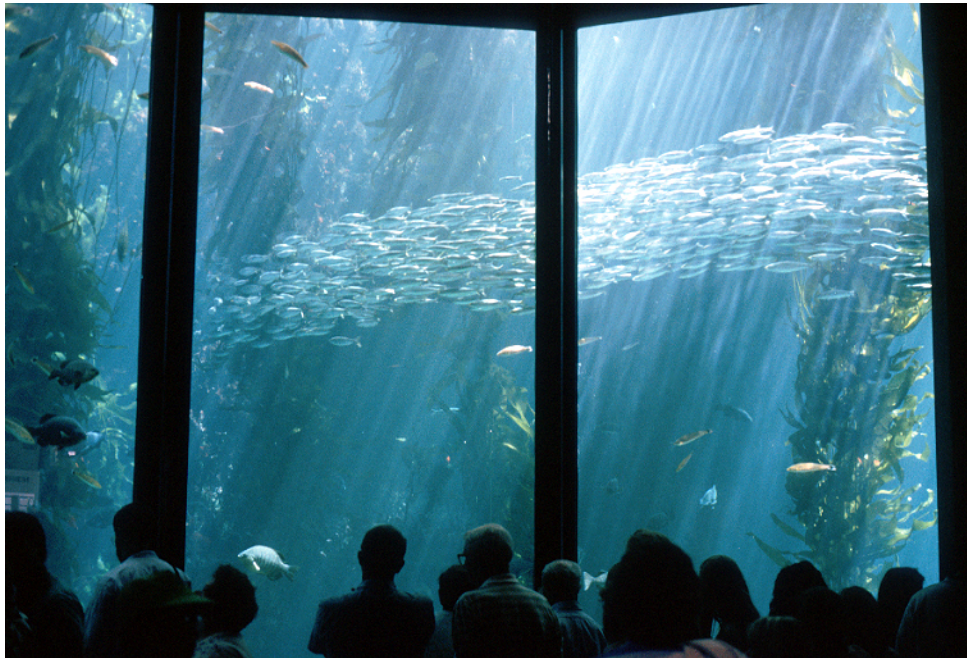


Ocean's Edge

Summative Evaluation

2007



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Monterey Bay Aquarium

2/16/2009

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Executive Summary

Overview

In 2006 the Exhibits department conducted a summative evaluation of Ocean's Edge, the aquarium's original and permanent galleries. From 2002-2005 the original galleries underwent a renovation to bring the original exhibits and interpretation up-to-date and to add additional exhibits. This area covers approximately 10,000 square feet.

Ocean's Edge is a dramatic transformation of the aquarium's original exhibit galleries. Rockwork and wharf pilings and touchable models transform galleries into the habitats they represent. Visitors can walk under a crashing wave or delve into multimedia exhibits that engage them in making sustainable seafood choices at the Real Cost Café or test out their tidepooling skills at the rocky shore.

In *Ocean's Edge*, we're connecting visitors to ocean life and protection of the world's ocean in a whole new way. Multi-sensory and multimedia exhibits offer new ways for visitors to touch, explore and learn about the amazing animals and plants on exhibit. Visitors are invited to see how they are part of Monterey Bay and all the ways they can enjoy and protect the bay, from visiting it with care—diving, kayaking and hiking—to choosing sustainable seafood. Throughout *Ocean's Edge*, visitors will discover ways to get personally involved in protecting the oceans for the future—we're putting people in the picture in ways we've never done before. We created videos and included photographs of people in Monterey Bay Habitats—diving, walking on the beach and tidepooling—to show people enjoying and appreciating these extraordinary places. We want everyone to see the positive and constructive ways that people can co-exist with healthy habitats—visiting them with care, cultivating their own connection with nature as well as children's connection with nature. Hands-on activities are integral to *Ocean's Edge* and will be found throughout the galleries from touch screen videos to touchable bronze models from an octopus crawling from its den to mussel encrusted rocks along the rocky shore. Visitors can bury a flatfish and explore a mural of animals hiding and hunting in the coastal wetlands and sandy shores.

Purpose of the Study

The purpose of this evaluation is to find out how visitors are using the newly renovated exhibition and how the design decisions affected visitor behavior, awareness and understanding of the Nearshore habitats of the Monterey Bay. Since a front-end evaluation was conducted in 2002 prior to the original galleries being renovated, some methods and items will be repeated to allow for a comparison between the original and renovated galleries.

Exhibition Goals

The Nearshore Habitats renovation must:

- be developed and designed to have a new and unique look and feel and include new exhibit experiences that add value to the overall visit to the aquarium.
- reach more people with our mission to inspire conservation of the oceans.
- put people in the picture as part of nature, not separate from nature.
- weave our mission throughout the exhibit presentation, and provide our visitors with opportunities to become more personally engaged with conservation of the world's oceans.

- be designed for intergenerational family groups, and build on what's been learned through research and museum visitor studies about the different ways people learn, how families learn in museum settings and what visitors value about their experiences here at the aquarium.
- maintain our regional focus, and make the regional connections accessible and obvious for visitors.
- create a connected and contiguous experience along the Habitats Path.
- build on what we've learned from our temporary exhibits about displaying live animals and the latest advances in tank design.

Research Questions

1. How do visitors currently use the exhibition?
2. Which design decisions for the renovation affected visitor behavior?
3. What do visitors think the exhibition is about?
4. How do visitors feel (what do they like and dislike) about the exhibition?
5. What is the unique character of Ocean's Edge?
6. How do visitors perceive conservation messages?
7. Which of the new additions, such as humor and "putting people in the picture," did visitors notice? What effect did these have on the visitor experience and perception of conservation messages?

Methods

We used multiple research methods to examine how visitors are using and reacting to Ocean's Edge, including:

Method	Sample Size	Description
Timing and tracking observations	103 visitors	Unobtrusive observations of what visitors attended to and for how long
Exit interviews	348 visitors	Structured interviews using forced-choice and open-ended questions
In-depth interviews	40 visitor groups	Longer qualitative interviews with groups to gather in-depth information and follow up on the exit interviews

Main Findings

1. How do visitors currently use the exhibition?

On average, visitors spent 21 minutes in Ocean's Edge and attended to 22% of the exhibits. These numbers are slightly lower than the pre-renovated experience in the Nearshore galleries. At the same time, 64% of visitors rated the exhibition as *Excellent*, which was relatively high compared to previous exhibitions.¹ One factor may have been pre-renovation (Summer 2002) and post-renovation (Summer 2006) differences in the way visitors distributed the time for their entire Aquarium visit. Once the renovated Ocean's Edge galleries opened, there were more experiences available for visitors throughout the Aquarium—including more temporary exhibitions and pocket interactive exhibits. However, the overall stay time, which has been about two and one half hours for the past decade, remained the same.² In other words, visitors were taking the same amount of time to visit the entire Aquarium even though there was more to see and do post-renovation. In any case, these numbers are similar to visitors who were observed in similar-sized exhibitions in other museums, zoos and aquariums across the nation (Serrell, 1998).³

Overall, the most attended exhibits in Ocean's Edge were the animal tanks, where visitors spent 80% of their total time in the exhibition. While live animal exhibits and interactives were tied for the average percent stopping (33%), live animal exhibits had longer average stay times (60 sec.) compared to interactives (37 sec.). The areas where people spent the most time were the Deep Reef, Rocky Shores Touch area (including the Aviary), Sandy Seafloor and Shale Reef; most of these areas had views of the Monterey Bay Habitats Tank.

2. Which design decisions for the renovation affected visitor behavior?

The addition of specific exhibits did focus visitor attention in certain areas. For example, the new Wave Crash portion attracted a large proportion of visitors (50%) and stay time was also good (62 sec.). The Real Cost café attracted a modest proportion of visitors (23%) but stay time was high (87 sec.). Tidepool Olympics, as a four-person interactive "game," attracted fewer visitors (12%) but stay time was also high (96 sec.). One area that showed great improvement was the Rocky Shores area that contained a lot of new media. Exhibits in this area prior to renovation averaged 4% of visitors stopping at each exhibit. After renovation that number more than tripled to an average of 13% of visitors stopping at each exhibit.

¹ The proportions of *Excellent* ratings for the following exhibitions are: Jellies: Living Art: 76%; Splash Zone (2000): 53%; Mysteries of the Deep: 64%; Inside Story: 46%; Fishing for Solutions: 43%.

² Data from the Aquarium's monthly marketing exit surveys shows that the average length of a visit to the Aquarium—about 2.5 hours—has remained steady for the decade 1997-2007.

³ Serrell, B. (1998). *Paying Attention: Visitors and Museum Exhibits*. Washington, DC: American Association of Museums.

3. What do visitors think the exhibition is about?

Overall, 75% of visitors understood all or part of the main message: about one-quarter of visitors (23%) interviewed at the exit of the exhibition identified the exhibition as being about life in the shallow water or ocean's edge. Additionally, 15% mentioned conservation or preservation in describing Ocean's Edge, and this was sometimes paired with a mention of education (13%). Another 11% specifically mentioned the local area or Monterey Bay. Also, during in-depth interviews, several visitors mentioned seeing the area introductory pylons with images they attributed to aspects of Monterey Bay. Another quarter (25%) of visitors thought Ocean's Edge was about what's in the world's oceans.

4. How do visitors feel (what do they like and dislike) about the exhibition?

In addition to the kelp forest tank and the touch pools, visitors mentioned the octopus, aviary, the Monterey Bay Habitats tank and the wave crash as favorite exhibits. They enjoyed these exhibits mainly because they were unique (20%), they got to see something up close (13%), they was interesting (7%), the variety of species (6%) or the movement of a particular animal (6%). When asked what would improve Ocean's Edge, people mainly mentioned reducing crowds. Other specific comments included having more touch experiences or interactives and better lighting. Areas that worked particularly well for groups with children were the Kelp Forest tank and the Touch pools.

5. What is the unique character of Ocean's Edge?

Almost two-thirds of visitors (63%) do perceive Ocean's Edge as different from other aquarium exhibitions. They noted the interactive and touch experiences, the natural look of the exhibits, the focus on local animals and the larger variety of animals. These findings were similar to the findings of the Nearshore front-end study where a majority (63%) of visitors mentioned the Nearshore exhibits as having a unique and distinct look and feel to other areas of the aquarium.

6. How do visitors perceive conservation messages?

Almost two-thirds of visitors (65%) said they remembered seeing or hearing something about conservation in the exhibition, and nearly half of visitors (49%) could recall something specific, although what they recalled varied. The majority of their comments (73%) were related to four main categories: specific exhibits or animals (27%); seafood or fishing practices (23%); pollution (14%); and caring for the oceans and ocean life (9%). The single most mentioned conservation-related item was the Seafood Watch Pocket Guide, at 12%. Compared to the Nearshore front-end, visitors mentioned that there was a conservation message, but most visitors had trouble recalling specific information and where they had seen it.

7. Did visitors notice the new addition of “putting people in the picture”? What effect did it have on the visitor experience and perception of conservation messages?

Part of the renovation's interpretive strategy included incorporating images and video of people modeling appropriate behavior within the Nearshore habitats. This strategy intended to help visitors draw connections between the people and animals that share these habitats. During in-depth interviews, visitors were asked if they noticed anything about people and conservation in the exhibition. This new element was a positive addition to the visitor experience as **some** visitor groups mentioned enjoying exhibits that included people, particularly the Real Cost Café, the nature center and other exhibits with video in them (which included people). A **couple** of visitor groups mentioned that having a “person” (in videos) there talking about the content was a good approach to communicate conservation information.

Timing and Tracking Observations

Purpose of the Study

The purpose of including timing and tracking observations in a summative evaluation is to provide a detailed picture of how visitors are using an exhibition. This level of detail can only be provided through direct observation of visitors as they're moving through an exhibition. The observations were intended to answer the following questions: How are visitors using the exhibition? Where are they stopping? And for how long?

Method

A total of 103 visitors were unobtrusively observed during their visit to Ocean's Edge, over 19 days from June 6, 2006 to July 4, 2006. Data were collected over all seven days of the week, with 73% weekdays and 27% weekends⁴. The majority of observations were done in June (79%), with the remainder (21%) completed in July.

Adult visitors were randomly selected for observation as they entered the exhibition. Data collectors recorded visitor movement using Noldus The Observer[®] 5 software on an hp iPAQ handheld computer. However, since visitors in a timing and tracking study are not interviewed, only selected demographics can be gathered about them. In this study, observers recorded visitors' gender, their estimated age in five-year increments and whether they were visiting with anyone who appeared to be under the age of 18.

Findings from this electronic data collection method were compared to findings from the Nearshore front-end evaluation where timing and tracking data was collected with paper exhibition layout maps and stopwatches. These methodological differences may have some effect when comparing the findings from this study to the Nearshore front-end study.

⁴ Although there were more data collected during the weekday, there were no statistically significant differences between weekdays and weekend days for total time spent in the exhibition or total time attending to exhibits.

Findings ⁵

1. How are visitors using the exhibition? Where are they stopping? For how long?

On average, visitors spent 21 minutes in Ocean's Edge and attended to 21% of the exhibits.

Overall, the most attended exhibits in Ocean's Edge where visitors spent most of their time were the animal tanks, where visitors spent 80% of their time. They spent 5% at videos, 4% at interactives and a small amount of time (<1%) at non-living object or text panels. Around 11% was spent moving between the exhibits or in behaviors where they weren't engaged with a particular exhibit (e.g., talking, looking at map, etc.). The two most popular exhibits were the Kelp tank and the Monterey Bay Habitats tank which attracted 90% and 79% of visitors, respectively. They were two of the top three stay times, with visitors spending 4:06 at the Monterey Bay Habitats tank and 2:45 at the Kelp Forest tank.

The areas where people spent the most time (see Table 8) were the Deep Reef, Rocky Shores Touch area (including the Aviary), Sandy Seafloor and Shale Reef. Areas in the beginning of Ocean's Edge had the highest proportions of visitors who stopped. Areas towards the end, where visitors could take more than one path, had lower proportions of visitors stopping in them.

The type of exhibit significantly affected both the percentage of visitors attending to it and the amount of time people spent there. While live animal exhibits and interactives were tied for the average percent stopping (33%), live animal exhibits had longer average stay times (60 sec.) compared to interactives (37 sec.). Animal touch experiences were the single most popular type in terms of stopping (55%) and average length of stay (114 sec.).

When compared to the Nearshore front-end, these numbers are slightly lower than the pre-renovated experience in the Nearshore galleries, but are similar to visitors who were observed in similar-sized exhibitions in other museums, zoos and aquariums across the nation (Serrell, 1998).⁶ Additionally, the proportion of time spent at exhibits was much higher for Ocean's Edge (94%) compared to Nearshore (70%). One factor may have been pre-renovation (Summer 2002) and post-renovation (Summer 2006) differences in the way visitors distributed the time for their entire Aquarium visit. Once the renovated Ocean's Edge galleries opened, there were more experiences available for visitors throughout the Aquarium—including more temporary exhibitions and pocket interactive exhibits. The increase in activities was not coupled with an increase in overall stay times, which has been similar for the past decade.⁷ In other words,

⁵ This section presents both mean and median measures. The mean is sensitive to outliers (really high or really low numbers) in the data's distribution, which can increase or decrease the outcome since each number exerts the same influence over the calculated mean. This effect is reduced as the distribution of the data normalizes (i.e., there are few outliers). The median, or the number at which 50% of the sample is higher than that number, and 50% is lower, reduces the influence of outliers.

The mean is used exclusively throughout the rest of the report since the distributions are normal enough to warrant using means instead of medians.

⁶ Serrell, B. (1998). *Paying Attention: Visitors and Museum Exhibits*. Washington, DC: American Association of Museums.

⁷ Data from the Aquarium's monthly marketing exit surveys shows that the average length of a visit to the Aquarium—about 2.5 hours—has remained steady for the decade 1997-2007.

visitors were taking the same amount of time to visit the entire Aquarium even though there was more to see and do post-renovation.

2. *What was the visitor profile for the timing and tracking sample?*

To match the Nearshore Front-End study (Yalowitz, 2002) roughly half of the groups sampled consisted of only adult (48%) and half included children (52%). Gender of observed visitors was split equally, while almost two-thirds of those observed (65%) were between the ages of 25 to 44.

Table 1. Gender of Visitors, Timing and Tracking

Gender	Total
Male	50%
Female	50%
Total	100%

Table 2. Estimated Age of Visitors, Timing and Tracking

Estimated Age	Total
18 to 24	15%
25 to 34	30%
35 to 44	35%
45 to 54	5%
55 to 64	10%
65 and older	5%
Total	100%

Table 3. Group Type, Timing and Tracking

Group Type	Total
Adult only group	48%
Adult visiting alone	4%
Two adults, no children	37%
Three or more adults, no children	7%
Children in group	52%
One adult, with children	8%
Two adults, with children	36%
Three or more adults, with children	8%
Total	100%

3. How do timing and tracking data for Ocean's Edge compare to similar data from other exhibitions?

Timing and tracking data for Ocean's Edge were compared with data from other aquarium exhibitions for which we have whole-exhibition timing and tracking data. They were also compared with data collected from similar-sized exhibitions at museums, zoos and aquariums around the country (Serrell, 1998). Visitors moved through the Nearshore exhibition at a slower rate compared to Ocean's Edge. However, there were more exhibits in the new area as well as an increase in the amount of experiences in the Aquarium as a whole. The greater multitude of offerings in the exhibition and the Aquarium may have lead visitors to move through the Ocean's Edge galleries at a faster clip in order to see everything in the Aquarium during their visit.

(See Appendix A for background on expectations for total time spent in exhibitions.)

Table 4. Timing and Tracking in Ocean's Edge Compared to Other Exhibitions ⁸

Exhibition	Square Feet	Average Total Time in Exhibition	Sweep Rate Index (SRI)	Number of Exhibits	Median % of Exhibits Stopped at
Ocean's Edge (post-renov.)	15,236	21.1	719	76	21.0
Nearshore (pre-renov.)	15,566	28.3	550	70	25.7
<i>Sharks: Myth and Mystery</i>	4,609	12.9	357	43	44.2
<i>Jellies: Living Art</i>	4,650	9.5	490	42	34.0
Vanishing Wildlife	1,702	5.7	299	16	22.0
National Study (Serrell, 1998) ⁹	9,267	17.9	697	51	26.6

⁸ The Nearshore (pre-renovation) and Ocean's Edge summative studies used a "stopped at" definition of attracting power where someone had to physically stop at the exhibit. The other exhibitions used "attending to" for attracting power where glancing at something for 2 or more seconds counted. The Ocean's Edge summative used "stopping at" only so that a comparison could be made to the Nearshore study.

⁹ From Serrell, B. (1998). *Paying Attention: Visitors and Museum Exhibits*. Washington, DC: American Association of Museums. This book lists timing and tracking data from national museum, zoo and aquarium exhibitions. Of this group 18 exhibitions between 8,000 and 12,000 square feet were included; numbers in the table are averages across the 18 exhibitions.

4. How do visitors behave in Ocean's Edge?

On average, visitors spent 21 minutes in Ocean's Edge and attended to 22% of the exhibits. These numbers are slightly lower than the pre-renovated experience in the Nearshore galleries. At the same time, 64% of visitors rated the exhibition as *Excellent*, which was relatively high compared to previous exhibitions.¹⁰ While researchers did not find definitive causal evidence for the difference, one factor may have been pre-renovation (Summer 2002) and post-renovation (Summer 2006) differences in the way visitors distributed the time for their entire Aquarium visit. Once the renovated Ocean's Edge galleries opened, there were more experiences available for visitors throughout the Aquarium—including more temporary exhibitions and pocket interactive exhibits. However, the overall stay time, which has been about two and one half hours for the past decade, remained the same.¹¹ In other words, visitors were taking the same amount of time to visit the entire Aquarium even though there was more to see and do post-renovation.

Table 5. Summary of Visitor Behavior in Ocean's Edge

Ocean's Edge	Lowest	Highest	Mean	Median
Number of exhibits stopped at (out of 76)	1	43	17	15
Percent of exhibits stopped at	1	57	22	20
Time spent in exhibition (min:sec)	00:19	1:03:27	21:05	19:45
Percent of total time at exhibits	1	100	89	94
Nearshore (pre-renovation)	Lowest	Highest	Mean	Median
Number of exhibits stopped at (out of 70)	1	61	21	18
Percent of exhibits stopped at	1	87	29	26
Time spent in exhibition (min:sec)	00:10	1:24:00	28:21	26:10
Percent of total time at exhibits	14	100	68	70

¹⁰ The proportions of *Excellent* ratings for the following exhibitions are: Jellies: Living Art: 76%; Splash Zone (2000): 53%; Mysteries of the Deep: 64%; Inside Story: 46%; Fishing for Solutions: 43%.

¹¹ Data from the Aquarium's monthly marketing exit surveys shows that the average length of a visit to the Aquarium—about 2.5 hours—has remained steady for the decade 1997-2007.

5. What percentage of visitors attended to or stopped at each exhibit for 2 or more seconds?

Table 6. Percentage of Visitors Stopping at Each Exhibit
(See Appendix B for a visual representation of these data.)

Exhibit	Percent Stopping
Kelp Forest	90
Monterey Bay Habitats	79
Lingcod and wolfeel tank	64
Touch pool	57
Giant octopus tank #2	56
Bat rays	53
Coastal wetlands	52
Giant octopus tank #1	50
Wave crash tunnel	50
Sheepcrab tank	48
Shale look down	46
Crevice dwellers tank	45
Rockfish tank	45
Small flatfish tank	43
Flatfish tank	41
Sanddollars tank	39
Bottom dwellers tank	36
Skates tank	35
Indoor coastal stream	31
Tube anemone tank	30
Outside, looking at bay	29
Octopus feeding video	28
Crabs tank	28
Clams tank	27
Skeletons (by lingcod, wolf eel)	26
Skeleton shrimp tank	26
Drill bit and clam model	24
Fringeheads tank	23
Real Cost café	23
Junk tank	22
Macrovideo interactive	22
Brittlestars tank	21
Sandy seafloor interactives	21
Surge channel interactive	21
Barnacle interactive	20
Chiton and snapping shrimp tank	19
Fat innkeeper worm/ghost shrimp tank	19
Wave splash tank (near Aviary)	18
Naturalist video	17
Aviary view (nature center)	17
Shale reef interactive	16
Surfperches tank	16
Wharf piling interactive	16
Feeding barnacles interactive	16
Tidepool tank	16

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Indoor wave crash	16
Kelp video	15
Tides video and interactive	15
Outdoor wave crash	15
Tidepool Olympics	12
Nature center flapper #1	9
Slough channel tank	9
Nature center flapper #2	8
Outdoor coastal stream	8
Seafood Watch pocket guide cash register	7
Clam touchable models	7
Aviary view (rocky shore side)	7
Mussels/sea star interactive	7
Shale reef title video	5
Steelhead interactive	5
Rockfish video	4
Nature center board interactive	4
Elkhorn slough map	4
Animals in waves interactive	4
Deep reef title video A	3
Deep reef title video B	3
Sandy seafloor title video	3
Infinity view	3
Sand crabs tank	3
Coastal stream title video	3
Ocean's Edge quote	2
Beach secrets interactive	2
Below the wharf title video	1
Nature center title video	1
Animals in tides interactive	1
Rocky shore title video	0

6. What is the average time spent at each exhibit?

Table 7. Average Time Spent by Visitors Stopped at Each Exhibit
(See Appendix C for a visual representation of these data.)

Exhibit	Average time (sec.)
Monterey Bay habitats	246
Coastal wetlands	167
Kelp forest	165
Touch pool	143
Outside, looking at bay	120
Tidepool Olympics	96
Real Cost Café	87
Bat rays	85
Sand crabs	85
Kelp video	73
Shale look down	72
Outdoor wave crash	66
Lingcod and wolfeel tank	65
Wave crash tunnel	62
Octopus feeding video	59
Macrovideo interactive	59
Bottom dwellers tank	58
Animals in the tides interactive	57
Sheepcrab tank	56
Crevice dwellers tank	56
Flatfish tank	55
Aviary view (nature center)	54
Giant octopus tank #1	53
Giant octopus tank #2	51
Outdoor coastal stream	49
Fringeheads tank	48
Skeleton shrimp tank	48
Surge channel interactive	47
Tides video and interactive	47
Clam tank	46
Elkhorn Slough map	46
Rockfish tank	45
Chiton and snapping shrimp tank	45
Feeding barnacles interactive	45
Rockfish video	44
Nature center title video	44
Mussels/Sea Star interactive	44
Skates tank	43
Wharf piling interactive	42
Small flatfish tank	41
Crabs tank	40
Sandy seafloor interactives	40
Naturalist video	39
Sand dollars tank	38
Barnacle interactive	38

Surfperches tank	37
Animals in waves interactive	36
Skeletons (by lingcod, wolf eel)	35
Indoor coastal stream	35
Junk tank	33
Fat innkeeper worm/ghost shrimp	33
Shale reef interactive	32
Steelhead interactive	32
Nature center flapper #1	30
Beach secrets interactive	30
Wave splash tank (near Aviary)	29
Tidepool tank	29
Tube anemone tank	28
Slough channel tank	28
Indoor wave crash	28
Brittlestars tank	27
Aviary view (rocky shore side)	26
Deep reef title video A	25
Below the wharf title video	25
Coastal stream title video	25
Drill bit and clam touchable model	23
Nature center board interactive	23
Ocean's Edge quote	20
Clam touchable models	20
Seafood Watch Pocket Guide cash register	18
Infinity view	17
Deep reef title video B	15
Sandy seafloor title video	15
Nature center flapper #2	15
Shale reef title video	11
Rocky shore title video	0

Table 8. Visitor Behavior in Each Area of Ocean's Edge

Area	% Stopped in Area	Median Time in Area (sec.)¹²
Entry area	100	29
Kelp Forest / Intro	90	62
Sandy Seafloor	76	192
Deep Reef	74	217
Shale Reef	71	190
Rocky Shores Touch	69	194
Octopus	67	113
Above the Wharf	55	72
Aviary	52	138
Rocky Shores Media	45	89
Coastal Stream	34	33
Outside Deck	32	99
Nature Center	31	98
Below the Wharf	28	48

¹² Median time is calculated only for those who stopped in the area, not for all visitors to the exhibition.

7. Are there differences in visitor behavior by type of exhibit?

Table 9 presents a comparison of visitor behavior at the 14 types of exhibits in *Ocean's Edge*, which were then classified into four main categories. "Average Percent Stopping" represents the average percentage of people who stopped at an exhibit for two or more seconds. Therefore, if an exhibit was an animal tank, then an average of 33% of visitors would be expected to stop at it. The same principle applies to "Average Time Spent." If an exhibit was an animal tank, visitors who attended to it would be expected to do so for an average of 60 seconds. "Number of Exhibits" refers to the number of exhibits in the exhibition that were grouped into a particular category.

The type of exhibit significantly affected both the percentage of visitors who stopped at an exhibit as well as the amount of time people stopped. Live animal exhibits and interactives both had an average of 33% of visitors stopping at them. Only 8% of visitors stopped at video-only exhibits and another 8% stopped at other non-living exhibits. The percent stopping at live animal exhibits was lower than for temporary exhibitions, but this may reflect the large number of animal tanks (including small ones) in Ocean's Edge.

In terms of stay time, live animal exhibits had the highest average stay time (60 seconds), followed by interactives (37 seconds) and videos (37). Non-living objects or text panels had the lowest average stay time (27 seconds).

(See Appendix D for a list of the exhibits and how they were classified.)

Table 9. Visitor Behavior by Exhibit Type
 (See Appendix D for which exhibits are included in each exhibit type.)

Exhibit Type ¹³	Number of Exhibits	Average Percent Stopping	Average Time Spent (sec.)
Live Animal Exhibit	41	33	60
Large live animal exhibit	9	48	99
Medium live animal exhibit	8	39	44
Small live animal exhibit	15	24	43
Animal touch experience	2	55	114
Views into aviary	2	12	40
Live tank with interactive	5	26	54
Interactive	12	33	37
Low-tech interactive	9	14	30
High-tech interactive	3	7	57
Video	17	8	37
Stand-alone video	2	16	52
Video with text panel(s)	2	11	31
Interactive video	4	11	57
Intro panel with video	9	4	26
Non-living Object or Text Panel	5	8	27

Statistically significant?

Yes

Yes

Note: Type of exhibit DOES affect the percentage of visitors stopping at an exhibit.

Note: Type of exhibit DOES affect the average time visitors spend at an exhibit.

¹³ The size of the animal tank (small, medium, large) was determined by the number of visitors who could “comfortably” view the tank at one time. Small tanks could accommodate 1 to 4 visitors at once, medium tanks 5 to 9 visitors and large tanks could accommodate 10 or more people viewing them at once. See Appendix D for how each tank was classified.

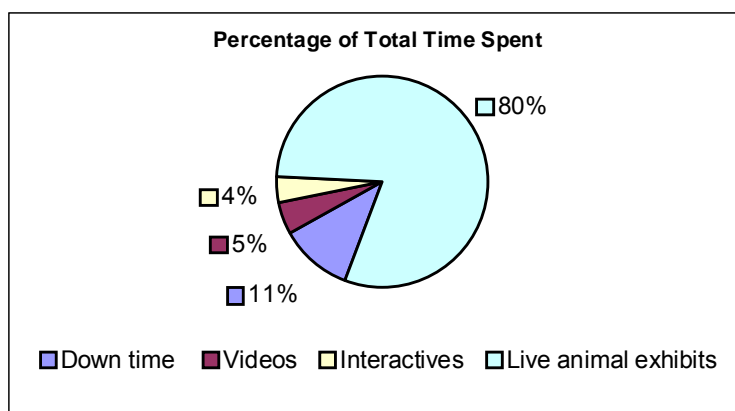
8. What percentage of total time do visitors spend at different types of exhibits?

On average, visitors spent almost all of their time (89%) stopped at exhibits. Not surprisingly, visitors spent the largest percentage of time at animal tanks (80%), followed by videos (5%) and interactives (4%).

Table 10. Percentage of Total Time Spent by Visitors, by Exhibit Type
(See Appendix D for a list of the exhibits and how they were classified.)

Exhibit Type ¹⁴	Percent of Total Time Spent	
Live Animal Exhibit	80	
Large live animal exhibit		45
Medium live animal exhibit		10
Small live animal exhibit		9
Animal touch experience		9
Live tank with interactive		3
Views into aviary		<1
Video	5	
Stand-alone video		2
Interactive video		2
Intro panel with video		1
Video with text panel(s)		<1
Interactive	4	
Low-tech interactive		3
High-tech interactive		1
Non-living Object or Text Panel	<1	
Down time ¹⁵	11	

Figure 1. Percentage of Total Time Spent by Visitors in General



¹⁴ The size of the animal tank (small, medium, large) was determined by the number of visitors who could “comfortably” view the tank at one time. Small tanks could accommodate 1 to 4 visitors at once, medium tanks 5 to 9 visitors and large tanks could accommodate 10 or more people viewing them at once. See Appendix D for how each tank was classified.

¹⁵ Down time in the exhibition is the percentage of time visitors spent engaged in other behaviors besides attending to the exhibits (i.e., moving between exhibits, looking at a map, having conversations, sitting down, etc.).

9. Do adults visiting with children behave differently than adults visiting without children?

There were not any statistically significant differences between adults visiting with or without children in the amount of time they spent, number or percent of exhibits attended to. However, adults in adult-only groups spent more of their time at videos compared to adults visiting with children. Conversely, adults visiting with children spent more time at interactive exhibits compared to adults in adult-only groups.

Table 11. Comparing Visitor Behavior of Adults in Groups With Children and Adult-Only Groups

Measure	Children in Group		Adult-Only Group		Statistically Significant Difference?
	Mean	Median	Mean	Median	
Number of exhibits attended to (out of 79)	16	15	18	17	No
Percent of exhibits attended to	21	20	23	22	No
Time in exhibition (min:sec)	20:32	20:12	21:27	19:27	No
Percent of total time attending to exhibits	87	93	92	95	No
Percent of total time spent at:					
Live animal exhibits	78	80	81	86	No
Interactives	5	3	3	1	Yes
Videos	4	2	7	4	Yes

Structured Interviews

Purpose of the Study

The structured interviews were conducted to measure the short-term impact¹⁶ of a visit to Ocean's Edge. In general, this method allowed us to get visitors' general and specific reactions to the exhibition. This quantitative interview also lets us see what visitors think about the exhibition.

The structured interviews were designed to answer the following:

1. How do visitors rate the exhibition and what would make it even better?
2. Which areas did visitors enjoy the most and why?
3. Which parts of Oceans' Edge worked best for groups with children and why?
4. What did visitors think the exhibition was about?
5. Did visitors recognize key elements of the messages in the various habitat areas?
6. What did visitors learn from the exhibition?
7. Which types of affect (i.e., emotions) did they experience in the exhibition?

Method

In August 2006, 348 randomly selected adult visitors were interviewed about their experience in Ocean's Edge. Visitors were approached as they were leaving the exhibition and asked if they would be willing to answer some questions about the exhibition. If they consented, an interviewer recorded their answers on an interview form. (See Appendix E for the structured interview form and Appendices F and G for the supporting materials used during the interview.)

Were there differences between those interviewed and aquarium visitors in general?

To determine whether the sample of visitors who were interviewed represented aquarium visitors in general, demographic data from the Ocean's Edge interviews were compared to demographic data from the aquarium's monthly exit surveys. In this case, all of the interview data were collected in August 2006 so monthly exit survey demographics for this month were used as a comparison.

There were two statistically significant differences between the two samples. In the Ocean's Edge sample there was a slight over sampling of repeat visitors compared to the monthly exit surveys. Also, the Ocean's Edge sample was slightly older compared to the monthly exit surveys.

¹⁶ Since the interviews were conducted immediately upon visitors exiting the exhibition, they document the immediate outcomes of a visit to the exhibition. In contrast, we have used telephone and web surveys to measure longer-term impacts.

Table 12. Ocean's Edge Interviews Compared With Monthly Exit Survey Respondents

Visitor Type	August 2006 Ocean's Edge Interviews	August 2006 Exit Surveys	Statistically Significant Difference?
First-time visitors	41%	52%	Yes
Members	16%	13%	No
Males/females	47% / 53%	44% / 56%	No
Visiting with children	61%	57%	No
Visitor origin:			No
California	66%	60%	
Other U.S. state	24%	32%	
International	10%	8%	
Age:			Yes
Under 21	1%	5%	
21 to 24	4%	7%	
25 to 34	23%	22%	
35 to 44	30%	30%	
45 to 54	25%	25%	
55 to 64	11%	7%	
65 and older	7%	5%	

Findings

1. How do visitors rate the exhibition and what would make it even better?

Almost all visitors (99%) rated Ocean's Edge as excellent or good, with 72% giving it an "excellent" rating (a 9 or 10 on a 10-point scale). This rating is slightly ahead of *Jellies: Living Art* (71%), which prior to this study had been our highest-rated exhibition. It had higher excellent ratings than temporary exhibitions such as *Mysteries of the Deep* (46%) and *Sharks: Myth and Mystery* (42%). It is important to keep in mind that the size of the Ocean's Edge exhibition, its large tank experiences and the touch areas make it a unique and popular experience at the aquarium.

Visitors who rated the exhibition a 9 or lower were asked what would make it a "10." Nearly half (45%) of the comments were about reducing crowding in the exhibition. There were also suggestions for improving the exhibition (31%), including having more touch experiences, increasing lighting and having more activities for kids or at kid-friendly height. Visitors also offered suggestions about the animals (17%), more specifically having more bat rays, a white shark or more big sharks and offering ways to see the giant octopus (which some visitors had a problem with seeing). Almost one in ten visitors (9%) couldn't think of anything to improve Ocean's Edge.

Table 13. Visitors' Overall Ratings

Rating	Frequency	Percent	Cumulative Percent
Excellent (9 to 10)	249	71.6	71.6
Good (7 to 8)	95	27.3	98.9
Fair (4 to 6)	4	1.1	100.0
Poor (1 to 3)	0	0	100.0
Total	354	100.0	

Table 14. Visitors' Suggestions for Improving the Exhibition

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

[If rated 9 or lower] What would make it a "10?"	Frequency	Percent
Comments about crowds	99	45.4
Fewer people, it's too crowded	60	27.5
Better able to see exhibits and labels (too crowded)	18	8.3
Better crowd control, flow	10	4.6
More space (too crowded)	9	4.1
Miscellaneous	2	0.9
Comments about exhibits	68	31.2
More touch experiences, interactives	18	8.3
Better lighting	15	6.9
More for kids, have things kid-height	9	4.1
Make it bigger	8	3.7
More information, identifying animals	6	2.8
Miscellaneous	12	5.5
Comments about animals	38	17.4
More bat rays	8	3.7
White shark, more big sharks	6	2.8
Couldn't see the octopus	6	2.8
More animals	6	2.8
Get a specific animal	5	2.3
Miscellaneous	7	3.2
Nothing, can't think of anything	19	8.7
More staff to talk to, point things out	5	2.3
I don't rate anything a 10	5	2.3
Fine as it is	2	0.9
Miscellaneous	27	12.4
Total visitors	218	

Miscellaneous crowding comments included the following:

- is a difficult place for older people because of running children/one of us had a knee replacement and found it difficult to maneuver around
- able to get a little closer to exhibits

Miscellaneous exhibit comments included the following:

- touch pool need more color or plants
- touch pool area/make sure each item is in the area it's supposed to because of crowds
- monitors in some areas as in otter section
- pools are too small compared to other aquariums
- more benches closer to exhibit
- touch pools could be better - bat rays get tired of being touched
- if the displays were more visible with animals closer
- more stuff for adults to do (like touch pools)
- more viewing on smaller exhibits
- underwater ocean ride
- more sitting areas
- walk through aquarium

Miscellaneous animal comments included the following:

- like the idea of the mixture of fish
- make it clearer [water] if possible need magnifying glass to see
- couple main types of animals in the pools
- bigger black sea bass - those guys are cool
- liked bat rays/impressed
- if you could touch an octopus
- sting rays interacting

General miscellaneous comments included the following:

- place/ can't go in with stroller
- more scuba divers
- if air condition is improved
- more feeding times
- wildlife in ocean
- serving free samples of fish [more chairs at seafood café to watch]
- more surrounding
- no cameras - people using cameras is distracting
- if the animals weren't in corners
- didn't like sea otter exhibit others were done well
- 10 = otters
- but could help if you had more obvious mapping throughout aquarium
- air conditioning
- less videos/want more live animals
- more feedings want to scuba dive
- want to see how species are related
- like kelp forest and touch pool area
- there's only so much you can do

- interaction with divers more often
- [kelp forest great]
- touch pool good
- [aquariums] others are far more advanced than these (in Singapore and Middle East)
- less people taking pictures
- I'm a perfectionist
- no children under 12 days
- put a suggested route on the map to increase flow of people, also more information or suggestions about conservation and oil spills is necessary.
- courtesy is an issue

2. Which areas did visitor enjoy the most and why?

Visitors are most likely to cite the kelp forest and touch pools as areas they enjoy the most. As a result, the survey item asked for the next most enjoyable aspect of a visit to Ocean's Edge. The next most commonly mentioned part were the octopus (21%), the aviary (13%), the big Monterey Bay Habitats tank (11%) and the wave crash (8%). The remaining areas consisted of specific exhibits, animals and experience (see below).

When asked why they enjoyed these particular aspects of Ocean's Edge, one in five visitors (20%) mentioned that it was a unique experience; in splitting up this 20% they either said it was something you don't normally get to see (15%) or that they specifically hadn't seen it themselves (5%). Next visitors said they got to see something up close (13%), it was interesting (7%), because of the variety of species (6%) or the movement of a particular animal (6%).

Table 15. Areas of Ocean's Edge Visitors Enjoyed the Most (besides Kelp Forest and Touch Pools)

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

Besides the Kelp Forest exhibit and the Touch Pool areas, which part of Ocean's Edge did you enjoy the most?	Frequency	Percent
Octopus (general)	73	21.2
Slough / Aviary / Birds	44	12.8
Monterey Bay Habitats Tank	37	10.7
Wave Crash Indoor	29	8.4
Deep Reefs	16	4.6
All of them	11	3.2
Sharks	12	3.5
Anemones (general)	12	3.5
Anchovies	6	1.7
Small exhibits / Side tanks	9	2.6
Wharf area	7	2.0
Bat Rays	5	1.5
Watching the fish, the fish	4	1.2
Octopus area	4	1.2
Touch Pool	4	1.2
Real Cost Cafe	3	0.9
Wetlands	3	0.9
Sheep crab	4	1.2
Outside deck	3	0.9
Big tanks, big areas	3	0.9
Bottom Dwellers	3	0.9
Coastal Stream	3	0.9
Crabs (general)	3	0.9
Flatfish (general)	3	0.9
Coral	2	0.6
Daughter interacting with exhibits	2	0.6
The videos (general)	2	0.6
Skeleton shrimp	4	1.2
Crevice dwellers	2	0.6
Magnifying glass	2	0.6
Common Murres	3	0.9
Sand dollars	4	1.2
Kelp forest	3	0.9
Exhibit not in OE	19	5.5
Don't know, no answer	31	9.0
Miscellaneous	30	8.7
Total visitors	345	

Miscellaneous comments included the following:

- shellfish
- big ugly rockfish
- nothing more than Kelp Forest and touch pool
- interactive areas within oceans edge - had toys to play with for kids
- more
- the sand crabs
- area that had the rock fish
- Sandy Shore
- tropical exhibit
- similar displays that focused on particular species
- feeding octopus
- loved the intertidal zone
- the white plumed anemones
- deep canyon area
- amazing power
- interaction in kelp forest
- farmed, raised fish
- floor bed
- big ling cod
- camouflage fish
- sandy bottom aquarium
- seeing the prawns
- tube anemones
- music enhances the experience
- cucumber looking things
- different colors
- the graphics
- little aquariums that showed shrimp
- mermaids purse
- aviary underwater scope

Table 16. Why Visitors Most Enjoyed These Areas

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

Why did you enjoy that part?	Frequency	Percent
Unusual, don't normally see	44	14.7
Closer look, easy to see	38	12.7
Interesting, fascinating	21	7.0
Variety, different species	17	5.7
The movement	17	5.7
I've never seen them before	15	5.0
Information, didn't know about them	14	4.7
Big animals, size of animals	14	4.7
Good for kids, watching kids	12	4.0
Colorful, beautiful	12	4.0
Camouflage, adaptations	12	4.0
Water around you, wave above	9	3.0
Shows co-existing, interaction of species	7	2.3
Peaceful, calm, mesmerizing	7	2.3
The way it's displayed	6	2.0
Enjoy looking at it	5	1.7
Bigger windows, tanks	5	1.7
Outside part	5	1.7
It was fun	5	1.7
Animal in the habitat, multiple habitats	5	1.7
I like sharks, there were sharks	5	1.7
Interactive exhibit	4	1.3
Just like it, like them	4	1.3
I like birds	4	1.3
Didn't know that was down there	4	1.3
I like octopus	3	1.0
Looks natural, realistic	3	1.0
Immersion, just like being there	3	1.0
Human/Animal interaction	2	.7
Multiple viewing points, different levels	2	.7
Talking with guides	2	.7
Conservation information	2	.7
You can touch things	1	.3
I love the ocean, fish	1	.3
Enjoyable, dramatic, spectacular	1	.3
Reminded me of diving	1	.3
Indoor/Outdoor aspect	1	.3
Like it, has specific species	1	.3
Videos	1	.3
Miscellaneous comments	57	19.0
Total visitors	300	

Miscellaneous comments included the following:

- to see reactions
- weren't a lot of people, could read and see signs. Important to read and see.
- [very dramatic] favorite place for 4 years
- they're so cute
- strange and creepy
- out of place
- always most favorite for long time
- idea of how birds live so close to water
- could see it!!!
- hadn't spent much time there before
- actually seeing it
- neat standing under it
- can see him
- so different
- watching seals sunbathing
- didn't know so tiny and living in ocean
- it's new
- jealous, want one at home
- so obvious and ugly
- it was all wonderful
- nothing downstairs
- not just underwater
- only part we got to see today
- because have been a member for 20 years and it's new
- to see what was underneath us [interesting]
- we have an aquarium at home and it reminded us of that
- familiarity with what I'm used to
- look of them and the suction
- you eat scallops you don't know where they come from
- can see without actually being in it
- could see it so well
- gave me an insight that I wasn't really aware of
- because a lot of the things you see about larger fish
- reading the way of life
- well it showed how the fish survived
- the presentation - if not a diver you don't know the opportunity to go so deep
- wasn't as crowded
- unique tank
- combines several levels of habitat
- to see how big
- good lighting
- it's the real feel of the ocean environment
- see fish, takes fear away for kids
- for adults
- we go over to the coast at Morro Bay
- their intelligence

- good descriptions
- neat to see how it works
- an appreciation of things in the ocean
- dynamic creatures
- experience you wouldn't normally have
- can observe them longer
- smaller crowds
- bubble walls
- not just fish

3. Which parts of the exhibition worked best for groups with children and why?

Adults visiting with children were most likely to say the kelp forest tank (29%) or touch pools (27%) worked best for their group. Some said all of it (8%) worked for them, while others mentioned the big tanks (6%), the aviary (4%), bat rays (4%) or the animals (4%).

When interviewers asked why that area worked best for their group, visitors gave the following reasons:

Kelp forest tank (29%): lots to see, different angles, it's bigger, something for everyone, easy for small children to see, many species

Touch pools (27%): kids like to touch, it's interactive, got to touch, kept them engaged, we could do it together

All of it (8%): kids could interact

Big tanks (6%): easier to see

Aviary (4%): [no specific trends, variety of responses given]

Bat rays (4%): [no specific trends, variety of responses given]

Wave crash (4%): [no specific trends, variety of responses given]

Table 17. Which Areas Worked Best for Groups with Children

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

Besides the Kelp Forest exhibit and the Touch Pool areas, which part of Ocean's Edge did you enjoy the most?	Frequency	Percent
Kelp forest tank	61	28.9
Touch pools	57	27.0
Miscellaneous	20	9.5
All of it	17	8.1
We split up, weren't together	15	7.1
Big tanks, big windows	12	5.7
Aviary	9	4.3
Bat rays	8	3.8
Wave crash	8	3.8
Monterey Bay Habitats tank, the big tank	6	2.8
Hands on, touch areas	5	2.4
Deep sea, deep reef	5	2.4
Sharks area, shark tanks	5	2.4
Octopus area	4	1.9
Kelp forest feeding	4	1.9
Small tanks, little windows	3	1.4
Wharf	3	1.4
Open, wider areas with more room	2	0.9
Splash Zone	2	0.9
Sandy seafloor	1	0.5
Tide pool	1	0.5
Jellies	1	0.5
Total visitors	211	

Miscellaneous comments included the following:

- 3-D window
- rockfish
- wharf section
- outside on patio
- Sandy Shore tank
- Outer Banks
- Seafood Café
- big fish
- stingrays
- tank of sea anemones
- the viewing behind the glass
- not really any
- none
- area of video games to the touch pool - my 5 year old wants games
- kelp lab
- play area

- sea otters
- touch pool volunteers
- penguins
- view screens

4. *What did visitors think the exhibition was about?*

Visitors were most likely to say they thought Ocean's Edge was about what's in the ocean (25%), but this was followed closely by those who correctly identified it as being about life in the shallow water or ocean's edge (23%). Additionally, 15% mentioned conservation or preservation in describing Ocean's Edge, and this was sometimes paired with a mention of education (13%). Another 11% specifically mentioned the local area or Monterey Bay.

Table 18. Visitor Descriptions of Ocean's Edge

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

In your own words, what do you think the Ocean's Edge exhibit is about?	Frequency	Percent
What's in the ocean	88	25.4
Life in shallow water, ocean's edge	78	22.5
Conservation (worth protecting, keeping in clean)	53	15.3
Education about ocean	46	13.3
What's around here, in Monterey Bay	37	10.7
Diversity of animals, habitats	21	6.1
Things you don't normally see	17	4.9
How it all co-exists, relates to each other	17	4.9
What's under the surface, what it looks like	14	4.0
Kelp	12	3.5
Animals in deep ocean	9	2.6
Animals in their natural habitats	9	2.6
Not the deep sea	8	2.3
Shows the beauty	6	1.7
Helps people appreciate what's out there	6	1.7
Bottom of ocean, ocean floor	5	1.4
Don't know	5	1.4
Touching animals	5	1.4
Get close to nature	2	0.6
Miscellaneous	20	5.8
Total visitors	347	

Miscellaneous comments included the following:

- fish
- colder ocean animals, non-typical
- exploring different wildlife
- fish
- see fish
- names of life stages of trout
- starfish, sardines, and octopus. Stuff like that
- so many creatures lived there
- learning about habitats and environments
- wave action and anemones and creatures to watch but for
- showing the kids how they swim out in the ocean, sand dollar
- very visual for the kids
- trying to give us a glimpse of how fish behave in their environment
- about crustaceans living within crabs
- explaining the depth of the ocean
- each exhibit different/bird sanctuary area was showing what the birds did when people were around/touch pools and kelp forest was like the rhythm of the ocean
- makes us more in touch with what's going on in ocean
- life
- seems to be a glimpse of what's right under the surface/gives kids an idea of the beach what's in that area
- experience for kids

5. Did visitors recognize key elements of the messages in the various habitat areas?

Visitors were given a list of eight statements and asked which four they thought were the main ideas of the exhibition (see Table 18). Visitors were only partially able to identify the correct messages, with two of the four “correct” main messages of the exhibition identified in the top four selected. Two of the correct main messages were the two least selected statements by visitors, although none of the messages were chose by fewer than half (50%) of visitors.

Table 19. Visitor Recognition of Main Messages

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

Which four of the following statements do you think are the main ideas of the exhibition?	Frequency	Percent
These extraordinary ocean animals and plants are from all over the world.	294	85.2
The nearshore habitats are home to a vast array of animals and plants.	264	76.5
Sharks, sea turtles and tunas are amazing, diverse and in trouble.	260	75.4
There are many different kinds of ocean habitats close to shore—from kelp forests and deep reefs to the beach and the rocky shores.	255	73.9
The ocean is full of abundant and diverse life.	243	70.4
The deep sea is deep, dark and under pressure and home to creatures with incredible adaptations.	234	67.8
You have a connection to the ocean animals you see here and you can join us to work for a healthy ocean.	191	55.4
Everything you see here lives right outside in Monterey Bay.	179	51.9
Total visitors	345	

NOTE: Statements in bold are the actual main messages of the exhibition.

6. What did visitors learn from the exhibition?

When asked to complete a sentence about the exhibition starting with “I never realized that ...” the majority of visitors, answered varied. The most common response (27%) related to something they didn’t realize about a specific species (i.e., their behavior, size, variety of species, etc.). Next, visitors were mostly likely to give general comments such as they didn’t realize there were so many different species (21%) or that there were so many animals out there (11%). Meanwhile, 4% mentioned the conservation messages in the exhibition.

Table 20. Visitor Learning

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

Please complete the following sentence about Ocean's Edge: "I never realized that...."	Frequency	Percent
Comments about a specific species	94	27.3
Behavior	32	9.3
General info	22	6.4
Size	12	3.5
Variety	8	2.3
Lives close to shore	6	1.7
Texture	6	1.7
Importance	4	1.2
Reaction to it	3	.9
Anatomy	1	.3
There were so many different species	73	21.2
There was so much out there, so many animals	39	11.3
No answer, don't know	20	5.8
The co-existing relationship between species	17	4.9
Comment about kelp, kelp tank	17	4.6
How big, tall kelp is	6	1.7
How fast kelp grows	4	1.2
Other kelp comment	5	1.2
First living kelp tank, could get tank this big	2	.6
Kelp Forest Tank comment	2	.6
So colorful/Beautiful	16	4.6
Conservation (it's delicate, disappearing)	15	4.4
I already knew it, no answer	9	2.6
So much was so close to shore	9	2.6
Fish were that big	8	2.3
Comment about exhibits (realistic, large, nice, etc.)	5	1.4
Oceans are so big, complex	5	1.4
There were different habitats, areas	5	1.4
Importance of oceans, plants and animals	3	.9
Could touch things in touch pool	2	.6
It was so crowded with people in MBA	2	.6
Sea life, Nearshore is interesting	1	.3
Aquarium had so much, is so good	1	.3

Miscellaneous comments	35	10.1
Total visitors	345	

Miscellaneous comments included the following:

- don't remember, was science major @ CSUMB
- people can be so rude and use flash photography on squid
- so intricate
- nature was so creative
- didn't get rid of second tank back there
- there were so many people so early
- it's not artificial, it's nature
- it takes so much to operate aquarium
- the ocean was gentle and soothing
- exactly what goes on in the ocean
- everything - place where it came from doesn't have
- commercial seafood is raised
- edge of the wharf was such an interest
- it's so wonderful
- underwater wildlife was so incredible
- fish were so fascinating
- that we were so close to the fish and underwater animals/that they were right there
- the ocean is so wonderful
- to see what a treasure of not only animals but also vegetation
- fish play - that what it looks like
- it's amazing
- wasn't quite what I expected
- there's so much activity below that you don't see
- so many undiscovered things could be in the ocean
- never saw that big sun fish
- there was that much activity under the sea water
- little kids get so excited about the ocean and tidepool life
- life in the sea could be so wonderful
- the power of the oceans
- some of the oceans' currents drop four feet
- how many things live very deep you would never know about
- that sting rays were so close and so friendly

7. Which types of affect (i.e., emotions) did they experience in the exhibition?

Visitors were given a list of 28 emotions and asked which ones they experienced in Ocean's Edge; roughly half were positive and half were negative (see Appendix G). Most of the emotions came from Jane Marie Clipman's research about the most commonly experienced emotions in museums.¹⁷ Each of the 345 visitors interviewed said they experienced at least one of the emotions on the list.

Emotional experiences in Ocean's Edge were overwhelmingly positive, as the top 15 emotions were positive in nature. The top three emotions, experienced by at least three-quarters visitors were interested (88%), amazed (75%) and curious (75%). These were followed by informed (65%) and peaceful (51%). The top negative emotions were sad (11%) and worried (11%), followed closely by tired (10%).

The strongest emotions closely matched which ones were experienced: interested (26%), amazed (19%) and impressed (12%). People also felt peaceful (6%), engaged (6%), informed (6%) and inspired (6%). Engaged and inspired were more powerful compared to their frequency, as they were ranked higher in the "strongest emotion" compared to simply being experienced.

The structured interviews were designed to study which emotions were being experienced, and the in-depth interviews followed up in more detail to understand how these emotions occurred and what impact, if any, they had on the overall experience and understanding of the main messages.

¹⁷ Clipman, J.M., Ph. D. *Development of the Museum Affect Scale and Visit Inspiration Checklist*. Presented at the Visitors Studies Association Annual Meeting, 2005.

Table 21. Emotions Experienced

Note: Visitors gave more than one response, so total responses exceed 100%.

Which of the following emotions did you experience, even just a little bit, during your time in Ocean's Edge?	Frequency	Percent
Positive emotions		
Interested	304	88.1
Amazed	258	74.8
Curious	258	74.8
Impressed	252	73.0
Informed	224	64.9
Peaceful	210	60.9
Engaged	177	51.3
Fun	174	50.4
Excited	139	40.3
Amused	138	40.0
Inspired	129	37.4
Grateful	126	36.5
Happy	125	36.2
Satisfied	120	34.8
Spiritual	84	24.3
Empowered	37	10.7
Negative Emotions		
Sad	38	11.0
Worried	38	11.0
Tired	36	10.4
Shocked	24	7.0
Annoyed	20	5.8
Disgusted	17	4.9
Bored	11	3.2
Angry	8	2.3
Confused	7	2.0
Afraid	7	2.0
Discouraged	7	2.0
Disappointed	7	2.0
Total visitors	345	

Table 22. Which Emotions Were Strongest

Which of these emotions was the strongest?	Frequency	Percent
Interested	89	25.8
Amazed	64	18.6
Impressed	40	11.6
Peaceful	21	6.1
Engaged	21	6.1
Informed	20	5.8
Inspired	20	5.8
Curious	13	3.8
Excited	11	3.2
Fun	5	1.4
Amused	4	1.2
Grateful	4	1.2
Happy	4	1.2
Satisfied	4	1.2
Empowered	3	.9
Annoyed	2	.6
Worried	1	.3
Tired	1	.3
Bored	1	.3
Total visitors	345	

8. *Where did visitors feel engaged, inspired and empowered?*

After visitors picked the emotions they felt the interviewer asked where people felt particular emotions, with an emphasis on visitors being engaged, inspired or empowered. If visitors selected any of these three emotions, they were asked where they felt that emotion. For engagement, the touch pools (20%) and the kelp forest (15%) worked particularly well. The kelp forest was the highest rated for both feeling inspired (28%) and empowered (26%). Besides the kelp forest, other exhibits such as the aviary, touch pools and Monterey Bay Habitats tank were mentioned as being engaging, inspiring and empowering. For each there were also many unique answers where visitors picked a specific exhibit or place not mentioned by others; this was the "Misc. exhibit" category.

Table 23. Where Visitors Felt Most Engaged

Where did visitors feel engaged?	Frequency	Percent
Touch pools, bat rays	19	20.0
Everywhere	16	16.8
Misc. exhibit	15	15.8
Kelp forest	14	14.7
Aviary, birds	9	9.5
During feeding, diver	6	6.3
Monterey Bay Habitats tank	5	5.3
Octopus	4	4.2
Deep reef, reef	3	3.2
Don't know, not one place	3	3.2
Another part of the aquarium	1	1.1
Total visitors	95	

Misc. exhibit included the following: button displays; by the surge pool where I could turn knobs; exhibit of the snapping shrimp; kids area where eels and old rockfish are; lets us know what's going on around us in an intertwined web; little stations with microscopes; magnifying glass; quite a few of the areas; sandfish; sea shrimps, tiny ones; seafood and making choices; tube anemones; wave tunnel; where you turn the cranks (change tide) aviary section with volunteers at the touch pools; with trash on bottom/at tide pools/one of the volunteers was explaining about sea cucumbers

Table 24. Where Visitors Felt Most Inspired

Where did visitors feel inspired?	Frequency	Percent
Kelp forest	31	28.4
Misc. exhibit	18	16.5
Everywhere	15	13.8
Another part of the aquarium	12	11.0
Monterey Bay Habitats tank	7	6.4
Touch pools, bat rays	5	4.6
Anchovies schooling in kelp forest	5	4.6
Don't know, not one place	5	4.6
Octopus	4	3.7
Aviary, birds	3	2.8
During feeding, diver	2	1.8
Deep reef, reef	2	1.8
Total visitors	109	

Misc. exhibit included the following: bronze sculptures - art so well integrated into display - I'm a creative person; building; amazing what we've done; by the nature and what it means to all of us; collective feeling after seeing exhibit ;coral; garbage display; habitat section/flat fish/anemones; looking at some of the things they're doing in labs; new place in back about the slough/interesting to me; observing sharks; oil drilling area touch; outside on pier; pollution exhibit, garbage; some of the pictures and divers/it's a beautiful career/the contact with nature/it's beautiful; trout stream; watching kids suit up for diving; waves; when walked in door

Table 25. Where Visitors Felt Most Empowered

Where did visitors feel empowered?	Frequency	Percent
Kelp forest	7	25.9
Misc. exhibit	6	22.2
Everywhere	5	18.5
Touch pools, bat rays	4	14.8
Another part of the aquarium	2	7.4
Monterey Bay Habitats tank	1	3.7
Octopus	1	3.7
Don't know, not one place	1	3.7
Total visitors	27	

Misc. exhibit included the following: display about different types of fish/diving/conservation/simple things you can do; display about preservation of oceans; information; marshlands and sanctuary area; outside looking at ocean and kelp forest area; the conservation tanks

9. Had visitors been to the aquarium or the Ocean's Edge exhibition previously?

Of those interviewed, more than half (59%) had been to the aquarium previously, and almost half (48%) of all visitors had seen Ocean's Edge before their visit that day. Of those who had seen Ocean's Edge previously, 37% had been since it was renovated, 12% 2 to 3 years ago, 20% 4 to 5 years ago and 31% had visited Ocean's Edge 6 or more years ago. The exhibition had been reopened for a little more than a year when the interviews were conducted.

Table 26. Repeat Visitation to Ocean's Edge

Is this your first visit to the aquarium?

Yes 41% (141 out of 344)
 No 59% (203 out of 344)

└─┬─> If No: **Have you seen Ocean's Edge before?**

No 18% (35 out of 200)
 Yes 83% (165 out of 200)

NOTE: 48% (165 out of 344) of all visitors had previously visited Ocean's Edge.

When was the last time you saw Ocean's Edge?

	<u>Seen OE Before Today</u>	<u>All Visitors</u>
Never	-----	53%
In past year	20% (33 out of 163)	10%
1 year ago *	17% (27 out of 163)	8%
2 to 3 years	12% (20 out of 163)	6%
4 to 5 years	20% (32 out of 163)	9%
6 or more years	31% (51 out of 163)	15%

* Ocean's Edge was renovated one year before the interviews, so someone who has seen it in the past year or one year ago saw the renovated Ocean's Edge galleries.

10. What did visitors remember about the conservation content in the exhibition?

Almost two-thirds of visitors (65%) said they remembered seeing or hearing something about conservation in the exhibition, and nearly half of visitors (49%) could recall something specific, although what they recalled varied. The majority of their comments (73%) were related to four main categories: specific exhibits or animals (27%); seafood or fishing practices (23%); pollution (14%); and caring for the oceans and ocean life (9%). The single most mentioned conservation-related item was the Seafood Watch Pocket Guide, at 12%.

Table 27. Percentage of Visitors Who Could Recall Conservation Content

Do you remember seeing or hearing anything in Ocean's Edge about conservation?	Frequency	Percent
Yes	224	64.7
No	122	35.3
Total	346	100.0

Table 28. Visitors' Memories of Conservation Content

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

What in particular do you remember seeing about conservation?	Frequency	Percent
Specific exhibits, animals	94	40.3
Feeding program	13	5.6
Junk tank	12	5.2
Sharks, shark fins or products	9	3.9
Tuna	8	3.4
Touch areas	7	3.0
Write the governor (Act Now)	6	2.6
Tide pools	6	2.6
Kelp forest	5	2.2
Paper towels = trees, in bathroom	4	1.7
Slough, Elkhorn Slough	3	1.3
Wharf area	3	1.3
Tidepool Olympics	3	1.3
Wetlands	2	0.9
Sand dollars	2	0.9
Murre	1	0.4
Miscellaneous	10	4.3
Seafood, Fishing practices	81	34.8
Sustainable seafood, SFW guide	28	12.0
Real cost cafe	22	9.4

	Overfishing, fishing industry	14	6.0
	Don't eat snapper, rockfish	10	4.3
	Shrimp farming	2	0.9
	Don't eat farmed salmon	2	0.9
	Miscellaneous	3	1.3
Pollution		51	21.9
	Don't pollute, litter, throw trash	21	9.0
	Oil spills, drilling	12	5.2
	Plastic bags, plastics	10	4.3
	Cigarette butts on beach	6	2.6
	Miscellaneous	2	0.9
Care for the oceans and ocean life		32	13.7
	Don't touch animals, touch gently	8	3.4
	Take care of ocean, keep it clean	5	2.2
	Nesting birds, be careful walking	4	1.7
	Shore birds, rescued birds	3	1.3
	Keep beaches, coast clean	3	1.3
	Species are disappearing	2	0.9
	Miscellaneous	7	3.0
Throughout exhibit, aquarium		11	4.7
Talking to docents, guides		4	1.7
Can't remember		38	16.3
Miscellaneous		42	18.0
Total visitors		233	

Miscellaneous comments included the following:

- recycling
- countries where fish don't meet harmful swimmers
- sea otter population dwindled
- bay is sanctioned for kayak rides
- how some of the marine life can co-exist
- was watching kids
- conservation is stronger on the other side than this side/never participated on other side [of aquarium] more. . .
- trying to keep track of kids
- wasn't reading it all - just looking at animals
- leave things as they are (traveling hauls in other species)
- ecosystem can only take a limited burden
- especially out on the deck
- using too much, losing sharks, turtles, etc.
- the role/balance of food chain
- species will die out
- outreach groups
- endangered species

11. Do visitors perceive Ocean's Edge as similar to or different from other exhibitions?

Of visitors who had seen other exhibitions by the time they were interviewed, almost two-thirds (63%) said the Ocean's Edge exhibits were different. When asked how it was different visitors were most likely to mention the interactive/touch experiences, the natural look of the exhibits, that it focused on local animals and had more variety of animals. They mentioned that it felt more open or bigger and that there were different species, and also noticed that there were different habitats and you got a chance to see things up close.

Table 29. Perception of Ocean's Edge Compared to Other MBA Exhibitions

Would you say the Ocean's Edge exhibits are similar to, or different from, other exhibits you have seen here at the aquarium?	Frequency	Percent
Similar to other exhibits	98	37.4
Different from other exhibits	164	62.6
Total	346	100.0

Table 30. How Ocean's Edge is Different from Other Exhibitions

Note: Visitors sometimes gave more than one response, so total responses exceed 100%.

How are the Ocean's Edge exhibits different	Frequency	Percent
More interactive, touch areas	25	15.3
More natural habitat, realistic	14	8.6
More local animals, about the area	13	8.0
More variety/types of life	13	8.0
More open, bigger	12	7.4
Different fish, species	12	7.4
Different environment, habitats	11	6.7
See more up close, better	8	5.5
More info, educational	5	3.1
Different visually, how it's exhibited	4	2.5
More fish	4	2.5
The lighting	4	2.5
Interaction between species	4	2.5
More relaxing, calming	4	2.5
More kelp	4	2.5
Has plants	3	1.8
More kelp	4	1.8
More detail	3	1.8
More animals in one area	3	1.8
Many exhibits	2	1.2
More shore	2	1.2
Smaller scope	2	1.2
More for kids	2	1.2
Bigger tanks	2	1.2
Miscellaneous	55	33.7
Total visitors	163	

Miscellaneous comments included the following:

- complement each other
- more look into the inaccessible part of world
- size of tanks
- different facility
- like how it's set up between inner and outer
- different information
- more depth to displays
- shows how steelhead come from rainbow trout
- similar but more engaging
- more crowded
- earth and birds together
- each area unique
- more crowded, not enough space/too many kids
- different feel
- not quite sure
- in size of pools
- showed what was underneath the ocean
- more mysterious (deep ocean section
- common theme
- what's in it and what it's about
- has to do with outer edges vs. other deep sea stuff
- very basic
- more of a feeling of size of ocean
- more visually going on for me
- never see that stuff before don't see much of that
- easy to study
- obviously different from otters, Ocean's Edge is more general, others are specific
- more alive
- more complex
- more happening
- everything's a little bit unique. Everything's different
- more activity
- more scale
- this is an accessible ecosystem and stuff you know yourself - others you can't see and such under the surface
- small fish
- see a lot more
- bigger fish
- conservation, awareness, interesting
- more videos
- felt you were in the exhibit by yourself
- more sunlight
- more deep
- movements

In-Depth Interviews

Purpose of the Study

The in-depth interviews were included to provide additional detail and context to the findings of the observations and structured interviews. They were also included to see whether there were differences in these interviews compared to the in-depth interviews from the Ocean's Edge (a.k.a. Nearshore) front-end evaluation.

Method

Forty visitor groups were recruited as they were leaving Ocean's Edge and asked to participate in an interview about their experience. After agreeing to participate, they were led to a conference room where their interviews were recorded for transcription and later analysis. Interviews took between 15 and 45 minutes.

Terminology

In qualitative research percentages are not reported because with such small sample sizes one person mentioning something in an interview can cause an increase or decrease of a few percentage points. However, it is necessary to have some indication of the degree to which a topic or area is mentioned. As a result, very specific terminology was used in this report to describe the degree to which something is mentioned by the forty visitor groups interviewed.

<u>Term</u>	<u>What it means</u>
All	Everyone (40 groups)
Most	Almost all (35 – 39 groups)
Many	More than half (23 – 34 groups)
Half	Near half (18 to 22 groups)
Some	Less than half (6 – 17 groups)
A few	Just a few (3 – 5 groups)
A couple	One or two (1 – 2 groups)
None	No one (0 groups)

Findings

The following are the specific question visitors were asked. Each visitor groups' responses were paraphrased coded, based on categories that emerged rather than using pre-determined ones. In this manner, the categories employed reflect as closely as possible the language visitors used to describe the experience. Direct quotes that are representative of the categories are included to show the exact words visitors used in the interviews.

1. Thinking about Ocean's Edge as a whole, what do you think the main ideas of the exhibit are? What is the aquarium trying to communicate to people?

When asked for the main ideas of the exhibition it was interesting that the majority of groups mentioned something besides the animals. In addition, **many** of these groups talked about more than one of the general topics below, with **some** groups mentioning the three main topics: the location the exhibition covered, the animals and the human relationship with the oceans (see quotes 1 and 2 below). Unprompted, five (a few) visitor groups mentioned that Ocean's Edge included different habitats or areas and four (a few) additional visitor groups named a specific habitat.

1) *Hayden: just to show you what the natural sea life is like at the ocean's edge with the kelp and the fish that obviously live in the kelp.*

Pauline: and to try to educate people that the ocean is precious, not to just dump in the ocean. It needs protecting. I find watching fish very therapeutic.

2) *Adam: obviously, I think trying to show the natural environment, a slice of the actual environment.*

Robin: and the species variability.

Adam: and there is a strong undertone of conservation and protection of the environment.

Many groups talked about the areas the exhibition covered, such as that it was near the shore, about what's under the surface or about life in the ocean (see quote 3 below).

3) *Sarah: showing the Ocean's Edge right there off the wharf. I know that one exhibit was supposed to be the wharf area and then close by you have the outer bay exhibit which is farther out and then this is closer to shore.*

Daniel: shows what you can't see above, what you see below the ocean shore.

Fernando: I think what you saw was locally, I guess right off the coast here.

Many visitor groups also mentioned humans and their relationship to the ocean. This included things like finding out what people can do to help, how people affect or harm the oceans, conservation or educating people about this relationship (see quotes 4 and 5 below).

4) *Larry: environmental concerns, to keep it restored. Be a part of the restoration or if not to be informed, to our kids and to adults how important it is.*

5) *Allison: that the ocean edge has different environments.*

Peggy: that we have to take care of it.

Peter: human kind is causing damage to the environment and that we ought to minimize this and be good kids.

Some visitor groups mentioned the animals, most commonly the variety of animals or a specific animal. **Some** visitor groups mentioned the exhibits, either talking about a specific exhibit or talking about how you could see things up close. **Some** visitor groups also mentioned touching or interacting, especially when it came to the animals (see quote 6 below).

6) *Susan: I guess to give an idea of beneath the sea level, the more unusual animals.*

Neil: there was a lot of variety as well and again, reading some of the exhibits talked about some of about the fragility of what you were seeing as well. Again variety and again getting to touch all the animals was a nice piece as well. Not just the animals but the different seaweeds as well. That was quite unusual. What was it trying to say to us? There is a lot of interesting stuff down there.

2. Do you think all the things you saw in Ocean's Edge are found in Monterey Bay or in other places in the world? And how did you figure that out? Did anything in the exhibit suggest that?

Many visitors thought the Ocean's Edge exhibits were about the Monterey Bay, which included **some** who thought it was only about Monterey Bay (see quotes 1 and 2 below) and **some** who thought it was Monterey Bay and other places in the world (see quotes 3 and 4 below). There were also **some** groups who thought it was only about other places in the world (see quote 5 below) and a couple of groups that had some disagreement among their members (see quote 6 below). In summary, the majority recognized Monterey Bay as a part of what they were seeing, while **some** thought it included things from outside of the Monterey Bay.

The interviewer also asked visitor groups how they determined which area the Ocean's Edge exhibits covered. The two most common answers, representing about a third of visitor groups each answer, were that they either read a label or just assumed that was the case. Those who said the exhibits dealt with Monterey Bay were also likely to say they've either seen the same animals or made a connection to something right outside the aquarium or in the area. For visitor groups who said the exhibits weren't about Monterey Bay, some said they'd seen these animals in other places and a couple mentioned that the animals in the exhibits seemed too exotic or strange to be from this area.

Monterey Bay only, direct quotes:

1) *Peggy: they are from Monterey Bay.*

Allison: at least from California coast right?

Peter: we have been members for so many years and I'm trying to remember as the years have gone by, more and more alien stuff has come in. Initially, everything was in within literally spitting distance of the aquarium. Ocean's Edge is still pretty much still local Monterey Bay.

2) *Tracey: I think from Monterey Bay.*

Jenna: I assumed that they were from around here.

Tracey: because all the literature that you read, a lot of it talks about where you have caught it around here. How long you had it in captivity and setting it free and stuff.

Interviewer: do you remember reading some things about what you mentioned?

Jenna: I just saw the birds. They were talking about how they rescued the injured birds and how they were going to put them back out if they were ready. I don't remember what else.

Interviewer: any exhibits that stuck out for you guys as far as how you would know that the things you were seeing were from Monterey Bay?

Tracey: maybe because the exhibits look out on Monterey Bay so when you are looking at the stuff, you look out and you are seeing it.

Jenna: it feels like it is part of the Bay. Part of it I wasn't sure it if was actually part of the Bay or the aquarium.

Monterey Bay and other places in the world, direct quotes:

3) *Neil: I'd assumed other places in the world.*

Susan: yes, I thought there was a variety.

Interviewer: was there anything that suggested that? How did you figure that out?

Neil: some of the exhibit had information attached. It said that you would see these locally because it was talking about what was by the wharf and the impact people had on things that were by the wharf. I guess it is just an assumption I made. Some of the fish are just so large that, I'm not saying they are not out in the Pacific Ocean but I wouldn't have imagined they were close in on the Bay. It is just an assumption.

4) *Ena: I don't know.*

James: I would say some fish are from different parts of the world but definitely from around here too.

Interviewer: were there any exhibits specifically that made you think they were from the Monterey Bay area?

James: some of the animals seem so odd that you really couldn't imagine seeing them in California. Maybe Hawaii or the Cayman Islands or a tropic country.

Other places in the world only, direct quotes:

5) *Aaron: all over the world*

Interviewer: how did you figure that out?

Aaron: there are so many breeds of fish you just can't get them all right here. I'm sure they migrate, everything migrates.

Steve: was there anything in the exhibit that suggested that or did you just figure that out?

Aaron: I just figured it out.

Disagreement among the group, direct quotes:

6) *Brad: it definitely told me that..., because inside you brought different parts of the ocean here and you could definitely tell.*

Tani: I think that a lot of it is actually from right around Monterey. Not to say that it isn't in other places but I think most of it is based on what is out there right now.

Interviewer: how did you figure that out?

Tani: reading some of the descriptions. It said that it was right out in the Bay and where you can find them. I did more of the reading and he did more of the hands on.

Interviewer: do you remember any of the specific things that you read or specific exhibits that illustrated that?

Tani: the ones that I saw where they described the sea kelp and the small little urchins that are out there. How they were found right outside and they brought them in. Don't ask me what area though.

3. How would you describe this exhibit to a friend who had never visited the aquarium? So what do you think makes Ocean's Edge similar to other exhibits you have seen here? And in what ways is it different from other exhibits here, what makes it unique?

DESCRIBING OCEAN'S EDGE:

When asked how they would describe the exhibit to a friend, the most common types of comments were about the following: exhibits, overall quality of the experience, the animals and the location.

Many visitor groups mentioned the exhibits, typically talking about the touch experiences, a specific exhibit like the kelp forest tank, or some positive exhibit quality like the lighting or how natural things looked. **Half** of the groups discussed the overall quality of the experience, saying it was cool or great, good for kids or multigenerational groups, or it was like being underwater. **Some** groups mentioned the animals, including the number and variety of animals or talking about a specific animal by name. Finally, **some** also mentioned the location the exhibits dealt with, saying it had to do with the shore or that it relates to the Monterey Bay.

Visitor groups frequently mentioned more than one of the four categories in their answer, so below are some direct quotes that show this tendency to talk about the exhibits and the overall quality, as well as sometimes mentioning the animals or the topic area:

1) *Peter: I would describe it as a concentrated introduction to the natural habitat of the area. You could go and see all of this stuff if you went and walked out along the shore and along the ocean's edge out there but it is so much easier... The thing that always strikes me is the birds in the little bird exhibit. Yes, you could go and see all of those birds but it would take you a long time to go and be able to see all of those. It is a boiled down selection of the natural habitat but it is stuff that you could find outdoors if you were diligent enough to go out and see it.*

Peggy: what I think is neat about it is there is a lot of stuff there that you wouldn't think of. I think the average person doesn't think of little pink anemones and shrimp and all these different things as being right there.

2) *Sylvia: I think it is an exhibit that has been designed with all ages in mind and that is what is so cool about it. It has been designed for the little toddler that is just screaming but is so happy to see the wave crash and hear the sound, up to the adult who really is enjoying the visual display and learning more about it. It is for all ages. I think there is something for everyone. It is very appealing for people at the very basic level as well as there are some details that you always learn and you get something new. The other thing that I love is that the displays are interactive. Those interactive displays are wonderful. For instance, that one with the..., what happens to the mussel or the abalone when the tide goes down? These are things that me as an adult in my 50's, I wish I would have learned science like this in school. It is a real nice way to educate us in these scientific ways that we weren't exposed to.*

Maya: I get so caught up and I know friends do in day to day details of our own life and being able to..., and we don't pay attention to what goes on in this immensely beautiful and complex, it almost feels like it is another world when you come to the Monterey aquarium and see these exhibits. You go about your daily life and you don't realize that there is so much happening in marine biology and these little animals have their own lifestyles and habits and it is like going to a different world but then you are reminded, hey this actually is part of my world. And it is beautiful.

- 3) Adam: *I would tell the person that I liked that it focused, especially the smaller exhibits, they all tried to highlight something different even though there is obviously a lot of species overlap between them. We were saying that the white topped anemones must be an easy grower since they are in all the tanks. It extracted a lot of the diversity from the environment and gave it to you in manageable slices.*
- 4) Sharon: *where the wave comes over, that was a really neat experience.*
Timmy: *it is like being in the ocean.*
Sharon: *seeing where they live.*
Nash: *well it is ocean's edge, you are there getting the tip of it all...*
Timmy: *there was that section right next to you and if you look under the wave when it was coming you can still see little fish.*
Jori: *we have been to tide pools and this was very reminiscent of that.*
Sharon: *it gave a different view from under the tide pool instead of just on top of it.*
Nash: *all the life that is around the edge which is kind of neat.*
Sharon: *it feels a little like, when you start at the touch pools especially, like starting right at the edge and just going deeper and deeper into the ocean. I love the way you can come around and then you are in that dark where the octopuses are. That is my favorite part.*
- 5) Mark: *they recreate the conditions of life at the edge with the wave coming in and everything. They stock it full of all the different species. More full than it would be out in the Bay. You are not going to find that many in one place out in the Bay usually.*
Lauren: *I would say that it is beautifully displayed.*
Mark: *it is easy to see.*
Lauren: *it is very inviting in a way that people really want to spend some time there.*

HOW OCEAN'S EDGE IS SIMILAR OR DIFFERENT FROM OTHER EXHIBITIONS:

When asked how Ocean's Edge was similar to or different from other exhibitions they had seen, **some** visitor groups were not able to answer because Ocean's Edge was the first exhibition they had seen that day. However, those who did see other exhibitions said they were similar to Ocean's Edge because the displays are similar, you are walking from tank to tank viewing animals and there are usually labels. When visitors mentioned differences, they talked about the focus on shallow water animals, the ability to touch some animals, the darker lighting, and marquis experiences like the kelp forest tank.

How Ocean's Edge is different, direct quotes:

- 1) Sue: *It is probably the only place I think where you can put your hands in and touch. There are birds in that area too which you don't have in the deeper areas.*
- 2) Karen: *That whole area was darker and there was music and when you walk in it gives you the feeling that you are underwater with the tall windows and it is just such a big tank with the sharks and the sardines and stuff. The fact that it is dark and there is a little bit of music and the tanks are so big, you feel like you are scuba diving. I was telling Pam. This is as close as I'm ever going to get to knowing what it is like to scuba dive. The other exhibits felt more like exhibits. You didn't feel like you were immersed as much.*

- 3) Gabrielle: I think it is cool because it is a little more alive than the rest of the exhibit because you can actually touch things and the birds are actually out and not behind the glass. You can actually go look at them fly around and stuff. I think it is the most alive, exciting part of the whole thing, besides the wall of fish.
Iris: and the bat rays that you can touch.

4. Do you remember seeing or hearing anything about conservation, or caring for nature, in the exhibit? [If yes] What in particular can you recall? Do you remember where you specifically saw it?

Most visitor groups said they did remember seeing or hearing conservation content in Ocean's Edge, and **almost all** of these groups could recall something specific. In fact, **half** of the visitor groups recalled more than one specific example of conservation in the exhibition. Compared to the pre-renovation Nearshore front-end in-depth interviews, many visitors mentioned that there was a conservation message, but most visitors had trouble recalling something specific.

In terms of what they remembered, **half** of the visitor groups mentioned the human impact on oceans, which included the "junk tank," a specific example of human impact, the wetlands and cigarette butts (see quotes 1 and 2 below).

1) Adam: *a lot of the little notes next to the exhibits.*

Robin: *I would say the dichotomy between, there was one exhibit where there was glasses and bottles and stuff like that, and that was a much less engaging..., it actually showed the effect of what people do to the environment versus the rest of it which didn't have anything like that. That dichotomy gave me more of a sense of what you were trying to say.*

Adam: *as well as the exhibit in which you interacted or altered the exhibit in some way, even the ones where you changed the current of the water. It gave you the impression of the impact that humans could have on the environment.*

2) Sue: *we saw that little area where it said the coastal beach clean ups, 50% trash are from picnics, 30% are from cigarette butts, so yes, we did see something about conservation.*

Half of the groups mentioned an issue related to seafood, such as the Real Cost Café, the Seafood Watch Pocket Guide, overfishing, rockfish or farming seafood (see quotes 3 and 4 below). As is obvious from the quotes below, people sometimes covered multiple topics and added in their own perspectives and thoughts on why these things were included.

3) Maya: *the preservation message was obviously most explicit in the cards that you guys give out and also in the movie with the café, the preservation café but also just the message of, here touch these sea cucumbers and touch these star fish, get to love this. I think people develop, especially kids, develop a fascination and interest in these animals and just developing that relationship I think is preservation. More people wanting to preserve these things that they love and that they have seen.*

Interviewer: *have you seen some of these things in Ocean's Edge specifically down there?*

Maya: *everybody is just fascinated by it. Kids go crazy and adults too.*

Sylvia: *you think there is nothing in that little space and so many little tiny creatures make their habitat out of what you think it empty but you are learning how to see and observe in ways that you hadn't observed before. Through observation comes appreciation and through appreciation comes conservation.*

- 4) *Peter: right at the end there is the animatronic park guide, the video tape park guide.*
Allison: I thought it was a restaurant.
Peter: there is a restaurant on one side and the park guide on the other.
Allison: I didn't see the park guide.
Peter: he is a life size video screen but he looks pretty...
Peggy: he is very real looking. I glanced up to see where you were and I thought you were talking to him. Then I realized no, he was a video. There were three video people in the little café. There was something about stuff that you drop off the wharf. One's man's trash is an anemone house but it wasn't necessarily a bad thing.
Allison: it said it could be a bad thing though. That was next to the anemones.
John: all of these conservation things had people in them.
Peter: yes
Peggy: but there was explanation on the wall near the rock fish too I thought about how rock fish grow really slowly and...
Allison: yes, I saw that
Peggy: or was that a video? It was a video with a voice narrating and you can pick English or Spanish and push whichever button you want. It talks about how there used to be these enormous rock fish and there aren't anymore because people fished them out. If you think you are eating Red Snapper you are actually eating rock fish.

Some visitor groups said they saw information about taking care of animals, while **just a few** specifically mentioned staff or volunteers (see quote 5 below).

- 5) *Maya: we got into a long discussion with the woman who is in charge of the bird habitat. She was talking about how the birds were saved because they were sick birds at some point. Just that the aquarium was taking care of sick animals I think that is a good preservation message.*

5. Do you recall seeing any photos or videos of people in the exhibits? [If no, skip to Q6. If yes...] Where do you remember seeing these – and can you describe them? Did they seem out of place or did it make sense that people were included in the exhibits? Why do you think people were included? Did you see anything about the interaction between humans and animals? [If yes] Can you tell me a little about that?¹⁸

Many visitors said they did recall seeing photos and videos of people in the exhibit. When this group of visitors was asked what they specifically remembered seeing, a couple mentioned pictures but the large majority of them mentioned videos. The two most common videos mentioned were the Real Cost Cafe and the Octopus video, followed closely by the Rocky Shores video (people climbing on rocks) and the Nature Center video. Quite a few people mentioned how lifelike the videos were and some even thought they were live feeds (see quotes 1 and 2).

- 1) *James: I walked by a few screens that were broadcasting something. I thought I saw a camera that was showing the pier I think and you could actually see people walk by and birds flying. I thought that was kind of cool.*
- 2) *Karen: was that thing in the corner with the guides talking about the wetlands and all that, is that part of the same exhibit? [S: yes] That was really cool. That was fun because*

¹⁸ Not all of these questions were asked for every interview.

it looks really lifelike. It is a little play, it is not just a video. It looks like a real person and you walk up and they are talking and they are obviously not real and the kids kept trying to look around the edge to see if there was another video. They were trying to figure that out so it pulls them in and then they are willing to stand and listen to some of the information.

When the visitors who saw videos or photos were asked whether it made sense, the large majority said that it did and gave a variety of reasons for why they made sense (see quotes 3 and 4).

3) *Raymond: so that people can relate better. It is a person to person, not just looking at an exhibit. They are hearing it from somebody or seeing another person talking about it. Jennifer: and it catches your attention. It caught the corner of my eye when I was walking and I saw that person talking on the video. It makes you want to go see it.*

4) *Karen: it totally made sense. You can't always get close enough to read the stuff on the walls so having the videos with people talking and giving information was really helpful. It didn't seem out of place at all.*

Only two groups said including people didn't make sense, with opinions about the use of videos sometimes differing within a group (see quote 5).

5) *Adam: I think it makes sense because the environment..., humans are a part of the environment. You are going to have kids on the rocks, you are going to have kayakers on the water. I think that is a totally legitimate part of what the Bay is like.*

Robin: I didn't watch the one with the people, I think because it had people in it. Right from the beginning, I'd rather watch a video of an alien fish than...

6. How do you think the Ocean's Edge exhibits are organized? Did you notice that the exhibit is separated into different habitats? [If No exhibit, skip to Q7, if Yes...] What were some of the different habitats you remember seeing? And how did you figure out there were different habitats? Can you think of anything you saw that suggested there were different habitats? [If yes] What?

The size of the tanks made an impression on visitors, with visitors sometimes mentioning the big tanks on one side of the path and the small tanks on the other side (see quote 1).

1) *Interviewer: how do you think the Ocean's Edge exhibits are organized? Is there an organization to the whole area?*

Gia: you have the big tanks on one side and then you have the little ones, like the octopus and then the fish... I don't know if there is an actual, I mean it is organized but I didn't catch a theme of what it was trying to do.

Others observed that the exhibition started with deeper tanks and proceeded to shallower tanks (see quote 2).

2) *Gabrielle: it is kind of in levels almost. On the one side there is a reef and then there is deeper in the ocean and you go to the other side and it is even more that way.*

Iris: then there is a section where you are on the shore.

Gabrielle: yeah, so I think there are different levels of where the fish are, which is cool.

When asked if they specifically noticed the different habitats, **many** visitors mentioned at least one specific habitat.

- 3) *Sarah: I really like how it is classified into the different groups and sections of the ocean. I really like how that was set up than rather being random and things all mismatched.*
Interviewer: can you name some of the habitats that you noticed that it was set up in?
Daniel: the wharf and the sand
Sarah: the sandy shore, the rocky shore

Visitors were asked how they figured out how the exhibition was separated into different habitats, and visitors were most likely to mention the labels or headings upon entering areas (see quote 4) or that they noticed physical differences in the area or lighting (see quotes 4 and 5). In the Nearshore front-end in-depth interviews, visitors mentioned a change in the animals or noticed the signs that indicated entering a different area.

- 4) *Interviewer: how did you figure out that there were these different areas or different habitats?*
Sarah: there was a little entrance to every single one. It was very clear which section you were entering into.
Interviewer: did you all notice those entrances?
Daniel: yes
- 5) *Interviewer: you mentioned the wharf, did you notice as you were going through that it was separated into different habitats?*
Kelly: yes, with the shale reef and then with the wharf. Those are the only two names I remember.
Interviewer: how did you notice that there were different habitats?
Kelly: the layout of the exhibits was different and the lighting sometimes was different. The big words on the top of where you walk in were sort of a give away.

7. Do you remember seeing any of these panels in the exhibit? [show video pylon sheet] Why do you think they were included?

Most visitors recognized seeing the video panels in the exhibition. When asked why they thought they were included in the exhibition, visitors gave one of three main reasons. Some visitors suggested the panels were included to show how the different habitats looked in real life (see quotes 1 and 2).

- 1) *Interviewer: why do you think we include these in the exhibits?*
Justin: to show the natural habitat I guess, instead of what you just see in the aquarium.
Gina: yes, parts of it that you can't see in the aquarium.
Larry: I guess it explains about that region or that part of the ocean.
- 2) *Interviewer: why do you think we put those in there?*
Iris: also, this shows you what it would look like from above, like from where we live and then when you walk in you get a chance to see what is below the surface, like in the deep reef and the coastal wetlands.

Some visitors said it was useful to show examples of the different habitats, which was one of the renovation design changes (see quotes 3 and 4).

3) *Interviewer: why do you think these types of panels [video pylons] were included?*

Pam: to show us different habitats. These are habitat panels.

4) *Interviewer: why do you think we put those panels [video pylons] in the exhibit?*

August: It does give you an understanding of how ocean life is broken up, like a downtown area in your city versus your uptown suburbs. It is all sectioned even in the ocean. What you see over here is not what you are going to see over there.

Some visitors thought the video pylons were included as cues that you were entering a different area, which was another example of a renovation design change (see quotes 5 and 6).

5) *Interviewer: why do you think we included those panels in the Ocean's Edge exhibit?*

Jenna: probably just to differentiate the different sections that you would be entering.

Tracey: to let you know what environment you are entering.

Gordon: and they are all different coastal habitats right and all of them would have their own issues environmentally.

6) *Interviewer: why do you think these types of panels were included?*

Karen: it helps keep the displays organized so that you have some sort of cognitive map for what you are wandering through.

In general, besides noticing the videos visitors were able to articulate why they were included in the exhibition.

8. Would you please tell me about a special moment you may have had as you were going through the exhibition? [Prompt]: Did you have any emotional connections with any part of the exhibition?

There were a variety of things that visitors felt made a visit to Ocean's Edge special, and all but one visitor group recalled more than one special moment. Not surprisingly, **most** groups talked about the animals. The most commonly referenced animals were the octopus (see quote 1), sharks (see quote 2) and rays:

1) *Justin: I liked the octopus. It was moving and stuff. You would think it would just stick there.*

Gina: It moved all over the glass. You could actually see it up close *Larry: I guess it explains about*

2) *Olivia: I think I'm just fascinated with how big some of the fish are and the sharks and there was a skate that was in there too. I've always kind of liked marine life, it has always been interesting to me.*

Another element that **some** visitors referred to was being able to touch the animals, including the bat rays and animals at the touch pools (see quotes 3 and 4). The main reasons people mentioned touching the animals was because you don't normally get to do that and you get to see how they really feel, which was sometimes surprising.

3) *Neil: I have to say I really enjoyed just the whole effect. The huge tank that makes a visual impact on you when you first go in and then actually touching the star fish and the*

seaweeds was good fun. Being that close to the birds in the little sea shore piece was incredible, I mean they were one foot away.

Susan: that was probably one of my favorites too actually.

4) *Tracey: petting the rays, I loved that.*

Ashley: yeah

Tracey: because it is not something you normally get to touch.

Ashley: I liked the star fish because I like to do a lot of hands on things. I learn better when I can move all the little windows instead of just sitting there and reading and I like to look at all the things and touch the rays and the star fish and seaweed and everything. It is really cool.

Some groups also mentioned the immersive quality of the exhibits, mentioning that it felt like they were underwater, feeling transported to another place or feeling mesmerized. This element seemed to have a big impact on the visit for those who mentioned it, with one group specifically mentioning this as a reason for visiting the Aquarium (see quote 5). Some visitor groups actually used the word immersive (see quote 6).

5) *Linda: it is just so peaceful, just watching the kelp just go in the surf or whatever.*

Dave: it is just all really amazing to me. It is just incredible that the ocean and the water and how everything exists together and it is a powerful experience. I think that is why people come here because it takes you to a whole different place. We live on land and we do this and we do that and we don't know all these little bitty tiny fish or plant life that you think are just there are actually living things. It takes you to a whole different sort of place. I think that is why we are members now and we come all of the time because it takes you to a different place.

6) *Adam: the amount of activity and creatures that were in that exhibit. It was dynamic with schools of fish that were swirling around and the kelp was moving back and forth.*

Robin: those anchovies were so cool and the music helped I have to say. I liked the music.

Interviewer: how did the music help?

Adam: immersive.

Robin: exactly right.

For a **few** of the groups a personal connection to what they were seeing made a moment special (see quote 7). In one case, a fisherman realized that in the Aquarium he was seeing fish differently from how he saw them when he was fishing (see quote 8).

7) *James: I liked the tide tunnel underwater. I enjoy water board sports, not surfing but I like to boogie board a lot and it reminded me of being underneath the wave and being swept. It was really cool.*

8) *Larry: In a sense I'm in my environment so, I like pretty much everything. In coming here and just knowing the Monterey aquarium, I'm assuming it is here to promote a clean environment and to that effect, habitats for particular sea life. The birds were different but of course those birds were on beaches which is a part of sea life. I liked it all. A better look at sturgeon, actually not on a hook and lying in a boat.*

Interviewer: so you know about these animals from fishing?

Larry: pretty much. I recognize them.

Interviewer: does that make it more interesting for you?

Larry: it was interesting. Oddly enough, while I was looking at the different ones, even the ling cod to that effect. I didn't look at them and think, if I had a fishing pole or anything like that. It was just enjoyable to see them in their environment. I didn't even think of it until just now when you said being a fisherman.

9. Here are some cards with different emotions listed on them. Please separate them into two different piles. Thinking about your time in Ocean's Edge only, place any emotions you felt, even a little bit, into one pile on the left. You should place any emotions you didn't feel at all in a second pile to the right.

9a. Looking through this pile [hand left pile], could you pick the emotion you felt most strongly? Could you talk a little bit about that, and where it happened?

The same list of emotions was used for this portion of the in-depth interviews as was included in the structured interview (see Appendix G). However, each word was placed on an index card for a card sort (see instructions above).

The purpose of using the same list of emotions was to add a level of understanding to why visitors felt the particular emotions they did in the structured interviews. In this manner we hoped to better understand qualitatively what about Ocean's Edge triggered certain emotions, especially the following three: engaged, inspired and empowered. As a result, this section focuses much more closely on these three emotions.

ENGAGED

Visitors mentioned a wide variety of reasons why they felt engaged in Ocean's Edge, and talked about a lot of different areas. However, some common themes emerged from the different interviews as being engaging, including the following:

- Looking at and being fascinated by what's in the tanks (see quote 1)
- Feeling like you're underwater or inside the tank (see quote 2)
- Seeing things you wouldn't normally see
- Interacting with staff or volunteers
- Getting up close or touching the animals (see quote 3)
- Seeing something familiar, from home/travels/their studies

1) David: Same sort of thing. The big tank with the big fish. We have fish ponds at our house and you are just so captivated by the whole experience, how they move through the water and it really just grabs you and keeps you glued to see what passes by next, or how great it is to see such a created thing. It just captivates you.

2) August: I feel part of all of the displays. It is just engaged all over. It takes my total focus. We are looking at this display, you just zone out, you don't hear the people, and you don't see the crowd. I think that for me, that is very hard, I'm always paying attention to everything. I hear the fan going, I hear the clock ticking, the birds out there, the ocean hitting the rocks. For me to focus completely on one thing like that, that is pretty impressive.

- 3) *Nancy: Just being able to be up close to everything, it was right there. You wanted to touch so for me that was engaging. Visually the colors and it is just very lively. It makes you want to be in there with them. I think that is engaging.*

Many visitors mentioned multiple reasons why the experience was engaging, often combining more than one from the bulleted list above. What was obvious from the taped interviews is that visitor groups found Ocean's Edge to be a very engaging experience for a variety of reasons.

INSPIRED

Some of the richest quotes in the whole interviews occurred when we asked visitor groups to explain why they chose "inspired" as one of the emotions they felt during their experience. Only viewing the full transcripts will give the reader a proper understanding of the range of responses we heard during the interviews.

Visitors were inspired in many different ways, and these responses can be loosely categorized into those who were inspired to do the following:

- Get out in nature, reconnect with nature (see quote 1)
- Return to the aquarium, bring others (see quote 2)
- Think about oceans/ocean animals in a new way
- Change their behavior in ways that is better for the oceans (see quotes 3 and 4)
- Keep working hard in their ocean-related studies or job (see quote 5)
- Get others to be more involved (see quote 6)

- 1) *Robert: Just over all, I think going through the Ocean's Edge area really inspired me to explore more of that environment, to do some diving, get Allison certified so she can go with me and we can actually go back out into the kelp beds. To, explore some of the areas, the freshwater streams and things, like down towards, below Big Sur and those areas and just do some hiking and really explore those areas. I haven't been there in two decades probably. I just really felt inspired to get more involved in being a part of those environments again.*

- 2) *Gia: I always feel good when I come here. It doesn't matter which display I go to. It makes you feel closer to the ocean, closer to the creatures, the fish, and the different things that go on under the water. It makes me pay more attention to the environment. You can get educated and all that stuff but if you are not reminded consistently, then you kind of forget. You go to the beach and dump stuff in the ocean, it doesn't matter but when you remember that there are creatures living under here and this is their world, it inspires you to do better and not treat it like it is nothing or that you are better than them. That is what I feel. It inspires me to bring other people back. That is what it does for me. I like it so I like to share it.*

- 3) *Mike: I feel kind of the same way about that. I guess for me, I do a lot of fishing and maybe I'll cut back a little bit on the fishing. I don't know. I've been thinking about that lately about how the oceans are depleted. I actually haven't been out for like one year now and I think it maybe inspires me to maybe cut back a little bit.*

- 4) *Sue I think just because I have grown up near the ocean, I have lived near the ocean and I have never really learned about specifics. I have gone to places like this but just*

seeing that thing about the trash and I know we have a coastal clean up day down our way and it inspired me to think, I need to pay a little more attention to what is going on.

5) *Sarah: because as I said this is my profession. I want to work hopefully one day as a research biologist here working towards that conservation so this keeps me really inspired to keep working hard.*

6) *Linda: You are inspired to do more. That is why we became members because we knew that goes towards the different work that you do here. The more you do here, to teach people and to get them involved, the better things are going to be.*

David: I guess just the whole connectedness with nature itself. Like Linda was saying it makes you want to do more. To be a part of this effort, to get people engaged and involved in nature and respect for what is out there.

EMPOWERED

As was the case for the structured interviews, not as many visitor groups chose "empowered" as one of their emotions felt during the visit. As such, there are fewer examples for this category. However, for those who felt empowered by their visit to Ocean's Edge, this seemed to be a very powerful experience. In general, people felt more empowered to:

- Share what they learned or experienced (see quotes 1 and 2)
- Change what they are doing (see quotes 3 and 4)
- Learn more about what they saw

1) *Raymond: The way I perceived that was empowered as, now I have the ability to go back and share things that I learned that I didn't know. It educated me, so I feel empowered that I can take something back and give it to somebody else.*

2) *Dennis: The oceans to my understanding are becoming polluted at such a rate and again, we are at the end of the food chain, we don't eat all of them but there is a source of food there for us. Sort of empowered and sort of at a loss at the same time because you can't fight bureaucracy, you can't stop what is being done without proper management. If making laws doesn't stop people from doing illegal things, it is about teaching people and that again, empowering is the sense of teaching little ones. I saw a lot of little kids down there just in total awe. You start young like that with these kinds of displays, they do teach youngsters that there is life beyond the television set or what they see out the back window. It is empowering in a sense. It is teaching the young ones, the older ones it is a little harder to get through to sometimes. Anyway, that is what I was thinking.*

3) *Iris: empowered is a good one too because the more I understand about what is going on out there, the more I have learned about what we do and our choices impact and that we are connected. For instance, we are much more careful with the fish we eat because we eat fish several times per week.*

Allegra: especially when we came here and they were talking about tuna and how they catch them and we took one of the flyers and now when we go to the grocery store we look for the tuna that they hand catch.

Iris: we are more careful about recycling and about how we throw things away because we understand that we are really connected. So, it is empowering to know that we can help, that we can maybe make a difference to make it better.

4) *Kelly: I think with all the Seafood Watch cards and especially that café, we learned a lot about sea life maybe going extinct or populations getting really small and then it showed that you can enjoy seafood and eat seafood but in a safer way. It felt good to hear that because I have only heard bad things about it. It was empowering to think that we could affect the changes that need to be done.*

5) *Max: yeah, similar thing, just being educated about how we can make choices that can better help the environment. Do not impair the environment but leave it to continue to exist.*

Appendix A Background on Timing and Tracking Expectations

One of the most difficult parts about interpreting results from timing and tracking studies is defining what a "normal" amount of time spent or a "typical" percentage of stops should be. This section provides some context by comparing data from this study with data from a meta-analysis that focused on a variety of exhibitions nationwide.

The following statements come from the book *Paying Attention: Visitors and Museum Exhibitions* (p. IX). The results are a compilation of timing and tracking studies conducted in 110 museum exhibitions.

In 80% of the exhibitions, the average total visit time was less than 20 minutes regardless of the size or topic of the exhibition.

Frequency distributions of time spent in exhibitions showed that most visitors spend relatively little time and fewer visitors spend longer times.

Visitors typically stopped at about one-third of the exhibition elements.

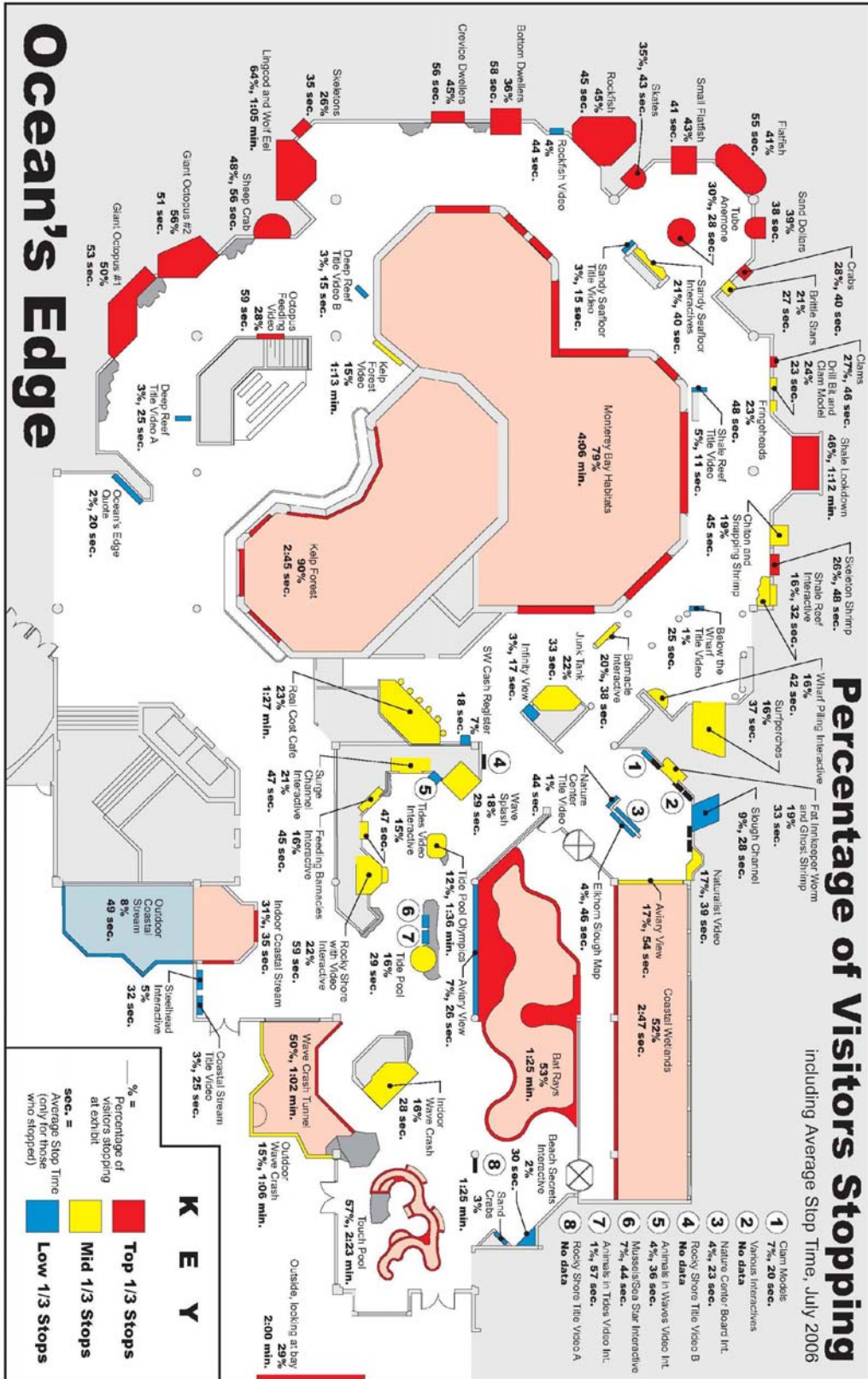
In general, the amount of time visitors spent in an exhibition was directly and positively related to the number of elements at which they stopped.

Comparisons across groups of exhibitions suggest that time spent and stops made differed among three subgroups (large exhibitions, old or pre-renovation exhibitions, and diorama-like exhibitions), but did not differ significantly among exhibition topics or types of museums.

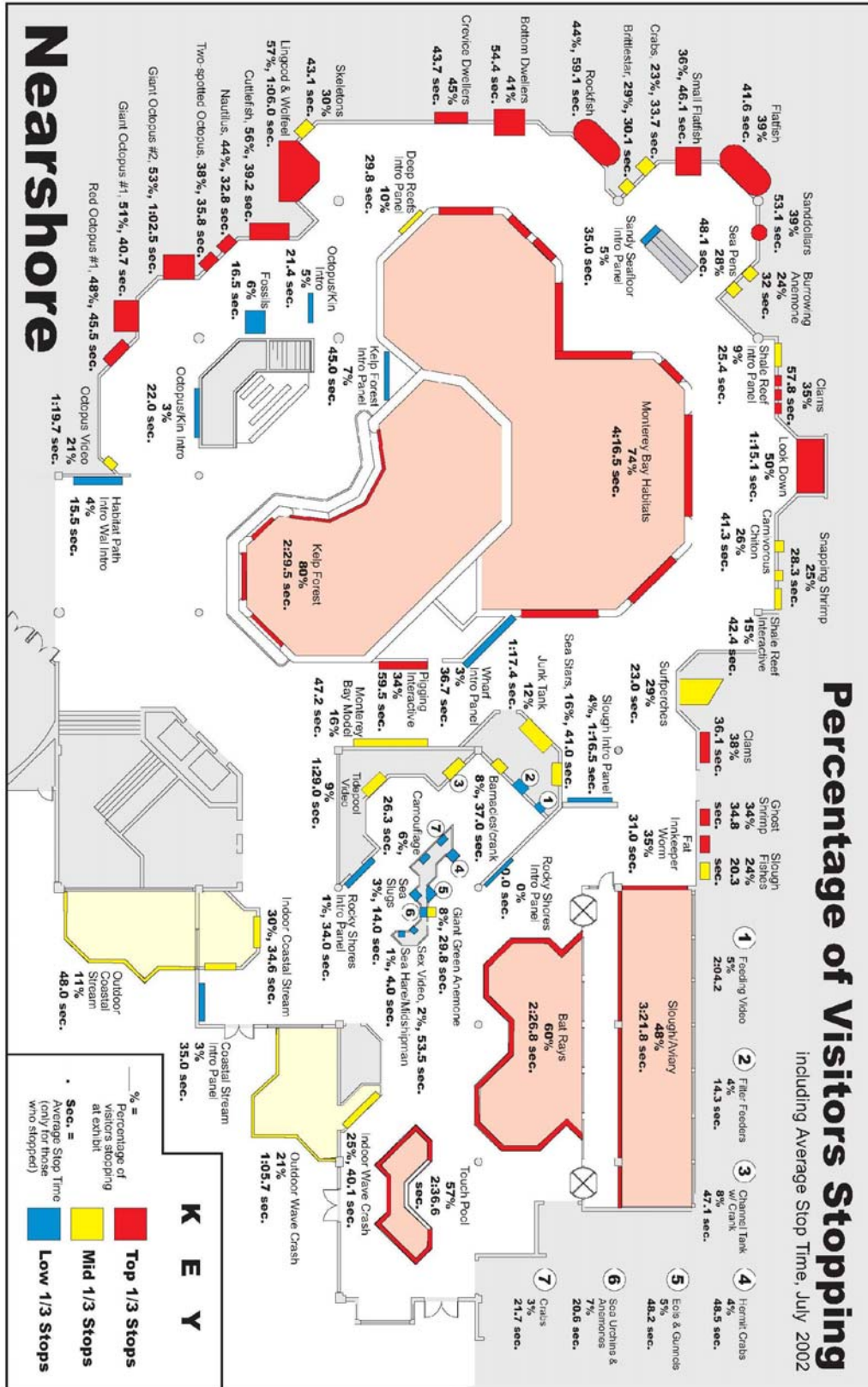
Among the 110 exhibitions in this study, exceptionally thoroughly used exhibitions were uncommon. These included exhibitions that charged a fee, were newly opened, contained elements that were extremely captivating, or attracted an audience that was apparently very intentional about being thorough.

Serrell, B. (1998). *Paying Attention: Visitors and Museum Exhibits*. Washington, DC: American Association of Museums.

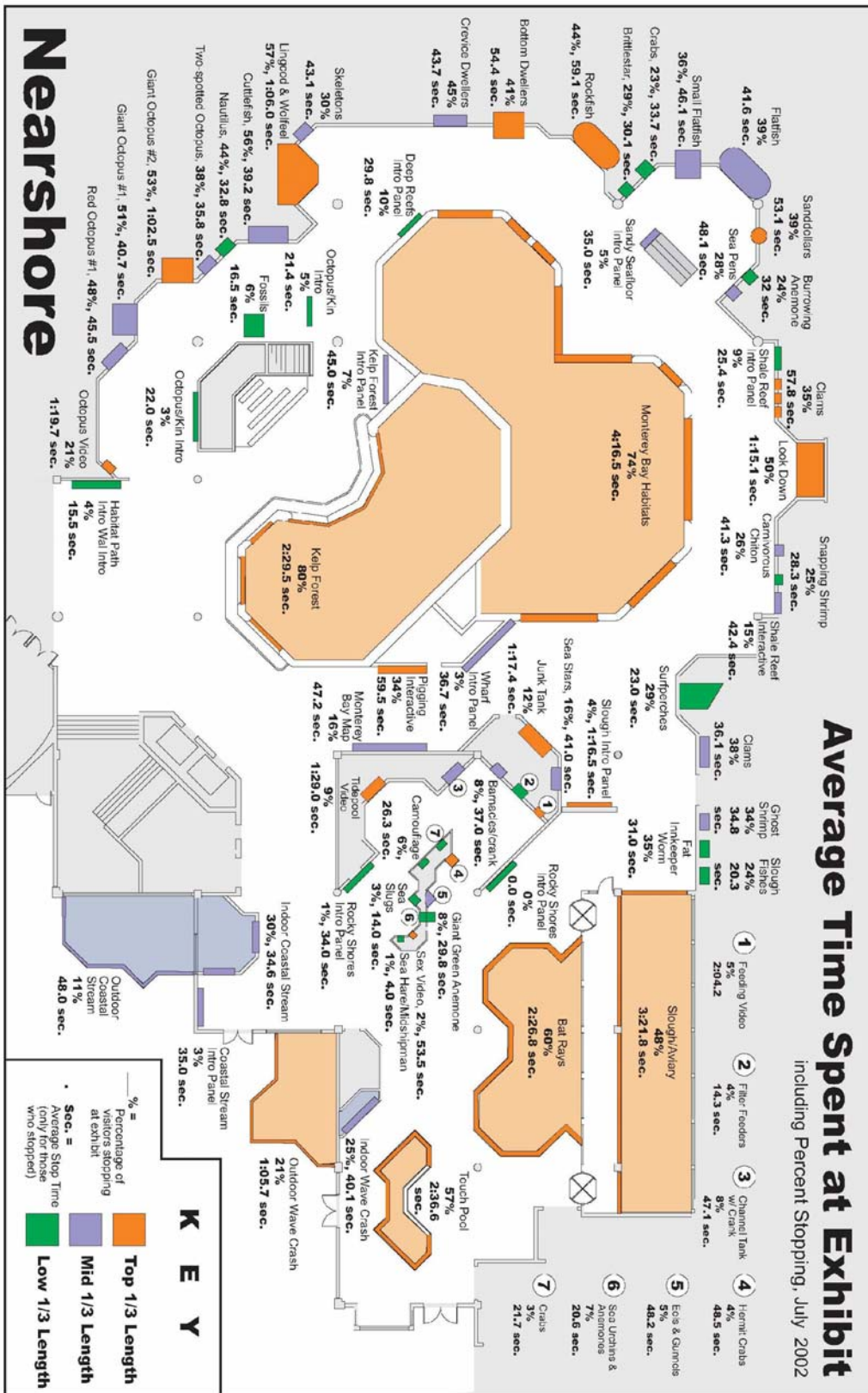
Appendix B
Percentage of Visitors Stopping at Each Ocean's Edge Exhibit



Appendix D
Percentage of Visitors Stopping at Each Nearshore Exhibit



Appendix E
Average Time Spent by Visitors Attending to Each Nearshore Exhibit



Appendix F
Exhibits by Type

Exhibit Type ¹⁹	Exhibits
Large live animal exhibit	Wave crash tunnel Kelp tank Octopus tank #1 Octopus tank #2 Monterey Bay Habitats tank Aviary Coastal stream tank Outside wave crash Outside coastal stream
Medium live animal exhibit	Wave crash window Sheepcrab tank Lingcod, wolf eel tank Rockfish tank Small flatfish tank Large flatfish tank Tube anemone tank Junk tank
Small live animal exhibit	Crevice dwellers tank Bottom dwellers tank Skate tank Sand dollars tank Crab tank Brittlestar tank Clam tank Fringehead tank Chiton shrimp tank Surfperch tank Fat innkeeper worm tank Slough fish tank Wave splash tank (near Aviary) Tidepool tank Sand crab tank
Views into aviary	Aviary view (nature center) Aviary view (rocky shore side)
Animal touch experience	Bat ray touch tank Touch pool
Live tank with interactive	Shale pool look down tank Skeleton shrimp tank

¹⁹ The size of the animal tank (small, medium, large) was determined by the number of visitors who could “comfortably” view the tank at one time. Small tanks could accommodate 1 to 4 visitors at once, medium tanks 5 to 9 visitors and large tanks could accommodate 10 or more people viewing them at once.

	<p>Surge channel tank Filter feeder tank Macrovideo tank</p>
Low-tech interactive	<p>Barnacle interactive Sandy seafloor interactives Shale reef touchable model Shale reef interactive Below the wharf interactive Nature center touchable model Nature center flapper #1 Nature center flapper #2 Coastal stream interactive</p>
High-tech interactive	<p>Tidepool Olympics Mussels interactive Rocky shore interactive (by aviary exit)</p>
Stand-alone video	<p>Octopus feeding video Rockfish video</p>
Video with text panel(s)	<p>Nature center video guide Nature center board interactive</p>
Interactive video	<p>Real Cost café Rocky shore video #1 Tides video Rocky shore video #2</p>
Intro panel with video	<p>Kelp title video Octopus title video Deep reef title video Sandy seafloor title video Shale reef title video Below the wharf title video Nature center title video Rocky shore title video Coastal stream title video</p>
Non-living object or text panel	<p>Skeleton (by lingcod, wolf eel) Real Cost cash register Ocean's Edge quote Infinity view (junk tank) Nature center slough map</p>
N/A	<p>Outside, looking at Bay</p>

Appendix G
Structured Interview Form

NOTE: Original interview form was on legal-sized paper (8 ½ X 14), so formatting is not exact.

Date: _____

Interviewer: _____

Hello! We're talking to people today about "Ocean's Edge," the exhibits here on the first floor [point to area]. Do you have just a few minutes to answer some questions?

1. On a scale from 1 to 10, where 1 is poor and 10 is excellent, how would you rate the Ocean's Edge exhibit? _____

1a. **[If 9 or lower]** What would make it a "10?" _____

2. In your own words, what do you think the Ocean's Edge exhibit is about?

3. Please complete the following sentence about Ocean's Edge: **"I never realized that....."**

4. Do you remember seeing or hearing anything about conservation in Ocean's Edge? Yes No

[If Yes,] 4a. What in particular do you remember seeing about conservation? **[Anything else?]**

5. Besides the Kelp Forest exhibit and the Touch Pool areas, which part of Ocean's Edge did you enjoy the most? _____

5a. Why did you enjoy that part? _____

6. **[Hand list to visitor]** Please read this list and tell me which four of these statements you think are the main ideas of the exhibit. You can just read me the four letters.

A B C D E F G H

7. **[Have them flip the sheet over]** Now please read this list and tell me which of these emotions you experienced, even just a little bit, during your time in Ocean's Edge.

1 2 3 4 5 6 7 8 9 10 11 12 13 14

15 16 17 18 19 20 21 22 23 24 25 26 27 28 None **[Skip to Q8]**

7a. **[If 9, 21 or 25 pick one (in order of 25 then 21 then 9 if more than one) and skip to Q7b]**

Which of these emotions was the strongest? **[read numbers]?** _____ **[write number]** or None

7b. Where did you experience number ____? _____

8. Would you say the Ocean's Edge exhibits are similar to, or different from, other exhibits you have seen here at the aquarium? Similar to Different from **Haven't seen others**

[If "Different from":]

8a. How are the Ocean's Edge exhibits different? _____

9. Are you visiting today with anyone under the age of 18? Yes No

9a. **If "Yes:"** Which part or area of Ocean's Edge worked best for you as a group?

9b. Why did it work well for your group? _____

NOW JUST A FEW QUESTIONS ABOUT YOU. [turn sheet over]

10. Is this your first visit to the aquarium? Yes No

10a. **[If No to Q10]:** Have you seen Ocean's Edge before? Yes No

10b. **[If Yes to Q10a]:** How many years ago did you see Ocean's Edge? _____ years **[OR]**

[# months if less than a year] _____

11. What is your zip code (or country of origin)? _____

12. Are you a member of the aquarium? Yes No

13. What year were you born? _____

14. How many adults, including yourself, are in your group? _____

15. How many children under 18? _____

16. **[Interviewer records]** Gender: Male Female

Thank you for your time!

Appendix H
List for Structured Interview Q6 – Main Ideas of Ocean's Edge

Which four of the following statements do you think are the main ideas of the exhibit? (Pick four)

- A. The nearshore habitats are home to a vast array of animals and plants.**
- B. The deep sea is deep, dark and under pressure and home to creatures with incredible adaptations.**
- C. You have a connection to the ocean animals you see here and you can join us to work for a healthy ocean.**
- D. These extraordinary ocean animals and plants are from all over the world.**
- E. There are many different kinds of ocean habitats close to shore—from kelp forests and deep reefs to the beach and the rocky shores.**
- F. Sharks, sea turtles and tunas are amazing, diverse and in trouble.**
- G. Everything you see here lives right outside in Monterey Bay.**
- H. The ocean is full of abundant and diverse life.**

Appendix I
List for Structured Interview Q7 – Emotions in Ocean's Edge

Which of the following emotions did you experience, even just a little bit, during your time in Ocean's Edge?

(Pick as many as apply)

- | | |
|----------------------|-------------------------|
| 1. Interested | 15. Informed |
| 2. Bored | 16. Worried |
| 3. Amazed | 17. Grateful |
| 4. Sad | 18. Afraid |
| 5. Excited | 19. Impressed |
| 6. Confused | 20. Annoyed |
| 7. Happy | 21. Inspired |
| 8. Angry | 22. Discouraged |
| 9. Engaged | 23. Spiritual |
| 10. Shocked | 24. Satisfied |
| 11. Curious | 25. Empowered |
| 12. Disgusted | 26. Peaceful |
| 13. Fun | 27. Disappointed |
| 14. Tired | 28. Amused |