**The Evergreen State College**

**Graduate Program on the Environment**

### Thesis Prospectus

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**STUDENT AGREEMENT:**

**SIGNATURE: \_Alyssa Kathleen Estes\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE\_12/10/2021\_\_**

**FACULTY READER APPROVAL:**

**SIGNATURE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**MES DIRECTOR APPROVAL:**

**SIGNATURE:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Provide the working title of your thesis.

The Prevalence of Commonly Cyanide Exposed and Overfished Aquarium Species in Washington State Pet Chain Stores.

2. In 250 words or less, summarize the key background information needed to understand your research problem and question.

The US is the primary global importer of aquarium species. Many of these species (the majority of marine species and some freshwater species) give cause for concern as they have been known to be captured through environmentally unsound means which harms ecosystems and local livelihoods. Most wild-caught species come from developing nations such as the Philippines where enforcement of what species protections they have is very lacking. The US has laws against importing species caught through illegal means, yet there is much evidence that their importation happens regardless due to lack of oversight by importing countries such as the US. Very little is known about the full extent of the trade and the nations involved seem slow and uninterested in devoting significant time and resources to addressing the shortcomings of existing regulations. This allows poor practices to continue, threatening the health of these species and ecosystems as well as preventing customers from making informed, ethical, and sustainable choices. Considering this, it’s important for individual US states to investigate their role in the aquarium trade and develop policy responses to address the damage they have contributed to. Ideally, this will provide the framework and incentive for federal reform. By the countries generating demand for these currently environmentally problematic species taking the lead on understanding and combating damaging practices, supplying nations will be encouraged to adhere to higher environmental standards when capturing species for international sale.

3. State your research question(s).

What is the current prevalence of commonly overfished and cyanide caught fish for the private aquarium industry in western Washington State among major chain stores (Petco)? Do pet stores selling these species offer labeling to inform customers if species were wild caught?

4. Situate your research problem within the relevant literature. What is the theoretical and/or practical framework of your research problem?

In terms of this research problem’s theoretical framework, the focus will be on the labeling impacts of aquarium species. There is a growing trend in customer awareness regarding the environmental impact of purchasing decisions which has resulted in a push for greater labeling and certification standards (Taufique et al., 2017). Within the food industry there has been growing efforts to label where ingredients come from, if they are organic, and the environmental impact they have such as the scrutiny palm oil has come under for its habitat destruction and impacts on orangutans (Carlson et al., 2018). Theoretically, labeling increases customer awareness about the product they are considering and can influence them to make more sustainable choices which will in turn encourage the market to shift to more sustainable practices in order to stay desirable to their customer base. Applying this to the aquarium industry in the form of requiring pet stores that sell species commonly associated with unsustainable practices to label said species with disclaimers about the possible conditions these animals were captured in would provide customers with greater knowledge to make the decision about if they want their money to go to a species of concern or look for a more sustainable alternative. The practical framework of the issue is being able to utilize the available data on the international trade to better understand what to look for within Washington state where the prevalence of these species can then be physically confirmed.

Carlson, Kimberly M., Robert Heilmayr, Holly K. Gibbs, Praveen Noojipady, David N. Burns, Douglas C. Morton, Nathalie F. Walker, Gary D. Paoli, and Claire Kremen. “Effect of Oil Palm Sustainability Certification on Deforestation and Fire in Indonesia.” *Proceedings of the National Academy of Sciences* 115, no. 1 (January 2, 2018): 121. <https://doi.org/10.1073/pnas.1704728114>.

Taufique, Khan Md Raziuddin, Andrea Vocino, and Michael Jay Polonsky. “The Influence of Eco-Label Knowledge and Trust on pro-Environmental Consumer Behaviour in an Emerging Market.” *Journal of Strategic Marketing* 25, no. 7 (November 10, 2017): 511–29. <https://doi.org/10.1080/0965254X.2016.1240219>.

5. Explain the significance of this research problem. Why is this research important? What are the potential contributions of your work? How might your work advance scholarship?

The significance of this research is to understand in better detail the sale of species often captured through ecologically harmful means (overfishing and cyanide stunning) for home aquariums. Much of the research regarding the private aquarium industry stresses that there are vast knowledge gaps in how many species/individuals are being traded, what they are exposed to/how they are captured, and how they are sold and imported, etc. This makes effective tracking and regulation of the trade exceedingly difficult. This lack of understanding continues to allow the ecological issues associated with the industry to persist and further threaten the species and communities (both inhuman and human) that rely on them. A greater understanding of how this industry operates and the amount of which importing nations (the US being the highest and thus individual states within contribute significantly to the issues) contribute to these issues through their consumption is needed to see where existing regulations can be strengthened and new regulations need to be created to combat the negative aspects of the aquarium trade while preserving the beneficial aspects. The proposed work may advance scholarship by providing a baseline understanding of the role a single state can have regarding the amount/types of aquarium species it allows the sale of so groups who wish to craft policy to reduce the negative impact of these sales in WA have a solid understanding of where to focus conservation efforts and further studies like how to better allocate state resources for testing imported fish for cyanide, sustainability labeling efforts, captive breeding programs, and banning the sale of specific species.

6. Summarize your study design. If applicable, identify the key variables in your study. What is their relationship to each other? For example, which variables are you considering as independent (explanatory) and dependent (response)?

This study design is to compare the amount of commonly overfished and cyanide caught fish for sale in the aquarium trade among Petcos in the Washington counties of Thurston, Whatcom, Skagit, Island, Snohomish, King, Pierce, Lewis, Grays Harbor, Cowlitz, Clallam, Kitsap, Chelan, and Kittitas. To identify how many stores there are and where they are located, the company webpages will be utilized to generate the sampling area as they list their physical locations. The attempt is to sample all the Petcos present within these counties. This comparison will be done by recording how many species of concern are at each pet store sampled and generate sales figures from the data. In addition, if the species have labeling informing the customer about whether it was wild caught or captive bred will also be collected for data analysis. I will be focusing on the labels of wild caught/captive bred only as there is currently no reliable way and on a large enough scale for pet stores to test if the wild caught fish they are marketing have been exposed to cyanide. Any attempt to label if the wild captured individuals in their tanks have been caught without using cyanide would be purely speculative, thus a risk for misleading customers and increasing the risk of a type II error. Pet stores have a greater ability to verify if the species they are marketing have been captive bred or wild caught, making the data more reliable, which is why that will be the focus. This study does not have any independent/dependent variables as it is not an experiment but rather a review of current sales practices.

7. Describe the data that will be the foundation of your thesis. Will you use existing data, or gather new data (or both)? Describe the process of acquiring or collecting data.

This study will be utilizing old data acquired from research papers found on common fish species sold for the aquarium trade paired with data on aquarium species commonly caught with cyanide or overfished to generate a survey tool for acquiring new data on the presence of ecologically concerning species for sale in pet stores and if the species are labeled as wild caught or captive bred. Once the survey data sheet is created, as many Petco stores will be sampled in western Washington as possible to see how many species commonly associated with unsustainable collection practices are present in each store. Marking whether the species have any kind of labeling informing the customer if the species was wild caught or captive bred will also be noted. These stores will be sampled by either contacting them to see if they will provide their species inventory list or by going to the store in person and looking at what fish they have for sale on site.

8. Summarize your methods of data analysis. If applicable, discuss specific techniques that you will use to understand the relationships between variables (e.g., interview coding, cost-benefit analysis, specific statistical analyses, spatial analysis) and the steps and tools (e.g., lab equipment, software) that you will take to complete your analyses.

The first action will be to calculate the percentage of chain pet stores that were surveyed as compared with the total number operating in Washington State. The method of analyzing data will be to count how many species out of those listed on the sheet for each store and generate a percentage of problematic species present at each store and if there are any labels as to whether they are wild or captive bred. Those percentages will be used in the Survey123 software to find the average of those numbers in order to see if there is a high or low average amount of problematic species found within WA chain pet stores. This analysis will not require any lab equipment or tools other than a laptop and tablet containing the survey tool.

9. Address the ethical issues raised by your thesis work. Include issues such as risks to anyone involved in the research, as well as specific people or groups that might benefit from or be harmed by your thesis work, perhaps depending on your results. List any specific reviews you must complete first (e.g., Human Rights Review or Animal Use Protocol Form).

A possible ethical issue with this research is that should this paper gain the attention of the public, customers who were unaware of the issues associated with their purchases may find themselves having made an environmentally damaging purchase choice and feel high amounts of guilt and experience negative emotional and mental reactions to the new information. Corporate heads may also get agitated if their company is not shown in a positive light and in response may take retaliatory action against stores within the survey area. If this research did inspire Washington State governments or other government entities to enact policy reform regarding the importation of said species, there may be the chance that people involved in the trade such as point of origin fishers and wholesale traders may see their income impacted negatively through the banning of some species for sale or having to switch harvest practices from utilizing cyanide to nets and collecting less individuals. As this research does not involve any human interaction and identification or interactions with non-human animals other than passive observation, no Human Rights Review or Animal Use Protocol Form will probably be needed.

10. List specific research permits or permissions you need to obtain before you begin collecting data (e.g. landowner permissions, agency permits).

As the stores are open to the public and all needed data can be collected by personal observation, no specific permits or permissions will be needed before collecting data.

11. Reflect on how your positionality as a researcher could affect your results and how you will account for this in the research process.

 My personal bias is from an environmental and strong belief in the ethical treatment of animals standpoint. I recognize that this could influence my view of how large chain stores such as Petco conduct their business regarding their standards for the well-being and capture conditions of the animals they sell. To combat this, I must make sure to adhere strictly to my survey tool and avoid making assumptions about the capture conditions if there is not adequate data to support it.

12. Provide at least a rough estimate of the costs associated with conducting your research. Provide details about each budget item so that the breakdown of the final cost is clear.

 All the supplies needed for this study are already acquired so no expenses other than the mileage needed to drive to the sample locations will be requested. A clearer idea of what mileage expenses will look like will come about once the sample store locations have been identified.

13. Provide a detailed working outline of your thesis.

 Thesis Introduction

-Title page

-Signature Page

-Table of Contents

-List of figures

-List of tables

-Acknowledgements

-Funding

Intro to Private Aquarium Trade (topic introduction)

-prevalence of private aquarium hobbyists

-sought after species

-how species are caught

-where the species are from and where they ship to (key importers) (5,

-responsibility of importers to encourage sustainable catch (attempted certification programs success and failures)

-how many chain pet stores selling fish are in WA (thesis will address WA consumer impacts on ornamental fish trade)

Literature Review

(possible thesis statement: Washington State chain pet stores sell significant numbers of problematic species for the private aquarium industry. Problematic species for sale within chain pet stores are not adequately labeled to help customers make informed purchases regarding the risks the purchase of these species pose)

Study Methods

-Generate sampling tool (spreadsheet with common problem species that can be used as checklist when in store) and sample pet stores to see what ratio of their fish are problematic (focus on chain pet stores like Petco as they are most prevalent and sampling some can give idea of general trends) (3,7,

-take note of how they are labeled

-find out if majority of species are problematic or not and if there is labeling identifying tank bred or wild caught

Results

- Data/sample outcomes

-study shortcomings (things that need corrections)

-strengths of the study results/methods

-table of species and their percentage of prevalence within stores

Discussion

-How results differed from or met what I expected

-Ethics of study method employed

-current state of WA regulations/laws regarding ornamental fish species and how effectively they are enforced (6,1

-Recommendations for further research and what actions the state can take (based on study findings so should this be in conclusions instead?)

-interest in customers to see sustainability enhanced that can be encouraged (9,2

-bans in countries of species origin has led to black market aquarium trade so import countries must take action for encouraged sustainability at both beginning and end

-identify current industry positives that should be retained and encouraged

Conclusion

-does research confirm or dispel concerns about the role of WA (and to a greater extent US) in fueling unsustainable wild aquarium trade

-what private aquarium trade would ideally look like if state acted based on findings (8

-WA already passes legislation to encourage responsible pet ownership such as banning sale of puppy mill dogs, can aquarium laws be modeled on these efforts (10,

-feasibility of actions (reach out to representative who sponsored puppy mill bill about feasibility of similar bill for fish (should this go in Recommendations section instead?) (4,

14. Provide a specific work plan and a timeline for each of the major tasks in the work plan. Be as realistic as you can, even though you will probably need to alter this schedule as you complete the tasks. Remember that faculty readers take time to return your drafts and that the final polishing and formatting of your thesis for binding will take longer than you ever imagined.

* Submit final prospectus, signed by Thesis Reader, to MES Director (on Friday, Dec 10th2022)
* Utilize sources to create a checklist of common cyanide exposed/overharvested species and download Survey 123 for collection (starting Monday, Jan 3rd 2022, 2-week duration)
* Acquire inventory lists or physically travel to as many Petco stores as possible within WA for data collection (starting Monday Jan 17th 2022, 1–2-month duration)
* Analyse data and draw conclusions (starting Thursday March 17th 2022, 2-week duration)
* Utilize conclusions to develop theoretical policy solutions/recommendations and write out rest of paper for draft turn in (on Friday April 8th 2022)
* Based on how the research has progressed, submit one of two forms signed by Thesis Reader to MES Director (on Friday 29th 2022)
o “Request to Present Thesis Research”
o “Request to Extend Thesis Research”
* Spring quarter Thesis Presentations (starting Friday May 20th 2022)
* Edit and revise paper (starting Monday May 23rd 2022, 1 week duration)
* Send final draft of thesis to Thesis Reader (on Friday June 3rd 2022)
* Final edits and turn in thesis (on Friday June 10th 2022)

15. Who, beyond your MES faculty reader, will support your thesis? Indicate support both within and outside of Evergreen. Be specific about who they are and in what capacity they will support your thesis. If you are working with an outside agency or expert, be specific about their expectations for your data analysis or publication of results.

 This research will not require working with anyone beyond the thesis reader.

16. List the 3-5 most important references you have used to identify the specific questions and context of your topic, help with issues of research design and analysis, and/or provide a basis for interpretation. For each annotated reference, explain how your project specifically connects to the source by extending, challenging, or responding to the conclusions, methods, or implications. For any other sources cited in this document provide a complete bibliographic citation.

Dee, Laura E., Kendra Anne Karr, Celia J. Landesberg, and Daniel J. Thornhill. (2019) Assessing Vulnerability of Fish in the U.S. Marine Aquarium Trade. *Frontiers in Marine Science* 5: 527. <https://doi.org/10.3389/fmars.2018.00527>.

This source connects to my project as it will be used to identify traded aquarium species that are vulnerable to harmful capture practices for the survey tool. This project will extend the information provided in this paper by utilizing its contributions to generate a finer scale analysis of the vulnerability these species face within the specific location of Washington State.

Evers, Hans-Georg, John K. Pinnegar, and Martin I. Taylor. (2019) Where Are They All from? – Sources and Sustainability in the Ornamental Freshwater Fish Trade. *Journal of Fish Biology* 94, no. 6 909–16. <https://doi.org/10.1111/jfb.13930>.

This source connects to the project as it aids in the development of the survey tool and provides valuable insight as to what sustainability measures have been attempted to combat the problems associated with ornamental fish collection. It focuses more on the freshwater aspect of the trade which helps balance out the overwhelming amount of sources found as they mostly pertain to saltwater species. The project will extend this paper by identifying the current state of the species and where they are sourced from in regards to their sale in Washington State and if the level of sustainability practices seem to be lower, higher, or in line with what the paper describes.

U.S. Fish and Wildlife Service. (2004, August 6). *18 USC 42-43 16 USC 3371-3378 Lacey Act.* U.S. Fish and Wildlife Service International Affairs. Accessed October 3, 2021. [https://www.fws.gov](https://www.fws.gov/le/pdffiles/Lacey.pdf) /le/pdffiles/Lacey.pdf.

This source connects to the project as it outlines the legal framework regarding the import of ornamental species, the species of whose import is supposed to conform to said regulations yet often is imported despite being in violation of said laws. This project will challenge the effectiveness and implications of this law because despite its existence, the very issues it was designed to prevent still persist in mass which shows that the current state of its writing and/or enforcement is not adequate to control the undesired behavior.

Jones, Ross & Steven, Andy. (1997). Effects of cyanide on corals in relation to cyanide fishing on reefs. Marine and Freshwater Research. 48. 517-522. 10.1071/MF97048.

This source connects to the project as it outlines the impacts of cyanide on ornamental fish collection which is one of the major concerns in regard to the collection of these species. This paper will help identify species often caught with cyanide and regions where it is used most for the live trade which will assist in generating the survey tool. The project will extend the information of this paper by providing an updated assessment on the deployment of cyanide for fish capture, its effects to reef systems, and the prevalence of it within imported fish.

Shuman, C., Hodgson, G., & Ambrose, R. (2004). Managing the marine aquarium trade: Is eco-certification the answer? *Environmental Conservation,* *31*(4), 339-348. doi:10.1017/S0376892904001663

This source connects to my project in the way that it outlines sustainable labeling attempts regarding the aquarium trade. The paper looks at certification programs aimed at reducing environmentally damaging practices proposed by the Marine Aquarium Council. It discusses how nations will need to utilize legislation to incentivize market demand for sustainable species. The proposed thesis work will extend the data needed to inform certification projects such as this and be a useful resource for generating state level types of plans similar to the one proposed by the Marine Aquarium Council.