Provoking Responses and Changing Behaviors: The Impact of an Interpretive Naturalist-Lead Boat-Based Trip on Whale Watchers

KC Bloom, Salem State University
Cynde McInnis, Cape Ann Whale Watch
Whale Watching:
- A increasingly popular activity
- Practiced in more than 87 countries
- Brings in > $200 million a year in the US alone
- 36 tour companies in New England
- 1 million people participate annually in NE

Gloucester, MA
- Whale Watching/Tourism as a replacement for fishing
- 3 companies
Interpretation:
The main tool of engagement

* Interpretation = allows for visitors to connect with the resource through:
  * providing information,
  * conveying the significance of the resource and the rationale for conserving the resource,
  * enhancing the enjoyment of the experience (White et al., 2005).

* Interpretation on a whale watch boat = non-static experience

* Daily variables = weather, whale behavior, species identification, and the length of the trip.
A Whale Watch as an Interpretive Experience

- 5 main times for education on the boat (IFAW 1997)
  - Pre-journey
  - The journey to the whales
  - The encounter
  - Return trip
  - Post-trip and follow-up.

General Educational/Interpretive themes include: sense of place, animal behavior, environmental issues, human-wildlife conflicts
Primary Purpose: To determine the impact of an interpretive-naturalist lead whale watch experience on an individual.

- How does such an experience impact an individual on an emotional level? Intellectually?

- How does it impact future behavior?
Hypotheses

* H1: As experience increases, knowledge about whales increases

* H2: As experience increases, emotional attachment increases

* H3: As experience increases, personal behaviors become more positive
Study Location

Get oriented with my whale watch map so you can see where you'll go and how to get to the tour boats.
Study conducted between June – October 2014

Random passengers on 7 pre-selected trips asked to participate (pre- and post-trip)

Survey consisted of 12 multiple-choice questions plus 6 short answer open-ended questions

282 surveys were completed (146 pre, 136 post)

Follow-up study currently being conducted
* 65% female, 35% male
* 26 different states plus 9 Countries
* Age range 18-75; Average between 30-60 years old
* 63% did not bring children with them
* 62% had at least a college degree

Previous contact with whales:
Survey

* Qualitative Questions
  * Pre-Trip Expectations
  * Post-Trip Emotional/Intellectual Response

* Quantitative Questions
  * 12 Survey Questions inspired by educational program on trip
  * Behavior Change – Pre (Current); Post (Intention to Change); Follow-Up (Change)
Excited like the pure kind when you are a kid.

Humble, small, excited, sad because mankind is responsible for the reduction in the whale population
Results
Educators on Board?

Nice
Cool
Pleasant
Educational
Answered questions
Makes it

Great
Useful
Positive
Helpful

Learned
Meaningful
Didn’t see them
Better
Interested
Results

Intellectual Responses

- New Environmental Knowledge (4 Areas)
  - Pollution
    - Decomposition of cigarettes, trash
    - Plastic bags & wildlife
  - Whale Behavior
    - Diving
    - Feeding patterns
  - Fishing/Entanglements
    - Impact of nets/commercial fishing methods
    - Entanglement scars
  - Sea Floor Geography/Ocean Functions
    - Importance of Whale Poop as Fertilizer
    - Underwater plateaus
Results

Intellectual Responses

- Importance of Whales to the Environment (1 main area)
- Balance the Ecosystem/Food Chain Services
  - Role of Whale Poop
  - Provide Balance in the FC
  - Keeps Other Species in Check
  - Indicator Species
Knowledge: No significant difference between those who had been on a whale watch & those who had not

However, significant overall

Independent T-Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1 Pre Mean</th>
<th>Group 2 Post Mean</th>
<th>T-Test</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>7.62</td>
<td>9.07</td>
<td>4.59</td>
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</table>
Why do the whales come to the Gulf of Maine?

Results
Intellectual Responses

Whales Feed in the Gulf of Maine

Number of Responses

- Pre
- Post

Correct
Wrong
Feed: Significant change in responses based upon information provided on trip

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\chi^2$</th>
<th>p Value</th>
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</thead>
<tbody>
<tr>
<td>Feed</td>
<td>52.51</td>
<td>p&lt;.01</td>
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</table>
Baleen whales are typically... Solitary or in pods
Results

Intellectual Responses

* Behavior: Significant change in understanding of nature of baleen whales

<table>
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<tr>
<th>Variable</th>
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<tbody>
<tr>
<td>Solitary</td>
<td>54.24</td>
<td>p&lt;.01</td>
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Results
Behavior Change

* Overview: No significant difference between those who had been on a WW and those who had not in terms of behavior
* Intent to change environmental behavior was significant
* Independent T-Test Results

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<th>Group 2 Post Mean</th>
<th>T-Test</th>
<th>p Value</th>
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<tbody>
<tr>
<td>Environmental Behaviors</td>
<td>4.16</td>
<td>5.55</td>
<td>4.84</td>
<td>p&lt;.01</td>
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Results
Behavior Change

* Minimize Packaging: Significant change

![Bar chart showing the change in behavior regarding minimizing packaging between Pre and Post. The chart indicates a significant increase in the number of responses intending to minimize packaging after the intervention.](chart-image-url)
**Results**

**Behavior Change**

* Significant Change in Desire/Intent to Minimize Packaging

<table>
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<tr>
<th>Variable</th>
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<td>Minimize</td>
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</table>
Results
Behavior Change

* Use of Chemicals: Significant Change

![Graph showing behavior change in use of chemicals before and after an intervention. The graph compares the number of responses indicating current/intent to monitor use of chemicals, with a significant increase post-intervention.](image)
Results
Behavior Change

* Significant Change in Desire/Intent to Minimize Use of Chemicals

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\chi^2$</th>
<th>p Value</th>
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<tbody>
<tr>
<td>Chemicals</td>
<td>7.88</td>
<td>&lt;.01</td>
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</table>
Conclusions

* Overall:
  * Tie between emotions, intellect, and behavior are fuzzy (H1: Voided; H2 & H3 Show Promise)

* The impact of the interpretation as well as the whale watch experience is positive while on the boat, however, the long-term impact of those experiences are questionable
Conclusions

* Knowledge Retention: No significant difference between those who had been on a whale watch before & those who had not. However, knowledge was gained overall.

* Emotional Responses: Seeing whales in their natural environment produces a positive response that may possibly influence behavior change
Behavior Change: The intention to change behavior to more environmentally friendly ones was significant post-trip.

Follow-up study will allow us to better understand impact of interpretive-education on whale watchers on a more long-term basis.
In the Future

- We need to add a values component to the study to increase the understanding of pre-trip environmental attitudes.

- Also would like to more significantly study the connections between emotional attachment and behavior change.

- Cross comparisons of impact of experience across the three Gloucester WW companies and/or throughout New England.
Thank you: Cape Ann Whale Watch & SSU