

Testing a Social Marketing Approach to Encourage Respectful Sea Turtle Viewing in Hawaii

A SPECIAL PROJECT/COOPERATIVE AGREEMENT BETWEEN NOAA PACIFIC ISLANDS FISHERIES SCIENCE CENTER AND COLORADO STATE UNIVERSITY

AN OUTLINE OF THE APPROACH AND SUMMARY OF KEY FINDINGS FROM THE FIELD RESEARCH

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Project Synopsis

This project will develop an evidence-based social marketing framework to encourage respectful human-protected marine species interactions. The aim of the project is to “reduce the negative impacts of human activities on protected species and their habitats” (NOAA Fisheries Priorities and Annual Guidance for 2019). Reducing these impacts supports NOAA’s mission goal to maintain and improve the viability of marine and coastal ecosystems. The focus on human-sea turtle interactions for this project can be adapted to other protected species or other behaviors besides intentional feeding based on technical direction from the sponsor and still within the budgetary and timeline constraints.

The social marketing framework combined with behavior change and communication theories has been shown to be effective in various conservation contexts (Greene et al., 2019; Abrams, Leong, Melena, Teel, 2019). The approach, however, has not been tested much with human-wildlife interaction issues that are intertwined with tourism and recreational activities as they would be with sea turtles in Hawaii.

This proposed project will develop an adaptable, evidence-based social marketing framework that can be applied to sea turtle viewing in Hawaii and related human-wildlife interaction contexts under NOAA’s purview. The first phase of the project aims to characterize people’s actions within or near areas known for human interactions with sea turtles in Hawaii. These data, along with insights from a literature review, will inform the design and testing of a social marketing approach on people’s behaviors that negatively impact these species of sea turtles.

Specifically, this project will:

1. Characterize factors that lead to undesirable human-protected species interactions, specifically those related tourism.
2. Characterize existing NOAA communication efforts pertaining to sea turtle viewing in order to understand baseline conditions.
3. Develop and test a theoretically-driven social marketing approach to determine whether it affects people’s behaviors (i.e., reduces the number of people getting too close to sea turtles, and/or harassing sea turtles).
4. Improve others’ understanding of a social marketing approach that mitigates undesirable human-protected species interactions.

Empirical Research Summary Pertaining to Testing the Social Marketing Campaign

Goal: Develop an adaptable, evidence-based social marketing framework to encourage respectful sea turtle watching on beaches in Hawaii

Site: Ali’i Beach Park

Presumably transferrable to other north shore beaches and others similar in terms of the nature of the problem and audiences.

Target behaviors: 10-foot distance

Also, but secondarily, preventing pursuing/corraling/blocking pathway, touching, harassing, luring/feeding.

Methods of evaluation: Field study using pre/post-test observations of human behavior

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Objectives, Approach, Timeline

Objective	Approach	Timeline
1) Characterize the factors that lead to disrespectful sea turtle interactions on the north shore beaches	Literature review + semi-structured interviews with up to 9 non-federal partners, such as species-specific volunteers, representatives from local tourism operators and conservation organizations	Lit. review: By Jan. 6 Interviews: By Jan. 17
2) Characterize existing communication efforts pertaining to sea turtle watching in Hawaii.	Content analysis of NOAA materials. This establishes our baseline for comparison of the new approach.	By January 31
3) Understand whether a communication strategy built using the social marketing framework encourages respectful sea turtle watching	Using what is learned from objectives 1-2, develop and test a social marketing campaign using a pre-/post-test, nonequivalent groups design	Campaign development: mid-January through February 21
	Katie meeting with CBSM group and others	March 2
	Pretest data collection	March 4-16
	Implementation	March 17
	Posttest data collection	March 18-31
	Data analysis complete	By May 31
4) Improve others' awareness of approaches that mitigate undesirable human-protected species interactions.	Develop a set of recommendations based on findings.	By May 31
	Develop and promote a basic website containing the highlights of the findings, recommendations, and adaptable materials.	By June 30
	Conduct webinars and provide consultation to NOAA personnel and NOAA collaborators.	Summer and fall 2020 as-needed
	Write, present, and publish at least one manuscript in scholarly outlets (conference paper presentation first, followed by journal article).	Pursue conference paper deadlines Aug. – Nov. 2020. Journal article to follow after feedback from scholarly conference takes place.


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Existing NOAA Media/Communication on Respectful Sea Turtle Guidance

Item
<p data-bbox="203 457 446 487">Metal guidance sign</p>  <p data-bbox="207 499 581 598">HAWAIIAN GREEN SEA TURTLES VIEW TURTLES RESPECTFULLY</p> <p data-bbox="224 604 568 625">Sea turtles are protected under State and Federal laws.</p> <p data-bbox="243 630 535 724"> 10 feet (3m)</p> <p data-bbox="284 724 503 745">GIVE TURTLES SPACE</p> <p data-bbox="243 745 544 777">Do not disturb turtles on land or in the water. ウミガメには近づかず、3メートル以上離れて観察してください。</p> <p data-bbox="251 787 332 861"></p> <p data-bbox="341 808 560 840">LOOK, DON'T TOUCH ウミガメは保護されています。さわらないでください。</p> <p data-bbox="251 871 332 945"></p> <p data-bbox="341 892 495 924">NEVER FEED ウミガメにエサを与えないでください。</p> <p data-bbox="211 966 576 997">Injured or Dead Turtles: (808) 725-5730 Report Violations: (808) 643-DLNR (2567) / (808) 853-1964</p>
<p data-bbox="203 1031 641 1060">Hawaiian Green Sea Turtle brochure</p>  <p data-bbox="235 1575 560 1659">HAWAIIAN GREEN SEA TURTLES Recovering yet still protected</p>

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Viewing Hawaii Wildlife rack card



Viewing Hawai'i Wildlife
Ocean recreation in Hawai'i can include encounters with marine wildlife. For their protection and your safety, view them responsibly!


Sea turtles, monk seals, dolphins and whales are wild animals and protected under state and federal laws.

<p>Responsible Viewing</p> <ul style="list-style-type: none"> • View from a distance. Use binoculars or your camera's zoom for a close up. • Do not disturb sea turtles or monk seals sleeping on the beach. • Never touch, chase, or feed. Animals are wild, unpredictable and protected. • Limit viewing time to a few minutes. • Never swim with crinoid 	<p>Viewing Distances</p> <ul style="list-style-type: none"> • Sea turtles View from at least 10 feet (3 meters) – on land and in water. • Hawaiian monk seals Stay behind any signs or barriers. Stay back 50 feet (15 meters), if no barriers. • Dolphins Stay back at least 50 yards (45 meters)
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MnH Banner

HAWAIIAN GREEN SEA TURTLES
Sea turtles are protected under State and Federal laws.


ハワイ島の緑の海亀は保護されています。近づかず、3メートル（3メートル）以上の距離を維持してください。



VIEW TURTLES FROM A DISTANCE OF 3M
Do not disturb turtles on land or in the water.

ハワイ島の緑の海亀は保護されています。距離を保ち、海亀の距離を維持してください。

海亀の生息地を邪魔する行為は違法です。海亀の生息地を保護してください。



THE HAWAIIAN MONK SEAL FOUNDATION

[NOAA Wildlife viewing web page](#)

Brief Summary of Message Approach Analysis

Overall:

- All use basic instructional messaging
 - Most are focused on encouraging desired behavior, discouraging the undesirable behavior
 - Words like “DO NOT” and “law”
- Two (brochure and webpage) use an educational appeal, focusing on wildlife protection and status of the species “fun facts”
- None appeal to social norms, values, personal norms, efficacy or identity (positive or negative)
- All materials mention the specific distance (mostly 10 feet, 3 meters, webpage says 50 yards)
- Most do not use a visual to augment understanding of distance
 - Sign and banner do (simple line with graphic of turtle and human)
- Differing variations of turtle/human representation
 - Graphics
 - Illustrations
 - Photographs
- Half of them tie back to digital media – mostly an email address or website

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- All use the NOAA logo and branding
- Half in English only, Half in English/Japanese

Webpages

- Majority use a basic proscriptive/prescriptive message (directions on what to do, what not to do)
 - Main focus is getting people not to do bad behavior
- None evoke identity (“you”)
- Lack of photographs / graphic presentation
 - Turtles or humans
- Mentions specific distance: 50 yards, ½ a football field
- **Did not use visual proxy but there was one verbal description:**
 - “For turtles in the water, or nesting on beaches, remain at least 50 yards away—about 1/2 a football field. This includes people and pets.”

Brochure

- Used a mix of educational, instructional, and risk perception appeals
- Only content to mention identity
 - Ex: “You can help!”
- Focuses on behavior – encouraging desirable and discouraging undesirable
- More focus on the status of the species and wildlife protection than other materials
- Specific distance: 10 feet / 3 meters

Theoretical Foundations for a New Communication Approach

Complete, formal literature review document available upon request.

- **Easy:** “I understand what 10 feet is from a turtle. I can still easily get a great photo or video of the encounter.” Make getting a good picture still seem very achievable at a 10-foot distance. Make getting a selfie seem achievable. (Or discourage the up-close selfie.)
- **Enjoyable:** “This is a special and unique experience. I am proud to be respectful. I’m doing the right thing. I’m making a difference.” They are still having a once-in-a-lifetime experience at the 10-foot distance. They can have fun getting more creative photos (i.e., replacement behavior for the closeup experience).
- **Popular:** “Others expect me to respect the turtles, keep 10 feet from them. I see evidence of or know others are respecting the sea turtles’ space.” Make the respectful distance seem like the norm –that it’s what people believe ought to be done.
- **Aligned with their identity:** Emphasize/remind them they are **respectful people** rather than just asking them to “be respectful”. Remind them of their personal norms to do the right thing.

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- **Unique:** Staying at least 10 feet away protects this sea turtle and their very unique behavior. Only 3 places in the world do sea turtles come out to bask on the beach. Getting to see the sea turtles doing this, even from 10 feet away, is an extraordinary experience.
- **Lawful:** If they're keeping at least 10 feet away and not doing anything else to deliberately harass the turtle (throwing sand, water or objects, luring with food), they're less likely to get accused of violating state and federal wildlife protection laws. (Note: Those on a mission to harass sea turtles require law enforcement or more forceful social pressure from others around; communication alone would be ineffective with the "make me" portion of the audience.)
 - Presently, this is not included in our campaign except on the web page, but we can add it if a "legal message" is desired on other materials.

Social Marketing Campaign Outline

Audience

Primarily targeting tourists but should secondarily also appeal to locals. In other words, just be sure the messaging isn't overly specific to tourists.

Interpersonal Communication Sources for Additional Richness on Audience Characteristics

Interviews with representatives from:

- Hawaii Tourism Authority
- Hawaii DLNR
- Pacific Islands Fish and Wildlife (USFWS)
- Malama na Honu
- Hawaii Marine Animal Response
- North Shore tour operator (contracted by Robert's) that includes a stop to see the turtles

Tourist Demographics

- 66% of tourists come from the U.S.
- About 15% are from Japan, S. Korea, China, and Taiwan. Chinese and S. Korean tourists are newer markets for Hawaii; more of these tourists tend to be "less traveled" and thus haven't considered that norms, laws, and such may differ in other places. Japanese tourists are better established travelers, particularly to Hawaii, but the marketing of sea turtle tourism in Japan is a major problem in that it often misleads tourists about swimming with and up-close encounters with sea turtles.
- About ¼ of U.S. tourists are more affluent, making more than \$200K a year.
- ~45% of Oahu visitors visit the north shore beaches

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- Who's in their travel party? 20-30% of U.S. tourists are traveling with their children. 61% are with a spouse. ~15% with a friend.
- More demographics can be found [here](#).

Additional Audience Psychographics to Factor into Theoretical Foundations

- Tourists have often saved a lifetime or view the trip as a once-in-a-lifetime experience. Selfie culture and social media-photo sharing trends further drive tourists to lesser known sites and to seek up-close encounters as proof of a unique experience and to “show off” to others or seek social validation. Many tourists to the north shore don't have time to get into the water. Primarily come to sightsee turtles, surfers, and a more laid-back (viewed as “authentic”) Hawaiian town compared to Honolulu, Waikiki, and the broader Ewa (resort) areas.
- Tourists come to the north shore to check “seeing the sea turtles” off their list for the area. They come expecting or feeling like they have to do that. They take their picture and move on. Vast majority have little interest in spending more than 10 minutes watching the sea turtles on the beach.
- The fact the species is threatened does not appear to be the case to most people, locals and tourists alike, because “the turtles are everywhere.” (In fact, a tour guide said, “they're not endangered here.”)
- Locals could be lumped into the following groups:
 - Hawaiian that has been here all their life. They might be the 3rd generation of Hawaiian. Grew up with grandparents and great grandparents who would bring home turtles to eat. They feel entitled to this. “This is my island. I can swim with it. To touch it isn't a big deal. The turtles are adapted.” Some locals come by every day and view these turtles as like a part of their family.
 - Person who has been here all their life but part of the generation and ideology that holds up a conservation ethic. They may reprimand others for getting too close to the turtles. They believe places like Laniakea Beach should be a sanctuary: protected and closed.
 - The people in the middle of those two groups' view of the solutions.
 - Locals are more likely than tourists to feed sea turtles.
 - A small segment on the fringes has grown to truly despise the sea turtle presence for causing traffic delays and crowding. They may hold malice toward the turtles.
 - Tour operators view the sea turtles as a commodity. Some hold disdain for Malam na Honu volunteers and others who may try to interfere with their customers' fun experience by spouting and trying to enforce viewing guidelines. Others appreciate MNH for providing added (free) value to their tours in the form of education and a unique experience (they've named the sea turtles, provide an avenue for people to support sea turtle conservation efforts through donation/feel-good token). Tour operators vary in their genuine interest in protecting the turtles from their customers. They are willing to provide materials

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to their customers so long as it provides added value. If they are overly focused on rules about what you cannot do, they will not use them.

Campaign Objective

A 20% increase in the number of beach-goers engaging in respectful behaviors around green sea turtles on the Hawaiian Islands. Our specific test site is [Ali'i Beach Park](#) in Haleiwa, HI ("north shore").

- Main target behavior: maintaining 10-foot distance
- *Secondary behaviors: not blocking or surrounding a moving sea turtle, not touching or throwing objects, sand, or water at them, not feeding or attempting to feed/lure

* If we can get people to maintain a 10-foot distance than that *should* prevent the secondary behaviors.

Hook and Key Messages

Hook: Amazing from afar

- Why? Emphasizes distance and a still-unique experience from 10 feet away. Establishes a positive theme for the messages that aligns with visitors' desired emotions (and with some locals' feelings of awe and respect for honu).

Key Message Concepts

- Respectful viewer or mindful viewer
 - Why? Taps into their identity so they want to align their behavior accordingly.
- 10 feet/3 meters visually portrayed with a compact car
 - Why? Supports how-to knowledge with an infographic-style portrayal of 10ft/3m. Compact car styled for iconic Hawaiian look
- The experience at 10 feet away is still extraordinary
 - Why? Tourists are pining for a unique experience.
- Use of only most basic Hawaiian language like "mahalo", "honu", and "aloha"
 - Why? To still embody the Hawaii brand, but avoid additional explanation necessary for audiences to fully grasp
- Showing off more fun, creative photos they can get if they're 10 feet away. "Show off your 10" has additional meaning in that the meaning of the number 10 also implies perfection or excellence in its slang uses.
 - Why? Replace the noncompliant behavior with equally/potentially more desirable one.
- Aligned with NOAA identity in coloring, soft/rounded shapes


Tactics

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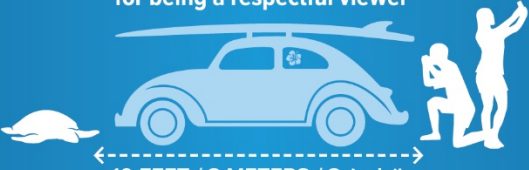
24x26 two-sided, pair of sandwich boards set up on the beach at site

ハワイのウミガメをまもろう!

AMAZING FROM AFAR



THANK YOU
for being a respectful viewer



← 10 FEET / 3 METERS / 3メートル →

In partnership with NOAA Fisheries

Respect and Protect the Awe

Hawai'i is the only place in the world where sea turtles crawl out of the water to rest on the beach. Hang back and take it all in. Respectful people don't get closer than 10 feet (3 meters) and can still get a great photo!

Below are fun ideas to mindfully capture the experience while protecting this unique honu (turtle) behavior.



HONU HOLD

Behold all the beauty that Hawai'i has to offer: sea turtles, sand, and surf. An epic experience in the palm of your hand.



HONU PROTECTOR

Show that you're a protector of sea turtles. Share your passion for honu respect and wellbeing with this protective pose.



HONU HEART

Feet in the sand; hearts in our hands. Show your love for sea turtles with this heart-shaped photo op!

Strike a pose by yourself or share the frame with a friend, but most importantly, **#ShowOffYour10!**



For more information about sea turtles and respectful viewing, visit AmazingFromAfar.org



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Rack cards provided to tour operators along with “sea turtle protector” stickers as an initial incentive for them to use the rack cards with their tour groups. Once they realize their customers are benefitting from the experience (they’re having fun getting creative photos from 10 feet away), the sticker incentive can be removed/reduced.

ハワイのウミガメをまもろう！

AMAZING FROM AFAR



THANK YOU
for being a respectful viewer and staying at least 10 feet (3 meters) away from sea turtles



In partnership with NOAA Fisheries

Respect, Protect the Awe

Hawai'i is the only place in the world where sea turtles crawl out of the water to rest on the beach. Hang back and take it all in. Respectful people don't get closer than 10 feet (3 meters) and can still get a great photo! Below are fun ideas to mindfully capture the experience while protecting this unique honu (turtle) behavior.

HONU HOLD
Behold all the beauty that Hawaii has to offer—sea turtles, sand, and surf. An epic experience in the palm of your hand.



HONU PROTECTOR
Show that you're a protector of sea turtles. Share your passion for honu respect and wellbeing with this protective pose.



HONU HEART
Feet in the sand, hearts in our hands. Show your love for sea turtles with this heart-shaped photo op!



Pick one of the photo ops above or come up with your own! Strike a pose by yourself or share the frame with a friend, but most importantly, **#ShowOffYour10!**



For more information about sea turtles and respectful viewing, visit AmazingFromAfar.org



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Landing page online - AmazingFromAfar.org: single-scroll, mobile-first design with richer messaging. Targeted more for people who likely already identify as a “sea turtle protector” and inquisitive locals. Provides necessary contact information and additional resources.

Instagram [@AmazingFromAfar](https://www.instagram.com/AmazingFromAfar)

Enhance social normative pressure through encouraging use of the **hashtag/social media**

- Seek Malama na Honu’s and/or NOAA Fisheries’ assistance in liking and commenting people’s posts on the hashtag on Instagram and Twitter to further support

Research Methods

Design

We used a quasi-experimental between-groups design with three conditions (Shadish, Cook, & Campbell, 2002) to field test the intervention (i.e., the social marketing campaign). The value of field testing under typical conditions provides strong ecological validity, but the nonequivalent groups design does pose threat to internal validity (Shadish et al., 2002). The three conditions included the existing conditions wherein there were two NOAA regulatory signs on metal poles at beach entry points (Figure 1), a condition with two NOAA regulatory signs placed on the beach (Figure 2), and a condition with two “Amazing from Afar” signs placed on the beach (Figure 3) and rack cards and stickers distributed to tour operators that frequented the site. There were English and Japanese language versions of the rack cards. The ones in Japanese were given to four tour operators and one tour company owner that specialize in Japanese language tours and frequent the site for sea turtle viewing. Additionally, in the “Amazing from Afar” condition, a website (www.amazingfromafar.org) and an Instagram account (www.instagram.com/amazingfromafar) were launched. The website address was on the print materials and accessible through a QR code on the signs.

Figure 1

Existing conditions had signs at entry pathways onto the beach



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Figure 2

NOAA regulatory sign set up on the beach in the same manner as the “Amazing from Afar” signs



Figure 3

A boy does the “honu hold” pose for a photo next to one of the “Amazing from Afar” signs



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We used census sampling and included counts of all people within 50 yards of the basking sea turtle(s), resulting in a sample size of 1,437.

To measure the effects of these three conditions on people's interactions with basking sea turtles, researchers inconspicuously observed and counted the number of people who kept at least 10 feet away from the turtle(s), got within 10 feet, touched or otherwise disturbed the turtle(s), and those who were within 50 yards but uninterested. Researchers would make inconspicuous marks at various points around a 10-foot radius around the turtle(s) at the first gap in beach-goers to allow observations to occur while they were at about 30-40 feet from the action so as to not influence people.

This method allowed us to observe the spontaneous behavior of visitors in the most natural way possible, increasing the study's ecological validity (McLeod, 2015). Another benefit to natural observation is that it provides an opportunity to study the total context of human-wildlife interaction. This provides additional avenues of inquiry that would be missed if studied through controlled observations such as a laboratory experiment (McLeod, 2015).

Quantitative measures were supplemented with qualitative data to further describes people's behavior, their observable characteristics, and environmental factors that colored these interactions. Abrams et al. (2019) used these methods for a similar project aimed at encouraging national park visitors to maintain safe distances from wildlife.

Procedure

The research was conducted daily from March 3 through March 22 at Ali'i Beach, in Haleiwa, HI, but data collection depended on the presence of basking sea turtles on the beach and people. Only three days included more than one turtle, with four being the most at one time. The research began with cycling between the existing condition and the NOAA regulatory signs condition. We cycled between these two conditions to encompass the same days of the week and include weekends in both conditions in a shorter time period. Once we had enough people in each of those two conditions for statistical power and encompassed a variety of days and environmental conditions, we launched the "Amazing from Afar" campaign on Sunday, March 15. In the two conditions wherein two signs were placed on the beach, they were done so in the same way: at about 25 feet from the turtle(s) and angled slightly toward walkways from the park to the beach. Signs were set up upon researcher arrival whether or a not turtles were out basking.

The Covid-19 pandemic affected our abilities to launch the tour operator materials at the scope and scale intended and cut short our planned research for the time being. The Covid-19 pandemic was declared by the World Health Organization on March 11 and measures further impacting tourism in Hawaii followed thereafter. First with the EU travel ban announcement on March 14, followed by closures of Hawaii tourist attractions on March 17, and then closures of beach parks on March 19. Although beach parks were closed, this meant public parking lots and park facilities like bathrooms and pavilions were closed; people were still allowed to walk through parks to recreate on the beach and in the water. On top of these extraordinary issues, heavy rains and flash flooding March 16-19 at the site further impacted the implementation of the new campaign and data collection. On March 23, the Hawaii governor advised all visitors to leave the state. For these reasons, sample size in the "Amazing from Afar" condition was lower than desired but still sufficient for statistical power.

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Findings

Effects on Proportions of People Complying with the 10-Foot Viewing Distance Guideline

When the new campaign was in place, 12.7% more people complied with the 10-foot viewing distance for basking sea turtles compared to a treatment condition with the current NOAA regulatory signs set up on the beach. Compared to the existing conditions wherein the NOAA regulatory signs were on tall metal poles at two of the basking beaches, 29.3% more people complied when the new campaign was in place (Table 1, Figure 4).

Table 1

Frequencies of people and their behavior within 50 yards of basking sea turtles at Ali'i Beach across the three conditions

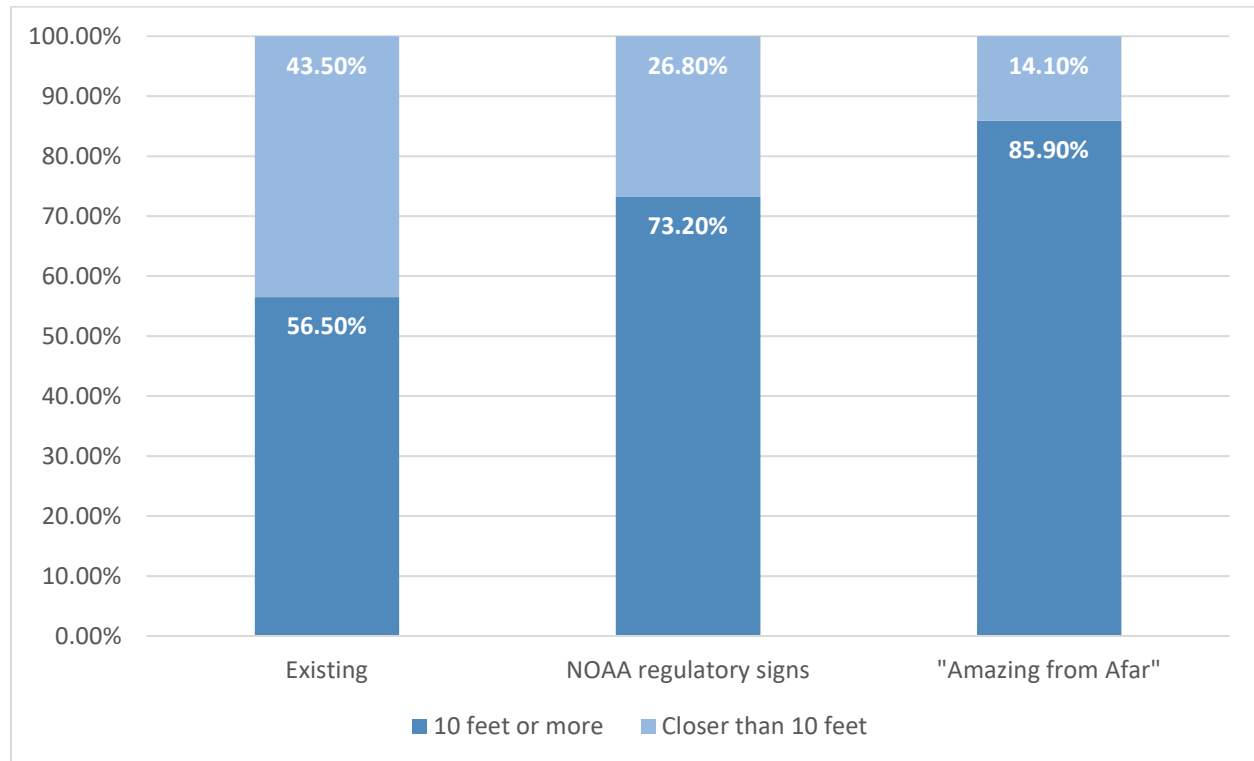
Condition	Days with sea turtle interaction	Uninterested people	Interested people	People that kept at least 10 feet away	People that got closer than 10 feet	People that touched turtle	People that kicked sand at turtle
Existing	7	38	536	303	233	2	1
NOAA regulatory signs placed on beach	4	24	477	349	128	3	0
"Amazing from Afar"	4	50	312	268	44	0	3*

Note. *These were three children around the age of 1 who were led by two adult women to pose within 1 foot to take photos. After the adults took photos, they then left the children alone with the turtle for a few minutes, which is when they began throwing sand at the turtle.

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Figure 4

Percentages of interested people in or out of compliance with the 10-foot viewing guidance (n = 1325)



We excluded uninterested people from analyses. A chi-square test for homogeneity was used to further analyze the differences between the proportions of people that complied/did not comply with the 10-foot viewing distance. It showed there was a statistically significant difference between the three conditions, $\chi^2(2, 1325) = 85.03, p < .001$. Post hoc analysis involved pairwise comparisons using the z-test of two proportions with a Bonferroni correction. The proportion of people that kept at least 10 feet away from basking sea turtles was statistically significantly higher for those in the "Amazing from Afar" condition than either of the other two conditions, $p < .001$. Also, the proportion of people that kept at least 10 feet away from basking sea turtles was also statistically significantly higher for those in the NOAA regulatory signs condition than the existing condition, $p < .001$.

Cramer's V formula was used to calculate the effect size, and it showed a medium effect, $V = .25$.

When the new campaign was in place, 15 people visited the website. Each Instagram post (11 posts total) had an average of 24 views.

Field Notes Analysis

The researchers also took field notes to further describe additional characteristics of beachgoers interested in the basking sea turtle(s). These notes included richer characteristics of their actions, overheard conversations pertaining to the interaction or the sign(s)/materials, whether they were part of a tour group, and approximate age. Although we attempted to record perceived racial and nationality characteristics, we advise against using these data due to their ambiguity and sole reliance on phenotypic features that could lead to inaccuracies and misrepresentations (see National Research Council, 2004).

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When analyzing the noted behaviors of those who complied and stayed at least 10 feet from the sea turtles, common occurrences included photography with large telephoto or zoom lens, selfies that aimed to include the entire scene (and not just the turtle) or staying far enough back to take a successful perspective photo (such as the “honu heart” or “honu hold” poses, proposed on the new campaign signs). It was also common for individuals or groups to comply if they were in the middle of a different activity when they saw the turtle, including but not limited to on a walk next to the water or with a stroller, walking a dog, fishing or surfing, throwing a football, eating ice cream or doing a people-focused photoshoot.

The most common occurrence of those who did not comply also involved photography. Selfies, posing behind the turtle, kneeling next to the turtle and taking a close-up shot of the turtle’s face were the most common ways groups or individuals broke compliance. Another reason involved people thinking that either the turtle was hurt, thinking they were helping the turtle (such as by removing a leaf from the turtle’s face) or because they wanted to inspect the turtle at a close distance (such as when two men got close to inspect the tail and discuss whether the turtle was male or female). Lastly, individuals or groups broken compliance when they felt that an authority figure left, and they were no longer being watched. Examples of who was considered an authority figure includes an HMAR volunteer, a tour guide, a parent, and even the researchers in some instances when recognized¹.

When interacting with the signs, there were several recorded instances when the existing NOAA designed signs placed on the beach were read and disregarded, with people seeing and reading them and then still approaching the turtle closer than 10 feet. The new campaign signs seemed to create longer engagement, with people stopping to read more of the sign, scan the QR code, or comment on them as they walked by. In instances where people read the sign first, they stayed 10 feet or more from the turtles. In some instances, people approached the turtle first and then read the sign after. Some adults, often with children read the sign and then proceeded to try the suggested poses.

There were several instances where groups or individuals interacted with each other. The most typical occurrence was when someone would get too close (an assumed tourist) and another people would yell at the individual or group (an assumed local or visitor who felt they knew enough / had enough authority to tell others what to do). Sometimes the message was informative, yelling something like “You have to keep 10 feet away!” and other times it was angry and aggressive, such as “Hey, get the [expletive] out of here!”. One notable confrontation included two tourists crouching within 2 feet of a turtle and a man running down the beach shouting “It’s 10 feet! Don’t look at me, it’s the law!” After the tourists left, the man exclaimed, “I don’t even live here!” and was visibly upset. These instances only occurred in the existing conditions and once in the NOAA regulatory sign condition. One man even went as far as moving the sign in front of the people he had just informed.

There were also several noted occurrences where social norms seemed to be at play. This most typically happened with groups of two, who were seemingly couples or partners. If one person in the pair got close, the other seemed to as well. If one stayed back or told their partner to stay back, the other typically would comply. Parents, guardians or caretakers also had influence over children’s behavior. If

¹These people were left out of the dataset if their behavior had not already been recorded before an incident requiring researcher intervention. Such incidents included tourists blocking sea turtles from exiting the water and/or disturbing the turtle in such a way that the turtle’s behavior changed or there was concern over potential harm to the turtle.

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the adult stayed back and instructed the child to stay back, they typically complied. If the adult got close or depending on the child's age, sometimes physically brought the child close to the turtle, then the child would get within 10 feet. Lastly, if an individual or group was already close to the turtle when another group showed up, this would typically influence the new group's behavior and understanding of norms.

Lastly, of the 28 tour groups noted, 19 of the tours mostly complied (i.e., most of the people within each group complied) while 9 of the groups mostly did not. Those on tour groups made up approximately 19% of the sample with most of that proportion coming through during the first two conditions. During the new campaign, because of the pandemic, there were fewer tour groups and they were more likely to have fewer people. Through observations of these groups, it was clear that these tour guides held authority to instruct the group to stay at least 10 feet back or showed the group that it was okay to get close. Tour groups that complied often had the guide come out onto the beach, vocally instruct everyone to stay 10 feet back and often assisted in taking pictures and setting people up in poses. Tour groups that did not comply often had the guide not with them (usually up in the grass or at the bus), would actively pose them too close, or tried to intervene after it was too late and many people had already gotten too close.

Considering tour group's behavior under the three different conditions, the group's behavior when no sign was present on the beach (existing conditions) was dictated by the guide's actions or inaction. Generally, in this condition, if a guide was present and told the group to stay 10 feet back, they complied. If the guide actively positioned them close to the turtles for photos, no group members objected. If the guide was not with the group, individuals typically got closer than 10 feet. In the condition with NOAA regulatory signs on the beach, behavior was similar but one notable difference was an increased level of perceived authority among guides and resulting aggression with those not on their tour who were getting closer than 10 feet. For example, one tour guide actively moved the signs away. In other instances, individuals felt emboldened to enforce the rules, with guides telling their groups that it's "illegal" to get closer than 10 feet, they can get a \$3500 ticket, or a woman point to the sign while telling others in the group who were touching the turtle "It literally says DO NOT TOUCH!". Another factor of these signs present is that they may allow some people to be willfully ignorant, as we saw one tour group immediately gravitate towards the sign and then 3 people in the group immediately got within 8 feet. A few seemed to actively avoid reading the sign carefully, but clearly noticed it. For example, two adults seemed to be drawn by the signs as identifying there may be a turtle on the beach, but then proceeded to take photos within 5 feet of the turtle. Someone told them to stay 10 feet away after they got several photos and one of them replied, "yeah, we should pay attention to the signs." This seemed to indicate they knew the signs provided guidance, but they preferred to be able to claim ignorance to avoid shame if they happened to do something that violated the guidance. When considering the third condition of the new campaign, it seemed that members of tour groups spent more time looking at the sign. Less people in tour groups seemed to try the perspective photography poses compared to those who were not in tour groups and this may be due to more people around obstructing the shot.

Discussion and Practical Recommendations

The "Amazing from Afar" approach seemed to encourage greater compliance with the 10-foot viewing guidance for basking sea turtles at Ali'i Beach. Simply placing the signs on the beach garners greater

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compliance, likely because the signs at the entry ways are not seen by most people entering the beach. Theoretically, the “Amazing from Afar” approach worked the best because of how the desired behavior was framed in messaging. The social marketing approach we developed was based on making the desired behavior seem easy (Kollmuss & Agyeman, 2002), enjoyable (Manfredo, Driver, & Brown, 1983), a unique experience (Cater & Cater, 2007), popular (Hunt et al., 2019), and in alignment with their identity (Bryan et al., 2011). A replacement behavior of posing to create forced perspective photos that can only be obtained at a minimum of 10 feet away with the basking sea turtle(s) helped to further emphasize the enjoyment and uniqueness of the experience. Additionally, this replacement behavior can make the desired behavior of viewing from at least 10 feet more popular.

However, this approach likely benefitted as well from the signs being set up on the beach in proximity to the basking turtle(s). Indeed, this influence can be seen by the increase in compliance in the condition with NOAA regulatory signs on the beach over the existing conditions wherein very similar signs were on tall metal poles at walkways to the beach. From our observations, if people spot a turtle on the beach or see the crowd, their gaze is much more focused on that than anything else. They are unlikely to observe or scan the larger environment. However, if signage is placed near where the turtle and/or people are, they are more likely to stop at the sign, especially if they must “wait their turn” to get closer in a crowd. Based on traffic patterns of tourists and basking spots frequented by the turtles, there are two key locations in which permanent displays of the “Amazing from Afar” signs could be placed at Ali'i Beach where they would likely receive more attention from tourists than the existing regulatory signs (Figure 5, next page). These signs should be placed at a height within most people's sightline. Alternatively, the moveable signage used in the research could be placed and taken down daily at these locations by a volunteer.

Finally, we recommend allotting more time and involvement of tour operators in the campaign. Their buy-in and use of the messaging is helpful to the long-term sustainability of the desired behavior among tourists. They also have authority as others who are not on the tour tend to look to the guides as authority-type figures who can either guide them or garner compliance simply by their presence and assumed authority. Operators need assurance their customers will have an enjoyable and unique experience while still complying with the 10-foot viewing guidance. One Japanese-speaking guide set an example of what could be possible with all tour groups. His routine was observed six times by the researchers. He gave a brief educational talk as customers listened and took photos. If anyone crept too close, he would immediately gently correct them. Then, he would take each party's phone or camera and instruct them where to stand and pose (at least 10 feet behind the turtle) and then he would take the shot at 10 feet in front of the turtle. After all parties got a photo, he then selected another party and would have them make “heart hands” and take a photo for them on their device. Other would then typically request similar shots. With his group of typically 10-12 people, they would be done within 10-15 minutes and the customers seemed to express joy especially over the forced perspective photos. Of note, this guide was the only one doing this *before* the new campaign was in place. Providing a brief training session on taking these photos (and providing a video and 1-page instructional guide) for tour operators is another, and perhaps more effective, way of encouraging them to better enforce the 10-foot viewing guidance. In this approach, it gives the operators autonomy as the guide rather than the direction for their customers seeming to come primarily from a third party. The operators would then be the primary focus for customers' positive perceptions of the experience, which adds value for the business.

Figure 5
Recommended sign placement at Ali'i Beach



Tourist Traffic Patterns

- - - Includes more independent tourists and tour groups given an option to snorkel or spend more time here
- - - Most likely to be tour groups dropped off without guide
- - - Tour groups led by employees from lifeguarding services for snorkelers (often more likely to comply and enforce the guidance)

Limitations and Future Research

Caveats and limitations exist and should be further researched in order to know with greater certainty as to how signs with different messages elicit compliance. One important potential caveat to note about the NOAA regulatory signs was that frequent Ali'i Beach visitors (locals, tour guides) associated the signs with presence of an authority-type figure. Researchers overheard them mention this idea with phrases like, "usually that means someone is around here to guard the turtles." Typically, on at least two days a week, HMAR will have a uniformed intern posted on the beach to actively enforce the 10-foot viewing rule by placing sticks as a symbolic barrier around the turtle(s), talking with people, and, if they have one, put up a NOAA sign on the beach. Occasionally, the employees from a company that provides lifeguarding services for snorkeling tours based at this beach will also place symbolic barriers around the turtles and leave a NOAA regulatory sign set up after they leave. Therefore, we could have seen greater compliance at this particular site with locals and tour guides with the NOAA sign, in particular, and possibly the new sign as well, because of this association. We still have confidence in this study's findings on the merits of the social marketing approach relative to the NOAA regulatory-framed approach given the sample size, but testing in another location that has a much lower frequency of the presence of an authority-type figure would clarify the extent to which that could have influenced this study's findings.

Another factor was our inability to more fully launch the tour operator components of the rack cards and stickers due to Covid-19. Because of the uncertainty felt by tour owners and operators, they were far more concerned about their business as they received many cancelations and were eventually told to cease operating. Additionally, a local liaison connected with many of the tour operators that stop at Ali'i Beach had to self-quarantine starting the week of March 15 due to probable exposure to someone who tested positive for Covid-19. This individual was going to set up a meeting for us with these tour owners and operators to provide them materials and briefly talk about the campaign. Had we been able to do that as planned, we may have seen even higher numbers of compliance.

The timing with the unfolding of Covid-19 in Hawaii and the greater U.S. may have also meant the demographic make-up of people at Ali'i Beach differed while the campaign was in place in that there could have been a higher proportion of locals compared to the other two conditions. This is most clearly evidenced by a marked higher proportion of uninterested people in the "Amazing from Afar" condition: 13.8%. This proportion was only 4.8% in the NOAA regulatory signs condition and 6.6% in the existing conditions. This was likely influenced by the increase in locals working from home and being limited to exercising in the beach park and recreating on the beaches in groups of less than 10 since most places of business were closed or operating under limited circumstance (pickup/delivery only).

In sum, we can certainly address the limitations posed by Covid-19 unfolding during the research by at least re-fielding the "Amazing from Afar" condition when tourism is less restricted in Hawaii. This approach is also adaptable to other protected marine species and should be tested within those contexts and with greater explicit involvement of tour owners and operators.

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References

- Abrams, K., Leong, K., Melena, S., & Teel, T. (2019). Encouraging safe wildlife viewing in national parks: Effects of a communication campaign on visitors' behavior. *Environmental Communication*. <https://doi.org/10.1080/17524032.2019.1649291>
- Bryan, C. J., Walton, G. M., Rogers, T., & Dweck, C. S. (2011). Motivating voter turnout by invoking the self. *Proceedings of the National Academy of Sciences*, *108*(31), 12653–12656. <https://doi.org/10.1073/pnas.1103343108>
- Cater, C., & Cater, E. (2007). *Marine ecotourism: Between the devil and the deep blue sea*. Wallingford, UK: CABI.
- Green, K. M., Crawford, B. A., Williamson, K. A., & DeWan, A. A. (2019). A meta-analysis of social marketing campaigns to improve global conservation outcomes. *Social Marketing Quarterly*, *25*(1), 69-87.
- Hawaii Tourism Authority. (2019). Visitor satisfaction study, Q2. Retrieved from https://www.hawaiitourismauthority.org/media/3731/vsat_qtr2_2019_report.pdf
- Hunt, C. A., & Harbor, L. C. (2019). Pro-environmental tourism: Lessons from adventure, wellness and eco-tourism (AWE) in Costa Rica. *Journal of Outdoor Recreation and Tourism*, *28*. <https://doi.org/10.1016/j.jort.2018.11.007>
- Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, *8*(3), 239–260. <https://doi.org/10.1080/13504620220145401>
- Manfredo, M. J., Driver, B. L., & Brown, P. J. (1983). A test of concepts inherent in experience-based setting management for outdoor recreation areas. *Journal of Leisure Research*, *15*(3), 263-283.
- McLeod, S. A. (2015). Observation methods. Retrieved from <https://www.simplypsychology.org/observation.html>
- National Oceanic and Atmospheric Administration. (2019). NOAA Fisheries Priorities and Annual Guidance 2019. Retrieved from <https://www.fisheries.noaa.gov/resource/document/noaa-fisheries-priorities-and-annual-guidance-2019>
- National Research Council. (2004). Defining race. In *Measuring racial discrimination* (pp.25-38). Washington, DC: The National Academies Press. <https://doi.org/10.17226/10887>.
- Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology*, *15*(3), 263-280.