

**Engagement Recommendation Report for Haystack Rock Awareness Program &  
Friends of Haystack Rock**



**Haystack Rock Awareness Program - Oregon Summer Scholar 2021  
Andrea Vega**

## **Introduction**

This report was developed to provide a recommendation for the Haystack Rock Awareness Program (HRAP) and the Friends of Haystack Rock (FOHR) that will maximize their engagement with the visitors at Haystack Rock and with their online community. The objective of this study is to identify the preferred method of delivery, content for science communication, and to formulate a recommendation based on the findings. The goal of the recommendation is to maximize engagement and interest in the preservation of the environment at Haystack Rock. Implementing these methods may optimize environmental stewardship and encourage community involvement by empowering them with science communication content and strategies.

The general public's tolerance and understanding of conservation and preservation of wildlife efforts may be supported by communicating relevant scientific information. The successful integration of science communication for preservation efforts could provide interest for the public so they could have tools to engage and support the environment (Infield et al., 2019). To engage interest and involvement from the community, science communication can provide an organic integration of conservation and environmental literacy. This has the potential to enable visitors of Haystack Rock to make decisions for the benefit of the environment (Monroe et al., 2003). There is an identifiable widening gap between people and nature that can be attributed to the lack of environmental literacy and connection. A study suggests that the development of environmental literacy should enable people to make decisions for the benefit of nature (Monroe et al., 2003).

Throughout my position as the Oregon Seagrass Summer Scholar, I was able to work on different projects in collaboration with the Haystack Rock Awareness Program, Friends of Haystack Rock, and the BIRDSwithFISH community science project. The different projects provided different areas of research that contributed to the final recommendation. The following projects were pursued to ensure maximum engagement: Friends of Haystack Rock Social Media Engagement, BIRDSwithFISH Community Science Project, and Haystack Rock Awareness Science Communications Study.

## **Study Site**

Haystack Rock is a monolithic rock located in Cannon Beach, Oregon. Marine Garden status was granted by the Oregon Department of Fish and Wildlife and prohibits the collection of any plants or animals. The disruption of nesting birds by climbing above the mean high tide mark is also not allowed. The area below the mean high water mark is managed by Oregon Parks and recreation and the area above the mean high water mark is managed by Oregon Islands National Wildlife Refuge of the United States Fish and Wildlife Service. This study site is a popular destination for tourists and also provides a home for many intertidal species such as starfish and sea anemones, and also nesting seabirds.

### **I. Friends of Haystack Rock Social Media Engagement Project**

#### **Introduction & Background**

The Friends of Haystack Rock (FOHR) is a non-profit organization that works in cooperation with the Haystack Rock Awareness Program, among other partnerships, to promote the preservation and protection of intertidal life and birds at Haystack Rock. The FOHR Social Media Project's goal was to maximizing engagement on Facebook and Instagram. Although there was an emphasis on maximizing social media engagement, in-person methods were used to assess general marine conservation and preservation interest. Within this project, I was able to implement methods of communication that I believed would be most effective for engaging an audience. The following methods were used: informational on Tufted Puffin research with accessible language for adults and children, library lectures led by researchers, social media posts, "All Sides of Haystack Rock" video series, Puffin Watch Week, and an infographic for local community science projects.

Two-way communication supplements scientific literacy for the general public and allows for conversations about the issues plaguing the natural environment, while also raising awareness. The increased involvement of scientists and researchers in the media may lead to a sense of responsibility for conservation. Social media is a way for a wider audience to be reached more casually and effectively and increases the visibility of scientists to the general public and becomes more familiar and trustworthy in the process (Hut et al., 2016). Additionally, the usage of social media for conservation efforts allows for more accessible language. More accessible language provides more groups with the opportunity to become engaged with research and science. Outreach is a form of activism that benefits scientists, instructions, and also the public at large (Smith et al., 2017).

## **Methods**

In order to assess the most effective forms of presenting science communication relevant to the preservation of Haystack Rock, a range of methods were used. The methods used can be split into two categories: accessible language and public outreach.

### **I. Accessible Language**

Accessible language is an important component of successful science communication. It is common for scientific research to be oversimplified or biased. This may often lead to misconceptions due to the limitations of accessibility. A set of informational materials were curated based on the Tufted Puffin Monitoring Study conducted by Shawn W. Stephenson from the U.S Fish and Wildlife Service in 2018. This study focused on the possible causes for puffin decline by conducting a burrow-nesting seabird survey across the Oregon coastline. To make the research more accessible in language to a broader audience, mature and younger audience versions were made. The younger audience version was made with the target of introducing three key themes. The three target themes were community science project awareness, research, and preservation. The informational made for a mature audience contained a larger volume of information but the language remained accessible and scientific jargon was eliminated from the contents. The three key themes remained the same throughout but there was an expansion on the themes and provided more information relating to the research that was conducted by the U.S Fish and Wildlife Service.

Another form of accessible science research is the Library Lecture Facebook events that are facilitated monthly for the public. This year the lecture series was extended to provide more focus and attention to the issues affecting the tufted puffins. Although in previous years the library lectures were conducted in person there was a shift to administering them through Facebook Live. This shift allowed them to reach a wider audience and made the research lecture more accessible to the public.

### **II. Public Outreach**

Public outreach and engagement facilitate the dialogue around science education and communication with the general public. Outreach in preservation and conservation helps increase awareness and support around issues affecting the environment. Increased awareness can lead to more informed decisions. A few techniques used for public outreach were the use of QR codes for social media, more interactive social media posts, a video series, farmers market events, and Puffin Week. Two main goals were targeted using these different techniques. The two main goals were general engagement with the public and assessing their interest in marine preservation and conservation through conversations, and the second objective was to translate the identified

needs onto the social media platform. The QR codes that were administered during the Puffin Watch and Farmers Market events were used as a way to increase the reach of the online following. The types of content preferred were based on these assessments. The social media posts and the video series curated are a reflection of this assessment.

## **Recommendation**

Based on the methods used for this project there are two suggestions to maximize engagement on Facebook and Instagram. In order, to build an extensive social media presence that reaches people beyond Cannon Beach; an added component of relatability may attract a more diverse audience. Highlighting transparent similarities to the overarching global environmental issues could provide a sense of connection and care for the preservation of Haystack Rock. Extending the framework from being solely based on the preservation of Haystack Rock and moving towards a framework that includes Haystack Rock within the global scale can provide the general public with a greater empathic understanding and response.

Secondly, highlighting the impact of tourism can be beneficial. While ecotourism provides financial benefits and support, advertising sustainable methods of travel can have an incredible impact. Introducing and emphasizing the idea that visitation has an impact and providing resources about sustainable and responsible travel can mitigate their impact and provide visitors with the tools to make responsible decisions. Ecotourism encourages the union of conservation, community, and responsible travel. The implementation of these principles into the social media content could increase the capacity to protect the rock.

## **II. Community Science Project**

### **Introduction & Background**

Community science projects are collaborations between researchers and members of the public. These collaborations have led to a significant amount of scientific discovery. By involving those that don't have a scientific background; community science projects can help with understanding the importance of conservation and preservation efforts. Community science projects also provide members of the public with a form of engagement that enables their ability to actively participate in marine preservation and conservation efforts. The establishment of local involvement in citizen science projects can lead to the development of an empathic relationship with the natural environment. Driving collective action towards the issues affecting the marine garden can build resilience and increase involvement and interest in conservation and preservation efforts. Inclusionary community science projects at Haystack Rock can be an effective way of involving the general public. Designing projects in a way that encourages the sharing of knowledge and collective responsibility could enable participation. Productive

partnerships in these projects can help ensure that scientific information about marine conservation and preservation is appreciated and understood across a broader community beyond affiliated members. Citizen science projects provide those who participate with an improved sense of scientific literacy, marine stewardship behavior, enhanced curiosity in the environment, and research skills (Kobri et al., 2016).

BIRDSwithFISH is a community science project led by a graduate student from Oregon State University that focuses on investigating the diets of coastal Oregon birds and how they might change over time through non-invasive community-sourced photography. This project was designed to engage experienced nature photographers from the community. The inspiration from the project came from the US Fish and Wildlife Service 2020 decision to not list the tufted puffin under the Endangered Species Act of 1973. Data gaps, such as diet, were identified and this led to the formation of this project. This project targets experienced nature photographers and birders in hopes of maximizing their collection of coastal avian species photographs and understanding of what coastal Oregon birds eat throughout the year. Although there is a primary focus on Tufted Puffins, the understanding of the diet of other coastal birds is important to the overall context of the project.

Through my collaboration with this project, I was able to understand the importance of outreach in community science projects. HRAP and FOHR are involved in several citizen science projects that range from population surveys to the removal of microplastic from the beach. These projects are active ways for people to become involved however there can be further steps taken to collaborate with the community and get more people involved and interested.

## **Methods**

### **I. Outreach**

Community science projects provide great opportunities for scientific knowledge and understanding. Successful outreach methods require the ability to successfully recruit participants, have the training, and retain the participants. To recruit participants a range of social media platforms were used for advertising the project among them being HRAP and FOHR's Facebook and Instagram. The retention rate and vitality of content was the main objective in recruitment and this allowed for us to target a niche audience of local wildlife photographers. The methods of outreach ranged from an informational webinar about the project with the project lead and a professional wildlife photographer to flyers posted at art galleries in the community. Most of the outreach came from reaching out to people individually and asking about possible connections they might have and introductions they could make.

## **Conclusion**

Cigliano et al. (2017) demonstrated that the integration of a framework led by communities for sustainable management and conservation has a high probability of long-term success. Currently, the majority of citizen science projects target an older demographic, however, targeting younger members of the community as well could be beneficial for long-term success in these projects. By targeting a younger demographic, generational scientific literacy can increase and provide a longer set of data for projects for the future (Cigliano et al., 2017). These projects can create an educational space that promotes a sustained perception in marine conservation and increase engagement in these efforts presents a promising avenue for strengthening individual skill sets in the community and also for the visitors at Haystack Rock.

### **III. Haystack Rock Awareness Science Communications Study**

#### **Introduction & Background**

The Haystack Rock Awareness Program (HRAP) is a municipal government organization that strives to protect, through education, the intertidal and bird ecology of the Oregon Marine Garden and National Wildlife Refuge at Haystack Rock in Cannon Beach. I conducted a human dimensions study in which I used a series of surveys and conducted interviews to figure out the preferred method of delivery for science communication. Science communication is the practice of informing, educating, and raising awareness of science-related topics. The purpose of this human dimensions study was to facilitate dialogue about marine preservation and stewardship by maximizing engagement and interest from the general public.

Direct communication between the general public and scientists increases interest and stimulates an increase in education and awareness about conservation and preservation issues that are plaguing the natural environment (Giovos et al., 2019). Considerable efforts and collaboration with the public are required for continued engagement and for building relationships that cultivate a trusting relationship with the scientific community and preservation groups (Smith et al., 2017). By strengthening the relationships between the scientific community and the general public through continuous engagement, it may result in bridging the knowledge gap between the two groups and encourage the transfer of knowledge and an interest in marine conservation and biology. This relationship enhances a deeper responsibility of good stewardship of the environment.

## **Methods**

### **A. Data Collection**

Interviews and surveys were the methods used to collect data about the preferred method of delivery for science communication for the general public. Additionally, personal narratives surrounding marine stewardship and preservation were also targeted in order to maximize engagement and interest in these areas. Data collection was done using a series of three surveys and through the administration of interviews that target the general public at Haystack Rock, marine science and conservation researchers, HRAP staff, and longstanding locals at Cannon Beach.

### **B. Interviews**

The purpose of these interviews was to get feedback on how engagement and science communication outreach can be improved with the local community. Interviews were conducted with four longstanding members of the Cannon Beach community. The participants that were interviewed were chosen based on their involvement with the community. All four of the participants have prior experience and involvement in conservation work. The interviews were conducted as unstructured interviews. I was able to modify the sequence of questions and the wording for clarifications based on the answers provided by the participants. The following were the five sets of questions: opening, introductory, transitional, key, and ending questions. The interview data from the zoom interviews were recorded on paper and recorded for further analysis and confirmation.

### **C. Surveys**

Surveys were conducted with the general public, marine science and conservation researchers, and HRAP staff. The surveys were written in guided response types and multiple choice. Rating scales were also used for these surveys: yes-no, multiple-choice, ranking, and level of agreement for statements.

Surveys with 93 members of the general public were conducted through HRAP's social media, FOHR events such as Puffin Watch and the farmers market, and at Haystack Rock. Surveys were collected for 4 weeks. Starting July 5th, 2021 thru July 28th, 2021. The platforms used to advertise the surveys were Facebook and Instagram. The surveys conducted during FOHR events and at Haystack Rock were collected by shifting conversations from questions they had about Haystack Rock to talking about the science communication study. They were asked if they would like to participate and were given no incentive. The general public surveys were designed to



measure knowledge about preferred methods of science communication delivery and presentation.

The marine science and conservation researcher surveys were administered through emails with the goal of collecting data on their perspective on science communication; as well as their confidence in the dissemination of information. The researcher's Google form surveys were emailed individually. Roughly 200 emails were sent out, however, considering time constraints and summer schedules, 33 individuals completed the survey.

The HRAP staff surveys were administered through email to collect to collect data on their level of confidence in relaying scientific information to the general public and to understand in which ways this can be improved. The staff Google form surveys were emailed and 11 surveys were completed. The surveys were administered on the week of June 21st. The early administration of the survey allowed for a general idea of what could be done to strengthen the confidence of the staff.

## **Results**

### **I. Interviews**

The four interviews conducted provided information about the local perspective and perception of these organizations, as well as personal anecdotes about the Cannon Beach community. These interviews revealed a general awareness of the work done by the program and the Friend group. The interviewees touched on three key aspects of the program and provided feedback on these areas. The three areas were the effectiveness of library lectures and the use of social media to engage the community, the need for expansion within HRAP, and the effectiveness of doing community events.

The use of social media was identified as a way in which they have been able to keep in touch with the work being done by HRAP and FOHR. The current use of social media for library lectures and updates on the rock satisfies their update and information uptake, however, there was an emphasis on providing content that feels more engaging and feels more reflective of the experience down at the tidepools. This involves the experience with the HRAP interpreters and how they communicate with the general public.

Throughout the interviews, it was touched on that they believe that the expansion of the HRAP program would be beneficial towards the protection of the rock. It was expressed that the increase in visitors in Cannon Beach brings a cause of concern for the degradation of the

environment. Getting more people involved to protect the beach could help with the visitor volume coming in and provide structure.

Community events such as having the scopes out have proved to be the most effective for getting involved with HRAP and FOHR and letting the public know about the work done as well as the reasoning behind the adamant protection of the rock. Additionally, it was noted that collaborations with local businesses could help reach and provide a deeper community connection. Although community projects such as community science projects and the volunteer program are good for the community outreach, it was said that creating opportunities beyond the Oregon coast community could help with making visitors feel responsible for their impact.

## **II. General Public Surveys**

The surveys administered to the general public provided data on the preferred methods of delivery for science communication information regarding marine preservation and conservation. The participants from this survey vary in age and location. Most Haystack Rock visitors come for recreational purposes. About 60% of participants had never spoken to an HRAP or FOHR interpreter before and 60% have never visited their social media. Although the top social media preferences were Facebook and Instagram there was a low percentage of participants that had most engagingly and effectively.

## **III. Researchers and Professionals Surveys**

The surveys administered to researchers and professionals that work in marine preservation and conservation provided data on the general confidence level in relaying scientific information to the general public and their opinions on using social media for science communication updates.

Within the survey questions regarding their usage of social media were asked in order to understand their interactions with the general public and with other researchers. Figure 3. and Figure 4. demonstrate that there is a higher social media usage when used to connect with peers than when used to connect with the general public to discuss their research, however, Figure 5. shows that more than 90% believe that social media could be a good platform for facilitating a dialogue between them and the general public about their research. When asked about the knowledge gap between the research community and the general public, roughly 95% stated that they believed there was a gap and about 85% stated they believed that science communication could be used to bridge the knowledge gap and facilitate a two-way dialogue.

This data reveals that there is confidence in social media as a platform for science communication and researchers feel that it could be a tool for discussing their research. Most

researchers demonstrated confidence in their abilities to relay scientific information to those without a science background. Additionally, it is believed that they are adequately prepared based on their years of experience. When asked which social media they preferred to use for work and personal use: Facebook, Instagram, and LinkedIn were rated the highest. Providing research content on social media platforms such as Facebook and Instagram could be an effective way to cast a wider net of interest in preservation and conservation efforts. This could also create a sense of community among researchers and the general public.

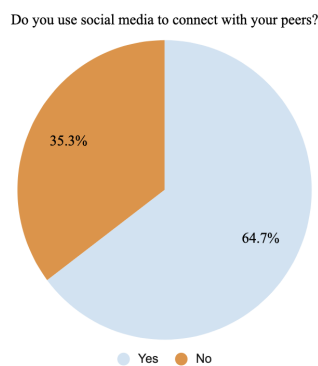


Fig. 3: Pie chart showing whether researchers use social media to connect with peers.

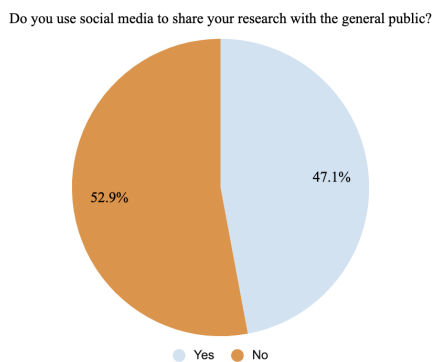


Fig. 4: Pie chart showing whether researchers use social media to share information with the general public.

The use of social media by scientists can facilitate conversations about their research

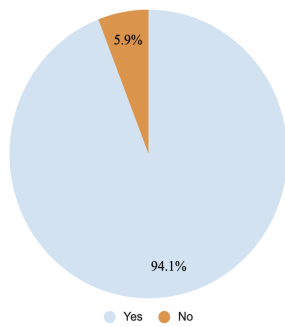


Fig. 5: Pie chart showing if scientists use social media as a platform to facilitate conversation about research.

#### IV. Staff Survey

The staff surveys provided data on the general confidence level of the interpreters in relation to communicating scientific information and the alignment of their values within the program. The staff members vary in ages and also vary in experience. 90.9% of staff members believe their involvement with HRAP has helped them develop the skills necessary for communicating with the general public, however, as shown in Figure 1, when asked if they felt adequately trained to answer questions about current science and research with visitors, 7 staff members ranked above neutral. Although it is more than 50% of staff, this shows that there could be an implementation of training that provides the staff with more confidence in communication science and research to the visitors.

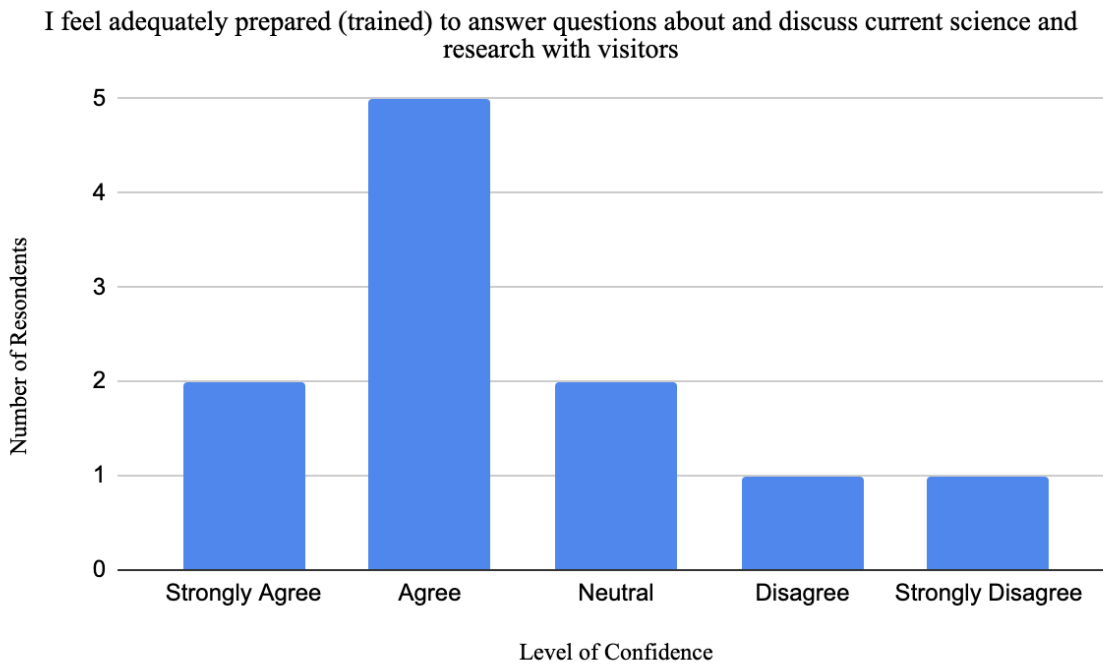


Fig. 1: Histogram of the staff member’s level of confidence to answer questions about current science and research with visitors.

All 11 of the survey participants stated that they felt fulfilled by the work they did with HRAP and that they would recommend HRAP to friends and family as an opportunity to become involved as an interpreter or volunteer. Approximately 65% of the respondents stated that they strongly agreed with their job makes a difference for conservation and more than 75% stated that they believe most visitors leave with a strong sense of stewardship. This demonstrates a strong sense of confidence within the HRAP staff and their abilities to communicate with visitors in a way that makes a difference to their experience and the environment. A good sense of confidence in their abilities translates into the level of impact they can make and these percentages demonstrate HRAP’s staff ability to protect the rock and educate visitors.

**Recommendation**

Based on the results from the surveys and interviews it is recommended that there should be a social strategy implemented. This social strategy could include environmental education, social marketing, capacity building, and community outreach. Social media can be used as the most effective way to relay science communication content to increase engagement in marine preservation interests. A plan can be strategized to target the maximization of engagement and should include community science projects and community outreach methods. Environmental education can be done through community science projects. Involving more members of the public in community science projects could provide a strong sense of community and

responsibility towards the environment. Social media content can be used as a way to form a connection to those that aren't locals and the effective use of science communication can increase awareness and involvement. Community outreach methods would be most effective using social media using the recommended preferences. In addition to these components, it could be beneficial to dedicate a specific role to an individual to strategize communications during the off-season and create content dedicated to this form of communication. A recommendation for doing this would be to dedicate a day of the week to science communication or create mailing lists to start a community that engages week after week. A way of doing this could potentially be creating a space online in which science communication updates can be posted and interested individuals can fully immerse themselves into the topic and discuss it with others. This space could contain special postings done by researchers or professionals in conservation and make it possible for there to be conversations based on research to be facilitated in a setting that feels community-based.

Science communication videos and reading materials could be posted weekly and should range between 3-5 minutes in length. The preferred social media platforms for this are Facebook and Instagram. Content should be an extension of the experience at the rock and could have a focus on the different ways that the interpreters engage with the public. While the interpreter's main goal isn't science communication, content can be created to unite the work done by HRAP and what is being posted online.

## **Discussion**

This report provides information on the most effective way to approach science communication content on social media. The maximization of engagement and interests in the preservation of the environment at Haystack Rock could be reached through the different use of communication and engagement methods. The preferred methods of delivery for science communication were explored by testing out different methods and conducting surveys and interviews. Science communication could provide new opportunities for engaging with the general public in a way that stimulates engagement in marine preservation and conservation. Different methods of outreach could strengthen the connections between researchers and the local communities and help to build public trust. Methods of outreach ultimately benefit all parties involved including the general public, researchers, and HRAP/FOHR.

The Friends of Haystack Rock Social Media Engagement Project, Community Science Project, and the Haystack Rock Awareness Science Communications study allowed me to explore the different components of science communication and to test out different methods. Results from these projects revealed that Facebook and Instagram can be used to engage the general public in marine preservation research and community science projects. Through the curation of

information based on research papers and different types of social media posts, the maximization of engagement and interest may increase.

Based on the different methods it is recommended that FOHR provides more content with a focus on relatability. This level of reliability should demonstrate the connection between other conservation and preservation efforts nationally and the efforts being done at Haystack Rock. By extending the idea of preservation on a wider scale creates an opportunity to have a deeper understanding of the work being done in Cannon Beach. Additionally, providing social media content about responsible traveling could lead to visitors making more responsible decisions in favor of the environment.

Based on the interviews and surveys conducted, it is recommended that HRAP undergoes a science communication project that follows the preferences found. Social media platforms for science communication could be the most effective way of reaching a wide audience and increasing engagement and interest in marine preservation. This project should focus on the community aspect of community science projects and involve the youth to increase environmental literacy. The creation of a space for professionals and the general public to engage could facilitate conversations and maximize engagement in science communication content.

### **Limitations of Study**

This study has potential limitations due to the oversimplified and biased views that come from survey research and the lack of reliability and validity in the results. The data collected through the surveys and interviews are inconsistent and can be attributed to the variability in the responses and the possibility of lack of truth. Survey methods are an adequate way of collecting objective data but present less effective results for subjective data collection.

## References

- Bennett, A., Cooper, J., & Rock, J. (2020). Place-based film for growing community engagement and community engagement in marine mammal protected areas. *Whale-watching: sustainable tourism and ecological management. Cambridge University Press, Cambridge, UK.*
- Monroe, M. C. (2003). Two avenues for encouraging conservation behaviors. *Human Ecology Review*, 113-125.
- Roberge, J. M. (2014). Using data from online social networks in conservation science: which species engage people the most on Twitter?. *Biodiversity and conservation*, 23(3), 715-726.
- Rose, K. M., Markowitz, E. M., & Brossard, D. (2020). Scientists' incentives and attitudes toward public communication. *Proceedings of the National Academy of Sciences*, 117(3), 1274-1276.
- Schuttler, S. G., Sears, R. S., Orendain, I., Khot, R., Rubenstein, D., Rubenstein, N., ... & Kays, R. (2019). Citizen science in schools: students collect valuable mammal data for science, conservation, and community engagement. *Bioscience*, 69(1), 69-79.
- Thornton, T. F., & Scheer, A. M. (2012). Collaborative engagement of local and traditional



knowledge and science in marine environments: a review. *Ecology and Society*, 17(3).

Wali, A., Alvira, D., Tallman, P., Ravikumar, A., & Macedo, M. (2017). A new approach to conservation: using community empowerment for sustainable well-being. *Ecology and Society*, 22(4).