

Social Science Research to Inform Soundscape Management in Haleakalā National Park

Final Report



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Chapter 1

Introduction

The National Park Service (NPS) defines natural soundscapes as those resources that “encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes” (NPS, 2006). Within the NPS Management Policies, the preservation and restoration of natural soundscape conditions are identified as important goals of the NPS:

The National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks... The Service will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts (NPS, 2006).

In recent years, the number of airplanes and helicopters flying over national park units has increased dramatically (NPS website, retrieved November 11, 2007, <http://www.nature.nps.gov/naturalsounds/sources/>). Thus, a significant source of unnatural sounds in national parks is from aviation activities over parks, which include general aviation, commercial passenger flights, park maintenance, and fire and emergency operations. Much of the increase in flights over the national parks can be attributed to the growth of the air tour industry. In the 1990s, Congress began to address the increasing number of sightseeing air tours by mandating the Federal Aviation Administration (FAA) and the NPS to manage air tours over the parks. The National Parks Air Tour Management Act of 2000 requires the development of Commercial Air Tour Management Plans (ATMP) for parks in which air tours are conducted.

The objective of the ATMP is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations upon the natural and cultural resources of national parks and visitor experiences.

Currently, the NPS and FAA are in the process of developing an ATMP for Haleakalā National Park. The purpose of this study is to examine the effects of natural and human-caused sounds, including air tour sounds, on visitors' experiences of Haleakalā National Park's soundscape. The results of this study are designed to help inform the development of Haleakalā National Park's ATMP.

The research presented in this report includes two components. The first component of the study uses a procedure referred to as attended listening, coupled with a visitor survey, and is designed to provide an empirical basis for understanding the sounds people hear while visiting the park, and their cognitive and affective responses to those sounds. The second component of the study uses a visitor survey, coupled with audio recordings of simulated park soundscapes, to assess visitor-based standards for: 1) the prominence of air tour sounds in Haleakalā National Park; and 2) how often visitors hear helicopter air tour sounds while hiking in the park. This report describes the methods used to conduct the attended listening exercises and audio recordings-based visitor survey, presents results of the research, and summarizes major findings designed to help inform the development of Haleakalā National Park's ATMP.

The report is organized as follows: Chapter 2 describes the survey instruments and sampling methods used to conduct the attended listening exercises and audio recordings-based visitor survey; Chapter 3 presents a summary of major findings and tabular results from the attended listening exercise administered on the Sliding Sands Trail in Haleakalā Crater; Chapter 4 presents a summary of major findings and tabular results from the attended listening exercise

administered on the trail to Waimoku Falls, in the Kīpahulu area of Haleakalā National Park; Chapter 5 presents a summary of major findings and tabular results from the audio recordings-based visitor survey administered on the trail to Waimoku Falls; and Chapter 6 presents a summary of the major findings from all components of the study. Appendices in the report include copies of the visitor survey instruments used in the study, verbatim responses to open-ended questions contained in the visitor surveys, comprehensive lists of zip codes of residence of all respondents to each of the visitor surveys, and codebooks for the electronic data files compiled from the visitor surveys. All electronic data files associated with this study are archived with Haleakalā National Park and the NPS Natural Sounds Program Center.

Chapter 2

Methods

As stated above, the research presented in this report includes attended listening exercises and associated visitor surveys administered from May through July, 2007 to visitors on the trail to Waimoku Falls, in the Kīpahulu area of Haleakalā National Park and visitors on the Sliding Sands Trail in Haleakalā Crater. In addition, the research reported here includes an audio-recordings based visitor survey administered during June and July, 2007 to people hiking on the trail to Waimoku Falls. The visitor survey instruments used in this study were reviewed and approved by the Virginia Polytechnic Institute and State University Internal Review Board and the Office of Management and Budget, and are included in the Appendices of this report. The following subsections of this chapter describe the methods used to administer the attended listening exercises and audio recordings-based visitor survey.

Attended Listening Exercise and Associated Visitor Survey

Attended listening exercises and associated visitor surveys were administered from May through July, 2007 to visitors on the trail to Waimoku Falls, in the Kīpahulu area of Haleakalā National Park and to visitors on the Sliding Sands Trail in Haleakalā Crater. Within the attended listening portion of the procedure, study participants were asked to sit quietly along the side of the trail, close their eyes, and listen for several minutes to the sounds around them. Study participants were then administered a visitor survey questionnaire in which they were asked to identify, from a list of potential sounds, any sounds that they heard while engaged in the listening exercise. Respondents were also given the option to list and evaluate other sounds they heard that were not included in the list contained in the questionnaire. In addition, the questionnaire asked

respondents to record any emotions or feelings elicited by the sounds they heard, and to evaluate each sound they heard on an acceptability scale (-4 = “Very Unacceptable” to +4 = “Very Acceptable”) and a personal evaluation scale (-4 = “Very Annoying” to +4 = Very Pleasing). A series of questions were included at the end of the questionnaire concerning visitors’ group size, group type, number of previous visits to Haleakalā National Park, gender, age, state or country of residence, level of formal education, race, ethnicity, and hearing ability. The survey instruments administered at the two study locations differed only in terms of the lists of potential sounds included in the questionnaires. The questionnaires were designed by researchers at Virginia Polytechnic Institute and State University, in consultation with Haleakalā National Park, the NPS Natural Sounds Program Center, the NPS Denver Service Center, and researchers at Colorado State University and the University of Vermont.

The attended listening exercise and associated visitor survey were administered on the trail to Waimoku Falls on 13 randomly selected days between June 7 and July 6, 2007 (Table 18). Survey administrators were stationed on the trail to Waimoku Falls, approximately 150 meters northwest of the intersection with Route 31 (Figure 1). On each sampling day, trained survey administrators approached randomly selected visitor groups as they were completing their hike on the trail and requested their participation in the survey. A randomly selected member of each visitor group who agreed to participate in the survey was given instructions about the attended listening exercise and administered a survey questionnaire after completing the attended listening. Respondents were asked to complete the questionnaire onsite. Individuals who were unwilling or unable to participate in the survey were thanked for their consideration. It should be noted that the attended listening exercise and associated survey were administered on the same days as the audio-recordings based visitor survey. Therefore, while one member of a visitor

group was completing the audio recordings-based visitor survey, a second member of the visitor group (if available) was asked to participate in the attended listening exercise and associated visitor survey. Thus, the response rate to the attended listening exercise is potentially inflated, as some of the participants may have refused to participate if they had not been waiting for another group member to complete the audio recordings-based visitor survey. Nonetheless, the overall response rate for the attended listening visitor survey administered on the trail to Waimoku Falls was 94.6% (Table 19).

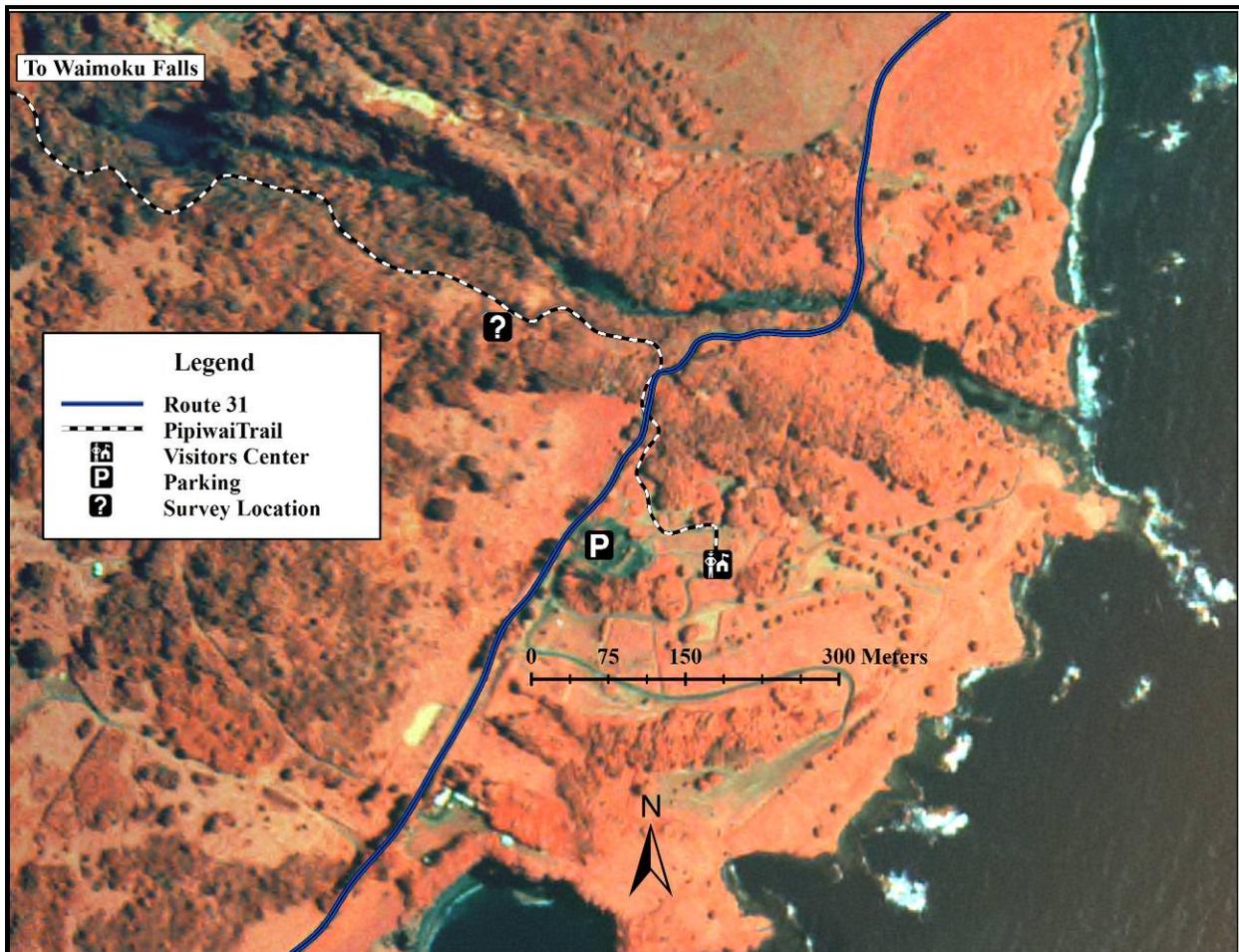


Figure 1. Kīpahulu area attended listening and audio recordings-based visitor survey sampling location, on the trail to Waimoku Falls.

The attended listening exercise and associated visitor survey were administered on the Sliding Sands Trail on 13 randomly selected days between May 27 and July 9, 2007 (Table 1). Survey administrators were stationed on the Sliding Sands Trail, approximately 1,400 meters into the Haleakalā Crater from the Sliding Sands Trailhead (Figure 2). On each sampling day, trained survey administrators approached randomly selected visitor groups as they were approaching the end of their hike on the trail and requested their participation in the survey. A randomly selected member of each visitor group who agreed to participate in the survey was given instructions about the attended listening exercise and administered a survey after completing the attended listening. Respondents were instructed to complete the questionnaire onsite. Individuals who were unwilling or unable to participate in the survey were thanked for their consideration. It should be noted that the attended listening exercise and associated survey were administered on the Sliding Sands Trail on the same days as another visitor survey (the Sliding Sands Trail Indicators and Standards of Quality Visitor Survey). Therefore, while one member of a visitor group was completing the other visitor survey, a second member of the visitor group (if available) was asked to participate in the attended listening exercise and associated visitor survey. Thus, the response rate to the attended listening exercise is potentially inflated, as some of the participants may have refused to participate if they had not been waiting for another group member to complete the other visitor survey. Nonetheless, the overall response rate for the attended listening visitor survey administered on the Sliding Sands Trail was 91.0% (Table 2).

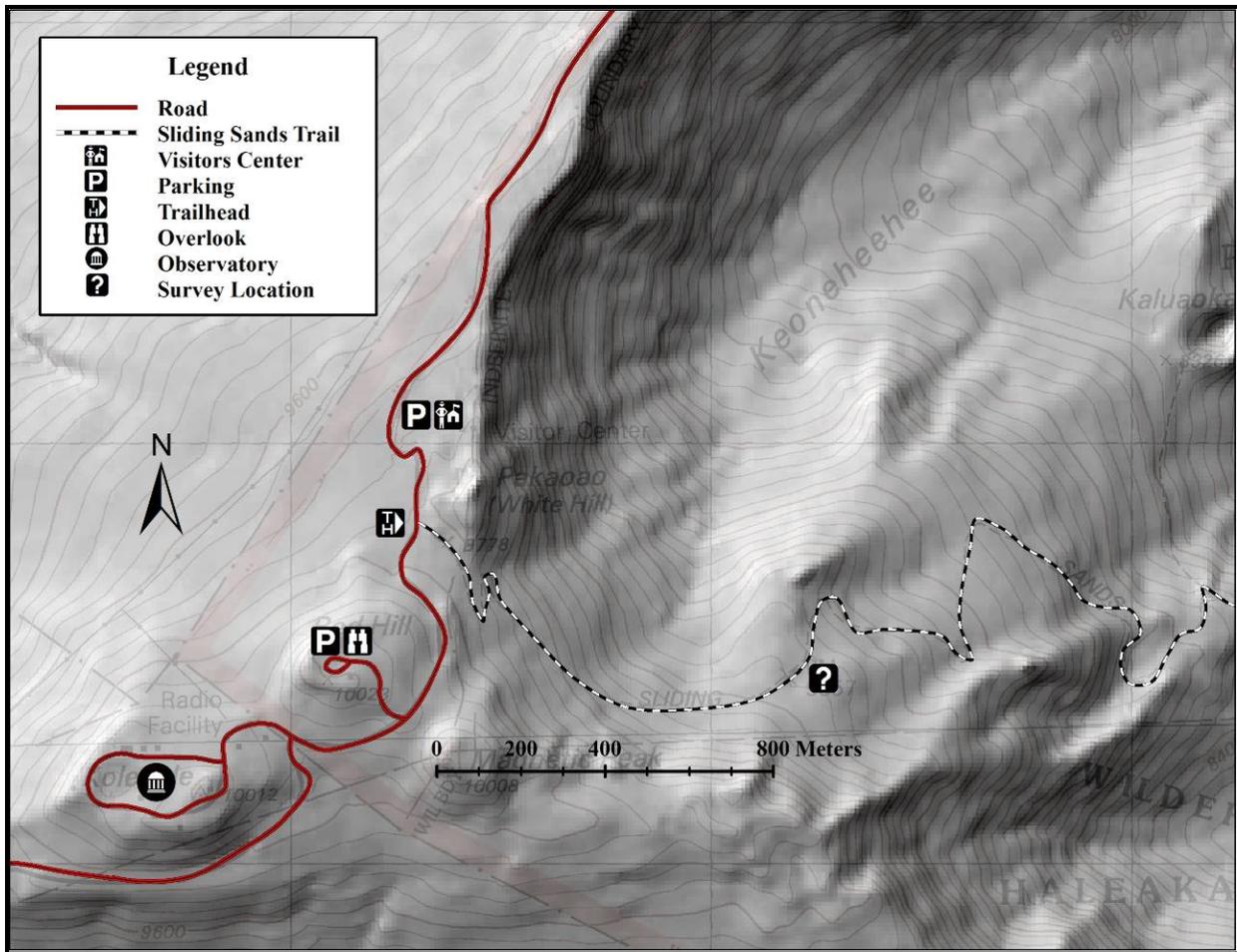


Figure 2. Sliding Sands Trail attended listening sampling location.

Audio Recordings-Based Visitor Survey

A survey of a representative sample of visitors on the trail to Waimoku Falls, in the Kīpahulu area of Haleakalā National Park was conducted during June and July, 2007. The survey questionnaire was designed by researchers at Virginia Polytechnic Institute and State University, in consultation with Haleakalā National Park, the NPS Natural Sounds Program Center, the NPS Denver Service Center, and researchers at Colorado State University and the University of Vermont. The questionnaire has three major sections. The first section of the

questionnaire, entitled “Trip Description” includes questions concerning visitors’ group size, group type, number of previous visits to Haleakalā National Park, and the importance of various motivations for hiking in the park on the day they were contacted for the survey.

The second section of the questionnaire is entitled “The Park Soundscape” and includes questions designed to assess visitor-based standards for the prominence of air tour sounds in Haleakalā National Park. In particular, visitors’ evaluations of the acceptability of alternative park soundscape conditions were measured using a series of five audio recordings containing simulated park soundscapes. The first audio recording in the sequence contained only natural sounds that can be heard in the Kīpahulu area of the park. Each subsequent audio recording in the sequence contained the “base” natural sounds, mixed with increasing levels of helicopter sounds associated with scenic air tours of the Kīpahulu area of the park. Questions were included to correspond with each of the five audio recordings and asked respondents to rate the acceptability of the sounds contained in the corresponding audio recording. In addition, questions were included to ask visitors to identify sounds in the recordings they found pleasing and/or annoying, and to identify the recording that sounded most like what they heard while hiking in the park on the day they were contacted for the survey.

Questions were also included in the second section of the questionnaire to assess visitor-based standards for how often visitors hear helicopter air tour sounds while hiking in the park. In particular, visitors’ evaluations of the acceptability of how often they hear helicopter air tour sounds while hiking in the park were measured using narratively portrayed scenarios, coupled with Recording 3 from the sequence of audio recordings described above. Each scenario described how often visitors would hear the helicopter sounds in Recording 3 while hiking in the park, with the scenarios ranging from never hearing the helicopter sounds to hearing them every

5 minutes. Questions were included to correspond with each of the scenarios and asked respondents to rate the acceptability of hearing helicopters as often as described in the corresponding scenario.

The second section of the questionnaire also contains questions concerning visitors' participation in scenic air tours over national parks, the extent to which visitors support or oppose potential air tour management strategies, and whether they heard aircraft while hiking in the park on the day they were contacted for the survey.

The third section of the questionnaire, entitled "Background Information", includes questions concerning visitors' gender, age, state or country of residence, level of formal education, race, and ethnicity.

The audio recordings-based visitor survey was administered on the trail to Waimoku Falls on 14 randomly selected days between June 6 and July 6, 2007 (Table 35). Survey administrators were stationed on the trail to Waimoku Falls, approximately 150 meters northwest of the intersection with Route 31 (Figure 1). On each sampling day, trained survey administrators approached randomly selected visitor groups as they were completing their hike on the trail and requested their participation in the survey. A randomly selected member of each visitor group who agreed to participate in the survey was given a copy of the questionnaire and asked to complete it onsite. Individuals who were unwilling or unable to participate in the survey were thanked for their consideration. The overall response rate for the audio recordings-based visitor survey was 63.1%. After removing refusals due to language barriers between the survey administrator and potential study participants, the survey response rate was 64.1% (Table 36).

Chapter 3

Results – Sliding Sands Trail Attended Listening Visitor Survey

This chapter of the report presents the results of the Sliding Sands Trail Attended Listening Visitor Survey. The chapter begins with a summary of major findings from the survey, organized according to the sections of the survey questionnaire. The chapter then reports information about sampling effort and survey response rate, and concludes with tables and figures reporting the quantitative results of the survey. A copy of the Sliding Sands Trail Attended Listening Visitor Survey questionnaire is included in the report as Appendix A.

Summary of Major Findings

Trip Description

- A substantial majority (82.9%) of visitor groups on the Sliding Sands Trail consist of 4 or fewer people, with about half (52.6%) consisting of 2 people (Table 3).
- Most (97.4%) visitors on the Sliding Sands Trail are not part of a commercial tour (Table 4).
- Over two-thirds (69.0%) of visitors on the Sliding Sands Trail are visiting Haleakalā National Park for the first time. Of those visitors who have previously visited the park, just over one-third (39.1%) have visited once previously, about half (47.8%) have visited 2 to 4 times previously, and under one-fifth (13.0%) have visited the park 5 or more times previously (Tables 5 and 6).

Listening Portion of the Sliding Sands Trail Attended Listening Visitor Survey

Within the listening portion of the Sliding Sands Trail Attended Listening Visitor Survey, study participants were asked to sit quietly along the side of the Sliding Sands Trail, close their eyes, and listen for several minutes to the sounds around them. Respondents were then asked to identify, from a list of potential sounds, any sounds that they heard while engaged in the listening exercise. Respondents were also given the option to list and evaluate other sounds they heard that were not included in the list contained in the questionnaire.

Respondents were also asked to record any emotions or feelings elicited by the sounds they heard, and to evaluate each sound they heard on an acceptability scale (-4 = “Very Unacceptable” to +4 = “Very Acceptable”) and a personal evaluation scale (-4 = “Very Annoying” to +4 = Very Pleasing). The detailed instructions used to administer the survey to park visitors are on the cover of the survey questionnaire, which is included in this report as Appendix A. For the purposes of analysis, the individual sounds listed in the questionnaire were grouped into sound categories representing general types of sounds. For example, the questionnaire items “Automobile” and “Motorcycle” were grouped into a sound category labeled “Vehicle Sounds”. The results of the listening portion of the survey are summarized below and include results for both the individual sounds listed in the questionnaire and the sound categories derived from grouping the individual sound items.

- The types of sounds that visitors most commonly reported hearing during the listening exercise on the Sliding Sands Trail include nature sounds (98.1%); the sounds of other visitors, such as walking sounds (90.6%) and talking (83.0%); and animal sounds (70.3%). Furthermore, more than half (55.3%) of all visitors reported hearing aircraft during the listening exercise, and just under half (44.7%) reported hearing technology

sounds (e.g., cameras, cell phones). A relatively small percentage of visitors reported hearing vehicle sounds (11.3%) and less than one-fifth (16.4%) reported hearing loud voices and/or yelling during the listening exercise (Table 7.2 and Figure 4). Among the nature sounds visitors reported hearing, wind was by far the most commonly heard (98.1%), while about half (54.8%) of all visitors reported hearing shifting rocks and/or sand. Of the animal sounds visitors heard during the listening exercise, horses were the most common (56.1%), while about one-third (35.5%) of visitors reported hearing insects and less than one-quarter (17.4%) of visitors indicated that they heard bird song. Of the aircraft sounds visitors reported hearing, about one-third (39.6%) of visitors reported hearing helicopter sounds and about one-quarter (22.6%) heard jet aircraft (Table 7.1 and Figure 3). Survey administrators noted if aircraft sounds were present while each respondent was completing a survey; 77.4% of respondents reported hearing an aircraft if one was indeed present during the time he or she took the survey.

- On average, visitors who reported hearing nature sounds rated these as very acceptable to hear on the Sliding Sands Trail (mean = 3.1). Similarly, those visitors who heard animal sounds generally rated them as acceptable to hear on the trail (mean = 1.8). Sounds generated by other visitors on the trail, such as walking sounds and talking sounds, were also generally considered to be acceptable sounds to hear on the trail (mean acceptability ratings of 2.9 and 2.2, respectively). However, the sounds of loud voices and/or yelling were generally considered to be unacceptable (mean = -1.6). Furthermore, visitors, on average, rated the sounds of personal electronic devices such as cell phones (mean = -1.8) and radio headsets (mean = -4.0) to be unacceptable sounds to hear on the Sliding Sands Trail. On average, visitors considered most mechanical sounds, such as the sounds of

aircraft and vehicles, to be unacceptable sounds to hear on the Sliding Sands Trail (mean acceptability ratings of -0.5 and -0.7, respectively; Tables 8.1 and 8.2; Figures 5 and 6).

- Generally, visitors rated nature sounds and the sounds of other visitors walking on the trail to be pleasing sounds to hear on the Sliding Sands Trail (mean personal interpretation ratings of 2.3 and 1.7, respectively). The nature sounds visitors rated most pleasing to hear on the trail include the sounds of thunder (mean = 3.0) and wind (mean = 2.3). While animal sounds were generally rated only slightly pleasing (mean = 0.9), bird song was rated, on average, as the most pleasing sound of any type to hear on the trail (mean = 3.5). While the sounds of other visitors walking and talking on the trail were generally considered to be somewhat pleasing sounds to hear, the sounds of other visitors' personal electronic devices, such as radio headsets and cell phones, were perceived to be very annoying. Similarly, loud voices and/or yelling were generally considered to be annoying sounds to hear on the Sliding Sands Trail (mean = -2.1). These findings, coupled with the results of the acceptability ratings for loud voices and/or yelling and the sounds of personal electronic devices, suggest that there may be social norms concerning appropriate visitor behavior and corresponding sounds on the Sliding Sands Trail. Thus, it would be advisable to inform visitors about these issues prior to hiking on the trail. On average, visitors rated mechanical sounds, such as aircraft sounds (mean = -1.1) and vehicle sounds (mean = -1.2), as annoying to hear on the trail (Tables 9.1 and 9.2; Figures 8 and 9).
- Figures 7 and 10 display information about the sounds visitors heard during the listening exercise on the Sliding Sands Trail in an "importance-performance" framework. Figure 7 plots visitors' mean *acceptability* ratings for the sounds included in the questionnaire

(Table 8.1), by the percentage of visitors who reported hearing each sound (Table 7.1), while Figure 10 plots visitors' mean *personal interpretation* ratings for the sounds (Table 9.1), by the percentage of visitors who reported hearing each sound (Table 7.1). The two figures are designed to help prioritize soundscape management actions. For example, sounds in the upper left quadrant of Figures 7 and 10 would be considered high priority for management consideration as they are sounds that were rated, on average, as unacceptable and/or annoying, and were heard frequently by visitors. In this case, there are no sounds that appear in the upper left quadrant of Figure 7 or 10. Sounds in the lower left quadrant of Figures 7 and 10 would be considered a priority for management as well, as they are sounds that were rated, on average, as unacceptable and/or annoying sounds to hear on the Sliding Sands Trail, though they are sounds that were heard by less than half of all visitors. In this case, about one-third (39.6%) of visitors reported hearing helicopter sounds during the listening exercise, and on average, visitors rated helicopter sounds as unacceptable (mean = -0.6) and annoying (mean = -1.3) to hear on the trail. Other sounds that appear in the lower left quadrant of Figure 7 include propeller, jet, and other aircraft; cell phone sounds; motorcycle sounds; and loud or yelling visitors. However, each of these sounds was heard by less than one-quarter of visitors during the listening exercise. Nonetheless, while these sounds may not present a significant management problem currently, they should be monitored and managed to ensure that they not become more common elements of the ambient sound conditions on the trail. The sounds in the upper right quadrant of Figures 7 and 10 are those sounds that visitors generally perceive to be acceptable and/or pleasing to hear on the Sliding Sands Trail and are heard frequently. The most commonly heard sounds in this quadrant include the

sound of wind and the sounds of other visitors walking on the trail. Efforts should be made to preserve opportunities to hear the sounds contained in the upper right quadrant of Figures 7 and 10. Sounds in the bottom right quadrant of Figures 7 and 10 are those that visitors generally consider to be acceptable and/or pleasing to hear on the Sliding Sands Trail, but are heard less frequently than those in the upper right quadrant of the figures. Within this quadrant, the sounds of bird song and thunder had the highest mean acceptability and personal interpretation ratings, however, each was heard by less than one-quarter of visitors. Efforts to maintain and improve opportunities for visitors to hear these sounds are recommended.

- As stated earlier, visitors were asked to describe any emotions or feelings they associated with the sounds they heard during the attended listening exercise on the Sliding Sands Trail. Of the more than 75 visitors who reported emotions and/or feelings associated with nature sounds they heard, the majority (66.2%) reported positive emotions or feelings, such as feelings of calm, peacefulness, and pleasure. The sounds of other visitors walking on the trail also elicited positive emotions from a substantial majority (76.6%) of the visitors who reported an emotion or feeling associated with hearing this sound. For example, visitors associated feelings of connectedness, companionship, safety, and pleasantness with hearing the sounds of other visitors walking on the trail. In contrast, most (87.5%) of the visitors who reported an emotion or feeling associated with hearing loud voices and/or yelling described negative emotions or feelings, such as annoyance and irritation. Similarly, about half (48.9%) of the visitors who reported an emotion or feeling associated with aircraft, reported negative emotions or feelings, while almost one-third (60.0%) of visitors who reported an emotion or feeling associated with hearing

vehicle sounds provided negative responses. These data suggest that aircraft sounds, vehicle sounds, and loud, disruptive behavior of other visitors may inhibit visitors' ability to have a restorative experience on the Sliding Sands Trail (Table 10.2).

Background Information

- A small majority (55.8%) of visitors on the Sliding Sands Trail are male, while a more substantial majority of visitors are residents of the United States (88.4%); have completed college/business/trade school or more formal education (89.7%); do not consider themselves to be Hispanic or Latino (96.6%); and identify themselves as White (90.0%). Furthermore, just over three-quarters (76.1%) of visitors on the Sliding Sands Trail are between the ages of 25 and 54 years of age, with about one-third (34.8%) between the ages of 25 and 34 years of age (Tables 11-16).
- Most (95.5%) visitors who participated in the study described their hearing as normal, while very few rated their hearing as somewhat impaired (3.9%), and no study participants rated their hearing as very impaired (Table 17).

Survey Sampling Effort and Response Rates

This section of the chapter reports information about sampling effort and survey response associated with the Sliding Sands Trail Attended Listening Visitor Survey.

Table 1. Sliding Sands Trail attended listening survey sampling dates.							
Date	Day of Week	Time of Day	Solicitations	Accept	Refuse	Unusable^a	LB Refuse^b
5/27/2007	Sunday	0900-1630	19	19	0	0	0
5/28/2007	Monday	0845-1600	14	14	0	0	0
5/29/2007	Tuesday	0930-1600	14	13	1	0	0
5/30/2007	Wednesday	0845-1600	18	14	2	2	1
6/02/2007	Saturday	0915-1630	24	19	3	2	2
6/05/2007	Tuesday	1015-1415	8	7	0	1	0
7/03/2007	Tuesday	1045-1250	7	6	0	1	0
7/04/2007	Wednesday	0915-1435	18	14	3	1	2
7/05/2007	Thursday	0915-1345	6	6	0	0	0
7/06/2007	Friday	0930-1515	28	25	2	1	0
7/07/2007	Saturday	0945-1500	2	2	0	0	0
7/08/2007	Sunday	0925-1415	14	13	1	0	0
7/09/2007	Monday	0915-1400	11	9	2	0	1
Total	-	-	183	161	14	8	6

^a Denotes surveys that were administered to respondents but contained no useable data.

^b LB Refuse were refusals due to a language barrier with the potential respondent.

Table 2. Sliding Sands Trail attended listening survey response rates.		
	Overall ^a	Minus LB ^b
Acceptance Rate	88.0%	91.0%
Refusal Rate	12.0%	9.0%

^a“Unusable” surveys treated as refusals.

^b LB Refuse were refusals due to a language barrier with the potential respondent.

Quantitative Results

This section of the chapter includes tables and figures reporting the quantitative results of the Sliding Sands Trail Attended Listening Visitor Survey, organized according to the sections of the survey questionnaire.

Trip Description

Table 3. How many people are in your personal group (family/friends) today?		
<i>Group Size</i>	(n=152)	
	<i>Count</i>	<i>Percent</i>
1 person	8	5.3
2 people	80	52.6
3 to 4 people	38	25.0
5 or more people	26	17.1
Mean	3.2	

Table 4. Is your personal group part of commercial tour in the park today?		
	(n=155)	
	<i>Count</i>	<i>Percent</i>
Yes	4	2.6
No	151	97.4

Table 5. Have you visited Haleakalā National Park before?		
	(n=155)	
	<i>Count</i>	<i>Percent</i>
Yes	48	31.0
No	107	69.0

Table 6. Approximately how many times have you visited this part of the park before today?

<i>Number of Previous Visits</i>	(n=46)	
	<i>Count</i>	<i>Percent</i>
1 visit	18	39.1
2 to 4 visits	22	47.8
5 or more	6	13.0
Mean	2.9	

Listening Portion of the Sliding Sands Trail Attended Listening Visitor Survey

Table 7.1. Number and percentage of visitors who reported hearing sounds during attended listening on the Sliding Sands Trail.

Sound Category	Sound	Heard Sound	
		Count	Percent
Aircraft Sounds	Aircraft, Jet	36	22.6
	Aircraft, Propeller	11	6.9
	Aircraft, Helicopter	63	39.6
	Aircraft, Unknown	10	6.3
Vehicle Sounds	Automobile	13	8.2
	Motorcycle	6	3.8
Trail Work / Maintenance Sounds	Trail Work/ Maintenance	1	0.6
Technology Sounds	Cell Phones	9	5.7
	Radio Headset or IPOD	1	0.6
	Technology Sounds, Unknown	2	1.3
	Camera	70	44.0
Walking Sounds	Walking Sounds	144	90.6
Talking	Group, Talking	92	57.9
	Adult(s), Talking	112	70.4
	Child/children, Talking	37	23.3
Loud Voices / Yelling	Group, Loud or Yelling	17	10.7
	Adult(s), Loud or Yelling	11	6.9
	Child/children, Loud or Yelling	8	5.0
	Child/children, Crying	2	1.3
Nature Sounds	Wind	152	98.1
	Thunder	1	0.6
	Rainfall	4	2.6
	Shifting Rocks & Sand	85	54.8
Animal Sounds	Bird Song	27	17.4
	Insect(s)	55	35.5
	Horses	87	56.1

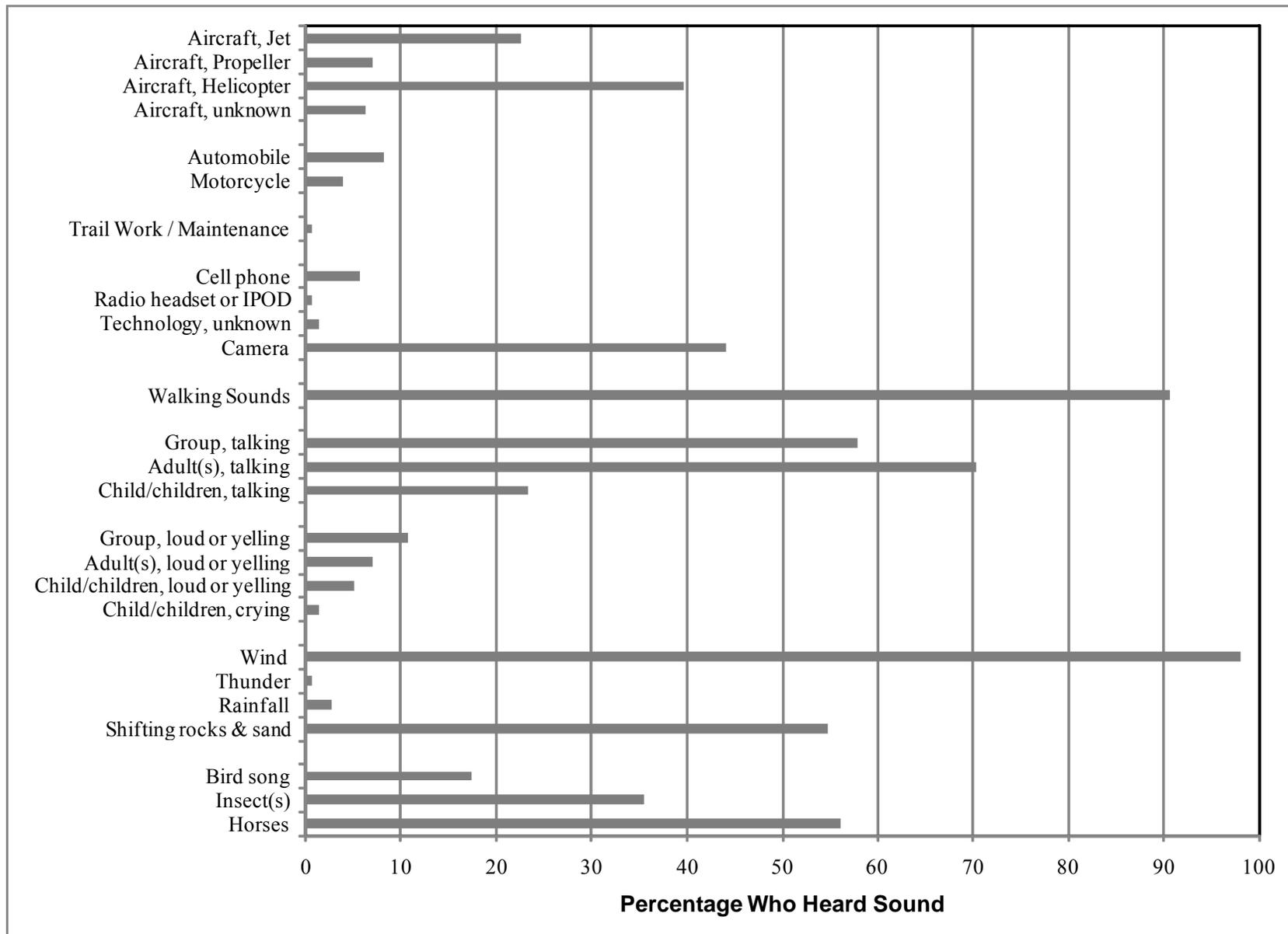


Figure 3. Percentage of visitors who reported hearing sounds during attended listening on the Sliding Sands Trail.

Table 7.2. Number and percentage of visitors who reported hearing sounds during attended listening on the Sliding Sands Trail, by sound category.		
Sound Category	Heard Sound	
	<i>Count</i>	<i>Percent</i>
Aircraft Sounds	88	55.3
Vehicle Sounds	18	11.3
Trail Work / Maintenance Sounds	1	0.6
Technology Sounds	71	44.7
Walking Sounds	144	90.6
Talking	132	83.0
Loud Voices / Yelling	26	16.4
Nature Sounds	152	98.1
Animal Sounds	109	70.3

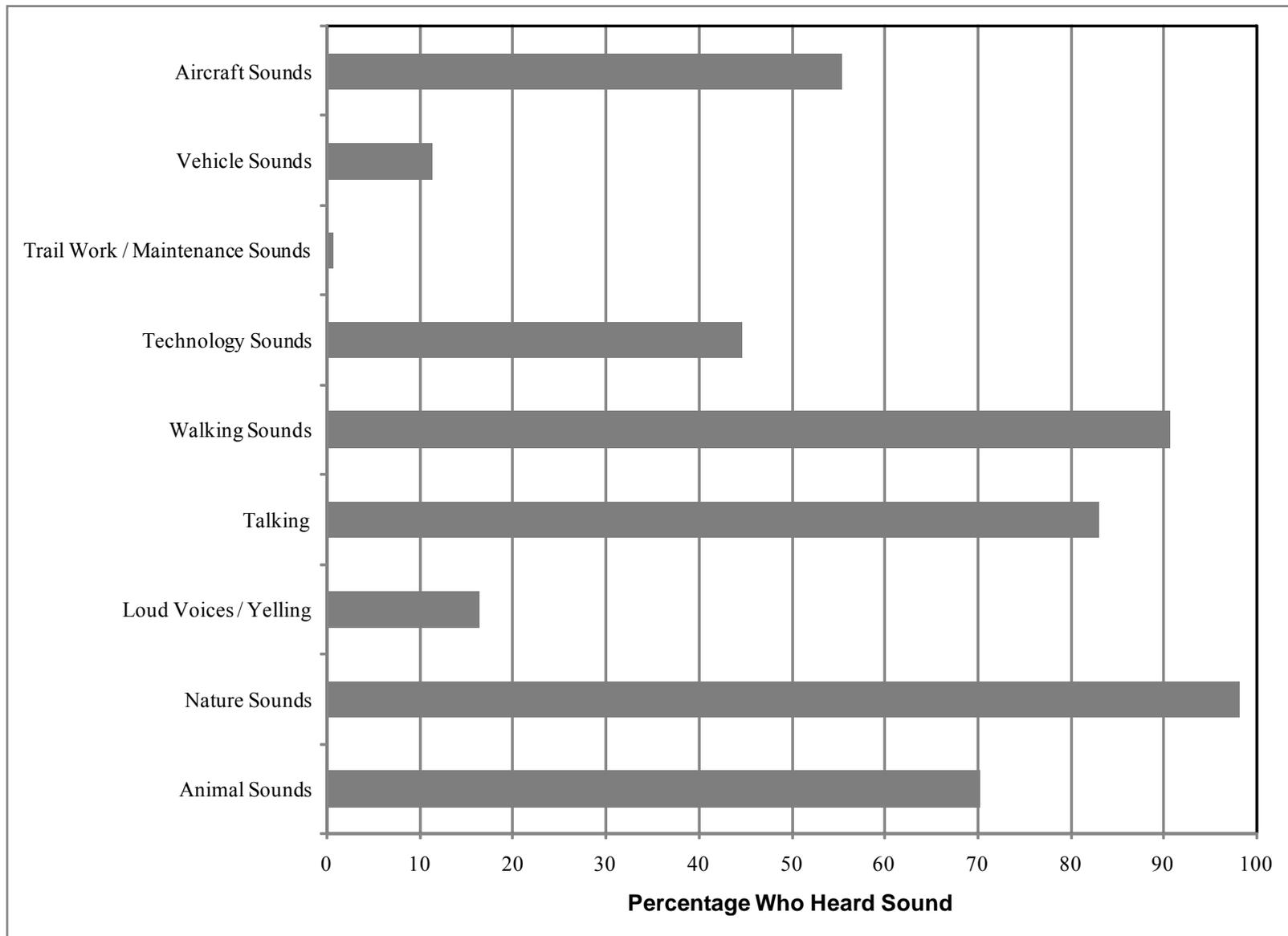


Figure 4. Percentage of visitors who reported hearing sounds during attended listening on the Sliding Sands Trail, by sound category.

Table 8.1. Visitors' acceptability ratings of sounds heard during attended listening on the Sliding Sands Trail.

Sound	n	Percentage who Rated Sound as... ^a			Mean
		Acceptable	Neutral	Unacceptable	
Aircraft, Jet	35	25.7	31.4	42.9	-0.3
Aircraft, Propeller	11	9.1	36.4	54.5	-1.5
Aircraft, Helicopter	63	23.8	23.8	52.4	-0.6
Aircraft, Unknown	10	30.0	20.0	50.0	-0.1
Automobile	13	15.4	46.2	38.5	-0.5
Motorcycle	6	16.7	0.0	83.0	-1.3
Trail Work / Maintenance	1	100.0	0.0	0.0	3.0
Cell Phones	9	22.2	0.0	77.8	-1.8
Radio Headset or IPOD	1	0.0	0.0	100.0	-4.0
Technology Sounds, Unknown	2	0.0	0.0	100.0	-3.0
Camera	68	73.5	22.1	4.4	2.1
Walking Sounds	142	83.1	11.3	5.6	2.9
Group, Talking	90	72.2	21.1	6.7	2.0
Adult(s), Talking	110	74.5	20.0	5.5	2.2
Child/children, Talking	36	83.3	16.7	0.0	2.5
Group, Loud or Yelling	17	17.6	5.9	76.5	-1.7
Adult(s), Loud or Yelling	11	18.2	18.2	63.6	-1.6
Child/children, Loud or Yelling	8	25.0	12.5	62.5	-1.0
Child/children, Crying	2	0.0	0.0	100.0	-2.0
Wind	149	87.9	6.0	6.0	3.0
Thunder	1	100.0	0.0	0.0	3.0
Rainfall	4	75.0	0.0	25.0	2.3
Shifting Rocks & Sand	82	91.5	8.5	0.0	3.3
Bird Song	25	96.0	0.0	4.0	3.6
Insect(s)	55	67.3	14.5	18.2	1.8
Horses	84	65.5	14.3	20.2	1.2

^a Response scale ranged from -4 = "Very Unacceptable" to +4 = "Very Acceptable". See Appendix B for detailed frequency distributions of acceptability ratings.

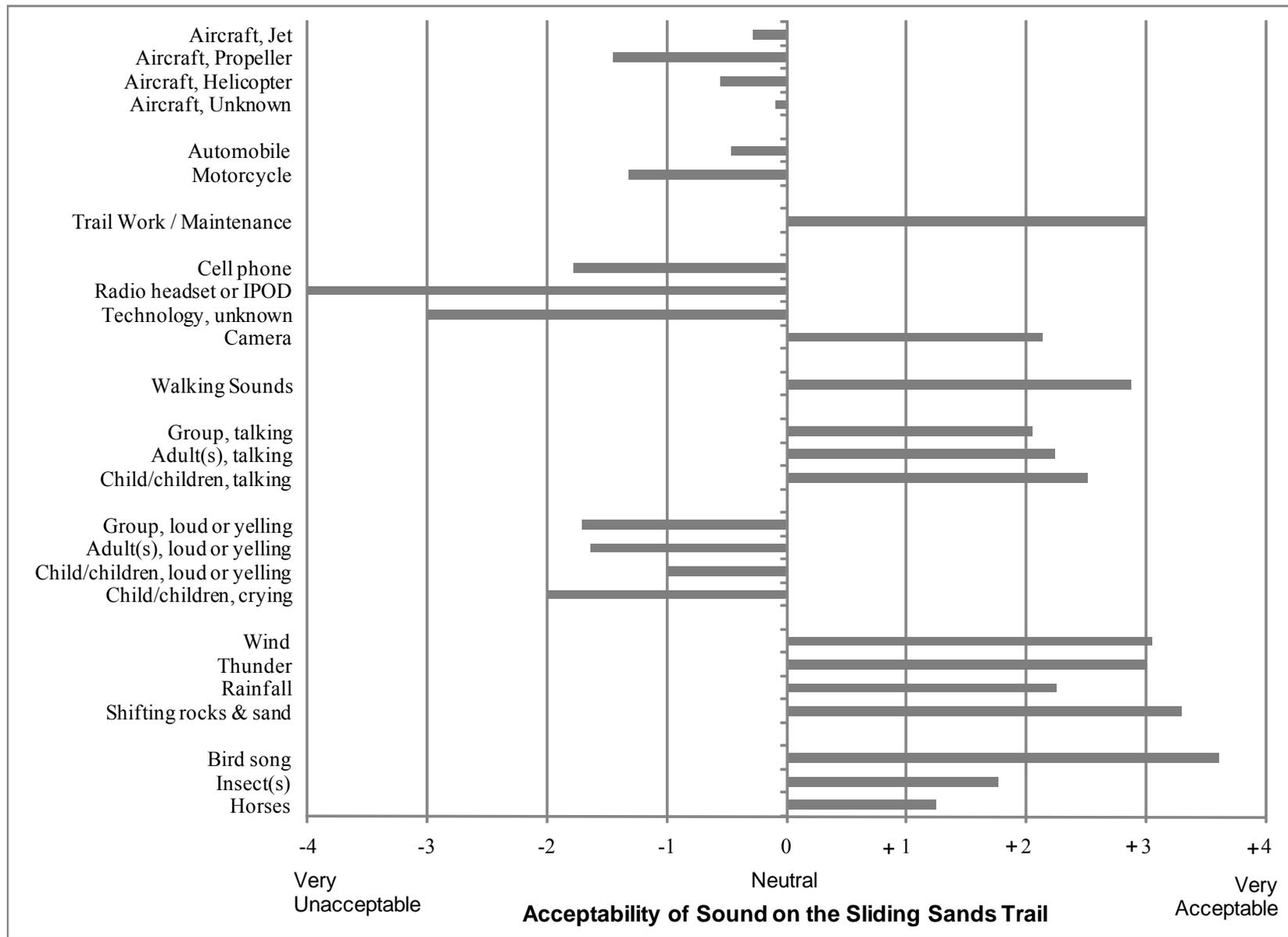


Figure 5. Visitors' mean acceptability ratings of sounds heard during attended listening on the Sliding Sands Trail.

Table 8.2. Visitors' acceptability ratings of sounds heard during attended listening on the Sliding Sands Trail, by sound category.

Sound Category	<i>n</i>	Percentage who Rated Sound as... ^a			Mean
		<i>Acceptable</i>	<i>Neutral</i>	<i>Unacceptable</i>	
Aircraft Sounds	119	23.5	26.9	49.6	-0.5
Vehicle Sounds	19	15.8	31.6	52.6	-0.7
Trail Work / Maintenance Sounds	1	100.0	0.0	0.0	3.0
Technology Sounds	80	65.0	18.8	16.3	1.5
Walking Sounds	142	83.1	11.3	5.6	2.9
Talking	236	75.0	19.9	5.1	2.2
Loud Voices / Yelling	38	18.4	10.5	71.1	-1.6
Nature Sounds	236	89.0	6.8	4.2	3.1
Animal Sounds	164	70.7	12.2	17.1	1.8

^a Response scale ranged from -4 = "Very Unacceptable" to +4 = "Very Acceptable". See Appendix B for detailed frequency distributions of acceptability ratings.

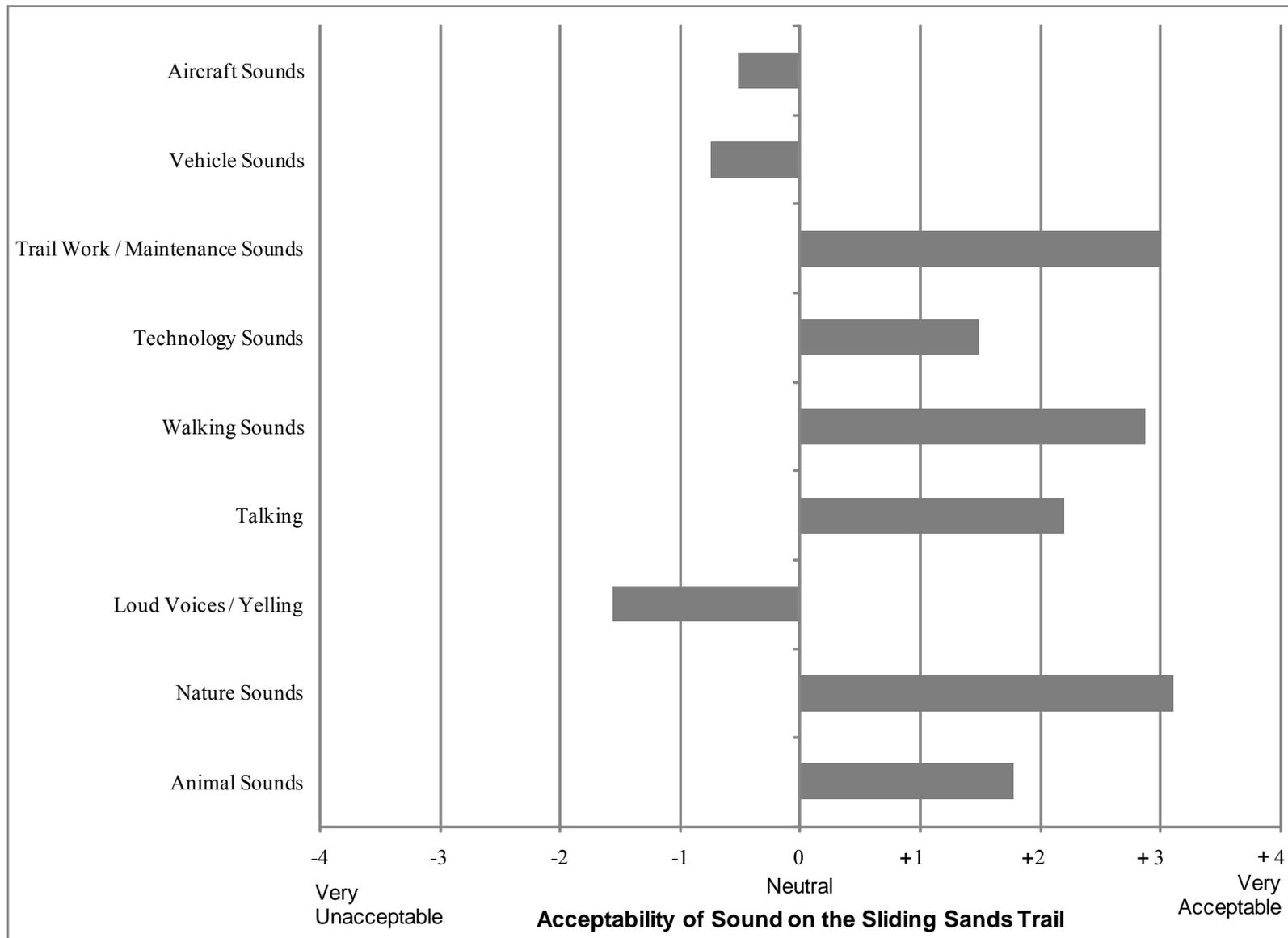


Figure 6. Visitors' mean acceptability ratings of sounds heard during attended listening on the Sliding Sands Trail, by sound category.

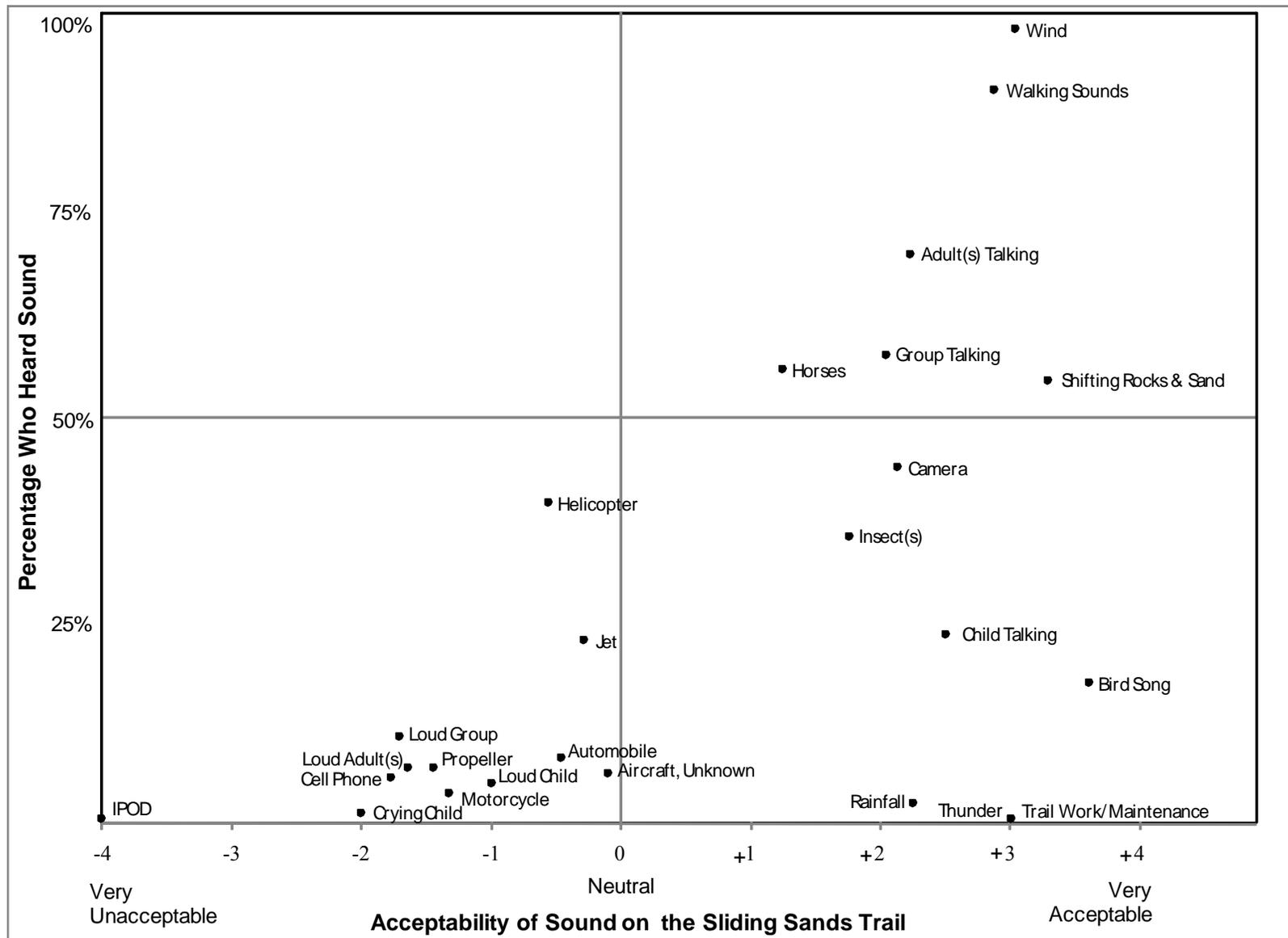


Figure 7. Visitors' mean acceptability ratings of sounds heard during attended listening on the Sliding Sands Trail, by percentage of visitors who heard each sound.

Table 9.1. Visitors' personal interpretation ratings of sounds heard during attended listening on the Sliding Sands Trail.

Sound	n	Percentage who Rated Sound as... ^a			Mean
		<i>Pleasant</i>	<i>Neutral</i>	<i>Annoying</i>	
Aircraft, Jet	36	2.8	55.6	41.7	-0.8
Aircraft, Propeller	11	18.2	27.3	54.5	-1.3
Aircraft, Helicopter	59	11.9	23.7	64.4	-1.3
Aircraft, Unknown	9	11.1	55.6	33.3	-1.0
Automobile	12	0.0	58.3	41.7	-0.9
Motorcycle	6	16.7	16.7	66.7	-1.7
Trail Work / Maintenance	1	100.0	0.0	0.0	1.0
Cell Phones	8	0.0	37.5	62.5	-1.5
Radio Headset or IPOD	1	0.0	0.0	100.0	-4.0
Technology Sounds, Unknown	2	0.0	0.0	100.0	-3.0
Camera	65	44.6	47.7	7.7	1.1
Walking Sounds	139	59.7	35.3	5.0	1.7
Group, Talking	88	33.0	53.4	13.6	0.6
Adult(s), Talking	104	37.5	52.9	9.6	0.8
Child/children, Talking	37	37.8	54.1	8.1	1.0
Group, Loud or Yelling	17	0.0	17.6	82.4	-2.1
Adult(s), Loud or Yelling	11	0.0	36.4	63.6	-2.2
Child/children, Loud or Yelling	7	14.3	0.0	85.7	-2.0
Child/children, Crying	2	0.0	0.0	100.0	-1.5
Wind	145	80.0	7.6	12.4	2.3
Thunder	1	100.0	0.0	0.0	3.0
Rainfall	4	50.0	25.0	25.0	1.5
Shifting Rocks & Sand	80	72.5	21.3	6.3	2.1
Bird Song	25	92.0	8.0	0.0	3.5
Insect(s)	52	40.4	17.3	42.3	0.1
Horses	80	50.0	25.0	25.0	0.7

^a Response scale ranged from -4 = "Very Annoying" to +4 = "Very Pleasant". See Appendix B for detailed frequency distributions of personal interpretation ratings.

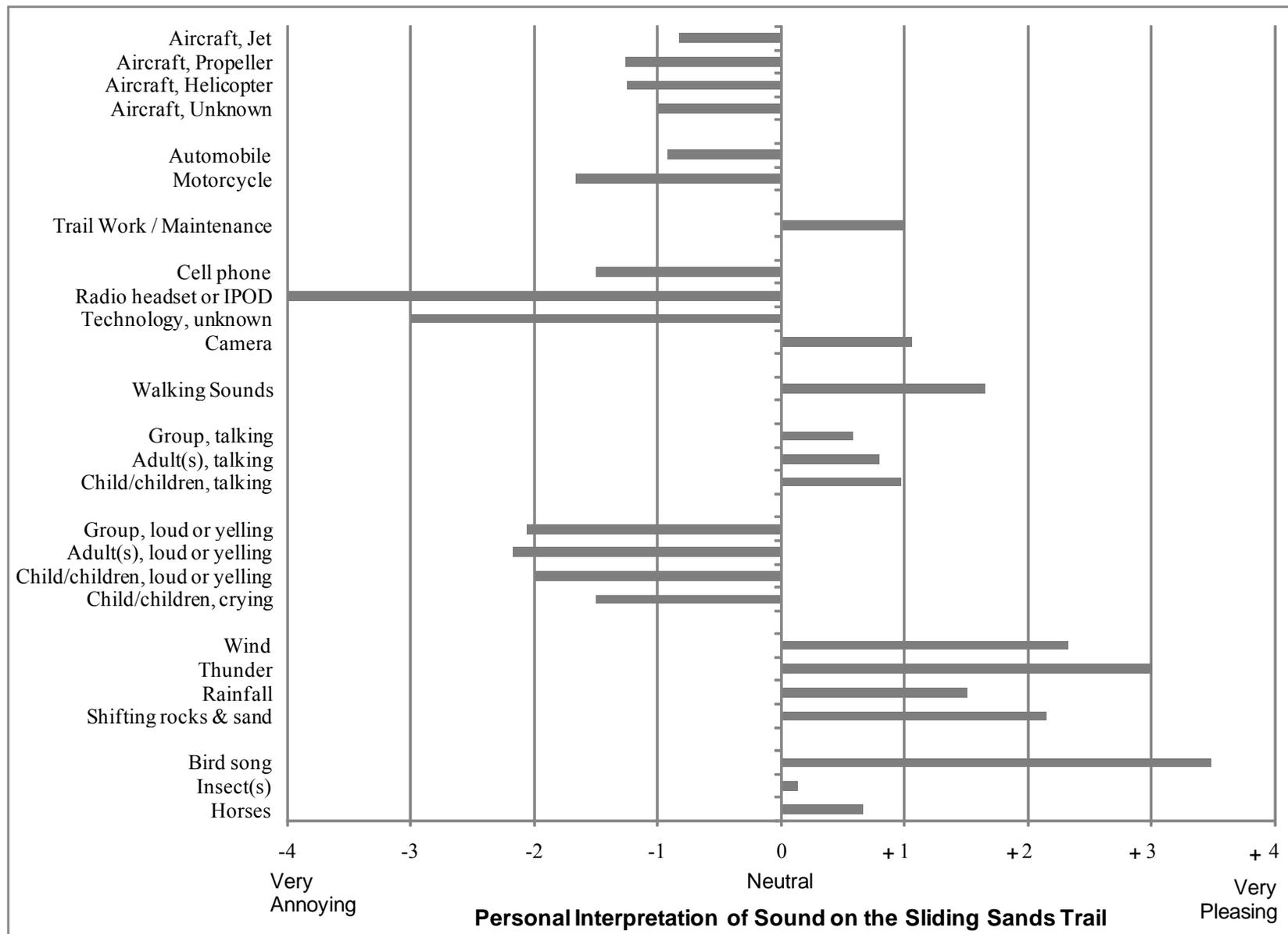


Figure 8. Visitors' mean personal interpretation ratings of sounds heard during attended listening on Sliding Sands Trail.

Table 9.2. Visitors’ personal interpretation ratings of sounds heard during attended listening on the Sliding Sands Trail, by sound category.

Sound Category	<i>n</i>	Percentage who Rated Sound as... ^a			Mean
		<i>Pleasant</i>	<i>Neutral</i>	<i>Annoying</i>	
Aircraft Sounds	115	9.6	36.5	53.9	-1.1
Vehicle Sounds	18	5.6	44.4	50.0	-1.2
Trail Work / Maintenance Sounds	1	100.0	0.0	0.0	1.0
Technology Sounds	76	38.2	44.7	17.1	0.6
Walking Sounds	139	59.7	35.3	5.0	1.7
Talking	229	35.8	53.3	10.9	0.7
Loud Voices / Yelling	37	2.7	18.9	78.4	-2.1
Nature Sounds	230	77.0	12.6	10.4	2.3
Animal Sounds	157	53.5	19.7	26.8	0.9

^aResponse scale ranged from -4 = “Very Annoying” to +4 = “Very Pleasant”. See Appendix B for detailed frequency distributions of personal interpretation ratings.

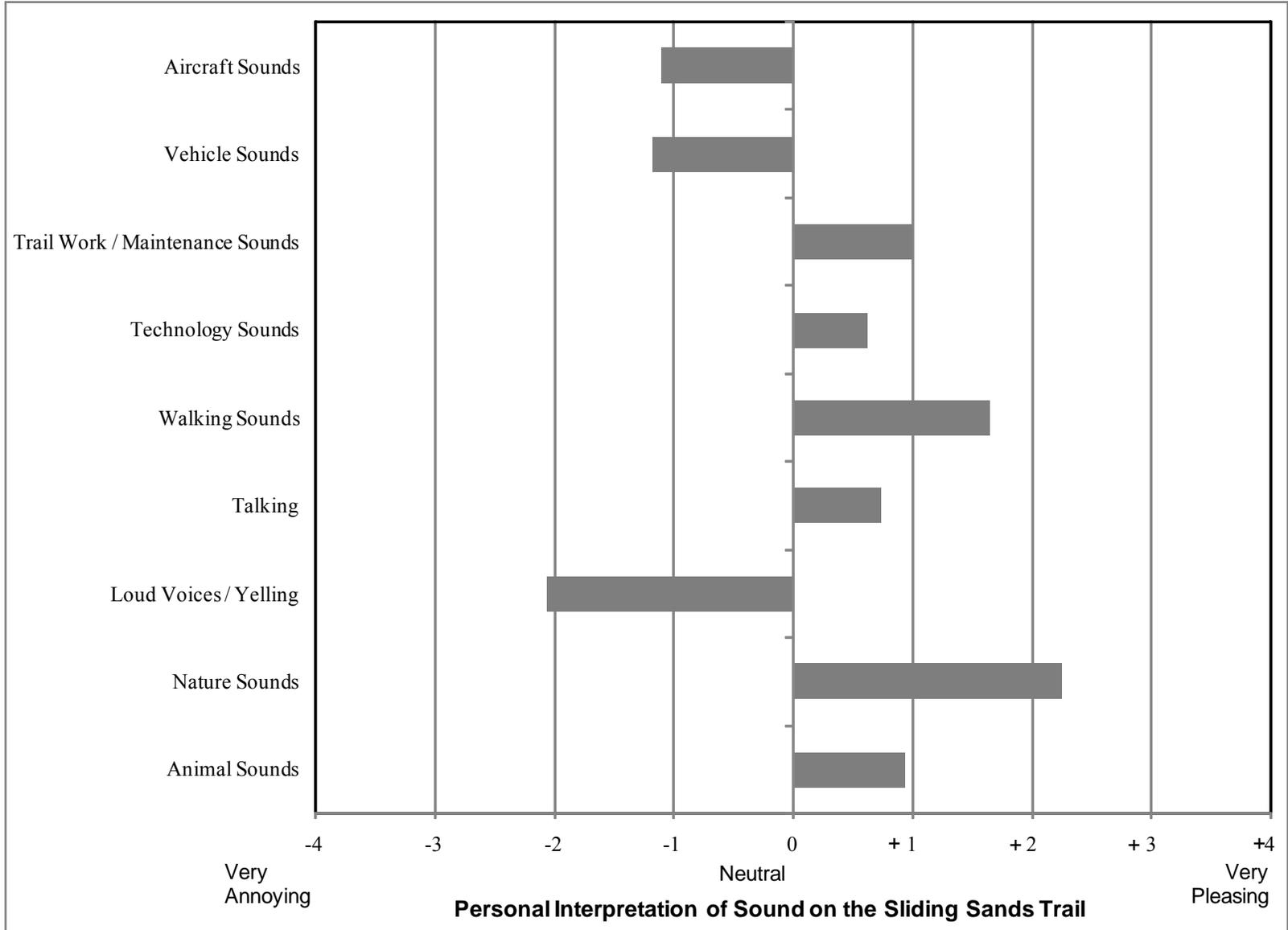


Figure 9. Visitors’ mean personal interpretation ratings of sounds heard during attended listening on the Sliding Sands Trail, by sound category.

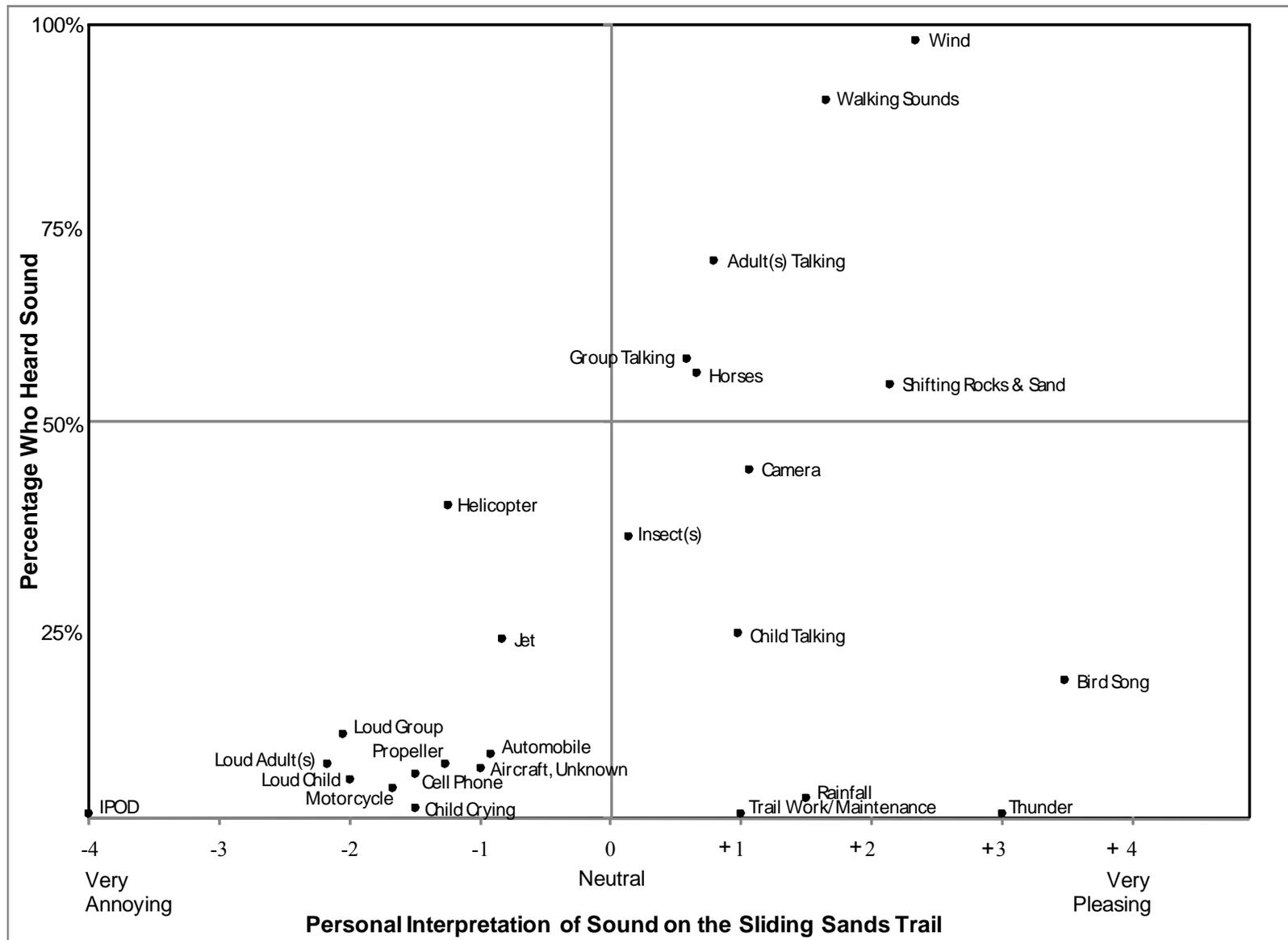


Figure 10. Visitors’ mean personal interpretation ratings of sounds heard during attended listening on the Sliding Sands Trail, by percentage of visitors who heard each sound.

Table 10.1. Visitor-reported emotions/feelings associated with sounds heard during attended listening on the Sliding Sands Trail.

Sound	Reported Emotions/Feelings Associated with Sound ^a				None Reported ^b
	<i>n</i>	<i>Positive</i>	<i>Ambiguous</i>	<i>Negative</i>	
Aircraft, Jet	16	12.5	37.5	50.0	20
Aircraft, Propeller	2	0.0	0.0	100.0	9
Aircraft, Helicopter	25	24.0	28.0	48.0	38
Aircraft, Unknown	4	0.0	75.0	25.0	6
Automobile	4	0.0	50.0	50.0	9
Motorcycle	1	0.0	0.0	100.0	5
Trail Work / Maintenance	0	N/A	N/A	N/A	1
Cell Phones	3	0.0	33.3	66.7	6
Radio Headset or IPOD	0	N/A	N/A	N/A	1
Technology Sounds, Unknown	1	0.0	100.0	0.0	1
Camera	21	42.9	57.1	0.0	49
Walking Sounds	47	76.6	17.0	6.4	97
Group, Talking	21	47.6	38.1	14.3	71
Adult(s), Talking	22	45.5	50.0	4.5	90
Child/children, Talking	6	66.7	33.3	0.0	31
Group, Loud or Yelling	4	25.0	0.0	75.0	13
Adult(s), Loud or Yelling	2	0.0	0.0	100.0	9
Child/children, Loud or Yelling	2	0.0	0.0	100.0	6
Child/children, Crying	0	N/A	N/A	N/A	2
Wind	55	70.9	16.4	12.7	97
Thunder	1	100.0	0.0	0.0	0
Rainfall	1	100.0	0.0	0.0	3
Shifting Rocks & Sand	20	50.0	25.0	25.0	65
Bird Song	9	100.0	0.0	0.0	18
Insect(s)	13	0.0	38.5	61.5	42
Horses	23	34.8	30.4	34.8	64

^a Open-ended responses were categorized as “positive,” “negative,” or “ambiguous” emotions/feelings. See Appendix C for a verbatim list of responses.

^b Number of respondents who heard the sound but did not report an emotion or feeling.

Table 10.2. Visitor-reported emotions/feelings associated with sounds heard during attended listening on the Sliding Sands Trail, by sound category.

Sound Category	Reported Emotions/Feelings Associated with Sound ^a				None Reported ^b
	-----Percent-----				
	<i>n</i>	<i>Positive</i>	<i>Ambiguous</i>	<i>Negative</i>	
Aircraft Sounds	47	17.0	34.0	48.9	73
Vehicle Sounds	5	0.0	40.0	60.0	14
Trail Work / Maintenance Sounds	0	N/A	N/A	N/A	1
Technology Sounds	25	36.0	56.0	8.0	57
Walking Sounds	47	76.6	17.0	6.4	97
Talking	49	49.0	42.9	8.2	192
Loud Voices / Yelling	8	12.5	0.0	87.5	30
Nature Sounds	77	66.2	18.2	15.6	165
Animal Sounds	45	37.8	26.7	35.5	124

^a Open-ended responses were categorized as “positive,” “negative,” or “ambiguous” emotions/feelings. See Appendix C for a verbatim list of responses.

^b Number of respondents who heard the sound but did not report an emotion or feeling.

Background Information

Table 11. What is your gender?		
<i>Gender</i>	(n=154)	
	<i>Count</i>	<i>Percent</i>
Male	86	55.8
Female	68	44.2

Table 12. In what year were you born (Converted to age in years.)?		
<i>Age Group</i>	(n=155)	
	<i>Count</i>	<i>Percent</i>
18 to 24 years old	16	10.3
25 to 34 years old	54	34.8
35 to 44 years old	26	16.8
45 to 54 years old	38	24.5
55 to 64 years old	19	12.3
65 years old and older	2	1.3
Mean Age	39.4	

Table 13.1. Do you live in the United States?		
	(n=155)	
	<i>Counts</i>	<i>Percent</i>
Yes	137	88.4
No	18	11.6

Table 13.2. What is your zip code (if you live in the United States)?	
<i>Most Frequent Zip Codes</i>	(n=121)
	<i>Count</i>
96753 (Kihei, HI)	3
96821 (Honolulu, HI)	2
48438 (Goodrich, MI)	2
77024 (Houston, TX)	2
78023 (Helotes, TX)	2
92037 (La Jolla, CA)	2
92549 (Idyllwild, CA)	2
36117 (Montgomery, AL)	2
98040 (Mercer Island, WA)	2

See Appendix D for the frequency of respondents by state.

Table 13.3. What country do you live in (if not the United States)?	
<i>Country</i>	(n= 19)
	<i>Count</i>
Canada	7
Germany	4
Australia	1
Brazil	1
Chruk (?)	1
France	1
India	1
Netherlands	1
Switzerland	1
United Kingdom	1

Table 14. What is the highest level of formal education you have completed?		
<i>Education Level</i>	(n= 154)	
	<i>Count</i>	<i>Percent</i>
Some high school	2	1.3
High school graduate or GED	5	3.2
Some college, business or trade school	9	5.8
College, business or trade school graduate	70	45.5
Some graduate school	12	7.8
Master's, doctoral or professional degree	56	36.4

Table 15. Are you Hispanic or Latino?		
	(n= 148)	
	<i>Counts</i>	<i>Percent</i>
Yes	5	3.4
No	143	96.6

Note: Only 2 of 5 Hispanics/Latinos also indicated a race in Table 16.

Table 16. What is your race?		
<i>Race</i>	(n=150)	
	<i>Count</i>	<i>Percent</i>
American Indian or Alaskan Native	2	1.3
Asian	18	12.0
Black or African American	1	0.7
Native Hawaiian	2	1.3
Pacific Islander other than Native Hawaiian	3	2.0
White	135	90.0
Belong to 2 races	3	2.0
Belong to 4 races	1	0.7
Belong to 6 races	1	0.7

Table 17. How would you describe your hearing?		
	(n= 155)	
	<i>Count</i>	<i>Percent</i>
My hearing is normal	148	95.5
I am somewhat hearing impaired	6	3.9
I am very hearing impaired	0	0.0
I don't know about my hearing capacity	1	0.6

Chapter 4

Results – Kīpahulu Area Attended Listening Visitor Survey

This chapter of the report presents the results of the Kīpahulu Area Attended Listening Visitor Survey. The chapter begins with a summary of major findings from the survey, organized according to the sections of the survey questionnaire. The chapter then reports information about sampling effort and survey response rate, and concludes with tables and figures reporting the quantitative results of the survey. A copy of the Kīpahulu Area Attended Listening Visitor Survey questionnaire is included in the report as Appendix F.

Summary of Major Findings

Trip Description

- A substantial majority (86.9%) of visitor groups on the trail to Waimoku Falls consist of 4 or fewer people, with just under two-thirds (64.6%) consisting of 2 people (Table 20).
- Most (99.0%) visitors on the trail to Waimoku Falls are not part of a commercial tour (Table 21).
- Close to two-thirds (62.3%) of visitors on the trail to Waimoku Falls are visiting Haleakalā National Park for the first time. Of those visitors who have previously visited the park, just under half (42.4%) have visited once previously, just under half (43.9%) have visited 2 to 4 times previously, and under one-fifth (13.6%) have visited the park 5 or more times previously (Tables 22 and 23).

Listening Portion of the Kīpahulu Area Attended Listening Visitor Survey

Within the listening portion of the Kīpahulu Area Attended Listening Visitor Survey, study participants were asked to sit quietly along the side of the trail to Waimoku Falls, close their eyes, and listen for several minutes to the sounds around them. Respondents were then asked to identify, from a list of potential sounds, any sounds that they heard while engaged in the listening exercise. Respondents were also given the option to list and evaluate other sounds they heard that were not included in the list contained in the questionnaire.

Respondents were also asked to record any emotions or feelings elicited by the sounds they heard, and to evaluate each sound they heard on an acceptability scale (-4 = “Very Unacceptable” to +4 = “Very Acceptable”) and a personal evaluation scale (-4 = “Very Annoying” to +4 = Very Pleasing). The detailed instructions used to administer the survey to park visitors are on the cover of the survey questionnaire, which is included in this report as Appendix F. For the purposes of analysis, the individual sounds listed in the questionnaire were grouped into sound categories representing general types of sounds. For example, the questionnaire items “Automobile” and “Motorcycle” were grouped into a sound category labeled “Vehicle Sounds”. The results of the listening portion of the survey are summarized below and include results for both the individual sounds listed in the questionnaire and the sound categories derived from grouping the individual sound items.

- The types of sounds that visitors most commonly reported hearing during the listening exercise on the trail to Waimoku Falls include nature sounds (99.5%); the sounds of other visitors, such as walking sounds (92.2%) and talking (91.7%); and animal sounds (90.1%). Furthermore, nearly two-thirds (62.7%) of visitors reported hearing aircraft during the listening exercise, and just under half reported hearing vehicle sounds (43.5%)

and technology sounds (e.g., cameras, cell phones; 42.5%) (Table 24.2 and Figure 12).

Among the nature sounds visitors reported hearing, the most commonly heard were flowing water (98.4%); leaves rustling (95.3%); and wind (94.8%), and bird song was, by far, the most commonly heard animal sound (88.0%). Of the aircraft sounds visitors reported hearing, a majority (52.3%) reported hearing helicopters, while less than ten percent heard a jet (9.3%), propeller plane (6.7%), or other aircraft (5.2%; Table 24.1 and Figure 11). Survey administrators noted if aircraft sounds were present while each respondent was completing a survey; 80.4% of respondents reported hearing an aircraft if one was indeed present during the time he or she took the survey.

- On average, visitors who reported hearing nature sounds and animal sounds rated these as very acceptable sounds to hear on the trail to Waimoku Falls (mean acceptability ratings of 3.7 and 3.6, respectively). Sounds generated by other visitors on the trail, such as walking sounds and talking sounds, were also considered to be acceptable sounds to hear on the trail (mean acceptability ratings of 2.9 and 2.0, respectively). However, the sounds of loud voices and/or yelling were generally considered to be unacceptable (mean = -0.3). On average, visitors considered mechanical sounds, such as sounds of aircraft, vehicles, and cell phones to be unacceptable sounds to hear on the trail to Waimoku Falls (mean acceptability ratings of -0.6, -0.4, and -1.5, respectively; Table 25.2 and Figure 14).
- Generally, visitors rated the sounds of nature and animals to be very pleasing sounds to hear on the trail to Waimoku Falls (mean personal interpretation ratings of 3.7 and 3.4, respectively). The nature sounds visitors rated most pleasing to hear on the trail include the sounds of ocean waves (mean = 3.9); flowing water (mean = 3.8); leaves rustling (mean = 3.6); and wind (mean = 3.5), while the most pleasing animal sound, by far, was

bird song (mean = 3.7). While considered less pleasing than the sounds of nature and animals, the sounds of other visitors, such as walking sounds (mean = 1.6); talking (mean = 0.6); and cameras (mean = 0.5), were considered to be pleasing sounds to hear on the trail. However, the sounds of loud voices and/or yelling were generally considered to be annoying sounds to hear on the trail to Waimoku Falls. This finding, coupled with the results of the acceptability ratings for loud voices and/or yelling, suggests that there may be social norms for appropriate visitor behavior and corresponding sounds while hiking on the trail to Waimoku Falls. Thus, it is advisable to inform visitors about this issue prior to hiking on the trail. On average, visitors rated mechanical sounds as annoying to hear on the trail. Such sounds included aircraft sounds (mean = -1.2); vehicle sounds (mean = -1.5); and cell phones (mean = -1.8; Tables 26.1 and 26.2; Figures 16 and 17).

- Figures 15 and 18 display information about the sounds visitors heard during the listening exercise on the trail to Waimoku Falls in an “importance-performance” framework. Figure 15 plots visitors’ mean *acceptability* ratings for the sounds included in the questionnaire (Table 25.1), by the percentage of visitors who reported hearing each sound (Table 24.1), while Figure 18 plots visitors’ mean *personal interpretation* ratings for the sounds (Table 26.1), by the percentage of visitors who reported hearing each sound (Table 24.1). The two figures are designed to help prioritize soundscape management actions. For example, sounds in the upper left quadrant of Figures 15 and 18 would be considered high priority for management consideration as they are sounds that were rated, on average, as unacceptable and/or annoying, and were heard frequently by visitors. In this case, helicopter sounds appear in the upper left quadrant of both Figures 15 and 18, with helicopter sounds being heard by about half (52.3%) of all visitors and

receiving a mean acceptability rating of -0.4 and a mean personal interpretation rating of -1.0. No other sounds are contained within the upper left quadrant of Figure 15 or 18. Sounds in the lower left quadrant of Figures 15 and 18 would be considered a priority for management as well, as they are sounds that were rated, on average, as unacceptable and/or annoying sounds to hear on the trail to Waimoku Falls, though they are sounds that were heard by less than half of all visitors. In this case, just under half (42.0%) of all visitors reported hearing automobile sounds during the listening exercise, and on average, visitors rated automobile sounds as unacceptable (mean = -0.3) and annoying (mean = -1.4) to hear on the trail. Other sounds that appear in the lower left quadrant of Figure 15 include propeller, jet, and other aircraft; cell phone sounds; motorcycle sounds; and loud or yelling visitors. However, each of these sounds was heard by less than one-quarter of visitors during the listening exercise. Nonetheless, while these sounds may not present a significant management problem currently, they should be monitored and managed to ensure that they not become more common elements of the ambient sound conditions on the trail. The sounds in the upper right quadrant of Figures 15 and 18 are those sounds that visitors generally perceive to be acceptable and/or pleasing to hear on the trail to Waimoku Falls and are heard frequently. Several nature and animal sounds are contained within this quadrant of Figures 15 and 18, including the sounds of flowing water; leaves rustling; wind; and bird song. The sounds of other visitors walking and talking on the trail are also located in this quadrant of both figures, suggesting that visitors commonly hear these sounds and generally consider them to be acceptable and pleasing sounds to hear on the trail to Waimoku Falls. Efforts should be made to preserve opportunities to hear the sounds contained in the upper right quadrant of Figures 15 and 18. Sounds in the bottom

right quadrant of Figures 15 and 18 are those that visitors generally consider to be acceptable and/or pleasing to hear on the trail to Waimoku Falls, but are heard less frequently than those in the upper right quadrant of the figures. Within this quadrant, the sounds of rainfall and ocean waves had the highest mean acceptability and personal interpretation ratings, and were each heard by more than one-quarter of visitors. Efforts to maintain and improve opportunities for visitors to hear these sounds are recommended.

- As stated earlier, visitors were asked to describe any emotions or feelings they associated with the sounds they heard during the attended listening exercise on the trail to Waimoku Falls. More than 200 visitors reported emotions and/or feelings associated with nature sounds they heard, and the vast majority (95.0%) of them reported positive emotions or feelings, such as feelings of calm, peacefulness, and relaxation. Similarly, animal sounds elicited positive emotions from a substantial majority (80.5%) of the visitors who reported an emotion or feeling associated with hearing animal sounds. These data provide empirical evidence that the sounds of nature tend to have a relaxing, calming, positive effect on visitors' affective state. In contrast, more than half (57.1%) of visitors who reported an emotion or feeling associated with aircraft, reported negative emotions or feelings, such as annoyance, irritation, and distraction. Similarly, almost two-thirds (61.0%) of visitors who reported an emotion or feeling associated with hearing vehicle sounds described negative emotions or feelings. These data suggest that aircraft and vehicle sounds may inhibit visitors' ability to have a restorative experience on the trail to Waimoku Falls (Table 27.2).

Background Information

- A small majority (55.7%) of visitors on the trail to Waimoku Falls are male, while a more substantial majority of visitors are residents of the United States (91.6%); have completed college/business/trade school or more formal education (79.5%); do not consider themselves to be Hispanic or Latino (94.7%); and identify themselves as White (91.5%). Furthermore, more than three-quarters (81.7%) of visitors on the trail to Waimoku Falls are between the ages of 25 and 54 years of age, with about one-third (34.0%) between the ages of 25 and 34 years of age (Tables 28-33).
- Most (92.6%) visitors who participated in the study described their hearing as normal, while very few rated their hearing as somewhat impaired (6.3%) or very impaired (0.5%; Table 34).

Survey Sampling Effort and Response Rates

This section of the chapter reports information about sampling effort and survey response associated with the Kīpahulu Area Attended Listening Visitor Survey.

Table 18. Kīpahulu area attended listening survey sampling dates.

Date	Day of Week	Time of Day	Solicitations	Accept	Refuse	Unusable ^a
6/7/2007	Thursday	1030-1630	23	22	1	0
6/8/2007	Friday	1000-1615	18	17	1	0
6/9/2007	Saturday	1015-1515	12	11	1	0
6/10/2007	Sunday	0950-1615	20	19	0	1
6/11/2007	Monday	0945-1415	15	14	0	1
6/12/2007	Tuesday	1025-1625	17	17	0	0
6/13/2007	Wednesday	1050-1520	14	14	0	0
6/16/2007	Friday	1035-1610	22	20	1	1
6/17/2007	Saturday	1120-1410	9	9	0	0
7/3/2007	Tuesday	1045-1615	16	14	0	2
7/4/2007	Wednesday	1000-1600	7	6	0	1
7/5/2007	Thursday	1000-1605	18	17	0	1
7/6/2007	Friday	1005-1345	13	13	0	0
Total	-	-	204	193	4	7

^a Denotes surveys that were administered to respondents but contained no useable data.

Table 19. Kīpahulu area attended listening survey response rates.	
	Overall ^a
Acceptance Rate	94.6%
Refusal Rate	5.4%

^a“Unusable” surveys treated as refusals.

Quantitative Results

This section of the chapter includes tables and figures reporting the quantitative results of the Kīpahulu Area Attended Listening Visitor Survey, organized according to the sections of the survey questionnaire.

Trip Description

Table 20. How many people are in your personal group (family/friends) today?		
<i>Group Size</i>	(n= 189)	
	<i>Count</i>	<i>Percent</i>
2 people	122	64.6
3 to 4 people	42	22.3
5 or more people	25	13.2
Mean	3.1	

Table 21. Is your personal group part of commercial tour in the park today?		
	(n= 191)	
	<i>Count</i>	<i>Percent</i>
Yes	2	1.0
No	189	99.0

Table 22. Have you visited Haleakalā National Park before?		
	(n= 191)	
	<i>Count</i>	<i>Percent</i>
Yes	72	37.7
No	119	62.3

Table 23. Approximately how many times have you visited this part of the park before today?

<i>Number of Previous Visits</i>	(n= 66)	
	<i>Count</i>	<i>Percent</i>
1 visit	28	42.4
2 to 4 visits	29	43.9
5 or more	9	13.6
Mean	4.1	

Listening Portion of the Kīpahulu Area Attended Listening Visitor Survey

Table 24.1. Number and percentage of visitors who reported hearing sounds during attended listening on the trail to Waimoku Falls.

Sound Category	Sound	Heard Sound	
		Count	Percent
Aircraft Sounds	Aircraft, Jet	18	9.3
	Aircraft, Propeller	13	6.7
	Aircraft, Helicopter	101	52.3
	Aircraft, Unknown	10	5.2
Vehicle Sounds	Automobile	81	42.0
	Motorcycle	16	8.3
Trail Work / Maintenance Sounds	Trail Work / Maintenance	16	8.3
Technology Sounds	Cell Phones	9	4.7
	Radio Headset or IPOD	0	0.0
	Technology Sounds, Unknown	0	0.0
	Camera	80	41.5
Walking Sounds	Walking Sounds	174	90.2
	Walking Sticks	75	38.9
Talking	Group, Talking	145	75.1
	Adult(s), Talking	158	81.9
	Child/children, Talking	88	45.6
Loud Voices / Yelling	Group, Loud or Yelling	37	19.2
	Adult(s), Loud or Yelling	23	11.9
	Child/children, Loud or Yelling	22	11.4
	Child/children, Crying	10	5.2
Nature Sounds	Leaves Rustling	184	95.3
	Wind	181	94.8
	Thunder	0	0.0
	Rainfall	94	49.2
	Flowing Water (Stream)	188	98.4
	Ocean Waves	67	35.1
Animal Sounds	Bird Song	168	88.0
	Insect(s)	59	30.9
	Cows	20	10.5
	Animal, Unknown	26	13.6

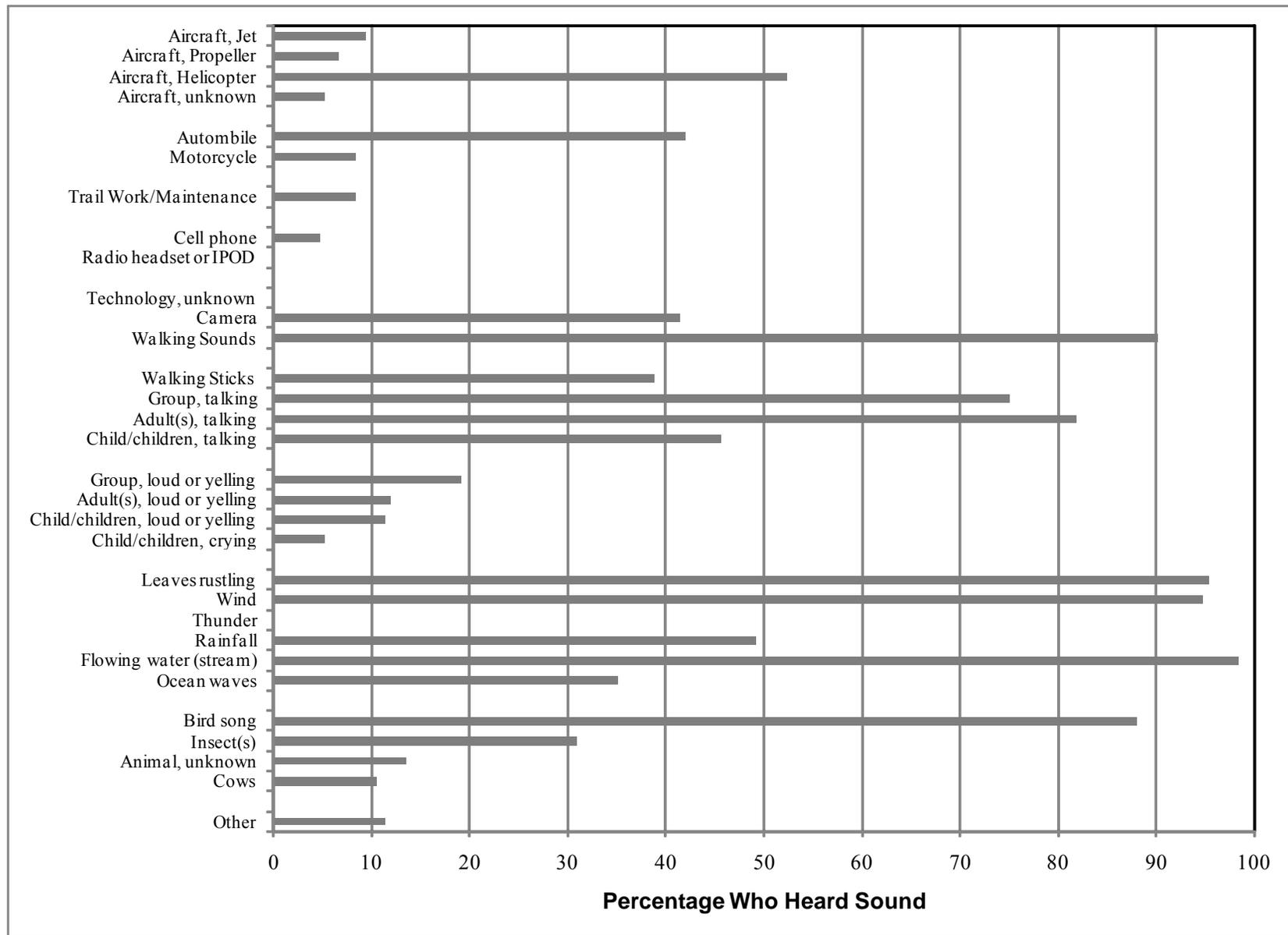


Figure 11. Percentage of visitors who reported hearing sounds during attended listening on the trail to Waimoku Falls.

Table 24.2. Number and percentage of visitors who reported hearing sounds during attended listening on the trail to Waimoku Falls, by sound category.

Sound Category	Heard Sound	
	<i>Count</i>	<i>Percent</i>
Aircraft Sounds	121	62.7
Vehicle Sounds	84	43.5
Trail Work / Maintenance Sounds	16	8.3
Technology Sounds	82	42.5
Walking Sounds	178	92.2
Talking	177	91.7
Loud Voices / Yelling	58	30.1
Nature Sounds	192	99.5
Animal Sounds	172	90.1

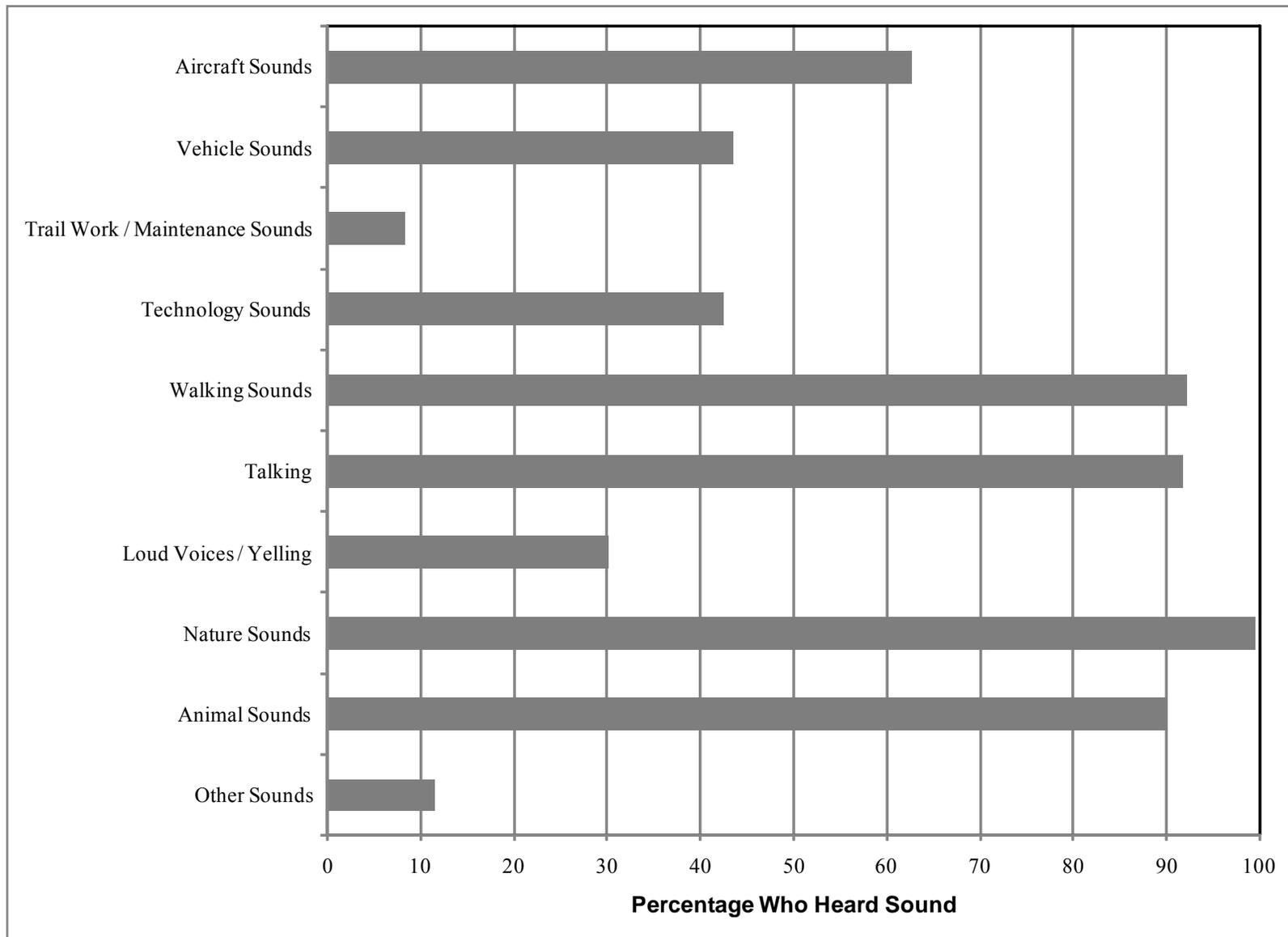


Figure 12. Percentage of visitors who reported hearing sounds during attended listening on the trail to Waimoku Falls, by sound category.

Table 25.1. Visitors' acceptability ratings of sounds heard during attended listening on the trail to Waimoku Falls.

Sound	n	Percentage who Rated Sound as... ^a			Mean
		Acceptable	Neutral	Unacceptable	
Aircraft, Jet	18	38.9	11.1	50.0	-0.5
Aircraft, Propeller	13	7.7	30.8	61.5	-1.4
Aircraft, Helicopter	100	31.0	26.0	43.0	-0.4
Aircraft, Unknown	10	0.0	20.0	80.0	-1.9
Automobile	80	30.0	23.8	46.2	-0.3
Motorcycle	16	18.8	31.2	50.0	-0.6
Trail Work / Maintenance	15	46.6	26.7	26.7	0.8
Cell Phones	8	12.5	12.5	75.0	-1.5
Radio Headset or IPOD	0	N/A	N/A	N/A	N/A
Technology Sounds, Unknown	0	N/A	N/A	N/A	N/A
Camera	80	63.7	30.0	6.3	2.0
Walking Sounds	174	83.4	13.2	3.4	2.9
Walking Sticks	74	87.8	9.5	2.7	2.9
Group, Talking	145	62.7	27.6	9.7	1.8
Adult(s), Talking	156	68.6	25.6	5.8	2.1
Child/children, Talking	86	68.6	23.3	8.1	2.0
Group, Loud or Yelling	37	27.0	13.5	59.5	-0.8
Adult(s), Loud or Yelling	22	36.4	9.1	54.5	-0.2
Child/children, Loud or Yelling	20	40.0	20.0	40.0	0.3
Child/children, Crying	10	20.0	50.0	30.0	0.1
Leaves Rustling	182	96.2	1.6	2.2	3.7
Wind	180	97.2	1.7	1.1	3.7
Thunder	0	N/A	N/A	N/A	N/A
Rainfall	94	96.7	1.1	2.2	3.6
Flowing Water (stream)	186	99.0	0.5	0.5	3.9
Ocean Waves	66	98.5	0.0	1.5	3.8
Bird Song	165	97.6	1.8	0.6	3.8
Insect(s)	59	81.4	18.6	0.0	3.0
Cows	19	84.2	10.5	5.3	3.2
Animal, Unknown	25	92.0	8.0	0.0	3.5

^a Response scale ranged from -4 = "Very Unacceptable" to +4 = "Very Acceptable." See Appendix G for detailed frequency distributions of acceptability ratings.

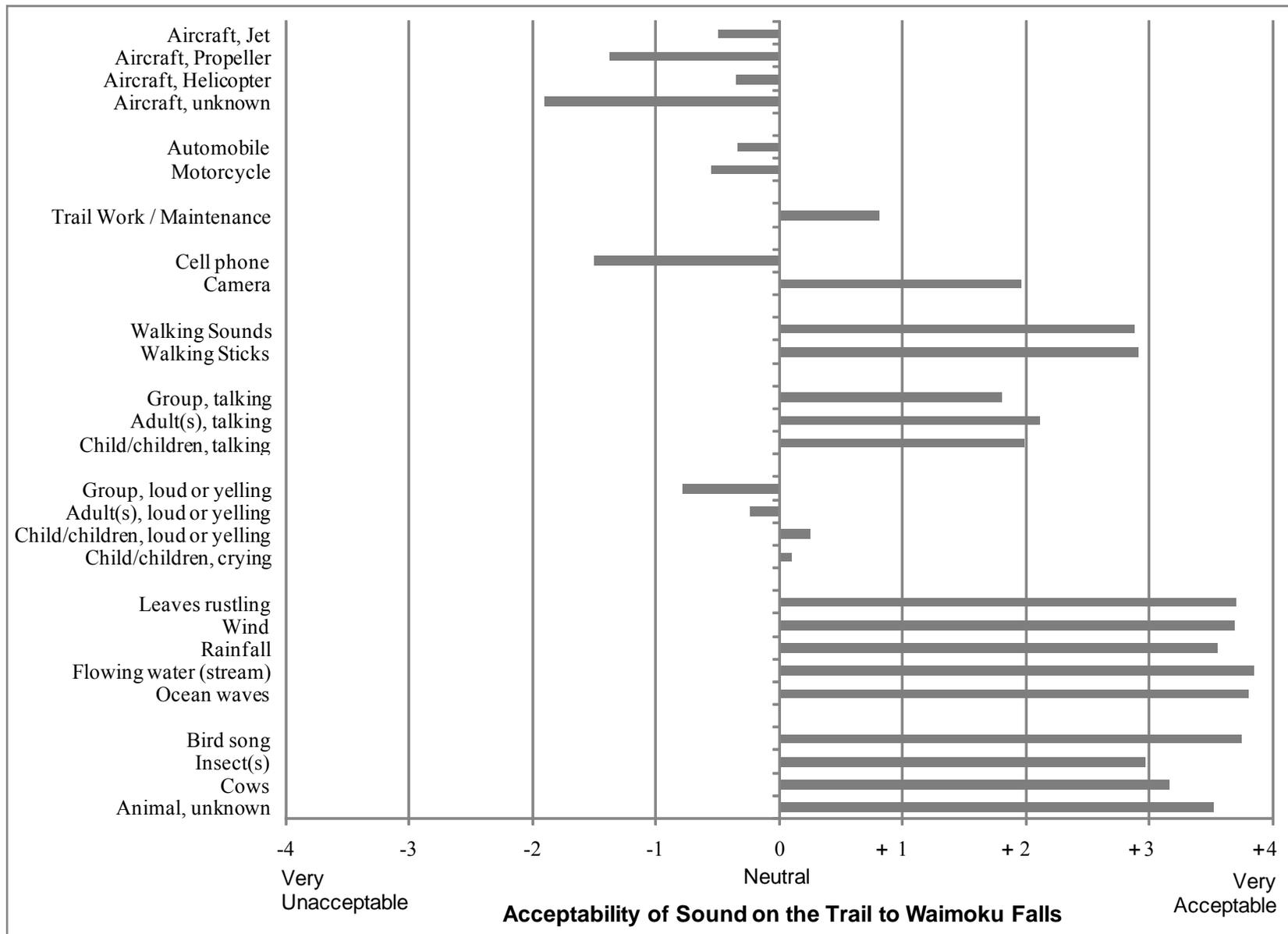


Figure 13. Visitors’ mean acceptability ratings of sounds heard during attended listening on the trail to Waimoku Falls.

Table 25.2. Visitors' acceptability ratings of sounds heard during attended listening on the trail to Waimoku Falls, by sound category.

Sound Category	<i>n</i>	Percentage who Rated Sound as... ^a			Mean
		<i>Acceptable</i>	<i>Neutral</i>	<i>Unacceptable</i>	
Aircraft Sounds	141	27.7	24.1	48.2	-0.6
Vehicle Sounds	96	28.1	25.0	46.9	-0.4
Trail Work / Maintenance Sounds	15	46.6	26.7	26.7	0.8
Technology Sounds	88	59.1	28.4	12.5	1.6
Walking Sounds	248	84.7	12.1	3.2	2.9
Talking	387	66.4	25.8	7.8	2.0
Loud Voices / Yelling	89	31.5	18.0	50.5	-0.3
Nature Sounds	708	97.5	1.1	1.4	3.7
Animal Sounds	268	92.6	6.7	0.7	3.6

^aResponse scale ranged from -4 = "Very Unacceptable" to +4 = "Very Acceptable". See Appendix G for detailed frequency distributions of acceptability ratings.

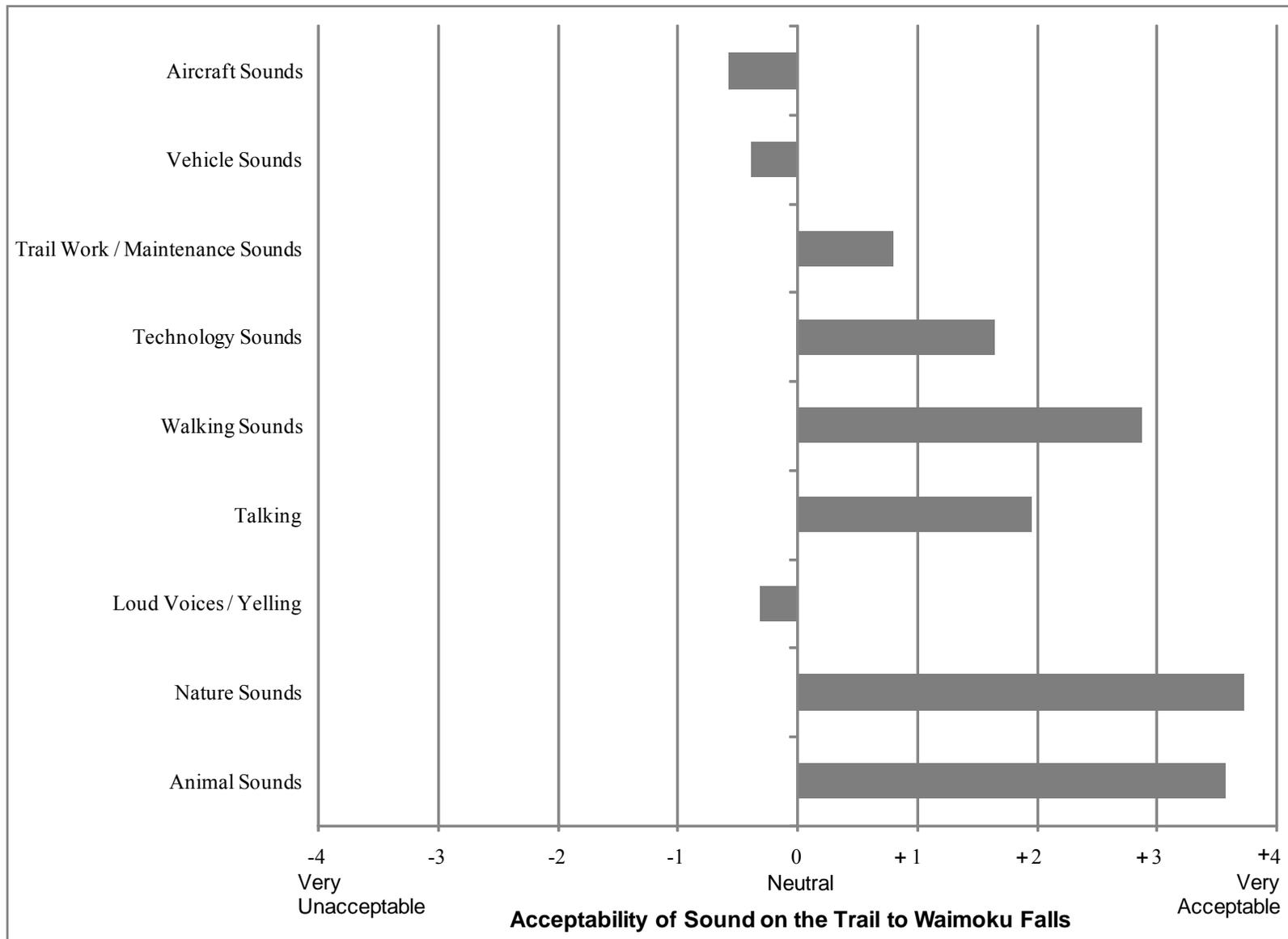


Figure 14. Visitors’ mean acceptability ratings of sounds heard during attended listening on the trail to Waimoku Falls, by sound category.

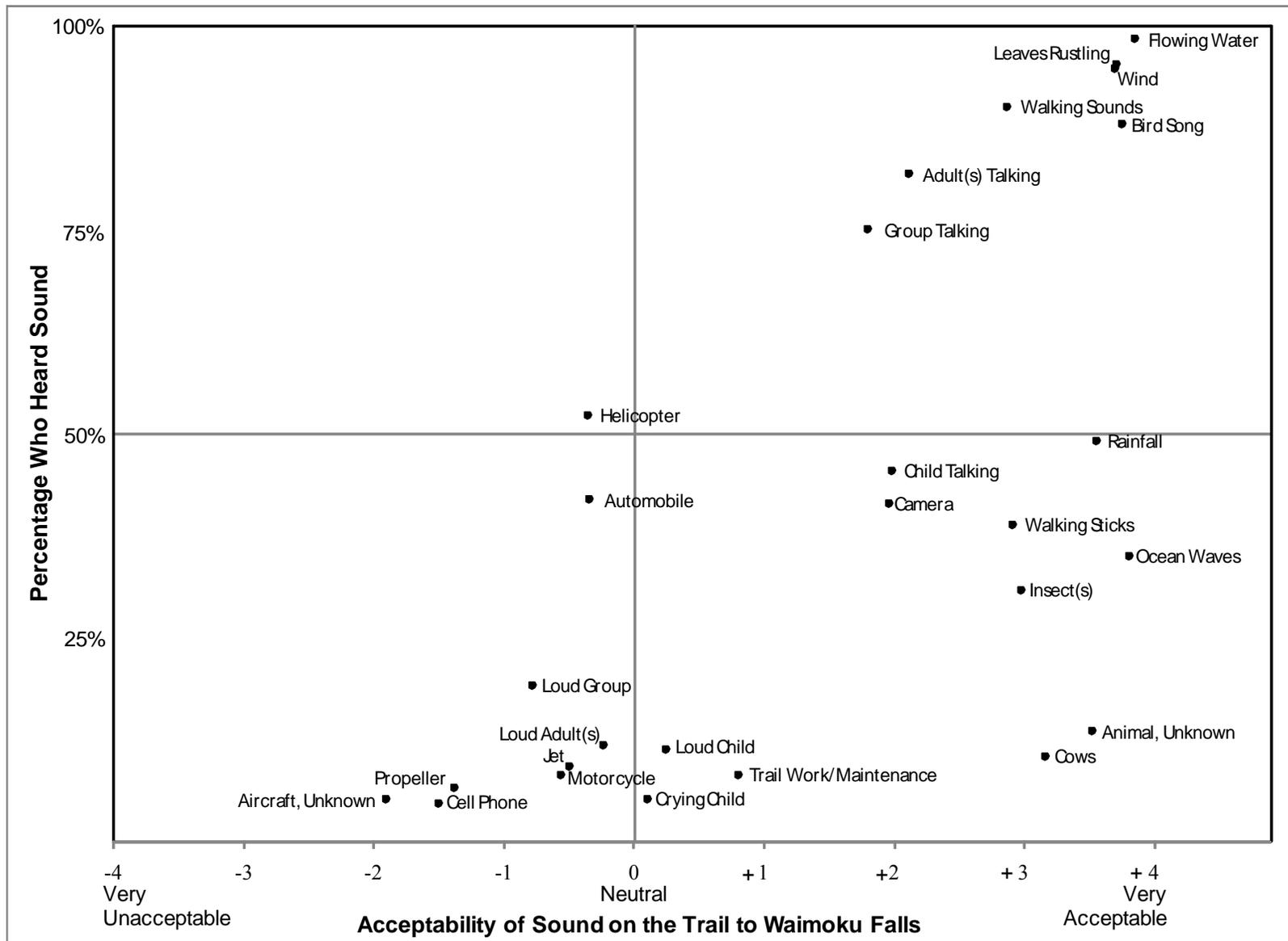


Figure 15. Visitors' mean acceptability ratings of sounds heard during attended listening on the trail to Waimoku Falls, by percentage of visitors who heard each sound.

Table 26.1. Visitors' personal interpretation ratings of sounds heard during attended listening on the trail to Waimoku Falls.

Sound	n	Percentage who Rated Sound as... ^a			Mean
		<i>Pleasant</i>	<i>Neutral</i>	<i>Annoying</i>	
Aircraft, Jet	17	5.9	23.5	70.6	-1.7
Aircraft, Propeller	13	7.7	7.7	84.6	-1.6
Aircraft, Helicopter	97	10.3	36.1	53.6	-1.0
Aircraft, Unknown	9	11.1	11.1	77.8	-1.6
Automobile	76	3.9	30.3	65.8	-1.4
Motorcycle	16	0.0	31.3	68.7	-1.8
Trail Work / Maintenance	15	20.0	20.0	60.0	-0.5
Cell Phones	8	12.5	12.5	75.0	-1.8
Radio Headset or IPOD	0	N/A	N/A	N/A	N/A
Technology Sounds, Unknown	0	N/A	N/A	N/A	N/A
Camera	77	24.7	70.1	5.2	0.5
Walking Sounds	169	58.0	37.3	4.7	1.6
Walking Sticks	74	55.4	36.5	8.1	1.5
Group, Talking	139	28.1	49.6	22.3	0.4
Adult(s), Talking	152	34.9	52.0	13.1	0.7
Child/children, Talking	84	34.6	45.2	20.2	0.7
Group, Loud or Yelling	34	8.8	20.6	70.6	-1.7
Adult(s), Loud or Yelling	22	27.3	13.6	59.1	-0.9
Child/children, Loud or Yelling	19	21.1	21.1	57.8	-0.8
Child/children, Crying	9	11.1	33.3	55.6	-1.2
Leaves Rustling	179	96.0	3.4	0.6	3.6
Wind	174	95.4	4.0	0.6	3.5
Thunder	0	N/A	N/A	N/A	N/A
Rainfall	90	92.2	2.2	5.6	3.2
Flowing Water (stream)	182	98.9	1.1	0.0	3.8
Ocean Waves	63	100.0	0.0	0.0	3.9
Bird Song	160	98.1	1.9	0.0	3.7
Insect(s)	59	69.4	15.3	15.3	2.0
Cows	19	79.0	10.5	10.5	3.0
Animal, Unknown	25	76.0	20.0	4.0	2.4

^a Response scale ranged from -4 = "Very Annoying" to +4 = "Very Pleasant". See Appendix G for detailed frequency distributions of personal interpretation ratings.

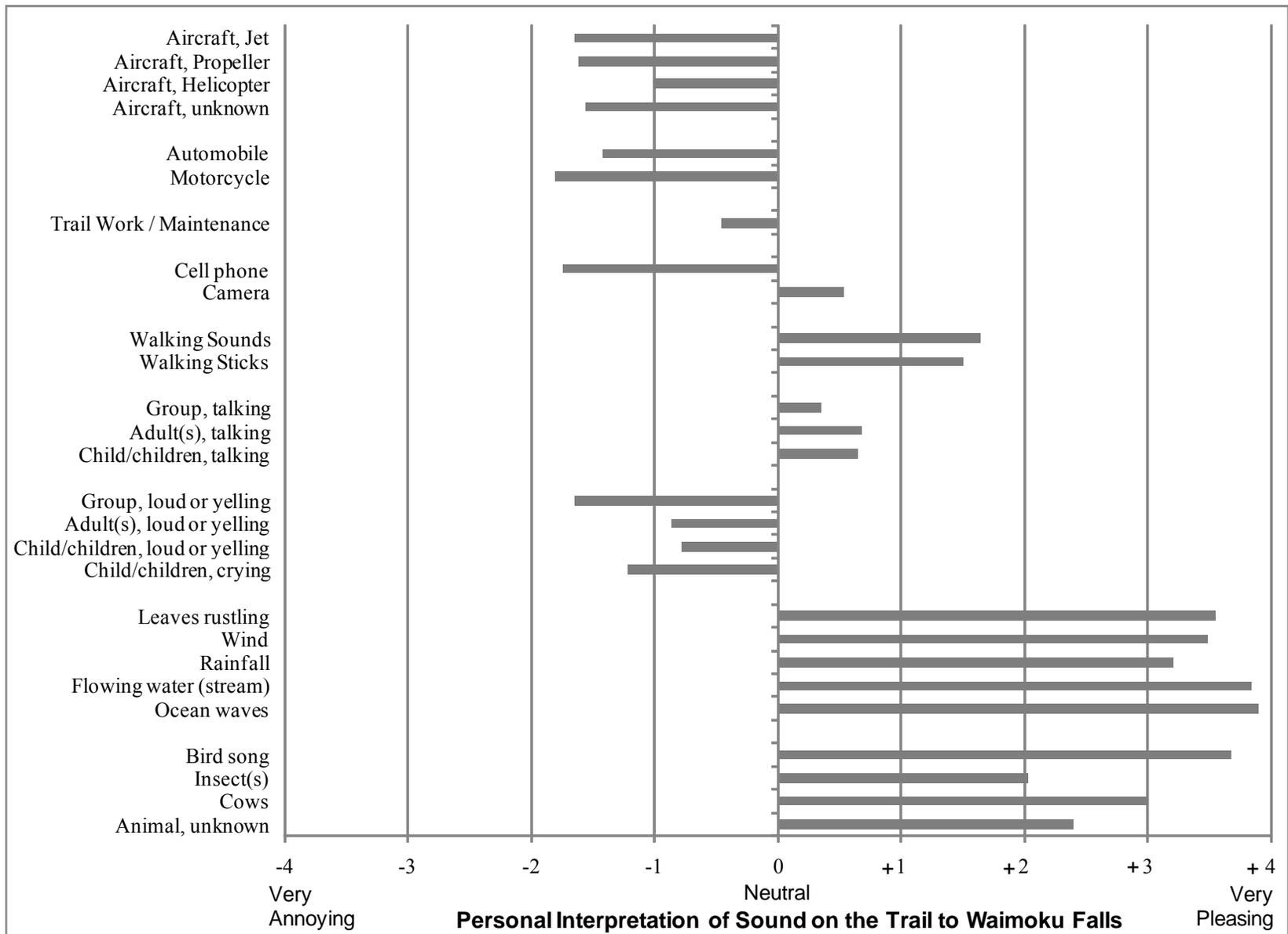


Figure 16. Visitors’ mean personal interpretation ratings of sounds heard during attended listening on trail to Waimoku Falls.

Table 26.2. Visitors’ personal interpretation ratings of sounds heard during attended listening on the trail to Waimoku Falls, by sound category.

Sound Category	<i>n</i>	Percentage who Rated Sound as... ^a			Mean
		<i>Pleasant</i>	<i>Neutral</i>	<i>Annoying</i>	
Aircraft Sounds	136	9.6	30.1	60.3	-1.2
Vehicle Sounds	92	3.3	30.4	66.3	-1.5
Trail Work / Maintenance Sounds	15	20.0	20.0	60.0	-0.5
Technology Sounds	85	23.5	64.7	11.8	0.3
Walking Sounds	243	57.2	37.0	5.8	1.6
Talking	375	32.3	49.6	18.1	0.6
Loud Voice / Yelling	84	16.7	20.2	63.1	-1.2
Nature Sounds	688	96.5	2.5	1.0	3.6
Animal Sounds	263	88.2	7.2	4.6	3.4

^a Response scale ranged from -4 = “Very Annoying” to +4 = “Very Pleasant”. See Appendix G for detailed frequency distributions of personal interpretation ratings.

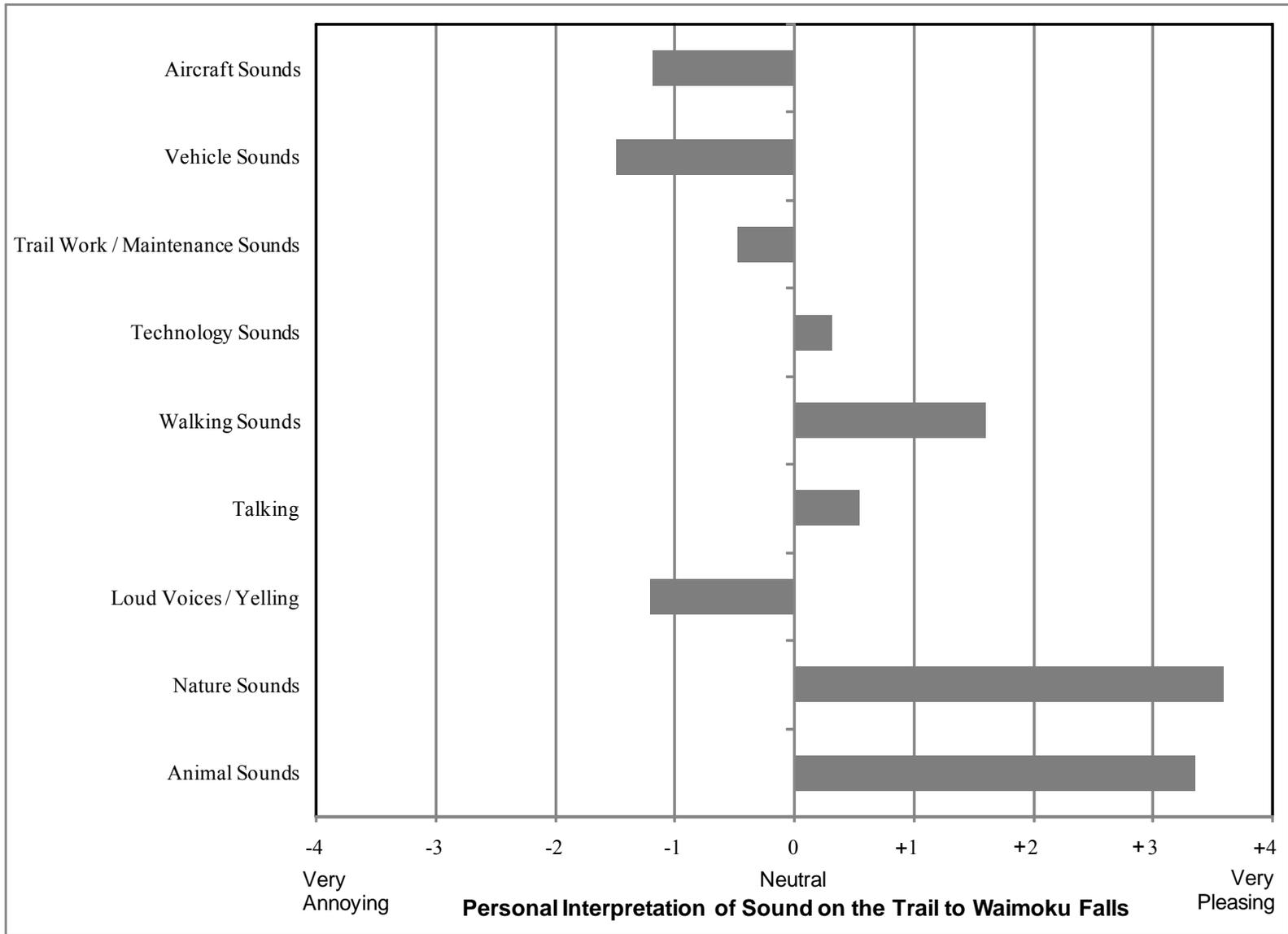


Figure 17. Visitors’ mean personal interpretation ratings of sounds heard during attended listening on the trail to Waimoku Falls, by sound category.

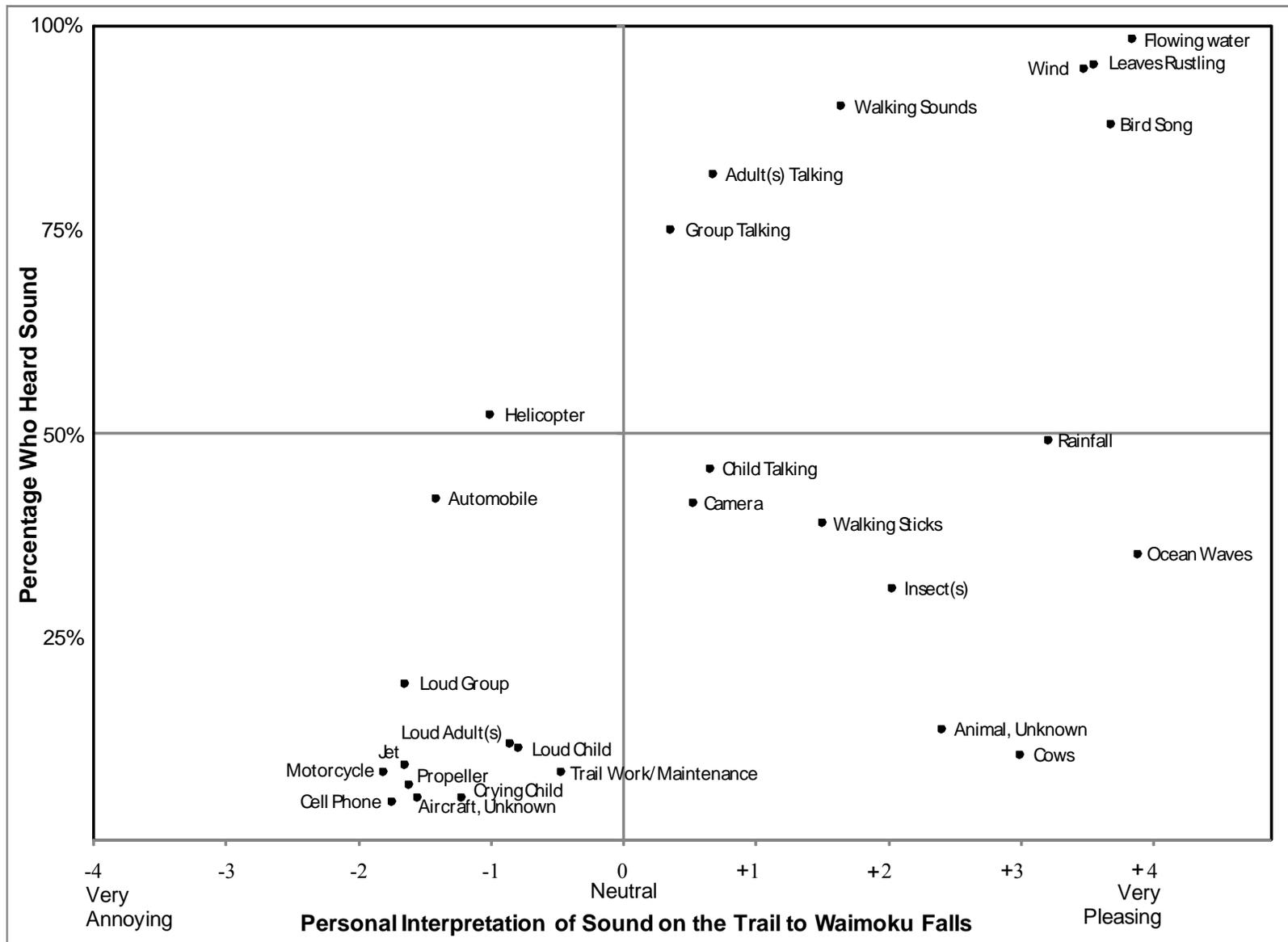


Figure 18. Visitors' mean personal interpretation ratings of sounds heard during attended listening on the trail to Waimoku Falls, by percentage of visitors who heard each sound.

Table 27.1. Visitor-reported emotions/feelings associated with sounds heard during attended listening on the trail to Waimoku Falls.

Sound	Reported Emotions/Feelings Associated with Sound ^a				None Reported ^b
	<i>n</i>	<i>Positive</i>	<i>Ambiguous</i>	<i>Negative</i>	
Aircraft, Jet	9	0.0	22.2	77.8	9
Aircraft, Propeller	3	0.0	0.0	100.0	10
Aircraft, Helicopter	39	20.5	33.3	46.2	62
Aircraft, Unknown	5	0.0	20.0	80.0	5
Automobile	34	0.0	41.2	58.8	47
Motorcycle	7	0.0	28.6	71.4	9
Trail Work / Maintenance	6	33.3	50.0	16.7	10
Cell Phones	4	0.0	50.0	50.0	5
Radio Headset or IPOD	N/A	N/A	N/A	N/A	N/A
Technology Sounds, Unknown	N/A	N/A	N/A	N/A	N/A
Camera	14	57.1	35.7	7.2	66
Walking Sounds	43	65.1	27.9	7.0	131
Walking Sticks	17	52.9	35.3	11.8	58
Group, Talking	31	35.5	45.2	19.4	114
Adult(s), Talking	31	29.0	42.0	29.0	127
Child/children, Talking	16	43.8	25.0	31.2	72
Group, Loud or Yelling	9	11.1	0.0	88.9	28
Adult(s), Loud or Yelling	7	42.9	14.2	42.9	16
Child/children, Loud or Yelling	4	25.0	0.0	75.0	18
Child/children, Crying	2	0.0	0.0	100.0	8
Leaves Rustling	66	95.5	4.5	0.0	118
Wind	60	100.0	0.0	0.0	121
Thunder	N/A	N/A	N/A	N/A	N/A
Rainfall	33	81.8	12.1	6.1	61
Flowing Water (stream)	65	95.4	3.1	1.5	123
Ocean Waves	18	100.0	0.0	0.0	49
Bird Song	48	95.8	4.2	0.0	120
Insect(s)	15	53.5	6.7	40.0	44
Cows	3	100.0	0.0	0.0	17
Animal, Unknown	11	45.4	27.3	27.3	15

^a Open-ended responses were categorized as “positive,” “negative,” or “ambiguous” emotions/feelings. See Appendix H for a verbatim list of responses.

^b Number of respondents who heard the sound but did not report an emotion or feeling.

Table 27.2. Visitor-reported emotions/feelings associated with sounds heard during attended listening on the trail to Waimoku Falls, by sound category.

Sound Category	Reported Emotions/Feelings Associated with Sound ^a				None Reported ^b
	<i>n</i>	<i>Positive</i>	<i>Ambiguous</i>	<i>Negative</i>	
Aircraft Sounds	56	14.3	28.6	57.1	86
Vehicle Sounds	41	0.0	39.0	61.0	56
Trail Work / Maintenance Sounds	6	33.3	50.0	16.7	10
Technology Sounds	18	44.4	38.9	16.7	71
Walking Sounds	60	61.7	30.0	8.3	189
Talking	78	34.6	39.8	25.6	313
Loud Voices / Yelling	22	22.8	4.5	72.7	70
Nature Sounds	242	95.0	3.8	1.2	472
Animal Sounds	77	80.5	7.8	11.7	196

^a Open-ended responses were categorized as “positive,” “negative,” or “ambiguous” emotions/feelings. See Appendix H for a verbatim list of responses.

^b Includes respondents who heard the sound but did not report an emotion or feeling.

Background Information

Table 28. What is your gender?		
<i>Gender</i>	(n= 192)	
	<i>Count</i>	<i>Percent</i>
Male	107	55.7
Female	85	44.3

Table 29. In what year were you born? (Converted to age in years.)		
<i>Age Group</i>	(n= 191)	
	<i>Count</i>	<i>Percent</i>
18 to 24 years old	24	12.6
25 to 34 years old	65	34.0
35 to 44 years old	46	24.1
45 to 54 years old	45	23.6
55 to 64 years old	10	5.2
65 years old and older	1	0.5
Mean Age	37.3	

Table 30.1. Do you live in the United States?		
	(n= 191)	
	<i>Counts</i>	<i>Percent</i>
Yes	175	91.6
No	16	8.4

Table 30.2. What is your zip code (if you live in the United States)?	
<i>Most Frequently Reported Zip Codes</i>	(n= 162)
	<i>Count</i>
96753 (Kihei, HI)	4
96761 (Lahaina, HI)	3
96768 (Makawao, HI)	3
10025 (New York, NY)	2
47130 (Jeffersonville, IN)	2
85234 (Gilbert, AZ)	2
91030 (South Pasadena, CA)	2
92629 (Dana Point, CA)	2

See Appendix I for a frequency distribution of respondents, organized by state.

Table 30.3. What country do you live in (if not the United States)?	
<i>Country</i>	(n= 16)
	<i>Count</i>
Canada	8
Germany	3
Holland	2
Switzerland	2
Netherlands	1

Table 31. What is the highest level of formal education you have completed?		
<i>Education Level</i>	(n= 190)	
	<i>Count</i>	<i>Percent</i>
Some high school	2	1.1
High school graduate or GED	13	6.8
Some college, business or trade school	24	12.6
College, business or trade school graduate	77	40.5
Some graduate school	14	7.4
Master's, doctoral or professional degree	60	31.6

Table 32. Are you Hispanic or Latino?		
	(n= 190)	
	<i>Counts</i>	<i>Percent</i>
Yes	10	5.3
No	180	94.7

Note: 8 out of 10 Hispanic/Latinos also indicated a race in Table 33.

Table 33. What is your race?		
<i>Race</i>	(n= 188)	
	<i>Count</i>	<i>Percent</i>
American Indian or Alaskan Native	5	2.7
Asian	10	5.3
Black or African American	4	2.1
Native Hawaiian	1	0.5
Pacific Islander other than Native Hawaiian	0	0.0
White	172	91.5
Reported 2 races	6	3.2

Table 34. How would you describe your hearing?		
	(n= 190)	
	<i>Count</i>	<i>Percent</i>
My hearing is normal	176	92.6
I am somewhat hearing impaired	12	6.3
I am very hearing impaired	1	0.5
I don't know about my hearing capacity	1	0.5

Chapter 5

Results – Kīpahulu Area Audio Recording Visitor Survey

This chapter of the report presents the results of the Kīpahulu Area Audio Recording Visitor Survey. The chapter begins with a summary of major findings from the survey, organized according to the sections of the survey questionnaire. The chapter then reports information about sampling effort and survey response, and concludes with tables and figures reporting the quantitative results of the survey. A copy of the Kīpahulu Area Audio Recording Visitor Survey questionnaire is included in the report as Appendix K.

Summary of Major Findings

Trip Description

- A substantial majority (84.8%) of visitor groups on the trail to Waimoku Falls consist of 4 or fewer people, with more than half (58.6%) consisting of 2 people (Table 37).
- Most (98.3%) visitors on the trail to Waimoku Falls are not part of a commercial tour (Table 38).
- Close to two-thirds (61.3%) of visitors on the trail to Waimoku Falls are visiting Haleakalā National Park for the first time. Of those who have previously visited the park, one-third (33.3%) have visited once previously, about half (48.7%) have visited 2 to 9 times previously, and just under one-fifth (17.1%) have visited the park 10 or more times previously (Tables 39 and 40).
- The most important reasons to visitors on the trail to Waimoku Falls for hiking in Haleakalā National Park include appreciating the natural scenery; seeing Waimoku Falls; and being with friends/family. More than two-thirds (67.6%) of visitors reported that

hearing the sounds of nature was a very important reason for hiking in the park, and more than half (58.1%) reported that enjoying peace and quiet was a very important reason for hiking in the park. Of the reasons for hiking in the park included in the questionnaire, the least important to visitors included getting away from crowds in the `Ohe`o Pools area and learning about Hawaiian culture and history, although a majority (67.2% and 83.8%, respectively) of visitors reported these as somewhat or very important reasons for hiking in the park (Table 41).

The Visitor Experience

- Visitors' evaluations of the acceptability of alternative park soundscape conditions were measured using a series of five audio recordings containing simulated park soundscapes. The first audio recording in the sequence contained only natural sounds that can be heard in the Kīpahulu area of the park. Each subsequent audio recording in the sequence contained the "base" natural sounds, mixed with increasing levels of helicopter sounds associated with scenic air tours of the Kīpahulu area of the park. The electronic audio playback files (i.e., recordings) are archived with Haleakalā National Park and the National Park Service Natural Sounds Program Center. The amplitude and slope of the curve derived from plotting visitors' mean acceptability ratings of the recordings suggest that exposure to helicopter sounds while hiking is a salient issue for visitors on the trail to Waimoku Falls. Furthermore, visitors' mean ratings of the audio recordings suggest that, on average, visitors consider the sounds in Recordings 1, 2, and 3 to be acceptable, while the soundscape conditions contained in Recordings 4 and 5 are unacceptable. However, the standard deviations of visitors' acceptability ratings suggest that there is less

consensus about the acceptability of Recordings 3 and 4, than for the more “extreme” conditions contained in Recordings 1, 2, and 5. In fact, values within 1 standard deviation of the mean acceptability ratings for Recordings 3 and 4 span the acceptable and unacceptable ranges of the scale. Nonetheless, more than two-thirds (69.4%) of visitors rate Recording 3 as acceptable and about two-thirds (63.5%) rate Recording 4 as unacceptable (Table 42.1 and Figure 19).

- The vast majority of visitors reported one or more pleasing sounds they heard in the first 4 audio recordings within the sequence of recordings described above, while nearly three-quarters (72.8%) indicated that they did not find any sounds pleasing in Recording 5 (the audio recording containing the highest level of helicopter sounds; Table 43.1). Of those visitors who described sounds in the recordings they found pleasing, the most commonly reported sounds included birds; water/waterfall/rain; bamboo; and wind. A small proportion of visitors described aircraft sounds as pleasing sounds contained within Recordings 3 (2.3%), 4 (5.1%), and 5 (4.4%; Table 43.2).
- A substantial majority of visitors indicated that they did not find any sounds annoying in Recordings 1 and 2 within the sequence of recordings described above, while about two-thirds (65.6%) reported one or more annoying sounds associated with Recording 3 and most visitors did so for Recordings 4 (92.6%) and 5 (97.3%; Table 44.1). Of those visitors who described sounds in Recordings 1 and 2 they found annoying, the most commonly reported sounds included unpleasant nature sounds, such as “too many birds”, “crunching leaves”, and “breaking of trees”, and background noise, such as “crackling”, “static”, and “clicking”. Of those visitors who described sounds in Recordings 3, 4, and/or 5 they found annoying, by far the most commonly reported sounds were those of

aircraft, while a smaller percentage of responses cited motor sounds and cars (Table 44.2).

- Nearly half (46.3%) of all visitors reported that Recording 1 sounded most like what they heard while they were hiking on the trail to Waimoku Falls, about one-third (36.6%) indicated that Recording 2 sounded most like what they heard, and under one-fifth (12.2%) considered Recording 3 to sound most like what they heard on the trail. Very few visitors reported Recordings 4 (3.5%) or 5 (1.4%) as sounding most like what they heard while hiking on the trail to Waimoku Falls (Table 45).
- Visitors' evaluations of the acceptability of how often they hear helicopter air tour sounds while hiking in the park were measured using narratively portrayed scenarios, coupled with Recording 3 from the sequence of audio recordings described above. Each scenario described how often visitors would hear the helicopter sounds in Recording 3 while hiking in the park, with the scenarios ranging from never hearing the helicopter sounds to hearing them every 5 minutes. The amplitude and slope of the curve derived from plotting visitors' mean acceptability ratings of the scenarios suggest that the frequency with which visitors hear helicopters while hiking in the park is a salient issue for visitors on the trail to Waimoku Falls. Furthermore, visitors' mean ratings of the scenarios suggest that, by far, visitors' most preferred scenario is to never hear helicopter sounds while they are hiking in the park, and that hearing helicopter sounds more often than once an hour is unacceptable. However, values within 1 standard deviation of the mean acceptability ratings for all but the two most extreme scenarios (i.e., never hear helicopter sounds and hear helicopter sounds every 5 minutes) span the acceptable and unacceptable ranges of the scale. Nonetheless, more than half (57.0%) of visitors indicated that hearing

helicopters once every 60 minutes is acceptable, while a majority (55.1%) considered hearing helicopters every 30 minutes to be unacceptable. Furthermore, over three-quarters (78.8%) of visitors reported that hearing helicopters every 15 minutes is unacceptable (Table 46.1 and Figure 20).

- More than half (58.9%) of all visitors reported hearing aircraft while they were hiking on the trail to Waimoku Falls (Table 47). Of those visitors who heard aircraft during their hike, over half (58.2%) indicated that the sounds of aircraft were somewhat or very annoying, while virtually no visitors (0.6%) indicated that the sounds were pleasing. A little less than half of all visitors on the trail to Waimoku Falls (40.0%) indicated that the sounds of aircraft they heard while hiking were neither pleasing nor annoying (Table 48).
- A substantial majority (80.1%) of visitors on the trail to Waimoku Falls have not taken a scenic air tour over Haleakalā National Park or any other national park (Table 49). Of those who have already taken a scenic air tour over Haleakalā National Park, nearly half (48.0%) said that, if given the chance, they didn't know if they would take an air tour over the park if visitors in the park could hear the aircraft while hiking, while 40.0% said they would and 12.0% said they would not. Of those visitors who have not taken an air tour over any national park, including Haleakalā, close to half (40.8%) said that, if given the chance, they would not take an air tour over Haleakalā National Park if visitors in the park could hear the aircraft while they were hiking, while about one-quarter (22.1%) said they would and more than one-third (37.1%) said they didn't know if they would take an air tour over the park (Tables 50 and 51).
- The majority of visitors on the trail to Waimoku Falls, whether they have taken a scenic air tour over a national park previously or not, would support: 1) reducing the number of

scenic air tours allowed to fly over Haleakalā National Park (64.4% and 69.3%, respectively); 2) requiring scenic air tours to be flown over the park only during designated dates and times (64.4% and 57.5%, respectively); and 3) requiring scenic air tours to use designated flight paths over limited areas of the park (69.5% and 66.8%, respectively). Furthermore, regardless of whether they have taken a scenic air tour over a national park previously or not, the majority of visitors on the trail to Waimoku Falls oppose increasing the number of scenic air tours allowed to fly over the park (84.8% and 75.6%, respectively). However, visitors who have previously taken a scenic air tour over a national park are more likely than those who have not taken a scenic air tour to oppose prohibiting scenic air tours from flying over the park (47.4% and 32.4%, respectively; Table 52).

Background Information

- Visitors on the trail to Waimoku Falls are about evenly split between male (50.5%) and female (49.5%), while a substantial majority of visitors are residents of the United States (92.0%); have completed college/business/trade school or more formal education (78.3%); do not consider themselves to be Hispanic or Latino (96.3%); and identify themselves as White (91.8%). Furthermore, more than three-quarters (78.4%) of visitors on the trail to Waimoku Falls are between the ages of 25 and 54 years of age, with about one-third (33.2%) between the ages of 25 and 34 years of age (Tables 53-58).

Survey Sampling Effort and Response Rates

This section of the chapter reports information about sampling effort and survey response associated with the Kīpahulu Area Audio Recording Visitor Survey.

Table 35. Kīpahulu area audio recording survey sampling dates.							
Date	Day of Week	Time of Day	Solicitations	Accept	Refuse	Unusable ^a	LB Refuse ^b
6/6/2007	Wednesday	1000-1540	44	25	19	0	1
6/7/2007	Thursday	1030-1620	32	24	8	0	0
6/8/2007	Friday	1000-1610	35	24	10	1	1
6/9/2007	Saturday	1010-1605	44	26	17	1	0
6/10/2007	Sunday	0945-1615	38	25	13	0	2
6/11/2007	Monday	0945-1615	35	24	11	0	2
6/12/2007	Tuesday	1025-1530	38	20	18	0	0
6/13/2007	Wednesday	1050-1600	34	21	12	1	0
6/16/2007	Saturday	1030-1615	40	24	16	0	1
6/17/2007	Sunday	1120-1440	22	11	11	0	0
7/3/2007	Tuesday	1045-1615	39	27	12	0	0
7/4/2007	Wednesday	1000-1600	13	7	6	0	0
7/5/2007	Thursday	1000-1605	36	21	15	0	0
7/6/2007	Friday	1000-1430	30	24	5	1	0
Total	-	-	480	303	173	4	7

^a Denotes surveys that were administered to respondents but contained no usable data.

^b LB Refuse were refusals due to a language barrier with the potential respondent.

Table 36. Kīpahulu area audio recording survey response rates.		
	Overall ^a	Minus LB ^b
Acceptance Rate	63.1%	64.1%
Refusal Rate	36.9%	35.9%

^a“Unusable” surveys treated as refusals.

^bLB were refusals due to a language barrier with the potential respondent.

Quantitative Results

This section of the chapter includes tables and figures reporting the quantitative results of the Kīpahulu Area Audio Recording Visitor Survey, organized according to the sections of the survey questionnaire.

Trip Description

Table 37. How many people are in your personal group (family/friends) today?		
<i>Group Size</i>	(n=302)	
	<i>Count</i>	<i>Percent</i>
1 person	16	5.3
2 people	177	58.6
3 to 4 people	63	20.9
5 or more people	46	15.1
Mean	3.1	

Table 38. Is your personal group part of commercial tour in the park today?		
	(n=302)	
	<i>Count</i>	<i>Percent</i>
Yes	5	1.7
No	297	98.3

Table 39. Have you ever visited Haleakalā National Park before?		
	(n=302)	
	<i>Count</i>	<i>Percent</i>
Yes	117	38.7
No	185	61.3

Table 40. Approximately how many times have you visited Haleakalā National Park before today?		
<i>Number of previous visits</i>	(n=117)	
	<i>Count</i>	<i>Percent</i>
1 visit	39	33.3
2 to 4 visits	46	39.3
5 to 9 visits	11	9.4
10 or more visits	20	17.1
Don't Know	1	0.9
Mean	6.0	

Table 41. Please rate the importance of each of the following reasons for hiking in Haleakalā National Park today.

	Percent			Mean ^a	Median ^a	n
	<i>Very important</i>	<i>Somewhat important</i>	<i>Not at all important</i>			
Appreciating the natural scenery	87.4	9.6	3.0	2.8	3.0	303
Seeing Waimoku	72.6	17.5	9.9	2.6	3.0	302
Being with family/friends	69.5	20.9	9.6	2.6	3.0	302
Seeing the Bamboo Forest	67.6	21.5	10.9	2.6	3.0	303
Hearing the sounds of nature	67.6	27.8	4.6	2.6	3.0	302
Experiencing nature “up-close”, away from facilities	67.3	26.4	6.3	2.6	3.0	303
Enjoying peace and quiet	58.1	35.0	6.9	2.5	3.0	303
Getting exercise	49.8	39.3	10.9	2.4	2.0	303
Getting away from crowds in the `Ohe`o pools area	37.1	30.1	32.8	2.0	2.0	299
Learning about Hawaiian culture and history	36.4	47.4	16.2	2.2	2.0	302

^a Response scale ranged from 1 = “not at all important,” 2 = “somewhat important,” to 3 = “very important.”

The Visitor Experience

Table 42.1. We would like you to listen to several short recordings of sounds from this part of Haleakalā National Park. Please rate each recording by indicating how acceptable you would find the sounds heard in the audio clip during a hike in this area of the park.

	-----Percent-----									Median	25 th Percentile	75 th Percentile	n
	Very Unacceptable			Neutral			Very Acceptable						
	-4	-3	-2	-1	0	+1	+2	+3	+4				
Recording 1	0.3	0.3	0.0	0.3	0.3	1.7	12.0	20.7	64.4	4.0	3.0	4.0	300
Recording 2	0.3	0.0	0.0	0.3	2.0	7.1	14.5	24.9	50.9	4.0	3.0	4.0	297
Recording 3	4.4	4.8	7.1	6.5	7.8	12.9	18.6	16.9	21.0	2.0	0.0	3.0	295
Recording 4	24.2	17.1	13.1	9.1	9.7	9.7	7.4	6.7	3.0	-2.0	-3.0	1.0	298
Recording 5	59.1	19.9	7.8	2.0	2.4	3.4	3.0	1.4	1.0	-4.0	-4.0	-3.0	296

Note: The electronic audio playback files (i.e., recordings) are archived with Haleakalā National Park and the National Park Service Natural Sounds Program Center.

Table 42.2. We would like you to listen to several short recordings of sounds from this part of Haleakalā National Park. Please rate each recording by indicating how acceptable you would find the sounds heard in the audio clip during a hike in this area of the park.

	Mean	Standard Deviation	n
Recording 1	3.4	1.0	300
Recording 2	3.1	1.2	297
Recording 3	1.3	2.3	295
Recording 4	-1.3	2.4	298
Recording 5	-3.0	1.8	296

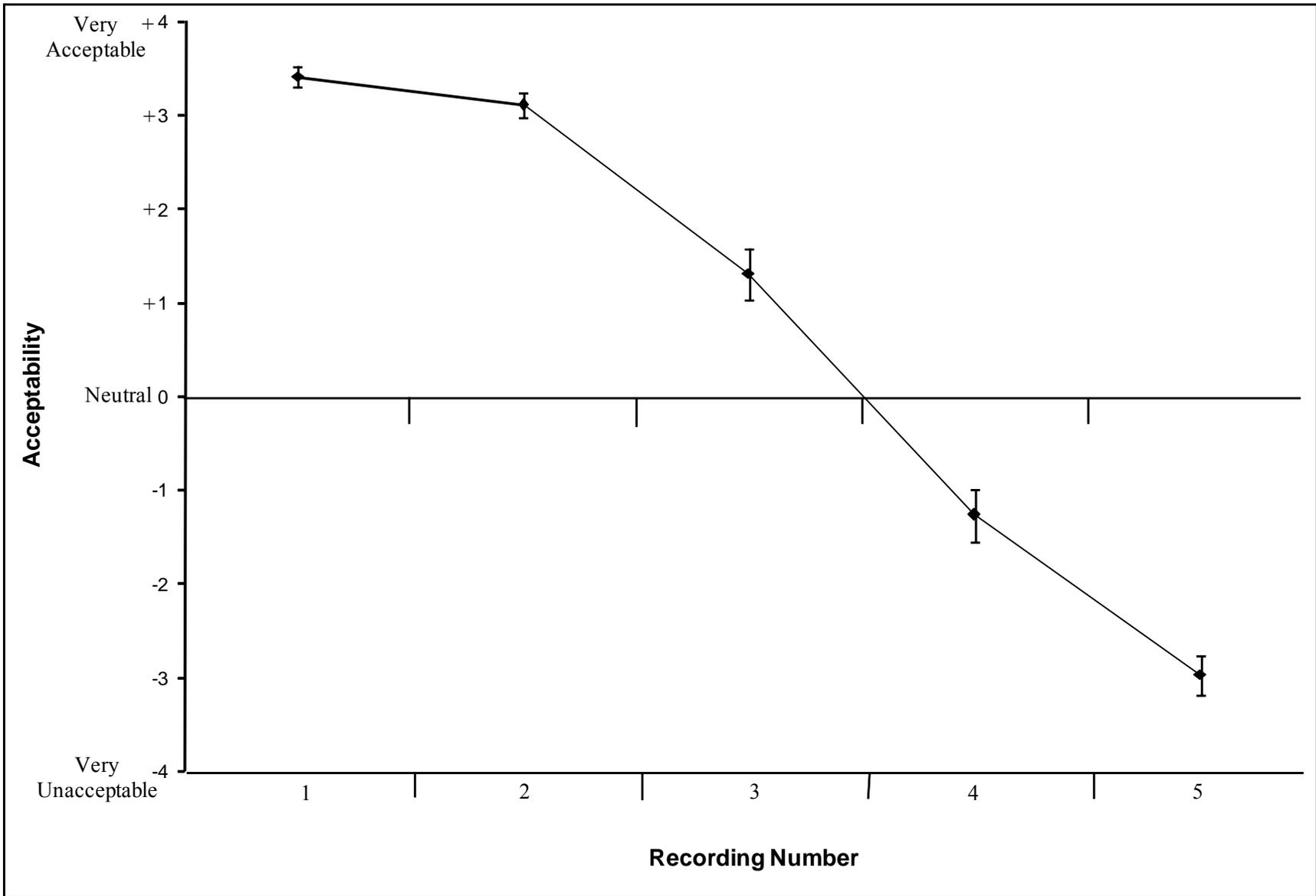


Figure 19: Respondents' mean acceptability rating of each recording. Note: Error bars represent 95% confidence intervals.

Table 43.1. Briefly describe any sounds in the recording you found <u>pleasing</u>.					
	Did not find any sounds <u>pleasing</u>		Reported a <u>pleasing</u> sound		n
	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	
Recording 1	5	1.7	292	98.3	297
Recording 2	6	2.1	282	97.9	288
Recording 3	17	6.2	258	93.8	275
Recording 4	62	23.9	197	76.1	259
Recording 5	182	72.8	68	27.2	250

Note: The electronic audio playback files (i.e., recordings) are archived with Haleakalā National Park and the National Park Service Natural Sounds Program Center.

Table 43.2. Briefly describe any sounds in the recording you found pleasing. (For those who reported a sound.)

<i>Pleasant Sounds</i> ^b	Recording 1 (n=292 ^a)		Recording 2 (n=282 ^a)		Recording 3 (n=258 ^a)		Recording 4 (n=197 ^a)		Recording 5 (n=68 ^a)	
	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>
Birds	226	77.4	224	79.4	213	82.6	165	83.8	40	58.8
Water, stream, waterfall, rain	121	41.4	119	42.2	100	38.8	53	26.9	31	45.6
Bamboo (including wind in bamboo)	81	27.7	82	29.1	63	24.4	20	10.2	3	4.4
Wind, breeze	34	11.6	31	11.0	36	14.0	20	10.2	5	7.4
Trees, forest, branches, etc.	23	7.9	27	9.6	24	9.3	18	9.1	5	7.4
Quiet, serene, peaceful, calming	15	5.1	7	2.5	4	1.6	0	0.0	2	2.9
Nature sounds (General)	8	2.7	7	2.5	11	4.3	12	6.1	6	8.8
Rustling, crackling etc. w/o source	7	2.4	7	2.5	4	1.6	0	0.0	1	1.5
Non-bird animal sounds	5	1.7	6	2.1	5	1.9	2	1.0	4	5.9
Human sounds	3	1.0	2	0.7	4	1.6	1	0.5	0	0.0
Rocks, pebbles, sand	1	0.3	2	0.7	1	0.4	0	0.0	0	0.0
Aircraft noises (as a positive)	0	0.0	0	0.0	6	2.3	10	5.1	3	4.4
All, everything	10	3.4	12	4.3	4	1.6	2	1.0	0	0.0
Other	2	0.7	3	1.1	4	1.6	3	1.5	1	1.5

^a Sample size equals the number of respondents who wrote in a response to this question. Some respondents wrote in more than one response; therefore, percentages sum to greater than 100.

^b See Appendix L for a verbatim list of responses, organized by recording and category.

Table 44.1. Briefly describe any sounds in the recording you found <u>annoying</u>.					
	Did not find any sounds <u>annoying</u>		Reported an <u>annoying</u> sound		n
	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	
Recording 1	269	94.7	15	5.3	284
Recording 2	224	78.9	60	21.1	284
Recording 3	100	34.4	191	65.6	291
Recording 4	22	7.4	277	92.6	299
Recording 5	8	2.7	290	97.3	298

Note: The electronic audio playback files (i.e., recordings) are archived with Haleakalā National Park and the National Park Service Natural Sounds Program Center.

Table 44.2. Briefly describe any sounds in the recording you found annoying. (For those who reported a sound)

<i>Annoying Sounds</i> ^b	Recording 1 (n=15 ^a)		Recording 2 (n=60 ^a)		Recording 3 (n=191 ^a)		Recording 4 (n=268 ^a)		Recording 5 (n=290 ^a)	
	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>
Aircraft, helicopters, etc.	0	0.0	13	21.7	161	84.3	264	98.5	255	87.9
Loud, annoying, noisy, etc.	0	0.0	0	0.0	2	1.0	6	2.2	30	10.3
Cars, traffic, parking lot, etc.	2	13.3	13	21.7	14	7.3	26	9.7	26	9.0
Motor sounds – source not specified	0	0.0	3	5.0	2	1.0	7	2.6	14	4.8
Background noise (e.g., crackling, clicking, static, fuzz)	6	40.0	12	20.0	13	6.8	2	0.7	6	2.1
People (e.g., voices, walking sounds, clapping)	0	0.0	5	8.3	7	3.7	0	0.0	1	0.3
Nature sounds (e.g., too many birds, crunching leaves, breaking of trees)	6	40.0	18	30.0	8	4.2	1	0.4	1	0.3
All, everything	1	6.7	0	0.0	0	0.0	1	0.4	6	2.1
Other	1	6.7	3	5.0	2	1.0	3	1.1	7	2.4

^a Sample size equals the number of respondents who wrote in a response to this question. Some respondents wrote in more than one response; therefore, percentages sum to greater than 100.

^b See Appendix M for a verbatim list of responses, organized by recording and category.

Table 45. Which of the five recordings you just heard sounds most like what you heard while hiking in the park today?		
<i>Recording</i>	(n=287)	
	<i>Count</i>	<i>Percent</i>
Recording 1	133	46.3
Recording 2	105	36.6
Recording 3	35	12.2
Recording 4	10	3.5
Recording 5	4	1.4
Median	2.0	

Note: The electronic audio playback files (i.e., recordings) are archived with Haleakalā National Park and the National Park Service Natural Sounds Program Center.

Table 46.1. We would like to know how often you think it would acceptable to hear a helicopter air tour while hiking in the park. To help judge this, please listen to a short recording of a helicopter air tour and then rate the acceptability of each of the following scenarios based on how frequently you would hear the sounds in the recording.

<i>Hear the helicopter sounds...</i>	-----Percent-----									Median	25th Percentile	75th Percentile	n
	Very Unacceptable			Neutral			Very Acceptable						
	-4	-3	-2	-1	0	+1	+2	+3	+4				
Never during visit	3.8	0.0	0.4	0.7	6.6	1.1	2.4	4.2	80.8	4.0	4.0	4.0	286
Once every 60 minutes	11.5	4.4	7.8	8.5	10.8	12.5	14.6	10.9	19.0	1.0	-1.0	3.0	295
Once every 30 minutes	23.4	9.9	12.6	9.2	12.9	9.9	7.5	7.1	7.5	-1.0	-3.0	1.0	294
Once every 15 minutes	43.3	16.7	10.6	8.2	5.1	5.1	3.8	3.1	4.1	-3.0	-4.0	-1.0	293
Once every 5 minutes	66.2	9.5	5.8	3.8	3.1	3.8	3.4	2.4	2.0	-4.0	-4.0	-3.0	293

Table 46.2. We would like to know how often you think it would acceptable to hear a helicopter air tour while hiking in the park. To help judge this, please listen to a short recording of a helicopter air tour and then rate the acceptability of each of the following scenarios based on how frequently you would hear the sounds in the recording.

<i>Hear the helicopter sounds...</i>	Mean	Standard Deviation	n
Never during visit	3.3	1.9	286
Once every 60 minutes	0.7	2.6	295
Once every 30 minutes	-0.8	2.6	294
Once every 15 minutes	-2.2	2.3	293
Once every 5 minutes	-2.8	2.1	293

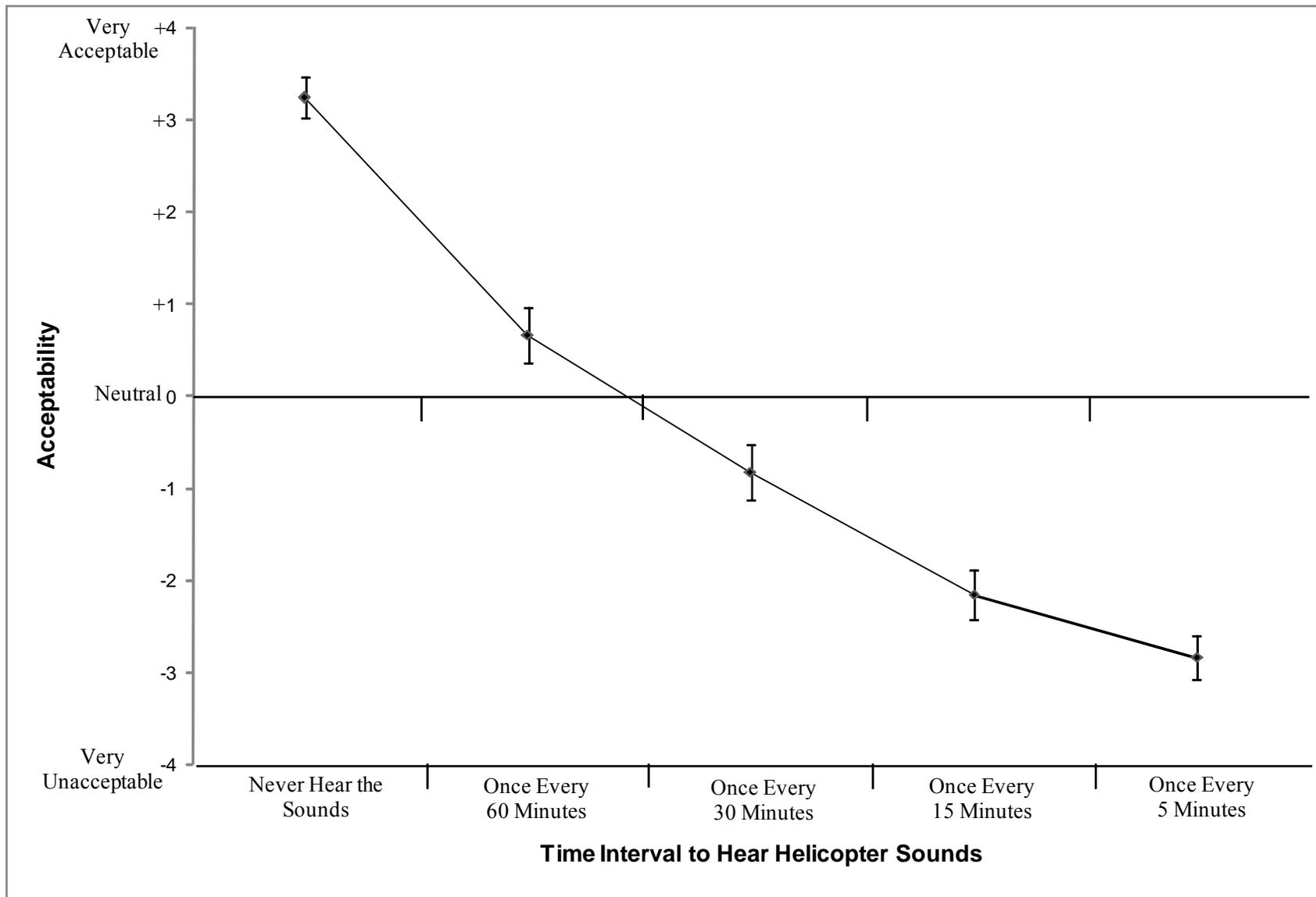


Figure 20: Respondents' mean acceptability rating of the time interval to hear helicopter sounds. Note: Error bars represent 95% confidence intervals.

Table 47. Did you hear any aircraft while you were hiking in this area of the park today?		
	(n=299)	
	<i>Count</i>	<i>Percent</i>
Yes	176	58.9
No	123	41.1

Table 48. Please indicate how pleasing or annoying you found the sounds of aircraft you heard while you were on the trail today.		
	(n=170)	
	<i>Count</i>	<i>Percent</i>
Very pleasing	0	0.0
Somewhat pleasing	1	0.6
Neutral	70	41.2
Somewhat annoying	85	50.0
Very annoying	14	8.2

Table 49. Have you ever taken a scenic air tour over Haleakalā National park or any other national park? (Check <u>all</u> that apply)		
	(n=301)	
	<i>Count</i>	<i>Percent</i> ^a
Yes, I have taken a scenic air tour over Haleakalā	25	8.3
Yes, I have taken a scenic air tour over another national park	41	13.6
No, I have not taken a scenic air tour over a national park	241	80.1

^a Sample size equals the number of respondents who wrote in a response to this question. Since the respondent could choose more than one box, the percentages do not add up to 100.

Table 50. If given the opportunity to take a scenic air tour over Haleakalā National Park, would you do so even if visitors in the park could hear the aircraft while hiking?

	(n=300)	
	<i>Count</i>	<i>Percent</i>
Yes	72	24.0
No	112	37.3
Don't know	116	38.7

Table 51. Proportion of respondents who would take an air tour even if visitors in the park could hear the aircraft while hiking, by previous participation in an air tour.

	Would take air tour		Would not take air tour		Don't know		n
	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	<i>Count</i>	<i>Percent</i>	
Have taken a scenic air tour over <u>Haleakalā National Park</u>	10	40.0	3	12.0	12	48.0	25
Have taken a scenic air tour over <u>another national park</u>	11	26.8	11	26.8	19	46.4	41
Have <u>not</u> taken a scenic air tour over a national park	53	22.1	98	40.8	89	37.1	240

Table 52. Comparison of the level of support or opposition for each of the potential management actions at Haleakalā National Park between those who have taken an air tour in Haleakalā National Park or in another National Park and those who have never taken an air tour in a park.

	Level of Support ^a	Have Taken Air Tour		Has Never Taken Air Tour		Chi-Square ^a , p-value	T-test, p-value
		Count	Percent	Count	Percent		
Reduce the number of scenic air tours allowed to fly over the park	Support	38	66.7	165	73.0	$\chi^2 = 1.014,$ $p = 0.602$	
	Neutral	17	29.8	56	24.8		
	Oppose	2	3.5	5	2.2		
	Mean ^b	0.9 (n=57)		1.1 (n=226)			$t = -1.641,$ $p = 0.102$
	Median ^b	1.0		1.0			
Maintain the number of scenic air tours allowed to fly over park at the current level	Support	14	25.9	58	27.5	$\chi^2 = 1.219,$ $p = 0.544$	
	Neutral	27	50.0	89	42.2		
	Oppose	13	24.1	64	30.3		
	Mean ^b	0.0 (n=54)		-0.1 (n=211)			$t = 0.708,$ $p = 0.479$
	Median ^b	0.0		0.0			
Increase the number of scenic air tours allowed to fly over the park	Support	2	3.4	13	5.7	$\chi^2 = 1.559,$ $p = 0.459$	
	Neutral	6	10.3	35	15.4		
	Oppose	50	86.2	180	78.9		
	Mean ^b	-1.2 (n=58)		-1.2 (n=228)			$t = -0.140,$ $p = 0.889$
	Median ^b	-1.0		1.0			

^a In order to conduct a Chi-square test, strongly support and support were combined, strongly oppose and oppose were combined, and those responding “don’t know/not sure” were removed from the analysis.

^b Response scale ranged from -2 = “Strongly Oppose,” -1 = “Oppose,” 0 = “Neutral,” 1 = “Support,” to 2 = “Strongly Support.”

Table 52 (continued). Comparison of the level of support or opposition for each of the potential management actions at Haleakalā National Park between those who have taken an air tour in Haleakalā National Park or in another National Park and those who have never taken an air tour in a park.

	Level of Support ^a	Have Taken Air Tour		Has Never Taken Air Tour		Chi-Square ^a , p-value	T-test, p-value
		Count	Percent	Count	Percent		
Require scenic air tours to be flown over the park only during designated dates and times	Support	38	67.9	137	61.2	$\chi^2 = 0.857,$ $p = 0.458$	$t = 0.153,$ $p = 0.715$
	Neutral	13	23.2	63	28.1		
	Oppose	5	8.9	24	10.7		
	Mean ^b	0.7 (n=56)		2.4 (n=224)			
	Median ^b	1.0		2.0			
Require scenic air tours to use designated flight paths over limited areas of the park	Support	41	70.7	159	71.6	$\chi^2 = 1.560,$ $p = 0.458$	$t = 0.599,$ $p = 0.550$
	Neutral	13	22.4	38	17.1		
	Oppose	4	6.9	25	11.3		
	Mean ^b	0.8 (n=58)		0.7 (n=222)			
	Median ^b	1.0		1.0			
Prohibit scenic air tours from flying over the park	Support	8	14.3	57	25.2	$\chi^2 = 5.669,$ $p = 0.059$	$t = -2.846,$ $p = 0.005$
	Neutral	20	35.7	92	40.7		
	Oppose	28	50.0	77	34.1		
	Mean ^b	-0.5 (n=56)		0.0 (n=226)			
	Median ^b	0.0		-0.5			

^a In order to conduct a Chi-square test, strongly support and support were combined, strongly oppose and oppose were combined, and those responding “don’t know/not sure” were removed from the analysis.

^b Response scale ranged from -2 = “Strongly Oppose,” -1 = “Oppose,” 0 = “Neutral,” 1 = “Support,” to 2 = “Strongly Support.”

Background Information

Table 53. What is your gender?		
	(n=301)	
	<i>Count</i>	<i>Percent</i>
Male	152	50.5
Female	149	49.5

Table 54. In what year were you born? (Converted to an age in years.)		
<i>Age Group</i>	(n=301)	
	<i>Count</i>	<i>Percent</i>
18 to 24 years old	29	9.6
25 to 34 years old	100	33.2
35 to 44 years old	61	20.3
45 to 54 years old	75	24.9
55 to 64 years old	32	10.6
65 years old and older	4	1.3
Mean	39.0	

Table 55.1. Do you live in the United States?		
	(n=299)	
	<i>Count</i>	<i>Percent</i>
Yes	275	92.0
No	24	8.0

Table 55.2. What is your zip code (if you live in the United States)?	
<i>Most Frequently Reported Zip Codes</i>	(n=253)
	<i>Count</i>
96753 (Kihei, HI)	6
96761 (Lahaina, HI)	6
96708 (Haiku, HI)	3
33176 (Miami, FL)	2
86301 (Prescott, AZ)	2
92629 (Dana Point, CA)	2
92663 (Newport Beach, CA)	2
96779 (Paia, HI)	2
96813 (Honolulu, HI)	2
98103 (Seattle, WA)	2

See Appendix N for a frequency distribution of respondents', organized by state.

Table 55.3. What country do you live in (if not the United States)?	
<i>Country</i>	(n=24)
	<i>Count</i>
Canada	8
Germany	5
Switzerland	3
Australia	2
France	1
Italy	1
Netherlands	1
New Zealand	1
Sweden	1
United Kingdom	1

Table 56. What is the highest level of formal education you have completed?		
<i>Education Level</i>	(n=299)	
	<i>Count</i>	<i>Percent</i>
Some high school	1	0.3
High school graduate or GED	10	3.3
Some college, business or trade school	54	18.1
College, business or trade school graduate	115	38.5
Some graduate school	29	9.7
Master's, doctoral or professional degree	90	30.1

Table 57. Are you Hispanic or Latino?		
	(n=298)	
	<i>Counts</i>	<i>Percent</i>
Yes	11	3.7
No	287	96.3

Note: Only 6 of 11 Hispanics/Latinos also indicated a race in Table 58.

Table 58. What is your race? (Check <u>all</u> that apply.)		
<i>Race</i>	(n=294)	
	<i>Count</i>	<i>Percent</i>
American Indian or Alaskan Native	5	1.7
Asian	21	7.1
Black or African American	2	0.7
Native Hawaiian	2	0.7
Pacific Islander other than Native Hawaiian	1	0.3
White	270	91.8
Reported 2 races	8	2.7

Chapter 6

Summary of Major Study Findings

This chapter of the report summarizes major findings from each of the components of the study, including the Sliding Sands Trail Attended Listening Visitor Survey, the Kīpahulu Area Attended Listening Visitor Survey, and the Kīpahulu Area Audio Recording Visitor Survey.

Summary of Major Findings - Sliding Sands Trail Attended Listening Visitor Survey

Trip Description

- A substantial majority (82.9%) of visitor groups on the Sliding Sands Trail consist of 4 or fewer people, with about half (52.6%) consisting of 2 people (Table 3).
- Most (97.4%) visitors on the Sliding Sands Trail are not part of a commercial tour (Table 4).
- Over two-thirds (69.0%) of visitors on the Sliding Sands Trail are visiting Haleakalā National Park for the first time. Of those visitors who have previously visited the park, just over one-third (39.1%) have visited once previously, about half (47.8%) have visited 2 to 4 times previously, and under one-fifth (13.0%) have visited the park 5 or more times previously (Tables 5 and 6).

Listening Portion of the Sliding Sands Trail Attended Listening Visitor Survey

Within the listening portion of the Sliding Sands Trail Attended Listening Visitor Survey, study participants were asked to sit quietly along the side of the Sliding Sands Trail, close their eyes, and listen for several minutes to the sounds around them. Respondents were then asked to identify, from a list of potential sounds, any sounds that they heard while engaged in

the listening exercise. Respondents were also given the option to list and evaluate other sounds they heard that were not included in the list contained in the questionnaire.

Respondents were also asked to record any emotions or feelings elicited by the sounds they heard, and to evaluate each sound they heard on an acceptability scale (-4 = “Very Unacceptable” to +4 = “Very Acceptable”) and a personal evaluation scale (-4 = “Very Annoying” to +4 = Very Pleasing). The detailed instructions used to administer the survey to park visitors are on the cover of the survey questionnaire, which is included in this report as Appendix A. For the purposes of analysis, the individual sounds listed in the questionnaire were grouped into sound categories representing general types of sounds. For example, the questionnaire items “Automobile” and “Motorcycle” were grouped into a sound category labeled “Vehicle Sounds”. The results of the listening portion of the survey are summarized below and include results for both the individual sounds listed in the questionnaire and the sound categories derived from grouping the individual sound items.

- The types of sounds that visitors most commonly reported hearing during the listening exercise on the Sliding Sands Trail include nature sounds (98.1%); the sounds of other visitors, such as walking sounds (90.6%) and talking (83.0%); and animal sounds (70.3%). Furthermore, more than half (55.3%) of all visitors reported hearing aircraft during the listening exercise, and just under half (44.7%) reported hearing technology sounds (e.g., cameras, cell phones). A relatively small percentage of visitors reported hearing vehicle sounds (11.3%) and less than one-fifth (16.4%) reported hearing loud voices and/or yelling during the listening exercise (Table 7.2 and Figure 4). Among the nature sounds visitors reported hearing, wind was by far the most commonly heard (98.1%), while about half (54.8%) of all visitors reported hearing shifting rocks and/or

sand. Of the animal sounds visitors heard during the listening exercise, horses were the most common (56.1%), while about one-third (35.5%) of visitors reported hearing insects and less than one-quarter (17.4%) of visitors indicated that they heard bird song. Of the aircraft sounds visitors reported hearing, about one-third (39.6%) of visitors reported hearing helicopter sounds and about one-quarter (22.6%) heard jet aircraft (Table 7.1 and Figure 3). Survey administrators noted if aircraft sounds were present while each respondent was completing a survey; 77.4% of respondents reported hearing an aircraft if one was indeed present during the time he or she took the survey.

- On average, visitors who reported hearing nature sounds rated these as very acceptable to hear on the Sliding Sands Trail (mean = 3.1). Similarly, those visitors who heard animal sounds generally rated them as acceptable to hear on the trail (mean = 1.8). Sounds generated by other visitors on the trail, such as walking sounds and talking sounds, were also generally considered to be acceptable sounds to hear on the trail (mean acceptability ratings of 2.9 and 2.2, respectively). However, the sounds of loud voices and/or yelling were generally considered to be unacceptable (mean = -1.6). Furthermore, visitors, on average, rated the sounds of personal electronic devices such as cell phones (mean = -1.8) and radio headsets (mean = -4.0) to be unacceptable sounds to hear on the Sliding Sands Trail. On average, visitors considered most mechanical sounds, such as the sounds of aircraft and vehicles, to be unacceptable sounds to hear on the Sliding Sands Trail (mean acceptability ratings of -0.5 and -0.7, respectively; Tables 8.1 and 8.2; Figures 5 and 6).
- Generally, visitors rated nature sounds and the sounds of other visitors walking on the trail to be pleasing sounds to hear on the Sliding Sands Trail (mean personal interpretation ratings of 2.3 and 1.7, respectively). The nature sounds visitors rated most

pleasing to hear on the trail include the sounds of thunder (mean = 3.0) and wind (mean = 2.3). While animal sounds were generally rated only slightly pleasing (mean = 0.9), bird song was rated, on average, as the most pleasing sound of any type to hear on the trail (mean = 3.5). While the sounds of other visitors walking and talking on the trail were generally considered to be somewhat pleasing sounds to hear, the sounds of other visitors' personal electronic devices, such as radio headsets and cell phones, were perceived to be very annoying. Similarly, loud voices and/or yelling were generally considered to be annoying sounds to hear on the Sliding Sands Trail (mean = -2.1). These findings, coupled with the results of the acceptability ratings for loud voices and/or yelling and the sounds of personal electronic devices, suggest that there may be social norms concerning appropriate visitor behavior and corresponding sounds on the Sliding Sands Trail. Thus, it would be advisable to inform visitors about these issues prior to hiking on the trail. On average, visitors rated mechanical sounds, such as aircraft sounds (mean = -1.1) and vehicle sounds (mean = -1.2), as annoying to hear on the trail (Tables 9.1 and 9.2; Figures 8 and 9).

- Figures 7 and 10 display information about the sounds visitors heard during the listening exercise on the Sliding Sands Trail in an “importance-performance” framework. Figure 7 plots visitors' mean *acceptability* ratings for the sounds included in the questionnaire (Table 8.1), by the percentage of visitors who reported hearing each sound (Table 7.1), while Figure 10 plots visitors' mean *personal interpretation* ratings for the sounds (Table 9.1), by the percentage of visitors who reported hearing each sound (Table 7.1). The two figures are designed to help prioritize soundscape management actions. For example, sounds in the upper left quadrant of Figures 7 and 10 would be considered high priority

for management consideration as they are sounds that were rated, on average, as unacceptable and/or annoying, and were heard frequently by visitors. In this case, there are no sounds that appear in the upper left quadrant of Figure 7 or 10. Sounds in the lower left quadrant of Figures 7 and 10 would be considered a priority for management as well, as they are sounds that were rated, on average, as unacceptable and/or annoying sounds to hear on the Sliding Sands Trail, though they are sounds that were heard by less than half of all visitors. In this case, about one-third (39.6%) of visitors reported hearing helicopter sounds during the listening exercise, and on average, visitors rated helicopter sounds as unacceptable (mean = -0.6) and annoying (mean = -1.3) to hear on the trail. Other sounds that appear in the lower left quadrant of Figure 7 include propeller, jet, and other aircraft; cell phone sounds; motorcycle sounds; and loud or yelling visitors. However, each of these sounds was heard by less than one-quarter of visitors during the listening exercise. Nonetheless, while these sounds may not present a significant management problem currently, they should be monitored and managed to ensure that they not become more common elements of the ambient sound conditions on the trail. The sounds in the upper right quadrant of Figures 7 and 10 are those sounds that visitors generally perceive to be acceptable and/or pleasing to hear on the Sliding Sands Trail and are heard frequently. The most commonly heard sounds in this quadrant include the sound of wind and the sounds of other visitors walking on the trail. Efforts should be made to preserve opportunities to hear the sounds contained in the upper right quadrant of Figures 7 and 10. Sounds in the bottom right quadrant of Figures 7 and 10 are those that visitors generally consider to be acceptable and/or pleasing to hear on the Sliding Sands Trail, but are heard less frequently than those in the upper right quadrant of the figures.

Within this quadrant, the sounds of bird song and thunder had the highest mean acceptability and personal interpretation ratings, however, each was heard by less than one-quarter of visitors. Efforts to maintain and improve opportunities for visitors to hear these sounds are recommended.

- As stated earlier, visitors were asked to describe any emotions or feelings they associated with the sounds they heard during the attended listening exercise on the Sliding Sands Trail. Of the more than 75 visitors who reported emotions and/or feelings associated with nature sounds they heard, the majority (66.2%) reported positive emotions or feelings, such as feelings of calm, peacefulness, and pleasure. The sounds of other visitors walking on the trail also elicited positive emotions from a substantial majority (76.6%) of the visitors who reported an emotion or feeling associated with hearing this sound. For example, visitors associated feelings of connectedness, companionship, safety, and pleasantness with hearing the sounds of other visitors walking on the trail. In contrast, most (87.5%) of the visitors who reported an emotion or feeling associated with hearing loud voices and/or yelling described negative emotions or feelings, such as annoyance and irritation. Similarly, about half (48.9%) of the visitors who reported an emotion or feeling associated with aircraft, reported negative emotions or feelings, while almost one-third (60.0%) of visitors who reported an emotion or feeling associated with hearing vehicle sounds provided negative responses. These data suggest that aircraft sounds, vehicle sounds, and loud, disruptive behavior of other visitors may inhibit visitors' ability to have a restorative experience on the Sliding Sands Trail (Table 10.2).

Background Information

- A small majority (55.8%) of visitors on the Sliding Sands Trail are male, while a more substantial majority of visitors are residents of the United States (88.4%); have completed college/business/trade school or more formal education (89.7%); do not consider themselves to be Hispanic or Latino (96.6%); and identify themselves as White (90.0%). Furthermore, just over three-quarters (76.1%) of visitors on the Sliding Sands Trail are between the ages of 25 and 54 years of age, with about one-third (34.8%) between the ages of 25 and 34 years of age (Tables 11-16).
- Most (95.5%) visitors who participated in the study described their hearing as normal, while very few rated their hearing as somewhat impaired (3.9%), and no study participants rated their hearing as very impaired (Table 17).

Summary of Major Findings - Kīpahulu Area Attended Listening Visitor Survey

Trip Description

- A substantial majority (86.9%) of visitor groups on the trail to Waimoku Falls consist of 4 or fewer people, with just under two-thirds (64.6%) consisting of 2 people (Table 20).
- Most (99.0%) visitors on the trail to Waimoku Falls are not part of a commercial tour (Table 21).
- Close to two-thirds (62.3%) of visitors on the trail to Waimoku Falls are visiting Haleakalā National Park for the first time. Of those visitors who have previously visited the park, just under half (42.4%) have visited once previously, just under half (43.9%)

have visited 2 to 4 times previously, and under one-fifth (13.6%) have visited the park 5 or more times previously (Tables 22 and 23).

Listening Portion of the Kīpahulu Area Attended Listening Visitor Survey

Within the listening portion of the Kīpahulu Area Attended Listening Visitor Survey, study participants were asked to sit quietly along the side of the trail to Waimoku Falls, close their eyes, and listen for several minutes to the sounds around them. Respondents were then asked to identify, from a list of potential sounds, any sounds that they heard while engaged in the listening exercise. Respondents were also given the option to list and evaluate other sounds they heard that were not included in the list contained in the questionnaire.

Respondents were also asked to record any emotions or feelings elicited by the sounds they heard, and to evaluate each sound they heard on an acceptability scale (-4 = “Very Unacceptable” to +4 = “Very Acceptable”) and a personal evaluation scale (-4 = “Very Annoying” to +4 = Very Pleasing). The detailed instructions used to administer the survey to park visitors are on the cover of the survey questionnaire, which is included in this report as Appendix F. For the purposes of analysis, the individual sounds listed in the questionnaire were grouped into sound categories representing general types of sounds. For example, the questionnaire items “Automobile” and “Motorcycle” were grouped into a sound category labeled “Vehicle Sounds”. The results of the listening portion of the survey are summarized below and include results for both the individual sounds listed in the questionnaire and the sound categories derived from grouping the individual sound items.

- The types of sounds that visitors most commonly reported hearing during the listening exercise on the trail to Waimoku Falls include nature sounds (99.5%); the sounds of other

visitors, such as walking sounds (92.2%) and talking (91.7%); and animal sounds (90.1%). Furthermore, nearly two-thirds (62.7%) of visitors reported hearing aircraft during the listening exercise, and just under half reported hearing vehicle sounds (43.5%) and technology sounds (e.g., cameras, cell phones; 42.5%). Among the nature sounds visitors reported hearing, the most commonly heard were flowing water (98.4%); leaves rustling (95.3%); and wind (94.8%), and bird song was, by far, the most commonly heard animal sound (88.0%). Of the aircraft sounds visitors reported hearing, a majority (52.3%) reported hearing helicopters, while less than ten percent heard a jet (9.3%), propeller plane (6.7%), or other aircraft (5.2%; Table 24.1 and Figure 11). Survey administrators noted if aircraft sounds were present while each respondent was completing a survey; 80.4% of respondents reported hearing an aircraft if one was indeed present during the time he or she took the survey.

- On average, visitors who reported hearing nature sounds and animal sounds rated these as very acceptable sounds to hear on the trail to Waimoku Falls (mean acceptability ratings of 3.7 and 3.6, respectively). Sounds generated by other visitors on the trail, such as walking sounds and talking sounds, were also considered to be acceptable sounds to hear on the trail (mean acceptability ratings of 2.9 and 2.0, respectively). However, the sounds of loud voices and/or yelling were generally considered to be unacceptable (mean = -0.3). On average, visitors considered mechanical sounds, such as sounds of aircraft, vehicles, and cell phones to be unacceptable sounds to hear on the trail to Waimoku Falls (mean acceptability ratings of -0.6, -0.4, and -1.5, respectively; Table 25.2 and Figure 14).
- Generally, visitors rated the sounds of nature and animals to be very pleasing sounds to hear on the trail to Waimoku Falls (mean personal interpretation ratings of 3.7 and 3.4,

respectively). The nature sounds visitors rated most pleasing to hear on the trail include the sounds of ocean waves (mean = 3.9); flowing water (mean = 3.8); leaves rustling (mean = 3.6); and wind (mean = 3.5), while the most pleasing animal sound, by far, was bird song (mean = 3.7). While considered less pleasing than the sounds of nature and animals, the sounds of other visitors, such as walking sounds (mean = 1.6); talking (mean = 0.6); and cameras (mean = 0.5), were considered to be pleasing sounds to hear on the trail. However, the sounds of loud voices and/or yelling were generally considered to be annoying sounds to hear on the trail to Waimoku Falls. This finding, coupled with the results of the acceptability ratings for loud voices and/or yelling, suggests that there may be social norms for appropriate visitor behavior and corresponding sounds while hiking on the trail to Waimoku Falls. Thus, it is advisable to inform visitors about this issue prior to hiking on the trail. On average, visitors rated mechanical sounds as annoying to hear on the trail. Such sounds included aircraft sounds (mean = -1.2); vehicle sounds (mean = -1.5); and cell phones (mean = -1.8; Tables 26.1 and 26.2; Figures 16 and 17).

- Figures 15 and 18 display information about the sounds visitors heard during the listening exercise on the trail to Waimoku Falls in an “importance-performance” framework. Figure 15 plots visitors’ mean *acceptability* ratings for the sounds included in the questionnaire (Table 25.1), by the percentage of visitors who reported hearing each sound (Table 24.1), while Figure 18 plots visitors’ mean *personal interpretation* ratings for the sounds (Table 26.1), by the percentage of visitors who reported hearing each sound (Table 24.1). The two figures are designed to help prioritize soundscape management actions. For example, sounds in the upper left quadrant of Figures 15 and 18 would be considered high priority for management consideration as they are sounds that

were rated, on average, as unacceptable and/or annoying, and were heard frequently by visitors. In this case, helicopter sounds appear in the upper left quadrant of both Figures 15 and 18, with helicopter sounds being heard by about half (52.3%) of all visitors and receiving a mean acceptability rating of -0.4 and a mean personal interpretation rating of -1.0. No other sounds are contained within the upper left quadrant of Figure 15 or 18. Sounds in the lower left quadrant of Figures 15 and 18 would be considered a priority for management as well, as they are sounds that were rated, on average, as unacceptable and/or annoying sounds to hear on the trail to Waimoku Falls, though they are sounds that were heard by less than half of all visitors. In this case, just under half (42.0%) of all visitors reported hearing automobile sounds during the listening exercise, and on average, visitors rated automobile sounds as unacceptable (mean = -0.3) and annoying (mean = -1.4) to hear on the trail. Other sounds that appear in the lower left quadrant of Figure 15 include propeller, jet, and other aircraft; cell phone sounds; motorcycle sounds; and loud or yelling visitors. However, each of these sounds was heard by less than one-quarter of visitors during the listening exercise. Nonetheless, while these sounds may not present a significant management problem currently, they should be monitored and managed to ensure that they not become more common elements of the ambient sound conditions on the trail. The sounds in the upper right quadrant of Figures 15 and 18 are those sounds that visitors generally perceive to be acceptable and/or pleasing to hear on the trail to Waimoku Falls and are heard frequently. Several nature and animal sounds are contained within this quadrant of Figures 15 and 18, including the sounds of flowing water; leaves rustling; wind; and bird song. The sounds of other visitors walking and talking on the trail are also located in this quadrant of both figures, suggesting that visitors commonly hear

these sounds and generally consider them to be acceptable and pleasing sounds to hear on the trail to Waimoku Falls. Efforts should be made to preserve opportunities to hear the sounds contained in the upper right quadrant of Figures 15 and 18. Sounds in the bottom right quadrant of Figures 15 and 18 are those that visitors generally consider to be acceptable and/or pleasing to hear on the trail to Waimoku Falls, but are heard less frequently than those in the upper right quadrant of the figures. Within this quadrant, the sounds of rainfall and ocean waves had the highest mean acceptability and personal interpretation ratings, and were each heard by more than one-quarter of visitors. Efforts to maintain and improve opportunities for visitors to hear these sounds are recommended.

- As stated earlier, visitors were asked to describe any emotions or feelings they associated with the sounds they heard during the attended listening exercise on the trail to Waimoku Falls. More than 200 visitors reported emotions and/or feelings associated with nature sounds they heard, and the vast majority (95.0%) of them reported positive emotions or feelings, such as feelings of calm, peacefulness, and relaxation. Similarly, animal sounds elicited positive emotions from a substantial majority (80.5%) of the visitors who reported an emotion or feeling associated with hearing animal sounds. These data provide empirical evidence that the sounds of nature tend to have a relaxing, calming, positive effect on visitors' affective state. In contrast, more than half (57.1%) of visitors who reported an emotion or feeling associated with aircraft, reported negative emotions or feelings, such as annoyance, irritation, and distraction. Similarly, almost two-thirds (61.0%) of visitors who reported an emotion or feeling associated with hearing vehicle sounds described negative emotions or feelings. These data suggest that aircraft and

vehicle sounds may inhibit visitors' ability to have a restorative experience on the trail to Waimoku Falls (Table 27.2).

Background Information

- A small majority (55.7%) of visitors on the trail to Waimoku Falls are male, while a more substantial majority of visitors are residents of the United States (91.6%); have completed college/business/trade school or more formal education (79.5%); do not consider themselves to be Hispanic or Latino (94.7%); and identify themselves as White (91.5%). Furthermore, more than three-quarters (81.7%) of visitors on the trail to Waimoku Falls are between the ages of 25 and 54 years of age, with about one-third (34.0%) between the ages of 25 and 34 years of age (Tables 28-33).
- Most (92.6%) visitors who participated in the study described their hearing as normal, while very few rated their hearing as somewhat impaired (6.3%) or very impaired (0.5%; Table 34).

Summary of Major Findings - Kīpahulu Area Audio Recording Visitor Survey

Trip Description

- A substantial majority (84.8%) of visitor groups on the trail to Waimoku Falls consist of 4 or fewer people, with more than half (58.6%) consisting of 2 people (Table 37).
- Most (98.3%) visitors on the trail to Waimoku Falls are not part of a commercial tour (Table 38).
- Close to two-thirds (61.3%) of visitors on the trail to Waimoku Falls are visiting Haleakalā National Park for the first time. Of those who have previously visited the park,

one-third (33.3%) have visited once previously, about half (48.7%) have visited 2 to 9 times previously, and just under one-fifth (17.1%) have visited the park 10 or more times previously (Tables 39 and 40).

- The most important reasons to visitors on the trail to Waimoku Falls for hiking in Haleakalā National Park include appreciating the natural scenery; seeing Waimoku Falls; and being with friends/family. More than two-thirds (67.6%) of visitors reported that hearing the sounds of nature was a very important reason for hiking in the park, and more than half (58.1%) reported that enjoying peace and quiet was a very important reason for hiking in the park. Of the reasons for hiking in the park included in the questionnaire, the least important to visitors included getting away from crowds in the `Ohe`o Pools area and learning about Hawaiian culture and history, although a majority (67.2% and 83.8%, respectively) of visitors reported these as somewhat or very important reasons for hiking in the park (Table 41).

The Visitor Experience

- Visitors' evaluations of the acceptability of alternative park soundscape conditions were measured using a series of five audio recordings containing simulated park soundscapes. The first audio recording in the sequence contained only natural sounds that can be heard in the Kīpahulu area of the park. Each subsequent audio recording in the sequence contained the "base" natural sounds, mixed with increasing levels of helicopter sounds associated with scenic air tours of the Kīpahulu area of the park. The electronic audio playback files (i.e., recordings) are archived with Haleakalā National Park and the National Park Service Natural Sounds Program Center. The amplitude and slope of the

curve derived from plotting visitors' mean acceptability ratings of the recordings suggest that exposure to helicopter sounds while hiking is a salient issue for visitors on the trail to Waimoku Falls. Furthermore, visitors' mean ratings of the audio recordings suggest that, on average, visitors consider the sounds in Recordings 1, 2, and 3 to be acceptable, while the soundscape conditions contained in Recordings 4 and 5 are unacceptable. However, the standard deviations of visitors' acceptability ratings suggest that there is less consensus about the acceptability of Recordings 3 and 4, than for the more "extreme" conditions contained in Recordings 1, 2, and 5. In fact, values within 1 standard deviation of the mean acceptability ratings for Recordings 3 and 4 span the acceptable and unacceptable ranges of the scale. Nonetheless, more than two-thirds (69.4%) of visitors rate Recording 3 as acceptable and about two-thirds (63.5%) rate Recording 4 as unacceptable (Table 42.1 and Figure 19).

- The vast majority of visitors reported one or more pleasing sounds they heard in the first 4 audio recordings within the sequence of recordings described above, while nearly three-quarters (72.8%) indicated that they did not find any sounds pleasing in Recording 5 (the audio recording containing the highest level of helicopter sounds; Table 43.1). Of those visitors who described sounds in the recordings they found pleasing, the most commonly reported sounds included birds; water/waterfall/rain; bamboo; and wind. A small proportion of visitors described aircraft sounds as pleasing sounds contained within Recordings 3 (2.3%), 4 (5.1%), and 5 (4.4%; Table 43.2).
- A substantial majority of visitors indicated that they did not find any sounds annoying in Recordings 1 and 2 within the sequence of recordings described above, while about two-thirds (65.6%) reported one or more annoying sounds associated with Recording 3 and

most visitors did so for Recordings 4 (92.6%) and 5 (97.3%; Table 44.1). Of those visitors who described sounds in Recordings 1 and 2 they found annoying, the most commonly reported sounds included unpleasant nature sounds, such as “too many birds”, “crunching leaves”, and “breaking of trees”, and background noise, such as “crackling”, “static”, and “clicking”. Of those visitors who described sounds in Recordings 3, 4, and/or 5 they found annoying, by far the most commonly reported sounds were those of aircraft, while a smaller percentage of responses cited motor sounds and cars (Table 44.2).

- Nearly half (46.3%) of all visitors reported that Recording 1 sounded most like what they heard while they were hiking on the trail to Waimoku Falls, about one-third (36.6%) indicated that Recording 2 sounded most like what they heard, and under one-fifth (12.2%) considered Recording 3 to sound most like what they heard on the trail. Very few visitors reported Recordings 4 (3.5%) or 5 (1.4%) as sounding most like what they heard while hiking on the trail to Waimoku Falls (Table 45).
- Visitors’ evaluations of the acceptability of how often they hear helicopter air tour sounds while hiking in the park were measured using narratively portrayed scenarios, coupled with Recording 3 from the sequence of audio recordings described above. Each scenario described how often visitors would hear the helicopter sounds in Recording 3 while hiking in the park, with the scenarios ranging from never hearing the helicopter sounds to hearing them every 5 minutes. The amplitude and slope of the curve derived from plotting visitors’ mean acceptability ratings of the scenarios suggest that the frequency with which visitors hear helicopters while hiking in the park is a salient issue for visitors on the trail to Waimoku Falls. Furthermore, visitors’ mean ratings of the scenarios

suggest that, by far, visitors' most preferred scenario is to never hear helicopter sounds while they are hiking in the park, and that hearing helicopter sounds more often than once an hour is unacceptable. However, values within 1 standard deviation of the mean acceptability ratings for all but the two most extreme scenarios (i.e., never hear helicopter sounds and hear helicopter sounds every 5 minutes) span the acceptable and unacceptable ranges of the scale. Nonetheless, more than half (57.0%) of visitors indicated that hearing helicopters once every 60 minutes is acceptable, while a majority (55.1%) considered hearing helicopters every 30 minutes to be unacceptable. Furthermore, over three-quarters (78.8%) of visitors reported that hearing helicopters every 15 minutes is unacceptable (Table 46.1 and Figure 20).

- More than half (58.9%) of all visitors reported hearing aircraft while they were hiking on the trail to Waimoku Falls (Table 47). Of those visitors who heard aircraft during their hike, over half (58.2%) indicated that the sounds of aircraft were somewhat or very annoying, while virtually no visitors (0.6%) indicated that the sounds were pleasing. A little less than half of all visitors on the trail to Waimoku Falls (40.0%) indicated that the sounds of aircraft they heard while hiking were neither pleasing nor annoying (Table 48).
- A substantial majority (80.1%) of visitors on the trail to Waimoku Falls have not taken a scenic air tour over Haleakalā National Park or any other national park (Table 49). Of those who have already taken a scenic air tour over Haleakalā National Park, nearly half (48.0%) said that, if given the chance, they didn't know if they would take an air tour over the park if visitors in the park could hear the aircraft while hiking, while 40.0% said they would and 12.0% said they would not. Of those visitors who have not taken an air tour over any national park, including Haleakalā, close to half (40.8%) said that, if given

the chance, they would not take an air tour over Haleakalā National Park if visitors in the park could hear the aircraft while they were hiking, while about one-quarter (22.1%) said they would and more than one-third (37.1%) said they didn't know if they would take an air tour over the park (Tables 50 and 51).

- The majority of visitors on the trail to Waimoku Falls, whether they have taken a scenic air tour over a national park previously or not, would support: 1) reducing the number of scenic air tours allowed to fly over Haleakalā National Park (64.4% and 69.3%, respectively); 2) requiring scenic air tours to be flown over the park only during designated dates and times (64.4% and 57.5%, respectively); and 3) requiring scenic air tours to use designated flight paths over limited areas of the park (69.5% and 66.8%, respectively). Furthermore, regardless of whether they have taken a scenic air tour over a national park previously or not, the majority of visitors on the trail to Waimoku Falls oppose increasing the number of scenic air tours allowed to fly over the park (84.8% and 75.6%, respectively). However, visitors who have previously taken a scenic air tour over a national park are more likely than those who have not taken a scenic air tour to oppose prohibiting scenic air tours from flying over the park (47.4% and 32.4%, respectively; Table 52).

Background Information

- Visitors on the trail to Waimoku Falls are about evenly split between male (50.5%) and female (49.5%), while a substantial majority of visitors are residents of the United States (92.0%); have completed college/business/trade school or more formal education (78.3%); do not consider themselves to be Hispanic or Latino (96.3%); and identify

themselves as White (91.8%). Furthermore, more than three-quarters (78.4%) of visitors on the trail to Waimoku Falls are between the ages of 25 and 54 years of age, with about one-third (33.2%) between the ages of 25 and 34 years of age (Tables 53-58).

Appendix A

Sliding Sands Trail Attended Listening Survey Questionnaire

Haleakalā Soundscape: Attended Listening

Today we are conducting a visitor survey that includes a listening portion which directs your attention to the sounds of the park. If you are interested in participating, you will be asked to fill out a checklist to identify sounds you heard today. This survey will be used to help management understand the effects of natural and human sounds in the park. This exercise is voluntary and anonymous. It will take approximately 5-10 minutes to complete.

Step 1: The listening portion of this survey will be led by an NPS volunteer. Remember that all sounds are included, both human and natural.

Step 2: Close your eyes and relax. Keep track of each individual sound that you hear. Listen until you are told by the leader to stop.

Step 3: While holding your concentration, focus on the sounds you have heard. Now, please take a moment to fill out the attached worksheets before speaking with other participants about what you have heard. This exercise begins on the next page.

Step 4: Please put a ✓ check mark next to each sound that you heard during the exercise. If sounds are not listed, please write the sound(s) in the blank spaces provided at the bottom of the **SOUNDS** column on page 4.

Step 5: Under the **FEELINGS OR EMOTIONS ASSOCIATED WITH SOUNDS** column, please list any feelings or emotions that you associated with each of the sounds you checked ✓.

Examples: I felt *relaxed* because the stream was soothing to me.
I felt *annoyed* because the bird was beeping like an alarm clock.
I felt *frustrated* because the dog was barking when I wanted peace and quiet.

Step 6: Under the **ACCEPTABILITY OF SOUNDS AT THIS LOCATION** column, please circle one number which best describes how unacceptable or acceptable the sound was for this location in the park: The scale is on a continuum from: - 4 as very unacceptable, - 2 as slightly unacceptable, 0 as neutral, +2 as slightly acceptable, and + 4 as very acceptable.

Step 7: Under the **PERSONAL INTERPRETATION** column, please circle one number which best describes how pleasing or annoying the sound was to you: The scale is on a continuum from: -4 as very annoying, - 2 as slightly annoying, 0 as neutral, +2 as slightly pleasing, and + 4 as very pleasing.

Step 8: Please answer a few questions about yourself and your group on page 5.

Thank you for your participation

OMB # 1024-0224 (NPS #07-014)
Expiration Date: 01/30/2008

SOUNDS	√	FEELINGS OR EMOTIONS ASSOCIATED WITH SOUND	ACCEPTABILITY OF SOUND AT THIS LOCATION					PERSONAL INTERPRETATION OF SOUND												
			Very unacceptable	Slightly unacceptable	Neutral	Slightly acceptable	Very acceptable	Very annoying	Slightly annoying	Neutral	Slightly pleasing	Very pleasing								
Aircraft, Jet			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Aircraft, Propeller			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Aircraft, Helicopter			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Aircraft, Unknown			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Automobile (cars, vans, trucks & buses)			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Motorcycle			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Trail Work/Maintenance			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Walking sounds			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4

SOUNDS	√	FEELINGS OR EMOTIONS ASSOCIATED WITH SOUND	ACCEPTABILITY OF SOUND AT THIS LOCATION										PERSONAL INTERPRETATION OF SOUND									
			Very unacceptable	Slightly unacceptable	Neutral	Slightly acceptable	Very acceptable	Very annoying	Slightly annoying	Neutral	Slightly pleasing	Very pleasing										
Group, talking			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Group, loud or yelling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Adult(s), talking			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Adult(s), loud or yelling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Child/children, talking			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Child/children, loud or yelling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Child/children, crying			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Technology, cell phone			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Technology, radio headset or IPOD			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Technology Sounds, Unknown			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Camera			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		

SOUNDS	√	FEELINGS OR EMOTIONS ASSOCIATED WITH SOUND	ACCEPTABILITY OF SOUND AT THIS LOCATION					PERSONAL INTERPRETATION OF SOUND												
			Very unacceptable	Slightly unacceptable	Neutral	Slightly acceptable	Very acceptable	Very annoying	Slightly annoying	Neutral	Slightly pleasing	Very pleasing								
Wind			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Thunder			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Rainfall			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Shifting Rocks & Sand			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Bird song			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Insect (s)			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Horses			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Other (Please specify):			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Other (Please specify):			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Other (Please specify):			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4

1. Have you visited Haleakalā National Park before? (Check one.)

- Yes (CONTINUE TO QUESTION 2)
- No (SKIP TO QUESTION 3.)

2. Approximately how many times have you visited Haleakalā National Park before today?

Approximate number of visits: _____ **OR** Don't know/Not sure

3. How many people are in your personal group (family/friends) today?

Number of people in group: _____

4. Is your personal group part of a commercial tour in the park today? (Check one.)

- Yes
- No

5. What is your gender? (Check one.)

- Male
- Female

6. In what year were you born?

Year born: _____

7. Do you live in the United States? (Check one.)

- Yes (What is your zip code? _____)
- No (What country do you live in? _____)

8. What is the highest level of formal education you have completed? (Check one.)

- Some high school
- High school graduate or GED
- Some college, business or trade school
- College, business or trade school
- Some graduate school
- Master's, doctoral or professional degree

9. Are you Hispanic or Latino? (Check one.)

- Yes
- No

10. What is your race? (Check all that apply.)

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian
- Pacific Islander other than Native Hawaiian
- White

11. How would you describe your hearing? (Check one.)

- My hearing is normal.
- I am somewhat hearing impaired.
- I am very hearing impaired.
- I don't know about my hearing capacity.

Thank you for your participation.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement: 16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. The permanent data will be anonymous. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. BURDEN ESTIMATE statement: Public reporting burden for this form is estimated to average 10 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to:

Superintendent
Haleakalā National Park
P.O. Box 369
Makawao, HI 96768
HALE_Superintendent@nps.gov

Appendix B

Frequency Distributions of Acceptability and Personal
Interpretation Ratings of Sounds Heard During
Sliding Sands Trail Attending Listening

Table B.1. Detailed ratings of the acceptability of aircraft sounds along the Sliding Sands Trail and personal interpretations of aircraft sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Aircraft, Jet	Count	1	3	5	6	11	4	2	1	2	1	4	6	4	20	0	1	0	0
	Percent	2.9	8.6	14.3	17.1	31.4	11.4	5.7	2.9	5.7	2.8	11.1	16.7	11.1	55.6	0.0	2.8	0.0	0.0
Aircraft, Propeller	Count	3	0	3	0	4	0	1	0	0	2	1	3	0	3	1	1	0	0
	Percent	27.3	0.0	27.3	0.0	36.4	0.0	9.1	0.0	0.0	18.2	9.1	27.3	0.0	27.3	9.1	9.1	0.0	0.0
Aircraft, Helicopter	Count	6	4	16	7	15	3	4	3	5	7	9	11	11	14	4	0	2	1
	Percent	9.5	6.3	25.4	11.1	23.8	4.8	6.3	4.8	7.9	11.9	15.3	18.6	18.6	23.7	6.8	0.0	3.4	1.7
Aircraft, Unknown	Count	1	0	3	1	2	0	1	0	2	2	1	0	0	5	0	1	0	0
	Percent	10.0	0.0	30.0	10.0	20.0	0.0	10.0	0.0	20.0	22.2	11.1	0.0	0.0	55.6	0.0	11.1	0.0	0.0

Table B.2. Detailed ratings of the acceptability of vehicle sounds along the Sliding Sands Trail and personal interpretations of vehicle sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Automobile	Count	0	1	2	2	6	1	1	0	0	1	0	3	1	7	0	0	0	0
	Percent	0.0	7.7	15.4	15.4	46.2	7.7	7.7	0.0	0.0	8.3	0.0	25.0	8.3	58.3	0.0	0.0	0.0	0.0
Motorcycle	Count	2	0	1	2	0	0	0	0	1	2	0	2	0	1	0	1	0	0
	Percent	33.3	0.0	16.7	33.3	0.0	0.0	0.0	0.0	16.7	33.3	0.0	33.3	0.0	16.7	0.0	16.7	0.0	0.0

Table B.3. Detailed ratings of the acceptability of trail work / maintenance sounds along the Sliding Sands Trail and personal interpretations of trail work / maintenance sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Trail Work/ Maintenance	Count	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
	Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0

Table B.4. Detailed ratings of the acceptability of technology sounds along the Sliding Sands Trail and personal interpretations of technology sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Technology, Cell Phones	Count	2	2	3	0	0	0	2	0	0	1	0	4	0	3	0	0	0	0
	Percent	22.2	22.2	33.3	0.0	0.0	0.0	22.2	0.0	0.0	12.5	0.0	50.0	0.0	37.5	0.0	0.0	0.0	0.0
Technology, Radio Headset or IPOD	Count	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Percent	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Technology Sounds, Unknown	Count	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
	Percent	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Camera	Count	2	0	1	0	15	4	10	13	23	0	1	2	2	31	6	6	8	9
	Percent	2.9	0.0	1.5	0.0	22.1	5.9	14.7	19.1	33.8	0.0	1.5	3.1	3.1	47.7	9.2	9.2	12.3	13.8

Table B.5. Detailed ratings of the acceptability of walking sounds along the Sliding Sands Trail and personal interpretations of walking sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Walking Sounds	Count	6	0	1	1	16	2	8	16	92	0	1	2	4	49	5	27	22	29
	Percent	4.2	0.0	0.7	0.7	11.3	1.4	5.6	11.3	64.8	0.0	0.7	1.4	2.9	35.3	3.6	19.4	15.8	20.9

Table B.6. Detailed ratings of the acceptability of talking sounds along the Sliding Sands Trail and personal interpretations of talking sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Group Talking	Count	0	2	3	1	19	6	11	23	25	0	2	4	6	47	6	10	7	6
	Percent	0.0	2.2	3.3	1.1	21.1	6.7	12.2	25.6	27.8	0.0	2.3	4.5	6.8	53.4	6.8	11.4	8.0	6.8
Adult(s) Talking	Count	2	1	2	1	22	6	13	23	40	1	1	3	5	55	7	12	11	9
	Percent	1.8	0.9	1.8	0.9	20.0	5.5	11.8	20.9	36.4	1.0	1.0	2.9	4.8	52.9	6.7	11.5	10.6	8.7
Child/children Talking	Count	0	0	0	0	6	4	5	8	13	0	1	1	1	20	1	3	5	5
	Percent	0.0	0.0	0.0	0.0	16.7	11.1	13.9	22.2	36.1	0.0	2.7	2.7	2.7	54.1	2.7	8.1	13.5	13.5

Table B.7. Detailed ratings of the acceptability of loud voices / yelling along the Sliding Sands Trail and personal interpretations of loud voices / yelling.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Group, Loud or Yelling	Count	3	3	4	3	1	3	0	0	0	5	1	4	4	3	0	0	0	0
	Percent	17.6	17.6	23.5	17.6	5.9	17.6	0.0	0.0	0.0	29.4	5.9	23.5	23.5	17.6	0.0	0.0	0.0	0.0
Adult(s), Loud or Yelling	Count	3	2	2	0	2	0	2	0	0	5	1	0	1	4	0	0	0	0
	Percent	27.3	18.2	18.2	0.0	18.2	0.0	18.2	0.0	0.0	45.5	9.1	0.0	9.1	36.4	0.0	0.0	0.0	0.0
Child/children, Loud or Yelling	Count	2	0	2	1	1	0	1	1	0	2	0	4	0	0	0	1	0	0
	Percent	25.0	0.0	25.0	12.5	12.5	0.0	12.5	12.5	0.0	28.6	0.0	57.1	0.0	0.0	0.0	14.3	0.0	0.0
Child/children Crying	Count	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
	Percent	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0

Table B.8. Detailed ratings of the acceptability of nature sounds along the Sliding Sands Trail and personal interpretations of nature sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Wind	Count	5	1	2	1	9	2	10	17	102	5	0	8	5	11	6	22	23	65
	Percent	3.4	0.7	1.3	0.7	6.0	1.3	6.7	11.4	68.5	3.4	0.0	5.5	3.4	7.6	4.1	15.2	15.9	44.8
Thunder	Count	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
	Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
Rainfall	Count	0	0	0	1	0	0	1	0	2	0	0	0	1	1	0	0	1	1
	Percent	0.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	50.0	0.0	0.0	0.0	25.0	25.0	0.0	0.0	25.0	25.0
Shifting Rocks & Sand	Count	0	0	0	0	7	2	5	14	54	0	0	2	3	17	7	7	19	25
	Percent	0.0	0.0	0.0	0.0	8.5	2.4	6.1	17.1	65.9	0.0	0.0	2.5	3.8	21.3	8.8	8.8	23.8	31.3

Table B.9. Detailed ratings of the acceptability of animal sounds along the Sliding Sands Trail and personal interpretations of animal sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Bird Song	Count	1	0	0	0	0	0	0	2	22	0	0	0	0	2	0	1	3	19
	Percent	4.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	88.0	0.0	0.0	0.0	0.0	8.0	0.0	4.0	12.0	76.0
Insect(s)	Count	2	4	3	1	8	2	3	12	20	4	3	10	5	9	3	7	4	7
	Percent	3.6	7.3	5.5	1.8	14.5	3.6	5.5	21.8	36.4	7.7	5.8	19.2	9.6	17.3	5.8	13.5	7.7	13.5
Horses	Count	4	4	8	1	12	9	14	16	16	7	2	5	6	20	6	15	9	10
	Percent	4.8	4.8	9.5	1.2	14.3	10.7	16.7	19.0	19.0	8.8	2.5	6.3	7.5	25.0	7.5	18.8	11.3	12.5

Table B.10. Respondents were given the opportunity to report additional sounds heard that were not listed in the survey. The table below presents the “other” sounds heard during attended listening on the Sliding Sands Trail, the emotions associated with those sounds, acceptability of hearing the sounds on the Sliding Sands Trail, and the personal interpretation of the sounds.

Other Sounds Reported ^a	Feelings Associated With Sound	Acceptability of Sound at This Location ^b	Personal Interpretation of Sound ^c
Animal scurrying		4	0
Chuquics rustling on rocks		3	3
Heavy breathing	I'm out of shape	3	3
Moon	calm comforting	-4	4
Mule		-2	-3
Other hikers	great to see others out and about	4	4
Rocks and sand		4	1
The clouds	entertaining, playful, ominous	-4	4

^a Each sound listed was reported by one respondent.

^b Scale ranged from -4 = “Very Unacceptable” to +4 = “Very Acceptable”

^c Scale ranged from -4 = “Very Annoying” to +4 = “Very Pleasing”

Appendix C

Verbatim Feelings and Emotions Associated with Sounds Heard
During Sliding Sands Trail Attended Listening,
Organized by Sound

Appendix C: Verbatim Feelings and Emotions – Sliding Sands Trail Attended Listening
(Note: Number in parentheses indicates number of times response was mentioned.)

Aircraft, Jet		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • connection to the real world • "like home" sounded normal 	<ul style="list-style-type: none"> • ↓ • annoyed • disappointed • interrupted • irritable • irritation, lack of peace • seems out of place • unusual 	<ul style="list-style-type: none"> • didn't bother me at all • didn't think much of it • indifferent (2) • none (2)

Aircraft, Propeller		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • not nature • seems out of place 	

Aircraft, Helicopter		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • curiosity, envy, excitement • it was interesting to here something other than the wind and our footsteps • jealousy • "like home" sounded normal • relaxing • what I associated with Hawaii- wish I were on it 	<ul style="list-style-type: none"> • ↓ • annoyed (2) • bothered me a lot • glad I didn't hear more than one • interrupted • irritable • irritation, thought of overdevelopment • little annoyed • slight annoyance that technology is allowed here • thought they were missing so much • why can't they get out and experience "real" nature 	<ul style="list-style-type: none"> • acceptance • neutral • no bad • thought either park service or tour chopper • tour of Maui • very distant, ok because distant, there's life • zero

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Aircraft, Unknown		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoyed 	<ul style="list-style-type: none"> • doesn't bother me • very distant, ok because distant, there's life • wondering where plane is going

Automobile		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • irritation, not peaceful • slightly annoyed, surprised 	<ul style="list-style-type: none"> • thought I heard something but very short while • unknown

Motorcycle		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoying 	

Technology, Cell Phone		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoyed • annoying 	<ul style="list-style-type: none"> • no service

Technology Sounds, Unknown		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
		<ul style="list-style-type: none"> • lost walkie talkie

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Camera		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • awe • beautiful view • creating memories • elated • familiarity • happy • interest • memories • we have a nice click to our camera that cuts the silence with a smile 		<ul style="list-style-type: none"> • acceptability • acceptable (2) • all cameras encountered made no audible sounds, or very little • indifference • just our own when taking pics • my own camera • neutral ok • none (2) • ok unless accompanied by lots of noise • our own

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Walking Sounds		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • "back to nature' • calming and relaxing • calming, crunchy • comfort (3) • comforting, rhythmic • companionship, safety • connected • crunching in trail was nice • earthly grounding • encouraging • feel like we are one with nature • good • good with friends • I like hearing them-energy/good exercise • It felt like I was walking on the beach where there was a lot of shells. I liked it, relaxed • just people walking • make me think of being on a nature walk/hike • my own amazement • natural sounding • nice sound • nice to see others • peaceful (2) • pleasant • pleasing • pleasure • quiet, peaceful • relaxation • relaxed • relaxing (2) • soothing (2) • soothing rhythmic 	<ul style="list-style-type: none"> • exhaustion • resignation, mild despair • tired 	<ul style="list-style-type: none"> • acceptance with shrug of shoulders • indifference • none (4) • wind • zero

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Group, Talking		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • comforting • community • enjoyment • fun • fun companionship • good fun • greetings and shared experience • I love the quiet and solitude of the place, but it is nice to hear quiet conversation too • nice • social 	<ul style="list-style-type: none"> • annoyance at leader of tour group • kind of annoyed • pretty quiet did break feeling of wilderness 	<ul style="list-style-type: none"> • acceptable • curiosity • I heard only when conversed with other people • indifferent (2) • just ourselves • neutral ok • none

Adult(s), Talking		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • cheerful • comfort • enjoyment • enjoyment of situation • excitement • feeling as if we are sharing this place with others • friendly • greetings and shared experience • natural sound • people, good to see others 	<ul style="list-style-type: none"> • inappropriate times 	<ul style="list-style-type: none"> • acceptable (2) • fine with me • indifference • indifferent • mostly my own and my family's and occasional greeting • neutral ok • neutral, its to be expected • none • ok sound • What are they saying? How far did they go?

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Child/Children, Talking		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • funny commentary by own child • happiness • natural sound • well-behaved and curious children on the trail 		<ul style="list-style-type: none"> • acceptable • neutral ok

Group, Loud or Yelling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • excitement 	<ul style="list-style-type: none"> • a bit of an annoyance at the inconsideration of others • annoyance • irritating 	

Adult(s), Loud or Yelling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoyance • her lack of awareness 	

Child/Children, Loud or Yelling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • agitated • annoyance 	

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Wind		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • associated with nature walks • awesome • blew sand, but refreshing • calm (2) • calm peaceful natural • calm, soothing, free • calming (4) • cleansing • cold and very nice • cold, refreshing • cool breeze under warm sun • cool! • freeing • gave sound the size of a valley, solitude, peaceful • good-nature • greatness of nature • I felt relaxed • I love it-its cool, refreshing, and the sound calms my soul • love the sound • natural • natural sound • nice (2) • nice cool feeling • peaceful • pleasant (2) • pleasure • refreshing • relaxing and desolation • soothed • soothing (2) • wildness • wonderful/free 	<ul style="list-style-type: none"> • annoying • cold, biting • cold, didn't dress warm, feeling like I couldn't enjoy it completely • concern, tiring • frustration • lonely • strange 	<ul style="list-style-type: none"> • acceptance • aloneness • content • feel like we are in a wind tunnel • isolation • part of territory • part of the experience • relentless power • surprise

Thunder		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • pleasure 		

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Rainfall		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • pleasure 		

Shifting Rocks & Sand		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • also associated with nature walks • calm peaceful natural • calming • expected/interesting • fun/challenging • good • I feel relaxed • natural • pleasant • very pleasant 	<ul style="list-style-type: none"> • "be careful" • exhausting • hope I do not fall or these rocks fall • slightly scary • worry surprise 	<ul style="list-style-type: none"> • a moon like deserty feel • none (2) • only natural • slippery, sandy

Bird Song		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • amazement • calming • happiness • happy to be in nature • little chirp, momma gathering young • nice • pleasure (2) • we think pleased 		

**Appendix C (continued). Verbatim Feelings and Emotions – Sliding Sands Trail
Attended Listening**

Insect(s)		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • a few annoying flies buzzing • annoyance flies on horse poop • annoying • annoying, flies! • annoying, especially the flies • flies were buzzing, annoying • nuisance • some what annoying 	<ul style="list-style-type: none"> • flies • flies part of life • indifferent • nature, buzzing heard but did not bother me • our only bug

Horses		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • awesome, felt like the olden days • happy • horse, excited looked like a great ride • I love ride • I wish I had one • pleasant • surprised, comfort, pleased • warm 	<ul style="list-style-type: none"> • annoyance • annoyed • confused • don't get spooked • felt like I was on a ranch- didn't like all the poop • horse dung on trails was a bit bothersome • poops • they need their own trail 	<ul style="list-style-type: none"> • also think of hikes although horse can be hard to share narrow trails with • beautiful to look at but leaves a mess • equestrian • stinky/dusty, but guide was kind • surprised • western trail ride • why didn't we do that

Appendix D

State Residency of Respondents – Sliding Sands Trail
Attended Listening

Appendix D. Complete list of state of residency for all respondents – Sliding Sands Trail Attended Listening.

State	Basic Stats (n=121)	
	Count	Percent
California	34	28.1
Hawaii	12	9.9
Washington	7	5.8
Florida	6	5.0
Illinois	6	5.0
Texas	6	5.0
Michigan	5	4.1
New York	5	4.1
Colorado	4	3.3
North Carolina	4	3.3
Oregon	4	3.3
Massachusetts	3	2.5
New Jersey	3	2.5
Arizona	2	1.7
Georgia	2	1.7
New Mexico	2	1.7
Ohio	2	1.7
Virginia	2	1.7
Connecticut	1	0.8
District of Columbia	1	0.8
Indiana	1	0.8
Kansas	1	0.8
Mississippi	1	0.8
Nevada	1	0.8
Pennsylvania	1	0.8
South Carolina	1	0.8
Tennessee	1	0.8
Utah	1	0.8
Vermont	1	0.8
Wisconsin	1	0.8

Appendix E

Sliding Sands Trail Attended Listening Survey Data Codebook

Appendix E. Sliding Sands Trail Attended Listening Survey Data Codebook
Pertaining to files SST_AL_SurveyData.xls and SST_AL_SurveyData.sav

Variable	Question #	Description	Values
Date	Front Cover	Date when survey was completed	dd/mm/yy
Time	Front Cover	Time when survey was completed	Military Time – 00:00:00
ID	Front Cover	Unique ID for each completed questionnaire	ID number
Aircraft	Front Cover	Indicates whether aircraft was present while respondent was completing survey	0 = Aircraft present 1 = Aircraft not present
AircraftNotes	Front Cover	Comments about the presence of aircraft	Text
S1	Aircraft, Jet	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S1Text	Aircraft, Jet: Feeling	Reported feelings associated with sound	Text
S1Code	Aircraft, Jet: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S1A	Aircraft, Jet: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S1P	Aircraft, Jet: Personal Interpretation.	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S2	Aircraft, Propeller	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S2Text	Aircraft, Propeller: Feeling	Reported feelings associated with sound	Text
S2Code	Aircraft, Propeller: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S2A	Aircraft, Propeller: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S2P	Aircraft, Propeller: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S3	Aircraft, Helicopter	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S3Text	Aircraft, Helicopter: Feeling	Reported feelings associated with sound	Text
S3Code	Aircraft, Helicopter: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S3A	Aircraft, Helicopter: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S3P	Aircraft, Helicopter: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S4	Aircraft, Unknown	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S4Text	Aircraft, Unknown: Feeling	Reported feelings associated with sound	Text
S4Code	Aircraft, Unknown: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S4A	Aircraft, Unknown:	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S4P	Aircraft, Unknown: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S5	Automobile	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S5Text	Automobile: Feeling	Reported feelings associated with sound	Text

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S5Code	Automobile: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S5A	Automobile: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S5P	Automobile: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S6	Motorcycle	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S6Text	Motorcycle: Feeling	Reported feelings associated with sound	Text
S6Code	Motorcycle: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S6A	Motorcycle: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S6P	Motorcycle: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S7	Trail Work/Maintenance	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S7Text	Trail Work/Maintenance: Feeling	Reported feelings associated with sound	Text
S7Code	Trail Work/Maintenance: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S7A	Trail Work/Maintenance: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S7P	Trail Work/Maintenance: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S8	Walking Sounds	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S8Text	Walking Sounds: Feeling	Reported feelings associated with sound	Text
S8Code	Walking Sounds: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S8A	Walking Sounds: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S8P	Walking Sounds: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S9	Group, Talking	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S9Text	Group, Talking: Feeling	Reported feelings associated with sound	Text
S9Code	Group, Talking: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S9A	Group, Talking: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S9P	Group, Talking: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S10	Group, Loud or Yelling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S10Text	Group, Loud or Yelling: Feeling	Reported feelings associated with sound	Text
S10Code	Group, Loud or Yelling: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S10A	Group, Loud or Yelling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S10P	Group, Loud or Yelling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S11	Adult(s), Talking	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S11Text	Adult(s), Talking: Feeling	Reported feelings associated with sound	Text
S11Code	Adult(s), Talking: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S11A	Adult(s), Talking: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S11P	Adult(s), Talking: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S12	Adult(s), Loud or Yelling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S12Text	Adult(s), Loud or Yelling: Feeling	Reported feelings associated with sound	Text
S12Code	Adult(s), Loud or Yelling: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S12A	Adult(s), Loud or Yelling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S12P	Adult(s), Loud or Yelling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S13	Child/Children, Talking	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S13Text	Child/Children, Talking: Feeling	Reported feelings associated with sound	Text
S13Code	Child/Children, Talking: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S13A	Child/Children, Talking: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S13P	Child/Children, Talking: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S14	Child/Children, Loud or Yelling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S14Text	Child/Children, Loud or Yelling: Feeling	Reported feelings associated with sound	Text
S14Code	Child/Children, Loud or Yelling: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S14A	Child/Children, Loud or Yelling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S14P	Child/Children, Loud or Yelling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S15	Child/Children, Crying	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S15Text	Child/Children, Crying: Feeling	Reported feelings associated with sound	Text
S15Code	Child/Children, Crying: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S15A	Child/Children, Crying: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S15P	Child/Children, Crying: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S16	Technology, Cell Phone	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S16Text	Technology, Cell Phone: Feeling	Reported feelings associated with sound	Text
S16Code	Technology, Cell Phone: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S16A	Technology, Cell Phone: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S16P	Technology, Cell Phone: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S17	Technology, Radio Headset or IPOD	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S17Text	Technology, Radio Headset or IPOD: Feeling	Reported feelings associated with sound	Text
S17Code	Technology, Radio Headset or IPOD: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S17A	Technology, Radio Headset or IPOD: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S17P	Technology, Radio Headset or IPOD: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S18	Technology Sounds, Unknown	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S18Text	Technology Sounds, Unknown: Feeling	Reported feelings associated with sound	Text

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S18Code	Technology Sounds, Unknown: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S18A	Technology Sounds, Unknown: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S18P	Technology Sounds, Unknown: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S19	Camera	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S19Text	Camera: Feeling	Reported feelings associated with sound	Text
S19Code	Camera: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S19A	Camera: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S19P	Camera: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S20	Wind	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S20Text	Wind: Feeling	Reported feelings associated with sound	Text
S20Code	Wind: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S20A	Wind: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S20P	Wind: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S21	Thunder	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S21Text	Thunder: Feeling	Reported feelings associated with sound	Text
S21Code	Thunder: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S21A	Thunder: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S21P	Thunder: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S22	Rainfall	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S22Text	Rainfall: Feeling	Reported feelings associated with sound	Text
S22Code	Rainfall: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S22A	Rainfall: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S22P	Rainfall: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S23	Shifting Rocks and Sand	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S23Text	Shifting Rocks and Sand: Feeling	Reported feelings associated with sound	Text
S23Code	Shifting Rocks and Sand: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S23A	Shifting Rocks and Sand: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S23P	Shifting Rocks and Sand: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S24	Bird Song	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S24Text	Bird Song: Feeling	Reported feelings associated with sound	Text
S24Code	Bird Song: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S24A	Bird Song: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S24P	Bird Song: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S25	Insect(s)	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S25Text	Insect(s): Feeling	Reported feelings associated with sound	Text
S25Code	Insect: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S25A	Insect(s) : Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S25P	Insect(s): Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S26	Horse	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S26Text	Horse: Feeling	Reported feelings associated with sound	Text
S26Code	Horse: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S26A	Horse: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S26P	Horse: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S27	S27	Indicates whether reported “other” sound	0 = Did not report other sound 1 = Reported other sound
S27Other	S27: Other	Describes the other sound heard	Text
S27Text	S27Other: Feeling	Reported feelings associated with sound	Text
S27Code	S27: Code	Categorizes feelings-related responses	0 = ambiguous 1 = positive 2 = negative
S27A	S27Other: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S27P	S27Other: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S28	S28	Indicates whether reported “other” sound	0 = Did not report other sound 1 = Reported other sound
S28Other	S28: Other	Describes the other sound heard	Text
S28Text	S28Other: Text	Reported feelings associated with sound	Text

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S28Code	S28: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S28A	S28Other: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S28P	S28Other: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
Q1	Question 1	Designates whether or not group has visited this area of the park previously	0 = No 1 = Yes
Q2	Question 2	Number of previous visits to this area of the Park	Number of visits
Prior_Visits	Question 2	Codes Question 2 into categories	1 = once 2 = 2 – 4 times 3 = 5 or more
Q3	Question 3	Number of people in group	Number of people
Q4	Question 4	Designates whether or not part of a commercial tour	0 = No 1 = Yes
Q5	Question 5	Gender of respondent	1 = Male 2 = Female
Q6	Question 6	Year born	YYYY
Age	Question 6	Respondent's birth year subtracted from 2007	Age in years
Q7	Question 7	Country of residence	1 = US 0 = Other
Q7Zip	Q7: Zip	Zip Code of residence	5-digit Zip Code
Q7Country	Q7: Country	Country of residence	1 = Germany 2 = Canada 3 = Switzerland 4 = Holland 5 = Netherlands

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
Q8	Question 8	Level of education	1 = Some high school 2 = High school graduate or GED 3 = Some college, business or trade school 4 = College, business or trade school graduate 5 = Some graduate school 6 = Master's, doctoral or professional degree
Q9	Question 9	Indicates if the respondent is Hispanic or Latino	1 = Yes 0 = No
Q10a	Question 10a	American Indian or Alaskan Native	1 = Checked 0 = Not Checked
Q10b	Question 10b	Asian	1 = Checked 0 = Not Checked
Q10c	Question 10c	Black or African American	1 = Checked 0 = Not Checked
Q10d	Question 10d	Native Hawaiian	1 = Checked 0 = Not Checked
Q10e	Question 10e	Pacific Islander (Not Hawaiian)	1 = Checked 0 = Not Checked
Q10f	Question 10f	White	1 = Checked 0 = Not Checked
MultiRaces	Question 10	Indicates if the respondent reported more than one race	0 = Reported no race 1 = Reported 1 race 2 = Reported 2 races 3 = Reported 3 races
Q11	Question 11	Indicates the hearing capacity of the respondent	1 = My hearing is normal 2 = I am somewhat hearing impaired 3 = I am very hearing impaired 4 = I don't know about my hearing capacity

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
Comments	Comments Throughout Survey	Comments about the survey either written by the survey administrator or survey respondent	Text
S_Aircraft	All Aircraft Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S1, S2, S3, and S4)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Vehicle	All Vehicle Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S5 and S6)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Talking	All Talking Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S9, S11, and S13)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_LoudVoices	All Loud Voices	Indicates whether or not the respondent heard any of the sounds in the category (S10, S12, S14, and S15)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Technology	All Technology Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S16, S17, S18, and S19)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Nature	All Nature Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S20, S21, S22, and S23)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category

Appendix E (continued). Sliding Sands Trail Attended Listening Survey Data Codebook

Variable	Question #	Description	Values
S_Animal	All Animal Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S24, S25, and S26)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category

Appendix F

Kīpahulu Area Attended Listening Survey Questionnaire

HALEAKALĀ NATIONAL PARK: Attended Listening

Today we are conducting a visitor survey that includes a listening portion which directs your attention to the sounds of the park. If you are interested in participating, you will be asked to fill out a checklist to identify sounds you heard today. This survey will be used to help management understand the effects of natural and human sounds in the park. This exercise is voluntary and anonymous. It will take approximately 5-10 minutes to complete.

Step 1: The listening portion of this survey will be led by an NPS volunteer. Remember that all sounds are included, both human and natural.

Step 2: Close your eyes and relax, and keep track of each individual sound that you hear. Listen until you are told by the leader to stop.

Step 3: While holding your concentration, focus on the sounds you have heard. Now, please take a moment to fill out the attached worksheets before speaking with other participants about what you have heard. This exercise begins on the next page.

Step 4: Please put a ✓ check mark next to each sound that you heard during the exercise. If the sounds are not listed, please write the sound(s) in the blank spaces provided at the bottom of the **SOUNDS** column on page 4.

Step 5: Under the **FEELINGS OR EMOTIONS ASSOCIATED WITH SOUNDS** column, please list any feelings or emotions that you associated with each of the sounds you checked ✓.

Examples: I felt *relaxed* because the stream was soothing to me.
I felt *annoyed* because the bird was beeping like an alarm clock.
I felt *frustrated* because the dog was barking when I wanted peace and quiet.

Step 6: Under the **ACCEPTABILITY OF SOUNDS AT THIS LOCATION** column, please circle one number which best describes how unacceptable or acceptable the sound was for this location in the park: The scale is on a continuum from: - 4 as very unacceptable, - 2 as slightly unacceptable, 0 as neutral, +2 as slightly acceptable, and + 4 as very acceptable.

Step 7: Under the **PERSONAL INTERPRETATION** column, please circle one number which best describes how pleasing or annoying the sound was to you: The scale is on a continuum from: -4 as very annoying, - 2 as slightly annoying, 0 as neutral, +2 as slightly pleasing, and + 4 as very pleasing.

Step 8: Please answer a few questions about yourself and your group on page 5.

Thank you for your participation

OMB # 1024-0224 (NPS #07-014)
Expiration Date: 01/30/2008

SOUNDS	√	FEELINGS OR EMOTIONS ASSOCIATED WITH SOUND	ACCEPTABILITY OF SOUND AT THIS LOCATION										PERSONAL INTERPRETATION OF SOUND									
			Very unacceptable	Slightly unacceptable	Neutral	Slightly acceptable	Very acceptable	Very annoying	Slightly annoying	Neutral	Slightly pleasing	Very pleasing										
Aircraft, Jet			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Aircraft, Propeller			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Aircraft, Helicopter			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Aircraft, Unknown			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Automobile (cars, vans, trucks & buses)			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Motorcycle			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Trail Work/Maintenance			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Walking sounds			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Walking sticks			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		
Leaves Rustling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4		

SOUNDS	√	FEELINGS OR EMOTIONS ASSOCIATED WITH SOUND	ACCEPTABILITY OF SOUND AT THIS LOCATION									PERSONAL INTERPRETATION OF SOUND								
			Very unacceptable	Slightly unacceptable	Neutral	Slightly acceptable	Very acceptable	Very annoying	Slightly annoying	Neutral	Slightly pleasing	Very pleasing								
Group, talking			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Group, loud or yelling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Adult(s), talking			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Adult(s), loud or yelling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Child/children, talking			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Child/children, loud or yelling			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Child/children, crying			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Technology, cell phone			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Technology, radio headset or IPOD			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Technology Sounds, Unknown			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Camera			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4

SOUNDS	√	FEELINGS OR EMOTIONS ASSOCIATED WITH SOUND	ACCEPTABILITY OF SOUND AT THIS LOCATION									PERSONAL INTERPRETATION OF SOUND								
			Very unacceptable	Slightly unacceptable	Neutral	Slightly acceptable	Very acceptable	Very annoying	Slightly annoying	Neutral	Slightly pleasing	Very pleasing								
Wind			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Thunder			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Rainfall			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Flowing Water (stream)			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Bird song			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Insect (s)			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Cows			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Ocean Waves			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Animal, unknown			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Other (Please specify):			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Other (Please specify):			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Other (Please specify):			-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4

1. Have you visited Haleakalā National Park before? (Check one.)

- Yes (CONTINUE TO QUESTION 2)
- No (SKIP TO QUESTION 3.)

2. Approximately how many times have you visited Haleakalā National Park before today?

Approximate number of visits: _____ **OR** Don't know/Not sure

3. How many people are in your personal group (family/friends) today?

Number of people in group: _____

4. Is your personal group part of a commercial tour in the park today? (Check one.)

- Yes
- No

5. What is your gender? (Check one.)

- Male
- Female

6. In what year were you born?

Year born: _____

7. Do you live in the United States? (Check one.)

- Yes (What is your zip code? _____)
- No (What country do you live in? _____)

8. What is the highest level of formal education you have completed? (Check one.)

- Some high school
- High school graduate or GED
- Some college, business or trade school
- College, business or trade school
- Some graduate school
- Master's, doctoral or professional degree

9. Are you Hispanic or Latino? (Check one.)

- Yes
- No

10. What is your race? (Check all that apply.)

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian
- Pacific Islander other than Native Hawaiian
- White

11. How would you describe your hearing? (Check one.)

- My hearing is normal.
- I am somewhat hearing impaired.
- I am very hearing impaired.
- I don't know about my hearing capacity.

Thank you for your participation.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement: 16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. The permanent data will be anonymous. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. BURDEN ESTIMATE statement: Public reporting burden for this form is estimated to average 15 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to:

Eric Anderson
Haleakalā National Park
P.O. Box 369
Makawao, HI 96768
Eric_Anderson@nps.gov

Appendix G

Frequency Distributions of Acceptability and Personal
Interpretation Ratings of Sounds Heard During
Kīpahulu Area Attended Listening

Table G.1. Detailed ratings of the acceptability of aircraft sounds along the trail to Waimoku Falls and personal interpretations of aircraft sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Aircraft, Jet	Count	4	2	2	1	2	1	2	3	1	3	2	4	3	4	1	0	0	0
	Percent	22.2	11.1	11.1	5.6	11.1	5.6	11.1	16.7	5.6	11.6	11.8	23.5	17.6	23.5	5.9	0.0	0.0	0.0
Aircraft, Propeller	Count	1	2	4	1	4	1	0	0	0	2	0	5	4	1	1	0	0	0
	Percent	7.7	15.4	30.8	7.7	30.8	7.7	0.0	0.0	0.0	15.4	0.0	38.5	30.8	7.7	7.7	0.0	0.0	0.0
Aircraft, Helicopter	Count	8	11	19	5	26	7	12	6	6	8	13	18	13	35	3	3	3	1
	Percent	8.0	11.0	19.0	5.0	26.0	7.0	12.0	6.0	6.0	8.2	13.4	18.6	13.4	36.1	3.1	3.1	3.1	1.0
Aircraft, Unknown	Count	1	2	4	1	2	0	0	0	0	1	1	5	0	1	0	0	1	0
	Percent	10.0	20.0	40.0	10.0	20.0	0.0	0.0	0.0	0.0	11.1	11.1	55.6	0.0	11.1	0.0	0.0	11.1	0.0

Table G.2. Detailed ratings of the acceptability of vehicle sounds along the trail to Waimoku Falls and personal interpretations of vehicle sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Automobile	Count	7	5	15	10	19	5	10	5	4	8	10	20	12	23	2	0	0	1
	Percent	8.8	6.3	18.8	12.5	23.8	6.3	12.5	6.3	5.0	10.5	13.2	26.3	15.8	30.3	2.6	0.0	0.0	1.3
Motorcycle	Count	1	3	3	1	5	0	0	1	2	2	4	4	1	5	0	0	0	0
	Percent	6.3	18.8	18.8	6.3	31.3	0.0	0.0	6.3	12.5	12.5	25.0	25.0	6.3	31.3	0.0	0.0	0.0	0.0

Table G.3. Detailed ratings of the acceptability of trail work / maintenance sounds along the trail to Waimoku Falls and personal interpretations of trail work / maintenance sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Trail Work/ Maintenance	Count	0	2	0	2	4	0	3	2	2	0	2	4	3	3	0	1	0	2
	Percent	0.0	13.3	0.0	13.3	26.7	0.0	20.0	13.3	13.3	0.0	13.3	26.7	20.0	20.0	0.0	6.7	0.0	13.3

Table G.4. Detailed ratings of the acceptability of technology sounds along the trail to Waimoku Falls and personal interpretations of technology sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Technology, Cell Phones	Count	1	1	3	1	1	0	1	0	0	2	1	1	2	1	1	0	0	0
	Percent	12.5	12.5	37.5	12.5	12.5	0.0	12.5	0.0	0.0	25.0	12.5	12.5	25.0	12.5	12.5	0.0	0.0	0.0
Technology, Radio Headset or IPOD	Count	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Percent	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Technology Sounds, Unknown	Count	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Percent	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Camera	Count	1	0	2	2	24	3	5	18	25	0	0	3	1	54	6	3	4	6
	Percent	1.3	0.0	2.5	2.5	30.0	3.8	6.3	22.5	31.3	0.0	0.0	3.9	1.3	70.1	7.8	3.9	5.2	7.8

Table G.5. Detailed ratings of the acceptability of walking sounds along the trail to Waimoku Falls and personal interpretations of walking sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Walking Sounds	Count	2	1	1	2	23	6	12	23	104	0	0	2	6	63	14	20	22	42
	Percent	1.1	0.6	0.6	1.1	13.2	3.4	6.9	13.2	59.8	0	0	1.2	3.6	37.3	8.3	11.8	13.0	24.9
Walking Sticks	Count	2	0	0	0	7	3	6	16	40	2	0	1	3	27	5	9	7	20
	Percent	2.7	0	0	0	9.5	4.1	8.1	21.6	54.1	2.7	0	1.4	4.1	36.5	6.8	12.2	9.5	27.0

Table G.6. Detailed ratings of the acceptability of talking sounds along the trail to Waimoku Falls and personal interpretations of talking sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Group Talking	Count	1	2	2	9	40	9	16	21	45	2	2	10	17	69	10	11	4	14
	Percent	0.7	1.4	1.4	6.2	27.6	6.2	11.0	14.5	31.0	1.4	1.4	7.2	12.2	49.6	7.2	7.9	2.9	10.1
Adult(s) Talking	Count	0	2	1	6	40	11	14	24	58	0	1	7	12	79	14	14	10	15
	Percent	0.0	1.3	0.6	3.8	25.6	7.1	9.0	15.4	37.2	0.0	0.7	4.6	7.9	52.0	9.2	9.2	6.6	9.9
Child/children Talking	Count	1	0	2	4	20	8	8	14	29	1	0	4	12	38	5	10	2	12
	Percent	1.2	0.0	2.3	4.7	23.3	9.3	9.3	16.3	33.7	1.2	0.0	4.8	14.3	45.2	6.0	11.9	2.4	14.3

Table G.7. Detailed ratings of the acceptability of loud voices / yelling along the trail to Waimoku Falls and personal interpretations of loud voices / yelling.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Group, Loud or Yelling	Count	5	5	5	7	5	6	4	0	3	6	7	5	6	7	1	2	0	0
	Percent	13.5	13.5	13.5	18.9	13.5	8.1	10.8	0.0	8.1	17.6	20.6	14.7	17.6	20.6	2.9	5.9	0.0	0.0
Adult(s), Loud or Yelling	Count	2	3	3	4	2	2	1	2	3	4	2	5	2	3	1	2	2	1
	Percent	9.1	13.6	13.6	18.2	9.1	9.1	4.5	9.1	13.6	18.2	9.1	22.7	9.1	13.6	4.5	9.1	9.1	4.5
Child/children, Loud or Yelling	Count	2	2	1	3	4	2	0	2	4	3	1	6	1	4	0	1	1	2
	Percent	10.0	10.0	5.0	15.0	20.0	10.0	0.0	10.0	20.0	15.8	5.3	31.6	5.3	21.1	0.0	5.3	5.3	10.5
Child/children Crying	Count	0	0	1	2	5	0	1	1	0	1	2	0	2	3	1	0	0	0
	Percent	0.0	0.0	10.0	20.0	50.0	0.0	10.0	10.0	0.0	11.1	22.2	0.0	22.2	33.3	11.1	0.0	0.0	0.0

Table G.8. Detailed ratings of the acceptability of nature sounds along the trail to Waimoku Falls and personal interpretations of nature sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Leaves Rustling	Count	3	1	0	0	3	0	4	4	167	0	0	0	1	6	1	13	22	136
	Percent	1.6	0.5	0.0	0.0	1.6	0.0	2.2	2.2	91.8	0.0	0.0	0.0	0.6	3.4	0.6	7.3	12.3	76.0
Wind	Count	1	0	1	0	3	0	7	15	153	0	0	0	1	7	3	13	23	127
	Percent	0.6	0.0	0.6	0	1.7	0	3.9	8.3	85.0	0.0	0.0	0.0	0.6	4.0	1.7	7.5	13.2	73.0
Thunder	Count	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Percent	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rainfall	Count	0	0	1	1	1	1	8	8	74	0	1	3	1	2	3	6	12	62
	Percent	0.0	0.0	1.1	1.1	1.1	1.1	8.5	8.5	78.7	0.0	1.1	3.3	1.1	2.2	3.3	6.7	13.3	68.9
Flowing Water	Count	1	0	0	0	1	0	3	9	172	0	0	0	0	2	1	2	15	162
	Percent	0.5	0.0	0.0	0.0	0.5	0.0	1.6	4.8	92.5	0.0	0.0	0.0	0.0	1.1	0.5	1.1	8.2	89.0
Ocean Waves	Count	1	0	0	0	0	0	0	5	60	0	0	0	0	0	0	2	3	58
	Percent	1.5	0.0	0.0	0.0	0.0	0.0	0.0	7.6	90.9	0.0	0.0	0.0	0.0	0.0	0.0	3.2	4.8	92.1

Table G.9. Detailed ratings of the acceptability of animal sounds along the trail to Waimoku Falls and personal interpretations of animal sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Bird Song	Count	1	0	0	0	3	1	3	12	144	0	0	0	0	3	2	7	20	128
	Percent	0.6	0.0	0.0	0.0	1.8	0.6	1.8	7.9	87.3	0.0	0.0	0.0	0.0	1.9	1.3	4.4	12.5	80.0
Insect(s)	Count	0	0	0	0	11	1	3	8	36	1	2	3	3	9	3	6	4	28
	Percent	0.0	0.0	0.0	0.0	18.6	1.7	5.1	13.6	61.0	1.7	3.4	5.1	5.1	15.3	5.1	10.2	6.8	47.5
Cows	Count	0	0	0	1	2	0	1	1	14	0	0	0	2	2	0	0	1	14
	Percent	0.0	0.0	0.0	5.3	10.5	0.0	5.3	5.3	73.7	0.0	0.0	0.0	10.5	10.5	0.0	0.0	5.3	73.7
Animals, Unknown	Count	0	0	0	0	2	0	0	4	19	0	0	0	1	5	2	4	1	12
	Percent	0.0	0.0	0.0	0.0	8.0	0.0	0.0	16.0	76.0	0.0	0.0	0.0	4.0	20.0	8.0	16.0	4.0	48.0

Table G.10.1. Detailed ratings of the acceptability of bamboo and waterfall sounds along the trail to Waimoku Falls and personal interpretations of those sounds.

Sounds		Acceptability of Sound at this Location									Personal Interpretation of Sound								
		Very Unacceptable		Slightly Unacceptable		Neutral		Slightly Acceptable		Very Acceptable	Very Annoying		Slightly Annoying		Neutral		Slightly Pleasing		Very Pleasing
		-4	-3	-2	-1	0	+1	+2	+3	+4	-4	-3	-2	-1	0	+1	+2	+3	+4
Bamboo	Count	0	0	0	0	0	0	0	2	13	0	0	0	1	0	1	0	3	11
	Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	86.7	0.0	0.0	0.0	6.2	0.0	6.2	0.0	18.8	68.8
Waterfalls	Count	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
	Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

Table G.10.2. Respondents were given the opportunity to report additional sounds heard that were not listed in the survey. The table below presents the “other” sounds heard during attended listening on the trail to Waimoku Falls, the emotions associated with those sounds, acceptability of hearing the sounds on the trail to Waimoku Falls, and the personal interpretation of the sounds.

Other Sounds Reported	Feelings Associated With Sound	Acceptability of Sound At this Location ^a	Personal Interpretation Of Sound ^b
Boars	Funny	0	0
VT Survey Attendant	Ambivalent, but is for research, so OK I guess	-1	-1
Nature sounds		4	4
Visually pleasant walk	Intermittent, noisy intrusions not too bad. Didn't really notice sounds until asked to	1	0
My heart beat		4	4
Rangers		-3	-4
Horns		-4	-4
Leaves falling	Alert, happy	4	4
My wife		4	4
Shoes sucking in mud	Gleeful, laughing	4	4

^a Scale ranged from -4 = “Very Unacceptable” to +4 = “Very Acceptable”

^b Scale ranged from -4 = “Very Annoying” to +4 = “Very Pleasing”

Appendix H

Verbatim Feelings and Emotions Associated with Sounds Heard
During Kīpahulu Area Attended Listening,
Organized by Sound

Appendix H. Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening
(Note: Number in parentheses indicates number of times response was mentioned.)

Aircraft, Jet		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoyance • did not like • distracting • irritation • mildly annoyed • shocked • takes away from relaxing environment 	<ul style="list-style-type: none"> • intense excitable • surprise

Aircraft, Propeller		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • did not like • reminds me of civilization • takes away from relaxing environment 	

Aircraft, Helicopter		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • happy • happy b/c we were on one 2 days ago • nice memory • remembered our last trip to maui and our ride on the helicopter • reminded me of the helo ride I took • should've done the air tour • that'd be cool to be up there • would love to be in the hellicopter 	<ul style="list-style-type: none"> • annoyance • annoyed (2) • annoying • commercialism • did not like • distracting • initial interest then annoyance • intrusive • irritated • irritation (2) • passengers missed out they should hike 	<ul style="list-style-type: none"> • curiosity • envy • mixed feelings about tourism • neutral (2) • none (3) • not a bother • noticeable but not annoying • sometimes you gotta fly • thought of tourist attraction • tour chopter

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Aircraft, Unknown		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoyance • intrusive • sounded out of place • very annoying, loud 	<ul style="list-style-type: none"> • none

Automobile		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoying • broken piece, horn kept blowing • car horn and truck, no good, only at the end • did not like • distracted • end of trail annoyed • frustrating • frustration/disruption • horns annoying • horns-annoyance • irritated • irritation • sad • slightly annoyed • somewhat disruptive, annoyance • startled • the horns must really bother the wild life • unwanted intrusion • very annoying, loud • well what can you do about it? 	<ul style="list-style-type: none"> • ambivalent • expected in parking lot or near it • home • horn • horns/close to finish • just safety honk at end of trail • know road is narrow so understandable • neutral • none (2) • none, used to them • normal • park ranger

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Motorcycle		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • confusion • did not like • frustrating • sad • what? 	<ul style="list-style-type: none"> • ambivalent • normal

Trail Work/Maintenance		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • needed work • very well kept 	<ul style="list-style-type: none"> • somewhat annoying or disruptive 	<ul style="list-style-type: none"> • courerise • necessary evil • puzzlement-where its coming(chainsaw)

Technology, Cell Phone		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • inappropriate disturbing • some distraction 	<ul style="list-style-type: none"> • husbands low battery • it was mine w/ a dead battery warning

Camera		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • amused by the number of pictures taken • good people making memories • good/positive • hope the pictures are good • memories • past trips/vacations • slight excitement • vacation 	<ul style="list-style-type: none"> • some took to long, the people 	<ul style="list-style-type: none"> • ambivalent • n/a • none • ok • ok understandable

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Walking Sounds		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • ☺ • accomplished feeling coming down • alertness • calming (3) • company • feeling of community • good • good didn't bother me • happy • lovely serene • natural • nature • nice • peaceful • pleasant (3) • pleasant, meditative • point of hiking • reassuring • relaxation • relaxing • soothed • soothing (2) • very relaxing 	<ul style="list-style-type: none"> • I wished there weren't as many people here • privacy invaded • work; boredom 	<ul style="list-style-type: none"> • curiosity • ignored after while • indifference • mostly neutral - unavoidable slight annoyance • neutral • none (2) • none, just wondering who is coming • not alone • ok • part of the deal • repetitive

Walking Sticks		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • ☺ • calmness • colleague • feeling of community • good didn't bother me • peaceful • pleasant • point of hiking • vacation 	<ul style="list-style-type: none"> • some were soft loud, sounds were intrusive • work; enslavement 	<ul style="list-style-type: none"> • +/- • bamboo broken down for walking stick • n/a • ok • primitive • same

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Group, Talking		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • family • fun to hear whats up • glad they're having a good time • good to hear people enjoying themselves • happy (2) • interest • ok natural • ok, better without • social • welcoming 	<ul style="list-style-type: none"> • annoying • interrupted peacefulness • ok if not following them • slight annoyance • slight annoying • some distraction 	<ul style="list-style-type: none"> • ambivalent • curiosity • just wondering who was coming • neutral (2) • none (5) • normal • normal conversation among adults meeting on trail • pretty neutral-just tuned it out, didn't hear much of it • reminded of civilization

Adult(s), Talking		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • content/pleasant • friends • good • happy (2) • many people are enjoying this area • people were calm and friendly • pleasant • wonder 	<ul style="list-style-type: none"> • apprehension broken concentration; reassurance of civilization • have to accept • little disturbing • ok if not following them • ok, better without • slight annoyance • slight annoying • slightly annoyed 	<ul style="list-style-type: none"> • ambivalent • curiosity • just wondering who was coming • neutral (2) • no problem • none (5) • ok • neutral

Child/Children, Talking		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • content/pleasant • future • good miss my son • I like kids • interest • ok natural • peaceful children happy 	<ul style="list-style-type: none"> • have to accept • ok if not following them • ok, better without • slight annoyance • some distraction 	<ul style="list-style-type: none"> • ambivalent • kids are going to be kids • neutral • none

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Group, Loud or Yelling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • fun 	<ul style="list-style-type: none"> • annoying (3) • disruptive • kind of annoyed • not pleasant • ok if not following them • some distraction 	

Adult(s), Loud or Yelling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • comradery • elation-we were the ones yelling under the water fall • fun 	<ul style="list-style-type: none"> • annoying • bothered • disrespectful 	<ul style="list-style-type: none"> • at waterfall ok

Child/Children, Loud or Yelling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • play 	<ul style="list-style-type: none"> • annoying • lack of control • minorly annoying 	

Child/Children, Crying		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
	<ul style="list-style-type: none"> • annoyed at parents • boo! 	

Appendix H (continued). Verbatim Feelings and Emotions– Kīpahulu Area Attended Listening

Leaves Rustling		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • ☺ • bamboo crackling • calm • calming (3) • calming peaceful • calmness • comforted • enjoying • good didn't bother me • good soothing • great • happiness • happiness, joy • happy (2) • isolation; peace • joyful • natural (2) • nice breeze • outdoors • peace • peaceful (9) • pleasant (4) • pleasant restful • pleasant, meditative • positive • refreshing • relaxed (2) • relaxing • restful • serene • soothing (9) • soothing, peaceful • soothing/calm/peace • sounds good • tranquility • vacation • very calm • very soothing • wonderfully relaxing 		<ul style="list-style-type: none"> • leaves rustling • ok • sometimes soothed, on guard

Appendix H (continued). Verbatim Feelings and Emotions– Kīpahulu Area Attended Listening

Wind		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • breeze is nice • calm (4) • calming (4) • calmness (2) • comfort • cooling (3) • excitement (2) • exciting • feels good • good • happy • joyful (2) • lightheartedness • loved it • make the clouds go away! • natural • nice • peace • peaceful (3) • peaceful lovely sound • pleasing (2) • refreshed calm • refreshing • relaxed • relaxing (5) • serene • serenity • soothing (5) • sounds very good in the bamboo • through the bamboo • tranquility • transition • very peaceful (2) • very relaxed • very relaxing • wonderful 		

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Rainfall		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • ☺ • calm (2) • calmness • comfort; relief • cooling • enjoyable • felt refreshing • peaceful • pleasant • pleasing happy • refreshing • relaxing • soothing • work, stability 	<ul style="list-style-type: none"> • impending wetness • uh-oh 	

Flowing Water – stream		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • ☺ • calm (2) • calming (3) • calmness (2) • enjoyable • excitable anticipation • excitement • exhilarating • loved it (2) • peace • peaceful (5) • pleasant • pleasing • pleasing happy • refreshing • relaxation • relaxing (4) • soothing (2) • stability • tranquil • very beautiful 	<ul style="list-style-type: none"> • thirsty 	<ul style="list-style-type: none"> • danger/peace • I felt very small at one point

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Flowing Water – stream (continued)		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • very joyful • very natural • very nice • very peaceful 		

Ocean Waves		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • ☺ • awesome • calming • calmness • impressed • pleasurable • relaxation • relaxing (2) • soothing • very beautiful relaxing and peaceful 		

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Bird Song		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • alerting • beautiful (2) • calmed • calming (2) • calmness • cheerful (2) • ease • good • happiness (2) • happy (5) • interested in type of bird • joy • joyous • loved it (2) • naturalistic • nice • peaceful (6) • pleasant • pleasing (2) • pleasing • quaint • relaxing (2) • serenity (3) • soothing (3) • sounds nice • sweet • They are happy? • very beautiful • very joyful • very peaceful • very relaxed • wonder what kind of bird • wonderful 		<ul style="list-style-type: none"> • none • what is it?

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Insect(s)		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • calming • happiness • intriguing • relaxing • very beautiful relaxing and peaceful 	<ul style="list-style-type: none"> • annoyed and itchy • irritating (mosquitoes/flies) • scared 	<ul style="list-style-type: none"> • neutral

Cows		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • amused • surprise • very beautiful relaxing and peaceful 		

Animal, Unknown		
<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
<ul style="list-style-type: none"> • beautiful • intriguing • it was 2 roosters in a tree - cool! • nice • pleasing 	<ul style="list-style-type: none"> • heard something in the bushes it was creepy 	<ul style="list-style-type: none"> • curious • neutral

Appendix H (continued). Verbatim Feelings and Emotions – Kīpahulu Area Attended Listening

Bamboo Sounds (Open-ended “Other” response)			
<i>Sound Description</i>	<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
bamboo clacking, squeaky	happy, awed		
bamboo “clicking”			
bamboo poles hitting each		creepy	
bamboo clicking			
bamboo blowing			
Bamboo			
Bamboo hitting one another	loved it		
Bamboo “clicking”			
bamboo creaking			awe/apprehension
bamboo banging together			
bamboo forest sound			
bamboo canopy rustling	awe		
bamboo rustling		curiosity; on guard	
BAMBOO			
bamboo falling	amazing		
bamboo hitting each other creaking	amazing		

Waterfall Sounds (Open-ended “Other” response)			
<i>Sound Description</i>	<i>Positive</i>	<i>Negative</i>	<i>Ambiguous</i>
waterfalls	excitement		
waterfall			sounds like aircraft
waterfall			
waterfall	relaxing		

Appendix I

State Residency of Respondents – Kīpahulu Area
Attended Listening

Appendix I. Complete list of state of residency for all respondents – Kīpahulu Area Attended Listening.

State	Basic Stats (n=162)	
	Count	Percent
California	41	25.3
Hawaii	17	10.5
Texas	11	6.8
Florida	8	4.9
Ohio	8	4.9
Arizona	7	4.3
New York	7	4.3
Minnesota	7	4.3
Illinois	5	3.1
Utah	5	3.1
Washington	5	3.1
Colorado	4	2.5
Georgia	4	2.5
Indiana	3	1.9
Maryland	3	1.9
Nevada	3	1.9
North Carolina	3	1.9
Oregon	3	1.9
Pennsylvania	3	1.9
Virginia	3	1.9
Massachusetts	2	1.2
New Jersey	2	1.2
Alaska	1	0.6
Delaware	1	0.6
Iowa	1	0.6
Michigan	1	0.6
Nebraska	1	0.6
Rhode Island	1	0.6
South Carolina	1	0.6
Wisconsin	1	0.6

Appendix J

Kīpahulu Area Attended Listening Survey Data Codebook

Appendix J. Kīpahulu Area Attended Listening Survey Data Codebook
 Pertaining to files KIP_AL_SurveyData.xls and KIP_AL_SurveyData.sav

Variable	Question #	Description	Values
Date	Front Cover	Date when survey was completed	dd/mm/yy
Time	Front Cover	Time when survey was completed	Military Time – 00:00:00
ID	Front Cover	Unique ID for each completed questionnaire	ID number
Aircraft	Front Cover	Indicates whether aircraft was present while respondent was completing survey	0 = Aircraft present 1 = Aircraft not present
AircraftNotes	Front Cover	Comments about the presence of aircraft	Text
S1	Aircraft, Jet	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S1Text	Aircraft, Jet: Feeling	Reported feelings associated with sound	Text
S1Code	Aircraft, Jet: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S1A	Aircraft, Jet: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S1P	Aircraft, Jet: Personal Interpretation.	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S2	Aircraft, Propeller	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S2Text	Aircraft, Propeller: Feeling	Reported feelings associated with sound	Text
S2Code	Aircraft, Propeller: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S2A	Aircraft, Propeller: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S2P	Aircraft, Propeller: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S3	Aircraft, Helicopter	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S3Text	Aircraft, Helicopter: Feeling	Reported feelings associated with sound	Text
S3Code	Aircraft, Helicopter: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S3A	Aircraft, Helicopter: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S3P	Aircraft, Helicopter: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S4	Aircraft, Unknown	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S4Text	Aircraft, Unknown: Feeling	Reported feelings associated with sound	Text
S4Code	Aircraft, Unknown: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S4A	Aircraft, Unknown:	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S4P	Aircraft, Unknown: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S5	Automobile	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S5Text	Automobile: Feeling	Reported feelings associated with sound	Text

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S5Code	Automobile: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S5A	Automobile: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S5P	Automobile: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S6	Motorcycle	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S6Text	Motorcycle: Feeling	Reported feelings associated with sound	Text
S6Code	Motorcycle: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S6A	Motorcycle: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S6P	Motorcycle: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S7	Trail Work/Maintenance	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S7Text	Trail Work/Maintenance: Feeling	Reported feelings associated with sound	Text
S7Code	Trail Work/Maintenance: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S7A	Trail Work/Maintenance: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S7P	Trail Work/Maintenance: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S8	Walking Sounds	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S8Text	Walking Sounds: Feeling	Reported feelings associated with sound	Text
S8Code	Walking Sounds: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S8A	Walking Sounds: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S8P	Walking Sounds: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S9	Walking Sticks	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S9Text	Walking Sticks: Feeling	Reported feelings associated with sound	Text
S9Code	Walking Sticks: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S9A	Walking Sticks: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S9P	Walking Sticks: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S10	Leaves Rustling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S10Text	Leaves Rustling: Feeling	Reported feelings associated with sound	Text
S10Code	Leaves Rustling: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S10A	Leaves Rustling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S10P	Leaves Rustling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S11	Group, Talking	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S11Text	Group, Talking: Feeling	Reported feelings associated with sound	Text
S11Code	Group, Talking: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S11A	Group, Talking: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S11P	Group, Talking: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S12	Group, Loud or Yelling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S12Text	Group, Loud or Yelling: Feeling	Reported feelings associated with sound	Text
S12Code	Group, Loud or Yelling: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S12A	Group, Loud or Yelling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S12P	Group, Loud or Yelling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S13	Adult(s), Talking	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S13Text	Adult(s), Talking: Feeling	Reported feelings associated with sound	Text
S13Code	Adult(s), Talking: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S13A	Adult(s), Talking: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S13P	Adult(s), Talking: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S14	Adult(s), Loud or Yelling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S14Text	Adult(s), Loud or Yelling: Feeling	Reported feelings associated with sound	Text
S14Code	Adult(s), Loud or Yelling: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S14A	Adult(s), Loud or Yelling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S14P	Adult(s), Loud or Yelling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S15	Child/Children, Talking	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S15Text	Child/Children, Talking: Feeling	Reported feelings associated with sound	Text
S15Code	Child/Children, Talking: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S15A	Child/Children, Talking: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S15P	Child/Children, Talking: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S16	Child/Children, Loud or Yelling	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S16Text	Child/Children, Loud or Yelling: Feeling	Reported feelings associated with sound	Text
S16Code	Child/Children, Loud or Yelling: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S16A	Child/Children, Loud or Yelling: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S16P	Child/Children, Loud or Yelling: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S17	Child/Children, Crying	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S17Text	Child/Children, Crying: Feeling	Reported feelings associated with sound	Text
S17Code	Child/Children, Crying: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S17A	Child/Children, Crying: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S17P	Child/Children, Crying: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S18	Technology, Cell Phone	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S18Text	Technology, Cell Phone: Feeling	Reported feelings associated with sound	Text

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S18Code	Technology, Cell Phone: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S18A	Technology, Cell Phone: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S18P	Technology, Cell Phone: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S19	Technology, Radio Headset or IPOD	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S19Text	Technology, Radio Headset or IPOD: Feeling	Reported feelings associated with sound	Text
S19Code	Technology, Radio Headset or IPOD: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S19A	Technology, Radio Headset or IPOD: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S19P	Technology, Radio Headset or IPOD: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S20	Technology Sounds, Unknown	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S20Text	Technology Sounds, Unknown: Feeling	Reported feelings associated with sound	Text
S20Code	Technology Sounds, Unknown: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S20A	Technology Sounds, Unknown: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S20P	Technology Sounds, Unknown: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S21	Camera	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S21Text	Camera: Feeling	Reported feelings associated with sound	Text
S21Code	Camera: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S21A	Camera: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S21P	Camera: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S22	Wind	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S22Text	Wind: Feeling	Reported feelings associated with sound	Text
S22Code	Wind: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S22A	Wind: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S22P	Wind: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S23	Thunder	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S23Text	Thunder: Feeling	Reported feelings associated with sound	Text

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S23Code	Thunder: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S23A	Thunder: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S23P	Thunder: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S24	Rainfall	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S24Text	Rainfall: Feeling	Reported feelings associated with sound	Text
S24Code	Rainfall: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S24A	Rainfall: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S24P	Rainfall: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S25	Flowing Water (Stream)	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S25Text	Flowing Water (Stream): Feeling	Reported feelings associated with sound	Text
S25Code	Flowing Water (Stream): Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S25A	Flowing Water (Stream): Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S25P	Flowing Water (Stream): Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S26	Bird Song	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S26Text	Bird Song: Feeling	Reported feelings associated with sound	Text
S26Code	Bird Song: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S26A	Bird Song: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S26P	Bird Song: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S27	Insect(s)	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S27Text	Insect(s): Feeling	Reported feelings associated with sound	Text
S27Code	Insect: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S27A	Insect(s) : Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S27P	Insect(s): Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S28	Cows	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S28Text	Cows: Feeling	Reported feelings associated with sound	Text
S28Code	Cows: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S28A	Cows: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S28P	Cows: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S29	Ocean Waves	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S29Text	Ocean Waves: Feeling	Reported feelings associated with sound	Text
S29Code	Ocean: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S29A	Ocean Waves: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S29P	Ocean Waves: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S30	Animal, Unknown	Indicates whether or not the sound was heard	0 = Did not hear sound 1 = Heard sound
S30Text	Animal, Unknown: Feeling	Reported feelings associated with sound	Text
S30Code	Animal, Unknown: Code	Categorizes feelings- related responses	0 = Ambiguous 1 = Positive 2 = Negative
S30A	Animal, Unknown: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S30P	Animal, Unknown: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S31	S31	Indicates whether reported “other” sound	0 = Did not report other sound 1 = Reported other sound

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S31Other	S31: Other	Describes the other sound heard	Text
S31Text	S31Other: Feeling	Reported feelings associated with sound	Text
S31Code	S31: Code	Categorizes feelings-related responses	0 = ambiguous 1 = positive 2 = negative
S31A	S31Other: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S31P	S31Other: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S32	S32	Indicates whether reported “other” sound	0 = Did not report other sound 1 = Reported other sound
S32Other	S32: Other	Describes the other sound heard	Text
S32Text	S32Other: Text	Reported feelings associated with sound	Text
S32Code	S32: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S32A	S32Other: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S32P	S32Other: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
S33	S33	Indicates whether reported “other” sound	0 = Did not report other sound 1 = Reported other sound
S33Other	S33: Other	Describes the other sound heard	Text
S33Text	S33Other: Feeling	Reported feelings associated with sound	Text

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
S33Code	S33: Code	Categorizes feelings-related responses	0 = Ambiguous 1 = Positive 2 = Negative
S33A	S33Other: Acceptability	Acceptability rating of the sound	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
S33P	S33Other: Personal Interpretation	Personal interpretation rating of the sound	-4 = Very Annoying 0 = Neutral 4 = Very Pleasing
Q1	Question 1	Designates whether or not group has visited this area of the park previously	0 = No 1 = Yes
Q2	Question 2	Number of previous visits to this area of the Park	Number of visits
Q3	Question 3	Number of people in group	Number of people
Q4	Question 4	Designates whether or not part of a commercial tour	0 = No 1 = Yes
Q5	Question 5	Gender of respondent	1 = Male 2 = Female
Q6	Question 6	Year born	YYYY
Age	Question 6	Respondent's birth year subtracted from 2007	Age in years
Q7	Question 7	Country of residence	1 = US 0 = Other
Q7Zip	Q7: Zip	Zip Code of residence	5-digit Zip Code
Q7Country	Q7: Country	Country of residence	1 = Germany 2 = Canada 3 = Switzerland 4 = Holland 5 = Netherlands

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
Q8	Question 8	Level of education	1 = Some high school 2 = High school graduate or GED 3 = Some college, business or trade school 4 = College, business or trade school graduate 5 = Some graduate school 6 = Master's, doctoral or professional degree
Q9	Question 9	Indicates if the respondent is Hispanic of Latino	1 = Yes 0 = No
Q10a	Question 10a	American Indian or Alaskan Native	1 = Checked 0 = Not Checked
Q10b	Question 10b	Asian	1 = Checked 0 = Not Checked
Q10c	Question 10c	Black or African American	1 = Checked 0 = Not Checked
Q10d	Question 10d	Native Hawaiian	1 = Checked 0 = Not Checked
Q10e	Question 10e	Pacific Islander (Not Hawaiian)	1 = Checked 0 = Not Checked
Q10f	Question 10f	White	1 = Checked 0 = Not Checked
MultiRaces	Question 10	Indicates if the respondent reported more than one race	0 = Reported no race 1 = Reported 1 race 2 = Reported 2 races 3 = Reported 3 races
Q11	Question 11	Indicates the hearing capacity of the respondent	1 = My hearing is normal 2 = I am somewhat hearing impaired 3 = I am very hearing impaired 4 = I don't know about my hearing capacity

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook			
Variable	Question #	Description	Values
Comments	Comments Throughout Survey	Comments about the survey either written by the survey administrator or survey respondent	Text
S_Aircraft	All Aircraft Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S1, S2, S3, and S4)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Vehicle	All Vehicles Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S5 and S6)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Walking	All Walking Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S8 and S9)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Talking	All Talking Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S11, S13, and S15)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_LoudVoices	All Loud Voices	Indicates whether or not the respondent heard any of the sounds in the category (S12, S14, S16, and S17)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Technology	All Technology Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S18, S19, S20, and S21)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category

Appendix J (continued). Kīpahulu Area Attended Listening Survey Data Codebook

Variable	Question #	Description	Values
S_Nature	All Nature Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S10, S22, S23, S24, S25, and S29)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Animal	All Animal Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S26, S27, S28, and S30)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category
S_Other	All Other Sounds	Indicates whether or not the respondent heard any of the sounds in the category (S31, S32, and S33)	0 = Did not hear any sounds in the category 1 = Heard at least one sound in the category

Appendix K

Kīpahulu Area Audio Recording Survey Questionnaire

Haleakalā Soundscape Audio Recording Evaluation

2007

ID: _____

Location: _____

Date: _____

Time: _____ **AM / PM**

Version: Air Ground

A. Trip Description

1. **How many people are in your personal group (family/friends) today?**

Group size: _____

2. **Is your personal group part of a commercial tour in the park today? (Check one.)**

Yes

No

3. **Have you ever visited Haleakalā National Park before? (Check one.)**

Yes (CONTINUE TO QUESTION 4)

No (SKIP TO QUESTION 5)

4. **Approximately how many times have you visited Haleakalā National Park before today?**

Approximate number of visits: _____ **OR** Don't know/Not sure

5. Please rate the importance of each of the following reasons for hiking in Haleakalā National Park today. (Circle one number for each item.)

	Not at all important	Somewhat important	Very important
a. Seeing the Bamboo Forest	1	2	3
b. Seeing Waimoku	1	2	3
c. Enjoying peace and quiet	1	2	3
d. Being with family/friends	1	2	3
e. Getting away from crowds in the `Ohe`o Pools Area	1	2	3
f. Getting exercise	1	2	3
g. Experiencing nature “up-close”, away from park facilities	1	2	3
h. Appreciating the natural scenery	1	2	3
i. Hearing the sounds of nature	1	2	3
j. Learning about Hawaiian culture and history	1	2	3

FOR THE NEXT SET OF QUESTIONS, PLEASE ASK THE SURVEY ATTENDANT FOR ASSISTANCE.

B. The Park Soundscape

6. We would like you to listen to several short recordings of sounds from this part of Haleakalā National Park. Please rate each recording by indicating how acceptable you would find the sounds heard in the audio clip during a hike in this area of the park. (Circle one number for each recording.)

Very Unacceptable	Recording 1								Very Acceptable
-4	-3	-2	-1	0	+1	+2	+3	+4	

A. Briefly describe any sounds in Recording 1 you found pleasing.

OR I did not find any of the sounds in Recording 1 to be pleasing.

B. Briefly describe any sounds in Recording 1 you found annoying.

OR I did not find any of the sounds in Recording 1 to be annoying.

PRESS PLAY AND RESUME YOUR LISTENING SESSION.

Very Unacceptable	Recording 2								Very Acceptable
-4	-3	-2	-1	0	+1	+2	+3	+4	

A. Briefly describe any sounds in Recording 2 you found pleasing.

OR I did not find any of the sounds in Recording 2 to be pleasing.

B. Briefly describe any sounds in Recording 2 you found annoying.

OR I did not find any of the sounds in Recording 2 to be annoying.

ADVANCE YOUR PLAYER AND RESUME YOUR LISTENING SESSION.

Very Unacceptable	Recording 3								Very Acceptable
-4	-3	-2	-1	0	+1	+2	+3	+4	

A. Briefly describe any sounds in Recording 3 you found pleasing.

OR I did not find any of the sounds in Recording 3 to be pleasing.

B. Briefly describe any sounds in Recording 3 you found annoying.

OR I did not find any of the sounds in Recording 3 to be annoying.

ADVANCE YOUR PLAYER AND RESUME YOUR LISTENING SESSION.

Very Unacceptable	Recording 4								Very Acceptable
-4	-3	-2	-1	0	+1	+2	+3	+4	

A. Briefly describe any sounds in Recording 4 you found pleasing.

OR I did not find any of the sounds in Recording 4 to be pleasing.

B. Briefly describe any sounds in Recording 4 you found annoying.

OR I did not find any of the sounds in Recording 4 to be annoying.

ADVANCE YOUR PLAYER AND RESUME YOUR LISTENING SESSION.

7. Which of the five recordings you just heard sounds most like what you heard while hiking in the park today? (Check one.)

- Recording 1
- Recording 2
- Recording 3
- Recording 4
- Recording 5

**For the next question,
please ask the survey attendant for assistance.**

8. We would like to know how often you think it would be acceptable to hear a helicopter air tour while hiking in the park. To help judge this, please listen to a short recording of a helicopter air tour and then rate the acceptability of each of the following scenarios based on how frequently you would hear the sounds in the recording. (Circle one number for each scenario.)

Hear the helicopter sounds once...	Very Unacceptable					Very Acceptable				
Every 5 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4	
Every 15 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4	
Every 30 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4	
Every 60 minutes	-4	-3	-2	-1	0	+1	+2	+3	+4	
Never hear the sounds	-4	-3	-2	-1	0	+1	+2	+3	+4	

9. **Did you hear any aircraft while you were hiking in this area of the park today? (Check one.)**
- Yes (CONTINUE TO QUESTION 10)
 - No (SKIP TO QUESTION 11)
10. **Please indicate how pleasing or annoying you found the sounds of aircraft you heard while you were on the trail today. (Check one.)**
- Very pleasing
 - Somewhat pleasing
 - Neutral
 - Somewhat annoying
 - Very annoying
11. **Have you ever taken a scenic air tour over Haleakalā National Park or any other national park? (Check all that apply.)**
- Yes, I have taken a scenic air tour over Haleakalā National Park
 - Yes, I have taken a scenic air tour over another national park
 - No, I have never taken a scenic air tour over a national park
12. **If given the opportunity to take a scenic air tour over Haleakalā National Park, would you do so even if visitors in the park could hear the aircraft while hiking? (Check one.)**
- Yes
 - No
 - Don't know/not sure

13. Please indicate the extent to which you would support or oppose each of the following potential management actions at Haleakalā National Park. (Check one box for each item.)

	Strongly Support	Support	Neither Support nor Oppose	Oppose	Strongly Oppose	Don't Know/ Not Sure
Reduce the number of scenic air tours allowed to fly over the park.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DK
Maintain the number of scenic air tours allowed to fly over the park at the current level.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DK
Increase the number of scenic air tours allowed to fly over the park.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DK
Require scenic air tours to be flown over the park only during specially designated dates and times.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DK
Require scenic air tours to use designated flight paths over limited areas of the park.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DK
Prohibit scenic air tours from flying over the park.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DK

C. Background Information

- 14. What is your gender? (Check one.)**
- Male
 - Female
- 15. In what year were you born?**
Year born: _____
- 16. Do you live in the United States? (Check one.)**
- Yes (What is your zip code? _____)
 - No (What country do you live in? _____)
- 17. What is the highest level of formal education you have completed? (Check one.)**
- Some high school
 - High school graduate or GED
 - Some college, business or trade school
 - College, business or trade school graduate
 - Some graduate school
 - Master's, doctoral or professional degree
- 18. Are you Hispanic or Latino? (Check one.)**
- Yes
 - No
- 19. What is your race? (Check all that apply.)**
- American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian
 - Pacific Islander other than Native Hawaiian
 - White

Thank you for your help with this survey!
Please return the completed questionnaire to the survey administrator.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement: 16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. The permanent data will be anonymous. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. BURDEN ESTIMATE statement: Public reporting burden for this form is estimated to average 15 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to

Superintendent
Haleakalā National Park
P.O. Box 369
Makawao, HI 96768
HALE_Superintendent@nps.gov

Appendix L

Verbatim Responses: Sounds Respondents Identified as
Pleasing in Kīpahulu Area Audio Recordings

Appendix L.1.

Pleasing Sounds in Recording 1

Appendix L.1. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 1 you found pleasing.

Birds

- bird calls (3)
- bird chirps (2)
- bird noises (2)
- bird songs (7)
- bird sounds (6)
- birds (184)
- birds chattering
- birds chirping (13)
- birds singing (4)
- birds very nice
- chirping birds
- enjoyed the singing birds
- listening some birds
- singing of birds

Water, stream, waterfall, rain

- 3-sound of rain
- a little water
- all water
- drops of water on leaves
- falling water
- falls
- far away water
- I like the sound of the running water
- light rain drops
- light rain fall
- moving water
- plus the rushing water
- rain (3)
- raindrops
- running water (8)
- soft water
- soft water drops
- sound of running water
- sounds like I am walking near a stream. I can hear the water.
- streams (5)
- the constant water sounds
- the sound of rushing water was very pleasing

Appendix L.1 (continued). Briefly describe any sounds in Recording 1 you found pleasing.

Water, stream, waterfall, rain (continued)

- the sounds of the falls
- water (51)
- water falling
- water flowing (6)
- water hitting
- water pour
- water running (8)
- water rushing (2)
- water sounds (2)
- water sounds in the background
- water -stream
- waterfall(s) (9)
- waterfall were beautiful
- water-rain

Bamboo – including wind in bamboo

- bamboo (30)
- bamboo blowing in the wind (3)
- bamboo clacking (5)
- bamboo clatter
- bamboo clicking against itself (3)
- bamboo forest (4)
- bamboo hitting bamboo
- bamboo in the wind (3)
- bamboo jungle-love it
- bamboo knocking
- bamboo rustling (3)
- bamboo shaking
- bamboo shoots
- bamboo shoots shaking
- bamboo thumping
- bamboo trees
- bamboo trees clattering
- bamboo trees creaking
- bamboo trees swinging in the wind
- bamboo's clicking
- cracking of bamboos
- I have never been in a bamboo forest-astonishingly pleasing sound-wise
- knocking of bamboo (2)
- rattle of the bamboo
- rustle of bamboo
- soft noise of bamboo
- sounds of bamboo in the wind

Appendix L.1 (continued). Briefly describe any sounds in Recording 1 you found pleasing.

Bamboo – including wind in bamboo (continued)

- the bamboo
- the bamboo crackling in the wind
- the bamboo hitting each other in the wind
- the bamboo wacking against other
- the claking of bamboo
- the rattling of the bamboo
- the sound of lammering bamboo
- wind hitting the bamboo
- wind in the bamboo

Wind, breeze

- breeze (4)
- rush sound of the wind
- sounds of wind
- wind (28)

Trees, forest, branches, etc.

- branches breaking
- branches hitting each other
- cracking of branches
- creaking trees
- crunching leaves
- leaves blowing
- leaves rustling (2)
- rustling trees
- trees (5)
- trees blowing
- trees crackling in wind
- trees nestling
- wind in trees (2)
- wind through trees (2)
- woods

Quiet, serene, peaceful, calming

- calm
- calmness
- clam

Appendix L.1 (continued). Briefly describe any sounds in Recording 1 you found pleasing.

Quiet, serene, peaceful, calming (continued)

- it's quiet
- peace, quiet
- peaceful
- pleasing
- quiet (4)
- soothing
- very nice
- very peaceful
- very relaxing

Nature sounds – General

- natural sounds
- naturistic
- nice sounds commonly found in nature
- no humans
- quiet nature walk sounds
- sound of nature
- sounds like being in nature
- sounds of nature

Rustling, crackling etc. w/o source

- crackling noise
- creaking
- distant rustle
- rustling (2)
- some kind of crunching(?)

Non-bird animal sounds

- bugs (3)
- frog?
- insects

Human sounds

- camera click
- walking (2)

Appendix L.1 (continued). Briefly describe any sounds in Recording 1 you found pleasing.

Rocks, pebbles, sand

- rocks clanking sand? against rocks

All, everything

- all (2)
- all of it (2)
- all of them
- all pleasing
- everything
- I like it
- nice
- the entire recording

Other

- general ambient sounds
- wrote something illegible

Appendix L.2.

Pleasing Sounds in Recording 2

Appendix L.2. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 2 you found pleasing.

Birds

- again birds
- bird calls (3)
- bird chirps
- bird noises
- bird songs (4)
- bird sounds (4)
- bird whistles
- birds (179)
- birds again (2)
- birds chirping (4)
- birds singing (4)
- birds singing chirping
- birds, although I think they were in first recording
- cool sound with lots of birds
- couldn't really make them out- birds
- mina birds
- more birds (2)
- mostly birds
- nice singing birds too but not so different like the 1st one
- birds
- same-birds
- same-birds chirping
- sound of the birds was nice
- sounded same as 1st (birds)
- sounds like- birds in the bamboo forest
- sounds of birds
- the bird sound is pleasing
- the birds chirping, however see B
- the birds singing
- unable to hear difference from #1 (birds)

Appendix L.2 (continued). Briefly describe any sounds in Recording 2 you found pleasing.

Water, stream, waterfall, rain

- a bit of rain?
- ambient water sounds
- breif ocean, I think
- drops of water on leaves
- I can hear the rain landing on leaves
- I like the sound of the running water
- light rain
- light rain fall
- louder water
- ocean (2)
- plus the rushing water
- rain (6)
- raindrops
- rainfall
- rainfall or swaying bamboo
- running water (6)
- rushing water (3)
- sound of water
- stream (8)
- the falls
- water (52)
- water (river?) flowing
- water again
- water flow (2)
- water louder than the 1st
- water over rocks
- water pour
- water running (4)
- waterdrops/flow
- waterfalls (14)
- waterfall in distance

Appendix L.2 (continued). Briefly describe any sounds in Recording 2 you found pleasing.

Bamboo – including wind in bamboo

- bamboo (40)
- bamboo blowing in the wind, snapping twigs
- bamboo blowing in wind (2)
- bamboo clacking (2)
- bamboo clatter
- bamboo clicking (2)
- bamboo crackling
- bamboo falling
- bamboo forest
- bamboo in the wind (3)
- bamboo knocking together in the wind (2)
- bamboo shaking
- bamboo sound
- bamboo stick w/ wind
- bamboo swaying
- bamboo thumping
- bamboo trees
- bamboo trees blowing
- bamboo trees creaking
- bamboo trees knocking against each other (3)
- bamboo trees touching
- bamboo-I like it!
- chopping of bamboo?
- cracking of bamboos
- creaking bamboo
- is that the bamboo?
- liked the sound of the bamboo too
- quaking bamboo
- rattle of the bamboo
- sounds of th fores bamboo maybe
- the swaying bamboo sound was pleasing
- very similar to clip on with perhaps less bamboo
- weaving bamboo
- wind in bamboo (2)

Wind, breeze

- breeze (2)
- the wind was pleasing
- wind (27)
- wind, louder than 1st

Appendix L.2 (continued). Briefly describe any sounds in Recording 2 you found pleasing.

Trees, forest, branches, etc.

- branches hitting each other
- branches rustling
- branches snapping
- cracking of branches
- cracking of trees
- forest
- grass
- it sounded very much like I was in a rain forest
- rustling leaves
- rustling/crunching of branches
- sounds like I am in a rain forest,
- swaying trees
- tree branch
- trees (4)
- trees in breeze
- trees nestling
- trees throwing?
- trees...breaking
- wind in the bushes
- wind in trees (2)
- wind rustling
- wind rustling through the trees
- woods

Quiet, serene, peaceful, calming

- calm (2)
- relaxing
- silent
- similar quiet sound as recording #1
- very peaceful

Nature sounds – General

- again-natural sounds
- didn't sound man-made
- natural sounds
- nature (3)
- sounds of nature

Appendix L.2 (continued). Briefly describe any sounds in Recording 2 you found pleasing.

Rustling, crackling etc. w/o source

- (neutral) crunching
- crackling (3)
- hissing
- rustling
- twisting breaking sounds

Non-bird animal sounds

- bugs
- crickets
- frogs
- insects (3)

Human sounds

- footsteps
- even the few footsteps or whatever it was
- camera click

Rocks, pebbles, sand

- pebbles
- rocks

All, everything

- all (4)
- all of it
- everything except horn
- everything seemed fine
- fine, nothing annoying
- generally ok
- it good
- most of it was pleasing even the few footsteps or whatever it was
- mostly nice

Other

- echoes
- general ambient sounds
- wrote something illegible

Appendix L.3.

Pleasing Sounds in Recording 3

Appendix L.3. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 3 you found pleasing.

Birds

- bird calls (3)
- bird chirps
- bird noises
- bird songs (5)
- bird sounds (3)
- birds (180)
- birds again
- birds chirping (6)
- birds singing
- birds singing chirping
- birds sounds
- distant sounds of birds were relaxing
- enjoy the birds
- lower level bird sounds
- more birds
- quieter birds
- similar as #2 (nice singing birds too but not so different like the 1st one)
- some birds
- sounds similar to other(birds/crickets)
- still liked the birds singing
- the birds still

Water, stream, waterfall, rain

- dropping rain, intermittently
- drops of water on leaves
- I can hear the rain
- I like the sound of the running water
- light rain fall
- rain (8)
- rain falling?
- running water (7)
- rushing water
- same as before, waterfall
- sound like running water
- sound of water
- sounds like rippling water
- streams (2)
- the falls

Appendix L.3 (continued). Briefly describe any sounds in Recording 3 you found pleasing.

Water, stream, waterfall, rain (continued)

- water (52)
- water flow
- water flowing (4)
- water over rocks
- water pour
- water running (3)
- waterfalls (10)

Bamboo – including wind in bamboo

- bamboo (39)
- bamboo blowing
- bamboo blowing in the wind
- bamboo clacking
- bamboo clatter
- bamboo clicking
- bamboo crackling
- bamboo forest, rustling
- bamboo in wind
- bamboo knocking (3)
- bamboo knocking together in the wind
- bamboo rustling
- bamboo thumping
- bamboo trees (2)
- bamboo trees clattering
- bamboo trees creaking
- bamboo/wind
- chopping of bamboo
- cracking of bamboos
- I like the bamboo although-would I like it if I didn't know what the sound was?
- possible bamboo in wind
- wind in bamboo

Wind, breeze

- air
- breeze (2)
- some wind
- wind (32)

Appendix L.3 (continued). Briefly describe any sounds in Recording 3 you found pleasing.

Trees, forest, branches, etc.

- ambient forest sound
- branches hitting each other
- branches rustling
- cracking of branches
- cracking of trees
- forest
- forest sounds
- leaves rustling
- plants rustling
- rustling of trees
- rustling/crunching of branches
- snapping twigs
- swaying trees
- trees (6)
- trees crackling
- trees in wind
- trees were nice
- treetops blowing
- wind in trees

Quiet, serene, peaceful, calming

- calm
- not much. I think it was very distant. Quiet.
- relaxing
- soothing but still sounds like there are others around

Nature sounds – General

- all the sounds of nature
- natural noises
- nature (3)
- nature sounds
- nature sounds are nice
- sounds more realistic
- sounds of nature (2)

Rustling, crackling etc. w/o source

- crackling
- crunching noise (2)
- hiss

Appendix L.3 (continued). *Briefly describe any sounds in Recording 3 you found pleasing.*

Non-bird animal sounds

- bugs (2)
- crickets
- insects (3)

Human sounds

- camera click
- footsteps (2)
- walking on ground

Rocks, pebbles, sand

- rocks rolling

Aircraft noises – as a positive

- a plane (2)
- airplane (2)
- heli
- jet

All, everything

- all
- all except one
- all sounds were pleasing
- everything

Other

- it's the same as 6&7
- same as previous two (general ambient sounds)
- similar to first two
- sounds very similar to first clip

Appendix L.4.

Pleasing Sounds in Recording 4

Appendix L.4. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 4 you found pleasing.

Birds

- barely heard birds (2)
- bird calls (2)
- bird songs (3)
- bird song-mostly drowned out by plane
- bird sounds (2)
- birds (137)
- birds (barely)
- birds (slightly softer)
- birds (weaker)
- birds always nice
- birds are fine, starting to get drowned out
- birds chirping (4)
- birds twittering
- chirping birds
- faint bird sounds
- same birds (2)
- singing birds
- some bird sounds
- some birds (2)

Water, stream, waterfall, rain

- a rushing stream
- falls
- less water
- light rain
- running water (3)
- still can hear the rain
- water (37)
- water (weaker)
- water flowing
- water running (2)
- water rushing
- water was pleasing
- waterfalls (2)

Appendix L.4 (continued). Briefly describe any sounds in Recording 4 you found pleasing.

Bamboo – including wind in bamboo

- bamboo (15)
- bamboo clatter
- bamboo clicking
- bamboo forest
- bamboos (weaker)
- similar to other comments (clammering bamboo)

Wind, breeze

- air
- breeze
- some wind
- wind (16)
- wind-harder to hear

Trees, forest, branches, etc.

- branches
- branches hitting each other
- cracking trees
- forest
- forest sounds
- leaves
- plants
- rustling
- rustling leaves
- rustling trees (2)
- trees (6)
- wind in the trees

Nature sounds – General

- again the nature
- can hear nature
- natural sounds (2)
- nature (5)
- nature sounds
- sounds of nature there
- the nature-what you can hear

Appendix L.4 (continued). *Briefly describe any sounds in Recording 4 you found pleasing.*

Non-bird animal sounds

- bugs
- insects

Human sounds

- camera click

Aircraft noises – as a positive

- airplane (4)
- helicopter (3)
- helicopter, plane
- plane noise
- train

All, everything

- all
- everything except plane

Other

- general ambient sounds
- same
- sounds same

Appendix L.5.

Pleasing Sounds in Recording 5

Appendix L.5. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 5 you found pleasing.

Birds

- a few birds
- birds (31)
- birds chirping (2)
- birdsong
- cannot hear birds well
- chirping birds were nice, but plane was bad
- distant birds
- few chirps from birds
- the bird every once in a while

Water, stream, waterfall, rain

- big waterfalls
- don't notice water as much but faint
- light rain fall
- liked the water
- ocean-nice
- rain
- running water (3)
- sounds like the falls
- streams
- the background ambient water
- the rain
- water (16)
- water flowing
- water maybe

Bamboo – including wind in bamboo

- bamboo (2)
- bamboo clatter

Wind, breeze

- air
- wind (4)

Appendix L.5 (continued). Briefly describe any sounds in Recording 5 you found pleasing.

Trees, forest, branches, etc.

- leaves rustling
- limbs breaking
- trees
- trees
- trees

Quiet, serene, peaceful, calming

- relaxing to me
- very refreshing sound

Nature sounds – General

- I could hear some nature, maybe
- natural sounds (4)

Rustling, crackling etc. w/o source

- noises

Non-bird animal sounds

- bugs (2)
- crickets barely audible
- insects

Aircraft noises – as a positive

- a louder noise of an airplane
- air traffic
- plane

Other

- general ambient sounds

Appendix M

Verbatim Responses: Sounds Respondents Identified as
Annoying in Kīpahulu Area Audio Recordings

Appendix M.1.

Annoying Sounds in Recording 1

Appendix M.1. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 1 you found annoying.

Cars, traffic, parking lot, etc.

- honking
- sounded like a wagon occasionally

Background noise

- clicking noise
- clicky
- crackling
- crackling/breaking, not sure what is was
- crunching sound (2)

Nature sounds

- nuts falling
- birds
- too many chirping birds
- too many birds
- slightly to many birds
- sticks hitting together

All, everything

- all

Other

- too much silent more nature sound

Appendix M.2.

Annoying Sounds in Recording 2

Appendix M.2. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 2 you found annoying.

Aircraft, helicopters, etc.

- aircraft
- airplane
- airplane sound-although I accept this noise as a necessary(?) evil of a tourist area
- helicopter (4)
- helicopter (although brief)
- plane (2)
- prop plane in background
- sound of distant plane
- the background of an overhead plane in distance minorly annoying

Cars, traffic, parking lot, etc.

- cars (2)
- car driving over gravel
- car parking on gravel
- honking
- horn from cars
- horn sound
- maybe I heard a distant horn
- road sound
- the sounds of autos in the back
- traffic? (2)
- train?

Motor sounds – source not specified

- maybe a little bit of mowing of some sort
- slight engine noise
- slight motor sound in background?

Background noise

- background
- cracking
- crackling noise (2)
- crinkling noise in background

Appendix M.2 (continued). Briefly describe any sounds in Recording 2 you found annoying.

Background noise (continued)

- fuzz
- lots of crackling
- same breaking
- static
- there was some static
- too much hissing
- white noise

People

- eating
- person's voice
- slight human footfall
- sounded like someone stomping in the branches
- There sounds like there is somebody walking or some background noise in the first 20% of the clip.

Nature sounds

- a lot of birds
- bamboo is overriding noise of birds
- birds
- birds in the background
- birds louder than any other sound
- crunching leaves/branches
- knocking or breaking of branches
- little creek sounds, like trees swaying
- maybe birds, but not bad
- not annoying-but didn't care for the sound of something in the bushes
- possibly breaking of trees or people hiking
- rattling bamboo
- repetitive bird song
- some breaking of branches
- some weird ticking-maybe it was just creaking trees-hard to identify
- too many birds chirping
- waterfall
- wind

Other

- crushing cans type noise-not very annoying
- missing water sound
- not sure what it was

Appendix M.3.

Annoying Sounds in Recording 3

Appendix M.3. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 3 you found annoying.

Aircraft, helicopters, etc.

- a helicopter?
- aeroplane
- air traffic (2)
- aircraft (helicopter?)
- aircraft
- aircraft
- aircraft
- aircraft noise
- aircraft/rotary wing
- airplane (s) (31)
- airplane (bombing run)
- airplane in background (2)
- airplane noise (2)
- airplane somewhat
- airplane sound
- airplane was slightly annoying
- airplane, helicopter (5)
- airplanes overhead
- distant airplane (helicopter)
- helicopter (s) (34)
- helicopter flying over
- helicopter is closer
- helicopter noise was very annoying disturbing the peace
- helicopter overhead
- helicopter sounds
- helicopter whir
- helicopter, airplane (5)
- helicopter, airplane, (focused on noise pollutions)
- helicopter, jet
- helicopter, jet plane
- helicopter, plane (3)
- I didn't like hearing the planes overhead
- in this recording I could definitely hear the sound of the airplane overhead ruining my "rainforest" experience.
- it sounds like their a plane
- jet
- jets, helicopter
- listening a plane in a forest not good at all
- loud sound of plane/ helicopter

Appendix M.3 (continued). Briefly describe any sounds in Recording 3 you found annoying.

Aircraft, helicopters, etc. (continued)

- much louder helicopter sounds
- over head plane
- plane (19)
- plane in background
- plane overhead, helicopter
- plane, helicopter (6)
- planes, air traffic
- planes, jets
- prop plane
- some aircraft noise
- some plane or aircraft
- the background airplane noise
- the helicopter was very irritating
- the jet passing-reminds me of NY city were I'm from, fine until the jet passed
- the plane! hard to focus-the planes in the background
- the sound of helicopters, planes
- the sound of the airplane
- the sound of the plane was a bit annoying
- this was primarily airplane noise
- too much heli!

Loud, annoying, noisy, etc.

- difficult to distinguish sounds
- this one is starting to sound noisy

Cars, traffic, parking lot, etc.

- autos
- car sounds (2)
- highway sounds (2)
- honking
- horn (2)
- sound of car driving on gravel
- traffic (2)
- train
- trucks
- vehicles in background

Appendix M.3 (continued). Briefly describe any sounds in Recording 3 you found annoying.

Motor sounds – source not specified

- annoying saw sounds
- motors

Background noise

- "heavier" sound background
- breaking
- crackling sounds in background (4)
- creaking sounds
- crinkling noise in background
- hum
- maybe some fuzz
- more background noise
- some type of background noise
- tapping

People

- clapping sound
- people walking
- singing
- sounded as if someone following in brush beside-you
- sounded like people making noise and stepping on things
- sounds like someone stepping on old bamboo
- talking

Nature sounds

- birds
- breaking of branches
- breaking wood
- crunching leaves
- did not like the rain being the primary sound
- some kind of rustling noise
- too many bird noises
- woodpecker?

Other

- more movement (more aggressive)
- some noise pollution

Appendix M.4.

Annoying Sounds in Recording 4

Appendix M.4. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 4 you found annoying.

Aircraft, helicopters, etc.

- "realistic" helicopter
- a lot of air traffic
- a/c noises were distracting but not absolutely annoying
- air traffic (5)
- aircraft (6)
- aircraft engine
- aircraft motor noise
- aircraft noises
- aircraft sounds
- aircraft sounds getting to loud
- aircraft, helicopter, jet
- aircraft/helicopter
- airplane (23)
- airplane flying overhead
- airplane in background
- airplane in the air
- airplane nearby
- airplane or helicopter tour
- airplane, helicopter (12)
- airplane, helicopter noise
- airplane, helicopter noise - loud
- airplane, helicopter sounds
- airplane/chopper-very disruptive
- airplane/helicopter
- airplanes in the background
- airplanes too loud- louder than #3
- airplanes? Eww
- airplane-some birds
- background noise I can't quit make-out possibly helicopter-not good!
- but planes! BAD!
- buzzing planes
- chopper too loud
- closer airplane/helicopter
- did not like the aircraft
- extremely loud airplane noise
- heli
- heli background noise
- helicopter (55)
- helicopter (louder)

Appendix M.4 (continued). Briefly describe any sounds in Recording 4 you found annoying.

Aircraft, helicopters, etc. (continued)

- helicopter close by
- helicopter close overhead
- helicopter close, airplane?
- helicopter closer
- helicopter dominates
- helicopter drowning out the sounds of nature
- helicopter flying over
- helicopter in the air
- helicopter noise, planes
- helicopter traffic
- helicopter very annoying!
- helicopter yuck
- helicopter, aerial object was annoying
- helicopter, aeroplane
- helicopter, aircraft (2)
- helicopter, airliners
- helicopter, airplane (8)
- helicopter, airplane sounds
- helicopter, airplane very distracting
- helicopter, plane (7)
- helicopter, plane doing something
- helicopter, planes loud
- helicopter?, plane?
- helicopter-drowned out all other sounds
- helicopter-loud
- helicopters, planes
- helicopters, planes, There was too much noise from helicopters/etc.
- helicopter-very low-very loud
- helicoter, airplanes, sound drowned out by air traffic
- helocopter sound was annoying
- jet noise
- jet, copter
- jet, helicopter
- jets, loud jets
- loud airplane sound
- loud helicopter overwhelms
- loud helicopter, plane (2)
- loud plane (2)
- louder helicopter
- more aircraft
- more planes or helicopters-annoying
- multiple rotary wing air craft, very close
- noise of helicopters got louder

Appendix M.4 (continued). Briefly describe any sounds in Recording 4 you found annoying.

Aircraft, helicopters, etc. (continued)

- over head plane
- overhead air traffic
- plane (31)
- plane and helico on the forest disturbs the forest sounds and my hike
- plane getting closer
- plane in the background
- plane noise
- plane or something
- plane sounds
- plane too loud for nature area
- plane traffic
- plane, copter, couldn't really here because plane/helicopter
- plane, helicopter (6)
- plane/helicopter sounds were awful
- planes near airport
- really close helicopter, airplane
- sounded like a plane
- sounds of aircraft(poss. Helicopter)
- the airplane again very distracting
- the closeness of the helicopter was annoying
- the heli
- the helicopter is overwhelming the nice sounds
- the helicopter/airplane noise!
- the large plane or highway
- the plane or truck whatever is was
- this is annoying helicopter
- too much airplane traffic
- too much heli!
- too noisy-didn't like hearing airplane
- turbo helicopter very near
- very annoying helicopter sounds
- very loud helicopter!
- very loud plane noise
- very loud plane, helicopter
- we're getting too close to the airport
- loud helicopter passing above

Appendix M.4 (continued). Briefly describe any sounds in Recording 4 you found annoying.

Loud, annoying, noisy, etc.

- a bit too much noise
- air pollution
- can't hear bamboo anymore
- could hardly hear anything pleasing
- couldn't hear (in reference to pleasing sounds)
- didn't come here for that
- hard to hear bamboo thumping
- I hate it
- noise (2)
- noise pollution
- ruined everything
- sound pollutions
- the annoying sounds outweighed the pleasing making it very unaccetible
- you can't hear the natural sounds

Cars, traffic, parking lot, etc.

- automobiles-Yikes! It's gonna land here!
- car noise/overcame water sounds
- car traffic
- cars (6)
- highway noise (2)
- honking
- motorized vehicle
- road
- road traffic
- traffic (9)
- trains?

Motor sounds – source not specified

- a saw
- engine noise
- engines
- machinery (2)
- motor "overhead"
- motor sounds(sounds like lawnmower electric)

Background noise

- humming
- vibrating noise

Appendix M.4 (continued). *Briefly describe any sounds in Recording 4 you found annoying.*

Nature sounds

- crunching leaves

All, everything

- everything but birds

Other

- all the manmade stuff
- more human made sounds
- something

Appendix M.5.

Annoying Sounds in Recording 5

Appendix M.5. Verbatim responses to the following question, organized by category of response: (Note: Number in parentheses indicates number of times response was mentioned.)

Briefly describe any sounds in Recording 5 you found annoying.

Aircraft, helicopters, etc.

- a/c noises was briefly annoying, but not persistent
- absolutely did not like the helicopters!
- again w/ the helicopter
- again, the helicopter and airplane noise! Just really annoying.
- air noise
- air traffic noise
- air traffic-loud
- aircraft (6)
- aircraft landing next to me
- aircraft noises (2)
- aircraft, helicopter (2)
- airforce plane in background
- airplane (15)
- airplane, helicopter (11)
- airplanes-too loud-couldn't hear birds at all
- all aircraft sounds
- all helicopter
- all I could hear were aircrafts
- am I at an airport?
- are we at the airport?!
- choppers, planes
- did not like the airplane-more annoying than the precious aerial object
- extremely loud airplane
- extremely loud plane noise
- heli/plane
- helicopter (45)
- helicopter (army), airplanes
- helicopter (dominating all other sounds)
- helicopter -again very low- very loud
- helicopter and maybe more aircrafts
- helicopter drowns out everything
- helicopter engine & rotor
- helicopter flying over
- helicopter in the air
- helicopter really close
- helicopter to close
- helicopter too loud
- helicopter very close!
- helicopter was very annoying

Appendix M.5 (continued). Briefly describe any sounds in Recording 5 you found annoying.

Aircraft, helicopters, etc. (continued)

- helicopter (somewhat loud)
- helicopter, aircraft (2)
- helicopter, airliners
- helicopter, airplane (3)
- helicopter, airplane (very loud)
- helicopter, airplane sounds
- helicopter, can't hear anything else
- helicopter, jet (2)
- helicopter, jets loud jets
- helicopter, loud aircraft engine
- helicopter, plane (10)
- helicopter, plane noise
- helicopter, poss plane as well even closer overhead
- helicopter-cannot hear any bird song or bamboo
- helicopter-real loud
- helicopters destroyed all enjoyment
- helicopters, jet
- helicopters, planes
- helo, planes
- helicopter was annoying
- horrible plane!
- jet straiting
- jet, helicopter (3)
- jets
- large commercial jet
- lots of air traffic noise
- loud air traffic
- loud aircraft
- loud airplane
- loud airplane noise
- loud airplane sound
- loud helicopter
- loud helicopter over taking nature's music
- loud helicopter, plane
- loud over head plane!!
- loud plane, heli
- loud plane/helicopter
- loud planes
- loud planes, helicopters
- loud sounding airplane
- loud, loud helicopter directly over
- low hovering
- mass amounts of close airplanes

Appendix M.5 (continued). Briefly describe any sounds in Recording 5 you found annoying.

Aircraft, helicopters, etc. (continued)

- more aircraft noise
- much to much aircraft
- overhead plane, copter very annoying
- overhead traffic overwhelms whats around
- plane (26)
- plane is going to hit me
- plane overwhelming
- plane, helicopter (14)
- plane/helicopter/machine
- plane-loud!
- planes landing
- planes, helicopter very very loud
- planes, trains, automobiles
- planes-loud
- planes-very dominant here
- really loud planes
- same as before but worse, helicopter, plane
- several planes overhead
- sound of plane or helicopter masks any other pleasing sound
- sounds like in airport
- sounds like my house in SD-under an airport- yuck
- sounds of a plane is very close it seems in an airport
- sounds of aircraft (loud)
- the airplane/copter sounds
- the plane sound is pretty urksome
- the planes, copter
- too close airplane or helicopter!
- too loud runway @ airport in Kailului
- too much airplane
- too much chopper-needs to go
- too much traffic sounds (air traffic) can't here nature
- uggh! The helicopter too loud!
- unacceptable, would stay in NY if this was the case
- under a helicopter
- very annoying helicopter
- very loud air traffic
- very loud annoying plane sounds
- very loud helicopter (2)
- very loud heli-plane
- very loud low flying plane
- very loud plane
- way too much heli!
- worse than #4 (traffic and helicopters)

Appendix M.5 (continued). Briefly describe any sounds in Recording 5 you found annoying.

Loud, annoying, noisy, etc.

- air pollution
- background noise very loud
- bad sounds-manmade
- can't hear
- can't hear any natural sounds
- can't hear much of wildlife or wind
- could not enjoy (in reference to pleasing sounds)
- could not hear nature
- couldn't hear any natural sounds
- drowning natural sounds
- drowns out natural sound
- horrible very limited sounds of nature.
- I hate it
- lots of noise
- loud sounds
- loud unpleasant sound
- nice sounds drowned out totally
- noise
- noise pollution too severe
- not my expectations for such a place.
- same as #4 but much worse (could hardly hear anything pleasing)
- sounds bad
- sounds like the Vietnam War (2)
- this is unbearable
- too loud (3)
- way too noisy!!
- worse! Everything written before but at higher decibel

Cars, traffic, parking lot, etc.

- auto
- cars (4)
- cars (2)
- heavy traffic
- highway (2)
- highway-was very overpowering
- loud traffic
- loud, city-like
- siren
- too urban
- traffic (10)

Appendix M.5 (continued). Briefly describe any sounds in Recording 5 you found annoying.

Cars, traffic, parking lot, etc. (continued)

- train
- transportation sound

Motor sounds – source not specified

- all the modernized equipment
- engine noise
- engines
- heavy equipment
- industrial sounds
- loud machinery
- machines
- mechanical noise-very annoying
- more engines even louder
- motor noise
- motor sounds
- motorboat?
- Motors
- some kind of motorized noise-cars or plane

Background noise

- crackling
- humming buzzing
- static
- to me just sounded like static
- too much loud background noise
- tracking in recording

People

- footsteps

Nature sounds

- Water was a little loud

All, everything

- all (3)
- all of them
- everything (2)

Appendix M.5 (continued). *Briefly describe any sounds in Recording 5 you found annoying.*

Other

- coast guard
- echoes
- human made sounds
- manmade noise
- other outside noise
- sounded like a plastic bag flapping too

Appendix N

State Residency of Respondents – Kīpahulu Area Audio Recording Survey

Appendix N. Complete list of state of residency for all respondents – Kīpahulu Area Audio Recordings.

<i>State</i>	Basic Stats (n=253)	
	<i>Count</i>	<i>Percent</i>
California	59	23.3
Hawaii	30	11.9
Washington	14	5.5
Arizona	12	4.7
Illinois	11	4.3
Texas	11	4.3
Minnesota	10	4.0
New York	10	4.0
Florida	9	3.6
Utah	9	3.6
Ohio	8	3.2
Colorado	7	2.8
Pennsylvania	6	2.4
Oregon	5	2.0
Virginia	5	2.0
Indiana	4	1.6
Maryland	4	1.6
Missouri	4	1.6
Alaska	3	1.2
Massachusetts	3	1.2
New Jersey	3	1.2
North Carolina	3	1.2
Wisconsin	3	1.2
Connecticut	2	0.8
Georgia	2	0.8
Iowa	2	0.8
Nevada	2	0.8
Arkansas	1	0.4
Idaho	1	0.4
Kansas	1	0.4
Kentucky	1	0.4

Appendix N (continued). Complete list of state of residency for all respondents – Kīpahulu Area Audio Recordings.

<i>State</i>	Basic Stats (n=253)	
	<i>Count</i>	<i>Percent</i>
Michigan	1	0.4
Nebraska	1	0.4
New Mexico	1	0.4
Rhode Island	1	0.4
South Carolina	1	0.4
Tennessee	1	0.4
Vermont	1	0.4
Washington DC	1	0.4

Appendix O

Kīpahulu Area Audio Recording Survey Data Codebook

Appendix O: Kīpahulu Area Audio Recording Survey Data Codebook
 Pertaining to files KIP_AC_SurveyData.xls and KIP_AC_SurveyData.sav

Variable	Question #	Description	Values
Date	Front Cover	Date when survey was completed	dd/mm/yy
Time	Front Cover	Time when survey was completed	Military Time – 00:00:00
ID	Front Cover	Unique ID for each completed questionnaire	ID number
Aircraft	Front Cover	Designates whether or not an aircraft flyover occurred during the survey	0 = No 1 = Yes
Q1	Question 1	Number of people in group	Number of people
Q2	Question 2	Designates whether or not part of a commercial tour	0 = No 1 = Yes
Q3	Question 3	Designates whether or not group has visited this area of Haleakalā National Park	0 = No 1 = Yes
Q4	Question 4	Number of previous visits to this area of the Park	Number of visits 99 = Don't Know
Q5a	Question 5	Importance of seeing the Bamboo Forest	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5b	Question 5	Importance of seeing Waimoku	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5c	Question 5	Importance of enjoying peace and quiet	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5d	Question 5	Importance of being with family/friends	1 = Not at all important 2 = Somewhat important 3 = Very important

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q5e	Question 5	Importance of getting away from crowds in the 'Ohe'o Pools Area	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5f	Question 5	Importance of getting exercise	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5g	Question 5	Importance of experiencing nature "up-close", away from park facilities	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5h	Question 5	Importance of appreciating the natural scenery	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5i	Question 5	Importance of hearing the sounds of nature	1 = Not at all important 2 = Somewhat important 3 = Very important
Q5j	Question 5	Importance of learning about Hawaiian culture and history	1 = Not at all important 2 = Somewhat important 3 = Very important
Q6R1	Question 6.1	Acceptability of Recording 1	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q6R1A	Question 6A1	Denotes if respondent reported any specific pleasing sounds in Recording 1	0 = Did not report any sounds 1 = Reported at least one sound
Q6R1AText1	Question 6A1	First free response to pleasing sounds in Recording 1	Free response

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook

Variable	Question #	Description	Values
Q6R1AT1_Code	Question 6A1	Coded value for Q6R1AText1	1 = All, everything 2 = Bamboo 3 = Birds 4 = Wind, breeze 5 = Water, stream, etc 6 = Quiet, serene, etc 7 = Nature sounds 8 = Human sounds 9 = Aircraft noise 10 = Trees, forest, etc 11 = General rustling with no reference to source 12 = Non-bird animal sounds 13 = Rocks, pebbles, sand 14 = Other
Q6R1AText2	Question 6A1	Second free response to pleasing sounds in Recording 1	Free response
Q6R1AT2_Code	Question 6A1	Coded value for Q6R1AText2	Same as Q6R1AT1_Code
Q6R1AText3	Question 6A1	Third free response to pleasing sounds in Recording 1	Free response
Q6R1AT3_Code	Question 6A1	Coded value for Q6R1AText3	Same as Q6R1AT1_Code
Q6R1AText4	Question 6A1	Fourth free response to pleasing sounds in Recording 1	Free response
Q6R1AT4_Code	Question 6A1	Coded value for Q6R1AText4	Same as Q6R1AT1_Code
Q6R1B	Question 6B1	Denotes if respondent reported any specific annoying sounds in Recording 1	0 = Did not report any sounds 1 = Reported at least one sound
Q6R1BText1	Question 6B1	First free response to annoying sounds in Recording 1	Free response

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q6R1BT1_Code	Question 6B1	Coded value for Q6R1BText1	1 = Aircraft, helicopters, plane, jet 2 = Cars, traffic, etc 3 = Nature sounds 4 = Background noise 5 = People 6 = Motor sounds 7 = All, everything 8 = Loud, noisy, etc 9 = Other
Q6R1BText2	Question 6B1	Second free response to annoying sounds in Recording 1	Free response
Q6R1BT2_Code	Question 6B1	Coded value for Q6R1BText2	Same as Q6R1BT2_Code
Q6R2	Question 6.2	Acceptability of Recording 2	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q6R2A	Question 6A2	Denotes if respondent reported any specific pleasing sounds in Recording 2	0 = Did not report any sounds 1 = Reported at least one sound
Q6R2AText1	Question 6A2	First free response to pleasing sounds in Recording 2	Free response
Q6R2AT1_Code	Question 6A2	Coded value for Q6R2AText1	Same as Q6R1AT1_Code
Q6R2AText2	Question 6A2	Second free response to pleasing sounds in Recording 2	Free response
Q6R2AT2_Code	Question 6A2	Coded value for Q6R2AText2	Same as Q6R1AT1_Code
Q6R2AText3	Question 6A2	Third free response to pleasing sounds in Recording 2	Free response
Q6R2AT3_Code	Question 6A2	Coded value for Q6R2AText3	Same as Q6R1AT1_Code
Q6R2AText4	Question 6A2	Fourth free response to pleasing sounds in Recording 2	Free response
Q6R2AT4_Code	Question 6A2	Coded value for Q6R2AText4	Same as Q6R1AT1_Code

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q6R2B	Question 6B2	Denotes if respondent reported any specific annoying sounds in Recording 2	0 = Did not report any sounds 1 = Reported at least one sound
Q6R2BText1	Question 6B2	First free response to annoying sounds in Recording 2	Free response
Q6R2BT1_Code	Question 6B2	Coded value for Q6R2BText1	Same as Q6R1BT2_Code
Q6R2BText2	Question 6B2	Second free response to annoying sounds in Recording 2	Free response
Q6R2BT2_Code	Question 6B2	Coded value for Q6R2BText2	Same as Q6R1BT2_Code
Q6R3	Question 6.3	Acceptability of Recording 3	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q6R3A	Question 6A3	Denotes if respondent reported any specific pleasing sounds in Recording 3	0 = Did not report any sounds 1 = Reported at least one sound
Q6R3AText1	Question 6A3	First free response to pleasing sounds in Recording 3	Free response
Q6R3AT1_Code	Question 6A3	Coded value for Q6R3AText1	Same as Q6R1AT1_Code
Q6R3AText2	Question 6A3	Second free response to pleasing sounds in Recording 3	Free response
Q6R3AT2_Code	Question 6A3	Coded value for Q6R3AText2	Same as Q6R1AT1_Code
Q6R3AText3	Question 6A3	Third free response to pleasing sounds in Recording 3	Free response
Q6R3AT3_Code	Question 6A3	Coded value for Q6R3AText3	Same as Q6R1AT1_Code
Q6R3AText4	Question 6A3	Fourth free response to pleasing sounds in Recording 3	Free response
Q6R3AT4_Code	Question 6A3	Coded value for Q6R3AText4	Same as Q6R1AT1_Code

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q6R3AText5	Question 6A3	Fifth free response to pleasing sounds in Recording 3	Free response
Q6R3AT5_Code	Question 6A3	Coded value for Q6R3AText5	Same as Q6R1AT1_Code
Q6R3B	Question 6B3	Denotes if respondent reported any specific annoying sounds in Recording 3	0 = Did not report any sounds 1 = Reported at least one sound
Q6R3BText1	Question 6B3	First free response to annoying sounds in Recording 3	Free response
Q6R3BT1_Code	Question 6B3	Coded value for Q6R3BText1	Same as Q6R1BT2_Code
Q6R3BText2	Question 6B3	Second free response to annoying sounds in Recording 3	Free response
Q6R3BT2_Code	Question 6B3	Coded value for Q6R3BText2	Same as Q6R1BT2_Code
Q6R3BText3	Question 6B3	Third free response to annoying sounds in Recording 3	Free response
Q6R3BT3_Code	Question 6B3	Coded value for Q6R3BText3	Same as Q6R1BT2_Code
Q6R4	Question 6.4	Acceptability of Recording 4	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q6R4A	Question 6A4	Denotes if respondent reported any specific pleasing sounds in Recording 4	0 = Did not report any sounds 1 = Reported at least one sound
Q6R4AText1	Question 6A4	First free response to pleasing sounds in Recording 4	Free response
Q6R4AT1_Code	Question 6A4	Coded value for Q6R4AText1	Same as Q6R1AT1_Code
Q6R4AText2	Question 6A4	Second free response to pleasing sounds in Recording 4	Free response
Q6R4AT2_Code	Question 6A4	Coded value for Q6R4AText2	Same as Q6R1AT1_Code

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q6R4AText3	Question 6A4	Third free response to pleasing sounds in Recording 4	Free response
Q6R4AT3_Code	Question 6A4	Coded value for Q6R4AText3	Same as Q6R1AT1_Code
Q6R4AText4	Question 6A4	Fourth free response to pleasing sounds in Recording 4	Free response
Q6R4AT4_Code	Question 6A4	Coded value for Q6R4AText4	Same as Q6R1AT1_Code
Q6R4AText5	Question 6A4	Fifth free response to pleasing sounds in Recording 4	Free response
Q6R4AT5_Code	Question 6A4	Coded value for Q6R4AText5	Same as Q6R1AT1_Code
Q6R4B	Question 6B4	Denotes if respondent reported any specific annoying sounds in Recording 4	0 = Did not report any sounds 1 = Reported at least one sound
Q6R4BText1	Question 6B4	Fifth free response to annoying sounds in Recording 4	Free response
Q6R4BT1_Code	Question 6B4	Coded value for Q6R4BText1	Same as Q6R1BT2_Code
Q6R4BText2	Question 6B4	Second free response to annoying sounds in Recording 4	Free response
Q6R4BT2_Code	Question 6B4	Coded value for Q6R4BText2	Same as Q6R1BT2_Code
Q6R4BText3	Question 6B4	Third free response to annoying sounds in Recording 4	Free response
Q6R4BT3_Code	Question 6B4	Coded value for Q6R4BText3	Same as Q6R1BT2_Code
Q6R5	Question 6.5	Acceptability of Recording 5	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q6R5A	Question 6A5	Denotes if respondent reported any specific pleasing sounds in Recording 5	0 = Did not report any sounds 1 = Reported at least one sound

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q6R5AText1	Question 6A5	First free response to pleasing sounds in Recording 5	Free response
Q6R5AT1_Code	Question 6A5	Coded value for Q6R5AText1	Same as Q6R1AT1_Code
Q6R5AText2	Question 6A5	Second free response to pleasing sounds in Recording 5	Free response
Q6R5AT2_Code	Question 6A5	Coded value for Q6R5AText2	Same as Q6R1AT1_Code
Q6R5AText3	Question 6A5	Third free response to pleasing sounds in Recording 5	Free response
Q6R5AT3_Code	Question 6A5	Coded value for Q6R5AText3	Same as Q6R1AT1_Code
Q6R5B	Question 6B5	Denotes if respondent reported any specific annoying sounds in Recording 5	0 = Did not report any sounds 1 = Reported at least one sound
Q6R5BText1	Question 6B5	First free response to annoying sounds in Recording 5	Free response
Q6R5BT1_Code	Question 6B5	Coded value for Q6R5BText1	Same as Q6R1BT2_Code
Q6R5BText2	Question 6B5	Second free response to annoying sounds in Recording 5	Free response
Q6R5BT2_Code	Question 6B5	Coded value for Q6R5BText2	Same as Q6R1BT2_Code
Q6R5BText3	Question 6B5	Third free response to annoying sounds in Recording 5	Free response
Q6R5BT3_Code	Question 6B5	Coded value for Q6R5BText3	Same as Q6R1BT2_Code
Q6R5BText4	Question 6B5	Fourth free response to annoying sounds in Recording 5	Free response
Q6R5BT4_Code	Question 6B5	Coded value for Q6R5BText4	Same as Q6R1BT2_Code

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q7	Question 7	Which of the five recordings you heard sounds most like what you heard while hiking in the park today?	1 = Recording 1 2 = Recording 2 3 = Recording 3 4 = Recording 4 5 = Recording 5
Q8a	Question 8	Acceptability of hearing helicopter sounds once every 5 minutes	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q8b	Question 8	Acceptability of hearing helicopter sounds once every 15 minutes	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q8c	Question 8	Acceptability of hearing helicopter sounds once every 30 minutes	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q8d	Question 8	Acceptability of hearing helicopter sounds once every 60 minutes	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q8e	Question 8	Acceptability of never hearing helicopter sounds	-4 = Very Unacceptable 0 = Neutral 4 = Very Acceptable
Q9	Question 9	Did you hear any aircraft while you were hiking in this area of the park today?	0 = No 1 = Yes
Q10	Question 10	Please indicate how pleasing or annoying you found the sounds of aircraft you heard while you were on the trail today	1 = Very pleasing 2 = Somewhat pleasing 3 = Neutral 4 = Somewhat annoying 5 = Very annoying
Q11a	Question 11	Yes, I have taken a scenic air tour over Haleakalā National Park	0 = Not checked 1 = Checked
Q11b	Question 11	Yes, I have taken a scenic air tour over another national park	0 = Not checked 1 = Checked

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q11c	Question 11	No, I have never taken a scenic air tour over a national park	0 = Not checked 1 = Checked
Q12	Question 12	If given the opportunity to take a scenic air tour over Haleakalā NP, would you do so even if visitors could hear the aircraft while hiking?	0 = No 1 = Yes 99 = Don't know
Q13a	Question 13	To what extent would you support or oppose reduce the number of scenic air tours allowed to fly over the park?	1 = Strongly support 2 = Support 3 = Neutral 4 = Oppose 5 = Strongly oppose 99 = Don't Know
Q13b	Question 13	To what extent would you support or oppose maintain the number of scenic air tours allowed to fly over the park at the current level?	1 = Strongly support 2 = Support 3 = Neutral 4 = Oppose 5 = Strongly oppose 99 = Don't Know
Q13c	Question 13	To what extent would you support or oppose increased the number of scenic air tours allowed to fly over the park?	1 = Strongly support 2 = Support 3 = Neutral 4 = Oppose 5 = Strongly oppose 99 = Don't Know
Q13d	Question 13	To what extent would you support or oppose requiring scenic air tours to be flown over the park only during specially designated dates and times?	1 = Strongly support 2 = Support 3 = Neutral 4 = Oppose 5 = Strongly oppose 99 = Don't Know
Q13e	Question 13	To what extent would you support or oppose requiring scenic air tours to use designated flight paths over limited areas of the park?	1 = Strongly support 2 = Support 3 = Neutral 4 = Oppose 5 = Strongly oppose 99 = Don't Know

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q13f	Question 13	To what extent would you support or oppose prohibit scenic air tours from flying over the park?	1 = Strongly support 2 = Support 3 = Neutral 4 = Oppose 5 = Strongly oppose 99 = Don't Know
Q14	Question 14	Gender of respondent	1 = Male 2 = Female
Q15	Question 15	Respondents birth year	YYYY
Age		Respondent's birth year subtracted from 2007	Age
Q16	Question 16	Country of residence	1 = US 0 = Other
Q16 Zip	Question 16	Zip Code of residence	5-digit Zip Code
Q16 Country	Question 16	Country of residence, if other than the United States	1 = Italy 2 = Germany 3 = Canada 4 = France 5 = Sweden 6 = the Netherlands 7 = Australia 8 = United Kingdom 9 = Switzerland 10 = New Zealand
Q17	Question 17	Level of education	1 = Some high school 2 = High school graduate or GED 3 = Some college, business or trade school 4 = College, business or trade school graduate 5 = Some graduate school 6 = Master's, doctoral or professional degree
Q18	Question 18	Indicates if the respondent is Hispanic/Latino	1 = Yes 0 = No
Q19a	Question 19a	American Indian or Alaskan Native	1 = Checked 0 = Not Checked
Q19b	Question 19b	Asian	1 = Checked 0 = Not Checked

Appendix O (continued). Kīpahulu Area Audio Recording Survey Data Codebook			
Variable	Question #	Description	Values
Q19c	Question 19c	Black or African American	1 = Checked 0 = Not Checked
Q19d	Question 19d	Native Hawaiian	1 = Checked 0 = Not Checked
Q19e	Question 19e	Pacific Islander (Not Hawaiian)	1 = Checked 0 = Not Checked
Q19f	Question 19f	White	1 = Checked 0 = Not Checked
MultiRaces	Question 19	Indicates if the respondent indicated more than one race	0 = Reported no race 1 = Reported 1 race 2 = Reported 2 races