.27
3 – 5	23	55	23	6.30	.043	.18
6 – 8	31	56	13	1.71	.425	.09
9 – 12	22	67	11	2.28	.319	.11
Total	26	58	17			

^a Cell entries are percentages.

There is a significant difference between those who teach estuary related topics, those who don't teach estuary related topics, and those who don't know at the K – 2 grade levels ($\chi^2 = 11.26$, $p = .004$) and the 3 – 5 grade levels ($\chi^2 = 6.30$, $p = .043$).

Table 9. Teachers who have used outdoor teaching experiences by county^a

	Yes	No	Don't know
Coos	92	8	0
Curry	85	15	0
Douglas	71	29	0
Jackson	77	23	0
Josephine	100	0	0
Lane	76	24	0
Total	80	20	0

^a $\chi^2 = 11.29, p = .046, V = .17$. Cell entries are percentages.

There is a significant difference across counties between teachers who use outdoor teaching experiences and those who do not ($\chi^2 = 11.29, p = .046$). The effect size is small. Teachers in Josephine County reported using outdoor teaching experiences most often (100%), whereas teachers in Douglas County reported using outdoor teaching experiences the least often (71%).

Table 10. Amount that teachers have used outdoor teaching experiences in the last two years by county^a

	Never	One to Four	Five to Nine	Ten to Fifteen	More than Fifteen
Coos	0	32	36	12	20
Curry	8	46	23	8	15
Douglas	21	29	25	4	21
Jackson	16	26	36	13	10
Josephine	0	43	29	21	7
Lane	14	34	24	11	18
Total	12	33	28	11	16

^a $\chi^2 = 21.01, p = .396, V = .15$. Cell entries are percentages.

There is not a significant difference between the amount that teachers have used outdoor teaching experiences in the last two years across the surveyed counties. In the last two years, a majority of the teachers surveyed across counties have used outdoor teaching experiences one to nine times (61%).

Table 11. The amount of emphasis placed on outdoor experiential activities by county ^a

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Coos	11	41	44	4
Curry	21	64	14	0
Douglas	36	36	29	0
Jackson	13	57	30	0
Josephine	40	60	0	0
Lane	25	58	15	3
Total	24	52	22	2

^a $\chi^2 = 29.55, p = .014, V = .21$. Cell entries are percentages.

There is a significant difference in the amount of emphasis placed on outdoor experiential activities across the counties surveyed ($\chi^2 = 29.55, p = .014$). The effect size is minimal ($V = .21$). Coos County reported the heaviest amount of emphasis placed on outdoor experiential activities (44%), whereas Josephine county placed the least amount of heavy emphasis on outdoor experiential activities (0%).

Table 12. The amount of emphasis placed on lab or field work/data collection by county ^a

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Coos	15	48	30	7
Curry	43	43	14	0
Douglas	19	58	19	3
Jackson	29	39	29	3
Josephine	20	67	13	0
Lane	23	59	18	1
Total	23	54	21	3

^a $\chi^2 = 13.28, p = .581, V = .15$. Cell entries are percentages.

There is not a significant difference in the amount of emphasis placed on lab or field work/data collection across the counties surveyed ($\chi^2 = 13.28, p = .581$). Coos County reported the heaviest amount of emphasis placed on lab or field work/data collection (30%), whereas Josephine County placed the least amount of heavy emphasis on lab or field work/data collection (13%).

Table 13. The amount of emphasis placed on stewardship projects or activities by county ^a

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Coos	33	41	19	7
Curry	43	50	7	0
Douglas	48	39	13	0
Jackson	42	32	23	3
Josephine	47	53	0	0
Lane	39	41	18	3
Total	41	41	16	3

^a $\chi^2 = 14.02, p = .524, V = .14$. Cell entries are percentages.

There is not a significant difference in the amount of emphasis placed on stewardship projects or activities across the counties surveyed ($\chi^2 = 14.02, p = .524$). Jackson County reported the heaviest amount of emphasis on stewardship projects or activities (23%), whereas Josephine County reported the least amount of heavy emphasis on stewardship projects or activities (0%).

Table 14. The amount of emphasis placed on data analysis, stats, and probability by county ^a

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Coos	37	41	19	4
Curry	50	29	21	0
Douglas	10	65	26	0
Jackson	23	42	32	3
Josephine	27	60	13	0
Lane	19	62	19	0
Total	23	54	22	1

^a $\chi^2 = 21.96, p = .109, V = .19$. Cell entries are percentages.

There is not a significant difference in the amount of emphasis placed on data analysis, stats, and probability across the counties surveyed ($\chi^2 = 21.96, p = .109$). Jackson County reported the heaviest amount of emphasis placed on data analysis, stats, and probability (32%), whereas Josephine County reported the least amount of heavy emphasis on data analysis, stats, and probability (13%).

Table 15. The amount of emphasis placed on scientific inquiry skills by county ^a

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Coos	4	44	48	4
Curry	21	57	21	0
Douglas	0	52	48	0
Jackson	0	48	52	0
Josephine	0	73	27	0
Lane	3	40	58	0
Total	3	48	49	1

^a $\chi^2 = 24.34, p = .060, V = .24$. Cell entries are percentages.

There is not a significant difference in the amount of emphasis placed on scientific inquiry skills across the counties surveyed ($\chi^2 = 24.34, p = .060$). Lane County reported the heaviest amount of emphasis placed on scientific inquiry skills (58%), whereas Curry County reported the least amount of heavy emphasis on scientific inquiry skills (21%).

Table 16. The amount of hours spent on professional development training on estuaries by county ^a

	None	< 8	8 – 16	16 - 24	24 - 32	32 – 40	> 40
Coos	33	42	17	4	0	4	0
Curry	77	0	8	15	0	0	0
Douglas	82	18	0	0	0	0	0
Jackson	77	20	0	0	0	1	0
Josephine	93	7	0	0	0	0	0
Lane	82	6	6	1	1	4	0
Total	75	14	5	2	1	3	0

^a $\chi^2 = 51.72, p < .001, V = .24$. Cell entries are percentages.

There is a significant difference in the amount of hours spent on professional development training in estuaries across the counties surveyed ($\chi^2 = 51.72, p < .001$). The effect size is small ($V = .24$). Coos County reported the largest percentage of teachers spending any time on professional development in estuaries (77%). Josephine County reported the largest amount of teachers spending no time on professional development in estuaries (93%).

Table 17. The amount of hours spent on professional development training on watersheds by county ^a

	None	< 8	8 – 16	16 - 24	24 - 32	32 – 40	> 40
Coos	39	35	17	0	4	4	0
Curry	77	0	8	15	0	0	0
Douglas	71	18	4	0	4	0	4
Jackson	67	13	7	3	0	7	3
Josephine	79	7	0	14	0	0	0
Lane	67	14	4	4	6	4	1
Total	66	16	6	4	3	3	2

^a $\chi^2 = 39.23, p = .121, V = .20$. Cell entries are percentages.

There is no significant difference in the amount of hours spend on professional development training on watersheds across the counties surveyed ($\chi^2 = 39.23, p = .121$). Coos County reported the largest percentage of teachers spending any time on professional development on watersheds (61%). Josephine County reported the largest amount of teachers spending no time on professional development on watersheds (79%).

Table 18. The amount of hours spent on professional development training on oceans by county ^a

	None	< 8	8 – 16	16 - 24	24 - 32	32 – 40	> 40
Coos	55	27	9	0	5	5	0
Curry	69	0	8	15	0	8	0
Douglas	82	11	0	4	4	0	0
Jackson	80	13	0	0	0	3	3
Josephine	86	7	0	0	0	7	0
Lane	79	14	3	1	1	1	0
Total	76	14	3	2	2	3	1

^a $\chi^2 = 33.49, p = .302, V = .20$. Cell entries are percentages.

There is no significant difference in the amount of hours spend on professional development training on oceans across the counties surveyed ($\chi^2 = 33.49, p = .302$). Coos County reported the largest percentage of teachers spending any time on professional development on oceans (45%). Josephine County reported the largest amount of teachers spending no time on professional development on oceans (86%).

Table 19. Teachers who report using NERR services or products by county ^a

	Yes	No
Coos	100	0
Curry	54	46
Douglas	43	57
Jackson	40	60
Josephine	0	100
Lane	31	69
Total	50	50

^a $\chi^2 = 48.29, p > .001, V = .53$. Cell entries are percentages.

There is a significant difference between teachers who report using National Estuarine Research Reserve (NERR) educational services or products across counties ($\chi^2 = 48.29, p > .001$). The effect size is large ($V = .53$). All teachers surveyed in Coos county reported using NERR services and products (100%). However, none of the teachers in Josephine County reported using NERR services (0%).

Table 20. The amount of class activity per year on estuary instruction by grade level ^a

Grade teaching	Days					
	None	> 1	1 to 2	3 to 5	6 to 15	> 15
K – 2	62	15	0	0	15	8
3 – 5	39	12	18	16	14	2
6 – 8	30	8	21	26	12	3
9 – 12	31	22	20	11	11	4
Total	34	13	19	18	12	4

^a Cell entries are percentages.

Table 21. The amount of class activity per year on watershed instruction by grade level ^a

Grade teaching	Days					
	None	> 1	1 to 2	3 to 5	6 to 15	> 15
K – 2	33	17	8	17	8	17
3 – 5	14	10	19	26	27	4
6 – 8	15	7	18	25	27	8
9 – 12	16	16	25	18	16	9
Total	15	10	20	25	22	7

^a Cell entries are percentages.

Table 22. The amount of class activity per year on ocean instruction by grade level ^a

Grade teaching	Days					
	None	> 1	1 to 2	3 to 5	6 to 15	> 15
K – 2	8	31	23	8	23	8
3 – 5	17	8	22	28	16	10
6 – 8	13	8	22	27	23	7
9 – 12	18	16	30	16	9	11
Total	15	10	22	26	17	10

^a Cell entries are percentages.

Table 23. The amount of class activity per year on estuary instruction by county ^a

County	Days					
	None	> 1	1 to 2	3 to 5	6 to 15	> 15
Coos	19	15	11	22	15	19
Curry	21	7	7	29	29	7
Douglas	23	30	20	23	3	0
Jackson	39	7	26	23	7	0
Josephine	47	0	33	13	0	7
Lane	41	11	19	13	15	1
Total	34	13	19	18	12	4

^a $\chi^2 = 49.47, p = .002, V = .23$. Cell entries are percentages.

There is a significant difference between the amount of class activity per year on estuary instruction by county ($\chi^2 = 49.47, p = .002$). There is a small effect size ($V = .23$). Curry County teachers reported spending the most amount of time on estuary instruction with 36% of teachers spending 6 or more days per year. 47% of teachers in Josephine County reported spending no days on estuary instruction per year.

Table 24. The amount of class activity per year on watershed instruction by county ^a

County	Days					
	None	> 1	1 to 2	3 to 5	6 to 15	> 15
Coos	15	4	19	35	23	4
Curry	8	0	0	31	46	15
Douglas	7	17	21	35	10	10
Jackson	23	7	19	29	16	7
Josephine	15	0	39	31	15	0
Lane	17	14	21	15	26	8
Total	15	10	20	25	22	7

^a $\chi^2 = 35.07, p = .087, V = .18$. Cell entries are percentages.

There is not a significant difference between the amount of class activity per year on watershed instruction by county ($\chi^2 = 35.07, p = .087$). Curry County teachers reported spending the most amount of time on watershed instruction with 61% of teachers spending 6 or more days per year. 23% of teachers in Jackson County reported spending no days on watershed instruction per year.

Table 25. The amount of class activity per year on ocean instruction by county ^a

County	Days					
	None	> 1	1 to 2	3 to 5	6 to 15	> 15
Coos	15	8	12	31	19	15
Curry	7	0	14	43	14	21
Douglas	7	17	24	28	21	3
Jackson	16	13	26	19	16	10
Josephine	7	0	29	29	21	14
Lane	19	10	24	23	15	8
Total	15	10	22	26	17	10

^a $\chi^2 = 21.21, p = .681, V = .14$. Cell entries are percentages.

There is not a significant difference between the amount of class activity per year on ocean instruction by county ($\chi^2 = 21.21, p = .681$). Curry County and Josephine County teachers reported spending the most amount of time on ocean instruction with 35% of teachers spending 6 or more days per year. 19% of teachers in Lane County reported spending no days on ocean instruction per year.

Table 26. Importance of estuary education across grade levels taught ^a

Grade teaching	Very important	Somewhat important	Neither	Somewhat unimportant	Very unimportant
K – 2	8	62	15	8	8
3 – 5	22	45	26	7	1
6 – 8	14	64	9	11	2
9 – 12	19	48	12	14	7
Total	20	49	19	9	3

^a Cell entries are percentages (%).

78% of sixth through eighth grade teacher report that estuary education is somewhat to very important.

Table 27. Importance of climate change education across grade levels taught ^a

Grade teaching	Very important	Somewhat important	Neither	Somewhat unimportant	Very unimportant
K – 2	23	54	8	15	0
3 – 5	32	41	22	6	0
6 – 8	49	42	5	4	0
9 – 12	60	38	0	2	0
Total	41	42	13	4	0

^a Cell entries are percentages (%).

98% of ninth through twelfth grade teachers report that climate change education is somewhat to very important.

Table 28. Teacher interest in professional development training across grade levels taught ^a

	K – 2	3 – 5	6 – 8	9 – 12	Total
Science content	46	83	70	85	81
Facilitating inquiry-based activities	69	67	68	58	66
Conducting hands-on activities	100	88	77	78	83
Incorporating new lab activities	15	47	61	75	56
Facilitating field work/data collection	39	47	60	68	53
Analyzing data	15	29	40	43	35
Using distance learning technology	39	25	18	18	20
Other ^b	0	1	2	3	2

^a Cell entries are percentages (%) of teachers interested in the professional development training indicated.

^b Other professional development training interests indicated include: collaborative projects that are more long term and learning about local resources

Appendix B - Market Analysis Survey Instrument

Oregon Coast Education Market

1. Oregon Coast Education Market Analysis

The South Slough National Estuarine Research Reserve and the Coos Bay District of the US Bureau of Land Management are working together to better understand what organizations are providing coastal education opportunities in Oregon. The results of this market analysis will provide information to providers of coastal education as we seek to improve our services to various K-12 audiences.

The information provided by you is voluntary. The results of the study will be published and will be distributed to participating organizations upon request. We will not share this information within the report or with other organizations. However, we may use this information to contact you for follow up purposes.

This survey will take 15-20 minutes to finish. You may edit information you provide at anytime while taking the survey. Use the "Prev" and "Next" buttons at the bottom of each page to navigate the survey. The first ten participating organizations will receive a coastal education kit containing a set of the Discovery Channel "Life" DVDs, South Slough NERR's "Tide of the Heron" DVD, and other educational resources. Thanks for joining in the effort to advance coastal education in Oregon!

***1. I agree to the above conditions of the survey regarding my contact information.**

- Yes
- No

Oregon Coast Education Market Analysis

2. Agency Information

*1. Please complete the following information:

Name of organization:

Address:

City:

State:

Telephone number with area code:

Website address:

Name of person completing this survey:

Position:

Email:

*2. Which of the following counties do you serve? Check all that apply.

- | | | |
|------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> Baker | <input type="checkbox"/> Hood River | <input type="checkbox"/> Polk |
| <input type="checkbox"/> Benton | <input type="checkbox"/> Jackson | <input type="checkbox"/> Sherman |
| <input type="checkbox"/> Clackamas | <input type="checkbox"/> Jefferson | <input type="checkbox"/> Tillamook |
| <input type="checkbox"/> Clatsop | <input type="checkbox"/> Josephine | <input type="checkbox"/> Umatilla |
| <input type="checkbox"/> Columbia | <input type="checkbox"/> Klamath | <input type="checkbox"/> Union |
| <input type="checkbox"/> Coos | <input type="checkbox"/> Lake | <input type="checkbox"/> Wallowa |
| <input type="checkbox"/> Crook | <input type="checkbox"/> Lane | <input type="checkbox"/> Washington |
| <input type="checkbox"/> Curry | <input type="checkbox"/> Lincoln | <input type="checkbox"/> Wheeler |
| <input type="checkbox"/> Deschutes | <input type="checkbox"/> Linn | <input type="checkbox"/> Yamhill |
| <input type="checkbox"/> Douglas | <input type="checkbox"/> Malheur | <input type="checkbox"/> All of the above |
| <input type="checkbox"/> Gilliam | <input type="checkbox"/> Marion | <input type="checkbox"/> We do not serve counties in Oregon |
| <input type="checkbox"/> Grant | <input type="checkbox"/> Morrow | |
| <input type="checkbox"/> Harney | <input type="checkbox"/> Multnomah | |

3. Agency Information

1. How would you classify your organization? (Check all that apply)

- Federal government agency
- State government agency
- Municipal agency/department
- Educational institution
- Non-profit organization
- For profit business
- Museum/zoo/aquarium
- Nature center/environmental education center
- Other (please specify)

2. How are your programs funded? (Check all that apply)

- Federal funds
- State funds
- County/municipal funds
- Private foundation
- Grants from non-profits
- Program fees
- Other

Oregon Coast Education Market Analysis

4. Educational Programs

1. What types of educational programs does your organization provide? (Check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Field trips for K-12 students | <input type="checkbox"/> After school program |
| <input type="checkbox"/> In-school/classroom programs for K-12 students | <input type="checkbox"/> Home school programs |
| <input type="checkbox"/> Teacher professional development | <input type="checkbox"/> Educational outreach |
| <input type="checkbox"/> In-service training | <input type="checkbox"/> Summer camps |
| <input type="checkbox"/> Pre-service training | <input type="checkbox"/> Distance learning programs |
| <input type="checkbox"/> Informal educator training | <input type="checkbox"/> Educational TV/radio programs |
| <input type="checkbox"/> Other (please specify) | |

2. What grade levels do you serve? (Check all that apply)

- | | | |
|------------------------------|-------------------------------|---|
| <input type="checkbox"/> K-2 | <input type="checkbox"/> 6-8 | <input type="checkbox"/> Higher Education |
| <input type="checkbox"/> 3-5 | <input type="checkbox"/> 9-12 | |

Oregon Coast Education Market Analysis

5. Educational Topics

1. Which of the following topics are addressed by your educational programs and for what grade levels? Check all that apply.

	K-5	6-8	9-12	Informal
Nutrient Cycles and Food Webs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biodiversity and Adaptation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Life Cycles of Marine/Aquatic Organisms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Animal Migration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Estuarine biology & ecology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marine biology & ecology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forest biology & ecology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geological Change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rivers & Watersheds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Cycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Erosion and Sedimentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate Change/Sea Level Rise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tides, Waves, Currents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marine/freshwater Pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conservation/Restoration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stewardship actions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human interaction with nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sustainable practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Best Management Practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Careers in Science (coastal related careers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commercial Fishing & Fisheries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation (Fishing, Birding, Boating, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Cultural Heritage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Oregon Coast Education Market Analysis

Experimentation & the Scientific Method	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab or Field Work Techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology & Instrumentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interdisciplinary Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

2. What topics do you think need more attention in terms of educational programs offered in the region? (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Nutrient Cycles and Food Webs | <input type="checkbox"/> Marine/freshwater Pollution |
| <input type="checkbox"/> Biodiversity and Adaptation | <input type="checkbox"/> Coastal Hazards |
| <input type="checkbox"/> Life Cycles of Marine/Aquatic Organisms | <input type="checkbox"/> Conservation/Restoration |
| <input type="checkbox"/> Animal Migration | <input type="checkbox"/> Stewardship actions |
| <input type="checkbox"/> Invasive Species | <input type="checkbox"/> Human interaction with nature |
| <input type="checkbox"/> Estuarine biology & ecology | <input type="checkbox"/> Sustainable practices |
| <input type="checkbox"/> Marine biology & ecology | <input type="checkbox"/> Best Management Practices |
| <input type="checkbox"/> Forest biology & ecology | <input type="checkbox"/> Careers in Science (coastal related careers) |
| <input type="checkbox"/> Geological Change | <input type="checkbox"/> Commercial Fishing & Fisheries |
| <input type="checkbox"/> Rivers & Watersheds | <input type="checkbox"/> Recreation (Fishing, Birding, Boating, etc.) |
| <input type="checkbox"/> Water Cycle | <input type="checkbox"/> Coastal Cultural Heritage |
| <input type="checkbox"/> Erosion and Sedimentation | <input type="checkbox"/> Experimentation & the Scientific Method |
| <input type="checkbox"/> Weather | <input type="checkbox"/> Lab or Field Work Techniques |
| <input type="checkbox"/> Climate Change/Sea Level Rise | <input type="checkbox"/> Data Analysis |
| <input type="checkbox"/> Tides, Waves, Currents | <input type="checkbox"/> Technology & Instrumentation |
| <input type="checkbox"/> Water Quality | <input type="checkbox"/> Interdisciplinary Research |
| <input type="checkbox"/> Other (please specify) | |

6. Teacher Professional Development

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

- K-2
- 3-5
- 6-8
- 9-12
- Do not offer professional development
- Other (please specify)

7. Teacher Professional Development

1. What type of teacher professional development does your organization provide? (Check all that apply)

- Half-day educator training
- Full-day educator training
- 10-hour training
- Field experience
- Class and field experience
- Networking fair
- Multiple day conference
- Single day symposium with professional experts
- Distance Education
- Video/DVD
- Other (please specify)

2. Do you offer teachers educational/professional development credits?

- No
- Don't know
- Yes. We offer (describe)

8. Program Development/Marketing

1. Are there plans to expand your K-12 programs or activities?

- No
- Yes (please briefly describe)

2. Are there plans to expand your teacher professional development programs?

- No
- Yes (please briefly describe)

3. 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 media
- Directly to past participants
- Website (specify below)
- List-serv (specify below)
- Other (please specify)

Oregon Coast Education Market Analysis

4. What are some barriers you've identified to participation in your programs or activities? (Check all that apply.)

- Program fees
- Transportation costs
- Lack of time
- Alignment with curriculum
- Lack of chaperones
- Other (please specify)

9. Partnerships

1. Do you currently partner or work with other groups or institutions to offer your programs?

- No
- No, but I am interested.
- Yes, with whom do you partner?

2. Data from this survey will be available to participants. Would you like to be contacted when the results are available? *NOTE: We will contact you using the information collected at the beginning of the survey.

- No
- Yes

3. The first ten participating organizations to complete this survey are eligible to receive a coastal education kit containing a set of the Discovery Channel "Life" DVDs, South Slough NERR's "Tide of the Heron" DVD, and other educational resources. Would you like receive a kit? *NOTE: We will contact you using the information collected at the beginning of the survey.

- No
- Yes

10. Oregon Coast Education Market Analysis

Thank you for participating in our survey! If you wish to edit any information you provided while taking the survey use the "Prev" and "Next" buttons at the bottom of the page before clicking "Done". For any questions or for more information please contact Tom Gaskill at tom.gaskill@state.or.us.

Oregon Coast Education Needs Assessment

Welcome!

We believe that teaching about estuaries, coastal watersheds, the ocean and the rich diversity of life found here is a valuable part of k-12 education in Oregon. We are seeking to enhance our understanding of the ways in which this type of education is occurring in schools and what teachers need to more effectively offer coastal education to their students.

Your participation in this needs assessment will help us to better target our efforts and resources to most effectively achieve improvements in marine, watershed, and coastal education throughout our study area. Results of this study will also contribute to an effort by the National Estuarine Research Reserves to improve estuary education throughout the United States.

This survey will take 15-20 minutes to finish. You may edit information you provide at anytime while taking the survey. Use the "Prev" and "Next" buttons at the bottom of each page to navigate the survey. The information provided by you is voluntary. Your answers and comments are strictly confidential throughout this survey. Specific data collected will not be explicitly identified in the final results.

Each participating teacher will be included in a drawing to receive 1 or 40 available coastal education kits containing a set of the Discovery Channel "Life" or Planet Earth" DVDs, South Slough NERR's "Tide of the Heron" DVD, and other educational resources (valued at over \$50).

This survey will be closed June 30th, 2012. Thank you in advance for your willingness to advance our understanding of coastal education in K-12 schools in Oregon!

Background

1. In which Oregon county do you currently teach?

- Coos
- Curry
- Douglas
- Jackson
- Josephine
- Lane
- None of the above

Background

2. Which grades do you currently teach? (Check all that apply)

- K-2
- 3-5
- 6-8
- 9-12
- Other?

3. How many years have you been teaching?

- Less than 2
- 2-3
- 3-5
- 5-7
- 10-15
- More than 15

4. Approximately what percentage (%) of students in your school identify with the following racial/ethnic groups? Please use numerical values for your response.

White/Caucasian	<input type="text"/>
Hispanic	<input type="text"/>
Black	<input type="text"/>
Asian/Pacific Islander	<input type="text"/>
American Indian/Alaskan Native	<input type="text"/>
Nonresident Alien	<input type="text"/>

5. What is your current age in years?

- Prefer to not answer
- Age:

Oregon Coast Education Needs Assessment

6. Please indicate your gender

- Female
- Male
- Prefer to not answer

7. How often, if ever, do you visit or use Oregon's coastal areas for recreation or leisure time?

- Never
- Rarely, no more than once or twice a year
- Occasionally, several times a year
- Somewhat frequently, a least once a month on average
- Very frequently, at least once a week or more

8. There is a National Estuarine Research Reserve (NERR) located in Charleston, OR (Coos County) called the South Slough NERR, which is one of 28 Reserves around the country protected for the purposes of education, research, water-quality monitoring and coastal stewardship. Were you aware that your state has a NERR?

- Yes
- No

9. If "yes", have you ever used any of their educational services or products?

***Note: Examples of educational services or products include the South Slough website, curriculum, taking students on a field experience, outreach, professional development training, etc.**

- Yes
- No

10. If "yes", which services or products?

11. If "no", why not?

Oregon Coast Education Needs Assessment

Educational Topics

Please use the following definitions for this section.

Estuary: An estuary is a semi-enclosed coastal body of water where fresh and salt water meet and mix.

Watershed: An area of land where all the water drains to a common place.

Ocean: Related to a system of open-ocean habitats, characterized by exposure to wave action, tidal fluctuations and ocean currents.

12. How many years have you been teaching estuary, watershed and ocean related topics?

	None	Less than 2 years	2-3 years	3-5 years	5-7 years	7-10 years	10-15 years	More than 15
Estuaries	<input type="radio"/>							
Watershed	<input type="radio"/>							
Ocean	<input type="radio"/>							

13. How many class or activity periods of estuary, watershed, and/or ocean instruction do your students receive in a typical school year?

	None	A portion of one class	One to two classes per year	3 to 5 classes per year	6 to 15 classes per year	More than 15 classes per year
Estuaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watershed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ocean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Oregon Coast Education Needs Assessment

14. From which web resources do you currently obtain estuary, watersheds, and ocean information for use in your classroom? Check all that apply.

- NOAA's Education Website - <http://www.education.noaa.gov>
- National Estuarine Research Reserve System's Website - <http://nerrs.noaa.gov>
- National Estuarine Research Reserve System's, Education Website – <http://www.estuaries.noaa.gov>
- South Slough NERR - <http://www.southsloughestuary.org>
- Oregon Department of Education - <http://www.ode.state.or.us/>
- NSTA Estuaries Sci Guide - <http://sciguides.nsta.org>
- EPA Education Website - <http://www.epa.gov/enviroed/>
- Wikipedia - <http://wikipedia.org>
- National non-profit. (specify below)
- Local non-profit. (specify below)
- I do not use web resources.
- Other (please specify)

15. Are estuary and estuary related topics a required part of your science teaching requirements?

- Yes
- No
- Don't know

16. Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following?

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Outdoor experiential activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lab or field work/data collection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stewardship projects or activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data analysis, statistics, and probability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scientific inquiry skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Educational Material Development

17. Do you foresee a need for new estuary/coastal/watershed related educational materials in different languages?

Yes

No

If "yes", which?

18. What percent of your students are English Second Language (ESL)?

Oregon Coast Education Needs Assessment

19. Please rate your level of need for further information and education materials on the following topics:

	Highly needed	Need	Do not need
Nutrient Cycles and Food Webs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biodiversity and Adaptation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life Cycles of Marine/Aquatic Organisms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal Migration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invasive Species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estuarine biology & ecology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marine biology & ecology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forest biology & ecology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geological Change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rivers & Watersheds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water Cycle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Erosion and Sedimentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weather	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climate Change/Sea Level Rise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tides, Waves, Currents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water Quality & Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marine/freshwater Pollution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coastal Hazards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conservation/Restoration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stewardship actions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human interaction with nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainable practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Best Management Practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Careers in Science (Coastal related careers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial Fishing & Fisheries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recreation (Fishing, Birding, Boating, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coastal Cultural Heritage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experimentation & the Scientific Method	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Oregon Coast Education Needs Assessment

Lab or Field Work Techniques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technology & Instrumentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interdisciplinary Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		

20. Thinking about the different science content areas you teach, how important is estuary education?

- Very important
- Somewhat important
- Neither important or unimportant
- Somewhat unimportant
- Very unimportant

21. Thinking about the different content areas you teach, how important is climate change education?

- Very important
- Somewhat important
- Neither important or unimportant
- Somewhat unimportant
- Very unimportant

22. What help do you need to incorporate more discussion about the effects of climate change on coastal areas in your classroom?

- Education materials & activities
- Age appropriate background materials
- Professional development training
- Sampling equipment
- Mini grants
- None
- Other (please specify)

Outdoor Education

Outdoor education may take place on your school campus or at various local or distance natural areas.

23. During your last two years of teaching have you used outdoor experiences in your curriculum?

- Yes
- No
- Don't know

If "yes", what types of activities?

24. During your last two years of teaching, how often have you used outdoor experiences in your curriculum?

- Never
- One to four times
- Five to nine times
- Ten to fifteen times
- More than fifteen times

25. Would you like to incorporate more outdoor education in your teaching?

- Yes
- No
- Don't know

Oregon Coast Education Needs Assessment

26. What help do you need to incorporate more outdoor education in your classroom?

Check all that apply.

- Field equipment
- Activities & teaching materials
- Training to guide outdoor activities
- Increased support from administration
- Increased funding and resources
- I do not need help
- Other (please specify)

Real/Archived Data Streams

Please use the following definitions for this section:

-Real-time data streams are defined as information from scientific instruments studying current conditions or events.

-Archived data is defined as previously collected data studying past conditions or events that is stored for later analysis.

27. Which real-time/archived science data sets have you used in your teaching related to the following topics? Check all that apply.

- Algal blooms
- Animal tag/tracking
- Atmospheric carbon dioxide
- Bathymetry/topography
- Currents
- Dissolved oxygen (DO)
- Fish species & abundance
- Nutrients
- Ocean color
- pH
- Salinity
- Sea level rise
- Temperature: air
- Temperature: water
- Water depth
- Water contaminants
- Water turbidity (clarity/cloudiness)
- Waves
- Zooplankton species
- None of the above
- Other (please specify)

Oregon Coast Education Needs Assessment

28. Which of the following real-time/archived data sets would you need synthesized into age-appropriate learning materials and visualizations for your teaching? Check all that apply.

- Algal blooms
- Animal tag/tracking
- Atmospheric carbon dioxide
- Bathymetry/topography
- Currents
- Dissolved oxygen (DO)
- Fish species & abundance
- Nutrients
- Ocean color
- pH
- Salinity
- Sea level rise
- Temperature: air
- Temperature: water
- Water depth
- Water contaminants
- Water turbidity (clarity/cloudiness)
- Waves
- Zooplankton species
- None of the above
- Other (please specify)

Professional Development

29. What are the reasons you attend professional development opportunities?

- New lessons, activities, materials
- Field experience & techniques
- Lab experience & techniques
- Background information
- Networking
- Earn Continuing Education Units (CEUs) or Professional Development Units (PDUs)
- Don't know
- Other (please specify)

30. Are Continuing Education Units (CEUs) important or required in determining which professional development opportunities you participate?

- Important
- Required
- No
- Don't know

31. Are Professional Development Units (PDUs) important or required in determining which professional development opportunities you participate?

- Important
- Required
- No
- Don't know

Oregon Coast Education Needs Assessment

32. Which of the following factors might prevent you from attending professional teacher development workshops? (Please check the 3 that most commonly occur)

- High registration fees
- Travel/transportation costs
- Food/lodging costs
- Can't get time off
- No time/too busy
- Lack of administration support
- Training is not relevant to my needs
- No educational credits were offered
- Other (please specify)

33. Have you participated in any distance learning training?

- Yes
- No
- Don't know

34. If yes, what type of training(s) did you participate in?

- Webinar
- On-line course
- Live video conference

Other (please specify)

35. In the last three years, how many hours of professional development training in science have you obtained related to estuaries, watersheds and the ocean?

	None	Less than 8 hours	8-16 hours (1-2 days)	16-24 hours (2-3 days)	24-32 hours (3-4 days)	32-40 hours (4-5 days)	More than 40 hours
Estuaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watershed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ocean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Oregon Coast Education Needs Assessment

36. Which professional development trainings have you taken to supplement your estuary/watershed/ocean education? Check all that apply.

- NOAA/NERRS Teachers on the Estuary Training
- Project WET
- Project Wild Aquatic
- Green Eggs and Sand Workshop
- MARE
- The Oregon Coast Education Program
- Northwest Aquatic and Marine Educators (NAME)
- The Jason Project Professional Development
- Project Learning Tree
- Creeks and Kids
- None of the above
- None of the above
- Other (please specify)

37. What type(s) of professional development training interest you?

- Science content
- Facilitating inquiry-based activities
- Conducting hands-on activities
- Incorporating new lab activities
- Facilitating field work/data collection
- Analyzing data
- Using distance learning technology
- Other (please specify)

Oregon Coast Education Needs Assessment

Thank you!

38. By completing this survey you may choose to be included in a drawing to receive 1 or 40 available coastal education kits containing a set of the Discovery Channel “Life” or Planet Earth” DVDs, South Slough NERR’s “Tide of the Heron” DVD, and other educational resources (valued at over \$50).

Please provide your name and mailing address in the boxes below if you would like to be entered into the drawing.

****NOTE: this contact information will not be used with any other information you provided in the survey.**

Name	<input type="text"/>
Street address & apartment number	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zipcode	<input type="text"/>

39. Thank you for taking the time to thoughtfully answer these questions. If you wish to edit any information you provided while taking the survey use the “Prev” and “Next” buttons at the bottom of the page before clicking “Done”.

**Your input is important; if you have any questions regarding this survey please contact:
Tom Gaskill
Education Program Coordinator
South Slough NERR
541-888-5558 ext. 26**

If you have any comments, please use the following section: