

## **Common Names for Invasive Species Project**

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### **Introduction:**

An invasive species is a non-native species that has evident economic, ecological, or health impacts. Oftentimes in scientific literature, invasive species are described using militaristic language and metaphors such as “eradicate”, “war against invasive species”, “attack”, and “combat” (Larson 2005). With the use of this militaristic language, there has been growing concern with invasive species and their common names.

The United States Department of Agriculture (USDA) demonstrates that 15% of the common names for invasive species are cultural or place-based (Chan, 2022). This statistic represents the abnormality of naming species after locations or cultures. This has created a growing concern as these place-based names are being used in combination with the militaristic language used with invasive species. For example, this is a sentence used in an article by the Pennsylvania Department of Conservation and Natural Resources, “Eliminate gypsy moth egg masses by scraping them into a container, sealing, and disposing of them” (Reed, 2021). In this sentence the common name is gypsy moth, a recognized derogatory term for the Romani people. It is being used simultaneously with the words eliminate and dispose, words often riddled with negative connotations. Regardless of the fact that ‘gypsy’ in itself is an offensive term, combined with militaristic language it promotes a negative view of the Romani people and associates them with something that must be eradicated.

This is just one example of the many common names that needed to be changed. And recently recognizing the harm this name promotes, the common name was changed to the spongy moth because their egg masses resemble a sponge (Better Common Name Project, 2022). This new common name demonstrates an important aspect in the renaming of species, unique and easily identifiable characteristics. These identifiable characteristics will help promote public identification and awareness of harmful invasive species without perpetuating harm against various ethnicities and cultures.

The creation of new common names through the acknowledgment of place-based and cultural names as potentially offensive guides the purpose of this study. This study aims to understand the general population's view on potentially offensive common names. This was accomplished with a 30 questions anonymous survey broken into three parts. 1) The common associations with

militaristic language and place-based names 2) Three species with potentially offensive common names and feedback about new proposed common names and 3) demographics. The three species this study focuses on are the Asian clam, the Chinese mitten crab, and Japanese wireweed. We will discuss them in more detail in the following section.

### **Chosen Invasive Species:**

#### **Asian clam**

The Asian clam (*Corbicula fluminea*) is a small bivalve that is light-colored and has a shell with distinct serrations. They are <50mm in size and their native range is along the North Pacific coasts of Russia, China, Korea, and Japan. The clam was first detected in 1938 in the Columbia River in Washington state. This species was likely introduced to the West Coast of North America as a food source but there are also theories that it came along with importing of the Giant Pacific oyster. However, there is uncertainty with how this species was introduced because its exact origins are unknown.

A pest risk assessment conducted on the Asian clam in Oregon found it to be high risk, with high uncertainty and a numerical score of 6 on a 1-9 scale (Draheim 2011). The primary concern of introduction of this species is through ballast water. Its spread potential is high and females can produce 45,000 to 200,000 eggs during a spawning event. The environmental impact is moderate to high because they can become a major biological disturbance and it bioaccumulates toxins like selenium which can be passed to its predators such as sturgeon and diving ducks. Additionally, they can clog pipes and waterways. The economic impact is low to high but there is uncertainty because of the limited data on the history of introduction of the species.

Some control methods used in small systems such as power plant water intake systems are screening, chloral injection, or increasing the temperature temporarily above 37 degrees Celsius (University of Wisconsin). One recommendation for management is to focus on prevention by instilling Coastal and trans-oceanic ballast water exchange requirements which are currently lacking in Oregon to prevent the larvae from entering Oregon estuaries.

Since the common name is “Asian clam”, we decided to pick this species to try to come up with recommendations because we think the current common name could be offensive to people since the geography has nothing to do with identifying the species.

#### **Chinese mitten crab**

Chinese mitten crab (*Eriocheir sinensis*) is a crab with chunks of hair on the white-tipped claws of larger juveniles and adults. These crabs have claws that are the same size, the shell has four spines on either side with a width of 3 inches. The Chinese mitten crab is native to rivers and estuaries in East Asia, Korea, and China. In the early 1990’s these crabs were found in the San Francisco Bay by commercial shrimp trawlers in which they spread quickly in the San Francisco Bay (University of Washington, 2020).

The Chinese mitten crab has become introduced to the west coast of the United States. The Chinese mitten crab are specifically found in the San Francisco Bay and the Delta watershed. This is causing harm to the native invertebrates and to the freshwater estuary communities. It also disturbs fisherman. The primary concern is through accidental release through ballast water. These crabs also have a huge effect ecologically through their predation and their ability to alter the structure of the freshwater communities. As well as the predation of salmonids and sturgeon eggs. These crabs also are known for burrowing, which results in erosion and weakness in riverbanks. (University of Washington, 2020).

As for removal efforts, one of the options was conducted through a San Francisco Partnership. In 1998 the state of California built a “Crabzilla” which was a 18-foot fish screen which traveled. This made it possible so that they can trap the crabs from traveling any further. The use of the “Crabzilla” trapped about 1 million of these crabs which transitioned them into another facility which made them into fertilizer (EPA, 2022).

### **Japanese wireweed**

Japanese wireweed or *Sargassum muticum* (*S. muticum*) is a large brown seaweed usually 1-3 meters in length; fast-growing, in the summer it can grow up to 10 cm a day. It is a highly tolerant plant capable of withstanding differences in salinity, temperature, desiccation, and light exposure (Guiry, 2000) making it a difficult invasive species. *S. muticum* is an invasive species native to Japan. It is believed to have spread through the transportation of Japanese oysters where it was introduced to the California coast in the 1940s and then to Europe in the 1970s; it is now considered a globally invasive species.

As an invasive species, it creates problems in many ways. Economically, it attaches to oyster shells increasing manual work to remove the algae. It can also get tangled up in farming structures and boat propellers causing additional maintenance costs. Ecologically it may outcompete native algae and aquatic plants interrupting the ecosystem's natural process. Its large size and fast-growing nature also create an algae screen preventing light penetration and decreasing the available light for the photosynthesis of other aquatic plants, thus disrupting the base of the food web, phytoplankton (*Wireweed*, n.d.).

There are currently three approaches to removal. One is mechanical removal which entails physically removing the plant. While this approach is both time and labor-intensive it is the most commonly used. Second, is chemical removal which entails the use of herbicides to kill the plant. However, this approach creates other major risks to other organisms and the surrounding environment. And third is biological which entails the use of natural predators to remove or slow the growth of the species. This plant however has few natural predators, and this approach would also mean introducing another new species to the environment, possibly causing more damage.

### **Proposed Common Names:**

The combination of the following species placed based names with the use of militaristic language for invasive species has led us to propose the following new common names. These names derive from the unique characteristics of each species making identification more achievable.

*Asian clam*

We propose the common name “Gold clam” because it is easier to visually identify based on its golden color.

*Chinese mitten crab*

*E. Sinensis* has a unique set of claws that resemble mittens with a fuzzy texture, therefore we propose removing the word Chinese with Furry to make the new common name “Furry mitten crab”.

*Japanese wireweed*

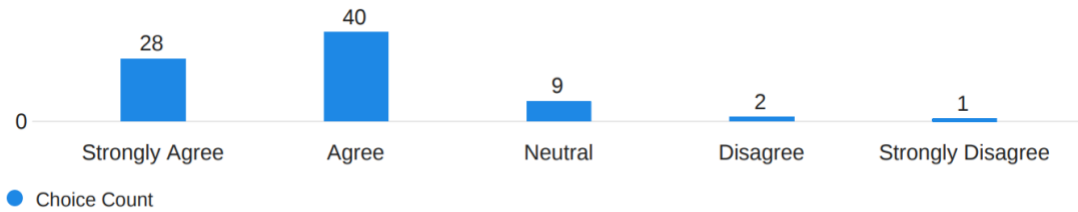
*S. muticum* has one easily distinguishable feature compared to other pacific coast seaweed, its small spherical float bladders (*Japanese wireweed*, n.d.). With this unique characteristic, which looks similar to small balloons, we propose the name “Ballooned seaweed”.

**Methods:**

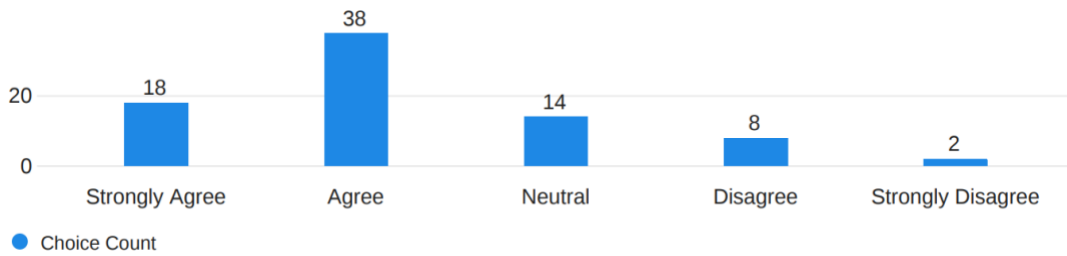
To develop the survey, the first step was to research invasive species from various sources which included the Washington Invasive Species Council, Oregon Invasive Species Council, and various others. After choosing invasive species to focus on, background research was conducted to learn about the history behind the name and why the species’ were invasive which included their origins and potential economic and ecological impacts. Then, after obtaining enough background information recommendations for new common names were created.

The survey questions surrounding militaristic language and invasive species were developed with research from scientific literature and also feedback from Dr. Samuel Chan. The survey was also anonymous. The first part of the survey focused on militaristic language and its use combined with invasive species. The second part of the survey focused on invasive species, including three species that were chosen to recommend new common names for: Asian clam, Chinese mitten crab, and Japanese wireweed. The survey questions were mostly set up to have responses using a likert scale of Strongly Agree, Agree, Neutral, Disagree, or Strongly Disagree. Additionally, some questions were left as open-answers for the respondents to type their own thoughts and suggestions towards invasive species. The survey was generated using Qualtrics, a free online survey maker tool. The free version had a limit of 30 questions and therefore, the survey generated for this study included 30 questions. The survey was then shared and distributed to the class by Dr. Cat through the announcements on Canvas and also distributed to friends and family to reach a wider demographic and sample size of the general public. The survey remained open for a week and then the responses were analyzed using the Qualtrics platform which also generated the graphs and word maps of the results.

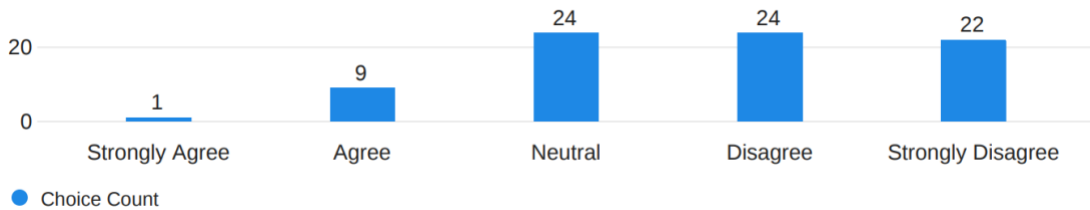




**Figure 4.** Question 4 part 1 asked, does using militaristic language on invasive species give a negative connotation to the species?

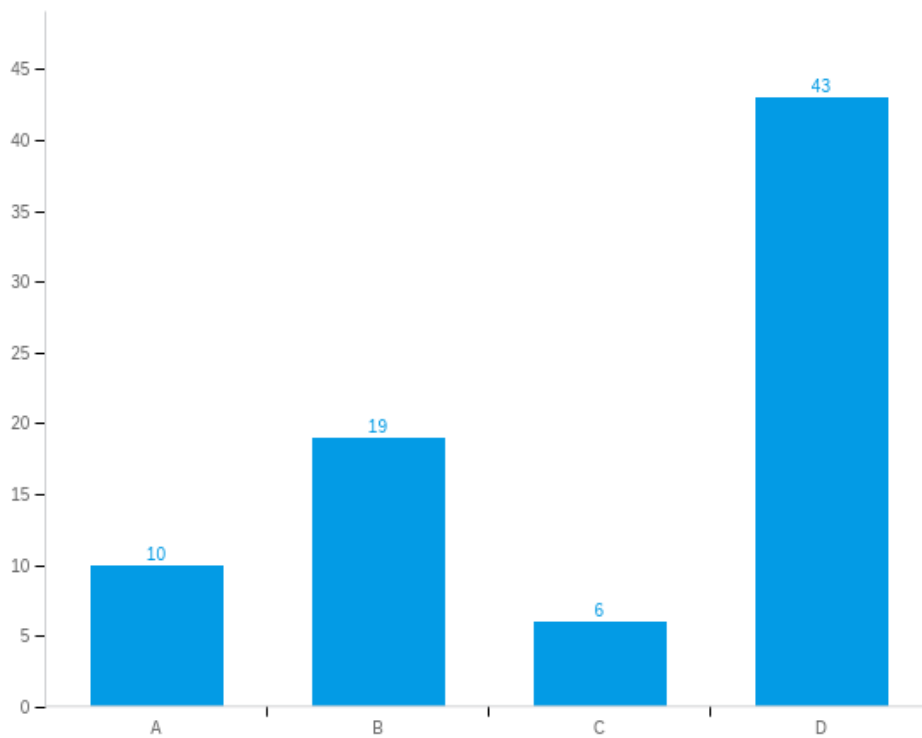
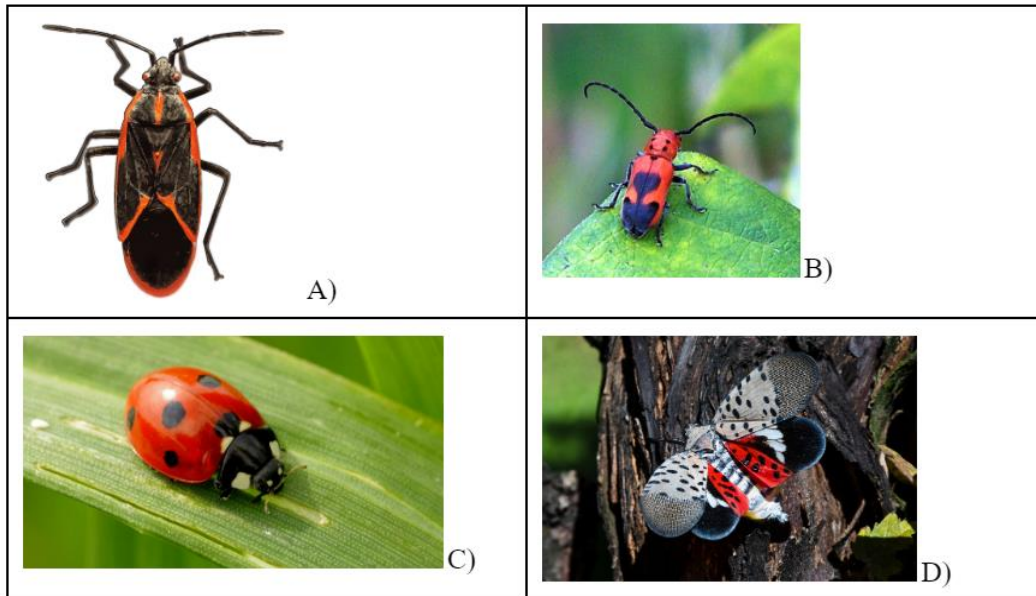


**Figure 5.** Question 5 part 1 asked, do the combined use of militaristic language and place-based names for invasive species give a negative view of the origin geographic location?



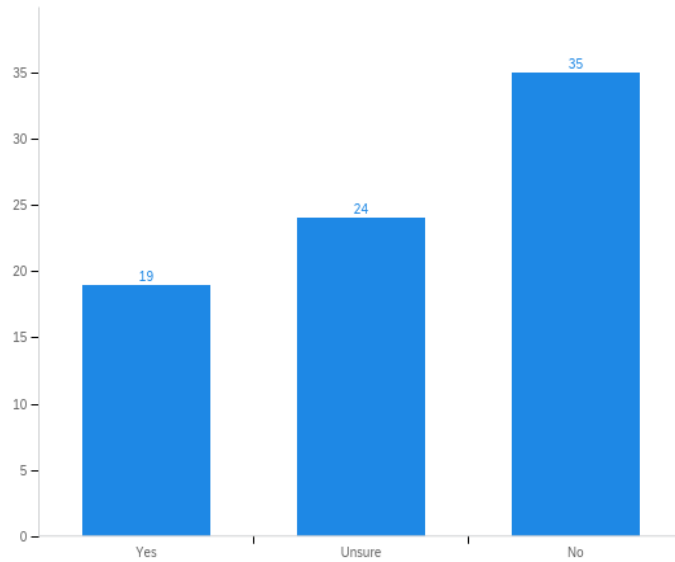
**Figure 6.** Question 6 part 1 asked, I have been harmed or offended by terminology used in invasive species names.

**Part 2: Invasive Species**

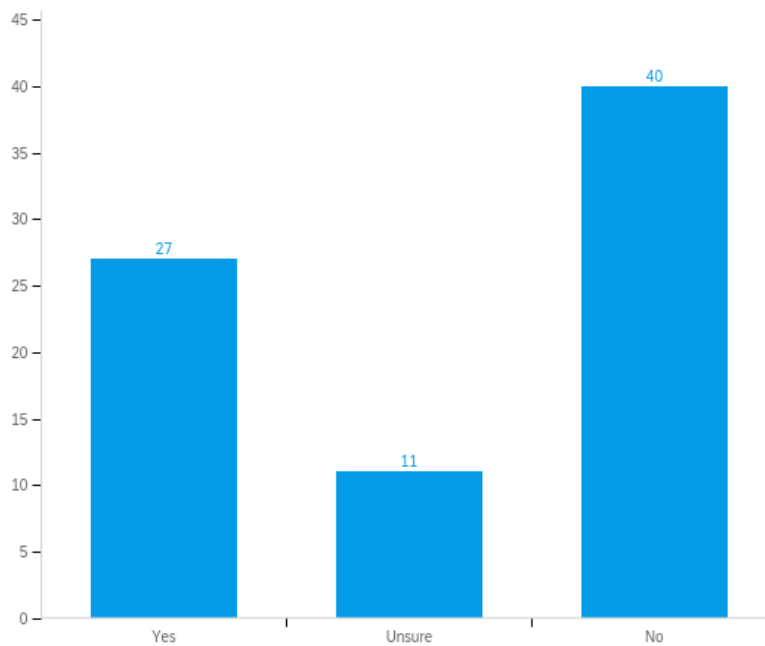


**Figure 7.** Question 1 part 2 asked, common names are used to help the general public identify species. Which one of these species do you think has the common name Spotted Lanternfly? (Select one)

## Asian clam



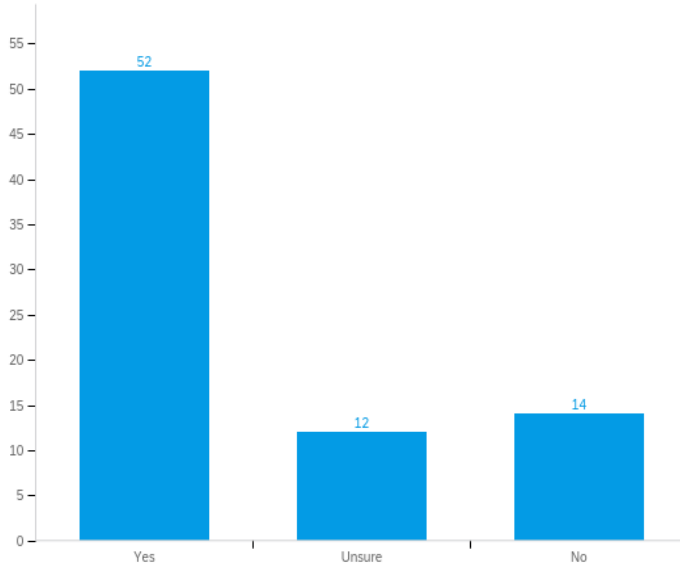
**Figure 8.** Question 2 part 2 asked, can you identify this species by name?



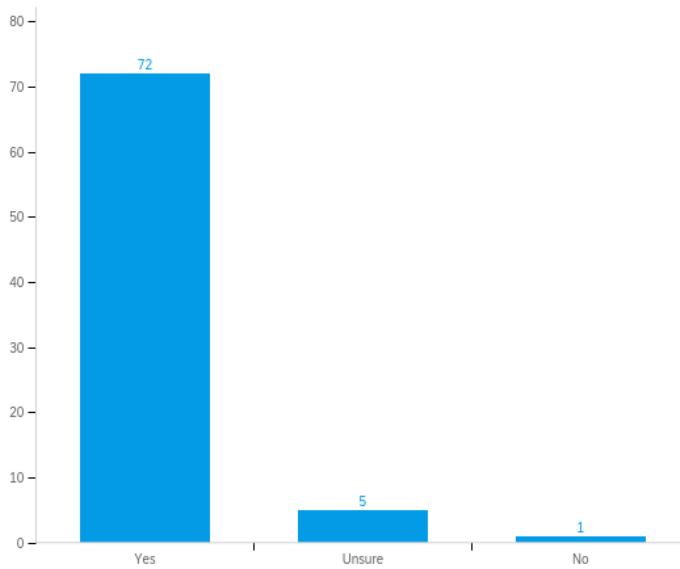
**Figure 9.** Question 3 Part 2 asked, The common name is Asian clam, Does this help you identify the species?





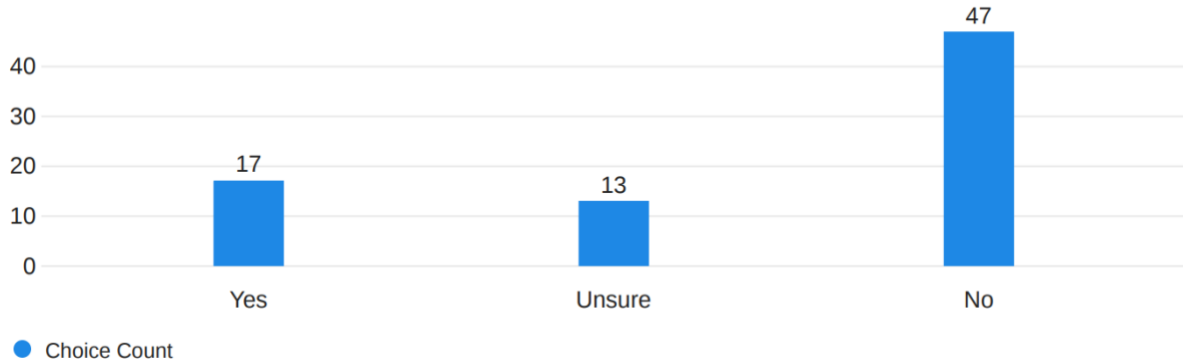


**Figure 12.** Question 6 part 2 asked, Do you think the term "Asian" might have unintended connotations towards people?

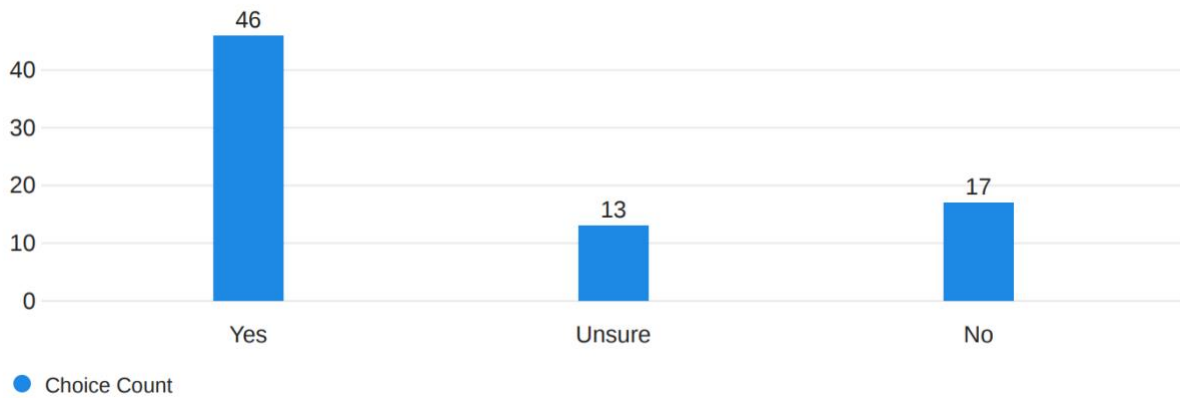


**Figure 13.** Question 7 Part 2 asked, We propose the common name "Gold clam" because it is easier to visually identify based on its golden color. Would this name help you identify the species?

## Chinese mitten crab



**Figure 14.** Question 8 Part 2 asked, Can you identify this species by name?



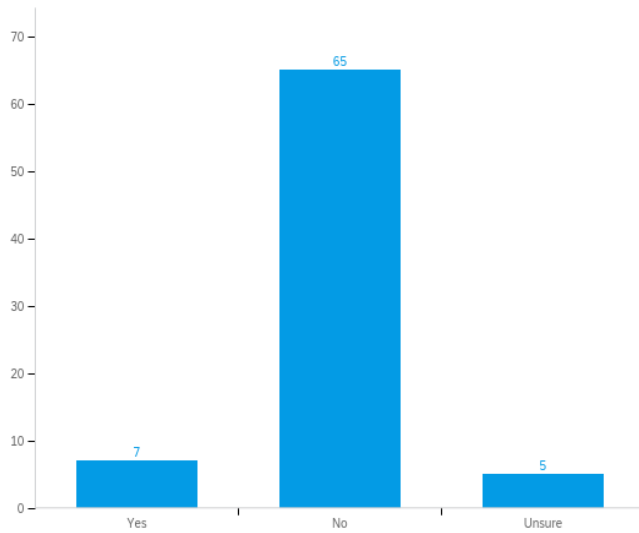
**Figure 15.** Question 9 Part 2 asked, The common name is Chinese mitten crab. Does this name help you identify this species?



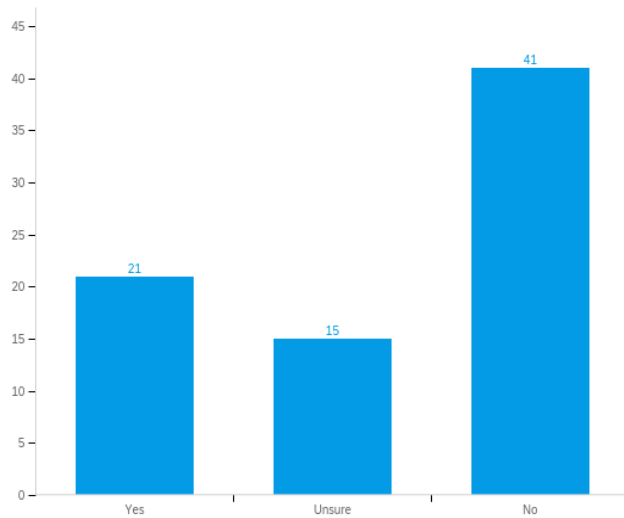
**Figure 16.** Question 9 part 2 asked, Which words in this name help you identify the species?



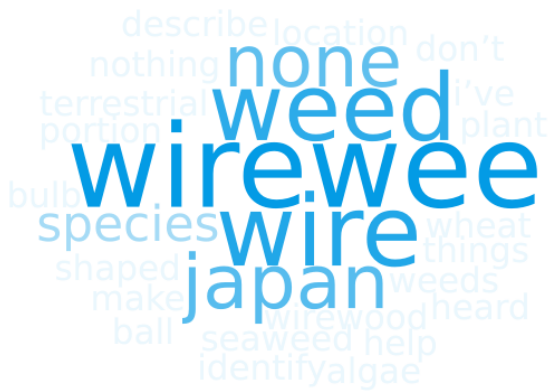
## Japanese wireweed



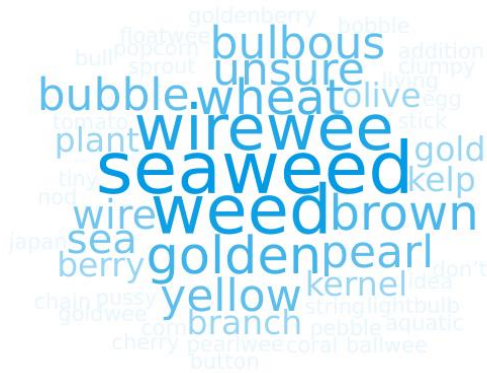
**Figure 20.** Question 13 part 2 asked, can you identify this species by name?



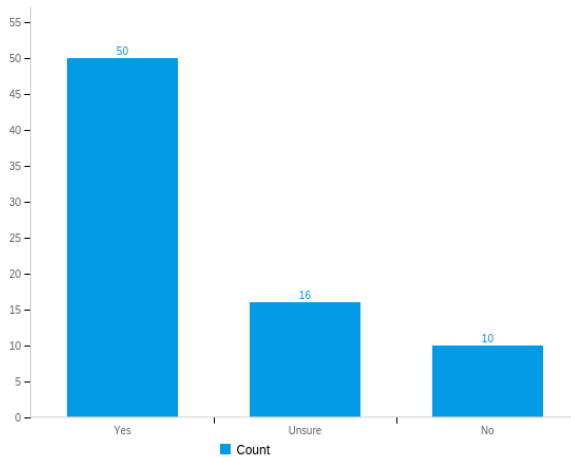
**Figure 21.** Question 14 part 2 asked, the common name is Japanese wireweed. Does this name help you identify this species?



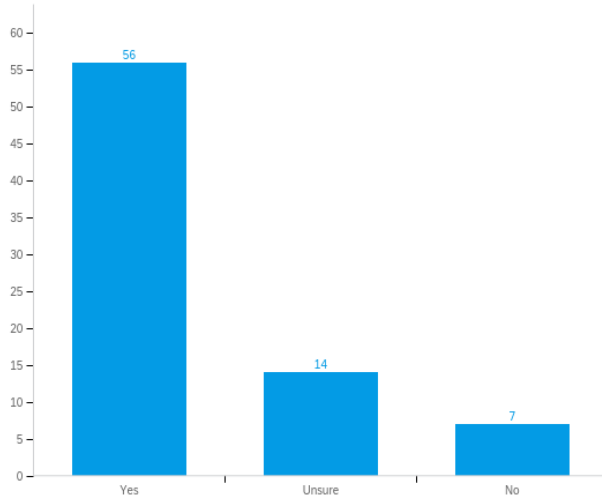
**Figure 22.** Question 15 part 2 asked, which words in this name help you identify the species?



**Figure 23.** Question 16 part 2 asked, if you were tasked with naming this plant, what would you name it?

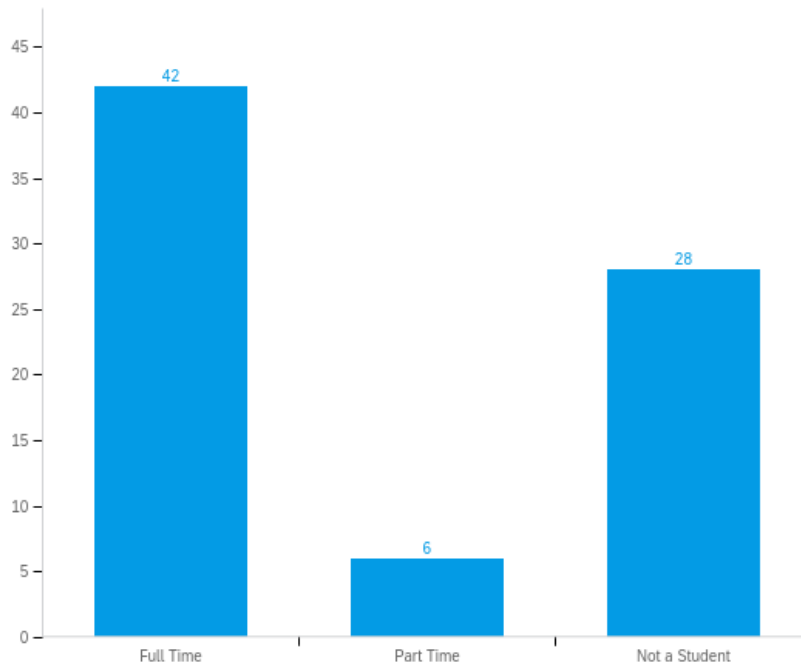


**Figure 24.** Question 17 part 2 asked, do you think the term “Japanese” might have unintended connotations toward people?



**Figure 25.** Question 18 part 2 asked, we propose the name ‘Ballooned Seaweed’ because of its spherical bladders unique from other pacific coast seaweed, would this name help you identify the species?

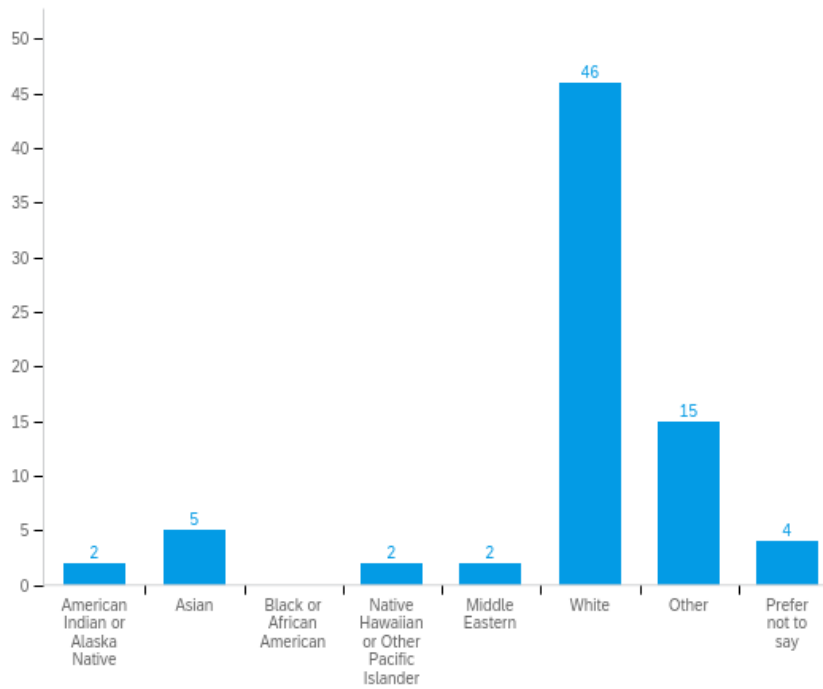
**Part 3: Demographics**



**Figure 26.** Question 1 Part 3 asked, “What is your student status?”

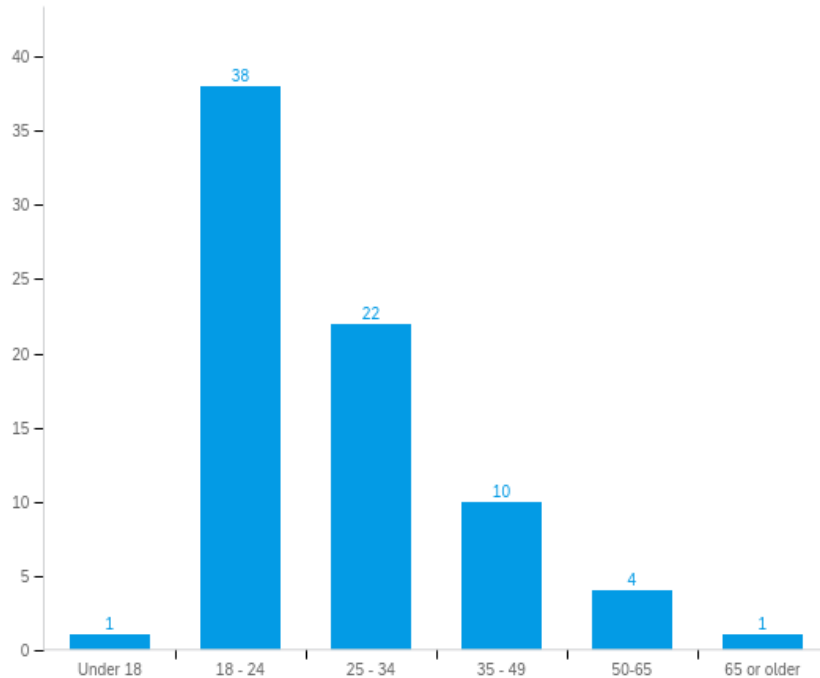


**Figure 27.** Question 2 Part 3 asked, “What is your major if you are a student?”



**Figure 28.** Question 3 Part 3 asked, “Ethnicity - How would you best describe yourself? (Select one)”





**Figure 29.** Question 4 Part 3 asked, “Age?”

### **Discussion:**

In the following section, we discuss the results from each of the three parts of our survey in depth as well as the lessons we learned, challenges we faced, and recommendations for future work and invasive species management.

#### *Part 1: Militaristic Language*

The survey results displayed a consensus of ‘negative’ or ‘highly negative reactions to the militaristic words: attack, fight, weapon (77.5%) (Figure 1) and enemy, defeat, war (88.75%) (Figure 2). It is interesting that the negative response went up 10% with the second set of militaristic words, specifically it was the response change of a decreasing response for ‘neutral’ and an increased response to ‘highly negative’. This may be because the question was placed second which influenced the respondent's thoughts, or the respondents found these created a higher negative response. On the other hand, there are a few outliers for both questions that found these words ‘highly positive’ or ‘positive’.

The respondents also communicated a ‘positive’ or ‘highly positive response’ to both the combined use of militaristic language and invasive species (85%) (Figure 4) and then militaristic language for invasive species names with place-based names (70%) (Figure 5). The decrease in negative responses to place-based names with militaristic language is due to an increased response for ‘neutral’(6.5%) and ‘disagree’/‘strongly disagree’(8.75%). This indicates that while the majority of respondents believe militaristic language with invasive species as ‘negative’, the inclusion of having a place-based name does not create the same negative correlation. These results are reflected in the response to being harmed or offended by invasive species (Figure 6),

with 12.5% of respondents who 'agree'(1.25%) or 'strongly agree'(11.25%). This indicates that the majority of respondents do not feel personally affected by the invasive species' common names.

### *Part 2: Invasive Species*

The use of the common name Spotted Lanternfly had a lower response to being able to identify the species by name than expected. Only 25.36% of respondents (Figure 7) felt confident enough to respond yes, while the rest were unsure or unable to identify the species by common name. This indicates that the common name, while not using offensive place-based names, is not specific enough for the layperson to identify between similar-looking species. While the species is not technically a moth, the larger fuzzy appearing wings are similar to those of a moth, therefore perhaps the common name "Spotted Lanternmoth" would be more effective. It is also not a fly, but a planthopper, so this name in itself may be a little misleading and why the respondents had a difficult time identifying it.

Asian clam: Results showed 19 respondents (24.36%) of individuals were able to identify the Asian clam based on its current common name (Figure 8). Most of the responses were "unsure" or "no" with a combined 70%, but it was surprising that some individuals were able to identify the species by its common name. Maybe because these are Environmental Science students familiar with the species already. 40 respondents (51.28%), which is over half of the surveyors stated that the common name does not help them identify the species. This seems to support our suggestion that the Asian clam is not the best common name to help the general public identify the species.

The majority of answers said that only the word "clam" helped them identify the species and the term "Asian" couldn't help them distinguish this clam from other clams. This again makes us question why the current common name needs the geographic location associated with it? Some of the name recommendations that the respondents came up with for a better common name were: "yellow clam, yellow ridged clam, yellow-brown ridged clam, mustard clam, and mini copper clam". These are great suggestions and help us understand from a different perspective of how others view and identify these species. 52 respondents (66.67%) said that the term "Asian" might have unintended connotations towards people. This is over half of the responses and may indicate that the name needs to be changed for it to be less offensive towards a specific group of people. 72 respondents (92.31%) said that the proposed name of "Gold clam" would help them identify the species better. These results support that a name change to "Gold clam" would help the general public identify the species if they were to see it while participating in recreational activities. As a result, this could also help with Early Detection Rapid Response (EDRR) of Oregon estuaries if the general public could help identify when the species is first introduced into different waterways.

Chinese mitten crab: Found that 17 respondents (22.08%) of individuals were able to identify this species by name (figure 14) . In the following question when the name of the species was stated then 46 respondents (60.53%) stated that the name was helpful in identifying the species (figure 15). This was actually a higher number than we had expected. In the next question asked what word in the common name helped identify the species the responses top words include:

mitten, crab, and Chinese (figure 16). Some of the responses were surprising because Chinese doesn't help with identifying this species.

Additionally, we asked if they were tasked with naming the species, what would you name it? A few of the responses included: fuzzy mitten crab, mitten crab excluding the word chinese, boxing crab, wooly crab, mittened crab, brown mitten crab, fuzzy claw crab, sloth crab, large claw crab, fuzzy mitten crab, and furry mitten crab (figure 17). This shows that the respondents were focusing on naming the species based on the hair on their claws as well as the color. They based the name on the physical characteristics. After mentioning the proposed common name "Furry mitten crab" the majority of the respondents (90.79%) indicated that this name would help them identify the species. On the other hand there were 3 respondents (3.95%) who indicated that the name would not help them identify the species.

We also found that the majority of respondents (70.13%) believe that the term "Chinese" from the common name chinese mitten crab might have unintended connotations towards people, while there were 11.69% who believed that it did not.

Japanese wireweed: Only 7 respondents (9.09%) (Figure 20) were able to identify this species by name, however, once the name was stated in the following question, 21 respondents (27.27%) (Figure 21) said the name was helpful in identifying the species. This was a higher number than we expected considering the lack of uniquely identifying features the current common name uses. When asked what word specifically helped identify the species the top words were: wire weed, Japan, and none (Figure 22).

Again, these results were surprising, specifically the response that Japan helps identify the species, as the location does not indicate anything about what the species looks like.

When tasked with naming the species, the respondents main identifying words they would choose are: seaweed, wireweed, bubble, bulbous, and many colors (wheat, brown, yellow, golden) (Figure 23). This indicates three identifying features that would help the layperson identify this plant. First, the inclusion of the name seaweed, which is also helpful as the plant is actually a seaweed, and the use of wireweed may be misleading. Two, the round floaters as indicated by the words bubble or bulbous. And third, the color while there were a few different identified colors, the multiple responses about color indicates this would be a helpful identifier. However, this species was last in the survey, so the proposed common name 'Golden clam' from questions 2-7 of part 2 may have influenced these responses by suggesting color is a helpful common name identifier. After sharing the proposed common name "Ballooned Seaweed", the majority of the respondents (72.73%) indicated they would utilize the common name, while 9.09% indicated they would not. The results from question 15 also indicate that the addition of a color component may help people identify this species, therefore perhaps the name Golden Ballooned Seaweed may be more helpful in identification.

The majority of the respondents (65.79%) found the name Japanese wireweed may have unintended connotations towards people, while 13.16% did not believe it does (Graph 22). The phrasing of this question however is a little unclear in comparison to the previous questions. To have specific results about the negative consequences of this common name, the question should have specified if the name Japanese wireweed created any negative connotations; the question

assumes the respondent will answer in response this way, without actually stating so. The specificity of a negative connotation may vary the results of the survey going forward.

### *Part 3: Demographic*

While the majority of respondents were students, they were fairly evenly split at 63.12% for students and 36.98% for non-students, indicating we reached a wider range of respondents than originally anticipated. Most of the participants had Environmental Science majors, but we also had others such as Psychology, Public Health, Business, Applied Health and Fitness, Chemistry, French, Film, Social Work, and Engineering. It is great that our results included a variety of participants with different educational backgrounds because this represents a good sample size of the general public and how they would identify and interact with invasive species and their common names.

Age-wise half of the respondents fell in the age group of 18-24 (50%), but there was at least one respondent per age group (Figure 29). In future surveys, it would be interesting to have more respondents of different ages to assess if different generations have differing beliefs about invasive species and their common names.

### *The Lessons we Learned:*

In creating the survey, we learned how to use the Qualtrics platform which we have never used before so it was a learning experience. It allowed us the opportunity to construct questions while also allowing us to be creative by the variety of questions types which included multiple choice, text entry, and text/graphic questions. This is a useful tool to know going into the future. We also learned that working collaboratively is essential for this survey process. The use of collaboration with Dr. Samuel Chan was important because he helped us learn the information we needed in regards to militaristic language and offensive common names in certain species. This allowed us to come to understand how certain things have negative connotations. Collaboration with each other as group members allowed us to get a better understanding of how different ideas can benefit each other by combining our ideas into one to create an amazing product. Additionally, we learned that the use of common names are important for helping the general public to identify invasive species. We also learned that it is essential to have the Likert scale and text entry questions in surveys because it allows us to come to an understanding of the thoughts that people have in regards to invasive species and help us develop a narrative.

### *Challenges We Faced:*

The survey in itself was a challenge to develop because we have never made a survey before. We had a quick time frame to produce the questions and then also needed to adjust some of the questions to be open-answered to better understand the point of view from our respondents. Furthermore, we also had to personally decide what common names of invasive species would be offensive to others which was tricky in itself. We ended up having to do more scientific research and learn about the origin of our three different species to decide if they were good candidates for recommendation. Additionally, we each had to learn how to use the Qualtrics

platform and quickly realized the free version only allowed for 30 questions. We had to discard some of the questions we planned to ask such as more identification questions of invasive species with their common names and pictures and also a few more demographic questions surrounding hobbies.

### *Recommendations:*

While 10 weeks is a short time frame to create a meaningful survey, we believe that we achieved setting up a pilot project for future Environmental Science and Management students to work on. Based on our results, we recommend that the common names for our three species Asian clam, Chinese mitten crab, and Japanese wireweed be changed to Gold clam, Furry mitten crab, and Ballooned Seaweed to help with the public identification of these invasive species. Future work could focus on developing more specific questions towards these species to get a better understanding of thoughts surrounding their common names. We also recommend that in addition to adjusting common names of invasive species to also develop educational brochures or posters to help the public identify these species. This will help with invasive species management through EDRR. If the public knows what to look for and is confident in identifying invasive species, they can then notify the proper authorities to help with prevention of the species spreading and potentially causing negative impacts to the environment, humans, and the economy.

Our survey results gave us a small insight to the thoughts surrounding militaristic language used to describe invasive species. Oftentimes, conservation managers and invasion biologists use this language to take action against invasive species so that they can control them (Larson 2005). However, this language can have ramifications towards people and this issue has not been discussed as much in scientific literature. We recommend that future managers not only consider changing common names of invasive species to be less offensive, but also transform their language in how they describe invasive species and use less militaristic and combative language. One study in Australia found that Indigenous elders used terms like “introduced” to describe plants that were brought in with colonization using neutral language that was descriptive. They also used the term “healthy country” to describe impacts of invasive plants and whether the plants neutrally, positively, or negatively affected the health of their ecosystem. They found that when the rangers used terms like ‘smashing’, ‘killing’, and ‘destroying’ plants that they lost sight of their reason to look after the health of the country (Bach & Larson 2017). The change in language could help progress invasive species management to think more about how the environment can be managed positively in a holistic way instead of focusing on trying to completely destroy and eliminate a certain species.

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