Summit 2021/2022: University of Alaska Southeast's Collection of Exceptional Academic Works

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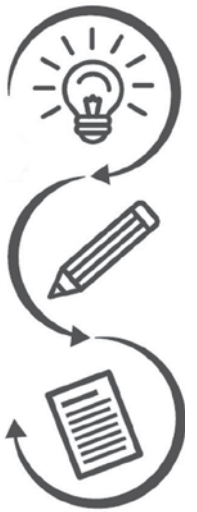
Academic works from
UAS undergraduate
students, presented by
the UAS Writing Center.

THE WRITING CENTER



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Published by the University of Alaska Southeast Writing Center

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UNIVERSITY OF ALASKA SOUTHEAST WRITING CENTER

We, the UAS Writing Center tutors,
dedicate this journal to Elise Tomlinson
for all the time she gave, support she offered,
and effort that she put into making this journal possible.

Contents

A Note from the Writing Specialist

For me, *Summit* represents pride. I'm so proud of the Writing Center tutors, who took such ownership of this project and created a remarkable collection of student work. I'm proud of the undergraduate students who submitted the work they'd put so much effort and time into. Proud that they have a place designed especially for them to showcase their writing when not many academic publications honor undergraduate work. I know how proud these students' professors must be to see a piece of writing go from an outline to an award-winning essay. And, I am proud of the original student tutors who conceptualized and founded *Summit*, whose legacy endures in this journal.

After the past couple of years, everyone at UAS deserves some bragging rights. We've all accomplished so much in such a difficult period just by continuing to put one foot in front of the other. Now is the time to pat ourselves on the back and reflect on our successes as we cautiously turn the page. The name *Summit* reflects the WC's belief that writing is akin to climbing a mountain, and this journal is the peak from which writers can shout their victories and be proud of making it to the top. But it's not only students who should claim bragging rights on a job well done; their professors can also crow from the mountaintop, for they were alongside the students as they climbed. We received many wonderful submissions for this edition of *Summit*, and though we were unable to publish them all, we value each student's climb up that mountain and the professors who provided the ropes and harnesses needed to make it.

As you read through this journal, take a moment to reflect on the uphill journey each student took and the people who made the ascent with them. Join me in the pride I feel for all their accomplishments, and remember that you deserve to be proud of yourself for the mountains you've had to climb.

A special thanks to our current tutor team, whose dedication warms my heart and who help other students summit peaks every day.

Jessy Goodman
Writing Specialist and *Summit* staff advisor

Acknowledgments

We would like to start by acknowledging all of the wonderful undergraduates who submitted to us this year, and their dedication to research, scholarship, creativity, and interdisciplinary activity. It is our honor to display and celebrate your academic achievements as a testament to your hard work and brilliance.

We would also like to acknowledge that the production of this journal was achieved *Áak'w Kwáan Aaní kát*' [on Áak'w Kwáan land]. We are immensely grateful to the stewards and innovators of this land–the Lingít. We also want to acknowledge the other Indigenous nations across Southeast Alaska: the Tsimshian and Haida peoples. *Aatlein gunalchéesh*!

This journal would not have been a success without the support and encouragement of Chancellor Karen Carey, Provost Maren Haavig, and Dean of Arts and Sciences Carin Silkaitis.

A huge thank you to our faculty and student judges: David Noon, Jay Szczepanski II, Tom Thornton, Sienna Chubak, Ian Hoch, and Jack Imel. Their diverse insight and writing expertise has been indispensable in curating this academic journal.

We are also grateful to Jonas Lamb, Mary Glaves, Kaia Henrickson, the rest of the library staff, Rosemarie Alexander-Isett, Mallory Nash, and Shauna Sage for their social, technological, and overall support during the promotion and production of *Summit*.

Thank you to Student Government for their generosity in funding the UAS Ernestine Hayes Award for Excellence in Essay Writing, and congratulations to Sabrina Croft, the 2021/2022 recipient!

Congratulations to all the professors whose students' work is published in this year's journal: Dr. Heidi Pearson, Dr. Eran Hood, Dr. Kristy Smith, Professor Emily Wall, Professor Teague Whalen, Dr. David Noon, and Professor Forest Wagner.

This journal would not have been possible without Elise Tomlinson, the Egan Library Dean, and Jessy Goodman, our Writing Specialist, for the support, expertise, and resources they provided in creating *Summit*. In addition, thank you to the UAS Writing Center Support fund and its donors for enabling this publication and for funding its first printing!

Lastly, we would like to acknowledge former Writing Specialist Allison Neeland, and both Braden File and Alicia Steiner for their continued support of both *Summit* and the Writing Center, and the foundational contributions they have made developing this journal alongside their fellow tutors at the time, Meghan Tabacek, Rayne Billings, and Olive Brend. We also want to acknowledge our first UAS Writing Center intern, Jurny Hinz, for her support and help during fall 2021.

We hope you enjoy this edition of *Summit*, and that it resonates with you as much as it does with us.

Olive Brend, Sabrina Croft, Autumn Daigle, Francesca Johnson, and Shaelene Grace Moler

UAS Writing Center Tutors

Ernestine Hayes Award for Excellence in Academic Writing

In an effort to promote the academic excellence of students and to highlight their writing, the UAS Writing Center held its first student essay writing contest in 2019. The essay contest, now named after Professor Emerita Ernestine Hayes, strives to honor the commitments she made toward student achievement and the craft of writing. Our third edition of *Summit* once again features the Ernestine Hayes Award for Excellence in Academic Writing. As before, students were invited to submit exemplary essays they composed for courses in a bachelor's program at any campus in the UAS system. A board of student and faculty judges rated the essays, given to them anonymously, to determine which would be published and which would be the recipient of the Ernestine Hayes Award.

This year, we at the UAS Writing Center congratulate our very own Sabrina Croft on being awarded the 2021/2022 Ernestine Hayes Award for Excellence in Academic Writing. Her essay was selected by the judges for its extensive scientific knowledge and display of detailed research, with an impressive score of 134/150.

Sabrina Croft is a marine biology major and UAS Writing Center tutor at the Juneau campus. Originally from Colorado, she has an immense passion for marine mammalogy and ecology, and she aspires to research solutions to pressing ocean conservation issues. In her free time, Sabrina enjoys playing video games, listening to music, running, watching movies and TV, and writing fiction. She will be graduating with a bachelor's degree in spring 2022.

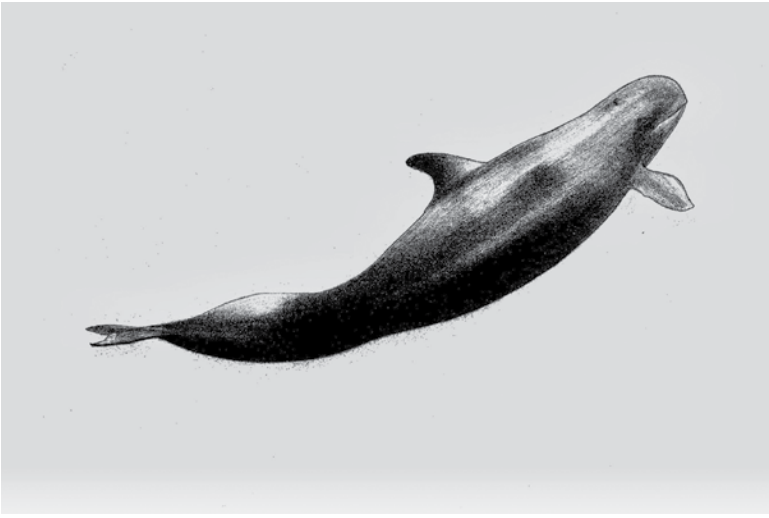
New Zealand False Killer Whale (*Pseudorca crassidens*) Spatial Associations with Common Bottlenose Dolphins (*Tursiops truncatus*) and Longline Fisheries

Sabrina Croft

University of Alaska Southeast

BIOL 384: Marine Mammalogy

Professor: Dr. Heidi Pearson



Drawn by Francesca Johnson, Sabrina Croft's friend and coworker

Abstract

The false killer whale (*Pseudorca crassidens*) is a widely distributed but rarely studied pelagic dolphin which often interacts with other dolphin species, such as the common bottlenose dolphin (*Tursiops truncatus*). Little can be confidently asserted when it comes to necessary conservation actions for this species, but bycatch of false killer whales in longline fisheries are commonplace, along with false killer whale depredation of longline hauls. A false killer whale population in Bay of Islands, New Zealand exhibits associations with bottlenose dolphins and potential longline interactions, and is therefore a viable candidate to better understand behaviors surrounding the two variables. In the following proposed study, satellite tags will be employed to track false killer whales and bottlenose dolphins at this site, and locations and set times of longline fisheries will be collected, as well. False killer whale distance from shore, spatial overlap with bottlenose dolphins, and spatial overlap with longline sets will be determined. Results are expected to reveal this false killer whale population maintaining a pelagic offshore range, frequent nearshore bottlenose dolphin associations, and minimal longline fisheries interactions. This information will be useful in demystifying understudied false killer whale populations and the habits therein,

and expanding this knowledge will lead to more informed decision making towards conservation of the species.

Introduction

False killer whales (*Pseudorca crassidens*) are rather mysterious odontocetes, or toothed whales, occurring widely in tropical and temperate zones of the Atlantic, Pacific, and Indian Oceans (IUCN 2021). Due to their inconvenient pelagic range far out in the open ocean water columns, few populations have been able to be thoroughly studied.

There is some evidence, however, of distinctive populations and long-term site fidelity amongst false killer whales. Two well-known groups include the insular and offshore Hawaiian stocks, the former of which has been tracked to show strong preference towards inshore habitat around the Hawaiian Islands (Baird et al. 2010). A New Zealand population, too, demonstrated site fidelity for a length of at least seven years (Zaeschmar et al. 2014). One false killer whale population off of central Mexico showed isotopic evidence of recent feeding in the study area, but transient behavior could not be ruled out (Ortega-Ortiz et al. 2014). Morphological and size differences have also been discovered during examinations of beached Japanese and South African false killer whales, with those from the former

population being longer both at birth and at sexual maturation (Ferreira et al. 2014). False killer whales in different regions may therefore vary in inshore or offshore foraging ground preferences as well as morphological data, indicating cultural and physiological differentiation between populations. All this is to say that false killer whales in different biogeographic regions likely have distinct lifestyles that influence their morphology and behavior.

Such behavior is displayed in New Zealand waters, where false killer whales exhibit high interspecies cooperation, in particular with common bottlenose dolphins (*Tursiops truncatus*; Zaeschmar et al. 2014). In some instances, common bottlenose dolphins and false killer whales have been observed cooperatively foraging together, even less than a body length apart on occasion, in New Zealand waters (Zaeschmar et al. 2013). Interspecific cooperative foraging is uncommon in nature, and it is unknown how frequent common bottlenose dolphins and false killer whales interact in this manner worldwide. New Zealand, however, seems to be a hotspot of interest for this fascinating behavior, and protecting both species must be a high priority considering fisheries threats in the area.

One infamous fisheries issue conflicting with false killer whale conservation is longline fisheries interactions, ranging from

bycatch to depredation. Cetacean depredation has been recorded in low percentages (<9% per vessel) in the Atlantic (Hernandez-Milain et al. 2008), with swordfish being the most commonly depredated prey by false killer whales (Passadore et al. 2015). Concerns with the Hawaiian Pacific false killer whale stocks having a negative effect on longline fishery hauls or vice versa are areas of intense study. Though Hawaiian fishermen often fear that false killer whale depredation will have significant detriment to their haul, the most productive fishing grounds see very infrequent use by false killer whales (Baird et al. 2021), and longlines in particular are more often than not ignored by nearby false killer whales (Anderson et al. 2020). Unfortunately, little data has been gathered on false killer whale and longline fisheries interactions in other parts of the Pacific, such as New Zealand, though these fisheries still raise concerns about their hauls when it comes to these pelagic odontocetes. Fisheries and conservation interests surrounding false killer whales currently clash because of the lack of knowledge about this species, which is necessary to amend in order to come to an agreement.

A better understanding of different global populations of false killer whales is essential to making wise conservation decisions around this species. The New Zealand population is of particular

interest, given its intriguing foraging interactions with common bottlenose dolphins and minimal data on longline interactions. Greater insight on the frequency and nature of interspecific interactions could shed light on New Zealand false killer whale cultural foraging tactics. Furthermore, New Zealand longline fisheries could greatly benefit from knowing if false killer whales target their catches for depredation, and if so, how to minimize this. This information would reduce bycatch and depredation, resulting in positives for both false killer whales and New Zealand longline fisheries.

Conservation Status

The lack of knowledge of false killer whales is reflected in its conservation status, currently classified as near threatened, with no known population trend and largely data deficient reports in years prior. It is unknown how many mature individuals make up the false killer whale population (Baird 2018).

Objectives

The proposed study aims to answer the following research questions, which are three-fold: (1) are New Zealand false killer whales more insular or pelagic, (2) how frequently do common bottlenose dolphins and false killer whales associate, and (3) how frequently do false killer whales interact with New Zealand longline fisheries, if at all?

Methods

The study site shall be the Bay of Islands, New Zealand in austral autumn beginning in March, when false killer whale sightings have been highest in the past (Zaeschmar et al. 2014). Longline fishing takes place annually in this area, sometimes involving upwards of five events each year (Fig. 1), making it an ideal location to test potential interactions.

Once encountered, false killer whales will be randomly outfitted with satellite tags as in Baird et al. (2010), with photo ID of tagged and adjacent individuals collected along the way. Photo IDs will be compared with existing records to identify recaptures or new individuals. Satellite tags will attach via titanium darts, fixed by backward-facing petals, once fired from a pneumatic dart projector. Tags will be duty-cycled to transmit location of false killer whales only during hours when the satellite is most likely overhead. Transmissions will be limited to twelve hours daily for the first 75 days, thereafter recording eight hours daily every third day.

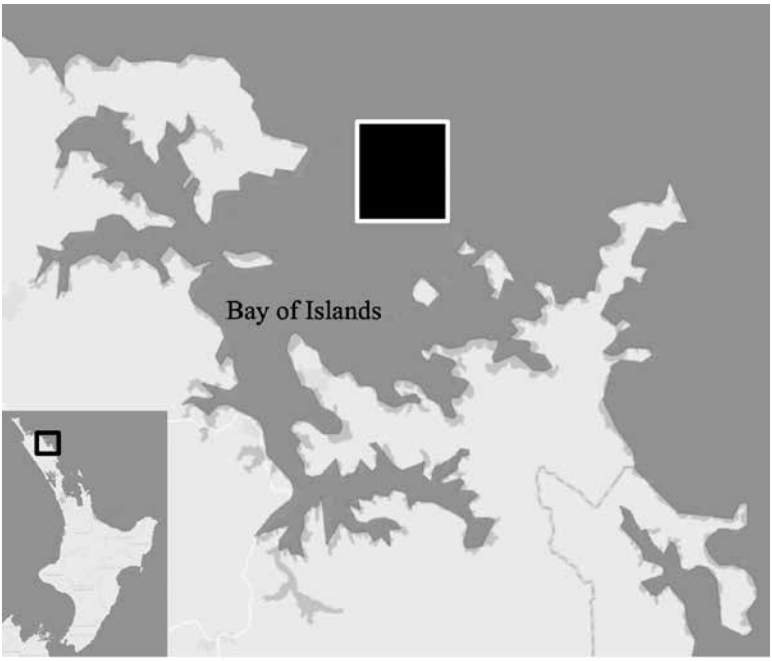


Figure 1. Map of Bay of Islands, New Zealand. Area of frequent longline fishing events (3 or more annually on average) is indicated by the black rectangle, with white showing the border (Booth 2016).

The same tagging process shall be repeated for common bottlenose dolphins in the Bay of Islands, preferably while in the company of false killer whales, but if need be, on separate, dedicated expeditions to find isolated common bottlenose dolphins.

Data will be gathered from logbooks on any available longline fishing vessels in the Bay of Islands present during the time of the study, including hourly vessel location and start and end times for longline set and longline haul (Anderson et al. 2020). The final report will not detail exact locations or times of this data in the interest of

confidentiality with fisheries.

Movements of tagged false killer whales will be plotted on a map. A right-tailed t-test $(\alpha=0.05)$ shall be used to compare the Bay of Islands false killer whale average median distance from shore in kilometers and average median depth in meters to that of the insular Hawaiian false killer whale population (Table 1), as per the data from Baird et al. (2010). The null hypothesis will be that the Bay of Islands population averages will be less than or equal to that of the insular Hawaiian population, equating to an insular nature for the former. The alternative hypothesis, then, is that the average distance and depth will be greater in the Bay of Islands population, indicating a more pelagic existence than the insular Hawaiian stock.

Table 1. Results of right-tailed t-test between insular Hawaiian (Baird et al. 2010) and Bay of Islands false killer whale median distance from shore and median depth.

	Median Distance (km)				Median Depth (m)			
Stock	Mean	Standard Deviation	t	p-value	Mean	Standard Deviation	t	p-value
Insular Hawai'ian	11.717	5.466			575.167	251.342		
Bay of Islands	?	?			?	?		
Results			$>t_c$	<0.05			$>t_c$	<0.05

Bottlenose dolphin movements will also be plotted and tracked in comparison to false killer whale movements. When a tagged bottlenose dolphin and tagged false killer whale are recorded

within 30 km of one another for an hour or more, this data will be considered a direct association of the two. Time and position in relation to one another will be recorded for as long as the tagged animals remain within 30 km of one another. Distance from shore will also be examined during these instances to determine a range for where these interspecies associations typically occur.

Longline interactions will then be analyzed as in Anderson et al. (2020), with tagged false killer whales within 100 km of a longline set considered during analysis. A Switching-State Space Model (SSSM) program will be used to differentiate between transit and foraging behavior of false killer whales around longline sets, recording these values in percentages. Spatial overlap with longline fishing gear as well as distance from longline set in relation to time shall also be plotted for tagged individuals within a 100 km radius of the aforementioned gear.

Expected Outcomes

Bay of Islands false killer whales are suspected to be more pelagic due to how uncommon encounters with them are (Zaeschmar et al. 2014), and the data gathered is expected to reflect that. To support this, the hypothesis test for median distance from shore is expected to reject the null ($p<0.05$; Table 1), since the Bay of Islands

population would spend more time farther from the shore if strictly pelagic in nature. This may also be reflected in the median depth hypothesis test, as an offshore population may also spend more time in deeper water, so the null is expected to be rejected here, as well ($p<0.05$; Table 1). Determination of the Bay of Islands false killer whale range is vital to locating individuals for future study and making informed decisions on locations for marine protected areas.

Interactions between common bottlenose dolphins and false killer whales are known to occur in nearshore waters (Zaeschmar et al. 2013), and this is expected to be supported by the data. More bottlenose dolphin-false killer whale associations are predicted to happen close to the shore, whereas more solitary false killer whale behavior is expected in offshore pelagic areas. The inverse could be true, however, as an offshore ecotype of bottlenose dolphins have been observed foraging cooperatively with false killer whales (Zaeschmar et al. 2013), and this may become a more common behavior out at sea that has gone unobserved. This information is pertinent to understanding community interactions between these species, and false killer whales may be more easily located by following bottlenose dolphins from nearshore waters if associations are known to take place elsewhere.

Previous studies have indicated that although depredation on longline catches does happen, it is rare (0.37%) from false killer whales, and interest in doing so is often minimal (Passadore et al. 2015; Anderson et al. 2020). While overlap between false killer whale movements and longline fishing gear is expected, patterns of disinterest are predicted to be found in Bay of Islands waters, as well. False killer whales in the Bay of Islands are also more often observed feeding upon kahawai (Zaeschmar et al. 2013), which are more often caught by purse-seining as opposed to longline fishing (Booth 2016). Dispelling fisheries' animosity towards false killer whales by showing their minimal impact, or, alternatively, setting guidelines in place to mitigate bycatch and depredation, are conservation steps that may be recommended depending upon these results.

Conclusion

While false killer whales remain vastly understudied in many regions, New Zealand has a population of particular interest. Associations with common bottlenose dolphins and potential longline fisheries interactions are specialized areas of study that can be focused on in the Bay of Islands. With commercial longlining being one of the most contentious conservation issues relating to false killer whales, it is especially pertinent to understand the extent of these interactions.

Therefore, a satellite tag study similar to false killer whale experiments is recommended for the Bay of Islands false killer whale population, investigating their spatial patterns, association with bottlenose dolphins, and longline interactions. A pelagic preference is expected, with more bottlenose dolphin associations near the shore, though this is debatable. Longline interactions are also suspected to be minimal. Easier tracking of false killer whales, informed decisions on marine protected area placement, and educating fisheries can all benefit from the results of the proposed study. This data is all important to demystifying these elusive pelagic predators in order to get a better grasp on the threats this species faces and the necessary conservation actions required to protect it.

Literature Cited

Anderson D, Baird RW, Bradford AL, Oleson EM. (2020). Is it all about the haul? Pelagic false killer whale interactions with long-line fisheries in the central North Pacific. *Fisheries Research, 230*, 105665 DOI: 10.1016/j.fishres.2020.105665.

Baird RW. (2018). IUCN Red List status of *Pseudorca crassidens*. *The IUCN Red List of Threatened Species*, Gland, Switzerland. Available from https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T18596A145357488.en. (accessed March 2021).

Baird RW, Anderson DB, Kratofil MA, Webster DL. (2021). Bringing the right fishermen to the table: Indices of overlap between endangered false killer whales and nearshore fisheries in Hawai'i. *Biological Conservation, 255*, 108975 DOI: 10.1016/j.biocon.2021.108975.

Baird RW, Schorr GS, Webster DL, McSweeney DJ, Hanson MB, Andrews RD. (2010). Movements and habitat use of satellite-tagged false killer whales around the main Hawaiian Islands. *Endangered Species Research, 10*, pp. 107-121 DOI: 10.3354/esr00258.

Booth J. (2016). Commercial fisheries of the Bay of Islands: history, present harvesting pressure, and ecological impact. A report prepared for Fish Forever, Arlington, Virginia.

Ferreira IM, Kasuya T, Marsh H, Best PB. (2014). False killer whales (*Pseudorca crassidens*) from Japan and South Africa: Differences in growth and reproduction. *Marine Mammal Science, 30*(1), pp. 64-84. DOI: 10.1111/mms.12021.

Hernandez-Milian G et al. (2008). Results of a short study of interac tions of cetaceans and longline fisheries in Atlantic waters: environmental correlates of catches and depredation events. *Essential Fish Habitat Mapping in the Mediterranean, 612*, pp. 251-268. DOI: 10.1007/s10750-008-9501-2.

IUCN (International Union for the Conservation of Nature), IUCN Red List of Threatened Species. (2021). *World database on species conservation statuses*. IUCN, Gland, Switzerland. Available from www.iucnredlist.org (accessed March 2021).

Ortega-Ortiz CD, Elorriaga-Verplancken FR, Olivos-Ortiz A, Liñán-Cabello MA, Vargas-Bravo MH. (2014). Insights into the Feeding Habits of False Killer Whales (*Pseudorca crassidens*) in the Mexican Central Pacific. *Aquatic Mammals, 40*(4), pp. 386-393 DOI: 10.1578/AM.40.4.2014.386.

Passadore C, Domingo A, Secchi ER. (2015). Depredation by killer whale (*Orcinus orca*) and false killer whale (*Pseudorca crassidens*) on the catch of the Uruguayan pelagic longline fishery in Southwestern Atlantic Ocean. *ICES Journal of Marine Science, 72*(5), pp. 1653-1666. DOI: 10.1093/icesjms/fsu251.

Zaeschmar JR, Dwyer SL, Stockin KA. (2013). Rare observations of false killer whales (*Pseudorca crassidens*) cooperatively feeding with common bottlenose dolphins (*Tursiops truncatus*) in the Hauraki Gulf, New Zealand. *Marine Mammal Science, 29*(3), pp. 555-562. DOI: 10.1111/j.1748-7692.2012.00582.x.

Zaeschmar JR, Visser IN, Fertl D, Dwyer SL, Meissner AM, Halliday J, Berghan J, Donnelly D, Stockin KA. (2014). Occurrence of false killer whales (*Pseudorca crassidens*) and their association with common bottlenose dolphins (*Tursiops truncatus*) off northeastern New Zealand. *Marine Mammal Science, 30*(2), pp. 594-608. DOI: 10.1111/mms.12065.

Estimating Future Population Trends in Hawaiian Monk Seals (*Neomonachus schauinslandi*) through Climate Downscaling

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University of Alaska Southeast

BIOL 384: Marine Mammalogy

Professor: Dr. Heidi Pearson

Abstract

Due to their small population size and remote location, the Hawaiian monk seal (*Neomonachus schauinslandi*) remains under-studied. This phocid uniquely inhabits only tropical regions — areas with high biodiversity that are especially at-risk to climate change. The specific effects of climate change on monk seals are not well-known. This study design uses an empirical downscaling technique and multiple years of oceanographic and climatic data to produce an understanding not only of climate change's effects on the Hawaiian monk seal, but also to further the knowledge of these effects on small populations in tropical environments. Throughout the study, seal encounters are expected to decrease between 2021 and 2027 at a rate of 2 to 4%. An El Niño-Southern Oscillation (ENSO) event may provide warmer and wetter weather during some years of study, which could indicate the future of the species as climate change progresses. Short-term negative correlations between monk seals and ENSO events (especially anomalous sea surface temperature (SST), sea surface height (SSH), and phytoplanktonic concentrations) are expected, but the established decline in population will continue in the background. Already-rising temperatures and sea levels will continue to rise, affecting the seal's variable food

web throughout the study and into the future. Further studies on the effects of anthropogenic stresses on important species in the Hawaiian Islands are necessary to determine other possible changes in the food web.

Introduction

The Hawaiian monk seal (*Neomonachus schauinslandi*, previously *Monachus schauinslandi*) is a medium-sized phocid, closely related to the Caribbean monk seal (*Neomonachus tropicalis*; extinct) and the Mediterranean monk seal (*Monachus monachus*) (Rose 2017). Along with the Hawaiian hoary bat (*Lasiurus semotus*), the seal is one of only two mammals indigenous to the Hawaiian Islands in the central Pacific Ocean (Rauzon 2001). Known in the Hawaiian language as '*ilioholoikauaua*, this monk seal species inhabits the entire archipelago, including both the Northwestern Hawaiian Islands (NWHI) and Main Hawaiian Islands (MHI) (Reeves et al. 2002; Fig. 1). The seal mostly remains at sea, but comes ashore to pup in winter and spring (Reeves et al. 2002). Monk seal breeding is serially monogamous, with males roving amongst individual females between March and August (Rice 1960). Terrestrial parturition occurs between December and June, and while the seals can live up to 30 years, most only breed between 5 and 15 years of age (Rauzon

2001). A variety of fishes and invertebrates comprise the monk seal's diet, although foraging takes place close to shore and in relatively shallow water (Reeves et al. 2002).

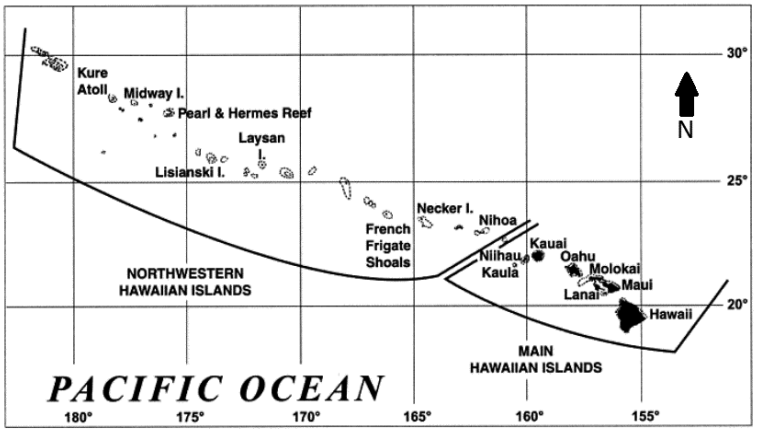

Fig. 1: The Hawaiian Archipelago, including the Main Hawaiian Islands and the Northwestern Hawaiian Islands. Note Necker and Nihoa Islands, the focus of my study, just northwest of Ni'ihau and Kaua'i. Map adapted from Baker and Johanos (2004).

As of November 2014, the International Union for Conservation of Nature (IUCN) lists the Hawaiian monk seal as endangered (Littnan et al. 2015). Across 6 NWHI subpopulations and one MHI subpopulation, the species population totals to 1,153 (Caretta et al. 2014). Only 58 mature seals are known to inhabit the MHI (Littnan et al. 2015). The overall Hawaiian monk seal population in 2014 was 69% lower than in 1958 — a decline of 2% to 4% per year across the NWHI subpopulations (Caretta et al. 2014). However, the MHI seals have experienced an increase of 6.5% per year (Baker

& Johanos 2004). If this trend is followed, the decline in the NWHI will continue until 2027, at which point the MHI subpopulation will surpass all of the NWHI subpopulations and the species as a whole will experience an increase in population (Littnan et al. 2015).

Humans (*Homo sapiens*) and Hawaiian monk seals first encountered each other around the sixth century CE when Polynesian explorers migrated to the archipelago (Rauzon 2001). The population likely decreased at this point as a result of hunting, but stability persisted until the nineteenth century when Europeans hunted them nearly to extinction (Rauzon 2001). By the 1950s the population had mainly recovered from the Euromerican incursions, but a rapid increase in human population and presence (including military bases on Tern Island and Midway Atoll) sent the monk seal population into another downward spiral (Rice 1960; Keynon 1972). By the early 2000s, special focus on the safety of pups and a decrease of human disturbance, especially in the NWHI where most human interaction is a result of military presence, has helped rebalance the populations (Rauzon 2001). Today, only an estimated 1,100 remain (Caretta et al. 2014).

Major natural and anthropogenic threats to Hawaiian monk seals include declining food sources from fisheries and climate

change, entanglement in debris, predation by sharks, and infanticide from aggressive males (Littnan et al. 2015). The low genetic diversity that existed in the population prior to human contact has also been identified as a threat to the future seal population (Littnan et al. 2015). Younger seals have much lower survival rates than older seals, with 66% of yearlings surviving in the NWHI and 95% of adults (5 to 20 years) in the same region (Baker & Thompson 2007). The NWHI subpopulations are generally safe from direct fisheries interactions, as a 1991 protocol for a Protected Species Zone set aside 50 nautical miles around all islands northwest of Kaua'i. Although ghost fishing, the interaction between lost fishing gear and marine animals, is possible, no interactions between monk seals and longline fisheries have been recorded in the Protected Species Zone since the protocol (Caretta et al. 2014). The MHI subpopulation, however, experienced at least 9 nearshore fishery takes each year between 2007 and 2012, with multiple episodes in 2010 and 2012 resulting in serious injury or mortality (Caretta et al. 2014).

The recent arrival of humans in the area leaves monk seals relatively neutral towards them, allowing easy access to close and violent encounters (Caretta et al. 2014). Historical pupping beaches in the MHI have become popular for tourism, so many are no longer

seal-friendly (Carretta et al. 2014; Rose 2017). At least 8 confirmed killings occurred on the MHI between 2009 and 2012, most of them on the island of Kaua'i (Caretta et al. 2014). Beyond this direct anthropogenic impact, not much is known about the effects of climate change on the Hawaiian monk seal. It is expected that prey species presence and distribution across the Hawaiian Archipelago may change as a result of rising sea levels (Rauzon 2001). Ocean acidification may also affect the seals' diets and range (Rauzon 2001). The Waikīkī Aquarium in Honolulu, the University of Hawai'i, and the University of California Santa Cruz provide current and future possibilities for research on population, breeding, life history, and major threats (Rauzon 2001; Rose 2017). Twelve-year-old monk seal Ho'ailona (KP2) at the Waikīkī Aquarium is one of the major ambassadors for public education and outreach, especially for tourists (Rose 2017).

Objectives

Climate change will inarguably affect oceanographic conditions, and therefore seal habitats and diets (Rauzon 2001). My study will focus on these effects on Hawaiian monk seal subpopulations on Necker and Nihoa Islands in the NWHI. These islands were chosen because of their in-depth historical population statistics reaching back 6 decades, high seal population as opposed to other

islands in the area, and proximity to each other and to the MHI (Rice 1960; Kenyon 1972; Baker & Johanos 2004; Caretta et al. 2014; Fig. 1). The objective is to understand long-term relationships between NWHI seal populations and oceanographic and climatic factors via a climate downscaling method, similar to Srinivasan et al. (2012). Research has shown warming and rising waters as having submerged multiple islands that were once habitats for monk seals (Rauzon 2001). The deaths of corals in the region will provide other cascading effects that may affect Hawaiian monk seals as well (Rauzon 2001). Because little is known about the outcomes of climate change in relation to this species, this study will provide an understanding of future climatic effects on Hawaiian monk seals. It will also provide future researchers further goals for conservation in the face of climate change.

Methods

Two surveys, one for Necker Island and one for Nihoa Island, will be repeated once every 2 months for 6 years (September 2021 to July 2027). The surveys will be conducted via boat traveling north-south on transect lines 2 km apart within a 27.7 km-sided square (0.25°-sided square) with the center of each respective island at the center of the square. Individual seals will be documented and, when

possible, photographed and identified.

Climate downscaling allows for the creation of regional climatic models well-tailored for analyzing specific regions or species (Hewitson & Crane 1996). It does not offer a sure answer for future climatic effects, but its specificity is more reliable than generalized climate models (GCMs) (Hewitson & Crane 1996). This study will use empirical climate downscaling, similar to the work of Srinivasan et al. (2012), for predictions of future climatic effects on Hawaiian monk seals. Seal encounters, measured in individual seals encountered/hour of survey, will serve as the main dependent variable to be compared with 6 others. The variables measured include sea surface temperature (SST, ˚C), sea surface height (SSH, m), salinity (g/kg), north-south wind velocity (m/s), east-west wind velocity (m/s), and phytoplankton concentration (mg/m^3) (Srinivasan et al. 2012). Each of these data will be acquired once per day during each study. Besides seal encounters, each variable is determined by anomaly of the mean of each variable for each day sampled, through the formula $\frac{x}{mean} - 1$. The rate of seal encounters will then be graphed in comparison with the anomalous variables and analyzed using Pearson's correlation coefficient, which determines the linear correlation that two sets of data have (Srinivasan et al. 2012).

Expected Outcomes

The length of the study will provide numerous rises and falls among the anomalous data. It is expected that changes in the Pacific Decadal Oscillation (PDO) may affect the data slightly. Moreover, a possible El Niño-Southern Oscillation (ENSO) event during certain years of the study (projected 2022-23) will cause a spike in SST, SSH, and wind velocity (Cheng et al. 2008; Fig. 2). Temperature and density are inversely related, and density and salinity are directly related, so this spike in SST will cause a drop in salinity at the surface. Higher temperatures also create a steeper thermocline, blocking upwelling and lowering plankton concentrations. In the months directly following the ENSO event (projected 2023-24), a drop in SST, SSH, and wind velocity is expected (Cheng et al. 2008; Fig. 2). Therefore, a rise in salinity and planktonic activity is also expected during these months. The rise and then fall of each of these variables will provide crucial information about the effects of climatic changes, including the increasing likelihood of extreme changes in weather and climate over the next few decades. The ENSO event may act as a window into the future of climate change. Across the entire study, general trends towards warmer, wetter, and stormier weather are also expected (Fig. 2).

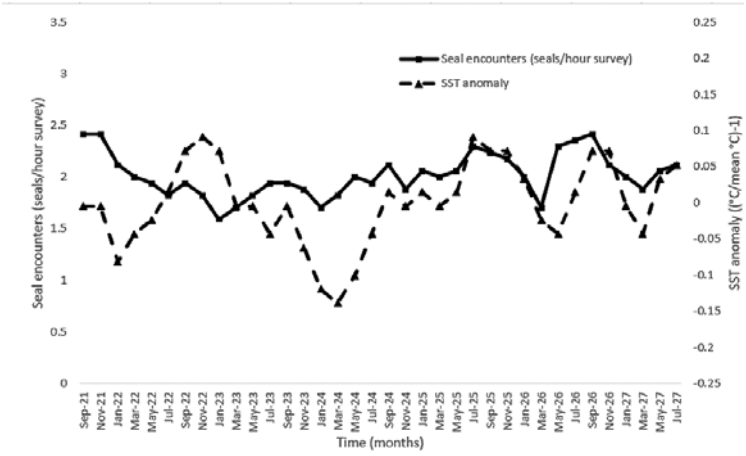

Fig. 2: Projected example of seal interactions and SST anomaly between summer 2021 and summer 2027. Note that while the correlation is inverse throughout the entire time of study, simply due to warming temperatures and decreasing seal populations (as have already been measured), there is a spike in SST anomaly between mid-2022 and mid-2023, correlating with an ENSO event. There is also a dip in SST anomaly just following that, in late-2023 and early-2024, due to environmental rebound from the ENSO event. The seal encounters fall during the ENSO event and, despite SST anomaly quickly lowering, the seals slowly return to their average decline.

Regarding the seals themselves, a low number of sightings is expected, simply because the population is so low (only 81 seals live on Necker and Nihoa Islands combined) (Littnan et al. 2015). Given the current seal population trends, a decline of 2 to 4% is expected across the study. Because the phytoplankton concentration is likely to decrease during the ENSO events, the overall production (and therefore consumption) will be much lower during this time, which will allow for a lower chance of pup survival and interactions (seal encounters will have negative correlation with SST, SSH, and wind velocity anomalies, and positive correlation with salinity planktonic anomaly) (Fig. 2). A

slight increase in seal interceptions, as a result of climatic rebound and/or a plankton-friendly La Niña event, as seen in the first few months of the study, may follow.

Conclusion

The negative correlation between SST anomaly and seal sightings does not prove promising for the species during climate change. As the ENSO event reveals on a small scale, a long-term change in temperature, salinity, and so forth will reduce upwelling and eventually reach an environmental tipping point (Srinivasan et al. 2012). Moreover, studies on Alaskan salmon (*Oncorhynchus* spp.) and cod (*Gadus macrocephalus*) populations have noted that the anomalous marine heatwave in the 2010s changed the nutritional value of phytoplankton, and therefore reduced the population and nutritional value of fish analogous to those of the monk seal's diet (Sreenivasan & Miller 2017). This decline in ecosystemic sustainability will almost certainly harm the already-poor monk seal population. Further studies are needed to confirm these possibilities, including those focused on primary producers in the area as well as the species consumed by the Hawaiian monk seal. Studies on the population dynamics and sustainability of monk seals are also needed; it is predicted that by the end of this study, the species will

be increasing again, but focused around the MHI instead of the NWHI (Littnan et al. 2015). This change in habitat will almost certainly provide further anthropogenic stresses, many of which are lacking in understanding. Furthermore, an intense ENSO event as is portrayed in this study may cause long-lasting problems for the already declining population, even longer than is represented in these sample data (Fig. 2). The future of the Hawaiian monk seal may still be unknown, but analyses of the broad ecosystemic effects of climate change found through a downsizing of space and time may provide some hope for further conservation of the species.

Literature Cited

Baker JD, Johanos TC. 2004. Abundance of the Hawaiian monk seal in the main Hawaiian Islands. Biological Conservation 116(1) DOI: https://doi.org/10.1016/S0006-3207(03)00181-2

Baker JD, Thompson PM. 2007. Temporal and spatial variation in age-specific survival rates of a long-lived mammal, the Hawaiian monk seal. Proceedings: Biological Sciences **274**(1608) DOI: https://doi.org/doi/10.1098/rspb.2006.3737.

Caretta JV, et al. 2014. U.S. Pacific marine mammal draft stock assessments: 2014. Technical memorandum 9.C(2). NOAA SWFSC, La Jolla, California.

Cheng Y, Xu Q, Liu Y, Li C, Rong Z, Zong H, Xiu P, Yin X. 2008. Interannual variability of SST, SLA and wind waves in the Hawai'i area and their responses to ENSO. Journal of Ocean of China (Oceanic and Coastal Sea Research) **7**(4):379–384.

Hewitson BC, Crane RG. 1996. Climate downscaling: techniques and application. Climate Research **7**:85–95.

Kenyon KW. 1972. Man versus the monk seal. Journal of Mammalogy **53**(4) DOI: https://doi.org/10.2307/1379207.

Littnan C, Harting A, Baker J. 2015. *Neomonachus schauinslandi*. The IUCN Red List of Threatened Species, Gland, Switzerland. Available from https://www.iucnredlist.org/species/13654/45227978#population (accessed 11 April 2021).

Rauzon MJ. 2001. The Hawaiian monk seal. Pages 64–72 in Rauzon MJ, author. Isles of refuge: wildlife and history of the Nort

western Hawaiian Islands. University of Hawai'i, Honolulu.

Reeves RR, Stewart BS, Clapham PJ, Powell JA. 2002. Hawaiian monk seal. Pages 154–157 in Reeves RR, Stewart BS, Clapham PJ, Powell JA, editors. National Audubon Society's guide to marine mammals of the world. Alfred A. Knopf, New York.

Rice DW. 1960. Population dynamics of the Hawaiian monk seal. Journal of Mammalogy **41**(3) DOI: https://doi.org/10.2307/1377496.

Rose DB. 2017. Monk seals at the edge: blessings in a time of peril. Pages 117–146 in Rose DB, van Dooren T, Chrulew M, editors. Extinction studies. Columbia University, New York.

Sreenivasan A, Miller K. 2017. Variability in juvenile Yukon River Chinook salmon energy content during outmigration: does water temperature play a role? Lowell Wakefield Fisheries Symposium: impacts of a changing environment on the dynamics of high-latitude fish and fisheries. Alaska Sea Grant, Anchorage, Alaska.

Srinivasan M, Pearson HC, Vaughn-Hirshorn RL, Würsig B, Murtuggudde R. 2012. Using climate downscaling to hypothesise impacts on apex predator marine ecosystem dynamics. New Zealand Journal of Marine and Freshwater Research **46**(4) DOI: https://doi.org/10.1080/00288330.2012.71297.

Effects of Hydrofluorocarbon on the Environment

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Introduction

With the many issues threatening our environment, one we have addressed and nearly solved is the depletion of our ozone layer. A chemical that helped us to prevent this depletion, while keeping many of our modern conveniences, is hydrofluorocarbon. However, it appears that this chemical contributes to the other environmental hazards we are facing today. Hydrofluorocarbons, or HFCs, are a chemical compound composed of hydrogen, fluorine, and carbon that are used primarily as refrigerants (Rogers, 2019). They were developed to replace chlorofluorocarbons, or CFCs, that were used in many common products such as aerosol sprays, and more critically, in refrigerants used in heating and cooling applications for our homes, vehicles, and even foods. Previous research into CFCs revealed that they were having a large impact on our ozone, leading to a hole forming above the Antarctic and an urgent need to address this issue to prevent serious health and environment hazards that would be caused by its loss. This resulted in the drafting and signing of the Montreal Protocol.

The Montreal Protocol, signed by 27 nations in 1987, agreed to reduce production of ozone depleting substances (ODS), such as CFCs, 50% by the year 2000. However, a later amendment in 1990

called for the complete elimination of production by that same year (Alexander and Fairbridge, 1999). With this, development began on a new compound to replace ozone depleting CFCs and the result was HFCs. While HFCs are extremely energy efficient and provide low utility cost for cooling and heating, they are heavily regulated by the Environmental Protection Agency (EPA); licensing is required to order and handle the compound, limits have been set for the amount that is legally allowed to vent from equipment, and there is a specific procedure for removal and disposal of the refrigerant. With such heavy regulation of this replacement compound, it must impose some level of risk to our environment. Taking this into account, we must consider alternative substances to replace HFCs as they have such a large impact on our climate and the potential to accelerate global warming.

Findings

Surprisingly, despite previous beliefs, HFCs do contribute to ozone depletion. A 2015 study conducted on five types of HFCs and their contribution to global warming discovered that their ozone depleting potential was mainly indirect. The cause of this is due to their warming effect of the stratosphere, increasing the rate at which chemical reactions occur and destroy ozone molecules, as well

as decrease the ozone levels above the tropics by increasing the rate of upwards movement of ozone-poor air (Reiny, 2015). Though the impact of ozone depletion is measurable, it appears to be minimal. As stated by lead author Margaret Hurwitz, "We're not suggesting HFCs are an existential threat to the ozone layer or to ozone hole recovery, but the impact isn't zero as has been claimed. HFCs are, in fact, weak ozone-depleting substances," (Reiny, 2015). So, while it is worth noting that they do have a measurable impact on the ozone, it is a different environmental effect that raises much more concern.

The largest threat that comes from HFCs is that they, like CFCs, are a very potent greenhouse gas and can have a very significant effect on the warming climate. Additionally, due to the increase in population and global temperature, there is an increase in demand for air conditioning and refrigeration leading to a rise in production and use of HFCs. If these gasses remain unchecked, we will see an exponential growth in production and use that will lead to further heating of our global climate. From 2006 to 2010 there has been an increase of about 10% per year of HFC-134a, more than 15% per year of HFC-125, and about 15% per year of HFC-143a (Figure 3.1) (UNEP, 2011).

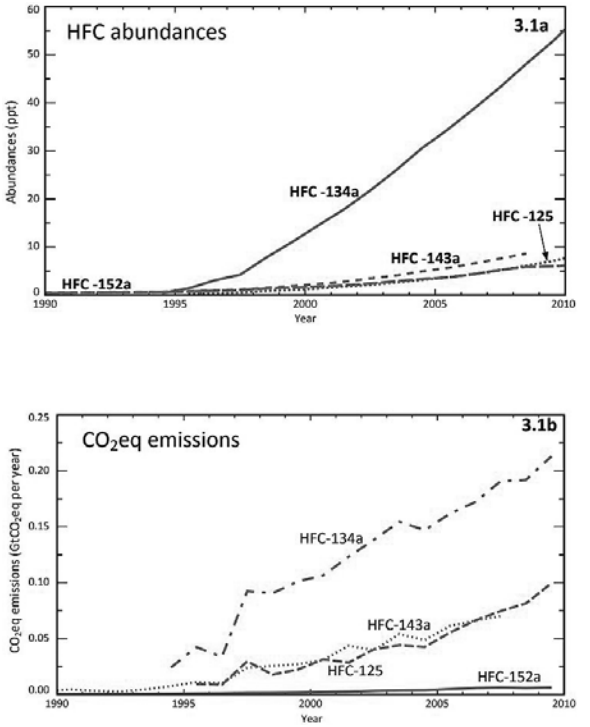


Figure 3.1 Increase in global average observed atmospheric abundances (3.1a) in parts per trillion, ppt and global annual CO_2eq emissions per year (3.1b) of four major HFCs. The emissions are inferred from the observed abundances. Not shown is HFC-23, the second most abundant HFC in the atmosphere with an abundance of about 22 ppt in 2009 (See Box 1). (Observed abundances from Chapter 1 of WMO (2011) with updates from Advanced Global Atmospheric Gases Experiment (AGAGE) data).

While HFCs currently represent a very small contribution in volume compared to other greenhouse gasses, with the rate that they are expected to increase they may become very significant contributors. Scenarios have been developed to assess impact of HFCs on climate given circumstances of non-intervention and project that by 2050 the total HFC emissions under the Velders et al. scenario

are 5.5-8.8 Gt CO_2 equivalent per year and emissions under the Gschrey et al. scenario are 3.5 Gt CO_2 equivalent per year (Figure 3.2) (UNEP, 2011).

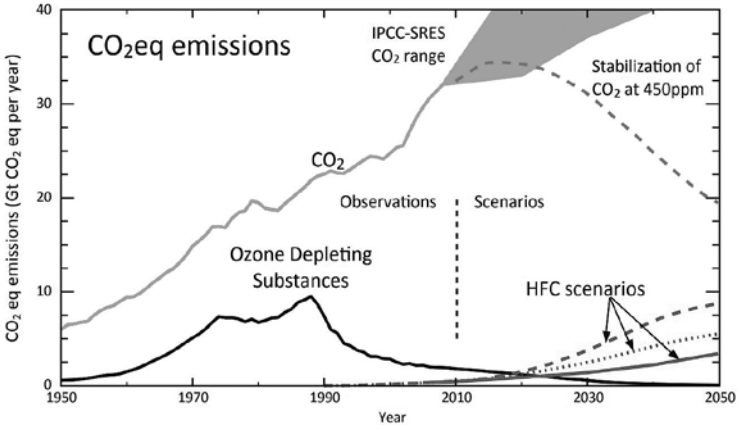


Figure 3.2. The decrease in Co_2 equivalent emissions of ODSs (CFCs, halons, HCFCs, and others) (line designated as ozone depleting substances) may be offset by the projected increase in their non-ozone depleting substitutes (HFCs) (lines designated as HFC scenarios). The HFC scenarios shown are the upper and lower (broken and dotted lines respectively) scenarios of Velders et al. (2009) and the scenario (solid line) of Gschrey et al. (2011). Shown for reference are emissions for the range of global CO_2 emissions from the IPCC-SRES Scenarios (IPCC 2000; 2001) (grey shaded area), and for a 450 ppm CO_2 stabilization scenario (IPCC 2007) (grey broken line) (The CO_2 emissions depicted for 1950-2007 are reported emissions from fossil fuel use and cement production). The HFC intervention scenario from TEAP (2009a) only covers the period up to 2020, and is not shown because it would not be visible. The emissions of the TEAP (2009a) scenario are 0.8 Gt CO_2eq per year in 2020; about equal to the Gschrey et al. (2011) scenario and slightly below the Velders et al. (2009) scenarios. (Figure based on WMO 2011).

That range is approximately between 12% and 29% of total CO_2 emissions in 2010 and nearly matching the peak CO_2 equivalent of ozone depleting substances before they were phased out. Intervention scenarios had been developed as well, however, the

data used for one study was not up to date with current trends and the second study only covered a 5-year period and were therefore not featured in the report and figures (UNEP, 2011). Their increase in abundancy paired with their global warming potential (GWP) makes them one of the most concerning among 5 other compounds (carbon dioxide, methane, nitrous oxide, perfluorocarbons, and sulfur hexafluoride) that contribute to global climate change and are human health hazards (Blowers and Lownsbury, 2010).

The impact of HFCs on global warming can be hundreds to thousands of times greater than CO_2 per unit of mass with the most abundant HFC being 3,790 times more damaging to the climate than CO_2 over a 20-year period (Climate and Clean Air Coalition, 2017). Using a measure of HFCs radiative forcing we can estimate their effects on the global climate due to their changes in concentration. Using that data, calculations were made on the GWP and global temperature change potential (GTP) for 20, 100, and 500 years and compared to previous Intergovernmental Panel on Climate Change (IPCC) estimates (Table 5) (Zhang, Wu, and Lu, 2011).

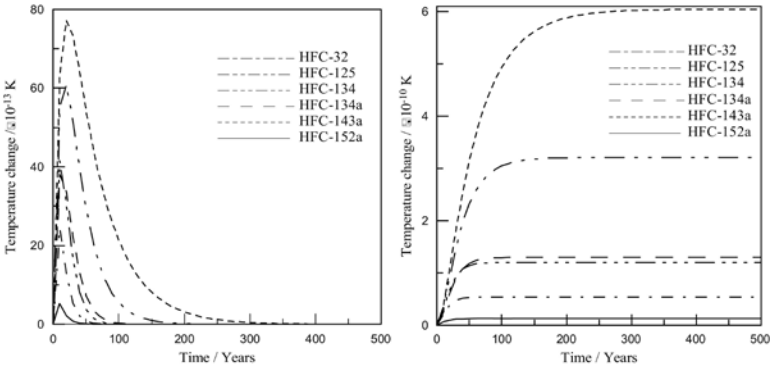
Table 5. Comparisons between GWPs, GTP^{P}s, and GTP^{S}s of HFCs in this work and the GWPs of HFCs in IPCC (2007) with time horizons of 20, 100, and 500 years, respectively. There, the lifetime in the calculation is given for reference.

Gases	Lifetime/yr	GWP 20/100/500 (yr)	GWP in IPCC (2007) 20/100/500 (yr)	GTP^{P} 20/100/500 (yr)	GTP^{S} 20/100/500 (yr)
HFC-32	4.9	2727/817/254	2330/675/205	1670/2/0	3469/885/257
HFC-125	29	8235/4713/1513	6350/3500/1100	8004/1113/0	8362/5008/1532
HFC-134	10	5345/1820/566	3200/1100/330	4007/10/0	6098/1791/573
HFC-134a	14	5080/1966/612	3830/1430/435	4406/55/0	5538/2125/619
HFC-143a	52	9940/7829/2850	5890/4470/1590	10124/4288/3	9764/8107/2885
HFC-152a	1.4	649/191/59	437/124/38	273/0/0	914/207/60

GWP is a measure of how much energy 1 ton of a specified gas will absorb over a given period of time relative to 1 ton of CO_2, while GTP is a measure of the temperature change at the end of the time period relative to CO_2 (EPA, 2021). As shown in the previous table, results determined that HFCs have a much greater GWP and GTP than CO_2 and have the potential to negatively impact global climate more than CO_2 if the volume in our atmosphere continues to increase. Additionally, HFC emissions rapidly reach a peak value of surface temperature change with a 1 kg pulse emission and recovers to zero within one to four centuries depending on the

specific compound (Fig. 4a.), while sustained emissions of 1 kg per year result in a surface temperature change that eventually arrive to a level that remains stable (Fig. 4b.) (Zhang, Wu, Lu, 2011).

Fig. 4. Temperature changes due to a pulse emission of 1kg of HFCs (a) and sustain emission of 1 kg yr^{-1} of HFCs (b).



Case Study

In a 2010 case study, Paul Blowers and James M. Lownsbury evaluated the environmental impact of refrigerants comparing HFCs to CFCs, as well as considering a 3rd generation substitute substance known as hydrofluoroethers (HFEs). Substitution substances are a class of substance that still carry their own hazards but are less impactful than current substances in use, such as replacing CFCs and their high ozone depleting effect with HFCs which have very little impact on the ozone but remain high in global warming potential. HFEs have very similar physical and chemical properties

as HFCs and could be considered as a replacement for most of the applications they are used in (Blowers and Lownsbury, 2010). However, they may not be ideal replacements in all regions as the case study will reflect.

The study conducted measured both direct and indirect contributions of CO_2 equivalent emissions. Direct emissions were assumed at a 9% per year rate of leakage based on previous studies and coal was selected as the fuel source of indirect emissions as it accounts for 39% of the electricity generated in the U.S. and is the dominant source of electricity worldwide (Blowers and Lownsbury, 2010). Due to a lack of peer-reviewed data for HFEs computational chemistry and statistical thermodynamics were used to predict heat capacities for that compound and existing data points for HFE were used to evaluate accuracy of the resulting predictions.

Physical property data of the refrigerants measured at the 100-year time horizon for GWP of HFC R-134a is 1600 kg CO_2 equivalent while HFE-143 is 458 kg CO_2 equivalent reflecting that HFEs have a significantly lower direct impact on global climate than HFCs (Blowers and Lownsbury, 2010). However, when these compounds are modeled for freezer applications with 10 tons of cooling the results showed that HFEs required far greater energy

consumption than HFCs, measuring 432,597 kg CO_2 equivalent and 375,877 kg CO_2 equivalent respectively, for the same cooling rate reflecting much higher indirect CO_2 equivalent emissions and offsetting the lesser impact of direct emissions from HFEs (Blowers and Lownsbury, 2010). With this data we can see that HFCs are preferable in areas that still use fossil fuels for energy and the HFEs would be preferable for regions that have renewables or nuclear energy sources. However, as HFEs are relatively recent and their total global radiative forcing are unknown, they are currently excluded from current U.S. EPA considerations. Further research into HFEs and other alternatives is needed to determine if they would be a suitable replacement to phase out HFCs to prevent the warming that will continue to occur if HFCs remain in use.

Conclusion

HFCs impact our environment in two ways. First, they influence our ozone and can be defined as an ozone depleting substance, though their impact is small and on their own are considered non-threatening. Secondly, they are a potent greenhouse gas that have a stronger global warming potential than CO_2, but currently are not as impactful due to their lower volume. However, with ever increasing demand for refrigeration due to population growth

and warming climate, HFCs are rising rapidly, becoming a main contributor to climate change. While much of the climate talks are understandably focused on fossil fuels, it is imperative that we do not underestimate the potential for HFCs to become a significant contributor and consider the future impact they may have if not more heavily regulated. Therefore, we need to begin taking steps to phase them out of production.

To phase out HFCs, we need to find an alternative substance that doesn't have such a large environmental impact. More research into substances like HFEs is necessary so we have a better understanding of the potential effects they may have and whether they would be an acceptable replacement. Additionally, working to move the world from fossil fuel energy supply to renewables or nuclear would help nullify the large impacts substances like HFEs have on indirect contribution and would provide more solutions for lower efficiency compounds to be used for our refrigeration needs without causing additional climate warming.

Another effect to take into consideration is that these refrigerant compounds can only maintain efficiency up to certain outdoor temperatures and may result in the system being inoperable in more extreme temperatures. We are currently seeing record breaking

temperatures as a result of climate change. If this continues, we may begin to experience temperature extremes too large for our refrigerant systems to be effective and would need to search for alternative methods just to keep up with the changing climate. While it is certain that we will need to research new and more effective compounds, we should prioritize finding one that will create a thriving and balanced environment and ecosystem, rather than waiting and being forced to find one to survive in an ever-warming world.

Literature Cited

Rogers, Kara. "hydrofluorocarbon". (2019) Encyclopedia Britannica. https://www.britannica.com/science/hydrofluorocarbon. Accessed 24 November 2021.

Climate & Clean Air Coalition. (2017) "Hydrofluorocarbons (HFCs)". https://www.ccacoalition.org/en/slcps/hydrofluorocarbons-hfcs

Alexander, David E. and Fairbridge, Rhodes W. (1999) The Chapman & Hall Encyclopedia of Environmental Science, pp. 78-80. https://gml.noaa.gov/hats/publictn/elkins/cfcs.html

Reiny, Samson. (2015) "NASA Study Shows That Common Coolants Contribute to Ozone Depletion" https://www.nasa.gov/press-release/goddard/nasa-study-shows-that-common-coolants-contribute-to-ozone-depletion

UNEP. (2011) "HFCs: A Critical Link in Protecting Climate and the Ozone Layer." United Nations Environment Program (UNEP), 36pp https://wedocs.unep.org/bitstream/handle/20.500.11822/8014/-HFCs_%20A%20Critical%20Link%20in%20Protecting%20%20Climate%20and%20the%20Ozone%20Layer-20111072.pdf?sequence=3&amp%3BisAllowed=

Blowers, Paul and Lownsbury, James M. (2010) "Carbon Dioxide Emission Implications if Hydrofluorocarbons are Regulated: A Refrigeration Case Study." Environmental Science & Technology, Volume 44, Issue 5, pg. 1526-1529 https://pubs.acs.org/doi/full/10.1021/es9023354

Hua Zhang, Jinxiu Wu, and Peng Lu. (2011) "A study of the radiative

forcing and global warming potentials of hydrofluorocarbons." Journal of Quantitative Spectroscopy and Radiative Transfer, Volume 112, Issue 2, January 2011, pg. 220-229 https://www.sciencedirect.com/science/article/pii/S0022407310001810

United States Environmental Protection Agency. (2021) "Understanding Global Warming Potentials." https://www.epa.gov/ghgemissions/understanding-global-warming-potentials

Juvenile Probation: Motivating Compliance to Avoid Technical Violations

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Juveniles that are charged with breaking the law in Alaska will often find themselves in front of a juvenile probation officer (JPO). Depending on the severity of the allegation, these juveniles may then be diverted to a youth court, placed on informal or formal probation, or remanded to be prosecuted as an adult. While the justice system is punitive by nature, the Division of Juvenile Justice is considered a restorative justice agency. Restorative justice means that equal emphasis is placed on holding offenders accountable, restoring damage caused to victims and communities, and assisting offenders and their families with developing skills to prevent future crime.

Each juvenile that is on either formal or informal probation must agree to follow standard and specialized conditions of probation to successfully complete the mandated term of supervision. Any violation of these conditions can result in an extension of supervision, additional requirements, or even incarceration, which can extend the youth's involvement with the justice system substantially. Many conditions violations are technical violations, defined as "noncriminal, nondelinquent incidents in which an individual fails to meet the terms of his or her probation," (Dir, Magee, Clifton, Ouyang, Tu, Wiehe, & Aalsma, 2021). Juveniles currently do not have the proper support and services to avoid prolonged

involvement with the justice system.

Except in cases of detention and residential facilities, it is impractical to monitor a juvenile 24 hours each day to ensure they do not commit a technical violation. In addition, experimentation with risky behavior is common and necessary as adolescents develop into adults. JPOs determine if/when to pursue sanctions for violations based on the severity, frequency, and impact of the event. Existing research primarily focuses on measuring and reducing recidivism, but few studies are geared towards reducing technical probation violations. The exploration of available data on delinquent juveniles, common barriers to compliance, and factors that affect JPO discretion can aid in determining how best to decrease the amount and frequency of technical violations given to youth offenders.

Vidal and Woolard (2016) investigated the relationship between parental perceptions of juvenile probation officers and juvenile compliance with conditions of probation. A total of 87 parents of juvenile offenders participated in a study conducted across four counties in two states. For this study, probation non-compliance was defined as "the variety of new offenses and technical violations of probation conditions in the past 6 months," (p. 13). The results of

this study did not provide substantial evidence that the frequency of contact, perceptions of the relationship quality with the probation officer, and parental strategies affected the number of additional delinquent offenses. This study did, however, find that the parents' perceptions of support, respect, and fairness from the probation officer were substantially related to fewer technical violations of probation conditions. Furthermore, the use of parenting practices that promote probation compliance increased as parental perception of support, respect, and fairness increased.

Schwartz, Alexander, Lau, Holloway, and Aalsma (2017) explored the connection between probation strategies used to improve compliance and the use of motivational interviewing techniques. The two probation strategies compared were client-centered vs. confrontational techniques. Parameters used to define motivational interviewing skills included reflective listening, affirmations, summarizations, and open-ended questions. A total of 228 juvenile probation officers participated in the study. The study found that confrontational tactics used by JPOs contribute to an increased resistance to change when compared to client-centered strategies. Additionally, the study also showed that the sample JPOs' interviewing techniques and skills were antithetical to motivational interviewing principles. It is important to note that

the level of training JPOs had received on motivational interviewing techniques was not captured as part of the study data. Previous studies with adult offenders demonstrated a positive correlation between the use of motivational interviewing and conditions of probation compliance, while confrontational tactics contribute to probationer resistance to change.

The electronic records of 18,289 first-offender probation-involved juveniles from Marion County, Indiana between 01/01/2000 and 12/31/2016 were examined to determine the effects of charge severity, program referrals, and race on the time to first technical violation (Dir et al. 2017). This study did not include technical violations that resulted in probation noncompliance that was formally processed by the court. The average age of the youth involved in the review was 15.2 years, and 15.3% of the included youth received a technical violation. Results showed that as the number of probation-required programs and conditions increased, the time to technical violation decreased. Juveniles with more challenges are likely to be referred to more services and programs and are also more likely to reoffend. Multiple requirements pose a higher burden to the probationer and their family. Many families involved with the juvenile justice system have minimal resources and may experience

additional barriers to compliance in the form of transportation issues, environmental issues, and others. Dir et al. emphasized the importance of balancing probation requirements with needs of the individual youth and their family and addressing barriers to compliance while rewarding probationers for requirements they've successfully completed.

Goldstein, NeMoyer, Gale-Bentz, Levick, and Feierman (2016) explored the relationship between adolescent development and juvenile probation compliance in the article "'You're on the right track!' Using Graduated Response Systems to Address Immaturity of Judgment and Enhance Youths' Capabilities to Successfully Complete Probation." This article contained an in-depth evaluation of the adolescent brain development and implications this can have on a juvenile's ability or motivation to be compliant with probation conditions. According to their findings, "adolescents demonstrate reduced consideration of future consequences of their behaviors, increased sensitivity to potential rewards for their behaviors, heightened impulsivity, greater susceptibility to peer influences, and greater difficulty regulating emotions," (2016). Specifically, adolescents have a greater response to positive incentives compared to negative consequences. A graduated response system was suggested with

frequent, immediate, and consistent rewards for positive behaviors in addition to consistent and progressive sanctions for negative behaviors to promote and facilitate probation compliance. While a graduated response system may increase compliance due to the adolescent brain responding more favorably to incentives rather than sanctions, it's important to recognize the possibility of inadvertent net widening in the juvenile justice system due to perceived benefits from positive incentives. To summarize, rewards should work to encourage probation conditions compliance rather than incentivizing involvement with the justice system.

Kolivoski, Goodkind, and Shook (2017) examined the historical development of social work and juvenile justice for crossover youth in the article titled Social Justice for Crossover Youth: The Intersection of the Child Welfare and Juvenile Justice Systems. Crossover youth were defined as youth that have experienced maltreatment as well as exhibited delinquent behavior. In other words, they are or have been involved with both the child welfare department and the justice department. Some estimates indicate that as many as 50% of juveniles in the justice system are considered crossover youth. This article illustrates the importance of collaboration between both agencies for crossover youth cases

to avoid duplication or overloading of services and obligations for the juvenile and their family. Perhaps most importantly, Kolivoski et al. (2017) offered a concise contrast of how youth are viewed and treated within each agency: "When in the child welfare system, they are in need of protection, and when in juvenile justice, they need to be rehabilitated." This article emphasizes the need to effectively serve crossover youth within both systems.

The study conducted by Johnson-Reid explored the relationship between child welfare intervention and entrance into the juvenile corrections system. It's important to note that this study used incarceration as the measurable point of entry, rather than simple involvement with the juvenile justice system that doesn't involve incarceration. In a previous Johnson-Reid study that the present study sought to replicate, it was found that 81% of children that had family preservation intervention due to behavioral problems and 66% of children who were served due to maltreatment had a conviction within 1 year of exit. The present study found that juveniles who received their first report of neglect or abuse between the ages of 11 and 14 had the highest rate of entry into juvenile corrections. The rate of entry decreased as the median family income increased. "Children entering foster care after maltreatment … had the highest risk of juvenile

corrections involvement," (Johnson-Reid, 2002). The study suggests that juveniles involved with the child welfare system and who received mental health services were at the highest risk of incarceration.

Trauma-informed care (TIC) policies and systems are commonly implemented throughout the juvenile justice system, however there isn't currently a widely accepted definition of what TIC is. Baetz and Hoagwood (2017) conducted a systematic literature review of 950 records in an attempt to identify definitions and recommended practices for implementing TIC within the juvenile justice system. Of the 950 records that were reviewed, only 10 records met the inclusion/exclusion criteria of the study. The 10 included publications noted 71 different practice or policy recommendations and 10 major domains of TIC practice for juveniles. While the study failed to identify one commonly held definition of TIC, it was unanimous that all staff should receive training on trauma and mental health. Nine studies called for universal screening for trauma impairment in juvenile offenders, nine also called for evidence-based, trauma-specific mental health evaluations, eight suggested providing tangible resources to reduce barriers to engagement, six identified policies and procedures aimed to promote a sense of psychological and physical safety, and five called for cross-system collaboration. While a consensus-based definition for TIC is still up for

debate, it's evident that a shift towards trauma-informed care is taking place within the juvenile justice system.

In conclusion, involvement with the justice system will have a profound effect on juveniles and their families; whether there's a positive or negative outcome depends heavily on the actions of the juvenile, their family, and the probation officer. Collaboration between agencies the youth is involved in, careful selection of conditions and services, mindfulness of trauma and other mental health challenges, and the introduction of a graduated response system have the potential to decrease the number and frequency of technical violations that a juvenile receives throughout their involvement with the Division of Juvenile Justice.

Resources

Branson, C. E., Baetz, C. L., Horwitz, S. M., & Hoagwood, K. E. (2017). Trauma-informed juvenile justice systems: A systematic review of definitions and core components. Psychological Trauma: Theory, Research, Practice, and Policy, 9(6), 635–646. https://doi.org/10.1037/tra0000255

Dir, A. L., Magee, L. A., Clifton, R. L., Ouyang, F., Tu, W., Wiehe, S. E., & Aalsma, M. C. (2021). The point of diminishing returns in juvenile probation: Probation requirements and risk of technical probation violations among first-time probation-involved youth. Psychology, Public Policy, and Law, 27(2), 283–291. https://doi-org.ezproxy.uas.alaska.edu/10.1037/law0000282

Goldstein, N. E. S., NeMoyer, A., Gale-Bentz, E., Levick, M., & Feierman, J. (2016). "You're on the Right Track!" Using Graduated Response Systems to Address Immaturity of Judgment and Enhance Youths' Capacities to Successfully Complete Probation. Temple Law Review, 88(4), 803–836.

Jonson-Reid, M. (2002). Exploring the relationship between child welfare intervention and juvenile corrections involvement. American Journal of Orthopsychiatry, 72(4), 559–576. https://doi.org/10.1037/0002-9432.72.4.559

Kolivoski, K. M., Goodkind, S., & Shook, J. J. (2017). Social Justice for Crossover Youth: The Intersection of the Child Welfare and Juvenile Justice Systems. Social Work, 62(4), 313–321.

https://doi.org/10.1093/sw/swx034

Schwartz, K., Alexander, A. O., Lau, K. S. L., Holloway, E. D., & Aalsma, M. C. (2017). Motivating compliance: Juvenile probation officer strategies and skills. Journal of Offender Rehabilitation, 56(1), 20–37.

Vidal, S., & Woolard, J. (2016). Parents' perceptions of juvenile probation: Relationship and interaction with juvenile probation officers, parent strategies, and youth's compliance on probation. Children and Youth Services Review, 66, 1–8. https://doi-org.ezproxy.uas.alaska.edu/10.1016/j.childyouth.2016.04.019

Women of Little Importance

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WRTG 211: Writing and the Humanities

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Science fiction is a genre that has captured millions, telling wild, fantastical, or dark stories. *The Matrix*, directed by Lana and Lily Wachowski, is a science fiction movie that takes place in an apocalyptic world, with the band of human rebels waiting for the person they call "The One." The story revolves around Neo learning to control his abilities in the Matrix and to believe in himself to be The One and save humanity from their robotic overlords. This film scarcely focuses on the female characters, despite the many abilities they have. They are forced to the background of the story and slotted into insubstantial roles in favor of placing the importance on the male characters. If we examine *The Matrix* through the lens of feminist theory, we see characters and symbols used to show how women are viewed in a male dominated society.

The minor and flat character of Trinity shows how women's roles in a patriarchy are reduced to helpers and romantic objects. At the scene near the end of the film when the sentinels are attacking the ship, she does not do anything to fight back against them, she merely stands over Neo to protect him. Instead of taking action, she does something passive, thus leaving room for Neo to take action later and fulfill his role as the hero of the story. This shows how, in patriarchal societies, women are forced out of doing impactful

work. Women need to be protected and saved, but they cannot save anyone else themselves. They are expected to step aside and allow men to be in the spotlight. Women are treated as something to be looked at and admired, with hardly any mind given to her own thoughts or abilities. She scarcely talks with Neo, yet she apparently falls in love with him. He, and thus the audience, knows nothing about her motivations, thoughts, or desires, beyond fighting against the Matrix. This enforces the idea that women's thoughts and desires are not important in patriarchal societies. A woman's opinion is not impactful. This example also displays how love is viewed in such societies: all that matters is that the woman in the relationship is a pretty face while the man gets to have depth and do the valued work. Her struggles and internal thoughts are never brought up or considered, because all that should matter are what the men are struggling with. This minimizes women's struggles in difficult situations, enforcing how they are expected to suffer in silence and be there when the men need them, no matter what they are going through. This character is not the only one in the film who is reduced due to patriarchal values and for the sake of putting men in the spotlight.

The minor, flat character of Switch shows how women have

little importance on their own in societies controlled by men. In the film, she is introduced with many other characters and her name is barely, if ever, brought up again. This shows how women's identities are not valued in patriarchal societies, how name and self are not important, but what women can do for men is. She is never shown performing any great or important feats of strength or intelligence as the men are, thus reducing and mocking her abilities. This enforces the idea in patriarchal societies that women belong in the background and must allow the men to receive all the glory and notice for the tasks they perform. A woman's actions are not treated with the same importance and wonder, rather they are looked down upon for taking away some of the spotlight from the men or she is deemed as trying to gain romantic attention. She is hardly in the film before she is killed and this moment is not treated with any emotional impact, furthuring the idea that women do not hold value in a patriarchal society. The cold write off of her death belittles her even further. She is one of, if not the only, character of the main cast who wears white. This coincides with the idea that women are supposed to be pure, and as she is not the love interest for the male lead, she certainly cannot be in a relationship with anyone else. Women are expected to be available to men, whenever

the man desires. This choice of color slots her into this restricting and dehumanizing role, as she is denied the ability to choose for herself. She does not change or grow in the story, but is reduced to a prop to show how Cypher has betrayed the group. This reinforces the idea that women's action and self are of little consequence and how they can do nothing to prevent themselves from being victims of violence at the whims of men. Men are meant to protect what is theirs and women are considered to be belongings. If they fail in this act, the murdered women are not mourned, but rather treated as a prop to inspire anger against the "others," to encourage the men to fight for this idealized caricature of women. Switch is but one of the examples of how women are treated as props in this film.

The symbol of the woman in the red dress shows how men reduce women to sexual objects. This symbol appears during Neo's training in the Matrix and she is used as something to distract him and make him lose his focus. She is also referred to as an object and a distraction, showing how women are not viewed with any sort of importance in patriarchal societies. This coincides with the ideas that women are distractions from the greater things men are able to do. Women are something less important and cannot be used to bring glory to men beyond sexual situations. She is wearing a tight red

dress, reinforcing the idea that women who dress a certain way are consenting to sexual situations, no matter their true thoughts at the time. Her smiling also contributes to this idea, as a woman's actions speak louder than she ever can and her actions are more important than her words will ever be. This woman is treated as nothing more than a sexual object and that is the greatest thing she can aspire to. Being attractive and desirable is what women are expected to focus on, and if they do not, they do not have any value. This is but one of the symbols in this film that shows how women and their thoughts and feelings are disregarded in patriarchal societies.

The symbolic action of Cypher assaulting Trinity shows the detrimental effects of viewing women as objects. This is another moment in the film that is not treated with the emotional weight it should be, showing how assault on women is not treated as a serious issue or something that should be looked down upon or have repercussions. In the scene, he is on top of her, symbolizing how men are forcing women into a lower position in patriarchal societies. Women are held lower by oppressive men, limiting their options, choices, and paths in their lives. Women who do not fight back will be stuck in this prison for their entire lives, but men want to ensure they stay there so men have something to objectify and work for them. He touches her face throughout the scene, admiring her as an

object of beauty, symbolizing how women are something men desire. It does not matter to them whether a woman desires them in return. This enforces how women are supposed to enjoy whatever attention they receive from a man, no matter if she reciprocates it. This action reduces assault to something that reflects badly on the man who performed it, but the effects on the woman are belittled or ignored entirely. It reduces this traumatic experience and the pain it leaves behind.

In examining *The Matrix* through the lens of feminist theory, characters and symbols are used to display the ways in which male dominated societies value and view women. The flat character of Trinity shows how women are forced into unimportant roles. The flat character of Switch displays how women do not carry much value in patriarchal societies. The symbol of the woman in the red dress shows the ways in which women are devalued as sexual objects. The symbolic action of Cypher assaulting Trinity displays the detrimental effects that come from viewing women as objects instead of human beings. These examples summarize the ways women are viewed and treated in *The Matrix*.

Work Cited

Wachowski, Lana and Lily Wachowski, directors. *The Matrix*. Warner Bros, 1999.

Plastic Earth

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WRTG 211: Writing and the Humanities

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From the day I entered the world, plastic entered mine. It came in the form of bottles, diapers, and toys. As I grew older, it found its way into my daily routine; showering, eating, and even typing on my computer. My generation is one among many whose lives evolved and continue to evolve around constant plastic consumption. I try and stray away from it as much as possible, but even given my best efforts, I still find its existence within my daily life.

Its body is engrained into our earth and continues to grow in numbers each day. It is found in the single use packaging we discard, the consumer goods that fill our stores, and even in our clothing. It is one of the hardest commodities to avoid and has purposefully been sewn into our environment for many years. Its sheer abundance has littered both the land and sea and its "natural" resistance to corrosion has resulted in monstrously negative environmental impacts. We as a consumers need to hold ourselves more accountable when it comes to plastic and make better decisions regarding its value and place in our lives to achieve a cleaner world.

Plastics overpowering presence has, and never will be, for a greater good, let alone our planet. According to Science History Institute, it all began in 1862 when a chemist by the name of Alexander Parkes was faced with the issue of creating an alternative

for the highly demanded ivory. Elephants during that time were nearing extinction due to its substantial desire but the people of the nineteenth century wanted more. They lusted after ivory combs, piano keys, and billiard balls. They sought after it as a representation of wealth and affluence. But its demand was prone to cause a particularly negative outcome. Luckily, Parkes was able to manufacture a genesis of the product, which was later developed in 1907 into an improved, non-flammable, version by Leo Baekeland. He structured its fully synthetic form which was later adapted and perfected by other scientists along the timeline.

Plastics artificial ability of resistance to the natural elements, thanks to man, is what has led it to be so destructive in years past. Plastics first major production rate came about during World War II when the U.S military required new models of itself to be made into elements such as neoprene, nylon, perspex, and polythene. These were then used to create parachute cords, rubber wheels, plane cockpits, and radar insulators, among many more. Without plastic, the U. S's fight against Germany may have never been won. "But only eighty five percent of its use went to war." ("History of Plastics World War II", 00:12:13-00:12:16). It was also during this time that plastic began to make its way into civilian homes. Radios,

clocks, vacuums, toys, glass frames, cleats; it expanded everywhere, and began replacing thousands of goods. Also according to Science History Institute "This discovery was revolutionary. For the first time human manufacturing was not constrained by the limits of nature. Nature only supplied so much wood, metal, stone, bone, tusk, and horn. But now humans could create new materials (Para.5)." Plastic was a cheaper, more durable, and more reliable substance, compared to previous alternatives, resulting in its sudden growth, and worldwide takeover. However, the optimism and awe surrounding plastic did not last for long.

Plastic, especially when mixed with the environment, causes more harm than good, and in the case of our grandparents, did not them long to realize. By the 1960's, its overwhelming presence became alarming, and many organizations began making attempts to slow its production rate. One particularly memorable instance of these attempts occurred on Earth Day of 1971 when the actor Espera Oscar de Corti, (frequently referred to as "Iron Eyes Cody") broadcasted a commercial in alliance with the Keep America Beautiful campaign. The advertisement portrayed by Mr. Corti, displays him in Native American regalia, padding by canoe through a trash filled lake. It begins in a peaceful setting, with the sun shining, and

the water clear, but ends in sights of smoking power plants and littered beaches. During its one-minute entirety, he states "Some people have a deep abiding respect for the natural beauty that was once this country, and some people don't. People start pollution. People can stop it." Soon after, the video became recognized as an iconic symbol of environmental idealism and promoted a huge increase in recycling. Although plastic will always seem to find its way into our natural resources, that does not prevent us from decreasing its mass, and choosing to dispose of it responsibly.

But even with this recycling solution to our plastic contaminating habit, the real issue never went away; being that we lacked insight on reducing and reusing materials and continued to simply buy and throw them away. Even today, certain plastics are turned down by recycling companies due to their marketing value and inability to be recycled in the first place. Yes! Even with a recycling logo, many plastics are still made without the ability to ever be recycled, causing them to be dumped into landfills or burned into the atmosphere. According to National Geographic "The same piece of plastic can only be recycled about 2-3 times before its quality decreases to the point where it can no longer be used" (Para.31). This problem is especially prevalent within the state of Alaska, commonly

among smaller islands, due to a large shortage and often complete absence of recycling programs.

In the city of Sitka, where I currently live, residents are not given access to recycle plastics numbered three to seven, nor mixed papers. We also do not have the luxury of simply strolling a recycling bin down to the end of our driveway, we instead are required to drive to a processing center where we manually sort and dispose of our garbage. This creates a problem within itself; however, many citizens do not have the means nor physical aptness to do so. According to our local radio station, KCAW, "All municipal material is exported by barge to Washington… because of these shipping costs, the city was already not making any money on its recycling" (Para. 8). This means, for Sitkan's at least, that many of the plastic products shipped here, even ones that *could* be recycled elsewhere, will never be. Now, an obvious solution to this would be to ban all non-recyclable products, however due to lack of funding, and low interest in switching to more sustainable products, Sitka will likely remain this way forever; at least, that is the popular opinion.

My town, among many other small island towns, may never dispose of their plastic problem, but that does not mean it cannot be helped. In my junior year of high school, I refused to let this

seemingly hopeless problem effect my environment and decided to join a UAS biology class in hopes to better understand how I could help. Under the guidance of Professor Dr. Ellen Chenoweth, and environmental scientist Will Peterson, I began researching the effects of plastic on my local beaches, as well as collecting and analyzing dozens of oceanic water and mussel samples. During my investigation, I also took the liberty of picking up a variety of manmade debris, including, but not limited to, boat scraps, cigarettes, masks, dab pens, bottle caps, styrofoam containers, and plastic utensils. Not to my surprise, plastic was the most common among the trash I collected. I then went on to examine hundreds of individual water droplets and clams, taking note of the number of each microplastic found within.

The study took over fourteen weeks to complete, and after many hours of testing, I came up with a final conclusion, being that the more populated an area was, the more contaminated the land, water, and marine life would be. I then crafted up a raw data conference poster to which I presented on Zoom with around fifty professional scientist viewers. They urged me to continue cleaning my beaches, investigate plastic preventative options, and seek out local volunteer groups opportunities. Soon after, I connected with a

local environmentalist group called Youth for a Sustainable Future (YSF). Together, we cleaned copious amounts of land, attended and gave earth day speeches, and even met with Alaskan senators to bring forward ideas on sustainability policies.

During this time, I also began looking at myself and considering how I personally could make a change in my habits to lighten the problem; I switched from plastic to reusable bags, bought bamboo straws, started brewing my coffee at home, and opted for bio-degradable packaging over others. I quickly became amazed at how much my trash load went down from simply changing a few minor patterns and soon decided to ask the same of my school board and city assembly. I knew in order to gain their attention I needed to find both a relevant and financially compelling topic, so I looked at none other than the biggest plastic polluter and money drainer in my high school…Lunchtime. After spending a few days compiling evidence and researching statistics, I shared the following: "If one plastic set of utensils costs on average 15¢, and you multiply that by 350 students, over the course of 180 days, it equals roughly $9,500. If one metal set of utensils costs on average $5, and we purchased 350 of them once, it equals roughly $1,750. This means we save more money by using less plastic! Approximately $7,750 worth

each year of being plastic free!" (Fenno, Slide 9) And although, over a year later, neither assembly nor board have made any action towards my proposition, I am still grateful to have learned what I did and am solitarily making small steps towards a more plastic-free environment. I even got my parents to ditch a few of their bad plastic habits as well.

Plastic will always be a part of our world, but when we take the time to observe the consequences of our actions and take initiative on righting our wrongs, we can begin to see a better environment for all. From the second it is created, it remains forever, and from the day it is bought, it is also thrown away. It is like heroine to us humans, used constantly, and often with devastating effects. No one has a perfect solution to its reign of terror on our environment, but we each, as individuals, can make a difference. Although the earth may never fully recover from the damage inflicted upon it, it can always begin to heal. Today, there are many organizations working towards a cleaner world and better alternatives. Plastic is and always will be a vitally important and convenient part of our lives, the modern world would not survive without it, but it is with this gift from science that we must take a grain of salt and remember it is a product of man, and therefore, cannot be left on nature's doorstep.

Works Cited

"Ocean Plastics Pollution." *Biologicaldiversity.org*, 18 Jun. 2020, https://www.biologicaldiversity.org/campaigns/ocean_plastics/.

"History of Plastics." *Plasticsindustry.org*, 12 Feb. 2021, https://www.plasticsindustry.org/history-plastics.

"History and Future of Plastics." *sciencehistory.org*, 20 Nov. 2019, https://www.sciencehistory.org/the-history-and-future-of-plastics.

"The Crying Indian - full commercial - Keep America Beautiful." *Youtube*, uploaded by coffeekid99, 30 Apr. 2007, https://www.youtube.com/watch?v=j7OHG7tHrNM.

Sedaghat, Lilly. "7 Things You Didn't Know about Plastic (and Recycling)." *Nationalgeographic.org*, 13 Apr. 2018, https://blog.nationalgeographic.org/2018/04/04/7-things-you-didnt-know-about-plastic-and-recycling/.

"History of Plastics: Plastics in World War …" *Youtube.com*, uploaded by Charlie Dean Archives, 25 Aug. 2013, https://www.youtube.com/watch?v=GirvOmjPZrc.

Fenno, Carolyn, "Reducing Plastics. Saving Money and our Environment." *Powerpoint.* 14 Nov 2020, Phttps://sitkaschoolsmy.sharepoint.com/:p:/r/personal/fennoc_sitkaschools_org/_layouts/15/Doc.aspx?sourcedoc=%7B87404EEA-66C5-44CE-9442-C61199D55EB6%7D&file=SHS%20PLASTIC.pptx&wdOrigin=OFFICECOM-WEB.START.REC&ct=1638152152994&action=edit&mobileredirect=true.

Naval Impact During the American Civil War

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HIST 361: The Civil War Era

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When most people picture the American Civil War, it is often perceived as a conflict fought entirely through the utilization of infantry units and cavalry. If the navy is mentioned it is in regards to the Anaconda Plan to blockade the rebelling Confederate states. In contrast, this paper aims to examine the Civil War, and the years that followed it, through the lens of naval conflict between the North and South. From its beginning at the start of the rebellion in 1861 and its ending with the little-known last shots of the Civil War in Alaska's Bering Sea after Lee's surrender to Grant at Appomattox, the navy was integral to the war. Even though details regarding the navy's contribution to the war are often overlooked in favor of terrestrial combat, the battle at sea, and communication within the branch itself and with other military arms, laid the foundation from which land combat was founded upon.

The Anaconda Plan prevented secessionist towns from receiving the goods they needed to withstand siege and thus impacted Confederate morale, and while it is now seen as a key strategy in the Union's eventual victory, at the time it was only considered one potential plan. As described in *The Civil War on the Mississippi* by Barbara Tomblin, while short lived, an alternative proposal for controlling Southern ports was to invade the areas of

interest directly with infantry. However, detractors of the Anaconda Plan, such as Secretary of the Navy Gideon Welles, argued that in order to blockade the South in accordance with international law the Union would first have to acknowledge the sovereignty of the Confederate States. Welles argued that by categorizing the war as a civil dispute, the Union was blockading its own people as opposed to a separate entity. In opposition to this, Lieutenant General Winfield Scott argued that invading the South and maintaining control of the ports "would require a force of 300,000 disciplined men. The destruction of life and property on the other side would be frightful and would be completed at the enormous waste of human life to the North and Northwest and incur a large national debt" (Tomblin 2). After the capture of Fort Sumter, when it became clear that the better angels of their nature would not prevail over the rebelling Southern states, Lincoln chose to implement the blockade of the South despite some calls to invade the region directly and thus enacted the first step in Scott's plan to constrict the Confederate States of America (CSA).

New Orleans was the South's largest city, acting as its primary port for the export of industrial material such as cotton, and importation of food to supply the war effort. This importance made

the city the primary target for the next phase of the Anaconda Plan. By seizing control of this port, the Union hoped to disrupt Confederate supply lines across the Mississippi River weakening both the rebel's limited industry as well as the morale of its soldiers and civilians. In spite of New Orleans's importance to the Confederacy, the construction of two, at the time unfinished, ironclad ships lulled Confederate leadership into a sense of security that this would deter the Union from attacking. Because of this, Confederate leadership believed the majority of their troops could be sent to reinforce Virginia and Tennessee, ultimately leaving only 4,000 troops to defend the city. By contrast, Union naval forces led by Commander David Glasgow Farragut, a veteran of the War of 1812, led a squadron of 12 ships and 333 marines. Though this gave the Union an advantage in firepower, continuous shelling from Forts Jackson and Saint Philip slowed Union progress along with fire rafts and natural sandbars. This would only delay the inevitable, however, since despite taking sustained heavy fire from both forts and a ship being temporarily set on fire, Farragut's fleet arrived at New Orleans on April 25th. As *The Civil War on the Mississippi* recounts the fall of New Orleans: "Confederate militia fled and thousands of bales of cotton were set aflame. When surrender negotiations failed Farragut sent in the

marines. They marched to city hall on April 29th, hauled down the Louisiana flag, and hoisted the stars and stripes above the mint and courthouse" (Tomblin 91). While negotiations with the forts initially failed, both surrendered to the Union detachment left by Farragut on April 28th after a mutiny at Fort Jackson the previous day.

The detailed descriptions of the controversy surrounding the Anaconda Plan and capture of New Orleans, given by author Barbara Tomblin, serve as a microcosm of the escalation that would later be seen in every theater of the war as time progressed; demonstrating the importance of resources and the escalation of violence. While Union leaders were initially concerned about the collateral damage to the South, reflecting Lincoln's early belief that secession was temporary and the South could be convinced to rejoin the Union peacefully, Farragut's naval and marine forces later had no problem burning cotton and seizing territory by force. This is a change in tactics which had repercussions for the health and morale of the Confederate Army and would later be repeated in Ulysses S. Grant's later capture of Vicksburg. This culminated to a more extreme extent in the use of total war tactics by William Tecumseh Sherman in Georgia. Aside from the change in Union tactics, Barbara Tomblin also showcases Southern hubris at the start

of the war as they underestimated the Union Navy by believing their largest city was mostly safe from attack due to fortifications, 4,000 troops, and two incomplete ironclads which were never implemented. Because of this decision, the Union gained a foothold in the Mississippi which would later lead to desertion, mass food shortages across the Confederacy, and the weakening of the Southern economy. The consequences of the Confederacy losing New Orleans are elaborated on in greater detail in *Lincoln's Trident*, where the dispute between Farragut and Major General Butler and the tactics Confederates used during blockade runs to get supplies past Union forces and subsequently the Confederacy's attempt to challenge the Union's control of New Orleans.

Robert Browning Jr. describes in *Lincoln's Trident* that, following the capture of New Orleans, the abandonment of Baton Rouge by Union garrisons allowed the Confederacy to regain control of two hundred miles of the river. Although they were unable to directly challenge the Union for control of New Orleans, the lack of Federal presence from Vicksburg to Baton Rouge allowed guerrilla attacks on Union vessels and garrisons which became more frequent and operated on a large scale. While the damage from these attacks were relatively minimal, their frequency furthered the divide

between Farragut and Major General Benjamin Butler regarding whose plans would proceed and whether the Union army or navy would take precedence in the campaign for the West Gulf. While Farragut was instructed to control the Mississippi and push forward before focusing on the capture of the port of Mobile, Alabama, Butler contested this and moved his troops out of New Orleans to invade western Louisiana for control of the Lafourche Parish. Butler recognized that, because of the area's agricultural importance, capturing Lafourche Parish's cotton and sugar plantations would allow the Union to make use of the commodities whilst also depriving the Confederacy of them. Butler's decision to withdraw his troops left Farragut's squadron open to counter attack by an emboldened rebel force who saw the withdrawal as an opportunity to reclaim the CSAs primary port with minimal resistance.

After receiving word that Confederates planned to send gunboats to New Orleans, along with a ram known as *Fair Play,* Union command in the city decided to mount a preemptive strike on the Confederates before they could pose a threat to the Navy squadron that remained in control of the city. As *Lincoln's Trident* recounts: The *Mississippi*, along with the *Kineo*, *Katahdin*, *Sciota*, and *Itasca*, all supported this operation (Browning 197). On the night

of September 7th, the Union army forces and artillery embarked in transports, ascended the river, and landed the next day at day-light. Paine disembarked his troops on the east bank at Red Church across from St. Charles Court House while McMillan landed five miles above this point to converge on the rebels. From the tall masts of the Mississippi, the lookouts spotted the Confederate cavalry forces in a cane field and informed McMillan, who extended his lines to cut off their retreat. The *Mississippi* then took her station to protect the troops ashore, fired some shells into the midst of the Confederates, and "scattered them in every direction" (Browning 223-224). After the Union victory, Butler returned to New Orleans and stationed his troops north of the city in hopes of capturing any remaining confederates in the area. Although the victory here and later reinforcements from Butler allowed the Union to retain control of New Orleans, the initial withdrawal of troops and attack it almost provoked demonstrates both the importance of cohesion between the Navy and the Army, even if their control of the port appeared absolute.

After the capture of New Orleans, under orders from Farragut, Captain John P. Gillis was placed in command of the Union navy's Second Division blockading Texas. Despite the Union's

presence off the coast, the Confederate blockade running from Texas to Cuba and Mexico remained a common issue. While the blockade was comprised of heavily armed warships, such as William G. Anderson with six 32-pounder batteries, two 24-pound howitzers, and a 30-pound Parrott rifle, it lacked shallow-draft vessels which could operate in moderate seas. This greatly reduced the speed of the blockade ships, as well as their range, since they had to remain off shore in relatively deep water. The disadvantageous nature of the Texas blockade's ship designs in contrast with the coastline in which they were expected to control was well known by the Union as when Gillis was told to keep up the blockade by Rear Admiral Charles H. Bell, "Can it be, without vessels?" (Browning 385). Although the blockade was not completely ineffective, as exhibited through the capture and destruction of the Confederate ships *Reserve* and *Friendship*, the Confederate schooners were largely able outrun the blockade when crossing from utilizing both the speed of their crafts in comparison to the Union's as well as the cover of darkness.

Accounts in *Lincoln's Trident* demonstrate how miscommunication impacted the outcome of naval conflict on both sides of the Civil War. Although Union leadership had seen the Confederacy make a similar mistake—leaving New Orleans improperly defended

due to feeling that the presence of unfinished ironclads made it safe from attack, leading to the Union exploiting this weakness to take control of the city—Union forces nearly suffered the same fate when a withdrawal of troops left them open to a counter attack. While they retained New Orleans due to a preemptive strike and the return of Butler, it nonetheless shows the consequences of not learning from past experiences and ineffective communication between officers. This is later compounded in Texas, where not having the right craft necessary for operating along the shoreline, while being fully aware of that it would be a limitation, led to the blockade of Texas being more inefficient than it likely would have been had the Second Division been properly equipped. This theme of naval miscommunication continues in the book *The Last Shot* where author Lynn Schooler argues that the battle with the *CSS Shenandoah* marks the true conclusion of the Civil War.

Originally constructed by Alexander Stephen and Sons as a merchant ship for the British, the 220ft long vessel *Sea King*—later renamed the *CSS Shenandoah*—was purchased under covert means by Lieutenant William Conway Whittle using the alias Mr. Brown in October 1864 under the guise of making a coal run to India so as to not alter Unionist dockworkers. While Britain never acknowl-

edged the Confederacy as a legitimate state and aiding the CSA was in direct violation of the Foreign Enlistment Act of 1819, many members of the British aristocracy held Confederate sympathies and aided them in secret, regardless of the country's neutral status. As Schooler explains, "To give the subterfuge a veneer of legality, Captain Corbett carried a signed power of attorney authorizing him to sell the *Sea King* at any time… for the sum of not less than forty-five thousand pounds sterling" (Schooler 25). Although the conspirators attempted to maintain secrecy, *The Last Shot* notes that Confederate interest in the ship had been known for months in advance and word quickly spread back to Washington upon news of the elicit sale. The successful sale of such a large ship to the Confederacy stoked fear in the Union that the rebels may plan to convert the *Sea King* into an ironclad like the *CSS Merrimac* two years prior.

In March of 1862, the South's first ironclad altered the nature of naval warfare since it was able to easily sink wooden ships, such as the *USS Cumberland,* while cannon fire merely bounced off. While the ensuing battle between the *CSS Merrimac* and the ironclad *USS Monitor* ended in a stalemate with neither vessel being able to sink the other, the possibility of the Confederacy building more ironclads that had the potential to break through the Union's blockade and

challenge the North's naval supremacy, despite their limited industrial capabilities, remained a significant threat on the minds of the navy. Even though the Union was aware of Confederate interest in the ship prior to its purchase, when word of the sale finally reached Washington, it prompted the navy to station the *USS Niagara* and *USS Sacramento* in the English Channel in hopes of intercepting the Confederates. By the time the Union ships arrived, Confederate spies had already escaped on route to Madeira where the merchant *Sea King* would undergo conversion into the commercial raider *CSS Shenandoah*.

In contrast to what the Union navy had originally feared, Lynn Schooler makes no mention that its captain James Iredell Waddell, or the Confederacy at large, ever intended for it to become an ironclad for use against the North's blockade. Instead, as demonstrated by the capture and sinking of nine merchant ships after leaving Madeira, the *CSS Shenandoah*'s goal was raiding rather than engaging in combat with other naval vessels. This led the ship to be categorized by the Federal and British governments as a pirate vessel rather than a true warship, which was a sentiment further corroborated by the capture of the Maine merchant ship *Delphine* in the Indian Ocean. Schooler writes, "Six of the ten men aboard the

Delphine joined the *Shenandoah* as soon as they got on board. The rest were put in double irons" (111). Although the crew of the *CSS Shenandoah* were wanted by the Union and British governments, after a brief standoff with the *HMS Victoria*, the ship was welcomed into the port of Melbourne in 1865 without firing a shot. Over the course of the 25-day hospitality to the crew, allowing their ship to be repaired, and causing an international incident between Australia and America as the Union's attempts to capture the crew of the Southern vessel were ignored. Their stop in Australia wasn't free of consequences, however, as nineteen members of Waddell's crew had deserted during that time, prompting the decision that more crew needed to be captured in order to continue the mission.

The *Harvest,* the last ship sunk by the *Shenandoah* that could arguably be considered part of the American Civil War, was destroyed days prior to Lee's surrender to Grant in April 1865. However, in June of 1865 the *Shenandoah* remained active in Alaska's Bering Strait largely unaware it was one of the last vestiges of the Confederacy. During its brief time in the Bering Sea, near the Aleutian Islands, the *Shenandoah* raided twenty-four whaling vessels, which like the merchant ships years prior, were completely unequipped to combat the rogue Confederate remnant.

As explained in *The Last Shot*, testimony from the crews of the whalers they'd boarded and newspapers Captain Waddell had read throughout the voyage while in port began to shake his faith in the mission, which he and his crew believed they were undertaking for the Southern cause. These outside sources had claimed the Civil War was over and that the South they knew had gone up in flames: "Waddell must have been nursing a niggling worry that the repeated claims of the Yankee masters and the newspaper articles might be right, that the South had surrendered, and that he, his ship, and his crew were now no better than common pirates" (Schooler 235). Schooler also writes, Waddell and his crew justified continuing their raids by arguing that if what they heard was true and the war was over, then people from the ships they captured wouldn't be willing to join them (235). Their denial regarding the outcome of the war would not last much longer, however, as in October and November of that year members of the crew began dying of a wasting disease which may have prompted Captain Waddell's decision to return to Britain. After dropping anchor behind the *HMS Donegal*, the ship's captain boarded the *CSS Shenandoah* with a squad of marines and officially informed the crew that the war was over and the South had surrendered. Although forty ships had been burned and a

thousand people taken prisoner during their voyage, months after the fall of the CSA, the last Confederates willingly lowered their flag and accepted defeat on November 6, 1865.

Although the repercussions of Civil War naval combat are often forgotten amidst the more well-known battles of the time, such as Shiloh and Gettysburg, without the contributions of the navy, history may have been different than what we know. For example, the Confederacy was able to exploit some weaknesses in the Union's Southern blockade due to incoherence in Union leadership. The alternative plan of invading Confederate ports with infantry could have led to even higher Union casualties and a more well supplied South that may have led to a longer war and greater support for peace. The repercussions of the Civil War are still being felt in modern society over 150 years after it ended, while the impacts of naval conflict are often overshadowed, one can only speculate how terrestrial combat and modern America may have changed without them.

Works Cited

Browning, Robert M. *Lincoln's Trident: The West Gulf Blockading Squadron during the Civil War*. The University of Alabama Press, 2015. *Ebscohost.* search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=964856&site=ehost-live.

Schooler, Lynn. *The Last Shot: The Incredible Story of the C.S.S. Shenandoah and the True Conclusion of the American Civil War*. Ecco, 2005.

Tomblin, Barbara Brooks. *The Civil War on the Mississippi: Union Sailors, Gunboat Captains, and the Campaign to Control the River.* University Press of Kentucky, 2016. *JSTOR.* www.jstor.org/stable/j.ctt1c3pwn1.

Antebellum America: Three Examinations of an Era Defined by Violence

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HIST 361: The Civil War Era

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Here's an image: columned porticos, elaborately dressed debutantes, practiced duelists, and brutal reactionary bloodshed in response to any insult. The antebellum South was inundated with violence: violence among the white elite; violence among the enslaved, and violence at a national level among the very representatives of government. The horror of the Civil War was the cultural norm for the Slave South, and prior to that war it expanded its reach beyond racial and geographic lines. Using the works of three American scholars I seek to understand the impacts of Southern antebellum violence beyond the ultimate outcome of Southern secession. With Dickson D. Bruce, Jr.'S *Violence and Culture in the Antebellum South* I will look at the philosophy of the white elite planter class. With Jeff Forret's *Slave Against Slave: Plantation Violence in the Old South* I will look at the causes and manifestations of intra-community violence among the enslaved. With Joanne B. Freeman's *Field of Blood: Violence in Congress and the Road to Civil War* I will look at how Southern violence was employed in national politics. Together, these works paint a disturbing picture of normalized bloodshed and deeply entrenched hostility toward anyone perceived as an enemy or outsider.

1. Violence and Culture in the Antebellum South

Violence in the antebellum South was not a byproduct of slavery, but rather slavery was one of many avenues through which Southerners manifested their violent philosophy toward life. Economically and socially, the antebellum South was a region trapped in a dead-end culture founded on self-doubt. Thus, the Southern elite existed in a self-enforced spiral of resigned brutality. This is the central theme of Dickson D. Bruce, Jr.'s *Violence and Culture in the Antebellum South*.

Written in response to previous examinations of Southern violence, ones that posit violence developed in the process of slave-holding and was then carried outward into Southern society, Bruce, a professor of history at the University of California, Irvine, instead puts forth the idea that violence was inherent to the culture of the American South. "To understand Southern violence," Bruce writes, "one must focus on the way in which people in the region maintained their views of society and human nature" (6). With this at the forefront of his narrative, Bruce examines Southern violence categorically: from the ritualized violence of the Southern practices of dueling and hunting; to the violent imagery summoned in the oratory techniques employed by Southern speakers; and on to the

manifestation of Southern martial spirit that carried white Southerners through secession. This approach allows the foundation of Southern philosophy to be laid, and then the ways it manifested in Southern society to be subsequently examined.

Violence and Culture in the Antebellum South offers an interesting perspective, delving into the philosophies that governed the Southern elite class. "Social insecurity" is a phrase often repeated in his book, not in regard to the precarious reality of a white minority ruling class oppressing a slave class, but rather in regard to the surety of violence and the lack of confidence in the character of everyone around them. Violence was an inevitability: it was used to enforce order in a hostile world; to solve disputes; and was inherent in community life. "Pessimistic" is how Bruce describes the Southern outlook. In the chapter on child-rearing, one father—a plantation owner—advised his sons that, "the world is envious and ill-natured" (47).

Insight into the philosophy that governed one of the most violent regions in American history is valuable, but the decentralization of slavery from the book's narrative makes it difficult to take Bruce's research at face value. So, too, is it difficult to detach oneself from his focus on the white Southern elite. While there are

several chapters dedicated to the narratives of transplanted Southern frontiersmen and freed Black Americans, the bulk of Bruce's primary sources are the letters and autobiographies of the white male Southern plantation elite class. This bias toward his primary sources cannot be ignored in the text; in the 24-page section of the book dedicated to the perspective of freed bondspeople, sandwiched between two grisly descriptions of sadistic punishments of enslaved Americans, Bruce writes, "One job which slave owners did perform that many ex-slaves remembered gratefully was that of preventing violence within the slave community" (145). Then, not even a page later:

> Quarreling and fighting were punished on most plantations . . . the quarrelsome slave could receive some two hundred lashes—only runaways were liable for more. One slave even recalled that the only cause for an automatic whipping on his plantation was fighting among the slaves. Slaveowners, everyone agreed, tried to keep down violence among their slaves (146).

Framing the acknowledgment of the control enslavers held over those trapped in bondage as gratitude, while bracketing this with terrible violence against the enslaved, was certainly an interesting choice. Perhaps this bias was to be expected. Bruce wrote

Violence and Culture in the Antebellum South in the late 1970s during the rise of political conservatism, well before the rigorous investigation of the freed and enslaved Black American perspective of the Slave South, which occurred in the 1990s.

2. Slave Against Slave: Plantation Violence in the Old South

"Genuine justice for bondpeople demands the fullest possible accounting of slaves' lives, warts and all. Only then do the true costs of bondage come into clearest possible focus," writes Jeff Forret in his Frederick Douglas Book Prize award winning work, *Slave Against Slave: Plantation Violence in the Old South* (8-9). This is a central motivation behind his investigation into intraracial violence amongst enslaved people during and before the antebellum period; the deromanticization of the popular image of a united slave community allows Forret to use communal violence as a lens through which he analyzes and humanizes those enslaved by Southern society.

Through this lens, Forret seeks to realize the vision of earlier scholars, "to imagine a history of slavery which sees the lives of enslaved people as powerfully conditioned by, though not reducible to, their slavery" (8). Forret refutes the harmonious sanitized all-encompassing "slave community" narrative. Pulling exhaustively

from state Supreme and county court records, church minutes, slave narratives, autobiographies, travelers' accounts, newspapers, and slaveholder diaries and journals, Forret analyzes data, finds common trends, and presents categorically the common values that span the region and motivate conflict amongst the enslaved population. This approach allows Forret to dedicate time to the conception of honor using both the male and female perspective, to investigate how the institutions the enslaved lived within influenced and reacted to community violence, how violence manifested in self-policed communities, and how inter-community violence put to bed the myth of the harmonious all-encompassing slave society.

Forret's work offers an in-depth and nuanced investigation of the causes of violence amongst enslaved people, concluding the motivations to be chiefly "family, theft, and gambling" (18). Of particular interest is the distinction between the female and male perspective, which Forret goes to some lengths to include. The default-male method disregards particular investigation into concepts of manhood and masculinity, as well as womanhood and femininity. Instead, Forret dedicates chapters to the gendered manifestations of honor and violence amongst the enslaved. Existing within Southern society's rigid honor code, enslaved bonds people

were completely excluded from the elite white honor system (288). The subordination and degradation of enslaved Black men was an underlying fact of white honor and acted as a "cultural foil" (289). Enslaved men were denied such cultural masculine staples as protecting and providing for family. Instead, enslaved masculine identity was shaped around taking advantage of opportunities to court, recreationally fight or drink, or defy authority (291). By contrast, feminine conceptions of honor were under attack with no recourse from sexual assaults committed by white men. Enslaved women often violently defended themselves if a predatory bondsman attempted the same, but the most common manifestation of enslaved female violence was against children, up to and including infanticide and murder (333). This flies in contrast to many white depictions of enslaved women as sexually promiscuous, morally depraved, and without family ties or honor. It also contradicts many depictions of female honor as passive, in contrast to proactive male honor.

Written through 2005 to 2015, Forret is very aware of the narrative of "black-on-black violence" presented during the Reagan era and still maintained today. He denies any through-line linking the antebellum era's "slave against slave" violence with the modern perception of a violent Black subculture, citing the period

immediately following the Civil War, during which the newly emancipated Black community sought out the Freedmen's Bureau agents for mediation instead of resorting to self-policing measures (392). Moreover, he denies that Southern Blacks had a violent subculture at all, instead falling in line with the dominant white culture of the South.

3. The Field of Blood: Violence in Congress and the Road to Civil War

"When the nation is polarized and civic commonality dwindles, Congress reflects that image back to the American people" (283). It is in using the reflection of antebellum America's congress that Joanne B. Freeman's *The Field of Blood: Violence in Congress and the Road to Civil War* chronologizes the events leading up to the South's secession from the Union from a personal, unromantic vantage point.

Freeman, a leading authority on early national politics and political culture, is no stranger to navigating the confusing political rituals of the past. The award-winning author of *Affairs of Honor: National Politics in the New Republic* here offers a timely account of violent day-to-day struggles obscured by greater scope works. Drawing heavily from the diaries of the book's central figure, House clerk and extensive journalizer Benjamin Brown French. "[French's]

emotional arc forms the core of this book and his lived experience structures it," Freeman writes (12). Witnessing the evolution of thought from a Southern sympathizing, doughfaced Democrat into a moderate Republican, adamant Lincoln supporter, and fervent hater of the Slave South allows Freeman to present the history of the period linearly. Following the transformation of one key individual lets Freeman both craft an eminently readable narrative as well as observe the shifting tone of violence in America.

Freeman, through French, presents violence as an omnipresent fact of life. Dueling in Congress, a Southern tradition, was commonplace. So, too, were threats of everything from personal assault to statewide secession. "Bullying as statecraft," Freeman calls the practice (161). Before geographical schism, when party loyalty ruled, Virginian-Whig and the sessions' most frequent and infamous fighter, Henry Wise, "campaign[ed] for a Whig president in the way he knew best: by dishonoring leading Democrats with man-to-man showdowns" (85). But as sectional parties coalesced and slavery became the dominant issue, equally enthusiastic cross-sectional dueling became more and more lopsided. French experiences the shift from fighting centered on party differences in the 1830s to an exclusive focus on slavery from the 1840s as both a personal betrayal

of himself and an ideological betrayal of the Union. A slave block gained central control of the senate. Beyond physical violence, of which there was much, congressional bullying included "oratorical wrath" where insulting, belittling, and threating foes was a common practice used to browbeat competition into compliance. This uniquely Southern bullying tactic worked effectively until the 1850s, when using intimidation was abruptly met with Northern bluff-calling—hand-in-hand with French's increased support of Northern fighting men during the western Compromise crisis (159).

Although every violent act, in word or deed, was played up to the press and sensationalized, the clash of values between Northern and Southern politicians was more personal than might have been observed without the insider look offered by French. Conflicting ideas of honor lead to Southern domination of the legislative branch, but Northern representatives still felt the sting of failure acutely, "Having one's rights within the Union challenged was a form of degradation that required resistance; fighting for those rights was a test of manhood" (11).

In conclusion: The Manifestations of Southern Violence

There are several common factors throughout each work that allow for a more complete understanding of how violence influenced

antebellum America. Bridging sectional and specific focuses in each of these works is the masculine concept of honor through violence—and dishonor through being the recipient of violence—as a recurring theme. In Congress, ritualized Southern dueling practices reigned, "Like the bonds of Union as a whole . . . customs skewed Southern, compelling non-combatants to fight or risk dishonor" (Freeman 148). When the Whig Representative for North Carolina observed to the House that a Whig loss to Democratic voter fraud was "unmanly," his remark was taken as an attack on the entire party's honor and the disagreement resulted in a duel (Bruce 22). "Manhood encompassed a set of admirable traits—independence, assertiveness, and self-confidence among them" and white manhood was contingent upon the denial of black manhood, and domination over slaves, yet these same values of manhood were practiced within the enslaved population (Forret 289).

The deep-rooted Southern culture of violence certainly crossed racial lines. Unprotected by the veneer of sophistication that shielded Southern gentry, lower class whites in the South were constantly ready for violent conflict on the part of most of the people they met (Bruce 105). They had this in common with Southern Blacks, whose cultural values were markedly similar. Violent conflict was as commonplace but not more intense within the enslaved population than it was within

the white population. "Violence was very much part of slaves' lives, but all that meant was that they were southern" (Forret 395). Where the government failed to respect their honor, Black populations in the South used the Southern social framework to enforce cultural norms, as did white Southerners of every class. In Congress, Southerners used displays of power to force their Northern contemporaries into silence, very effectively gagging dissent in the government through threats of violence and elevating Southern sociopolitical agendas (Freeman 132).

Looking forward to now, Freeman's work offers perspective on our own current politics and reminds us that when trust "in the institution of Congress lapses" so does "the trust of Americans in one another" (283). With the recent events of January 6th in the Capitol, loud threats of violence against political enemies are alive again today—if so far, not as effective. More insidiously, the modern cultural theory of "black-against-black" intracommunity violence as a uniquely Black affliction and an aftereffect of slavery is, as noted by Forret, an attempt to canonize violence within Black communities as unique, when the data shows otherwise (394). What seems to be more pervasive, at least in relation to the antebellum South, is a cultural heritage of violence established by Southern whites and carried north through political, racial, and sectional fraternization.

Considered together, these three works contextualize Southern violence and foster greater understanding of the culture that went to war with the Union.

Works Cited

Bruce, Dickson D Jr. *Violence and Culture in the Antebellum South*. University of Texas Press, 1979.

Forret, Jeff. *Slave Against Slave: Plantation Violence in the Old South*. Louisiana State University Press, 2015.

Freeman, Joanne B. *The Field of Blood: Violence in Congress and the Road to Civil War*. Picador, 2018.

Shkalneek [story]: A Way Forward

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ODS 243: Outdoor Studies and Leadership

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I would first like to acknowledge that I am currently writing from the traditional unceded territories of the Áak'w Kwáan on *Lingít Aaní* [Tlingit land], also known as Juneau, Alaska. I share this land acknowledgment with you today to honor and respect the original stewards of the land, as a way toward truth and reconciliation for all people.

I was three years old the first time I went subsistence *s'igeidí* [beaver] hunting with my great uncle Dennis Jules. In my Lingít culture it is the responsibility of the aunts and uncles to pass down their cultural knowledge to their nieces and nephews. Long before I attended the Eurocentric school system, I was first taught out on the land using our oral tradition of *shkalneegi* [storytelling]. My experience is similar to Vanessa Watts who belongs to the Anishnaabe and Haudenosaunee tribe and wrote "Indigenous Place-Thought & Agency Amongst Humans and Non-Humans," as *shkalneekx'* [stories] in my opinion are more than just the Euro-Western definition. My Elders taught me that Lingít *shkalneekx'* [stories] are an accurate representation of our histories and give the current generations a glimpse into the lives of our "human and non-human" ancestors (Watts 20). Lingít *shkalneekx'* [stories] taught me to respect Mother Earth and honor "…the animal world, sky world, [and] the spirit world…] (Watts 20). This teaching is

now being lost today, as the Lingít people are losing our fluent speakers faster than we are gaining new speakers. That is why Watts's research on the power and agency of upholding Indigenous *shkalneekx'* [stories] is so important for revitalization, as it sheds insight on how to "reaffirm this sacred connection" to Mother earth and all her beings (Watts 20). Using my Lingít point of view, I will share my personal connection to Watt's findings in relation to the outdoor leadership concepts of group dynamics, environmental ethics, legal liability and risk management. As a step towards decolonization, I propose the outdoor leadership industry incorporates Indigenous cosmologies through *shalneegi* [storytelling]; as a result, this will provide a *wooch yáx̲ kudidáal* [balance] of recognition of both the Euro-Western knowledge and the traditional philosophy of my shuká [ancestors].

While growing up, I was told the Lingít creation *shkalneek* [story] of "The Raven Who Stole the Light." The *shkalneek* [story] portrayed the story of Raven, otherwise known as the Trickster. It speaks to the time before there were sun, moon and stars, and how Raven went through his journey of transformation and trickery to steal the sacred celestial bodies as gifts for the humans. Dr. Yaaskeitch Norma Shorty, member of the Teslin Tlingit Council First Nations, aligns the original timeline of "The Raven Who Stole the Light"

with the creation of the universe, long before humans existed. This is comparable to Watt's perspective on the "Seven Fires of Creation," as she emphasizes that this *shkalneek* [story] "…was not imagined or fantasized . . . [and] not lore, myth or legend . . . this is what happened" (Watts 21). In other words, these *shkalneekx'* [stories] were actual historical accounts from the Indigenous point of view. These events carry the Indigenous philosophy of interconnection and reciprocity with Mother Earth, and with our human and non-human relatives. In relation to outdoor experiential learning, this interconnection would be known as group dynamics. Although group dynamics may be seen as exclusive to human beings, there is opportunity to expand the group dynamic concept to include the animal, sky and spirit world, as Indigenous people believe "all living things contain spirit" (Watts 23). With this heightened interconnection, we can speak and understand our non-human and spirit relatives. Due to the attempted eradication of the Indigenous way of life, we are now also forgetting our ability to speak to the land and our ears are becoming deaf to the response of the land (Watts 32). Our *shkalneekx'* [stories] are a way towards transferring and safeguarding this knowledge to current and future generations. Now is the time we need to come together from all walks of life, to uphold and reintegrate this reciprocated relationship into our current system.

In my culture, this interconnection is also known as *Haa Kusteeyi* which is the Lingít way of life guided by harmony, reciprocity and respect for the land. This is also known as, the Lingít people's environmental ethic. Watts illustrates this as, "Our sovereignty is related to our connections to the earth and is inherent" (Watts 27). This relationship reminds me of a *shkalneek* [story] my late auntie Taku Tlaa Pearl Keenan used to tell me as a little girl, "The Girl and The Woodworm." There was a little girl who one day found a wood worm. She then, took that woodworm and raised it in secret from her village and family. The woodworm grew as big as a bus; she could no longer hide it and her people then were forced to kill it. The way I interpreted this *shkalneek* [story], was that the little girl should have been honest with her people and she should have initially left the woodworm alone, as it is the Indigenous belief to leave Mother Earth to her own accord. We coexist "following the natural order of all living things," which can be seen as a legal liability or cultural protocol, in other words, an unwritten contract with the land. This speaks to the highest respect to Mother Earth that this cultural protocol entails, "as Indigenous peoples, we are extensions of the very land we walk upon" (Watts 23). We are one with nature and should personify nature with the same respect we give one another. I agree with Watts that *shkalneekx'* [stories] showcasing that humankind

were the last to arrive on earth, provides evidence that humankind arrived at an already functioning non-human society, with ethics and protocols in place. The Indigenous interconnection "transpired from a [place of] reverence and understanding," in contrast to the Euro-Western framework where nature is seen as something to be extracted and used up, hence the terminology environmental resources (Watts 25). As soon as we start upholding Indigenous philosophies like "humans are made from the land; [and] our flesh is literally an extension of soil," this would create and foster the bridge between the nonnative and Indigenous groups, when it relates to how we are going to come together to fight for the rights of Mother Earth and our non-human relatives (Watts 27).

The last concept I will share with you today is the contrast between the Euro-Western risk management and the Indigenous risk management. The Euro-Western risk management is a way of trying to predict, analyze, and evaluate to avoid or minimize impact of risks. In contrast, the Indigenous risk management is more of a way of thinking; if we take care of nature, it will take care of us. This also applies to our non-human relatives as is evident in most Lingít *shalneegi* [stories] through the relationships of respect, harmony and love for one another. This type of risk management is also parallel to the protection of identifying Indigenous women. In the Indigenous point

of view Mother Earth is a woman, she is the ultimate life giver, and she is femineity. Watts states this as "The land is understood to be female: First Woman designates the beginning of the animal world, [and] the plant world" (Watts 27). She also correlates the connections of violence between "Indigenous lands and Indigenous women" through the attempted colonization of Indigenous people (Watts 31). If we truly want to manage the risk of what is happening to the earth and in parallel to Indigenous peoples, we must uphold the Indigenous cosmologies.

I propose, we create an Indigenous *shkalneek* [story] nature-based curriculum, to support the knowledge transfer of interconnection, *Haa Kusteeyi*, and Indigenous risk management. I have introduced this method to my peers for my outdoor studies midterm presentation. I told the story in Lingít then English, and we worked together to pick out the teachings, values, and ethics. All participants connected with the *shkalneek* [story] in a different way, contributing their personal connections and how they can implement the teachings into their lives. This is evident that Indigenous *shkalneekx'* [stories] are an interactive, inclusive teaching method that all people can adapt to living in harmony with Mother Earth, as my ancestors once did.

Work Cited

Watts, Vanessa. "Indigenous Place-Thought & Agency Amongst Humans and Non-Humans." *Queens University*, Vol. 2, No. 1, 2013.

Writer Biographies:

Randy J. Brannan Jr.: Randy J. Brannan Jr. is a freshman at University of Alaska Southeast. Originally from Arizona, he moved to Juneau in 2017 to enjoy a cooler climate and a smaller community. At 31 years old, as a veteran and tradesman, he never had his sights on academia. However, after exploring the environment around Juneau, he fell in love with the outdoors, became determined to get involved with the research that will help protect it, and began pursuing his B.S. in Environmental Science.

Olive Brend: Olive Brend is a writer and amateur ecologist in Juneau. They are in their fourth year, studying English and Biology, with a concentration on Literature and the Environment. In their free time, they love writing, hiking, and watching the harbor seals in Auke Bay.

Keefer Brown: Keefer Brown is a marine biology major with plans to specialize in pinnipeds after receiving his Bachelor of Arts degree. He has been volunteering at the Alaska Sealife Center in various forms from a young age, eventually serving on the Center's board of directors, and intends to use this experience along with a focus on writing to inform the general public of the importance of conserving Alaska's marine ecosystems.

Sabrina Croft: Sabrina Croft is a study in irony, having been born and raised in landlocked Colorado, yet being obsessed with ocean life from a young age. She transferred to UAS from the University of Colorado Denver and is thrilled to be studying marine biology. Always partial to the underdog, Sabrina loves nothing more than dispelling harmful myths that give sharks a bad reputation. She hopes to contribute to research to protect these ocean predators and all marine life.

Carolyn Fenno: Carolyn Fenno is a second-year, dual-enrollment student at the University of Alaska Southeast and is currently a senior in high school. Following the end of the spring 2022 semester, she will have obtained 37 college credits after completing 12 UAS courses. Thus far she has not received any final grade lower than an A and has a current cumulative GPA of 3.87. She has previously done extensive volunteer work with Youth for Sustainable Futures and 4-H, as well.

Krystal Gray: Krystal Gray is a business management student with UAS. She moved to Juneau in 2020 and works for the State of Alaska. During her free time, she enjoys spending time with her family and pets, hiking, cooking, and card games. She has worked in fields ranging from mental health, cattle ranching, and juvenile probation, and she is always looking for the next adventure!

Francesca Johnson: Francesca Johnson is 19 years old. She is majoring in marine biology with minors in mathematics and environmental science. After she graduates, she hopes to do research in marine biology but hasn't yet decided what she wants to focus on yet. There are so many amazing possibilities! She'd love to be out on some kind of ship, perhaps a sailboat, at least a portion of the time. She loves musicals, writing, drawing, painting, working out, reading, singing, baking, and sewing.

Skaydu.û Jules: "*Skaydu.û Jules yu xhút duwáasakw, axh léelk'w du tláa Skaydu.û yu duwáasagóon Łingít xhanaxh, ka Graffie Jules dlet ka xhanaxh yóo xhat uwasáa. Dakh'laa shaax I yá xhát. Deisleen Łingít khwán I yá xhát. Dzántik'i Héeni-x' áyá yei xhat yatee yidat."* [My Tlingit name is Skaydu.û, and I'm named after my grandma's mom Skaydu.û in Tlingit and Graffie Jules in English. I am a woman of the Eagle Clan. I am of the Teslin Tlingit people. I'm living in Juneau right now.] I use the pronouns she/her," said Skaydu.û.
Skaydu.û is currently attending the University of Alaska Southeast majoring in a four-year Bachelor of Liberal Arts (BLA) with an emphasis on Alaska Native languages, with a minor in outdoor leadership and adventure studies and a certificate in Indigenous language teaching. She also attends part-time classes through Simon Fraser University, working towards a language proficiency program certificate. When she is not studying, Skaydu.û also works part-time with the Genuine Progress Index Atlantic (GPI) working as a project coordinator, assisting with the training of future global changemakers and preparing them to travel and work with their overseas partners such as the Cambodian Volunteers for Society.

Elizabeth Tallmadge: Elizabeth Tallmadge is a junior in the BLA program at UAS and attends class on the Juneau campus. Her focuses are in American history and fine art, though not American art history. She lives in a cabin with one large dog as an irregular roommate. He does not pay rent.

About the UAS Writing Center…

The Juneau Writing Center is ready to help you! We can assist you at any stage of the writing process, from understanding prompts to making final revisions and everything in between. Our services are free to all UAS students, including distance learners.

Who we are:

The Writing Center, located downstairs in the Egan Library, Room 105, advises students from all disciplines on writing projects. We are a team of strong writers who believe writing is a crucial form of communication for any class and any profession. We aim to help you master your writing skills through attentive, supportive assistance and a genuine interest in what you have to say.

What we do:

We discuss your writing with you. After all, we think that's what writers need most—readers who are interested in their writing and who want to respond to it. We hope you will visit us often, with anything from your biology paper to the poem you wrote last night. You are also welcome to come see us if you're working on a scholarship application letter, a short story on your own, or even a thought-provoking post on social media.

We can help at every stage of the writing process, from understanding a prompt (no draft required!) to helping you with the final polish of your assignment.

We also provide a variety of study guides to help you organize your essay, create a thesis statement, write your first analysis, master citation styles like MLA or APA, and more.

The Writing Center is a judgment-free zone. We want to help you regardless of your skill level or experience! We will assist you in editing your own papers and help you develop your own editing skills by locating grammar errors and teaching you how to self-correct your sentences. We work hard to explain grammatical concepts in plain words that you can understand. We don't tell you what to think or write but instead help you determine how best to respond to your writing assignments. We also provide feedback on content and organization. This attention to detail means we may only cover a short portion of your paper during

your appointment, but you will leave with tools to apply to the rest of your revision. We also welcome you to make multiple appointments to work on any assignment.

Contact Us!

You can contact us through email, phone, or social media.
Email: uas.writingcenter@alaska.edu
Phone: 907-796-6188
Instagram: @uaswritingcenter
Facebook: @uasjuneauwritingcenter
You can also visit our website at https://uas.alaska.edu/juneau/writing-center/

Want to submit to next year's edition?

Submissions for the 2022/2023 edition of *Summit* will open December 1st, 2022, and be accepted through February 1st, 2023. *Summit* will consider submissions from any current undergraduate student taking courses through any of the three UAS campuses. Submissions must be coursework completed in spring or fall of 2022 and up to the submission deadline in spring 2023.

Accepted Works:

Due to the nature of the journal, *Summit* will only be accepting academic works that meet the following criteria:

- Qualify as academic (no creative works)
- Do not exceed 15 pages (double spaced), excluding references
- Present a clear thesis
- When appropriate, utilize scholarly references

Scoring:

Each submission will be judged with the same rubric, which analyzes each paper for how well it reflects scholarly writing and the UAS core competencies of:

- Information literacy
- Critical thinking
- Professional behavior reflected in writing

Essay Contest:

The paper that exhibits the strongest mastery of the core competencies will be the recipient of the UAS Ernestine Hayes Award for Excellence in Essay Writing, will receive a monetary prize, and will be featured with a dedicated page in the journal.

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