Environmental Literacy: Report of findings from a survey of North Monterey County High School Students

Preliminary Report Submitted to the Elkhorn Slough Foundation and North Monterey County High School

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The mission of the Environmental Studies Program at California State University Monterey Bay is to develop students and communities with the knowledge, skills, and compassion to promote social and environmental justice and sustainable communities.

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Environmental Literacy:

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Introduction

As the second largest tidal salt marsh in California, the Elkhorn Slough is home to a diversity of resident and migratory birds, marine mammals, and fish. The Slough provides habitat for threatened and endangered species, including the endangered Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) and approximately 125 Southern sea otters (*Enhydra lutris nereis*). The wetland provides important ecological services to the region, filtering pollutants and serving as a carbon sequestration source (About Elkhorn Slough, n.d.).

The Elkhorn Slough Foundation is dedicated to conserving and protecting the Elkhorn Slough and surrounding watershed. In hopes of educating the next generation about its rich ecosystem and ecological importance, the Elkhorn Slough Foundation offers educational opportunities for local youth to learn about the environment of which they are a part. One of these opportunities is the Slough Crew run out of North Monterey County High School which began in 2014. The Elkhorn Slough Foundation's educational goal at NMCHS is to "increase environmental literacy in the Elkhorn Slough watershed" (Pofahl 2017). The Slough Crew engages in activities such as regular club meetings, field trips, creating school gardens, and hosting Earth week.

Environmental Literacy is defined as a combination of competencies, knowledge, and dispositions to support the enviornment and to ultimately demonstrate pro-environmental behaviors (NAAEE 2011). Environmental literacy is the capacity of an individual to act successfully in daily life from a broad understanding of how people and societies relate to each other and to natural systems, and how they might do so sustainably (Pofahl 2017). A person who is environmentally literate has the power to act individually or with others to support ecologically sound, economically prosperous, and equitable communities for present and future generations (CA DOE 2015).

This research project included partners from the Elkhorn Slough Foundation, North Monterey County High School, and California State University Monterey Bay, to better serve the data analysis and public outreach deliverables of this project. This report summarizes findings from a survey designed to gauge the environmental literacy of students over time. The survey will be issued in the fall and spring of the 2017-2018 school year. This report includes results from the first issuance of the survey in the fall of 2017.

Methods

To assess the success of the Slough Crew and related programming at North Monterey County High School, Katie Pofahl, the Outreach Coordinator of Elkhorn Slough Foundation, and Victoria Derr, a professor at CSU Monterey Bay, designed a survey to assess the attitudes, knowledge, and behaviors of students enrolled in science courses at North Monterey County High School, a pool of over 800 students (Pofahl, n.d.). Pofahl and Derr's intention is to issue this test at the beginning and end of the school year in 2017-2018, and potentially to continue beyond this academic year to assess environmental literacy and to improve program goals and functioning.

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Survey questions were developed by Derr and Pofahl, were reviewed by NMCHS science teacher Amber Gardea, and were pretested with Slough Crew members in August. ENSTU 350 students then took the survey as well to refine question wording. Overall, the survey was designed to assess the following:

- What is student knowledge of their local environment?
- What are student attitudes toward their local environment?
- Do students take action to conserve their environment?
- Do students who have been involved in our programs show a greater change over time?
- How do these aspects change over time for the entire student body?

The survey was written in English and translated into Spanish. The final survey was comprised of 21 questions, grouped into attitude (6 questions), knowledge (7 questions), behavior (4 questions), and demographic (4 questions) sections. Attitude and behavior questions were developed using a 5-point Likert scale. Attitude questions also included a 7-point "Connectedness to Nature" scale (Schultz 2002) (Figure 1). Attitude questions included attitudes toward environmental action/physical spaces at school and attitudes toward nature in general. The Connectedness to Nature scale (Figure 1) has been used widely to test students' feelings of connection to nature and has been shown to be a reliable measure.

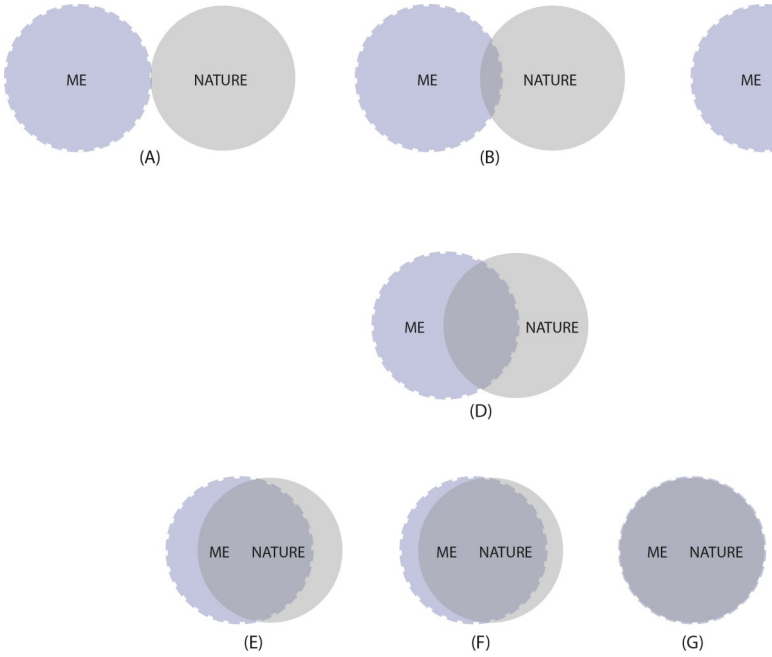


Figure 1. Connectedness to Nature scale. Graphic credit: Emily Tarantini

Knowledge questions included multiple-choice, true-false, and write-in questions. Behavior questions included both the intention to act (attitudes toward pro-environmental behaviors) and self-reported behaviors, such as recycling at school) along a Likert scale from Always True to Never True. A complete list of survey questions is provided in the Appendix.

Over two weeks, surveys were administered via a Google Form in the computer lab at school and during the students' science courses at NMCHS so that every student at the school had a chance to participate. The data

were extracted from the Google Form, with a total of 861 respondents. The initial Google Sheet was coded by students in the ENSTU 350 course and then transferred to Excel for analysis. Each question was given a code corresponding to whether it was an attitude question (A1-A6), a knowledge question (K1-K5), a belief question (B1-B4), or a demographics question (D1-D4). Each answer to a question was given a numerical value, i.e., Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1. We calculated the average, percent, and standard deviation for each question. For each question type (attitude, knowledge, behaviors), we also calculated a construct score derived from the average of students' answers to questions in each category. Constructs were created for school attitude, nature attitudes, nature connection (Venn diagram scale), knowledge, belief in action, and pro-environmental behavior constructs. Table 1 summarizes the variables and the types of analysis completed.

Table 1. Summary of Data Analysis

Variable	Analysis
School Attitude	Percent Agree or Strongly Agree (3 Questions) Average Response with Standard Deviation for each question School Attitude Construct Comparison of School Attitude Construct to Elkhorn Slough, Slough Crew, Gender, and Grade
Attitude to Nature	Percent Agree or Strongly Agree (2 Questions) Average Response with Standard Deviation for each question School Attitude Construct Comparison of Attitude to Nature Construct to Elkhorn Slough, Slough Crew, Gender, and Grade
Knowledge	Percent Correct (5 Questions) Word Frequencies and Word Clouds (2 Questions) Comparison of Knowledge Construct to Elkhorn Slough, Slough Crew, Gender, and Grade
Behavior: Belief in Action	Percent Mostly True or Always True (2 Questions) Average Response with Standard Deviation for each question Belief in Action Construct Comparison of Belief in Action Construct to Elkhorn Slough, Slough Crew, Gender, and Grade
Behavior: Pro-Environmental Behavior	Percent Mostly True or Always True (2 Questions) Average Response with Standard Deviation for each question Pro-Environmental Behavior Construct Comparison of Pro-Environmental Construct to Elkhorn Slough, Slough Crew, Gender, and Grade
Demographics and Student Experience	Percent of each Grade Percent of each Gender Percent who have visited Elkhorn Slough Percent who have participated in Slough Crew

The two open-ended questions were treated as qualitative data. One question asked students to name three animals that live in the Elkhorn Slough and the second question asked students to list 3 words to describe Elkhorn Slough. Qualitative data were cleaned by removing non-responses (including responses such as "lions, tigers, and bears" or "I don't know"). We analyzed the word frequency of responses in the qualitative

analysis software NVivo. We analyzed several groupings of responses in NVivo (e.g., comparing whether students had visited the slough vs. not visited, if students had participated in slough crew vs. no slough crew, 9th grade versus 12th) and found no difference in the word counts for the most frequently listed animals. We therefore analyzed all student responses to the word cloud questions as a single cohort.

Results

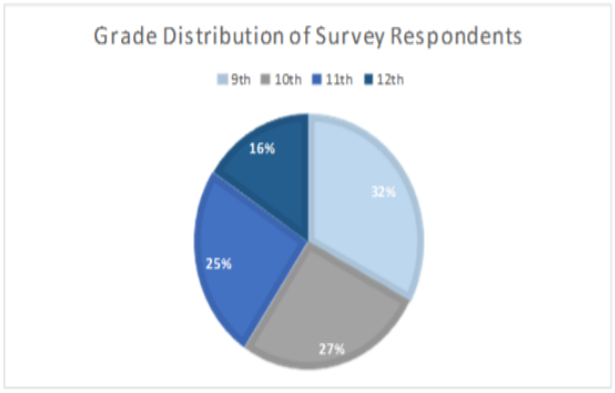
A total of 861 students completed the survey. There were no non-responses because all questions were required on the Google Form. There were some non-response answers in the qualitative responses, where students provided a "junk" answer; i.e., random letters, silly statements, or other terms that were not responding to the question asked. Overall, students showed the highest scores in their connection to nature and pro-environmental behaviors (Table 2). They had below average knowledge, at about 50% (Table 2). Their self-reports of Pro-Environmental Behaviors were higher than their Belief in Action (Table 2).

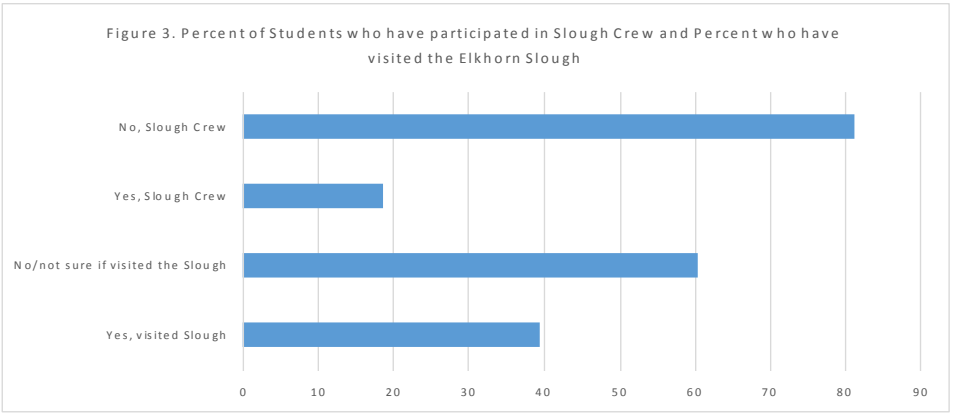
Table 2. Summary of Average Construct Scores

Construct Type (Scale)	Average Construct Score	Standard Deviation
School Attitude (1-5)	2.93	0.73
Attitude to Nature (1-5)	3.83	1.05
Knowledge (0-1)	0.459	
Belief in Action (1-5)	3.08	0.88
Pro-Environmental Behavior (1-5)	3.21	0.88

Demographics

North Monterey County High School students who took the survey were distributed across all grades, with slightly fewer in 12th grade than the other three grades (Figure 2). The sample includes slightly more females (52.25%) than males (45.88%), and 1.89% who identified as non-binary. In terms of experience with the Elkhorn Slough, 39.5% of respondents had visited the slough previously (60.51% had not or were not sure), and 18.6% of respondents said they have participated in the Slough Crew (Figure 3).





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Attitudes

Attitudinal data are presented in Tables 3-4 and Figures 4-6, and for the qualitative question asking students to list "3 words to describe Elkhorn Slough" (Figure 9, Table 7). Overall, data show that students have stronger attitudes toward nature and the environment in general than they do attitudes about the environmental context of their school (Figure 4). This is reflected in the construct scores: on average the school attitudes were a 2.93 (± 0.73) and the nature connection construct average was 3.83 (± 1.05). About 75% of students believe it is important to recycle and about 68% believe nature is a source for relaxation. On the other hand, 29% of students responded that they do not have many places to enjoy nature on school grounds, and only 18% of students believe that people at their school understand how their actions impact the environment (Table 3, Figure 4).

Table 3. Showing percent of students who "agree" or "strongly agree" with each question, average responses based on the 5-point Likert scale, and standard deviation of average responses.

Item	Percent	Average	St Dev	Description
A1	75.38	3.84	1.54	75.38% of students either Agree or Strongly Agree with the statement, "It is important to recycle to protect the environment."
A4	68.18	3.81	1.05	68.18% report that nature makes them feel free and relaxed from the world
A3	39.61	3.24	0.96	39.61% feel connected to school
A5	18	2.65	0.99	18% of the people at my school understand how their actions impact the environment
A6	29.15	2.89	1.03	29.15% think there are places on the school grounds where they can enjoy nature

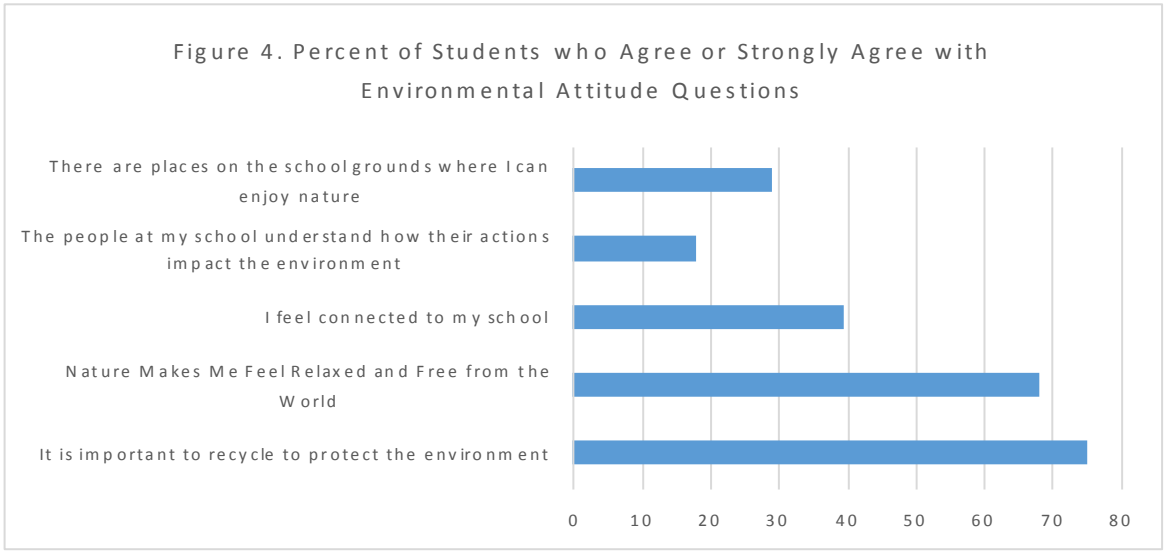

Figure 4. Percent of Students who Agree or Strongly Agree with Environmental Attitude Questions

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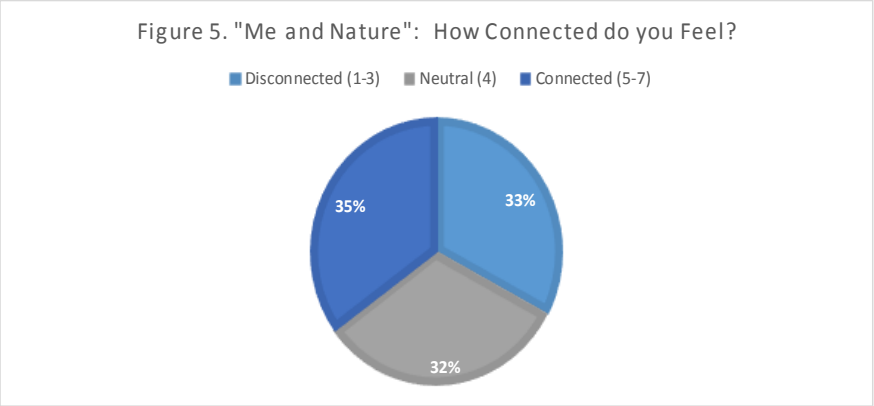
When responses for the Nature Connectedness scale were grouped into 3 ranges (positively connected, neutral, or not connected), student responses were roughly equal (Figure 5). In this analysis, 35% of students responded that they were connected or very connected (responses E-G of the Venn diagram, Figure 1), 32% neutral (response D, Figure 1), and 33% disconnected (responses A-C, Figure 1). When responses were shown in their distribution across all 7 categories, they show an even spread, with many responses directly in the middle and fewer responses on each extreme (not at all connected, or entirely connected) (Figure 6). However, it is noteworthy that 5% of students feel no connection to nature whereas more than double that number (10.5%) feel "as one" with nature (Figure 6).

Attitudes also were compared by grade. All grades except 12th graders had positive attitudes about their ability to make a difference. In contrast, Seniors had the most positive average nature construct score, of 5, with a standard deviation of 0 (Table 4).



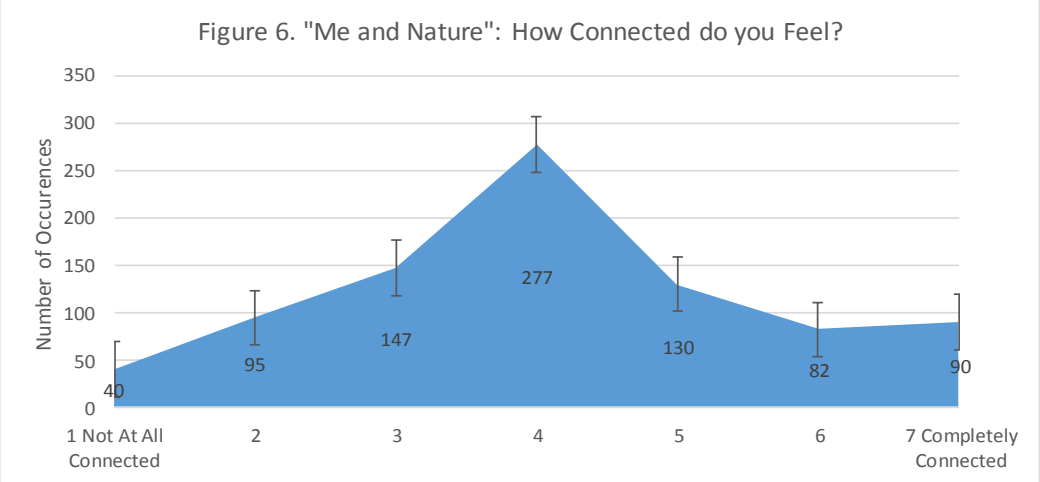


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Table 4. Average Attitudinal Construct Score for School and Nature, overall and by grade in school

Grade	Average School Attitude	STDV	Average Nature Construct Score	STDV
Overall	2.93	0.73	3.83	1.05
9th	3.02	0.76	2.57	0.78
10th	2.92	0.76	4	0.23
11th	2.84	0.75	4.56	0.17
12th	2.90	0.75	5	0

The average school attitude construct score was 2.93 (±0.73). This average gets progressively lower as students advance in their grade in school (Table 4). Males have an average school attitude construct score of 2.98 and the females 2.86; this means that they both have overall slightly negative to neutral school attitudes. On the other hand non-binary students have an average score of 3.44 towards school attitudes. This means that they have overall neutral-to-positive school attitude.

Attitudes toward nature were more positive for all students, with an average nature construct score of 3.83 (±1.05). In direct contrast to the average school attitude construct scores, the average nature construct score increases with each grade in school, with all 12th graders replying that they feel one with nature. Non-binary students seem to feel more connected to nature than either males or females. The non-binary average score was a 4.5; this means that on average, they feel connected or very connected to nature. On the other hand males felt their connection was neutral to slightly connected (3.74), and the same can be said about females, although their score was slightly higher (3.90).

Knowledge

Knowledge results are shown in Tables 5-6 and Figure 7-8. Knowledge questions were scored as a 0 for incorrect and a 1 for correct. The average knowledge construct score was 0.46, meaning that less than 50% of students responded correctly to the 5 questions. The average knowledge construct score was higher for freshman (0.48±0.2) and seniors (0.49±0.22) than for sophomores or juniors (0.44±0.2, each).

Most students responded that "flooding on a river renews the environment" and that "wetlands are good for water quality." However, only 18.41% correctly identified the watershed where their school is located. Of those who could, some listed Moro Cojo and some Elkhorn Slough. Nearly 30% of students responded that *both* trash & debris and agricultural runoff harm water quality. Some student selected one of these two, or checked both of these along with incorrect responses. These answers were coded as incorrect responses because they do not reflect complete knowledge. However, many students were able to mark at least one of the two correct responses, usually trash and debris. There was no discernable difference between the knowledge of male, female, or non-binary students.

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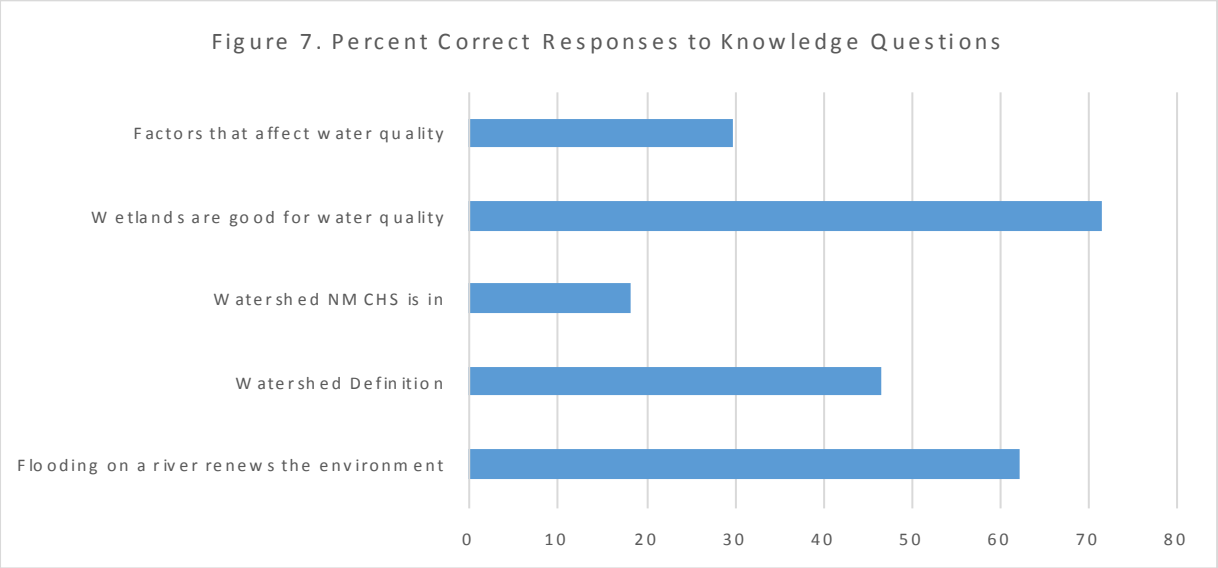

Table 5. Showing percent of students who responded correctly to each question.

K1	62.49% marked True that Flooding on a river renews the environment.
K2	46.81% correctly defined Watershed
K3	18.41% correctly identified which Watershed Their School Is In
K4	71.78% marked True that wetlands are Good for Water Quality.
K5	29.97% marked correctly that Trash & Debris and Agricultural Runoff Harm Water Quality

Results from the question asking students to "list 3 animals that rely on Elkhorn Slough for their habitat," and the 10 most frequent responses are provided in Figure 8 and Table 6. As described in the methods section, there was no discernable difference in the most frequent responses by participation in Slough Crew, visitation of the slough, or by grade. Fish, birds, frogs, and otters were the most common responses. However, many students also listed the salamander, with fewer than 10 listing the full name of Santa Cruz long-toed salamander. Responses to the question to list 3 words they associated with Elkhorn Slough are provided in Figure 9, Table 7. These results show a mix between negative associations (smelly, dirty, messy), to neutral terms (wet, water, green), to positive (beautiful, relaxing, peaceful). The top 2 responses were negative, the next 2 were neutral, and 4 or the 5 remaining were positive (Table 7). For the analysis of words associated with Elkhorn Slough, all "I Don't Know" responses were omitted, so the results reflect only those 39.5% of students who said they have visited the slough (Figure 9, Table 7). The word cloud results did not indicate differences based on comparison variables.

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Figure 8: Frequency of reported animals that depend on Elkhorn Slough

Table 6. Word frequency in response to the question, "List 3 animals that rely on the Elkhorn Slough for habitat."

Word	Count	Weighted Percentage (%)
fish	403	19.45
birds	327	15.78
otter	194	9.36
frogs	169	8.16
insects	55	2.65
seals	55	2.65
salamanders	49	2.36
ducks	47	2.27
snakes	46	2.22
sharks	35	1.69

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Figure 9: Frequency of words that students used to describe Elkhorn Slough

Table 7. Word frequency in response to the question, "List 3 words to describe Elkhorn Slough."

Word	Count	Weighted Percentage (%)	Similar Words
smelly	60	5.34	smelly
dirty	59	5.25	dirty
water	47	4.19	water
wet	47	4.19	wet
beautiful	45	4.01	beautiful, beauty
nature	40	3.56	natural, nature
green	29	2.58	green
muddy	29	2.58	muddy
big	24	2.14	big
nice	24	2.14	nice

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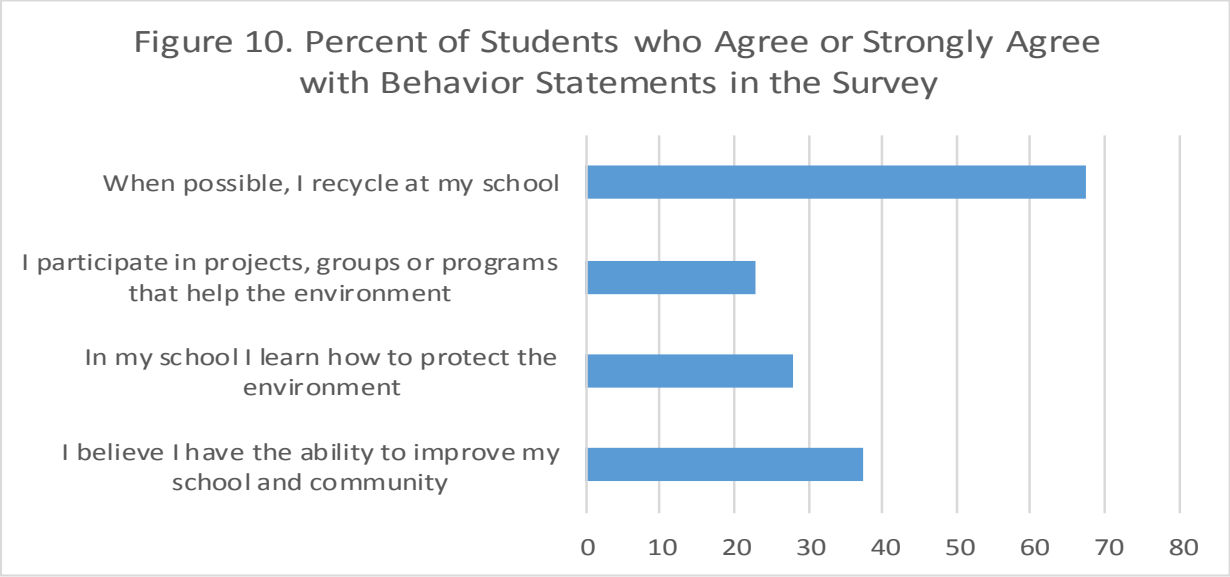
Behavior

Behavior scores show that students show low percentages of beliefs in their knowledge and ability to improve or protect the environment (Table 8, Figure 10). Students show higher agreement with their recycling behaviors (67.47% Agreed or Strongly Agreed to this) (Table 8). The average behavior construct score for ability to influence their school environment was 3.08 (± 0.88), and to protect the environment more generally was 3.22 (± 0.88). In the "3 words to describe Elkhorn Slough" question, one of the students wrote *"The Elkhorn Slough seems to be dying, but we are trying to make it last as much as we can. It is a beautiful place where many tourists and local people like to go take pictures."*

Table 8. Percentage of students who either Agree or Strongly Agree with Behavior Questions.

Item	Percent	Description
B1	37.28	37.28% of students either agree or strongly agree with this statement "I believe I have the ability to improve my school and community."
B2	28.10	28.11% of students either agree or strongly agree with this statement "In my school I learn how to protect the environment."
B3	22.88	22.88% of students either agree or strongly agree with this statement "I participate in projects, groups or programs that help the environment."
B4	67.47	67.47% of students either agree or strongly agree with this statement "When possible, I recycle at my school."



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Discussion

The results show that overall, students' attitudes toward the environment are neutral to slightly positive, their knowledge is low to average, and their behaviors are moderately positive, but perception of others' behaviors is low. Connection to nature is also moderate. Attitudes and beliefs were not very different for those who have visited the slough as compared to those who had not. Similarly there was not much discernable difference between those who were part of the Slough Crew in attitudes, knowledge, or behavior. Since the average attitude construct was neutral to slightly negative (2.93) for questions related to the school environment, the Elkhorn Slough Foundation may want to consider ways to implement programs to further engage and educate all students at North Monterey County High School.

Students' overall attitudes to nature were neutral to slightly positive (the average construct score was 3.83), with 10.5% of students feeling very strongly connected to nature, and 35% feeling positively connected to nature overall. When analyzing demographics, the non-binary students showed higher attitudinal scores toward school and nature. This could be a result of the very small sample size of this demographic, but it could also be that non-binary students show greater affinity to the environment, either as an escape (Pilkington and D'Augelli 1995) or as a personal disposition, or if a greater percentage of non-binary students are also in 11th or 12th grades where nature construct scores were higher. The demographic results also show slightly less than one in five (18.6%) respondents have participated in Slough Crew. The results also show that most students feel there is no place where students can feel connected to nature at school.

The average knowledge construct score was 0.46. This means that on average, the students got half of the knowledge questions correct. There was quite a bit of variability in the knowledge results. Most (71.78%) of the survey respondents knew the importance of a watershed like the Elkhorn Slough even though only 18% could correctly write the name of the watershed where their high school is located.

Students' behavior responses show that the majority of students say they will recycle whenever they have the opportunity, but most do not participate in events to help the environment. Thus while they attributed positive attitudes and actions to themselves, they did not extend these beliefs to other students. This may be attributed to a Response Bias, in which students want to reflect themselves well to others in the survey. And when students observe trash or others who do not recycle at school, they distrust their peer's environmental commitment. This discrepancy gives students and teachers alike an opportunity to support greater accountability for one's actions. Currently, students do not appear to feel empowered to make changes in their school, even if that is simply encouraging proper recycling and cleaning up after oneself.

One of the most surprising responses to the survey is that 70% of students did not know that trash, debris, and agricultural runoff had negative impacts on water quality. While the process of coding exaggerates this response (in that some students responded partially correct but were scored as incorrect for analysis), considering the slough's ecological importance and the environmental impact of agriculture on the region, more concentration could be placed on educating students about the impacts of pollution in the region. We did not detect knowledge differences across grades, but in a preliminary regression analysis, we did find a slightly positive correlation between students' knowledge and their behavior responses. In other words, students with

greater knowledge showed slightly more pro-environmental behavior responses as well. Further analysis with end-of-year survey data can tease apart differences in these domains. Chawla's (2009) model of factors associated with the environment suggests that knowledge about the environment *as well as* knowledge about *how* to take action are important precursors to providing opportunities to *take action*. Focusing on ways to care for the environment might lead to stronger attitudes as well: taking positive action might be one way to build positive associations with the environment and help to build a more consistent environmental identity for students (Chawla and Derr 2012).

Limitations of this research include the potential Response Bias inherent to self-reported questions, in which students may report more favorable attitudes or behaviors because they deem them more socially acceptable. However, the area of the survey this seems most likely is in the behavior self-reports. In the future, it may be desirable to use different assessment methods for behaviors, such as school observations or trash audits. Longer term, the results will be able to show more clearly if Elkhorn Slough Foundation and the Slough Crew's programming is contributing to gains in environmental literacy at the school overall. While the intention to follow students 2x per year is a good one for establishing changes in literacy, it may also be valuable to follow students beyond high school, or to conduct interviews to see if programming impacts career choices or pro-environmental behaviors beyond high school.

Conclusion

The Elkhorn Slough is a unique and important ecological place. The Slough Crew and associated programming at North Monterey County High School were established to help create a generation of environmentally literate stewards who can positively contribute to the health of the Slough. This research project was carried out to gather initial information that can help assess the attitudes, knowledge, and behaviors of the North Monterey County High School student population and to identify gaps in learning or programming. Overall, students attitudes and belief that behaviors are important were neutral to positive, their knowledge was low to average, and their feelings of connection to nature were neutral to positive. Students demonstrated very generic knowledge about the slough, listing fish, birds, otters, and frogs by a very large margin. Their descriptions of the slough are mixed and probably reflect the differences in attitudinal scores and connection to nature, with some reporting positive words and some negative. That attitudinal scores and self-reported pro-environmental behaviors were neutral-to-positive suggests that there is a positive entry point for increasing literacy through programs that build knowledge and provide positive, direct experiences with the slough. The results suggest that while many people care about the environment, they do not know how to take care of it or feel empowered to take action. Focusing on ways to care for the environment might lead to stronger attitudes as well: taking positive action might be one way to build positive associations with the environment.

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Appendix: Survey Questions

Attitude

A1. It is important to recycle to protect the environment. / Es importante reciclar para proteger el medio ambiente. (1-5 Likert Scale, Strongly Disagree to Strongly Agree)

A2. Me and Nature. Choose the answer that best fits how you see yourself and nature. / Yo y la Naturaleza. Elige la respuesta que mejor se adapte a cómo te ves en relación con la naturaleza. (Venn Diagram A-G Scale, See Figure 1.)

A3. I feel connected to my school. / Me siento conectado con mi escuela. (1-5 Likert Scale, Strongly Disagree to Strongly Agree)

A4. Nature makes me feel free and relaxed from the world. / La naturaleza me hace sentir libre y relajado del mundo. (1-5 Likert Scale, Strongly Disagree to Strongly Agree)

A5. The people at my school understand how their actions impact the environment. / Las personas de mi escuela entienden cómo sus acciones afectan el medio ambiente. (1-5 Likert Scale, Strongly Disagree to Strongly Agree)

A6. There are places on the school grounds where I can enjoy nature. / Hay lugares en la escuela donde puedo disfrutar de la naturaleza. (1-5 Likert Scale, Strongly Disagree to Strongly Agree)

Knowledge

K1. Flooding on a river renews the environment. / Las inundaciones en un río renuevan el medio ambiente. (True/False)

K2. What is a watershed? / ¿Qué es una cuenca hidrográfica? (Multiple choice)

- The level below which the ground is saturated with water. / El nivel bajo el cual el suelo está saturado con agua.
- An area of land where all the water flows to the same place. / Un área de tierra donde toda el agua fluye al mismo lugar.
- A tank where water is stored. / Un tanque donde se almacena el agua.
- A building where water pumps are. / Un edificio donde están las bombas de agua.
- An underground water supply. / Una fuente de agua subterránea.

K3. What watershed is your school in? / ¿En qué cuenca hidrográfica está tu escuela? (Write in response)

K4. Wetlands are good for water quality. / Los humedales son buenos para la calidad del agua. (True/False)

Environmental Literacy

Appendix: Survey Questions (continued)

Knowledge (continued)

K5. Water quality is harmed by (check all that apply) / La calidad del agua se ve perjudicada (marque todos los que apliquen):

- Trash and debris / Basura y escombros
- Fishing / Pesca
- Recycling / Reciclaje
- Agricultural runoff / Escorrentía agrícola

K6. Write the names of 3 animals that depend on the Elkhorn Slough for their habitat /

K7. List three words to describe the Elkhorn Slough. If you have never been write "I don't know". / Enumere tres palabras para describir el Elkhorn Slough. Si nunca has visitado escribe "No sé".

Behavior

B1. I believe I have the ability to improve my school and community. / Creo que tengo la capacidad de mejorar mi escuela y comunidad. (1-5 Likert Scale, always true to never true)

B2. In my school I learn how to protect the environment. / En mi escuela aprendo cómo proteger el medio ambiente. (1-5 Likert Scale, always true to never true)

B3. I participate in projects, groups or programs that help the environment. / Participo en proyectos, grupos o programas que ayudan al medio ambiente. (1-5 Likert Scale, always true to never true)

B4. When possible, I recycle at my school. / Cuando sea posible, reciclo en mi escuela. (1-5 Likert Scale, always true to never true)

Demographics and Prior Experience

D1. Have you ever visited the Elkhorn Slough Reserve (the visitor center and walking trails on Elkhorn Road)? / ¿Alguna vez ha visitado la Reserva Elkhorn Slough (el centro de visitantes y senderos para caminar en el Camino Elkhorn)? (Yes/No)

D2. Have you participated in Slough Crew? / ¿Has participado en Slough Crew? (Yes/No)

Environmental Literacy

Appendix: Survey Questions (continued)

Demographics and Prior Experience (continued)

D3. What grade are you in? / ¿En que grado estás? (Freshman, Sophomore, Junior, Senior)

D4. What is your gender? / ¿Cuál es su género? (Male, Female, Non-Binary)