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CHARACTERISTICS AND MOTIVATIONS OF PASSENGERS ON BOARD A
PUFFIN TOUR BOAT IN MAINE

by

Skye Howard

A Thesis Submitted in Partial Fulfillment
of the Requirements for a Degree with Honors
(Marine Science)

The Honors College

University of Maine

May 2024

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ABSTRACT

The Atlantic puffin (*Fratercula arctica*) is a visually attractive seabird found in the North Atlantic Ocean. While research in the Eastern North Atlantic indicates that Puffins attract visitors to areas where the species can be viewed, less is known about visitor interest in Atlantic puffins in the Western North Atlantic. This study helps fill a gap in the literature regarding visitor interest in Atlantic puffins in the Western North Atlantic. The purpose of this study is to provide an understanding of the characteristics of passengers on board a puffin tour boat visiting Petit Manan Island, Maine, and the importance of Atlantic puffins as a trip motivator among these passengers. We used a survey of passengers (n=41) on board a tour boat visiting Petit Manan to gather data related to demographics and the significance of several possible trip motivational factors. Our results indicate that the most important trip motivator among passengers on the tour boat is seeing puffins, and that seeing the landscape and scenery of the area is also an important trip motivator. Our findings have implications for both tour boat companies and Atlantic puffin conservation groups.

ACKNOWLEDGEMENTS

I would like to thank Acadian Boat Tours, especially Gary, Diane, and Kaitlyn, for their support and for providing use of their tour boats for my research.

TABLE OF CONTENTS

List of Figures	vi
Introduction	1
Literature Review	2
Background	6
Methods	9
Study Area	9
Data Collection and Analysis	11
Results	12
Passenger Profiles.....	12
Motivational Factors.....	13
Discussion.....	16
Conclusion.....	21
References.....	22
Appendix: IRB Letter of Approval	24
Authors Biography	25

LIST OF FIGURES

Figure 1. Map of Petit Manan Island, Maine.....	10
Figure 2. The most important trip motivational factor according to each survey participant.....	14
Table 1. Ranking of four potential trip motivators from “not at all important” to “very important.”.....	15

INTRODUCTION

The Atlantic puffin (*Fratercula arctica*) is one of many species that have experienced a tumultuous past thanks to human interference. At one time puffins flourished at the southwestern end of their range along the coast of Maine. However, as more people moved to the area, their coveted feathers and value as a food source led to overharvesting and population decline. By the late nineteenth and early twentieth centuries puffins in Maine were almost entirely wiped out. Careful restoration efforts beginning in the 1970s have brought the birds back to the state, but they remain listed as a threatened species under the federal Endangered Species Act. Today, Atlantic puffin nesting colonies are found on five islands in Maine, including Petit Manan Island (Figure 1). Several companies run tours out of Bar Harbor, a small coastal town located on Mount Desert Island about thirteen miles from the island. Despite having a year-round population of only 5,000 residents, Bar Harbor's proximity to Acadia National Park and the local seafood industry have made it a thriving tourist destination.¹ The reintroduction of the Atlantic puffin in Maine provides a unique opportunity to observe the birds without having to leave the country, and the established boat tour companies in Bar Harbor give visitors easy access to view the species. The purpose of this study is to better understand the characteristics of passengers on nature and puffin-based boat tours, including what motivates them to take these tours.

¹ In 2021, the Park Service recorded nearly four million visitors to Acadia, 13,290 acres of which lies within Bar Harbor

LITERATURE REVIEW

Ecotourism, especially wildlife and birdwatching tourism, has become increasingly popular over the past few decades (Dybsand et al., 2023). Many communities located in places with abundant wildlife and natural landscapes have capitalized on this trend by offering viewing opportunities in the form of tours, including boat tours, and educational programs (Miller et al., 2020). Studies have shown there are clear economic benefits to these communities as a direct result of wildlife tourism. For example, many visitors pay for lodging and food while in the area, as well as spend money on tours and viewing opportunities (Marasinghe et al., 2020). Many of the animal species that have become popular to view are threatened, endangered, or face other risks. Increased popularity in viewing these species, therefore, has the possibility of raising awareness of animal populations in need of protection. However, a rise in visitation to fragile ecosystems also increases the risk of anthropogenic habitat degradation and human disturbance (Miller et al., 2020). Understanding whether the presence of a particular animal population is a motivation for wildlife tourism is important to both the economy of local communities, the preservation of the animals themselves, and recognizing potential risks to the environment.

Wildlife or ecotourism is one of the fastest growing subsets of tourism (Das and Chatterjee et al., 2015). This group of tourists seek experiences including learning about local ecosystems, connecting with local people, and even participate in conservation efforts (Balmford et al., 2009). Previous studies have found that ecotourist motivations include learning about nature, being physically active, meeting people with similar interests, nature appreciation, having an authentic rural or cultural experience, escape, and seeing local scenery (Caravache-Franco et al., 2022).

Studies also suggest that ecotourists are more likely to participate in activities if they are related to the environment (Lou and Deng et al. 2008).

Several studies have examined the role of seabirds and other wildlife in attracting visitors to an area. For example, Dybsand et al., (2021) conducted a study on Hornøya Island in Norway, a popular location for birdwatchers (Dybsand et al., 2021). Hornøya is home to several populations of red-listed seabirds, including the Atlantic puffin. The island is a protected reserve and is considered popular to visitors due to the diversity of bird species and the opportunity to get close to the birds in the wild. The study consisted of a form handed out to visitors which directed them to an online survey asking questions related to trip motivation and demographics. Participants were recruited on board the boat taking visitors to the island, as well as from a lodging used by visitors. The study found that most participants were college educated (77%), the mean age was 55 years old, and there was a slight majority of male participants (55%). Most participants indicated that they were from other countries, with only 17% being from Norway. The study also found that “experiencing birds” (Dybsand et al., 2023, pg. 37) was a significant motivational factor among visitors. The study also found that there were differences in age, education, and nationality between participants in the survey, which were cited as possible causes for differences in motivation for visiting Hornøya Island (Dybsand et al., 2021).

Miller et al. (2020) examined the motivations for wildlife tourism in Kaktovic Alaska in the United States, and focused on another red-listed species, the polar bear. Viewing polar bears and their Arctic habitat is considered a “last chance tourism” (LTC) opportunity. The LTC label is used as a marketing strategy by tourism companies to attract visitors to environments and wildlife that are in peril or in danger

of disappearing altogether. The study consisted of a survey given to participants on a guided polar bear viewing boat tour operating out of Kaktovic, a part of the Arctic National Wildlife Refuge. The survey asked questions regarding participant motivations for visiting the area and their demographics. The study found that most participants were middle aged or older, well educated (73.9 % had bachelor's or higher-level degree) and were traveling in groups. Most participants were from the United States (71.1%). The study also found that the parts of the experience related to viewing the polar bears were most important to visitors was a significant motivational factor among visitors, and that the group of visitors categorized as “Wildlife enthusiasts” (Miller et al., 2020, pg. 74) considered viewing polar bears as their highest priority (Miller et al., 2020).

Beh and Buryere (2007) found similar results in a study of three national reserves in the East African nation of Kenya. They conducted a survey to better understand the motivations that visitors had for coming to protected areas and parks. The survey was given to tourists at Samburu, Buffalo Springs, and Shaba Reserves, and asked participants to rate the importance of different possible motivational factors on a seven-point scale. The possible motivations included those related to experiencing culture, education, the landscape, general wildlife viewing, and species-specific wildlife viewing. The species-specific questions focused on three megafauna (zebra, giraffe, and elephants). Participants were grouped into three categories based on overall responses to questions regarding trip motivation. These three groups were the Learners, Escapists, and Spiritualists. Learners were defined as the group who had high mean scores for questions related to education, learning about the preserves, and wildlife. The study found that most participants categorized as Learners were mostly European (82%) with an average age of 41 years. Escapists comprised the group of

participants that had high mean scores for questions related to escaping normal life and relaxation. The study found that Escapists were mostly European (85%) and had an average age of 37 years. Spiritualists were defined as the group who had high mean scores for questions related to personal growth and culture. Spiritualists were found to have the lowest average age of 35 years, and the highest percentage of North American participants (35%) out of the three groups. The study found that general viewing of nature and wildlife was a stronger motivational factor than species specific viewing for all three participant groups. General wildlife viewing was the most significant motivational factor for both the Learner and Escapist groups. The Spiritualist group reported motivations related to culture as slightly more significant than those related to the Nature or Wildlife Viewing groups (Beh and Buryere, 2007).

BACKGROUND

Atlantic puffins (*Fratercula arctica*) are a small pelagic seabird found across the North Atlantic. In Maine the birds are found on four islands: Matinicus Rock, Eastern Egg Rock, Seal Island, and Petit Manan Island. A nesting colony also is located on Machias Seal Island, which is considered disputed territory between the United States and Canada (Maine Department of Inland Fisheries and Wildlife, 2003). Puffins are a pelagic species and spend most of their lives on the open ocean, only coming to land to nest. Each nesting pair lays a single egg per breeding season and nests in a colony (Lefort et al., 2021). The nesting season differs slightly by location, but generally starts in early May and ends in mid to late August. Puffin nests are located in what is known as a burrow. The burrow is usually a crevasse or small cave in a rocky cliff, with a nest built within for protection from predators and the elements. Both the male and female members of the nesting pair take turns sitting on the nest while the other forages for food. The Atlantic puffin has a range of food sources including worms and crustaceans, but feeds primarily on small schooling fish (Falk et al., 1992). The adult puffins will feed and care for the chick after it has hatched until it is developed enough to swim and fly on its own. In August, both the breeding adults and their offspring depart the nesting location, bound for the open North Atlantic Ocean. Juvenile puffins spend the first 2-3 years of their lives at sea before returning to the same location they were born to begin breeding as mature adults (Maine Department of Inland Fisheries and Wildlife, 2003).

Atlantic puffins were never found in large numbers on the coast of Maine, as that area has always been the southern limit of their range. Historically, the seabird was found on eight islands in Maine (Maine Department of Inland Fisheries and Wildlife, 2003). However, puffin populations in Maine were nearly wiped out entirely

in the nineteenth and early twentieth centuries. During this time, puffin eggs and the birds themselves were collected by islanders for food, and the adults were hunted for their feathers which were used by milliners. As nesting islands were populated by humans, new predators were introduced such as rats, and nesting habitat was disturbed both by humans themselves and by sheep and other livestock. By 1977 Atlantic puffins had been completely wiped out on all but two islands in Maine: Machias Seal Island and Matinicus Rock (Maine Department of Inland Fisheries and Wildlife, 2003).

In the early 1980s the National Audubon Society began restoration efforts to bring the birds back to their traditional nesting grounds in Maine. Puffin chicks were transported from colonies in Newfoundland, Canada to traditional nesting islands in Maine, and decoys and sound recordings were used to reestablish populations. By this time, all lighthouses located on the islands were automated, eliminating human disturbance from lighthouse keepers and their animals. The hunting of puffins was also banned. Gulls, a natural predator and competitor of the puffins, were also removed from the islands (Anderson and Delvin et al., 1999). Other seabirds took advantage of the newly protected habitat as well. Populations of terns, eider ducks, petrels, and guillemots began to establish nesting colonies (Anderson and Delvin et al. 2021). Restoration efforts have proved extremely successful and today Atlantic puffins are found on five islands in Maine, where they coexist alongside other seabird species. The puffins are closely monitored by scientists and visitation to the islands is strictly limited. Despite their restoration, Atlantic puffins were listed as a threatened species under the Endangered Species Act in 1997 and remain so to this day due to their small population size. Though most historical threats to puffins in Maine have been eliminated, environmental change still poses a threat. Overfishing of herring and

other puffin food sources can affect the health and survivorship of young puffins on the nest. In some places gill netting fisheries run the risk of catching puffins as they hunt for food underwater (Fayet et al., 2021). Also, although human presence on nesting islands is regulated, anthropogenic interference still poses an issue (Maine Department of Inland Fisheries and Wildlife, 2003).

METHODS

Study Area

Our study took place on the *Eden Star*, a tour boat operated by Acadian Boat Tours out of Bar Harbor Maine. The *Eden Star* is a double-decked vessel with both indoor and outdoor seating, including an open-air upper deck. The vessel carries a maximum of 65 passengers, with tickets costing \$65 per adult, \$62 per senior, and \$43 per child aged 14 or under. The tour is intermittently guided by a narrator who addresses the entire ship through a series of speakers. The narrator educates the passengers on topics including seabirds, other wildlife, local history and more. The boat tour lasts three and a half hours and travels to the waters off Petit Manan Island, located about three miles off the coast of Steuben, Maine (Figure 1). The Island was first inhabited by humans in 1817 when a lighthouse, keeper's quarters, and animal barn were built. Historically, Atlantic puffins were not found on the island, which was instead home to large colonies of nesting Arctic and common terns. The presence of lighthouse keepers on the island was actually beneficial to the terns as the keepers kept gulls, natural predators of tern eggs and chicks, away from the island. However, after the lighthouse was automated in 1972, gulls began to return to Petit Manan and the terns were pushed out. In 1984 a restoration project was begun by the U.S. Fish and Wildlife service to remove the gulls once again. Terns moved back to the island almost immediately. Just two years later in 1986, a pair of Atlantic puffins was recorded breeding on Petit Manan. It was thought that the elimination of the gulls, which also are predators of puffin eggs and young, the isolation of the island after the lighthouse keepers left, and the puffin restoration project conducted by the National Audubon Society on other Maine Islands led to puffins showing up on Petit Manan. Prior to 1986 no puffin had ever been recorded on the Island. However, because of

their low population, nesting on the island was encouraged by creating artificial burrows to increase nesting habitat (Anderson and Delvin et al. 2021). As of 2005, 51 nesting pairs of Atlantic Puffin were reported on Petit Manan Island. The Island also has been acquired by the Maine Coastal Islands National Wildlife Refuge making it permanent protected land (U.S Fish and Wildlife service 2005). Today, the former lightkeepers quarters are used as a research station operated each summer by scientists and students from several organizations. Studies are conducted on many of the nesting bird species including a banding program for the Atlantic puffins. Visitors to the island itself are strictly limited to researchers and U.S. Coast Guard personnel maintaining the lighthouse. However, several tour boats visit the waters near the island, allowing passengers to observe the birds perched on the rocky cliff and flying to and from their nesting site.

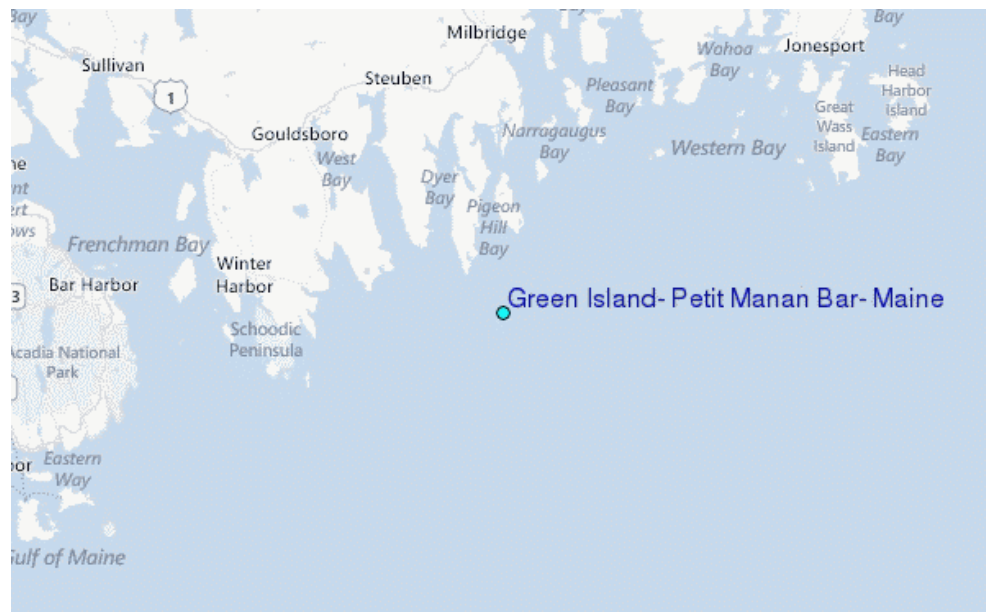


Figure 1. Map showing the location of Petit Manan Island. Note: Green Island and Petit Manan are located next to each other and are connected by a rock bar at low tide. The names of the two islands are sometimes used interchangeably.

Data Collection and Analysis

We distributed the electronic surveys to passengers on board the tour boat operated by Acadian Boat Tours out of Bar Harbor, Maine, which was advertised as a “Puffins, Lighthouses, and Seabirds Cruise.” The boat’s naturalist/narrator announced an invitation to take the survey at the beginning of each tour and provided slips of paper with a QR code link to the survey in Qualtrics. The QR code also was available on a flyer on the vessel’s gally counter. Passengers used their personal electronic devices to scan the code and take the survey. Any adult passenger on board was eligible to participate. We offered the survey on seven boat trips taken between August 10 and August 15, 2023. Our survey was available throughout the entire tour, both before and after the Atlantic puffins were viewed, and for 24 hours after the tour was complete.

The survey asked passengers to rate the importance of four different possible motivational factors on a five-point Likert scale, and then report what factor they considered to be the most important motivator. Participants also were asked general questions regarding their decision to come on the tour; how they heard about the tour; how much they previously knew about puffins; and participation in a previous tour. The survey also collected social and demographic data from participants (i.e., education level, group size/composition, state/country of origin, cultural and economic background, age, and gender). Participants were given the opportunity to provide additional feedback and comments at the end of the survey. The survey was only available in English. A total of 41 participants on the cruise completed surveys.

RESULTS

Passenger Profiles

Most survey participants (98%) identified as white Caucasian, with the remaining participants choosing not to disclose their race. Most participants, 61%, identified as female, while 34% identified as male, and the remaining 5% identified as non-binary or third gender.

The age of survey participants covered a wide range from 18 years of age to 74 years of age. About 29.3% of participants were between 25-34 years old. None of the survey participants identified as being 75 years or older. Eighty-nine and a half percent of participants reported that their household income was \$50,000 or more, with 42.1% reporting that their household income was between \$100,000 and \$199,000. The majority of participants also reported that they had completed either a bachelor's or graduate degree, with 51.2% percent completing a bachelors, and 43.9% completing a graduate degree. The remaining 4.9% reported completing at least some college experience. None of the participants reported just having attended or completed high school. Most participants were residents of the United States (95%) the remaining participants were residents of Canada (5%). Of the participants residing in the U.S. 7.8% were from Maine and 92.2% were from out of state. By region, 15.8% were from New England and the remaining 84.2% were from other parts of the U.S. Most survey participants were taking the cruise with others. In fact, 56% of participants had three or more other individuals in their party, with only 10% of the participants being by themselves. The majority (68%) did not have children in their party.

Most survey participants indicated that they had never been on a puffin tour before (82.5%) and did not consider themselves to be a birder (73.2%). Most

participants also reported being not knowledgeable at all (46.3%) or slightly knowledgeable (36.6%) about puffins before taking the boat tour.

Half of the participants reported that they learned about the boat tour through an online search for puffin cruises, 26.5% from an online search for general boat tours, 17.6% from a friend or family, and only 5.9% from advertising around Bar Harbor.

Motivational Factors

Nearly half (48.8%) of all participants indicated that their most important motivator for coming on the boat tour was to see puffins. As one participant commented in the survey, “The sole purpose of our trip to Maine was to see puffins today.” Twenty-two percent indicated that being on a boat in the ocean was most important, and 19.5% indicated seeing the landscape and scenery of the area was most important. Seeing lighthouses and seeing other seabirds besides puffins was the least important motivator with 7.3% of participants indicating lighthouses, and 2.5% of participants indicating seeing other seabirds as being most important (Fig. 2). While each participant was asked to choose one trip motivation to rank as their most important reason for coming on the boat tour, more than one participant reported in the comments field of the survey that they had multiple reasons for coming on the tour, and that the variety of viewing opportunities (wildlife, landscape, etc..) was important to them.

More than half of survey participants (61%) indicated that they considered seeing puffins to be very or extremely important to their decision to come on the boat tour. Only 14.6 % indicated that seeing puffins was slightly important, and no participants indicated that seeing puffins was not important at all (Table 1). Sixty-seven and a half percent of participants reported that seeing the landscape and scenery

of the area was very or extremely important to their decision to come on the tour. Only 7.5% indicated that seeing the landscape and scenery was slightly important, and no participants indicated that it was not important at all (Table. 1). Just 35% of participants reported seeing lighthouses as being very or extremely important to their decision to come on the cruise. More than half of participants (60%) indicated that seeing lighthouses was slightly or moderately important, and the remaining 5% indicated that seeing lighthouses was not important at all (Table 1). Seeing other seabirds besides puffins was the lowest ranked trip motivator with 17.5% of participants reporting seeing other seabirds as very or extremely important. Most participants (80%) indicated that seeing other seabirds was slightly or moderately important (Table 1).

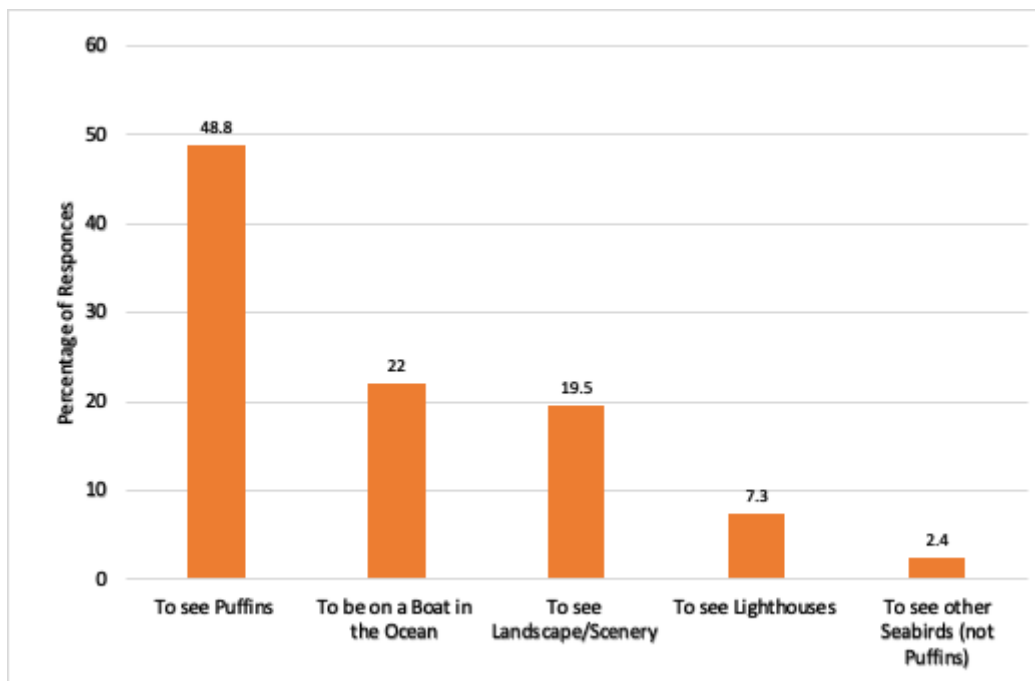


Figure 2. Participant motivations for taking the tour, n=41.

Trip Motivation Questions	Not at all Important	Slightly Important	Moderately Important	Very or Extremely Important	Overall Mean
How Important was Seeing Puffins to your Decision to Come on this Cruise? (n=41)	0%	14.6%	24.4%	61%	3.83
How Important is Seeing the Landscape and Scenery of the Area on this Cruise? (n=40)	0%	7.5%	25%	67.5%	3.83
How Important is Seeing Lighthouses on this Cruise? (n=40)	5%	25%	35%	35%	3.13
How important is Seeing Other Seabirds (Besides Puffins) on this Cruise? (n=40)	2.5%	30%	50%	17.5%	2.85

Table 1. Ranking of four potential trip motivators from “not at all important” (1) to “very important” (5). The rank of “very important (4) and “extremely important” (5), are combined.

DISCUSSION

Our study first examined the characteristics of the passengers on board the Acadian Boat Tour's Puffins, Lighthouses, and Seabirds Cruise. Most participants were well educated, relatively affluent, Caucasian, and residents of the United States (domestic tourists). The majority were also female and were taking the tour as part of a group. Many of these findings were similar to those found in other studies. Both Miller et al. (2020) and Dybsand et al. (2023) found that visitors to Alaska for polar bear viewing, and Hornøya Island, Norway for birdwatching, respectively, were well educated with most having a university education. Miller et al. (2020) also found that most of the visitors to Alaska for polar bear viewing were domestic tourists from the United States. However, Dybsand et al. (2023) and Beh and Bruyere (2007) found that most visitors to Hornøya Island and Kenyan wildlife reserves were foreign tourists from other countries. Our study also found that most tour boat participants were female while Dybsand et al. (2023) found that the majority of visitors to Hornøya Island were male. The findings in this study regarding group size were in line with Miller et al. (2020), who also found most visitors to be participating in the experience as part of a group rather than individually.

Our study also found that the age group with the most participants was 25 to 35 years old. This finding is in line with the Spiritualists group examined by Beh and Bruyere (2007) in Kenya, which had an average age of 35 years. However, both the Learner and Escapist groups examined by Beh and Bruyere (2007), as well as the visitors examined by Miller et al. (2020) and Dybsand et al. (2023) had higher average ages.

Our study also found that most participants had never been on a puffin tour before. Our finding is in line with Miller et al. (2020) who found that most visitors to

Alaska for polar bear viewing had never seen polar bears before. Both studies had similar viewing constraints with the species of interest only being found in one state in the U.S. Therefore, it is unsurprising that so few study participants had seen either Atlantic puffins or polar bears respectively.

The second part of our study examined potential motivations for passenger participation in the boat tour to Petit Manan Island. We found that the largest number of participants considered seeing puffins as the most important motivator in their decision to participate in the boat cruise. This is in line with Miller et al. (2020) who found that the most significant trip motivator for visitors on polar bear viewing excursions in Alaska was to see polar bears. Our study also found that, when asked about individual trip motivations, most participants indicated that they considered seeing puffins as very or extremely important to their decision to come on the cruise. This finding is in line with Dybsand et al. (2023) who found “experiencing birds” to be a significant trip motivator among visitors to Hornøya Island.

Our study unexpectedly found that most participants also considered seeing the landscape and scenery of the area as very or extremely important to their decision to participate in the boat cruise. This was a surprising result as the Puffins, Lighthouses, and Seabirds boat tour is not strictly advertised as a sightseeing or scenery cruise, and a different sightseeing-specific cruise is also offered by Acadian Boat Tours. Another unexpected result of our study was that most participants considered “seeing other seabirds (besides puffins)” as being only slightly or moderately important to their decision to come on the cruise. This was surprising as the tour is advertised, in part, as a seabird cruise. This finding is not in line with Dybsand et al. (2023) who found “experiencing birds,” and Beh and Buryere (2007)

who found “experiencing nature and wildlife” to be significant trip motivators among the participants in their respective studies.

Examining the characteristics of the passengers on the boat tour may explain why they decided to participate in the tour. The fact that 50% of participants heard about the tour from an online search for puffin cruises indicates that many passengers were specifically interested in the puffins. Such interest might explain why most participants reported “seeing puffins” as the most important motivator for taking the boat tour. Most participants were not from Maine, which could be why many considered seeing the landscape and scenery of the area as important to their decision to come on the cruise. Seeing a different environment than they were used to would be considered a novelty experience. Most participants reported that they did not consider themselves knowledgeable about puffins prior to the tour, and that they had never been on a puffin tour before. Both characteristics could explain why the percentage of participants that considered puffins to be very or extremely important to their decision to come on the cruise was not higher than the percentage that considered seeing the landscape and scenery to be very or extremely important. It is possible that some participants were unfamiliar enough with puffins that they did not consider them very or extremely important. Most participants also did not consider themselves to be birders, which could explain why the majority of them considered seeing other seabirds besides puffins to be only slightly or moderately important to their decision to come on the cruise. The lack of birders on the tour may be a result of our study taking place at the end of the puffin nesting season. Experienced birders would know that the end of the nesting season is not the best time to observe the species, as they have already begun to leave the nesting site and migrate to their wintering habitat.

Further research should provide more information regarding the characteristics of passengers and their motivations for participating in the boat tour. A survey conducted over the entire puffin nesting season from May to August would provide a more complete sample of passengers on board the tour boat. More information related to passengers past experiences on the ocean, including boat tours in other places, and the number of experiences could be collected to better understand the characteristics and background of the survey participants. Additional possible motivational factors including seeing other wildlife (seals, harbor porpoise, etc.) could also be examined. Atlantic puffins are charismatic and visually attractive animals. Therefore, it is possible that passengers who took the survey after seeing the puffins at Petit Manan Island were more likely to choose puffins as an important trip motivator, regardless of their original reasons for choosing the boat tour. Adding a question to the survey asking passengers if they are completing the survey before or after visiting Petit Manan, would provide more information regarding this possibility. Offering the survey in paper form as well as electronically would also ensure that the survey is accessible to everyone regardless of whether or not they have a cellular device and they are comfortable using it.

The characteristics of visitors on tour boats and their motivations for taking tours have implications for both the boat companies and the conservation of Atlantic puffin in Maine. The importance of puffins as a trip motivator among tour boat passengers shows how the seabird could be a valuable marketing tool for the tour boat companies. Our study also found that most passengers learned about the tour from an online search for either a puffin cruise or a general boat tour, and only 5.9% learned about the tour from advertising around Bar Harbor. Tour boat companies could increase their use of puffins in tour marketing and have a user friendly and well-

maintained company website, as that is how most passengers discover the tour.

Increasing puffin related advertising in Bar Harbor would likely lead to more visitor interest in the tour as well. Such advertising could take the form of puffin related signage at the tour boat dock and ticket booth, as well as fliers in businesses around Bar Harbor.

Our study also found that, despite their interest in seeing Atlantic puffins, most passengers did not consider themselves to be knowledgeable about the birds before taking the boat tour. Public awareness of Atlantic puffins and their threatened status in Maine is an important tool for conservationist to use to advocate for the protection of the species. Increasing visitor participation in puffin boat tours would help create a more informed public regarding puffins, the challenges they face, and protection efforts. Our study also found that most passengers on the tour boat were from out of state, perhaps a reason for why they did not know much about a species only found in Maine. Advertising the story of the Atlantic Puffin outside of Maine would increase awareness for both the species and puffin related boat tours.

CONCLUSIONS

Overall, this study provides a better understanding of the characteristics and motivations of passengers on board a puffin boat tour in Maine. We found that Atlantic puffins were the most important trip motivator among passengers, and that seeing the landscape and scenery of the area was also an important motivator. Our findings have implications for tour companies and their use of puffins for marketing, as well as for conservationists and their efforts to protect the threatened species. Finally, our study contributes to the literature relating to Atlantic puffins and helps to fill the gap regarding their presence in Maine.

REFERENCES

- Anderson, J. G. T., & Devlin, C. M. (1999). Restoration of a multi-species seabird colony. *Biological Conservation*, *90*(3), 175–181. [https://doi.org/10.1016/S0006-3207\(99\)00018-X](https://doi.org/10.1016/S0006-3207(99)00018-X)
- Balmford, A., Beresford, J., Green, J., Naidoo, R., Walpole, M., & Manica, A. (2009). A global perspective on trends in nature-based tourism. *PLoS Biology*, *7*(6), e1000144. <https://doi.org/10.1371/journal.pbio.1000144>
- Beh, A., & Bruyere, B. L. (2007). Segmentation by visitor motivation in three Kenyan national reserves. *Tourism Management*, *28*(6), 1464–1471. <https://doi.org/10.1016/j.tourman.2007.01.010>
- Carvache-Franco, M., Carvache-Franco, W., Carvache-Franco, O., & Borja-Morán, J. (2022). Motivations as a predictor of satisfaction and loyalty in ecotourism. *Journal of Outdoor Recreation and Tourism*, *37*, 100478. <https://doi.org/10.1016/j.jort.2021.100478>
- Das, M., & Chatterjee, B. (2015). Ecotourism: A panacea or a predicament? *Tourism Management Perspectives*, *14*, 3–16. <https://doi.org/10.1016/j.tmp.2015.01.002>
- Dybsand, H. N. H., Stensland, S., & Aas, Ø. (2023). The influence of motivation on birdwatcher satisfaction and destination loyalty: The case of Hornøya, Norway. *Journal of Ecotourism*, *22*(1), 25–42. <https://doi.org/10.1080/14724049.2021.2016776>
- Falk, K., Jensen, J.-K., & Kampp, K. (1992). Winter diet of Atlantic puffins (*Fratercula arctica*) in the northeast Atlantic. *Colonial Waterbirds*, *15*(2), 230. <https://doi.org/10.2307/1521457>
- Fayet, A. L., Clucas, G. V., Anker-Nilssen, T., Syposz, M., & Hansen, E. S. (2021). Local prey shortages drive foraging costs and breeding success in a declining seabird, the Atlantic puffin. *Journal of Animal Ecology*, *90*(5), 1152–1164. <https://doi.org/10.1111/1365-2656.13442>
- Lefort, K. J., Major, H. L., Bond, A. L., Diamond, A. W., Jones, I. L., Montevecchi, W. A., Provencher, J. F., & Robertson, G. J. (2021). Long-term stability in the volume of Atlantic Puffin (*Fratercula arctica*) eggs in the western North Atlantic. *Canadian Journal of Zoology*, *99*(8), 653–657. <https://doi.org/10.1139/cjz-2020-0254>
- Luo, Y., & Deng, J. (2008). The new environmental paradigm and nature-based tourism motivation. *Journal of Travel Research*, *46*(4), 392–402. <https://doi.org/10.1177/0047287507308331>
- Marasinghe, S., Perera, P., Simpson, G. D., & Newsome, D. (2021). Nature-based tourism development in coastal wetlands of Sri Lanka: An importance–performance analysis at maduganga mangrove estuary. *Journal of Outdoor Recreation and Tourism*, *33*, 100345. <https://doi.org/10.1016/j.jort.2020.100345>

Maine Department of Inland Fisheries and Wildlife. (2003). *Atlantic Puffin (Fratercula arctica)*.

https://www.maine.gov/ifw/docs/endangered/atlanticpuffin_56_57.pdf

Miller, L. B., Hallo, J. C., Dvorak, R. G., Fefer, J. P., Peterson, B. A., & Brownlee, M. T. J. (2020). On the edge of the world: Examining pro-environmental outcomes of last chance tourism in Kaktovik, Alaska. *Journal of Sustainable Tourism*, 28(11), 1703–1722. <https://doi.org/10.1080/09669582.2020.1720696>

U.S. Fish and Wildlife Service. (2005). *Seabird Restoration Efforts at Petit Manan Island: 1984 — 2005*.

https://www.fws.gov/sites/default/files/documents/Program_highlights_2005_Maine_Coastal_Islands_NWR.pdf

APENDICES

Appendix A: IRB Letter of Approval

APPLICATION COVER PAGE
KEEP THIS PAGE AS ONE PAGE - DO NOT CHANGE MARGINS/FONTS!!!!!!!!!!
PLEASE SUBMIT THIS PAGE AS WORD DOCUMENT

APPLICATION FOR APPROVAL OF RESEARCH WITH HUMAN SUBJECTS
Protection of Human Subjects Review Board, 311 Alumni Hall

(Type inside gray areas)
PRINCIPAL INVESTIGATOR: Skye Howard EMAIL: skye.howard1@maine.edu
CO-INVESTIGATOR: EMAIL:
CO-INVESTIGATOR: EMAIL:
FACULTY SPONSOR: Dr. Teresa Johnson EMAIL:
Teresa.johnson@maine.edu
(Required if PI is a student):
TITLE OF PROJECT: Passenger Motivation for taking boat tours in Bar Harbor Maine
START DATE: 08-10-2023 PI DEPARTMENT: School of Marine Science

STATUS OF PI: FACULTY/STAFF/GRADUATE/UNDERGRADUATE U (F,S,G,U)

If PI is a student, is this research to be performed:

- for an honors thesis/senior thesis/capstone?
for a doctoral dissertation?
other (specify)
for a master's thesis?
for a course project?

Submitting the application indicates the principal investigator's agreement to abide by the responsibilities outlined in Section I.E. of the Policies and Procedures for the Protection of Human Subjects

Faculty Sponsors are responsible for oversight of research conducted by their students. The Faculty Sponsor ensures that he/she has read the application and that the conduct of such research will be in accordance with the University of Maine's Policies and Procedures for the Protection of Human Subjects of Research. REMINDER: if the principal investigator is an undergraduate student, the Faculty Sponsor MUST submit the application to the IRB.

Email this cover page and complete application to tumric@maine.edu

FOR IRB USE ONLY Application # 2023-07-07 Review (F/E): E Expedited Category:
ACTION TAKEN:

- Judged Exempt; category 2 Modifications required? Y Accepted (date) 08-10-2023
Approved as submitted. Date of next review: by Degree of Risk:
Approved pending modifications. Date of next review: by Degree of Risk:
Modifications accepted (date):
Not approved (see attached statement)
Judged not research with human subjects

FINAL APPROVAL TO BEGIN 08-10-2023
Date

10/2018

AUTHORS BIOGRAPHY

Skye Howard grew up in the small coastal town of Gouldsboro Maine, attending Peninsula Middle School and Sumner Memorial High School. She graduated salutatorian of her high school class in the spring of 2020. Skye started her undergraduate degree in Marine Science at the University of Maine in the fall of 2020, going on to concentrate in Marine Biology. While at the University, she has been a member of the Maine Outing Club, studied abroad for a semester in Australia, and completed the Semester by the Sea program at the Darling Marine Center.

Upon graduation in the spring of 2024, Skye plans to take a gap year to continue to work as a naturalist and deckhand with Acadia Boat Tours in pursuit of obtaining her passenger vessel captain's license. After her gap year, she intends to attend graduate school focusing on Marine Policy.