

0029320

CH3

10-19-10 Comments on
CAHA # 2871
10-18-10 version



Sandra
Hamilton/DENVER/NPS
10/19/2010 08:34 AM

To lfox@louisberger.com
cc Doug Wetmore/DENVER/NPS@NPS
bcc
Subject rest of comment on 101810 4:37 p.m. version of CH 3
socio-econ edits

Hi Lori,

Here are the rest of my comments on yesterday afternoon's version. We're getting close!!

Page and line numbers correspond to your revision of 101810 afternoon.

p. 198 line 13 Table 35- 3, delete the extra space in 35-3

p. 198 Table 35-3. see comment dw15. This still has not been fixed per Doug's comment dw15 on the previous draft?

p. 205 line 12, I prefer 10 spelled out as "ten" as provided in my comment seh 16, because it looks better with "two" and "five" in the same sentence. But whatever Juanita decides is best is OK with me.

p. 205, line 37 change "our to "the" - sorry I didn't catch this one before

p. 206 Table 37-2 and Table 37-3 -- don't these need the same column heading arrangement as the ramp count tables where lower bound and upper bound are in boxes under "95% confidence interval?"

p. 206 line 13, I think we should say 59% rather than fifty-nine percent" because 26% and 15% in the same sentence use the numerals rather than spelling out the numbers

p. 206 line 13, change 2010 to 2009 [reason = the counts that we're talking about in this paragraph (see first sentence of paragraph) were done April to November 2009. The table 37-2 counts go into 2010, but the counts couldn't be analyzed by geographic location for the low season, which included Jan - Mar 2010, because there weren't enough, as described earlier]

p. 206 lines 16 - 22. The first sentence is confusing because starts with % for Hatteras Island and ends talking about "this" ramp. It's also inconsistent because it says Memorial Day weekend and fourth of July weekend, but the data as described on p. 204 say Memorial Day and fourth of July (not the weekend). Replace as follows: These results for Hatteras Island are similar to the 2008 counts in figure 25 and table 27-1, which showed approximately 55% of vehicles on Hatteras Island on Memorial Day and 63% of vehicles on Hatteras Island on July 4th.

replace the second sentence with: The 2008 vehicle counts for Bodie and Ocracoke islands on Memorial Day and on July 4th differed slightly from the 2009 counts. The 2008 vehicle counts for Bodie Island (ramp 4 to Bodie Island spit) showed approximately 31% on Memorial Day and 25% on the fourth of July; the 2009 counts showed 15%. The 2008 vehicle counts for Ocracoke Island showed approximately 14% on Memorial Day and 12% on the fourth of July; the 2009 counts showed 26%.

p. 214 last bullet line 40-41 delete "under" so it reads alternative management scenario which would

p. 214 line 5 delete the space between ramps and the comma at the end of the line.

Sandy

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0029321

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Sandra
Hamilton/DENVER/NPS
10/19/2010 06:27 AM

To lfox@louisberger.com
cc Doug Wetmore/DENVER/NPS@NPS
bcc
Subject another comment on last version of CH 3 socio-econ edits

p. 198 lines 8-11

This sentence mixes activity engaged in and primary activity and is confusing. It'd be better to separate the discussions (per comment seh4 about separating the tables). Here it is with the location of tables and topics re-organized below so that it discussed activities engaged in first, and primary purpose second.

Might the difference in #'s between the two surveys for people visiting historic sites be explained by where the surveys were conducted? i.e. was the 2003 survey conducted only on the beach? Or at other locations, like the VC's or at the historic sites as well? If so, we should add a sentence noting that the difference in survey locations may explain some of the difference for this activity.

Based on these surveys the most popular activities at the Seashore were "swimming, sunbathing, or enjoying the beach" and "bird watching/wildlife viewing" (see table 35-1). The activities "driving on the beach during the day" and "beach fishing" were done by an estimated 40.7% and 37.5% of visitors in the sampling population, respectively. In the 2010 visitor intercept survey, some activities visitors engaged in the most were similar to those in the 2003 survey, with both showing a high number of respondents that participated in swimming/sunbathing (78% in 2003 and 99% in 2010). The 99% of respondents who indicated they engaged in swimming, sunbathing or enjoying the beach may have also included those who were walking and/or enjoying solitude (which was not a category in the 2010 survey). Both surveys also showed similar numbers of respondents engaging in beach driving, with 36% indicating that they engaged in this activity in 2003 and 40% in 2010. However, results of the surveys differed for some activities engaged in, such as visiting historic sites which had a high response in 2003 (70%) but a much lower response in 2010 (18%).

Table 35-1. Activities done so far this trip - Mean estimate and 95% confidence interval

Activity	95% Confidence Interval	
	Mean	Lower Bound Upper Bound
Pier fishing	5.5%	0.4% 10.6%
Beach fishing	37.5%	25.6% 49.4%
Charter (offshore) fishing	1.8%	0.0% 4.4%
Swimming, sunbathing, or enjoying the beach	99.4%	98.0% 100.0%
Surfing or kite-surfing	17.2%	4.2% 30.3%
Birdwatching/wildlife-viewing	70.7%	63.2% 78.2%
Take a ferry	38.5%	10.7% 66.2%
Visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse	22.6%	9.0% 36.2%
Visit historic sites in Cape Hatteras National Seashore	18.4%	9.3% 27.4%
Canoeing, kayaking, or sailing	6.2%	1.8% 10.7%

Driving on the beach during the day	40.7%27.2%54.2%
Driving on the beach at night after 10pm	4.5%0.7%8.3%
Other	12.4%2.0%22.8%

Source: RTI 2010a

For the 2010 survey, Table 35-2 lists weighted percent of the sample that selected each activity as their primary activity for the trip. Swimming, sunbathing or enjoying the beach was the primary activity for 63.2% of visitors in the sample population. Beach fishing was the primary purpose of the trip for 22.8% of visitors, and driving on the beach was the primary purpose of the trip for 0.7% of visitors (RTI 2010a).

Table 35- 2. Primary Activity for the Trip - Mean estimate and 95% confidence interval.


Activity	95% Confidence Interval	
	Mean	Lower Bound Upper Bound
Beach fishing	22.8%	7.3%38.2%
Swimming, sunbathing, or enjoying the beach	63.2%	48.8%77.6%
Surfing or kite-surfing	6.9%	0.0%16.5%
Visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse	0.5%	0.0%1.3%
Driving on the beach during the day	0.7%	0.0%1.9%
Other	6.0%	0.0%13.0%

Source: RTI 2010a

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Sandra
Hamilton/DENVER/NPS
10/19/2010 05:54 AM

To "Fox, Lori" <lfox@louisberger.com>
cc Doug_Wetmore@nps.gov
bcc
Subject RE: CAHA vis use/socio 

Hi Lori,

Please see comment seh 4 (Can we put Table 35-1 here after the sentences that pertain to it, instead of putting both tables at the end?) I don't see where you've addressed that comment in the revised copy attached to your email below. I made the comment because I find it confusing to start reading about activities done, then read about primary activity, then have a table about activities done. Please call so we can discuss. Thanks.

Sandy

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"Fox, Lori" <lfox@louisberger.com>



"Fox, Lori"
<lfox@louisberger.com>
10/18/2010 04:37 PM

To <Sandra_Hamilton@nps.gov>
cc <Doug_Wetmore@nps.gov>
Subject RE: CAHA vis use/socio

Hi Sandy,

Here is the revised document, in the format we discussed on our call today.
Things to note:

1. Once change I made was to make the tense all past tense for the visitor intercept survey, to be consistent with how we described the 2002 survey.
2. Where we discuss the visitor intercept survey, I did make a note about some text we might want to consider cutting.
3. The issue with the tables were the ones with the numbers in the 40s (not the 30s), those have been corrected.

Let me know if the attached meets your needs or if there are further changes to be made. If you have questions call my cell, as I will be working from home this evening.

Thanks,
Lori

Lori Fox
Deputy Director, Denver Operations/Senior Planner

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-----Original Message-----

From: Sandra_Hamilton@nps.gov [mailto:Sandra_Hamilton@nps.gov]
Sent: Monday, October 18, 2010 2:36 PM
To: Fox, Lori
Cc: Doug_Wetmore@nps.gov; Patrick_Walsh@nps.gov; Otto, Dana;
Tracie_Richardson@nps.gov
Subject: Fw: CAHA vis use/socio

Hi Lori,

See below re the last draft.

We need your help to step up the QC on these, please. I don't mean a whole elaborate process, but for example, where the needed change has been provided in a comment, please double check that it's actually been made correctly. Also, please double check that the sentences you've drafted and added make sense, and that the correct numbers are used when pulled from tables or previous text.. Not only is it slowing up our progress when we have to make the same edit more than once in the FEIS body, but it ends up taking your time to read them again from us and go back to the document to fix them. Thanks.

Talk to you in a bit.

Sandy

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----- Forwarded by Sandra Hamilton/DENVER/NPS on 10/18/2010 02:18 PM -----

Doug
Wetmore/DENVER/NP

0029326

S
10/18/2010 01:58
PM

Sandra Hamilton/DENVER/NPS@NPS

To
cc
Subject

CAHA vis use/socio

(See attached file: 101810 eqd comments on LB fixes to sections on 3 studies (extracted pages).doc) Doug Wetmore Environmental Protection Specialist
National Park Service - Environmental Quality Division P.O. Box 25287 Denver,
CO 80225-0287
Office: (303) 987-6955
Cell: (303) 968-5214
[attachment "chapter 3 VU and Socio changes.doc" deleted by Sandra Hamilton/DENVER/NPS]

0029327



"Mansfield, Carol A."
<carolm@rti.org>
10/19/2010 06:49 AM

To <Sandra_Hamilton@nps.gov>
cc <Doug_Wetmore@nps.gov>, <lfox@louisberger.com>,
"Mansfield, Carol A." <carolm@rti.org>
bcc
Subject RE: question about intercept survey - visit historic sites

Hi Sandy,
Good question. In the survey, we ask about specific activities. In the list we (did they) "Visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse?" and then the next question is " Visit historic sites in Cape Hatteras National Seashore?"

I assume they understood that "visit historic sites" was historic sites other than the lighthouses.

Does that sound reasonable?

Carol

-----Original Message-----

From: Sandra_Hamilton@nps.gov [mailto:Sandra_Hamilton@nps.gov]
Sent: Tuesday, October 19, 2010 8:01 AM
To: Mansfield, Carol A.
Cc: Doug_Wetmore@nps.gov; lfox@louisberger.com
Subject: questions about intercept survey - visit historic sites

Hi Carol,

The table showing percent of respondents for activities done so far this trip has 18.4% for "visit historic sites in Cape Hatteras National Seashore" and 22.6% for visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse." The lighthouses are historic sites, so how could 22% visit them but 18% visit historic sites? Is it because some of the people interviewed don't know they're historic sites or what? Thanks for the help understanding the results.

Sandy

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0029328



"Fox, Lori"
<lfox@louisberger.com>
10/18/2010 04:37 PM

To <Sandra_Hamilton@nps.gov>
cc <Doug_Wetmore@nps.gov>
bcc
Subject RE: CAHA vis use/socio

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Things to note:

1. Once change I made was to make the tense all past tense for the visitor intercept survey, to be consistent with how we described the 2002 survey.
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Thanks,
Lori

Lori Fox
Deputy Director, Denver Operations/Senior Planner

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-----Original Message-----

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Sent: Monday, October 18, 2010 2:36 PM
To: Fox, Lori
Cc: Doug_Wetmore@nps.gov; Patrick_Walsh@nps.gov; Otto, Dana;
Tracie_Richardson@nps.gov

Subject: Fw: CAHA vis use/socio

Hi Lori,

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Talk to you in a bit.

Sandy

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----- Forwarded by Sandra Hamilton/DENVER/NPS on 10/18/2010 02:18 PM -----

Doug
Wetmore/DENVER/NP
S

10/18/2010 01:58
PM

To
Sandra Hamilton/DENVER/NPS@NPS
cc
Subject
CAHA vis use/socio

(See attached file: 101810 eqd comments on LB fixes to sections on 3 studies (extracted pages).doc) Doug Wetmore Environmental Protection Specialist
National Park Service - Environmental Quality Division P.O. Box 25287 Denver, CO 80225-0287
Office: (303) 987-6955
Cell: (303) 968-5214



chapter 3VU and Socio changes.doc

When presented with a description of ORV management under a draft version of alternative F, 93.5% of visitors reported that they would likely still have taken their current trip to the Seashore. 3.3% of beach visitors reported they would have stayed home if alternative F had been in place before they made plans (Table 5).

Table 5. Predicted Impact of Alternative F

Question	Answer	Mean	Low	High
If the plan on this map had been in place *before* you made any plans or reservations for this trip and before you put down any money on deposits, how likely is it that you would still have taken this trip?	Very Likely/Somewhat Likely	93.5%	86.2%	100.0%
	Somewhat Unlikely/Very Unlikely	6.3%	0.0%	13.6%
	Don't Know	0.2%	0.0%	0.4%
What do you think you most likely would have done instead?	Go to Another Part of the Outer Banks	0.1%	0.0%	0.2%
	Go to a Different Beach in North Carolina	0.2%	0.0%	0.5%
	Go to a Different Beach outside North Carolina	0.5%	0.0%	1.1%
	Go to Somewhere Else, But Not an Ocean Beach	2.3%	0.0%	7.2%
	Stay Home	3.3%	0.0%	8.3%
	Don't Know	0.0%	0.0%	0.1%

1 CHAPTER 3: AFFECTED ENVIRONMENT

2 VISITOR USE AND EXPERIENCE

3 ...

4 RECREATIONAL OPPORTUNITIES AND USE AT CAPE HATTERAS NATIONAL SEASHORE

5 The Seashore provides a diverse range of recreational
6 opportunities including auto touring, biking, bird watching,
7 boating, camping, fishing, hiking, hunting, kayaking, taking
8 nature walks, horseback riding, stargazing, swimming,
9 wildlife viewing, surfing, kite boarding, and wind surfing.
10 Materials submitted to the negotiated rulemaking committee
11 by Cape Hatteras Business Allies mentioned the following
12 recreational activities sought by visitors: bird watching and
13 wildlife viewing, fishing, horseback riding, shelling, sea
14 glass collecting, swimming, water sports (kayaking, kite
15 boarding, paddle boarding, skim boarding, surfing, and
16 windsurfing). (Cape Hatteras Business Allies 2009; NPS
17 2009m).



Historic Photo of Recreating at the Seashore
Credit: NPS

18 Major developed facilities, such as visitor centers and campgrounds, as well as more informal visitor use
19 areas at the Seashore that provide for these recreational activities, are shown on the Seashore map in
20 chapter 1 of this document. Visitor centers are located on each island in association with Ocracoke, Cape
21 Hatteras, and Bodie Island lighthouses, and campgrounds include Ocracoke, Frisco, Cape Point, and
22 Oregon Inlet. Fishing piers are located near Frisco³ and at Avon and Rodanthe on Hatteras Island, and a
23 major marina is located at Oregon Inlet on Bodie Island. Bathhouses and/or designated swimming
24 beaches are available near Frisco on Cape Hatteras Island, Coquina Beach on Bodie Island, and on
25 Ocracoke Island north of the village. Information stations, day use areas, and informal recreation
26 opportunities, such as nature trails, are also found throughout the Seashore. Visitor surveys were
27 conducted in 2002 and 2010 regarding what facilities and activities visitors use while they are at the
28 Seashore.

29 According to the study conducted by the University of Idaho in 2002, the three most important reasons
30 mentioned by visitors for visiting the Seashore were the lighthouses, the beach/beachcombing, and
31 fishing. Historical significance and swimming followed closely (University of Idaho 2003). This study
32 also asked visitor groups to list the activities in which they participated during their visit to the Seashore.
33 In total, 254 visitor groups were surveyed. Respondents could choose more than one activity in which
34 they engaged in, therefore the percentages did not equal 100%. The results are displayed in figure 23,
35 with swimming/sunbathing being the most popular activity (approximately 200 or 78% of respondents),
36 followed by visiting historic sites (approximately 180 or 70% of respondents), walking (approximately
37 165 or 65% of respondents), and enjoying solitude (approximately 143 or 56% of respondents). The
38 study indicated 93 respondents (approximately 36%) had driven on the beach during their visit to the
39 Seashore (University of Idaho 2003). Other activities that respondents participated in included family
40 time/reunions, clamming/crabbing, shelling, shopping, and history study.

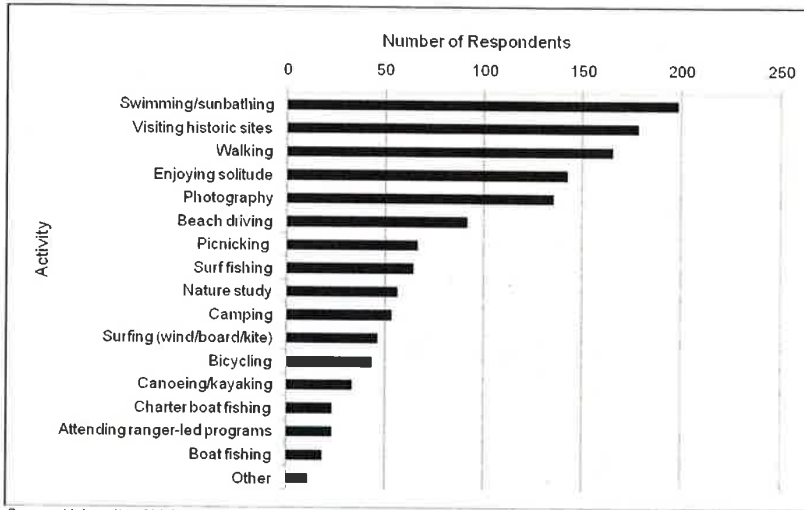
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³ The Frisco pier was closed for public safety reasons, due to deteriorating conditions, and then further damaged by Hurricane Earl in September 2010. The future of this pier is not known at this time.

Chapter 3: Affected Environment



Source: University of Idaho 2003

FIGURE 23. VISITOR ACTIVITIES SURVEY RESULTS

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In addition to the 2003 study from the University of Idaho, the NPS contracted with RTI International (RTI) to conduct an intercept survey of visitors using the oceanside beaches (RTI 2010a). The primary goal of the visitor intercept survey was to understand the current visitor use of the Seashore and how visitors' self-reported behavior would change under different management conditions.

The visitor intercept survey consisted of two separate sampling populations. The first sampling population was all visitors on open beaches in the Seashore from 6 a.m. to 10 p.m., between August 4th, 2009 and March 29th, 2010. [The Seashore beaches were divided into 168 segments of varying lengths based on the expected number of visitors at the beach segment. To ensure that there was at least one three-day interview trip taken during the low winter season, two seasonal strata were created out of the 34 weeks in the first sampling population. Five trips were taken during the first strata consisted of the 17 weeks between August 4th and November 30th, 2009. One trip was taken during the lowest visitation strata, which consisted of the 17 weeks from the beginning of December 2009 through the end of March 2010.]

The second sampling population consisted of visitors at 12 selected beach areas in the Seashore from 10 a.m. to 6 p.m., Friday through Monday between June 15th and July 26th 2010. The 12 selected beach areas were: Oregon Inlet Campground Beach; Bodie Island Spit; Rodanthe Pier Beach; Avon Pier Beach; Cape Hatteras Lighthouse Beach; Cape Point; South Beach; Frisco Pier Beach; Ramp 55 to Hatteras Inlet; North Ocracoke; Ocracoke Day Use Beach; and South Point Ocracoke.

Field staff conducting the survey took eight 3-day trips to the Seashore to interview beach visitors (six for the first sampling population and two for the second). Each selected day, field staff traveled to two randomly selected clusters of beaches and conducted interviews in two randomly selected beach segments per cluster. Two hours of interviewing was allotted for each beach segment. Groups of beach visitors were selected using systematic sampling based on the number of groups within the segment. In total, 96

Leave in but define strata

Comment [11]: Reading this again, it seems like this may be too much information and confusing to the reader who may not know what "strata" is. What are your thoughts about deleted this and just talking about the first sampling population then going right into the second sampling population?

Comment [dw2]: Past tense

Berger: Changed
Deleted: were

1 beach segments were visited for interviews and 245 interviews were completed. The data from the
 2 counting trips was weighted based on sampling design and the probability that a segment was selected for
 3 counting at a certain time or a certain day.

4 Based on these surveys the most popular activities at the Seashore were “swimming, sunbathing, or
 5 enjoying the beach” and “bird watching/wildlife viewing” (see table 35-1). The activities “driving on the
 6 beach during the day” and “beach fishing” were done by an estimated 40.7% and 37.5% of visitors in the
 7 sampling population, respectively. Table 35-2 lists weighted percent of the sample that selected each
 8 activity as their primary activity for the trip. Swimming, sunbathing or enjoying the beach was the
 9 primary activity for 63.2% of visitors in the sample population. Beach fishing was the primary purpose of
 10 the trip for 22.8% of visitors, and driving on the beach was the primary purpose of the trip for 0.7% of
 11 visitors (RTI 2010a).

12 **Table 35-1. Activities done so far this trip - Mean estimate and 95% confidence interval**

Activity	Mean	95% Confidence Interval	
		Lower Bound	Upper Bound
Pier fishing	5.5%	0.4%	10.6%
Beach fishing	37.5%	25.6%	49.4%
Charter (offshore) fishing	1.8%	0.0%	4.4%
Swimming, sunbathing, or enjoying the beach	99.4%	98.0%	100.0%
Surfing or kite-surfing	17.2%	4.2%	30.3%
Birdwatching/wildlife-viewing	70.7%	63.2%	78.2%
Take a ferry	38.5%	10.7%	66.2%
Visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse	22.6%	9.0%	36.2%
Visit historic sites in Cape Hatteras National Seashore	18.4%	9.3%	27.4%
Canoeing, kayaking, or sailing	6.2%	1.8%	10.7%
Driving on the beach during the day	40.7%	27.2%	54.2%
Driving on the beach at night after 10pm	4.5%	0.7%	8.3%
Other	12.4%	2.0%	22.8%

13 Source: RTI 2010a

14 **Table 35- 2. Primary Activity for the Trip - Mean estimate and 95% confidence interval.**

Activity	Mean	95% Confidence Interval	
		Lower Bound	Upper Bound
Beach fishing	22.8%	7.3%	38.2%
Swimming, sunbathing, or enjoying the beach	63.2%	48.8%	77.6%
Surfing or kite-surfing	6.9%	0.0%	16.5%
Visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse	0.5%	0.0%	1.3%

Deleted: are

Comment [seh3]: I think it'd be best to delete "both of which are potentially impacted by new ORV management" because the other activities, depending on the visitor, may be also. (i.e. for those who want to drive to all activities.)
 Berger: Deleted

Deleted: , both of which are potentially impacted by new ORV management, are

Comment [seh4]: Can we put Table 35-1 here after the sentences that pertain to it, instead of putting both tables at the end?

Comment [seh5]: Insert "Swimming, sunbathing or enjoying the beach" was the primary activity for 63.2% of visitors in the sampling population;

Comment [seh6]: Insert "surfing or kite-surfing was the primary activity for 6.9% of visitors in the sampling population."
 Berger: Inserted

Comment [seh7]: Delete and insert "and"
 Berger: Deleted "whereas" and added "and"

Comment [seh8]: Delete
 Berger: Deleted

Deleted: whereas

Deleted: only

Comment [19]: I checked chapter 3 and the table before this one is table 35 under soundscapes. Also the next table is 36.
 Turns out the tables brought up from the socio section that were in the 40s were numbered incorrectly and are fixed below.

Comment [seh10]: tables in the 40's are before this one, therefore this number is probably still wrong

Comment [seh11]: same comment as above about table number
 Berger: see comment 18

Formatted: Not Highlight

Driving on the beach during the day	0.7%	0.0%	1.9%
Other	6.0%	0.0%	13.0%

1 Source: RTI 2010a

2 In the 2010 visitor intercept survey, activities visitors engaged in the most were similar to those
 3 in the 2003 survey, with both showing a high number of respondents that participated in
 4 swimming/sunbathing (78% in 2003 and 99% in 2010). The 99% of respondents who indicated
 5 they engaged in swimming, sunbathing or enjoying the beach may have also included those who
 6 were walking and/or enjoying solitude (which was not a category in the 2010 survey). Both
 7 surveys also showed similar numbers of respondents engaging in beach driving, with 36%
 8 indicating that they engaged in this activity in 2003 and 40% in 2010. While the percentage of
 9 users with ORV use as their primary activity was similar in the 2002 and 2010 surveys, results of
 10 the surveys differed for some activities, such as visiting historic sites which had a high response
 11 in 2003 (70%) but a much lower response in 2010 (18%).

- Deleted: were similar for ORV use,
- Deleted: activity
- Deleted: like
- Deleted: , were use with
- Comment [seh12]: This sentence is unintelligible. What are you trying to say?
- Breger: edit made to clear up sentence
- Deleted: is
- Deleted: are

12 The 2010 survey also included questions regarding the current management of the Seashore.
 13 Table 35- 3, shows that the awareness of beach driving among visitors to the Seashore was high,
 14 with 91.6% aware that some Seashore beaches are open to vehicles. Additionally, 58.7% of
 15 visitors were aware that some beaches previously open to vehicles are now closed at some point
 16 during the year. The uncertainty surrounding beach closures did not affect the planning of trips
 17 for 93.4% of visitors, however 4.2% of visitors reported making plans closer to time of the trip
 18 due to this uncertainty.

- Comment [dw13]: I had changed the sentence to read: The uncertainty surrounding beach closures did not affect the planning of trips for 93.4% of visitors, however 4.2% of visitors reported making plans closer to time of the trip due to this uncertainty". Why was change not made?
- Breger: Change inserted

19 **Table 35-3. Knowledge and Impact of Current Management - Mean estimate and 95%**
 20 **confidence interval.**

Question	Answer	95% confidence interval		
		Mean	Lower Bound	Upper Bound
Before you arrived at Cape Hatteras National Seashore for this trip, did you know that some beaches at Cape Hatteras National Seashore were open to vehicles?	Yes	91.6%	84.0%	99.3%
	No	8.1%	0.5%	15.8%
	Don't Know	0.2%	0.0%	0.6%
Before you arrived at Cape Hatteras National Seashore for this trip, did you know that certain parts of the Seashore that have been open to vehicles in the past are now closed to vehicles during parts of the spring, summer and fall?	Yes	58.7%	47.3%	70.0%
	No	40.1%	28.4%	51.9%
	Don't Know	1.2%	0.0%	2.7%

- Deleted: Current management of ORVs did not affect the planning of trips for 93.4% of visitors, however 4.2% of visitors reported making plans closer to time of the trip due to uncertainty of beach closures
- Comment [seh14]: Same table number comment
- Breger: see comment 18
- Comment [dw15]: Make consistent with other tables per Carol's comments. Should say "95% confidence interval" over the right two columns only.
- Breger: Text changed
- Deleted: Mean estimate and
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Still needs to be fixed

Visitor Use and Experience

How would you say the uncertainty about whether specific parts of the Seashore would be open to vehicles affected when you started planning for this trip?	Didn't Affect	93.4%	88.1%	98.7%
	Farther in Advance	1.8%	0.0%	3.9%
	Made Plans Closer to the Time of the Trip	4.2%	0.2%	8.2%
	Don't Know	0.6%	0.0%	1.5%

1 Source: RTI 2010a

2 **Recreational Fishing**



15 **Historic Photo of Recreational Fishing**
15 Credit: NPS

The cold Labrador Current and the warm waters of the Gulf Stream meet adjacent to the Outer Banks of North Carolina. The waters off the Seashore are known throughout the world as highly productive fishing areas. The fish that congregate in the waters off the Outer Banks attract anglers from throughout the region, but largely from North Carolina and Virginia. In the spring and fall, when bluefish (*Pomatomus saltatrix*), spotted sea trout (*Cynoscion nebulosus*), red drum (*Sciaenops ocellatus*), and other species are present in offshore waters, surf fishermen line the beaches to cast their baits and lures over the incoming breakers and into the schooling fish. Most of the beach and sound are open to fishing as are the fishing piers in the villages of Rodanthe, Frisco, and Avon. NPS boat

16 ramps are located at the Oregon Inlet Marina and near the ferry office in Ocracoke Village. Charters and
17 head-boat services (boats that carry a large number of anglers who pay by the person) are available at
18 local marinas.

19 Particularly productive and high-demand fishing areas include Ocracoke, Hatteras, and Oregon inlets and
20 Cape Point, which are often accessed via ORVs. ORV counts at ramps accessing these inlets exceeded
21 those of other beach access ramps. This use is discussed in the "Visitor Access and Off-road Vehicle Use"
22 section that follows below.

23 Typically, fishing tournaments
24 occur in the spring and fall in
25 locations throughout the
26 Seashore, as shown in table 36.
27 Tournament data from 2001 to
28 2008 indicate that, normally,
29 about eight or nine fishing
30 tournaments occur annually
31 (Thompson pers. comm. 2008).
32 While data are not available for
33 actual attendance, the events are
34 well attended. For 2005,



35 **Recreational Fishing in Modern Times**
35 Credit: NPS

36 estimates indicate that more than
37 720 people participated in one event that lasted for 2 days. Some tournaments may only have 25
38 participants, depending on the availability of fish and weather. Restrictions are placed upon the events as
39 to location and times to ensure the availability of recreational areas for other Seashore visitors. These
restrictions change from time to time depending on the time of the year, seasonal visitation figures, past

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1 experience with the sponsors, and how the proposed event is structured. Typically, Seashore beaches 0.5
2 mile on either side of Cape Point and 0.5 mile on either side of an inlet are closed to tournament fishing.

3 Like other Seashore visitors, tournament participants are not allowed in any resource closure areas.
4 Tournaments take place in the designated ORV corridor, which has presented conflict with recreational
5 anglers during the tournaments on a few occasions (NPS 2007e).

6 Visitor Access and Off-road Vehicle Use

7 As noted in chapter 1 of this document, before 1954, local residents and
8 visitors used the beaches and sound trails for vehicular transportation
9 purposes because there were few formal roads in this remote area. With
10 the paving of NC-12, the completion of the Bonner Bridge connecting
11 Bodie and Hatteras islands, and the introduction of the NCDOT Ferry
12 System to Ocracoke Island, improved visitor access to the islands resulted
13 in increased recreational use of the Seashore in general, as well as
14 increased vehicle use on the beaches for recreational purposes. ORVs were
15 used by residents to facilitate commercial netting of fish, and sport
16 fishermen used ORVs to pursue migrating schools of game fish and to
17 reach more productive areas such as Cape Point or the inlets, which are
18 often a mile or more from the nearest paved surface. ORVs are currently
19 used at the Seashore for commercial and recreational fishing, sightseeing,
20 travel to and from swimming and watersport areas, and pleasure driving
21 (NPS 2004b). On the other hand, Seashore visitors choose to access the
22 Seashore by foot for swimming, sunbathing, birdwatching, fishing,
23 enjoying scenic ocean views, and other recreational activities.



Beach Driving at the Seashore

Credit: NPS

24 TABLE 36. FISHING TOURNAMENTS, 2004–2008

Applicant/Event	Tournament Date	# People Authorized	Tournament Location within the Seashore
4 Plus Four Wheel Drive Club	Late April from 2004 to 2008	600	Ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet
Ocracoke Invitational Surf Fishing Tournament	Late April / early May from 2004 to 2008	240	Ocean beach between ramps 68 and 72
Outer Banks Association of Realtors	5/20/2005	150	Ocean beach from Coquina Beach to ramp 4
Hatteras Village Invitational	Early September from 2006 to 2008	540	Hatteras Island
Hatteras Village Civic Association	9/10/2004 9/9/2005	240	Ocean beaches on Hatteras Island open to 4x4 vehicles from ramp 43 south and west to 0.5 mile from Hatteras Inlet, but excluding 0.5 mile either side of Cape Point
Salt Water Grill	9/28/2008	120	Bodie Island
Nags Head Surf Tournament	Early October from 2004 to 2008	240	Ocean beach from Coquina Beach to ramp 4
FFFF Tournament	Early October from 2006 to 2008	120	Bodie Island

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Applicant/Event	Tournament Date	# People Authorized	Tournament Location within the Seashore
Capitol City Four Wheelers	Mid-October from 2004 to 2008	600	Ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet, and all areas closed to vehicular access including ramps temporarily closed due to flooding
Outer Banks Association of Realtors	Mid-October from 2006 to 2008	240	Bodie Island
Red Drum Tournament	10/24/2007 10/22/2008	600	Parkwide
Cape Hatteras Anglers Club	11/4/2004	600	Public ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet;
Cape Hatteras Anglers Club	11/3/2005 11/2/2006 11/8/2007 11/6/2008	720	Public ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet; also excluding 0.2 mile on either side of ramps 1, 4, 23, 27, 30, 34, 43, 49, and 55
Outer Banks Angler	11/30/2007 12/5/2008	600	Parkwide
Surf Fishing Info.	12/2/2005	240	Ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, 0.5 mile on the north side of Oregon Inlet, and other closures ordered by the Seashore

Source: Thompson pers. comm. 2008



ORVs Accessing the Beach using a Ramp 11
Credit: NPS 12

ORVs access the beach via a system of ramps located off NC-12. This vehicular beach access ramp system provides controlled entry and exit to beach areas. Originally, planks were placed on the dune crossing site, hence the name "ramp," to prevent the sand from moving and to prevent the dune from being further breached. The ramps began as an informal system of unimproved access points connecting the roadway to the beaches. Over time, this system was formalized and ramps are now numbered, maintained, and identified on the Seashore's ORV route maps as official vehicle routes for beach access. In 1978, there were 28

13 identified ramps, 22 of which were located on NPS lands. Although the NPS opened a new ramp to the
 14 public in 1998, the number of ramps has decreased since 1978 as some were lost to erosion and others
 15 were closed to the public and are now used for administrative vehicle access only (NPS 2004a). The NPS
 16 currently has 17 oceanside access ramps available for public ORV use. These ramps are listed on table 37.
 17 Each ramp number on the map (figure 24) refers to the approximate mile on NC-12 south of Nags Head
 18 on Bodie Island.

19

1

2

TABLE 37. OCEAN BEACH ACCESS

Ramp	Open to Public Use
Ramp 2 (Coquina)	Seasonal
Ramp 4	Year-round
Ramp 23	Year-round
Ramp 27	Year-round
Ramp 30	Year-round
Ramp 34	Year-round
Ramp 38	Year-round
Ramp 43	Year-round
Ramp 44	Year-round
Ramp 45	Year-round
Ramp 49	Year-round
Ramp 55	Year-round
Ramp 59	Year-round
Ramp 67	Year-round
Ramp 68	Seasonal
Ramp 70	Year-round
Ramp 72 (South Point Road)	Year-round

Source: NPS 2008g



1

2

FIGURE 24. OFF-ROAD VEHICLE RAMPS AT CAPE HATTERAS NATIONAL SEASHORE

3

Number and Distribution of ORVs at the Seashore

4

From 2007–2008, the Seashore installed infrared counters at ORV ramps to determine the number of ORVs using the Seashore, as well as their distribution in the Seashore. However, in addition to counting ORVs, the counters were found to count anything that breaks the infrared beam, including pedestrians, rain, and untrimmed plants. The counters also failed to register some counts and must be properly aligned to count. Testing showed that the ramp counters overestimated the number of ORVs substantially and that pedestrian crossings often added to the inaccurate counts. For these reasons, the data from the ramp

9

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1 counters were deemed not reliable for constructing estimates of ORV use at the seashore (RTI pers.
 2 comm. 2009a).

3 On Memorial Day and the Fourth of July, the Seashore counts the number of ORVs on the beach by an
 4 aerial survey. Research Triangle Institute, International (RTI) (RTI pers. comm. 2009a) used this
 5 information, along with assumptions based on rental occupancy and patterns of use, to create a range of
 6 estimates for the total number of ORVs using the Seashore in a year. Although there are some data from
 7 various sources about the number of vehicles on the beach, none of the sources have the scope or
 8 reliability to provide a robust annual estimate of vehicles on the beach. The data from the aerial counts
 9 were used to provide counts for ORVs at the following locations, which include some of the most popular
 10 ramps leading to the points and spits:

- 11 • Ramp 4: Includes Bodie Island Spit.
- 12 • Ramp 23 to ramp 27: Approximately 4-mile area directly south of Salvo.
- 13 • Ramp 27 to ramp 38: Approximately 11 mile area including Avon.
- 14 • Ramp 43 to ramp 49: Includes Cape Point.
- 15 • Ramp 55: Includes Hatteras Inlet Spit.
- 16 • Ocracoke: All of Ocracoke Island.

17 Figure 25 and the ramp counts in table 37-1 show the distribution of ORVs across these areas on
 18 Memorial Day and the Fourth of July in 2008.

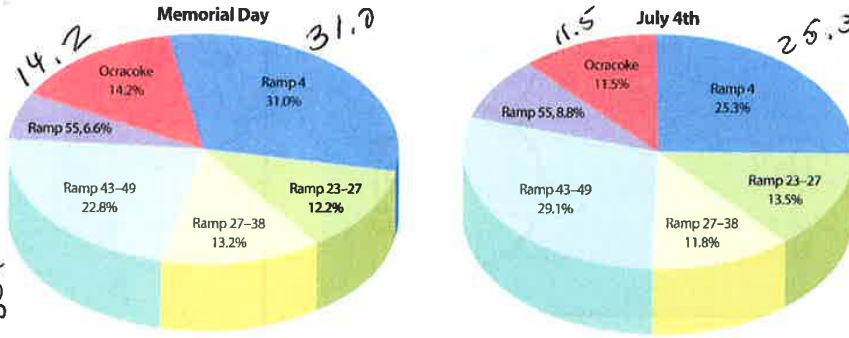


FIGURE 25. ORV DISTRIBUTION BASED ON AERIAL COUNTS, FOURTH OF JULY AND MEMORIAL DAY 2008

TABLE 37-1: RAMP COUNTS FOR MEMORIAL DAY AND FOURTH OF JULY, 2008

Memorial Day		Fourth of July	
Ramp	Count	Ramp	Count
Ramp 4	641	Ramp 4	661
Ramp 23-27	336	Ramp 23-27	353

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Ramp 27-38	191	Ramp 27-38	277
Ramp 43-49	471	Ramp 43-49	758
Ramp 55	137	Ramp 55	230
Ocracoke	293	Ocracoke	300
2008 Total Count	2069	2008 Total Count	2579

Trevino pers. comm. 2010

1 To supplement these counts, a survey was conducted according to a random sampling plan to provide an
 2 estimate of the number of vehicles on the beach between April 1, 2009, and March 30, 2010, with a 95%
 3 confidence interval. NPS contracted with RTI to conduct a count of vehicles using the oceanside ORV
 4 beach access ramps over a 12-month period from April 2009 through March 2010. The primary goal of
 5 the vehicle counting survey was to estimate of the total number of vehicle roundtrips on the 17 oceanside
 6 ORV ramps during a 12-month period between 6 a.m. and 10 p.m. The details of the study are described
 7 in the final report (RTI 2010b). These vehicle counts provide an estimate of the total number of vehicle
 8 roundtrips to the beach. They are not directly comparable to the official number of recreational visitors to
 9 Cape Hatteras, because these numbers are determined by a traffic counter at Whalebone Junction. A
 10 single recreational visit, as counted by the Whalebone Junction counter, can include multiple vehicle
 11 roundtrips over an ORV ramp to the beach. Seventeen oceanside ORV access ramps currently operate in
 12 the Seashore. Two of the ramps are located on Bodie Island, 10 are on Hatteras Island, and the remaining
 13 five are on Ocracoke Island. RTI field staff took 19 three-day trips to the Seashore to count at beaches and
 14 ramps, for a total of 57 days of counting. Each selected day, field staff traveled to two randomly selected
 15 clusters of ramps and beaches and spent two hours counting the number of vehicle roundtrips on each of
 16 two ORV ramps (the numbers of entrances and exits were added together and averaged to provide the
 17 estimated number of roundtrips since each vehicle that entered the beach through a vehicle access ramp
 18 also exited the beach, though not necessarily at the same ramp). The 57 days of counting resulted in a
 19 total sample of 114 clusters covering 228 two-hour vehicle counting opportunities and 456 beach
 20 counting opportunities (RTI 2010b).

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Comment [seh16]: Change to ten, keep the total
 as seventeen
 Berger, changed to 10
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21 To ensure that at least two counting trips were taken during the low winter season, RTI created two
 22 seasonal strata out of the 52 weeks. The two strata roughly correspond to low and medium/high visitation
 23 seasons at the Seashore. The lowest visitation stratum, which consists of the 17 weeks from the beginning
 24 of December 2009 through the end of March 2010, was assigned two 3-day trips. The remaining 17 trips
 25 took place in the other 35 weeks from April 2009 through November 2009, which make up the medium
 26 and high visitation strata. The data from the counting trips was weighted based on the sampling design
 27 and the probability that a ramp was selected for counting at a certain time or a certain day. Based on the
 28 data from the ramp counts, the mean estimate is 499,802 vehicle roundtrips over an oceanside ramp onto
 29 the Seashore beaches between April 2009 and March 2010, with a 95% confidence interval of 276,946 to
 30 722,659. An estimated mean of 994,604 passengers were inside these vehicles with a 95% confidence
 31 interval of 654,961 to 1,334,247 passengers (table 37-2). As with the number of vehicle roundtrips, the
 32 estimated number of passengers is not directly comparable to the official statistics on recreational visitors
 33 to the Seashore. A visitor using the ramps could make several roundtrips over the ramps in a day and
 34 would result in counting the same visitor multiple times (RTI 2010b).

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35 The increased sampling coverage between April and November (49% of the weeks as opposed to 12% of
 36 the weeks between December and March), resulted in narrower confidence intervals around the April and
 37 November estimates. Between April and November, the 95% confidence interval is +/-17% of our point
 38 estimate of 344,999 vehicle roundtrips. Between December and March, the 95% confidence interval is +/-
 39 151% (table 37-2). In addition, the geographic distribution of ORV use in the Seashore could not be
 40 determined between December and March due to the lack of sampling coverage. April through November

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1 captures the majority of vehicle roundtrips that would be affected by the proposed management
 2 alternatives, providing the best estimates (RTI 2010b).

Table 37-2. Estimates and 95% Confidence Intervals for Number of Vehicles Making a Roundtrip to the Beach over an Oceanside Ramp and Associated Passengers by Time Strata^a

Time Interval	Vehicle Roundtrips			Passengers		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
April 2009 to November 2009	344,999	284,696	405,302	768,948	625,928	911,968
December 2009 to March 2010	154,803	0	392,594	225,656	0	567,185
52 week total	499,802	276,946	722,659	994,604	654,961	1,334,247

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shd be 2009

3 ^aThese vehicle access counts provide an estimate of the total number of vehicle roundtrips to the beach. Currently the NPS
 4 method for compiling visitation only uses the Whalebone Junction counts because a vehicle using the ramps could make several
 5 roundtrips in a day and would result in counting the same visitor multiple times.

6 Source: RTI 2010b

7
 8 Table 37-3 reports the average daily vehicle roundtrips and associated passengers by ramp for the period
 9 of April to November 2009. The most popular ORV ramp between April and November was ramp 4 on
 10 Bodie Island, however ramps 43, 49, 55, and 70 were all estimated to average over 100 vehicle roundtrips
 11 a day between April and November 2009. ~~These results were similar to the 2008 counts, which found~~
 12 ~~that ramp 4 and ramps 43-49 were both the most traveled ramps over Memorial Day and Fourth of July~~
 13 ~~(see figure 25 and table 37-1). During the 2010 vehicle counts, an estimated fifty-nine percent of vehicle~~
 14 ~~roundtrips took place on the various ramps on Hatteras Island, 26% on Ocracoke Island, and 15% on~~
 15 ~~Bodie Island (table 37-3). Confidence intervals for the vehicle roundtrip estimates range from +/-18% for~~
 16 ~~ramp 70 to +/-132% for ramp 44. These results are similar to the 2008 counts in figure 25 and table 37-1~~
 17 ~~for Hatteras Island, which showed approximately 55% of vehicles on Hatteras Island during Memorial~~
 18 ~~Day weekend, with a higher percentage, approximately 63%, using this ramp over the 4th of July weekend~~
 19 ~~this same year. The 2008 counts for Bodie and Ocracoke islands over Memorial Day weekend differed~~
 20 ~~slightly from the 2009-2010 counts with the 2008 counts showing approximately 31% of the vehicles on~~
 21 ~~Bodie Island while 14% were on Ocracoke Island (versus 15% on Bodie Island and 26% on Ocracoke~~
 22 ~~Island in the 2009-2010 count).~~

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Comment [seh18]: Needs a space between "70" and "to"
 Berger: Space added
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 Berger: Clarification added
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Table 37-3. Estimates and 95% Confidence Intervals for Daily Vehicle Roundtrips and Associated Passengers by ORV ramp (April to November 2009)^a

Ramp	Vehicle Roundtrips			Associated Passengers		
	Estimate	Lower Bound	Upper Bound	Estimate	Lower Bound	Upper Bound
2	40.4	26.8	54.1	66.2	40.8	91.6

Comment [dw20]: Include sentence about the most popular ramps during the 2008 counts, like was done for the 2009-2010 counts
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4	173.0	95.1	250.8	409.0	195.8	622.3
23	55.0	0.0	110.5	105.0	0.0	212.9
27	57.6	17.2	98.1	141.8	21.2	262.5
30	53.7	15.9	91.5	138.3	31.7	245.0
34	60.4	25.3	95.5	123.7	49.2	198.3
38	82.2	45.3	119.1	177.8	89.8	265.8
43	133.9	52.9	214.9	273.3	78.1	468.4
44	86.5	0.0	200.3	229.7	0.0	547.1
49	134.2	8.9	259.5	349.3	10.8	687.8
55	152.1	57.9	246.2	325.6	89.6	561.6
59	66.3	37.6	95.0	152.9	74.8	231.1
67	48.1	19.8	76.4	99.6	37.4	161.8
68	13.9	1.5	26.2	25.8	0.3	51.3
70	155.5	127.5	183.4	318.1	226.6	409.7
72	76.4	14.5	138.3	167.4	28.6	306.3

1 ^aThese vehicle access counts provide an estimate of the average daily number of vehicle roundtrips to the beach. Currently the
 2 NPS method for compiling visitation only uses the Whalebone Junction counts because a vehicle using the ramps could make
 3 several roundtrips in a day and would result in counting the same visitor multiple times.

4 Source: RTI 2010b

5

6 **Closures.** A number of areas throughout the Seashore have been closed to ORV travel over the years,
 7 either due to safety issues or for resource protection purposes. Temporary closures to ORVs also occur
 8 along the beaches to protect sea turtle nests and bird species such as piping plovers, American
 9 oystercatchers, and colonial waterbirds. The Seashore contains approximately 67 miles of shoreline that
 10 are available for public use, when not closed for resource or safety concerns. The 12 miles of beach that
 11 comprise Pea Island NWR are within the Seashore boundary and are managed separately and under a
 12 different regulatory framework by the USFWS; ORVs are not permitted on Pea Island beaches.

13 Currently, all the Seashore beaches are potentially open to ORV use during the winter, except a section
 14 near the Cape Hatteras Lighthouse (which is closed year-round), and those beaches under a safety closure.
 15 Some beaches are also closed to ORV use if they become too narrow. During the summer months, the
 16 amount of Seashore beach open can vary depending on resource closures and seasonal ORV closures of
 17 village beaches, as detailed in chapter 2 of this document. On the soundside, 18 access points are publicly
 18 available to ORVs. However, vehicular access is typically limited to short distances along sandy portions

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1 of the sound shoreline because the Seashore prohibits ORV use on vegetated areas, and most of the
 2 soundside areas have vegetation. Closures vary from year to year depending on a range of management
 3 considerations.

4 Following Hurricane Isabel, ORV use areas (restrictions) were put in place in March 2004 to protect
 5 sensitive habitat that opened up as a result of dune destruction and to provide for more consistent
 6 management of breeding and nesting bird closures. These closures did not significantly decrease the sum
 7 total of shoreline miles open to ORV access and public recreation nor did it impact the number of ramps
 8 open to allow ORV access to Seashore beaches. White posts were placed 150 feet landward from the
 9 average, normal high-tide line, or, if existing, at the vegetation or remnant dune line. Beach areas
 10 landward of the post line, although not open to ORV use, were open to pedestrian use (NPS 2004b).

11 Temporary resource closures are established throughout the Seashore, including within areas of ORV and
 12 pedestrian use, to comply with protection measures afforded nesting sea turtles and protected shorebirds.
 13 These closures are implemented at crucial periods during the life of these species. During these closures,
 14 the NPS routes ORV beach traffic around the temporary resource closure when possible. Temporary
 15 resource closures apply to both ORV and pedestrian use, although occasionally pedestrian access can be
 16 provided in pedestrian corridors. These closures include prenesting closures. Table 37-2 details the
 17 prenesting closures or resource closures that have taken place under alternative A (2007) and alternative
 18 B (2008 – 2010), beginning in 2007, showing dates when the closure began and when the area reopened.

19 **TABLE 37-2. RESOURCE CLOSURE DATES FOR POPULAR VISITOR SITES 2007-2010**

2007 (Prenesting areas installed by April 1)			
Location	Closed	Reopened	# of Days Closed
Bodie Island Spit	July 15	August 16	32
Cape Point ¹	n/a	n/a	0
Hatteras Inlet "rip" ²	May 8	May 10	2
North Ocracoke ³	April 8	June 7	60
South Point Ocracoke (two events)	June 26 ⁴	June 28	2
	July 10 ⁵	July 11	1
2008 (Prenesting areas installed by March 15)			
Location	Closed	Reopened	# of Days Closed
Bodie Island Spit	May 5	August 26	113
Cape Point	May 5	July 22/29 (Pedestrian/ORV)	78/85
Hatteras Inlet "rip"	April 9	July 24	75
North Ocracoke	June 5	July 11	37
South Point Ocracoke	May 5	August 18	105
2009 (Prenesting areas installed by March 15)			
Location	Closed	Reopened	# of Days Closed
Bodie Island Spit	March 23	August 6	136
Cape Point	April 14	July 17/29 (Pedestrian/ORV)	101/113

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Hatteras Inlet "rip"	March 11	July 15	125
North Ocracoke	May 9	August 28	111
South Point Ocracoke	May 22	August 9	80
2010 (Prenesting areas installed by March 15)			
Location	Closed	Reopened	# of Days Closed
Bodie Island Spit	May 9	August 23	106
Cape Point	May 13	July 7/July 21 (Pedestrian/ORV)	55/69
Hatteras Inlet "rip"	March 11	July 15	126
North Ocracoke	April 28	August 25	119
South Point Ocracoke	April 20	August 27	129

- 1 ¹ Open to ORVs/pedestrians from east side, but not from west side
- 2 ² Open to pedestrians only from soundside (south of terminus of Spur Road). Pole Road safety closure after a storm prevented
- 3 access to Spur Road May 8-9. Ocean shoreline approximately 0.3 mile south of Pole Road closed to ORVs and pedestrians as
- 4 prenesting area on March 28, then reopened on June 30 (94 days closed).
- 5 ³ Open to ORVs and pedestrian North of Ramp 59 approximately to the inlet.
- 6 ⁴ Closed to access on June 26 (PIPL chicks); re-opened for daytime access on June 28; and re-opened to 24-hour access on
- 7 July 2.
- 8 ⁵ Closed to access on evening of July 9 (AMOY chick); re-opened for daytime access on July 11; and re-opened for 24-hour access
- 9 on July 16.
- 10 **Bird Closures.** The open sand flats near the three inlets in the Seashore (Oregon, Hatteras, and Ocracoke)
- 11 and Cape Point are used by protected bird species and are also favorite fishing areas that visitors access in
- 12 ORVs. Piping plover, American oystercatcher, and colonial waterbird breeding activity has been
- 13 documented on and near the ocean beach in all of these locations.
- 14 In 2005, temporary resource closures occurred at multiple beach locations (including popular recreational
- 15 fishing areas at the points and spits) to protect piping plovers, American oystercatchers, and colonial
- 16 waterbirds from ORV and pedestrian use. These closures occurred on all three islands but were most
- 17 concentrated on Hatteras Island, followed by Ocracoke. The Interim Strategy was published in January
- 18 2006 and finalized by a FONSI in July 2007 (NPS 2007a). The Interim Strategy presented a multifaceted
- 19 approach that included the establishment of prenesting closures, species protection buffers, wintering
- 20 habitat protection, and temporary resource closures. Although for the most part the Interim Strategy
- 21 established specific distances for species buffers, it allowed for the reduction or expansion of buffers
- 22 based on professional judgment of the resource management staff. Species and ORV management under
- 23 the Interim Strategy resulted in beach closures similar to those that occurred in previous years.
- 24 Management and resource closures were altered by a lawsuit in 2007 and subsequent consent decree in
- 25 2008.



1 In October 2007, Defenders of Wildlife and the National **Typical Closure**
 2 Audubon Society filed a lawsuit against the NPS alleging Credit: NPS
 3 inadequacies in the management of protected species at the Seashore under the Interim Strategy and
 4 failure of the Seashore to comply with the requirements of the ORV executive order and NPS regulations
 5 regarding ORV use. On December 18, 2007, the Dare County Commissioners, Hyde County
 6 Commissioners, and the board of the Cape Hatteras Access Preservation Alliance were allowed to join the
 7 lawsuit as intervenor-defendants. However, a consent decree was filed on April 16, 2008, in U.S. District
 8 Court (signed on April 30, 2008), whereby the parties involved in the lawsuit agreed to a settlement of the
 9 case. The consent decree resulted in larger buffers than those prescribed in the Interim Strategy being
 10 established during portions of the spring and summer around bird breeding and nesting areas; this
 11 included creating a 1,000-meter (3,280-foot) vehicle buffer and a 300-meter (984-foot) pedestrian buffer
 12 around piping plover chicks until they have fledged. From May 15 through August 21, 2008, an average
 13 of 10 miles of oceanfront beach at the Seashore was closed to both pedestrians and ORVs. The largest
 14 amount of beach closures was reported on May 29, 2008, when 12.8 miles of beach were closed to all
 15 recreational use to protect piping plovers exhibiting breeding, nesting, and/or foraging behavior. The
 16 consent decree also established a prohibition on night driving on beaches between the hours of 10:00 p.m.
 17 and 6:00 a.m. from May 1 through September 15, with night driving allowed from September 16 through
 18 November 15 under the conditions of a permit.

19 **Sea Turtle Closures.** Temporary resource closures, which apply to ORVs and pedestrians, are
 20 implemented during nesting and hatching activities for all three sea turtle species that are known to nest at
 21 the Seashore. Generally, ORVs and pedestrians can negotiate around these posted closures for sea turtle
 22 nests. However, when the turtle eggs are ready to hatch, the NPS implements a beach closure with fencing
 23 from the nest to the water's edge. If sufficient room exists, ORVs and pedestrians can go around the
 24 landward side of the fence. In some cases, a full beach closure must be implemented because of the
 25 location of a nest relative to a dune or vegetation, preventing ORV and pedestrian access through the area.
 26 As mentioned previously, the consent decree signed in April 2008 included a prohibition on night driving
 27 to protect nesting sea turtles. The consent decree also contains provisions for full beach closures in the fall
 28 to allow existing turtle nests to hatch safely.

29 **Safety Closures.** Areas normally open to ORVs may close for safety reasons. Adverse weather conditions
 30 can result in narrow beach areas or flooded conditions, among other hazards, necessitating closures to
 31 vehicles. In November 2005, safety closures included 1.6 miles on Bodie Island, 22.8 miles on Hatteras
 32 Island, and 6.5 miles on Ocracoke Island (Stevens pers. comm. 2005). However, from May 15 through
 33 August 21, 2008, safety closures throughout the season consistently included a total of 11.1 miles of
 34 beach (NPS 2008m). Under current management, village beaches are closed to ORVs to protect
 35 pedestrians during the busy summer season.

36 **CROWDING, VISITOR ENCOUNTERS, AND VISITOR SAFETY**

37 A University of Idaho study indicated that one of the reasons people visited the Seashore was to escape
 38 crowds and seek solitude. When asked about crowding, 27% of visitors said they felt "crowded" to
 39 "extremely crowded," while 43% of visitors felt "somewhat crowded." Thirty percent of visitors surveyed
 40 indicated that they felt "not at all crowded." Many visitor groups (49%) reported that crowding "detracted
 41 from" their park experience (University of Idaho 2003).

42 As part of the visitor experience, visitor safety is also considered. During public scoping for this plan/EIS,
 43 comments were received that indicated that some visitors felt that there was a potential for conflicts
 44 between visitors on foot and visitors using ORVs. The potential for accidents involving ORVs and
 45 pedestrians on beaches open to ORV use is well documented. For example, during 2010 in separate
 46 incidents in Volusia County, Florida, two children were run over and killed by ORV, one on New Smyrna

1 Beach and one on Daytona Beach Shores (Cave 2010). Since 2005, 41 pedestrians have been hit by cars
 2 on the Volusia beaches (Hobson 2010). At the Seashore, law enforcement staff indicated in early 2009
 3 that in the prior 10 years, there were no known case incident reports documenting pedestrians being
 4 struck by ORVs on Seashore beaches; however, public comment indicated a concern about the speed of
 5 ORVs on the beach and how close they are to other Seashore users. On September 27, 2009, a 7-year-old
 6 boy was accidentally hit by an ORV that was backing up on the beach in front of ramp 38. While the
 7 boy's parents and other family members were swimming and playing in the ocean, the boy decided to
 8 play on the beach digging holes and making sand castles with his hands. The driver of the vehicle that
 9 struck the boy had driven onto the beach to see if he and his passenger would surf at this location. The
 10 individuals decided not to surf at this location and turned around to exit the beach. The beach is sloped
 11 from the ramp down to the water and the sand is soft in this area. The vehicle driver was having difficulty
 12 driving his vehicle up the slope and was backing up and going forward to try to get up the slope, (they
 13 had not reduced air pressure in their tires). While backing up, the driver did not see the boy playing in the
 14 sand. The vehicle struck the boy with the right rear bumper and tire. Neither of the boy's parents had
 15 observed the actual incident but had observed the vehicle maneuvering on the beach prior to the accident.
 16 They did not believe the vehicle was being operated carelessly or too fast. The boy was transported to the
 17 Outer Banks Hospital for examination and was released. Injuries included bruising to the arm and leg.
 18 The ORV operator was not charged with any violation (Murray pers. comm. 2009a).

19 VISITOR SATISFACTION

20 A visitor survey was conducted by the University of Idaho Park Studies Unit for units of the NPS in 2008.
 21 The survey was developed to measure each park unit's performance related to NPS *Government*
 22 *Performance Results Act* (GPRA) Goals IIa1 (visitor satisfaction) and IIb1 (visitor understanding and
 23 appreciation). Survey cards were distributed at the Seashore to a random sample of visitors from July 1 to
 24 July 31, 2008. The report included three categories of data: park facilities (which included visitor centers,
 25 exhibits, restrooms, walkways/trails/roads, and campgrounds / picnic areas), visitor services (assistance
 26 from park employees, park maps/brochures, ranger programs, and commercial services), and recreational
 27 opportunities (nature/history/cultural learning and outdoor recreation). Overall, the percentage of
 28 Seashore visitors satisfied with the three categories of facilities, services, and recreational opportunities
 29 taken together, was 95%. When asked about each component separately, 93% of visitors were satisfied
 30 with park facilities, 85% of visitors were satisfied with visitor services, and 89% were satisfied with
 31 recreational opportunities (University of Idaho 2008).

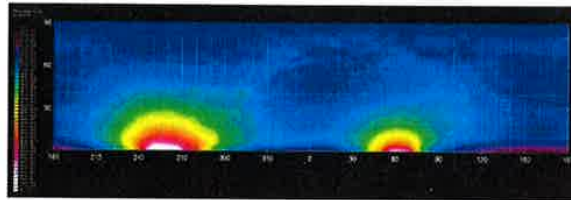
32 In the 2002 University of Idaho study, the researchers solicited visitor opinions about selected factors that
 33 affect visitor experience. As would be expected, vehicles on the beach were perceived very differently by
 34 different visitors, but most stated that the use of vehicles on the beach did not detract from their visitor
 35 experience. The factors receiving the highest proportion of "no effect" ratings were airplane overflights
 36 (50% of those surveyed), dogs off leash (35%), vehicles on the beach (34%), and visitors drinking alcohol
 37 (33%). Factors receiving the highest proportion of "added to my experience" ratings included vehicles on
 38 the beach (20%) and fires on the beach (16%), while those receiving the highest "detracted from my
 39 experience" ratings were litter (40%) and vehicles on the beach (18%). About 29% of those surveyed did
 40 not experience vehicles on the beach (University of Idaho 2003).

Chapter 3: Affected Environment

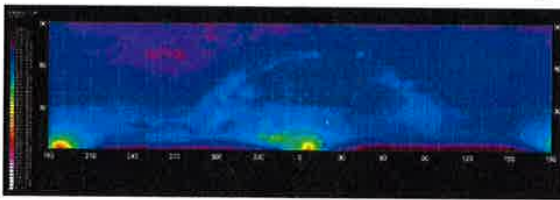
1 **Night Skies**

2 The NPS defines a natural
3 lightscape as “a place or
4 environment characterized by
5 the natural rhythm of the sun
6 and moon cycles, clean air, and
7 of dark nights unperturbed by
8 artificial light. Natural
9 lightscapes, including dark
10 night skies, are not only a
11 resource unto themselves, but
12 are an integral component of
13 countless park experiences”

14 (NPS 2007b). The NPS created the Night Sky Team in 1999 to address increasing alarm over the loss of
15 night sky quality throughout the network of national parks. The Night Sky Team functions as a center of
16 expertise that provides advice, guidance, and technical support in characterizing and preserving park
17 lightscapes (NPS 2007b). According to the Night Sky Team, the Seashore is one of only a handful of sites
18 in the eastern United States with a nearly natural regimen of light and dark, where light patterns are made
19 up primarily of the dark sky, moon, and stars (NPS 2008f).



This picture was compiled from images captured on a boardwalk between Frisco and Hatteras. Frisco lies at about 60° azimuth and Hatteras at about 260° azimuth.
Credit: Night Sky Team Visit Report



This picture was compiled from images captured on a boardwalk between Salvo and Avon. The combined light of Rodanthe, Salvo, and Waves can be seen at about 63° and Avon at 191°. Also note the presence of a few clouds reflecting the town lights at about 345°.

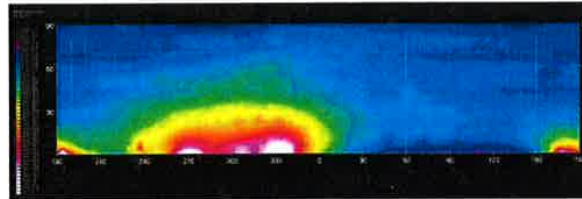
Credit: Night Sky Team Visit Report

In November 2007, the NPS Night Sky Team visited the Seashore to record preliminary measurements of night sky quality from three sites: the Bodie Island Maintenance Facility (Bodie Island); the boardwalk at ramp 27 (Hatteras Island); and the boardwalk south of Frisco (Hatteras Island) (NPS 2008f). During this visit, the team concluded that the Seashore has better night sky quality as compared to most other NPS

34 units east of the Mississippi River. Furthermore, measurements showed that light pollution sources
35 beyond the Seashore boundary illustrated the need to be aware of the easily impacted night skies (NPS
36 2008f).

37 Measurements of the night sky at the Seashore were taken with a charge-coupled device (CCD) camera (a
38 scientific-grade digital camera) that captures the known magnitude (a measure of stellar brightness) of
39 known stars as an index to determine the ambient brightness of the nighttime sky. These measurements
40 are influenced by atmospheric conditions, which affect how light travels through the sky. To account for
41 these changes, multiple measurements are taken over a period of time. The initial measurements at the
42 Seashore occurred over two nights, with more planned in the future (NPS 2008f).

1 Results from the November
 2 2007 measurements found that
 3 sky brightness ranged from
 4 approaching a natural level of
 5 darkness to significantly light
 6 polluted, with the potential to
 7 threaten the ecological health
 8 of the coastal environment in
 9 some areas (NPS 2008f). To
 10 address those areas where there
 11 are high levels of light
 12 pollution, the Night Sky Team
 13 recommended retrofitting or
 14 swapping existing light fixtures
 15 in favor of turtle-friendly and
 16 night-sky-friendly fixtures, as well as working with park neighbors to enact night sky measures such as
 17 lighting ordinances (NPS 2008f).



This picture was compiled from images on Bodie Island, just south of the maintenance facility. A number of light domes are evident in this image, including the combined light from Harbor, Rodanthe, and Salvo between 165° and 168°; the lighthouse at 184°; Wanchese at 267°; and the combined light from Manteo, Kill Devil Hills, Nags Head, and Kitty Hawk between 304° and 333°. A considerable amount of light scattering occurs in this picture due to high humidity.

Credit: Night Sky Team Visit Report

18 **SOCIOECONOMIC RESOURCES**

19 ...

20 **BUSINESS SURVEY**

21 NPS contracted with RTI to conduct surveys of local businesses to provide additional information for the
 22 ORV planning process. The business survey (RTI 2010c) included questions about the characteristics and
 23 size of local businesses to assess the possible impacts of the action alternatives on revenue relative to the
 24 no-action alternatives, as discussed later in Chapter 4. For the purposes of the survey, NPS divided
 25 businesses into two groups based on geographic location. The first group included businesses in the
 26 villages that directly border the Seashore, called the “Seashore villages” (Rodanthe, Waves, Salvo, Avon,
 27 Buxton, Frisco, Hatteras, and Ocracoke). These businesses depend heavily on tourists visiting the beaches
 28 on the Seashore. The second group included businesses located north of the Seashore boundary in the
 29 villages of Nags Head, Kill Devil Hills, and Kitty Hawk. These businesses serve tourists that visit the
 30 Seashore, but their customer base also includes visitors who use the beaches outside the Seashore on the
 31 Outer Banks.

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32 Four primary industry categories were selected for interviewing: recreational supplies, rental homes,
 33 lodging excluding rental homes, and commercial fishermen. In addition to these four industry categories,
 34 several other industry categories serve tourists directly, which are addressed in the impact analysis (see
 35 Chapter 4). These surveys all followed the same format, with appropriately worded questions for the
 36 specific industries, and were administered by telephone. Up to 10 calls were made to each business if the
 37 number was busy or no one answered.

Comment [seh21]: Addressed
 Berger: Text changed
 Deleted: address

38 Businesses were first asked to provide general information describing their business, including services
 39 and products offered and seasons of operation. The second set of questions collected information on
 40 revenue and number of employees, including seasonal variation, to classify the size of businesses and
 41 characterize the business community in general. Next, businesses were asked to provide the change in
 42 revenue between 2007 and 2008 (which represent implementation of alternative A (2007) and alternative
 43 B (2008)). Finally, the survey requested the respondent’s estimations of how different alternative
 44 management scenarios would affect their revenue. For the purposes of this survey, the two different
 45 alternative management scenarios generally represented the two action alternatives that contained

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1 elements from opposite ends of the management spectrum for ~~elements of the action~~ alternatives under
 2 consideration at the time. ~~A question was also asked about the effects of closing soundside ramps to ORV~~
 3 ~~use, but leaving them open to pedestrians (which represented the third scenario in the survey).~~

4 RTI conducted the surveys between June 1 and August 31, 2009. The timing of the surveys was dictated
 5 primarily by the schedule needed to meet the court-ordered deadline for finalizing the new rule and by the
 6 Paperwork Reduction Act, which requires Office of Management and Budget approval for information
 7 collection and public comment. Conducting the surveys over the summer ensured that seasonal businesses
 8 were available to participate; however, because business owners are busiest during the summer, the
 9 timing of the surveys made it difficult for some businesses to participate.

- Comment [seh22]:** Insert
Berger: inserted
- Comment [seh23]:** insert "action"
Berger: inserted
- Comment [seh24]:** add "A question was also asked about the effects of closing soundside ramps to ORV but leaving them open to pedestrians"

10 The overall response rate to the survey was 42%, although response rates varied depending on the
 11 business category and whether the business was located in one of the Seashore villages or in the villages
 12 just north of the Seashore. Businesses that responded to the survey were generally worried about the
 13 future impacts of the action alternatives. Many said they were already feeling the impacts, although they
 14 acknowledged that economic conditions and fuel prices in 2008 made it difficult to identify the impact of
 15 beach closures. Overall, the business survey provided the following general conclusions:

- 16 • All but eight of the businesses interviewed were categorized as small businesses based on Small
 17 Business Administration (SBA) definitions.
- 18 • Businesses north of the Seashore in Nags Head, Kill Devil Hills, and Kitty Hawk overall
 19 expected smaller impacts from any change in ORV management relative to the Seashore villages.
 20 The response rate from these businesses was lower, in part because the issue was not expected to
 21 have a big impact. However, some of the businesses that responded to the survey predicted
 22 significant drops in revenue from the two ~~alternative management scenarios described in the~~
 23 ~~survey.~~
- 24 • Businesses that rented vacation homes fared better between 2007 and 2008 than recreational
 25 supply and lodging businesses ~~(lodging businesses are lodging that are not used for rental homes,~~
 26 ~~for example, hotels).~~
- 27 • In all business categories, the majority of businesses reported that revenue fell between 2007 and
 28 2008, but the majority also reported hiring the same number of full and part-time employees in
 29 2007 and 2008.
- 30 • The majority of businesses thought that all ~~alternative management scenarios described in the~~
 31 ~~survey would result in decreased revenue compared to 2008. A smaller number expected no~~
 32 ~~change or an increase.~~
- 33 • The alternative management scenario under which all the spits and points were closed year-round
 34 was expected to result in the biggest decrease in revenue.
- 35 • Fewer businesses felt comfortable providing a quantitative forecast of the expected impact of the
 36 alternative management scenarios on revenue given the uncertainties surrounding the cause of
 37 changes in revenue between 2007 and 2008, the impact of the alternatives on visitation, and the
 38 year-to-year variation in weather and ~~species~~ nesting patterns.
- 39 • From the businesses providing quantitative forecasts: Businesses forecast median decreases of
 40 0% to 25% in annual revenue compared to 2008 for the alternative management scenario ~~under~~
 41 ~~which would completely close the points and spits and a few miles of beach between Ramp 27~~

- Deleted:**
- Deleted:** all other
- Deleted:** not including rental homes, such as
- Comment [seh25]:** use "Lodging businesses are lodging that are not rental homes, for example, hotels"
Berger: Change made
- Comment [dw26]:** We mention 2 earlier.
Berger: Text added above to clarify.
- Deleted:** I
- Comment [seh27]:** Delete this parenthetical and its contents, the survey doesn't use the alternative names
Berger: Deleted
- Deleted:** (alternatives D and F, and separately, and alternative that would close the soundside ramps)
- Comment [dw28]:** Why was this changed ignored?
Berger: added in
- Deleted:**
- Deleted:**
- Deleted:** closed more miles of beach to ORVs year-round, including beaches at
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Socioeconomic Resources

1 (south of Salvo) and Buxton all year. For the second alternative, that did not involve the year-
 2 round closures of points and spits but would create ORV and pedestrian corridors to some
 3 popular spots (such as Bodie Island Spit, about a mile of the Cape Point area and the South Point
 4 area of Ocracoke) the median change in revenue compared to 2008 ranged from a decrease of
 5 12% to no change. When asked about the potential impacts of closing the soundside ramps ,
 6 survey respondents indicated median estimates of revenue loss ranging from no change to -4%.

7 **TOURISM CONTRIBUTIONS TO THE ECONOMY**

8 The economy of the ROI is largely driven by the region’s tourist draw, mainly during the summer
 9 months. As estimated by the North Carolina Department of Commerce, travel expenditures in Dare
 10 County have increased faster than those for the state as a whole (table 43); however, travel expenditures
 11 in Hyde County have decreased since 2000. In 2008, the Department of Commerce estimated that tourism
 12 was responsible for 11,250 jobs in Dare County and 370 jobs in Hyde County (North Carolina
 13 Department of Commerce 2009).

14 ...

address "Strata"

Comment [seh29]: delete (not in the business survey)
 Berger: Change made based on discussion with Sandy

Comment [seh30]: delete (not in the business survey)
 Berger: Change made based on discussion with Sandy

Comment [dw31]: Alt F (and all action alternatives) has some year round closures. Is this supposed to be about the points/spits only?
 Berger: Change made based on discussion with Sandy

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Deleted: all the points and spits. For the alternative management scenario which did not involve year-round closures at all the points and spits