AN ABSTRACT OF THE PROJECT OF

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State parks in Oregon provide important sites for visitor recreation and natural resource education. With the increasing number of visitors to Oregon coastal parks, tide pools and beach areas, there is growing need for site-specific marine education to enhance stewardship, interpretation and safety knowledge. The Oregon Sea Grant Program and the Oregon Parks and Recreation Department collaborated in a demonstration project of low power radio (LPR) technology in 1998. An evaluative research project of this technology was conducted at Boiler Bay State Park, Oregon during July through August 1998. This project evaluated the effectiveness of a 100 milliwatt low power radio broadcast in providing coastal resource interpretation to visitors parked at a scenic overlook. LPR is a limited broadcast range AM radio station that park visitors can tune-in on their car radio to hear pre-recorded messages.

Several research parameters were investigated during the evaluative portion of the project: (1) do signage numbers influence LPR listenership, and (2) does a relationship exist between specific demographic characteristics of visitors and listenership? Visitor surveys were conducted three days a week from July 1, 1998 to August 2, 1998 during 10:30 AM to 2:30 PM. Occupants from 822 vehicles (i.e. cars, trucks, RV's or motorcycles) were interviewed.

Research results indicate that significantly more visitors tuned-in when more signs were displayed. Demographics do not appear to be a significant factor in listenership. Ninety-seven percent of LPR listeners recommended that LPR stations be placed in additional parks. Results from this study indicate that LPR broadcasts are a promising communication technology for providing park visitors with helpful information.

Low Power Radio:
An Antidote for Coastal Visitors Looking but not Seeing!

by

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Introduction

Warm sea salt mists, crashing ocean waves and driftwood laden sandy beaches sound alluring to many people. As visitation to coastal parks, tide pools and beach areas increases each year, park managers, business owners and communities face new challenges in educating and informing coastal tourists of the natural resource experiences available in coastal areas. Visitors are often looking for, but not necessarily seeing, the resources that coastal areas offer. Additionally, sustainable use and safety practices must be communicated to guests to protect themselves and these unique coastal ecosystems. The coast is a powerful attractant that yields fun while generating large revenues. "The nation's coasts are both rich in their promise for tomorrow and bountiful in their delivery of today's ecological, recreational, aesthetic, and commercial rewards. The vastness of the coasts and their resources is matched only by the dimensions of the challenges society faces in preserving and nurturing those resources" (Coastal Challenges: A Guide to Coastal and Marine Issues, 1998).

The travel and tourism industry is estimated at generating $502 billion annually, generating over 7 million jobs, with tax revenues of $71 billion and a trade surplus of over $24 billion (EPA Sustainable Industry webpage). Visitor expenditures generated an estimated $4.5 billion in 1996 in Oregon (Official Tourism Website for the State of Oregon). Recreation and tourism can also cause immense environmental impacts. With education and cooperation from coastal and inland visitors, however, these impacts can be minimal. The EPA Sustainable Industry webpage states that "the scope of these impacts creates the potential for significant benefits to the environment and the economy through improved performance by participants." According to Bookman, et al (1998), despite the diversity and scope of recreational activities—from bird watching, to boating based sports, to second-home developments—little information is available on coastal and marine recreation and tourism, its scope, importance, and impacts.

Oregon's coastal state parks provide important sites for resident and visitor recreation and marine education. Oregon Parks and Recreation Department (OPRD) administers many coastal parks overlooking the Pacific Ocean that are used for camping, whale watching, beachcombing, and picnics. These upland areas are also adjacent to many valuable rocky intertidal areas, thereby providing visitor access to these resources. Additionally, this state agency manages dry and wet beach areas owned by the State of Oregon. Park managers must balance the need to educate and provide interpretative information to visitors with the financial, and other, resources available to them. Few state parks have full or even part-time staff members present to answer visitor questions so if sites do not have educational materials available, tourists often leave these sites with no knowledge gained. The need for affordable, accessible visitor information with limited agency staff numbers must be met in new ways. Oregon State Parks are just one agency along the coast that must manage coastal lands.

Oregon State Parks are just one agency along the coast that must manage coastal lands. Oregon's coastal zone encompasses a wide variety of lands that are managed by many different cities, counties and state agencies. Oregon has a federally approved Coastal Management Program, which combines state laws with future land use goals for managing the coastal lands and waters. Coastal areas accessible to tourists and residents often fall under several state agency jurisdictions. Gaps in coastal protection and sustainable use practices exist due to the multi-agency management of coastal areas. Teaching visitors to be better stewards of the coast could potentially narrow these gaps. With the degradation of many coastal resources, it would be advantageous to educate visitors to be good stewards of these resources. Frankel (1995) states, "worldwide recreation and tourism have grown at a rate of nearly 8.8% per year, or well over twice the rate of economic growth. A very substantial proportion of new recreational and tourist developments are oriented towards the use of the coastal zone and the oceans. Recreation and tourism are very fragile economic activities that can suffer long-term damage when the environment on which they are based is degraded." By the year 2010, it is estimated that nearly 127 million Americans will live within the coastal zone (http://www.nos.noaa.gov/News/estuariesday.html). In light of this predicted increase in

coastal tourists and residential populations, coastal managers are worried about the continual availability of limited coastal resources for future generations. To help secure these resources, wise use and stewardship principles must be effectively communicated to coastal tourists.

Public parks provide an important doorway for people to access coastal resources. In 1996, over 40 million day visits were made to Oregon's state parks ("About OPRD" website). But state parks must have enough money to maintain the park areas they manage and keep these sites open to the public. The state considered closing 60 parks in 1996 until money was approved by the Oregon Emergency Board to keep these sites open. Park funding can vary every two years. In order to secure a more stable funding source, and one that would not be subject to legislature approval every two years, Oregon ballot measure 66 was proposed for the state's 1998 election. Passed in November 1998, ballot measure 66 provides state parks and salmon restoration efforts fifteen percent of the net proceeds from lottery revenues. Ballot measure 66 was implemented by the state legislature through the passage of House Bill 3225. The final budget approved for Oregon State Parks for 1999-2001 was $108.4 million (Legislative Fiscal Office, 1999). Specifically, $19.4 million was allocated for administration and park operations including increased funding for ocean shore education. Even under ideal funding conditions, parks need to establish effective channels to communicate with visitors.

One affordable and promising communication technology for oceanside visitor education is low power AM radio (LPR). LPR is a limited broadcast range radio station that listeners can tune-in on their vehicle radio to hear prerecorded messages. There is a 100 milliwatt LPR system that broadcasts within a radius of 0.5 square miles from the station, or a 10 Watt system, which broadcasts approximately 15 square miles (DeYoung, 1992). The Federal Communications Commission (FCC) does not require licensing for the 100 milliwatt station and commercial advertisement messages are allowed. Sponsorship by a governmental organization and FCC licensing is required for a 10 Watt system. While the 100 milliwatt system can have commercial messages, music, or other sound enhancements, the 10 Watt system cannot. New messages can be uploaded manually, or from a remote location, and the broadcast runs continuously. Because of the

localized broadcast range, any "unused" frequency in an area can be used for the 100 milliwatt system. The "use" of a frequency must be checked during both the day and night.

Background

Literature Review

LPR is most widely known for its applications in roadside travel information and airport updates using 10 Watt broadcast systems. It is, however, finding increasing use as a communication strategy for enhancing stewardship, interpretation and safety knowledge in recreation areas. The National Park Service (NPS) has used LPR broadcasts since the 1970's for interpretive and educational information. The NPS has installed over 150 LPR units in national parks across the country (Weed, 1999). Within Oregon there are several agencies utilizing this technology to enhance recreation opportunities. Beverly Beach State Park in Oregon used a "Talking House" LPR system from 1995 to 1998 to accelerate park registration and notify visitors of park amenities. A LPR station operates at the mouth of the Columbia River, near Warrenton, Oregon, to increase boating ramp safety. Additionally the Extension Forestry Service at Oregon State University uses 10 Watt LPR stations along state highways traversing forests. This project, called "Forest Talk" directs its broadcast to the traveling visitor.

The goal of the Forest Talk project is to educate the motoring public about Oregon's' forests as motorists are driving past points of interest (Lamb, 1994). In 1993, Lamb evaluated the listenership and sign effectiveness of the Santiam Pass Forest Talk LPR site. Lamb recorded license plate numbers from vehicles driving over the Santiam Pass during July to August 1993. She then contacted the registered owners of those vehicles for a telephone survey. The telephone survey sought to ascertain whether the vehicles had seen a sign advertising the broadcast and whether they tuned into Forest Talk. The telephone survey also obtained demographic information to see if any relationships between age, gender or residence and tune-in rates existed. With an

additional focus group survey of selected populations, additional information regarding message recall, broadcast enjoyment and value was collected and analyzed. Through the telephone survey Lamb found a total tune-in rate to the broadcast of 8% (out of 278 surveys). Thirty percent of the sample saw the broadcast signs, with 28% of those people subsequently tuning into the broadcast. Lamb found no significant relationships between age, gender or urban versus rural residence and vehicles tuning into the broadcast. However, the focus group survey found that "urban respondents considered the program useful more consistently than rural dwellers" (Lamb, 1994).

The Forest Talk program has expanded broadcast sites since Lamb's 1994 evaluation. An additional roadside evaluation at three western Oregon broadcast sites showed that 1.3% of passing vehicles tuned into the Forest Talk station (Reed and Bondi, 1995). Respondents indicated their listenership by flashing their headlights when they saw survey personnel after hearing a special radio message asking them to do so. Results from this survey also showed that 46% of those asked did not see highway department signs alerting them to the radio broadcast (Reed and Bondi, 1995).

Other alternative applications of LPR technology include Atlantic Records' promotion of artists by playing music to motorists traveling through New York's Holland Tunnel (Billboard, Dec 10, 1994) and the Fox network broadcasting soundbites, music and messages to X-files fans from a billboard in Los Angeles (Broadcasting & Cable, May 6, 1996).

Prior studies related to project elements

Signs are an important method for informing motorists of speed limits, travel advisories, visitor information sites and rest areas. The frequency, color and visibility of signs are all important factors in determining the effectiveness of signs in communicating information to travelers. However, interpretive highway signs are frequently not seen by motorists along high-speed roadways. Additionally, little interpretive information can be placed on a sign along highways. This dilemma prompted the New Mexico State Highway and Transportation Department (NMSH&TD) to secure funding for a 10 Watt low power radio broadcast to convey information to motorists (Hall, 1990). Historically

the 10 Watt stations have been used for travel or weather information along highways and are often referred to as Travelers Information Stations (TIS) or Highway Advisory Radio (HAR). The NMSH&TD noticed that an unusually high number of drivers were apparently "lost" at a specific interchange area near Santa Fe, New Mexico. The use of a radio broadcast to direct motorists might provide a solution to this problem.

While the NMSH&TD project results are not available, Hall proposed a method for evaluating the broadcast listenership: broadcast frequency signs would be installed along the highway and a radio message would ask motorists to turn on their headlights if they listened to the broadcast. This method of evaluating listenership has been used by several Highway and Transportation Departments (Hall, 1990) as well as subsequent Forest Talk evaluations (Reed and Bondi, 1995).

Project rationale and objectives

While the 10 Watt system has a larger broadcast range, its use has several disadvantages. This size system costs about $10,000, requires government sponsorship and a FCC license to operate. Additionally, the 10 Watt LPR system is often used in mobile vehicle settings, where a driver or passenger must see instructional signs and locate the broadcast frequency while traveling at high speeds. Conversely, a 100 milliwatt LPR system costs about $3,500, has few restrictions and can broadcast messages in localized areas to more stationary visitors. Figure 1 illustrates major differences between the 100 milliwatt and 10 Watt LPR stations. Due to the affordability of the "parking lot" size 100 milliwatt LPR system, it seems especially well suited and promising for outreach projects, especially in Oregon's state parks.

Figure 1: A comparison table of 100 milliwatt and 10 Watt LPR station attributes.

LPR Attributes	100 milliwatt LPR	10 watt LPR
Purchase and installation	about $3,500	about $10,000
Approximate broadcast range	0.5 square mile radius	10 square miles
Government sponsorship	Not required	Required
FCC licensing	Not required	Required
Music and sound effects	Can include	Cannot include
Ground plane antennae	Optional	Needed
Commercial ads/messages	Allowed by FCC	Not allowed by FCC
Signage	Typically in parking areas	Along public roadways with ODOT permission
NOAA weather rebroadcast	Optional	Optional
Printed promotion materials	Can be helpful	Can be helpful
Equipment maintenance	Typically minimal	Typically minimal
Message updating	Occasional	Occasional
Message memory unit	Same equipment	Same equipment

To determine the efficacy of utilizing this technology to meet the need of affordable, accessible visitor information despite limited staff numbers, Oregon Parks and Recreation Department and Oregon Sea Grant (OSG) collaborated in a demonstration and applied research project at Boiler Bay State Park near Depoe Bay, Oregon. This project evaluated the effectiveness of a 100 milliwatt low power radio broadcast in providing coastal resource interpretation to visitors parked at a scenic overlook. Though LPR has been used in many public outreach applications on high-speed roadways, this project is the first known evaluation of static listenership.

Demonstration and Evaluative Research Projects Methodology

This project was split into two sections: an equipment test and initial demonstration of the radio technology in late March 1998 and the research and survey segment of the project, which occurred from July 1 to August 2, 1998. A 100 milliwatt radio unit with ten minutes of memory, remote telephone access and a National Oceanic and Atmospheric Administration (NOAA) National Weather Service radio was used for this project.

Demonstration and Equipment Test

The LPR technology equipment test occurred during OPRD's "Whale Watching Week," March 21-28, 1998. Six radio messages were created by OSG and OPRD and uploaded for whale watching week (Appendix 1). Throughout this week, Boiler Bay State Park visitors were asked for suggestions and feedback regarding message content and length. Many visitor suggestions were incorporated into the message scripts, which were subsequently modified or created for the summer survey period. Additionally, we were interested in visitor receptiveness to the technology and interpretive opportunity it provided. Four signs were displayed during this time period: two at the park turn-ins and one on each of the external bathroom walls. The signs used for this period were 18 by 24 inches with blue vinyl lettering on white corex board. The signs read "Whale Talk, Tune to 1610 AM." Most visitors informally questioned during this period did not see any of the entrance or bathroom signs advertising the station. The "Whale Watching Spoken Here" volunteers on site at Boiler Bay State Park had a radio playing the broadcast for visitors during the week. In informal discussions with visitors during this period, most visitors reacted positively to the use of a radio broadcast to provide interpretive information.

Evaluative Research Methodology

The collaborative research project between OPRD and OSG assessed visitor reactions to LPR technology and 100 milliwatt broadcasts heard while parked in their

vehicles. Additionally, this project sought to determine if there is a relationship between the number of signs presented and the number of park visitors tuning into the radio broadcast. We also wanted to investigate whether a relationship exists between specific demographic characteristics (such as city or country residence, age, or gender) of park visitors and their tuning into the radio broadcast. The project's hypotheses were:

Hypothesis 1: There is no relationship between signage (i.e. the number of signs) and park visitors tuning into the low power radio broadcast.

Hypothesis 2: There is no relationship between specific demographic characteristics (i.e. city versus country residence, age, or gender) of park visitors and their tuning into the low power radio broadcast.

Eight radio messages were broadcast during the summer survey period (Appendix 2). These included modified versions of the demonstration period messages and new scripts created exclusively for the summer. There was a message alerting visitors to the survey being conducted and to the possibility of being asked to participate. Total message length was approximately seven minutes. In addition, the station broadcast two and one-half minutes of National Weather Service (NWS) information after the completion of each message cycle.

Visitor surveys were conducted from July 1 to August 2, 1998 on Wednesdays, Saturdays and Sundays. The survey instrument included questions about whether the visitor tuned into the broadcast, message retention, sign observation, and demographic information (Appendix 3, 4, 5). Surveys were collected from 10:30 A.M. to 2:30 P.M., the high visitation period, with some variation due to weather conditions or visitor numbers. The surveyor names and work schedule is listed in Appendix 6. The signs advertising the broadcast were sky-blue colored, reverse-printed with the phrase "Coast Talk, Tune your radio to 1610 AM." Oregon State Parks and Oregon Sea Grant logos were printed on the bottom of the signs (Appendix 7). The parking lot signs, measuring 18 by 24 inches, were displayed (staked in the ground) and removed each day. The

entrance and bathroom signs, measuring 24 inches by 36 inches, were installed permanently. Each of the five survey weeks (a Wednesday, Saturday, and Sunday) had a different number of signs displayed to test the effect of sign numbers on visitor tune-ins. Weekly survey summaries and complete survey totals are listed in Appendix 8 along with the survey coding key.

Week 1 was considered "normal" signage. "Normal" is the number of signs that OPRD would display permanently without this evaluation and consisted of displaying one sign at each entrance and one sign on each bathroom wall for a total of four signs. During the second week, maximum sign numbers (48 signs) were displayed to ensure that all park visitors would see at least one sign. Signs during week 2 were placed every five feet along parking areas. The following two weeks reduced this maximum number by approximately one-half each week. Week 5 was considered the "optimal" signage week by OSG and OPRD and utilized the previous four weeks research experience for strategically placing signs throughout the park in the most highly noticed areas. Table 1 lists the general signage locations and numbers for the five-week survey period.

Signs displayed during week 5 were installed on signposts (instead of placed in the ground like previous weeks) and the two large entrance turn-in signs were replaced with smaller size signs placed just inside the entrance. Visitors may be more likely to retain the frequency number when placed just inside the park entrance. Drivers would not be distracted by navigating the turn into the park and would be driving at a slower speed inside the park than along the highway.

Table 1: General signage locations and numbers for the five-week survey period at Boiler Bay State Park, July to August 1998.

	Sign Locations	Total number displayed
Week 1	Park Entrances and bathrooms	**4** (1 at each entrance + 1 on each exterior bathroom wall)
Week 2	Park Entrances, bathrooms, and parking areas	**48** (4 Entrance & Bathroom signs + 44 park signs)
Week 3	Park Entrances, bathrooms, and parking areas	**21** (4 Entrance & Bathroom signs + 17 park signs)
Week 4	Park Entrances, bathrooms, and parking areas	**12** (4 Entrance & Bathroom signs + 8 park signs)
Week 5	Bathrooms and on sign posts	**9** (2 Bathroom signs + 7 signs on posts and inside the entrances)

Survey respondents were approached when visitors were observed preparing to depart the park (i.e. packing up picnic items or moving towards their vehicle). One question was added to the survey during weeks 3, 4, and 5: "As a result of your visit to this park and seeing the Coast Talk signs, had you intended to tune into the broadcast before departing?" This question was added after we noticed that many people responded to survey question number 3, "did you happen to tune into this Coast Talk program on Radio Station 1610 AM today?" that they were going to tune-in to the broadcast after re-entering their vehicle and the surveyor intercepted them.

At the completion of a survey, the surveyor would finalize any written information and then pick the next visitor/vehicle that was preparing to leave. If two vehicles were departing at the same time, the surveyors chose to approach the car that had a color they had not seen within the past hour. In this way, surveyor bias, based on car color, newness, cleanliness, or brightness, is believed to have been avoided. Additionally, surveyors were assigned to a survey zone and zones were rotated after two hours. At the completion of the survey period, visitors were thanked for their

participation and given a brochure informing them of a low power radio broadcast located at Seal Rock State Park at that time and general information about LPR technology.

This survey method was chosen over the "flashing headlights" protocol used by Reed and Bondi (1995) for the Forest Talk evaluation for several reasons. One, the layout of the park was not conducive to this type of evaluation. Second, if a sign asked visitors to turn on their headlights to indicate listenership, it is possible that visitors would not see or read the sign in time to participate. Additionally, visitors could exit on the north side of the park and would miss the south survey zone (this area was the only space that could have been used for this alternate evaluation). If a message were placed on the radio broadcast asking listeners to flash their lights, visitors could avoid the survey zone, resulting in an inaccurate listenership count.

Additionally, the following parameters were recorded each survey day: car counter number at the beginning and end of the survey period, number and locations of signs displayed daily, (using a water soluble spray paint for consistency and locations marked on a site map), hours surveyed and number of surveys conducted each day, names of surveyors each day and their assigned survey zones. A summary of this information is listed in Appendix 9.

Post survey methods

Surveys were coded and entered into Microsoft Excel spreadsheets. Survey codes and computer entry was checked for accuracy by a second person. Zip code locations were obtained in September, 1998, using the United States Postal Service version 3.2 database, found at their website http://www.usps.gov/ncsc. The number of park visitors for the survey period was calculated by multiplying the total car count by three. Boiler Bay has a one-way car count meter at one of its two entrances and day park visits are normally calculated at OPRD by multiplying the car counts by four (they assume an average of two people per vehicle) to account for vehicles entering the park at the non-metered location. During "Whale Watching Week" and the pre-survey period, it was observed that most cars turn into the park from the North, which is where the meter is

located. Therefore, a calculation factor of four was considered too high for this project's visitor counts and a factor of three was used instead.

Results and Discussion

During the five-week survey period, 822 valid surveys were obtained from cars, trucks, recreational vehicles (RV's) and motorcycles. Analysis of the data shows that there was a relationship between the number of signs and the number of visitors tuning into the LPR broadcast. One sign located at each park entrance alerting visitors to the broadcast was not as effective as additional signs placed throughout the park. There was a significant difference in tune-ins between week 1 with four signs displayed ($p>=0.01$, Chi-squared), and weeks 2, 3, 4, and 5 (additional signs displayed). Week 2 tune-ins were also significantly greater than weeks 3, 4, and 5 ($p>=0.05$, Chi-squared). There were no significant differences in the tune-ins between weeks 3, 4, and 5. Table 2 lists the percentages and numbers of tune-ins for each survey week.

Table 2: Percentages and numbers of tune-ins for each survey week from respondents that saw signs at the entrance, bathrooms, or by parking space (raw numbers are in parentheses).

	Week 1 n=190	Week 2 n=173	Week 3 n=163	Week 4 n=149	Week 5 n=147	Totals N=822
Tune-in numbers	10% (19)	36% (63)	23% (38)	16% (24)	16% (24)	20% (168)
% that saw sign total	42% (79)	97% (168)	93% (152)	78% (116)	78% (114)	77% (629)
% that saw entrance sign	33% (63)	59% (102)	53% (87)	53% (79)	59% (87)	51% (418)
% that saw bathroom sign	11% (20)	20% (34)	17% (27)	15% (23)	14% (20)	15% (124)
% that saw sign by parking space	N/A	91% (157)	83% (136)	62% (92)	42% (62)	81% (447) n=551

Different numbers of signs were displayed each week in order to determine the optimal sign number which could most effectively and efficiently advertise the broadcast (see Table 1). We conclude that week 1 signage was not effective with four signs posted and only 42% of the visitors seeing a sign. Week 2 had the largest volume of signs but this is not an appropriate number to display long-term, even though this week had the highest visibility and tune-in rate by visitors. OPRD would not permanently display the number of signs presented during week 2 since they blocked much of the coastal view. Weeks 4 and 5 had about the same tune-in rates, with three fewer signs displayed during week 5. There was a significant tune-in difference between weeks 1 and 5 with only five additional signs displayed during week 5. Therefore, the nine signs displayed during week 5 are considered the "optimal" sign number for visitor detection at this site since OPRD wanted to minimize the number of signs displayed in the park without compromising tune-in rates.

Only one significant correlation was observed between a demographic characteristic and broadcast listenership. During week 2, significantly more women than men tuned into the broadcast ($p=0.001$, Chi-squared). It is possible that more women were in a position, possibly the passenger seat, to see the signs and turn on the broadcast. The Forest Talk evaluation showed no significant relationships between age, gender, residence, and tune-ins.

Nearly 97% of listening park visitors interviewed during this study recommend that OPRD provide LPR broadcasts in more state parks. Respondents found the broadcast contained useful and interesting information and felt it enhanced their state park visit. Funding concerns were the main reason given by the four respondents who did not support the addition of these broadcasts in parks. These respondents were apprehensive that tax dollars would be used to support this type of outreach while parks themselves fall into disrepair due to funding problems. If park fees or other funds were used to implement LPR systems, then most of these people supported the installation of broadcasts in additional parks.

The 100 milliwatt LPR system can have commercial messages, so there are several avenues available to fund the purchase of additional LPR stations. One option is

to have a business, or several businesses, purchase the radio unit in exchange for broadcasting a commercial or message recognizing their contribution toward the broadcast. Another option would be to place sponsor logos on signs promoting the broadcast and/or provide recognition in the audio message itself.

Twenty-three percent of respondents did not see any signs prior to the interview. During week 1, 58% did not see any signs advertising the broadcast. Throughout the five weeks, an average of 51% of visitors recalled seeing a sign at a park entrance and 15% saw a bathroom sign. This lower bathroom number is likely because many visitors indicated they did not utilize the bathroom facilities. Many visitors volunteered that they were pleased there were additional signs in the park because they could not process the broadcast frequency quickly enough as they were turning into the park.

Twenty percent of park visitors interviewed during the five-week period tuned into the broadcast that day or in a prior visit to the park (no repeat surveys were allowed). If the broadcast continued throughout the year, this would translate into approximately 20,000 vehicles tuning in for interpretative and informational messages (based on 100,000+ vehicles annually visiting the park, OPRD car counter data). Week 1 had the lowest number of visitors tuning in that day or a previous day (10% total) and Week 2 had the highest total number of visitors tuning in (36%). By comparison, the Forest Talk system, located on a high speed roadway, had an 8% total tune-in rate during one evaluation period (Lamb, 1994) and a 1.3% tune-in rate during another (Reed and Bondi, 1995). It is unknown how many signs were displayed during their evaluation.

Ninety-seven percent of vehicles had a functioning AM radio and 74% of people surveyed listened to their radio "most of the time" or "some of the time" when traveling. More than 40% of interviewed park visitors not initially tuning into the Coast Talk broadcast said they intended to listen to the messages before leaving the park. Most of these people indicated that they noticed Coast Talk signs while walking around the park, but were interviewed prior to reentering their vehicles and turning on the radio broadcast. Place of residence did not predict listenership. There was no significant difference in Oregon residents tuning into the broadcast compared to out-of-state or international visitors. Forty-eight percent of respondents had an Oregon zip code, 45% lived out of

state and six percent lived in foreign countries (one percent of visitors refused to give their zip code). Almost 70% of park visitors interviewed on-site during this study indicated having an urban or metropolitan domicile. The Portland area was the most common residence of respondents from urban areas.

Many park visitors interviewed during this study found the broadcasts were a great tool for enhancing their state park visit. Most listening visitors could recall the major theme(s) of the message(s) they heard and found the message length appropriate. Additionally, many visitors who had not tuned into the broadcast prior to the survey expressed positive opinions about the unique opportunities offered by this technology and indicated they would tune-in to the broadcast at the completion of the survey.

Increased listenership may have been obtained by putting a sign on the highway, which the Oregon Department of Transportation would not have allowed for this project. While the short range of the 100 milliwatt station would not extend out along the highway, a highway sign could inform motorists of the broadcast opportunity available in the park and motorists could choose to visit the park to listen to the broadcast. Many visitors suggested placement of signs along the highway. In addition, several respondents indicated they thought the signs and "Coast Talk" referred to a commercial broadcast or "talk radio show" and did not tune-in for this reason. Increasing the size of the OPRD and OSG logos on the signs or an alternate name for the broadcast may have decreased the confusion. Many respondents suggested using the phrase "Park Info, Tune to 1610 AM" to notify visitors of the legitimacy of the broadcast.

Several visitors tried to tune-in to the broadcast but did have trouble receiving the signal. While many of these problems were attributed to faulty radio or antenna equipment, some reception difficulties remained. Often one visitor would have trouble hearing the broadcast while an adjacent visitor was listening to the broadcast. This problem may be attributed to differences in radios or antenna strengths.

Conclusions and Implications for the Future

Fazio and Gilbert (1982) discuss some drawbacks of utilizing conventional commercial radio technology to communicate interpretive or educational information. Radio is an immediate medium where the message effectiveness depends on a "one-shot" effort at visitor contact and understanding and it is a more passive form of communication. Contact through the radio message does not necessarily mean communication. However there are several advantages in utilizing automated content radio such as LPR to communicate to visitors. This radio broadcast format is a timely medium; it can be easily updated and it is relatively accessible. And it is relatively low in cost considering the large number of people who can be reached. LPR differs from conventional commercial stations in that messages are rebroadcast automatically every 10-15 minutes, 24 hours a day, seven days a week. Messages can be listened to as many times as desired by visitors, leading to increased retention of the information.

Most survey respondents, regardless of whether they heard the broadcast, were enthusiastic about this communication tool. Boiler Bay project results should be disseminated to OPRD managers so additional broadcasts are considered for new coastal park sites. Additionally, funds for purchasing the LPR equipment to remain at Boiler Bay State Park have not yet been procured. It is hoped that as OPRD managers learn of the outreach potential of LPR broadcasts, funds will be made available to purchase this equipment. Visitor education is vital to conservation of marine and coastal resources. Morgan et al (1997) states that

> Predicting, understanding, and managing human behavior will not only reduce visitor conflicts but also ultimately yield greater public support for a variety of conservation practices. Unfortunately the effects of communication strategies in outdoor settings are poorly understood. This problem is compounded by the lack of funding, time, and personnel to conduct evaluation-based research on interpretation. In the current budget-cutting era, government agencies must explore many different options as the try to do 'more with less.'

Low power radio broadcasts are a viable option for state park coastal managers to "do more with less." During December 1999, a resource notebook was distributed to key OPRD coastal parks staff to enlighten them about LPR broadcasts and the Boiler Bay project results. This project extension was funded through the Curtis and Isabella Holt Marine Education Fund. It is hoped that this resource notebook will accelerate the adoption of LPR broadcasts in Oregon's coastal parks.

LPR broadcasts could become a trademark of Oregon's coastal parks. The state park system is already highly valued by residents and visitors. As we look ahead to increasing coastal residents and visitors, this outreach tool could help stimulate and renew interest in our marine environment and natural resources. A future study could investigate whether a Coast Talk broadcast encouraged visitors to be more responsible stewards in the coastal environment, which would be useful and important information for coastal managers.

There are several advantages of using 100 milliwatt LPR units in coastal parks instead of a 10 Watt transmitter placed along the highway. Signs notifying visitors of a 10 Watt system must be viewed while motorists are traveling at high speeds along roadways. Attention to the message content of these size stations may be minimal if motorists are studying maps or distracted in other ways inside the moving vehicle or merely watching traffic road conditions. Use of 100 milliwatt broadcasts in parking areas provides greater opportunity for visitors seeing signs, attention to message content, and may lead to greater retention of the broadcast information though this was not measured in this study. Had funds and time allowed, a follow-up study could have been conducted to determine if the visitors retained information heard during the radio broadcast.

Tune-in rates during the 10 Watt Forest Talk evaluations ranged from 1.3% to 8%. While the Boiler Bay project had a tune-in rate of 10% during the first week with only four signs visible, it increased to 16% during Weeks 4 and 5, which is double the highest Forest Talk listenership. The 100 milliwatt LPR stations must have an adequate number of signs displayed so visitors have the opportunity to tune-in to the broadcast.

Whether the OPRD interest level in this technology increases enough to widen the LPR broadcast application in coastal parks remains to be seen. The Boiler Bay project

results intrigued both the Port of Newport and the Hatfield Marine Science Visitor Center. Both sites now have 100 milliwatt LPR stations broadcasting information specific to each location. Results from this study at Boiler Bay State Park indicate that LPR broadcasts are a promising communication technology for providing park visitors with helpful information. State parks in Oregon offer important opportunities for visitor recreation and natural resource education. With increasing visitation to the nation's coastal parks, there is growing need for marine education to enhance stewardship, interpretation, and safety knowledge. This research indicates that resource agencies should consider LPR technology as an affordable communication strategy for reaching these visitors.

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Appendix 1: Boiler Bay State Park Low Power Radio Messages, March 1998

This appendix lists the radio messages played during the demonstration portion of the Boiler Bay State Park project throughout March 1998.

Message 1: Welcome

Welcome to Boiler Bay and a front seat on one of the greatest animal migrations on earth. From now through May, as many as 100 gray whales each day will pass this point on their 10-thousand-mile journey from the waters off Mexico to their summer feeding grounds near Alaska.

Sit back, relax and learn a little about these giant travelers, their long migration -- and how you can improve your chances of spotting gray whales as they swim past the Oregon coast.

Message 2: Who are the Gray Whales?

The gray whale is the most common large whale seen along the Pacific Coast of North America. They get their name from their skin color. Some are born with blotchy gray skin, and many are also spotted with clusters of barnacles. Like all whales, gray whales are mammals. They are warm-blooded, and they have come to the surface to breathe air. They give birth to live babies that nurse on their mothers' milk.

Gray whales are among the biggest animals on earth. An adult gray whale can grow almost as big as a Greyhound bus, and can weigh up to 35 tons! Instead of teeth, gray whales have baleen -- stiff, fringed plates they use to strain tiny sea creatures from the mud they slurp up from the ocean floor. These creatures, called amphipods, make up most of the gray whale's diet. At one time, gray whales were very rare. Whalers had hunted the animals almost to extinction. But thanks to international whale protection treaties, today there are almost as many gray whales as there ever were.

Message 3: The Long Migration

Gray whales spend much of their life traveling -- and a very long trip it is. At this time of year, most gray whales are heading north toward Alaska's Bering and Chukchi Seas. They will spend the summer feeding on tiny, shrimp-like amphipods that grow there in great quantities during the long summer days.

The journey starts in the warmer, sheltered lagoons off Mexico's Baja Peninsula, where the whales have spent the winter breeding and bearing their young. The first animals to head north each spring are usually juveniles, adult males, and females without calves. They swim past Oregon in March and April. A little later, in April, May and June, the mothers and their babies head north, usually traveling close to shore. By late December, the cycle repeats itself as the whales head south to Mexico once again to bear their young. The full round trip covers 10-thousand-miles -- the longest seasonal migration of any mammal on earth.

A few hundred gray whales don't follow the migration, but stay in the waters off Oregon all year long. Boiler Bay is an especially good place to spot the occasional gray whale, even after the migration passes its peak.

Message 4: How to Spot Whales

What does it take to see a whale? Patience, mostly -- and a little good luck. At this time of year, whales are relatively easy to spot, since most of them travel within two miles of shore. If you're lucky, you may even see whales swimming among the breakers!

Fair weather and calm seas help make it easier to tell the whales from the whitecaps. Pick a time and place where the sun won't shine in your eyes. Scan the water slowly from left to right and back again. You're looking for the sudden, vertical plume of water as a whale clears its blowholes when it surfaces to breathe. Be patient. Once you see a blow, stay with it. Whales will often make several short, shallow dives in a row before making a longer, deeper dive that takes them out of sight.

If you're using binoculars, it's easier to spot a whale first with your naked eye. Keep track of where you saw it as you raise your binoculars for a closer view. Most of the time, only a small part of the whale's back is visible when it blows. But you never know -- you might just see one lift its giant tail flukes into the air, or be lucky enough to see a whale breach clear out of the water!

Message 5: Whale Watch Week Activities

Whale Watch Week is a busy time on the Oregon Coast. At Oregon State University's Hatfield Marine Science Center in Newport, you can see a whale skeleton, watch marine mammal movies, and learn firsthand about OSU whale research. Also in Newport, the Oregon Coast Aquarium has a brand-new new exhibit, "What About Whales," opening March 21st. The Aquarium is also where you can see Keiko, the world-famous killer whale.

Stop by the Cape Perpetua Visitor Center near Yachats any day this week for their all-day whale film festival. Or contact one of the many whale-watching charter companies up and down the coast about taking a boat out to see the whales -- up close and personal!

Right here at Boiler Bay -- along with 28 other state parks up and down the Oregon Coast -- trained volunteers are on hand every day from 10 a.m. to 1 p.m., March 21st through 28th, to answer your questions about whales. Just look for the signs that say "Whale Watching Spoken Here."

Message 6: Credits and Closing

This message has been brought to you as a special Whale Watch Week service by the Oregon State Parks and Recreation Department and Oregon Sea Grant. This recording is part of a research and demonstration project on the use of Low Power Radio to teach visitors about the coastal environment.

During Whale Watch Week, an OSU research assistant will visit Boiler Bay and may want to ask you what you think of these recordings. We hope you'll take a few minutes to let her know. Or talk to the Whale Watch Volunteers and tell them what you think. Thanks for tuning in. If you missed part of the message or would like to listen again, just stay tuned!

Appendix 2: Boiler Bay State Park Low Power Radio Messages, Summer 1998

This appendix lists the radio messages played during the evaluative research portion of the Boiler Bay State Park project throughout the summer of 1998.

Message 1: Welcome to Boiler Bay

Welcome to Boiler Bay, and a front seat on Oregon's coastal geology and ocean life. Boiler Bay takes its name from the rusty old ship's boiler you can see in the bay at low tide. The boiler is all that remains of the J. Marhoffer, a small freighter that sank here after an explosion in 1910.

Sit back, relax, and learn about some of the natural wonders you can see here at Boiler Bay State Park.

Message 2: Boiler Bay Biology and Geology

From spring to early summer, as many as 100 gray whales each day pass this point on their 10-thousand-mile journey from the waters off Mexico to their summer feeding grounds near Alaska. In the fall and early winter, the whales pass by again, heading back south to bear their young. In a moment, we'll tell you more about the whales and how you can spot them.

Even when the whales aren't visible, there's lots to see at Boiler Bay, including some of the best bird-watching on the Oregon coast. Among the sea birds you might see here are ancient and marbled murrelets, Cassin's auklets and Common murres. Brown pelicans, shearwaters, grebes and oystercatchers are also common.

Like the rest of the Oregon coast, Boiler Bay is the result of millions of years of geologic activity. Long ago, the Juan de Fuca plate, a layer of rock which forms the offshore sea floor of the Pacific Northwest, began to slide beneath the geologic plate that makes up the western edge of North America. This resulted in the formation of the Coast Range mountains. Most of the dark rock you see at the park today is basalt, a product of ancient undersea volcanoes.

Look to the right of the point and you should be able to see a blowhole that formed in the rock. When waves are high, look for large spouts or blows of water blasting through the hole.

Message 3: Who are the Gray Whales?

The gray whale is the most common large whale seen along the Pacific Coast of North America. They get their name from their skin color. Some are born with blotchy gray skin, and many are also spotted with clusters of barnacles. Like all whales, gray whales are mammals. They are warm-blooded, and they have come to the surface to breathe air. They give birth to live babies that nurse on their mothers' milk.

Gray whales are among the biggest animals on earth. An adult gray whale can grow almost as big as a Greyhound bus, and can weigh up to 35 tons! Instead of teeth, gray whales have baleen -- stiff, fringed plates they use to strain tiny sea creatures from the mud they slurp up from the ocean floor. These creatures, called amphipods, make up most of the gray whale's diet. At one time, gray whales were very rare. Whalers had hunted the animals almost to extinction. But thanks to international whale protection treaties, today there are almost as many gray whales as there ever were.

Message 4: The Long Migration

Gray whales spend much of their life traveling -- and a very long trip it is. In the spring and early summer, most gray whales head north toward Alaska's Bering and Chukchi Seas. They will spend the summer feeding on tiny, shrimp-like amphipods that grow there in great quantities during the long summer days.

The journey starts in the warmer, sheltered lagoons off Mexico's Baja Peninsula, where the whales have spent the winter breeding and bearing their young. The first animals to head north each spring are usually juveniles, adult males, and females without calves. They swim past Oregon in March and April. A little later, in April, May and June, the mothers and their babies head north, usually traveling close to shore. By late December, the cycle repeats itself as the whales head south to Mexico once again to bear their young. The full round trip covers 10-thousand-miles -- the longest seasonal migration of any mammal on earth.

A few hundred gray whales don't follow the migration, but stay in the waters off Oregon all year long. Biologists believe the whales stay here because they can find plenty of food. The resident gray whales can often be spotted feeding in the shallow waters off Boiler Bay, even when the migrating whales have left the area. Look for them diving and spotting off the shore.

When they are feeding, gray whales typically dive for 3 to 5 minutes, then surface for a series of short breaths before diving again. But they have been known to dive for as long as 10 minutes. While the migrating gray's often travel as fast as 5 miles an hour, the resident whales are slower and may stay in one area for some time.

Message 5: How to Spot Whales

What does it take to see a whale? Patience, mostly -- and a little good luck. At this time of year, whales are relatively easy to spot, since most of them travel within two miles of shore. If you're lucky, you may even see whales swimming among the breakers!

Fair weather and calm seas help make it easier to tell the whales from the whitecaps. Pick a time and place where the sun won't shine in your eyes. Scan the water slowly from left to right and back again. You're looking for the sudden, vertical plume of water as a whale clears its blowholes when it surfaces to breathe. Be patient. Once you see a blow, stay with it. Whales will often make several short, shallow dives in a row before making a longer, deeper dive that takes them out of sight.

If you're using binoculars, it's easier to spot a whale first with your naked eye. Keep track of where you saw it as you raise your binoculars for a closer view. Most of the time, only a small part of the whale's back is visible when it blows. But you never know -- you might just see one lift its giant tail flukes into the air, or be lucky enough to see a whale breach clear out of the water!

Message 6: Credits and Closing

Coast Talk is brought to you by the Oregon Parks and Recreation Department and Oregon Sea Grant. The broadcast is part of a research and demonstration project on the use of Low Power Radio to inform visitors about the coastal environment.

If you would like more information about the marine environment, drop by one of the many State Parks visitor centers along the coast. You can also tune into Coast Talk at Seal Rock State Park, located about 12 miles south of Newport. There, you can learn about tidepools and the best way to explore and protect these unusual coastal ecosystems.

Message 7: Survey Notification

This summer, OSU researchers and State Park staff will be interviewing selected visitors to Boiler Bay. If asked, we hope you will take a few minutes to share what you think about this park's Coast Talk broadcast.

Message 8: Weather Notification

Stay tuned now for National Weather Service radio and a report on current weather conditions for the central Oregon coast. If you missed part of Coast Talk or wish to hear it again, keep listening and the broadcast will repeat in about five minutes.

Appendix 3: Survey introduction used at Boiler Bay State Park, July to August 1998.

This is the survey introduction statement used to approach each potential survey respondent.

LOW POWER RADIO CHECKPOINT SURVEY INTRODUCTION (est. time, 0:30)

Hi, my name is (first name only) and I'm with Oregon State University. Today, OSU is conducting a survey of people traveling in this park that may have listened to our new radio program called Coast Talk.

[Interviewer Note: You have an official Interviewer Identification card in case anyone questions your authenticity. If possible, direct interview to person in front seat of vehicle (who can turn on AM radio).]

Would you be willing to share approximately 7 minutes to answer questions that will help us evaluate the success of this programming? This is a confidential and voluntary survey – at no time will I ask you for your name or address.

[Interviewer Note:
If person says, "I haven't listened to the program." Tell them its OK, but we still have a few questions we'd like to ask.

If person says, "No, I don't want to participate." Interviewer says, "Thank you for your time and have a good day!" Offer a brochure.]

Can you help us today? There are no "right or wrong" answers!

[Interviewer Note: If person says, "Yes", proceed with survey.]

[Other interviewer notes: Following the completion of the interview, thank the participant for sharing time with us, give them our brochure, and invite them to tune in to 1610AM at Seal Rock State Park.]

Finally, tally any who refuse to participate in the survey. Tally here for all refusals:

Appendix 4: Survey instrument used at Boiler Bay State Park during Weeks 1 and 2, July 1998.

This is the survey instrument used at Boiler Bay State Park, Oregon during the evaluative research project period during survey weeks 1 and 2, July 1998.

BOILER BAY STATE PARK LOW POWER RADIO PROJECT SURVEY (v.1)

1. Do you have a functioning AM radio in your vehicle?

YES.....1
NO.....2

2. How often do you listen to the radio when travelling?

MOST OF THE TIME.....1
SOME OF THE TIME.....2
RARELY.....3

3. Oregon Sea Grant and Oregon Parks and Recreation Department have developed short informational messages about Boiler Bay State Park. Did you happen to tune into this Coast Talk program on Radio Station 1610 AM today?

NO.....1 (Skip to 14)
YES.....2

4. Have you listened to this broadcast before today?

YES.....1
NO.....2
[DK/NA].....3

5. How did you first learn about this broadcast? (circle only one)

SIGNS.....1
NEWSPAPER.....2
OTHER_____

6. Today's broadcast is made up of several short messages about Boiler Bay and our survey. Did you listen long enough to hear more than one message?

YES.....1
NO.....2
[DK/NA].....3

7. Can you recall the major theme of the (message) or (messages)?

Anything else?

8. Do you think you might use this information in your coastal travels?

YES.....1
NO.....2

9. Did you find the message length about right, too long, or too short?

ABOUT RIGHT.....1
TOO LONG.....2
TOO SHORT.....3

10. Did you also listen to the weather report broadcasted by this park's radio station?

[DK/NA].....1
NO.....2
YES.....3

10a. Should we continue this coast weather report?

YES.....1
NO.....2
[DK/NA].....3

11. How likely is it that you would tune into another park radio station again?

VERY LIKELY.....1
SOMEWHAT.....2
NOT LIKELY.....3

12. Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?

YES.....1
NO.....2
[DK/NA].....3

13. Overall, do you think these messages provide a useful service?

YES.....1
NO.....2

13a. Please indicate why you don't think the service is useful.

14. Did you notice any signs (INT: show sign) in the park advertising this radio information today?

[DK/NA].....1 (Skip to 15)
NO.....2 (Skip to 15)
YES.....3

14a. Did you notice a sign at:

	YES	NO	[DK]
a. the Park Entrance?	1	2	3
b. the Park Bathroom?	1	2	3
c. by Parking Space?	1	2	3

14b. Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?

ENOUGH.....1
MORE NEEDED.....2

(Vol.) [Too many].....3

(ASK OF EVERYONE) Finally, I would like to ask a few questions about you.

15. Have you ever heard of Oregon Sea Grant before today?

YES.....1
NO.....2
[DK/NA].....3

16. How many people including yourself, are in your vehicle today?

Number in Vehicle _____
[DK/NA] 99

17. I am going to read you a list of age groups, please tell me which category represents your age.

a. below 16 _____
b. 16 to 25 _____
c. 26 to 45 _____
d. 45 to 65 _____
e. 66 and over _____

18. What is your home zip code?

ZIP _____

Refused 99

19. Would you say that you live in a city or in the country?

COUNTRY.....1

CITY.....2

[DK/NA].....3

20. (Int: BY OBSERVATION) Respondent's Gender:

MALE.....1

FEMALE.....2

21. Is there anything else concerning the radio broadcast that you would like to say?

Thank you for your time! Your input will be used to help produce more effective and enjoyable public education programs. (Don't forget to give each participant a brochure.)

DATE: _____ TIME: _____AM / PM (circle one)

INTERVIEWER'S NAME: _____

Appendix 5: Survey instrument used at Boiler Bay State Park during survey weeks 3-5, July to August 1998

This is the survey instrument used at Boiler Bay State Park, Oregon during the evaluative research project period during Weeks 3, 4, and 5, July to August 1998.

BOILER BAY STATE PARK LOW POWER RADIO PROJECT SURVEY (v.2)

1. Do you have a functioning AM radio in your vehicle?

YES.....1
NO.....2

2. How often do you listen to the radio when travelling?

MOST OF THE TIME.....1
SOME OF THE TIME.....2
RARELY.....3

3. Oregon Sea Grant and Oregon Parks and Recreation Department have developed short informational messages about Boiler Bay State Park. Did you happen to tune into this Coast Talk program on Radio Station 1610 AM today?

NO.....1 (Skip to 14)
YES.....2

4. Have you listened to this broadcast before today?

YES.....1
NO.....2
[DK/NA].....3

5. How did you first learn about this broadcast? (circle only one)

SIGNS.....1
NEWSPAPER.....2
OTHER_____

6. Today's broadcast is made up of several short messages about Boiler Bay and our survey. Did you listen long enough to hear more than one message?

YES.....1
NO.....2
[DK/NA].....3

7. Can you recall the major theme of the (message) or (messages)?

Anything else?

8. Do you think you might use this information in your coastal travels?

YES.....1
NO.....2

9. Did you find the message length about right, too long, or too short?

ABOUT RIGHT.....1
TOO LONG.....2
TOO SHORT.....3

10. Did you also listen to the weather report broadcasted by this park's radio station?

[DK/NA].....1
NO.....2
YES.....3

10a. Should we continue this coast weather report?

YES.....1
NO.....2
[DK/NA].....3

11. How likely is it that you would tune into another park radio station again?

VERY LIKELY.....1
SOMEWHAT.....2
NOT LIKELY.....3

12. Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?

YES.....1
NO.....2
[DK/NA].....3

13. Overall, do you think these messages provide a useful service?

YES.....1
NO.....2

13a. Please indicate why you don't think the service is useful.

14. Did you notice any signs (INT: show sign) in the park advertising this radio information today?

[DK/NA].....1 (Skip to 15)
NO.....2 (Skip to 15)
YES.....3

14a. Did you notice a sign at:

	YES	NO	[DK]
a. the Park Entrance?	1	2	3
b. the Park Bathroom?	1	2	3
c. by Parking Space?	1	2	3

14b. Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?

ENOUGH.....1
MORE NEEDED.....2

(Vol.) [Too many].....3

(ASK OF EVERYONE) Finally, I would like to ask a few questions about you.

15. Have you ever heard of Oregon Sea Grant before today?

YES.....1
NO.....2
[DK/NA].....3

16. How many people including yourself, are in your vehicle today?

Number in Vehicle _____
[DK/NA] 99

17. I am going to read you a list of age groups, please tell me which category represents your age.

a. below 16 _____
b. 16 to 25 _____
c. 26 to 45 _____
d. 45 to 65 _____
e. 66 and over _____

18. What is your home zip code?

ZIP _____

Refused 99

19. Would you say that you live in a city or in the country?

COUNTRY.....1

CITY.....2

[DK/NA].....3

20. (Int: BY OBSERVATION) Respondent's Gender:

MALE.....1

FEMALE.....2

21. As a result of your visit to this park and seeing the Coast Talk signs, had you intended to tune into the broadcast before departing?

YES.....1

NO.....2

DK/Maybe.....3

(Vol.) Due to survey.....4

22. Is there anything else that you would like to add?

Thank you for your time! Your input will be used to help produce more effective and enjoyable public education programs. (Don't forget to give each participant a brochure.)

DATE: _____ TIME: _____AM / PM (circle one)

INTERVIEWER'S NAME: _____

Appendix 6: Surveyor schedule from Boiler Bay State Park during evaluative low power radio research project.
July 1 to August 2, 1998

WEEK 1	9:30am -3:30pm	Surveyor 1	Surveyor 2	Surveyor 3	Surveyor 4	Surveyor 5
1-Jul-98	Wednesday	Erin Williams	Mike Rivers (OPRD)	Janice Adams/Bruce DeYoung	James Tingey	Lyudmila Kirillova
4-Jul-98	Saturday	Erin Williams	Jen DeYoung	Kevin Bruce	James Tingey	
5-Jul-98	Sunday	Erin Williams	Jen DeYoung	Kevin Bruce	James Tingey	
WEEK 2	**9:30am-3:30 pm**					
8-Jul-98	Wednesday	Erin Williams	Mike Rivers (OPRD)	Janice Adams/Bruce DeYoung	James Tingey	Lyudmila Kirillova
11-Jul-98	Saturday	Erin Williams	Mandy Caruso	Kevin Bruce	James Tingey	
12-Jul-98	Sunday	Erin Williams	Mandy Caruso	Kevin Bruce	James Tingey	
WEEK 3	**9:30am-3:30 pm**					
15-Jul-98	Wednesday	Erin Williams	Mike Rivers (OPRD)	Janice Adams/Bruce DeYoung	Lyudmila Kirillova	
18-Jul-98	Saturday	Erin Williams	Jen DeYoung	Kevin Bruce	Mandy Caruso	
19-Jul-98	Sunday	Erin Williams	Mandy Caruso	Kevin Bruce	Jen DeYoung	
WEEK 4	**10:00am-4:00pm**					
22-Jul-98	Wednesday	Erin Williams	Mike Rivers (OPRD)	Janice Adams/Bruce DeYoung	James Tingey	Lyudmila Kirillova
25-Jul-98	Saturday	Erin Williams	Mandy Caruso	Kevin Bruce	James Tingey	
26-Jul-98	Sunday	Erin Williams	Mandy Caruso	Kevin Bruce	James Tingey	
WEEK 5	**10:00am-4:00pm**					
29-Jul-98	Wednesday	Erin Williams	Mike Rivers (OPRD)	Janice Adams/Bruce DeYoung	James Tingey	Lyudmila Kirillova
1-Aug-98	Saturday	Erin Williams	Jen DeYoung	Kevin Bruce	James Tingey	
2-Aug-98	Sunday	Erin Williams	Jen DeYoung	Kevin Bruce	James Tingey	

Appendix 7: Black and white example of signs displayed during the Boiler Bay State Park low power radio survey project, July-August 1998.

This is a black and white example of the signs displayed during the Boiler Bay State Park low power radio survey project. The signs were sky-blue colored, reverse-printed. The signs displayed in the parking areas measured 18 by 24 inches and were staked in the ground and removed each day. The entrance and bathroom signs measured 24 inches by 36 inches and were installed permanently. Each of the five survey weeks (a Wednesday, Saturday, and Sunday) had a different number of signs displayed.


COAST
TALK
Tune your
radio to
1610 AM
Sea Grant
Oregon
OREGON
STATE
PARKS

Appendix 8: Weekly summaries and five week total of survey responses from Boiler Bay State Park low power radio project.

This appendix contains the summary of survey responses for each week (one through five) as well as the total summary of survey responses for all five weeks from the Boiler Bay State Park low power radio project, July to August, 1998. The coding key for the survey is also included at the end.

Week 1 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 1
Number of Surveys		**190**

Q1: Do you have a functioning AM radio in your vehicle?

Yes	97.4%	185
No	2.6%	5
SUM	100.0%	**190**

Q2: How often do you listen to the radio when travelling?

Most of the time	44.2%	84
Some of the time	28.9%	55
Rarely	26.3%	50
99	0.5%	1
SUM	100.0%	**190**

Q3: Did you happen to tune into this Coast Talk program on Radio Station 1610 Am today?

No	94.7%	180
Yes, tuned in	5.3%	10
SUM	100.0%	**190**

Q4: Have you listened to this broadcast before today?

Yes, listened before today	4.7%	9
No	64.7%	123
99	30.5%	58
SUM	100.0%	**190**

Week 1 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 1
Q5: How did you first learn about this broadcast?		
Signs	6.3%	12
Newspaper	0.0%	0
Other	1.1%	2
99	0.5%	1
n/a	92.1%	175
SUM	100.0%	**190**
Q6: Did you listen long enough to hear more than one message?		
Yes	1.1%	2
No	4.7%	9
DK/NA	0.5%	1
99	1.6%	3
n/a	92.1%	175
SUM	100.0%	**190**
Q7: Can you recall the major theme of the (message) or (messages)?		
Yes	4.2%	8
No	1.1%	2
99	2.6%	5
n/a	92.1%	175
SUM	100.0%	**190**
Q8: Do you think you might use this information in your coastal travels?		
Yes	4.2%	8
No	1.6%	3
Maybe	0.5%	1
99	1.6%	3
n/a	92.1%	175
SUM	100.0%	**190**

Week 1 survey results from Boiler Bay State Park low power radio project

Percentages	Week 1

Q9: Did you find the message length about right, too long, or too short?

About right	4.7%	9
Too long	1.1%	2
Too short	0.0%	0
99	1.6%	3
n/a	92.1%	175
DK	0.5%	1
SUM	100.0%	**190**

Q10: Did you also listen to the weather report broadcasted by this park's radio station?

DK/NA	0.5%	1
No	3.2%	6
Yes	2.6%	5
99	1.6%	3
n/a	92.1%	175
SUM	100.0%	**190**

Q10a: Should we continue this coast weather report?

Yes, continue	2.6%	5
No	0.0%	0
DK/NA	0.5%	1
99	1.1%	2
n/a	95.8%	182
SUM	100.0%	**190**

Week 1 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 1
Q11: How likely is it that you would tune into another park radio station again?		
Very likely	4.2%	8
Somewhat likely	1.6%	3
Not likely	0.5%	1
99	1.6%	3
n/a	92.1%	175
SUM	100.0%	**190**
Q12: Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?		
Yes	5.8%	11
No	0.5%	1
99	1.6%	3
n/a	92.1%	175
SUM	100.0%	**190**
Q13: Overall, do you think these messages provide a useful service?		
Yes	5.8%	11
No	0.5%	1
99	1.6%	3
n/a	92.1%	175
SUM	100.0%	**190**
Q14: Did you notice any signs in the park advertising this radio information today?		
DK/NA	0.5%	1
No	57.9%	110
Yes	41.6%	79
SUM	100.0%	**190**

Week 1 survey results from Boiler Bay State Park low power radio project

Percentages	Week 1

Q14aa: Did you notice a sign at: the Park Entrance?

Yes	33.2%	63
No	4.7%	9
DK	0.5%	1
99	3.7%	7
n/a	57.9%	110
SUM	100.0%	**190**

Q14ab: Did you notice a sign at: the Park Bathroom?

Yes	10.5%	20
No	19.5%	37
DK/DV	3.2%	6
99	8.9%	17
n/a	57.9%	110
SUM	100.0%	**190**

Q14ac: Did you notice a sign by your Parking Space?

n/a	100.0%	190
SUM	100.0%	**190**

Q14b: Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?

Enough signs	18.9%	36
More needed	20.0%	38
Too many (volunteered)	0.0%	0
99	1.6%	3
n/a	57.9%	110
DK	1.6%	3
SUM	100.0%	**190**

Week 1 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 1

Q15: Have you ever heard of Oregon Sea Grant before today?

Yes	17.9%	34
No	81.1%	154
DK/NA	0.5%	1
99	0.5%	1
SUM	100.0%	**190**

Q16: How many people, including yourself, are in your vehicle today?

Vehicle number		585

Q17: I am going to read you a list of age groups, please tell me which category represents your age.

a. below 16	0.5%	1
b. 16 to 25	5.3%	10
c. 26 to 45	43.2%	82
d. 46 to 65	39.5%	75
e. 66 and over	11.6%	22
SUM	100.0%	**190**

Q18: What is your home zip code?

Oregon zip code	47.4%	90
Out of state zip code	44.7%	85
Out of country code	5.3%	10
Refused	2.6%	5
SUM	100.0%	190

Week 1 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 1
Q19: Would you say that you live in a city or in the country?		
Country	32.1%	61
City	67.4%	128
DK/NA	0.5%	1
SUM	100.0%	**190**
Q20: Respondent's Gender: (By interviewer observation)		
Male	52.1%	99
Female	47.4%	90
99	0.5%	1
SUM	100.0%	**190**

Q21: DID NOT EXIST

Week 2 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 2
Number of Surveys		**173**

Q1: Do you have a functioning AM radio in your vehicle?

Yes	96.5%	167
No	3.5%	6
SUM	100.0%	**173**

Q2: How often do you listen to the radio when travelling?

Most of the time	50.3%	87
Some of the time	24.9%	43
Rarely	24.9%	43
SUM	100.0%	**173**

Q3: Did you happen to tune into this Coast Talk program on Radio Station 1610 Am today?

No	69.9%	121
Yes, tuned in	30.1%	52
SUM	100.0%	**173**

Q4: Have you listened to this broadcast before today?

Yes, listened before today	6.4%	11
No	91.9%	159
99	1.7%	3
SUM	100.0%	**173**

Week 2 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 2
Q5: How did you first learn about this broadcast?		
Signs	27.7%	48
Newspaper	0.0%	0
Other	1.7%	3
99	3.5%	6
n/a	67.1%	116
SUM	100.0%	**173**
Q6: Did you listen long enough to hear more than one message?		
Yes	9.2%	16
No	17.3%	30
DK/NA	0.6%	1
99	4.0%	7
n/a	68.8%	119
SUM	100.0%	**173**
Q7: Can you recall the major theme of the (message) or (messages)?		
Yes	19.7%	34
No	7.5%	13
99	4.0%	7
n/a	68.8%	119
SUM	100.0%	**173**
Q8: Do you think you might use this information in your coastal travels?		
Yes	23.7%	41
No	1.7%	3
Maybe	1.7%	3
99	4.0%	7
n/a	68.8%	119
SUM	100.0%	**173**

Week 2 survey results from Boiler Bay State Park low power radio project

Percentages	Week 2

Q9: Did you find the message length about right, too long, or too short?

About right	16.2%	28
Too long	1.2%	2
Too short	0.0%	0
99	4.6%	8
n/a	68.8%	119
DK	9.2%	16
SUM	100.0%	**173**

Q10: Did you also listen to the weather report broadcasted by this park's radio station?

DK/NA	0.6%	1
No	15.0%	26
Yes	11.6%	20
99	4.0%	7
n/a	68.8%	119
SUM	100.0%	**173**

Q10a: Should we continue this coast weather report?

Yes, continue	9.8%	17
No	1.7%	3
DK/NA	0.6%	1
99	4.0%	7
n/a	83.8%	145
SUM	100.0%	**173**

Week 2 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 2
Q11: How likely is it that you would tune into another park radio station again?		
Very likely	20.8%	36
Somewhat likely	4.6%	8
Not likely	1.2%	2
99	4.6%	8
n/a	68.8%	119
SUM	100.0%	**173**
Q12: Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?		
Yes	25.4%	44
No	0.6%	1
DK/NA	1.2%	2
99	4.0%	7
n/a	68.8%	119
SUM	100.0%	**173**
Q13: Overall, do you think these messages provide a useful service?		
Yes	27.2%	47
No	0.0%	0
99	4.0%	7
n/a	68.8%	119
SUM	100.0%	**173**

Week 2 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 2
Q14: Did you notice any signs in the park advertising this radio information today?		
DK/NA	0.0%	0
No	2.9%	5
Yes	97.1%	168
SUM	100.0%	**173**
Q14aa: Did you notice a sign at: the Park Entrance?		
Yes	59.0%	102
No	30.6%	53
DK	1.2%	2
99	6.4%	11
n/a	2.9%	5
SUM	100.0%	**173**
Q14ab: Did you notice a sign at: the Park Bathroom?		
Yes	19.7%	34
No	28.9%	50
DK/DV	34.1%	59
99	14.5%	25
n/a	2.9%	5
SUM	100.0%	**173**
Q14ac: Did you notice a sign by your Parking Space?		
Yes	90.8%	157
No	0.0%	0
99	6.4%	11
n/a	2.9%	5
SUM	100.0%	**173**

Week 2 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 2

Q14b: Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?

Enough signs	76.3%	132
More needed	2.9%	5
Too many (volunteered)	16.8%	29
99	0.6%	1
n/a	2.9%	5
DK	0.6%	1
SUM	100.0%	**173**

Q15: Have you ever heard of Oregon Sea Grant before today?

Yes	13.9%	24
No	86.1%	149
SUM	100.0%	**173**

Q16: How many people, including yourself, are in your vehicle today?

Vehicle number		474

Q17: I am going to read you a list of age groups, please tell me which category represents your age.

a. below 16	0.6%	1
b. 16 to 25	8.1%	14
c. 26 to 45	39.9%	69
d. 46 to 65	38.2%	66
e. 66 and over	13.3%	23
SUM	100.0%	**173**

Week 2 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 2
Q18: What is your home zip code?		
Oregon zip code	45.7%	79
Out of state zip code	48.0%	83
Out of country code	6.4%	11
Refused	0.0%	0
SUM	100.0%	173
Q19: Would you say that you live in a city or in the country?		
Country	30.6%	53
City	68.2%	118
DK/NA	1.2%	2
SUM	100.0%	**173**
Q20: Respondent's Gender: (By interviewer observation)		
Male	59.0%	102
Female	41.0%	71
SUM	100.0%	**173**
Q21: DID NOT EXIST		

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Number of Surveys		**163**

Q1: Do you have a functioning AM radio in your vehicle?

Yes	96.9%	158
No	3.1%	5
SUM	100.0%	**163**

Q2: How often do you listen to the radio when travelling?

Most of the time	44.2%	72
Some of the time	34.4%	56
Rarely	20.9%	34
99	0.6%	1
SUM	100.0%	**163**

Q3: Did you happen to tune into this Coast Talk program on Radio Station 1610 Am today?

No	79.8%	130
Yes, tuned in	20.2%	33
SUM	100.0%	**163**

Q4: Have you listened to this broadcast before today?

Yes, listened before today	3.1%	5
No	92.6%	151
99	4.3%	7
SUM	100.0%	**163**

Week 3 survey results from Boiler Bay State Park low power radio project

Percentages	Week 3

Q5: How did you first learn about this broadcast?

Signs	17.2%	28
Newspaper	0.0%	0
Other	1.2%	2
99	0.6%	1
n/a	81.0%	132
SUM	100.0%	**163**

Q6: Did you listen long enough to hear more than one message?

Yes	9.2%	15
No	7.4%	12
DK/NA	0.6%	1
99	0.6%	1
n/a	82.2%	134
SUM	100.0%	**163**

Q7: Can you recall the major theme of the (message) or (messages)?

Yes	14.7%	24
No	2.5%	4
99	0.6%	1
n/a	82.2%	134
SUM	100.0%	**163**

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Q8: Do you think you might use this information in your coastal travels?		
Yes	14.7%	24
No	1.2%	2
Maybe	0.0%	0
99	0.6%	1
n/a	82.2%	134
DK	1.2%	2
SUM	100.0%	**163**
Q9: Did you find the message length about right, too long, or too short?		
About right	13.5%	22
Too long	0.6%	1
Too short	0.0%	0
99	0.6%	1
n/a	82.2%	134
DK	3.1%	5
SUM	100.0%	**163**
Q10: Did you also listen to the weather report broadcasted by this park's radio station?		
DK/NA	1.2%	2
No	8.0%	13
Yes	8.0%	13
99	0.6%	1
n/a	82.2%	134
SUM	100.0%	**163**

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Q10a: Should we continue this coast weather report?		
Yes, continue	8.0%	13
No	0.6%	1
DK/NA	0.6%	1
99	0.6%	1
n/a	90.2%	147
SUM	100.0%	**163**

Q11: How likely is it that you would tune into another park radio station again?		
Very likely	10.4%	17
Somewhat likely	5.5%	9
Not likely	1.2%	2
99	0.6%	1
n/a	82.2%	134
SUM	100.0%	**163**

Q12: Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?		
Yes	13.5%	22
No	0.6%	1
DK/NA	3.1%	5
99	0.6%	1
n/a	82.2%	134
SUM	100.0%	**163**

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Q13: Overall, do you think these messages provide a useful service?		
Yes	16.6%	27
No	0.6%	1
99	0.6%	1
n/a	82.2%	134
SUM	100.0%	**163**
Q14: Did you notice any signs in the park advertising this radio information today?		
No	6.7%	11
Yes	93.3%	152
SUM	100.0%	**163**
Q14aa: Did you notice a sign at: the Park Entrance?		
Yes	53.4%	87
No	30.7%	50
DK	1.2%	2
99	8.0%	13
n/a	6.7%	11
SUM	100.0%	**163**
Q14ab: Did you notice a sign at: the Park Bathroom?		
Yes	16.6%	27
No	23.9%	39
DK/DV	39.9%	65
99	12.9%	21
n/a	6.7%	11
SUM	100.0%	**163**

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Q14ac: Did you notice a sign by your Parking Space?		
Yes	83.4%	136
No	6.7%	11
99	3.1%	5
n/a	6.7%	11
SUM	100.0%	**163**
Q14b: Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?		
Enough signs	80.4%	131
More needed	4.9%	8
Too many (volunteered)	6.7%	11
n/a	6.7%	11
DK	1.2%	2
SUM	100.0%	**163**
Q15: Have you ever heard of Oregon Sea Grant before today?		
Yes	12.9%	21
No	86.5%	141
99	0.6%	1
SUM	100.0%	**163**
Q16: How many people, including yourself, are in your vehicle today?		
Vehicle number		478

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Q17: I am going to read you a list of age groups, please tell me which category represents your age.		
a. below 16	0.0%	0
b. 16 to 25	4.3%	7
c. 26 to 45	35.0%	57
d. 46 to 65	47.9%	78
e. 66 and over	12.9%	21
SUM	100.0%	**163**
Q18: What is your home zip code?		
Oregon zip code	50.9%	83
Out of state zip code	43.6%	71
Out of country code	5.5%	9
Refused	0.0%	0
SUM	100.0%	163
Q19: Would you say that you live in a city or in the country?		
Country	30.7%	50
City	65.6%	107
DK/NA	3.1%	5
99	0.6%	1
SUM	100.0%	**163**
Q20: Respondent's Gender: (By interviewer observation)		
Male	53.4%	87
Female	45.4%	74
99	1.2%	2
SUM	100.0%	**163**

Week 3 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 3
Q21: As a result of your visit to this park and seeing the Coast Talk signs, had you intended to tune into the broadcast before departing?		
Yes	47.2%	77
No	14.1%	23
Maybe	12.3%	20
n/a	26.4%	43
SUM	100.0%	**163**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number
Number of Surveys		**149**

Q1: Do you have a functioning AM radio in your vehicle?

Yes	97.3%	145
No	2.7%	4
99	0.0%	0
SUM	100.0%	**149**

Q2: How often do you listen to the radio when travelling?

Most of the time	46.3%	69
Some of the time	23.5%	35
Rarely	30.2%	45
SUM	100.0%	**149**

Q3: Did you happen to tune into this Coast Talk program on Radio Station 1610 Am today?

No	87.2%	130
Yes, tuned in	12.8%	19
SUM	100.0%	**149**

Q4: Have you listened to this broadcast before today?

Yes, listened before today	3.4%	5
No	96.6%	144
SUM	100.0%	**149**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number
Q5: How did you first learn about this broadcast?		
Signs	14.1%	21
Newspaper	0.0%	0
Other	0.7%	1
99	1.3%	2
n/a	83.9%	125
SUM	100.0%	**149**
Q6: Did you listen long enough to hear more than one message?		
Yes	5.4%	8
No	8.7%	13
n/a	85.9%	128
SUM	100.0%	**149**
Q7: Can you recall the major theme of the (message) or (messages)?		
Yes	11.4%	17
No	2.7%	4
n/a	85.9%	128
SUM	100.0%	**149**
Q8: Do you think you might use this information in your coastal travels?		
Yes	12.8%	19
No	0.7%	1
Maybe	0.0%	0
n/a	85.9%	128
DK	0.7%	1
SUM	100.0%	**149**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number
Q9: Did you find the message length about right, too long, or too short?		
About right	8.7%	13
Too long	0.0%	0
Too short	0.7%	1
99	0.7%	1
n/a	85.9%	128
DK	4.0%	6
SUM	100.0%	**149**
Q10: Did you also listen to the weather report broadcasted by this park's radio station?		
No	9.4%	14
Yes	4.7%	7
n/a	85.9%	128
SUM	100.0%	**149**
Q10a: Should we continue this coast weather report?		
Yes, continue	4.7%	7
No	0.0%	0
DK/NA	2.0%	3
n/a	93.3%	139
SUM	100.0%	**149**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number
Q11: How likely is it that you would tune into another park radio station again?		
Very likely	9.4%	14
Somewhat likely	2.7%	4
Not likely	1.3%	2
99	1.3%	2
n/a	84.6%	126
DK	0.7%	1
SUM	100.0%	**149**
Q12: Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?		
Yes	13.4%	20
No	0.7%	1
99	1.3%	2
n/a	84.6%	126
SUM	100.0%	**149**
Q13: Overall, do you think these messages provide a useful service?		
Yes	14.1%	21
No	0.0%	0
99	1.3%	2
n/a	84.6%	126
SUM	100.0%	**149**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number
Q14: Did you notice any signs in the park advertising this radio information today?		
DK/NA	0.7%	1
No	21.5%	32
Yes	77.9%	116
SUM	100.0%	**149**
Q14aa: Did you notice a sign at: the Park Entrance?		
Yes	53.0%	79
No	21.5%	32
DK	2.7%	4
99	1.3%	2
n/a	21.5%	32
SUM	100.0%	**149**
Q14ab: Did you notice a sign at: the Park Bathroom?		
Yes	15.4%	23
No	16.1%	24
DK/DV	41.6%	62
99	5.4%	8
n/a	21.5%	32
SUM	100.0%	**149**
Q14ac: Did you notice a sign by your Parking Space?		
Yes	61.7%	92
No	14.8%	22
DK	0.7%	1
99	1.3%	2
n/a	21.5%	32
SUM	100.0%	**149**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number

Q14b: Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?

Enough signs	61.1%	91
More needed	12.1%	18
Too many (volunteered)	3.4%	5
99	2.0%	3
n/a	21.5%	32
SUM	100.0%	**149**

Q15: Have you ever heard of Oregon Sea Grant before today?

Yes	18.1%	27
No	81.9%	122
SUM	100.0%	**149**

Q16: How many people, including yourself, are in your vehicle today?

Vehicle number		472

Q17: I am going to read you a list of age groups, please tell me which category represents your age.

a. below 16	0.0%	0
b. 16 to 25	7.4%	11
c. 26 to 45	37.6%	56
d. 46 to 65	38.3%	57
e. 66 and over	16.8%	25
SUM	100.0%	**149**

Week 4 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 4 number

Q18: What is your home zip code?

Oregon zip code	52.3%	78
Out of state zip code	41.6%	62
Out of country code	6.0%	9
Refused	0.0%	0
SUM	100.0%	149

Q19: Would you say that you live in a city or in the country?

Country	24.2%	36
City	75.8%	113
SUM	100.0%	**149**

Q20: Respondent's Gender: (By interviewer observation)

Male	61.1%	91
Female	37.6%	56
99	1.3%	2
SUM	100.0%	**149**

Q21: As a result of your visit to this park and seeing the Coast Talk signs, had you intended to tune into the broadcast before departing?

Yes	46.3%	69
No	15.4%	23
Maybe	16.8%	25
n/a	21.5%	32
SUM	100.0%	**149**

Week 5 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 5
Number of Surveys		**147**

Q1: Do you have a functioning AM radio in your vehicle?

Yes	97.3%	143
No	2.7%	4
SUM	100.0%	**147**

Q2: How often do you listen to the radio when travelling?

Most of the time	45.6%	67
Some of the time	25.9%	38
Rarely	28.6%	42
SUM	100.0%	**147**

Q3: Did you happen to tune into this Coast Talk program on Radio Station 1610 Am today?

No	87.1%	128
Yes, tuned in	12.9%	19
SUM	100.0%	**147**

Q4: Have you listened to this broadcast before today?

Yes, listened before today	3.4%	5
No	93.2%	137
99	3.4%	5
SUM	100.0%	**147**

Week 5 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 5
Q5: How did you first learn about this broadcast?		
Signs	15.0%	22
Newspaper	0.0%	0
Other	0.7%	1
99	0.7%	1
n/a	83.7%	123
SUM	100.0%	**147**
Q6: Did you listen long enough to hear more than one message?		
Yes	6.8%	10
No	6.1%	9
99	0.7%	1
n/a	86.4%	127
SUM	100.0%	**147**
Q7: Can you recall the major theme of the (message) or (messages)?		
Yes	8.8%	13
No	2.7%	4
99	2.0%	3
n/a	86.4%	127
SUM	100.0%	**147**
Q8: Do you think you might use this information in your coastal travels?		
Yes	9.5%	14
No	0.7%	1
Maybe	0.0%	0
n/a	87.8%	129
DK	2.0%	3
SUM	100.0%	**147**

Week 5 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 5
Q9: Did you find the message length about right, too long, or too short?		
About right	6.8%	10
Too long	0.0%	0
Too short	0.7%	1
n/a	88.4%	130
DK	4.1%	6
SUM	100.0%	**147**
Q10: Did you also listen to the weather report broadcasted by this park's radio station?		
No	6.8%	10
Yes	4.1%	6
n/a	88.4%	130
DK	0.7%	1
SUM	100.0%	**147**
Q10a: Should we continue this coast weather report?		
Yes, continue	4.1%	6
No	0.0%	0
DK/NA	0.7%	1
n/a	95.2%	140
SUM	100.0%	**147**
Q11: How likely is it that you would tune into another park radio station again?		
Very likely	10.9%	16
Somewhat likely	4.1%	6
Not likely	0.0%	0
n/a	85.0%	125
SUM	100.0%	**147**

Week 5 survey results from Boiler Bay State Park low power radio project

Percentages	Week 5

Q12: Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?

Yes	14.3%	21
No	0.0%	0
DK/NA	0.7%	1
n/a	85.0%	125
SUM	100.0%	**147**

Q13: Overall, do you think these messages provide a useful service?

Yes	15.0%	22
No	0.0%	0
n/a	85.0%	125
SUM	100.0%	**147**

Q14: Did you notice any signs in the park advertising this radio information today?

No	22.4%	33
Yes	77.6%	114
SUM	100.0%	**147**

Q14aa: Did you notice a sign at: the Park Entrance?

Yes	59.2%	87
No	15.0%	22
DK	1.4%	2
99	2.0%	3
n/a	22.4%	33
SUM	100.0%	**147**

Week 5 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 5
Q14ab: Did you notice a sign at: the Park Bathroom?		
Yes	13.6%	20
No	17.7%	26
DK/DV	41.5%	61
99	4.8%	7
n/a	22.4%	33
SUM	100.0%	**147**
Q14ac: Did you notice a sign by your Parking Space?		
Yes	42.2%	62
No	31.3%	46
DK	0.7%	1
99	3.4%	5
n/a	22.4%	33
SUM	100.0%	**147**
Q14b: Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?		
Enough signs	59.2%	87
More needed	15.6%	23
Too many (volunteered)	0.0%	0
99	0.7%	1
n/a	22.4%	33
DK	2.0%	3
SUM	100.0%	**147**

Week 5 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 5
Q15: Have you ever heard of Oregon Sea Grant before today?		
Yes	15.6%	23
No	83.7%	123
99	0.7%	1
SUM	100.0%	**147**
Q16: How many people, including yourself, are in your vehicle today?		
Vehicle number		441
Q17: I am going to read you a list of age groups, please tell me which category represents your age.		
a. below 16	0.0%	0
b. 16 to 25	4.1%	6
c. 26 to 45	43.5%	64
d. 46 to 65	39.5%	58
e. 66 and over	12.9%	19
SUM	100.0%	**147**
Q18: What is your home zip code?		
Oregon zip code	45.6%	67
Out of state zip code	44.9%	66
Out of country code	8.8%	13
Refused	0.7%	1
SUM	100.0%	147

Week 5 survey results from Boiler Bay State Park low power radio project

	Percentages	Week 5
Q19: Would you say that you live in a city or in the country?		
Country	27.9%	41
City	70.7%	104
DK/NA	0.7%	1
99	0.7%	1
SUM	100.0%	**147**
Q20: Respondent's Gender: (By interviewer observation)		
Male	59.9%	88
Female	39.5%	58
99	0.7%	1
SUM	100.0%	**147**
Q21: As a result of your visit to this park and seeing the Coast Talk signs, had you intended to tune into the broadcast before departing?		
Yes	36.1%	53
No	17.7%	26
Maybe	23.1%	34
n/a	23.1%	34
SUM	100.0%	**147**

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Number of Surveys	822	822

Q1: Do you have a functioning AM radio in your vehicle?

Yes	97.1%	798
No	2.9%	24
SUM	100.0%	822

Q2: How often do you listen to the radio when travelling?

Most of the time	46.1%	379
Some of the time	27.6%	227
Rarely	26.0%	214
99	0.2%	2
SUM	100.0%	822

Q3: Did you happen to tune into this Coast Talk program on Radio Station 1610 Am today?

No	83.8%	689
Yes, tuned in	16.2%	133
SUM	100.0%	822

Q4: Have you listened to this broadcast before today?

Yes, listened before today	4.3%	35
No	86.9%	714
99	8.9%	73
SUM	100.0%	822

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Q5: How did you first learn about this broadcast?		
Signs	15.9%	131
Newspaper	0.0%	0
Other	1.1%	9
99	1.3%	11
n/a	81.6%	671
SUM	100.0%	822
Q6: Did you listen long enough to hear more than one message?		
Yes	6.2%	51
No	8.9%	73
DK/NA	0.4%	3
99	1.5%	12
n/a	83.1%	683
SUM	100.0%	822
Q7: Can you recall the major theme of the (message) or (messages)?		
Yes	11.7%	96
No	3.3%	27
99	1.9%	16
n/a	83.1%	683
SUM	100.0%	822

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Q8: Do you think you might use this information in your coastal travels?		
Yes	12.9%	106
No	1.2%	10
Maybe	0.5%	4
99	1.3%	11
n/a	83.3%	685
DK	0.7%	6
SUM	100.0%	822
Q9: Did you find the message length about right, too long, or too short?		
About right	10.0%	82
Too long	0.6%	5
Too short	0.2%	2
99	1.6%	13
n/a	83.5%	686
DK	4.1%	34
SUM	100.0%	822
Q10: Did you also listen to the weather report broadcasted by this park's radio station?		
DK/NA	0.5%	4
No	8.4%	69
Yes	6.2%	51
99	1.3%	11
n/a	83.5%	686
DK	0.1%	1
SUM	100.0%	822

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Q10a: Should we continue this coast weather report?		
Yes, continue	5.8%	48
No	0.5%	4
DK/NA	0.9%	7
99	1.2%	10
n/a	91.6%	753
SUM	100.0%	822
Q11: How likely is it that you would tune into another park radio station again?		
Very likely	11.1%	91
Somewhat likely	3.6%	30
Not likely	0.9%	7
99	1.7%	14
n/a	82.6%	679
DK	0.1%	1
SUM	100.0%	822
Q12: Would you recommend that Oregon State Parks provide informational radio broadcasts in more state parks?		
Yes	14.4%	118
No	0.5%	4
DK/NA	1.0%	8
99	1.6%	13
n/a	82.6%	679
SUM	100.0%	822

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Q13: Overall, do you think these messages provide a useful service?		
Yes	15.6%	128
No	0.2%	2
99	1.6%	13
n/a	82.6%	679
SUM	100.0%	822
Q14: Did you notice any signs in the park advertising this radio information today?		
DK/NA	0.2%	2
No	23.2%	191
Yes	76.5%	629
SUM	100.0%	822
Q14aa: Did you notice a sign at: the Park Entrance?		
Yes	50.9%	418
No	20.2%	166
DK	1.3%	11
99	4.4%	36
n/a	23.2%	191
SUM	100.0%	822
Q14ab: Did you notice a sign at: the Park Bathroom?		
Yes	15.1%	124
No	21.4%	176
DK/DV	30.8%	253
99	9.5%	78
n/a	23.2%	191
SUM	100.0%	822

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals

Q14ac: Did you notice a sign by your Parking Space?

Yes	54.4%	447
No	9.6%	79
DK	0.2%	2
99	2.8%	23
n/a	33.0%	271
SUM	100.0%	822

Q14b: Do you think there are enough radio signs to alert park visitors to the broadcast, or are more signs needed?

Enough signs	58.0%	477
More needed	11.2%	92
Too many (volunteered)	5.5%	45
99	1.0%	8
n/a	23.2%	191
DK	1.1%	9
SUM	100.0%	822

Q15: Have you ever heard of Oregon Sea Grant before today?

Yes	15.7%	129
No	83.8%	689
DK/NA	0.1%	1
99	0.4%	3
SUM	100.0%	822

Q16: How many people, including yourself, are in your vehicle today?

Vehicle number		2450

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Q17: I am going to read you a list of age groups, please tell me which category represents your age.		
a. below 16	0.2%	2
b. 16 to 25	5.8%	48
c. 26 to 45	39.9%	328
d. 46 to 65	40.6%	334
e. 66 and over	13.4%	110
SUM	100.0%	822
Q18: What is your home zip code?		
Oregon zip code	48.3%	397
Out of state zip code	44.6%	367
Out of country code	6.3%	52
Refused	0.7%	6
SUM	100.0%	822
Q19: Would you say that you live in a city or in the country?		
Country	29.3%	241
City	69.3%	570
DK/NA	1.1%	9
99	0.2%	2
SUM	100.0%	822
Q20: Respondent's Gender: (By interviewer observation)		
Male	56.8%	467
Female	42.5%	349
99	0.7%	6
SUM	100.0%	822

Total summary of survey responses from Boiler Bay State Park low power radio project

	Percentages	Totals
Q21: As a result of your visit to this park and seeing the Coast Talk signs, had you intended to tune into the broadcast before departing? n=459		
Yes	43.4%	199
No	15.7%	72
Maybe	17.2%	79
n/a	23.7%	109
SUM		459

Coding Key for Boiler Bay Survey, 1998

For all questions:
Code 99 = no answer circled (not asked or other)
DK/NA = respondent didn't know, had no opinion, or question was not applicable

Question #1: Functioning AM radio?
Code 1 = Yes, functioning AM radio
Code 2 = No

Question #2: How often listen to the radio?
Code 1 = Most of the time
Code 2= Some of the time
Code 3 = Rarely or never

Question #3: Did you tune in today?
Code 1 = no, did not tune in
Code 2 = Yes, did tune in
Code 21 = Yes, tried tuning in
Code 22 = Started tuning in but stopped for some reason

Question #4: Have you tuned in before?
Code 1 = Yes, previously tuned in
Code 2 = No, haven't previously tuned in
Code 11 = Yes, tried previously tuning in

Question #5: How did you first learn of the broadcast?
Code 1 = Signs
Code 2 = Newspaper
Code 3 = Other source

Question #6: Did you listen long enough to hear more than one message?
Code 1 = Yes, listened to more than 1 message
Code 2 = No, did not listen to more than 1 message

Question #7: Recall major themes?
y= yes
n= no

Question #8: Use this information in coastal travels?
Code 1 = Yes, use in coastal travels
Code 2 = No, would not use in coastal travels
Code 3 = Maybe

Question #9: Message length?
Code 1 = about right
Code 2 = too long
Code 3 = too short

Question #10: Did you listen to the weather broadcast?
Code 1 = DK
Code 2 = No
Code 3 = Yes, listened to weather

#10a: Should we continue weather?
Code 1 = Yes, continue weather
Code 2 = No
Code 3 = DK/NA

Question #11: How likely is it that you would tune into another park station?
Code 1 = very likely to tune in again
Code 2 = somewhat likely to tune in again
Code 3 = not likely to tune in at another state park

Question #12: Recommend more broadcasts in more parks?
Code 1 = Yes, recommend placing in more parks
Code 2 = No, do not recommend placing in more parks
Code 3 = DK

Question #13: Do you think the messages provide a useful service?
Code 1 = Yes, useful service
Code 2 = No, not useful service
Code 3 = DK/NA

Question #14: Did you notice any signs?
Code 1 = DK/NA
Code 2 = No, didn't see signs
Code 3 = Yes, saw signs

Question #14aa: Saw sign at park entrance?
Code 1 = Yes
Code 2 = No
Code 3 = DK/NA

Question #14ab: Saw sign by Park Bathroom?
Code 1 = Yes
Code 2 = No
Code 3 = DK/NA

Question #14ac: Saw sign by Parking Space?
Code 1 = Yes
Code 2 = No
Code 3 = DK/NA

Question #15: Oregon Sea Grant
Code 1 = Yes, heard of it
Code 2 = No, haven't heard of it
Code 3 = DK/NA

Question #16: Number of persons in vehicle

Question #17: Age category
Code A = below 16
Code B = 16 to 25
Code C =26 to 45
Code D = 46 to 65
Code E = 66 and over

Question #18: Zip code
Home zip code

Question #19: Do you live in the city or the country?
Code 1 = Country residence
Code 2 = City residence
Code 3 = DK/NA

Question #20: Male or Female respondent?
Code 1 = Male respondent
Code 2 = Female respondent
Code 3 = DK

Question #21: Had you intended to tune-in?
Code 1 = Yes, had intended to tune-in
Code 2 = No
Code 3 = Maybe
Code 4 = Due to survey

Question #22: Anything to add?

Appendix 9: Daily tabulation of survey information from the Boiler Bay State Park low power radio project. July-August 1998.

	Week 1			Week 2			Week 3		
	1-Jul-98	4-Jul-98	5-Jul-98	8-Jul-98	11-Jul-98	12-Jul-98	15-Jul-98	18-Jul-98	19-Jul-98
Survey hours	10:30-2pm	10:10-2pm	10:30-2:30	10:45-2:45	10:30-2:30	10:15-2:30	10:20-2:30	10:30-2:30	10:30-2:30
Survey color	salmon	salmon	salmon	yellow	yellow	yellow	pink	pink	pink
Survey code	1-1-#	1-2-#	1-3-#	2-1-#	2-2-#	2-3-#	3-1-#	3-2-#	3-3-#
Surveys conducted	57	50	83	59	48	66	52	57	54
Signs displayed	4	4	4	44 + 4	44 + 4	44 + 4	17 + 4	17 + 4	17 + 4
Survey refusals	11	12	15	16	16	13	11	9	18
Initial car counter	38048	39283	39833	40330	41568	42220	43947	45396	46124
Final car counter	38195	39465	40019	40466	41833	42550	44210	45694	46455
Total car count	148	182	187	136	266	330	263	298	331
Visitor count	443	546	560	408	797	990	789	894	993

	Week 4			Week 5		
	22-Jul-98	25-Jul-98	26-Jul-98	29-Jul-98	1-Aug-98	2-Aug-98
Survey hours	10:30-2:30	10:30-2:30	10:30-2:30	11-2:45	10:25-2:25	10:30-2:30
Survey color	blue	blue	blue	lavender	lavender	lavender
Survey code	4-1-#	4-2-#	4-3-#	5-1-#	5-2-#	5-3-#
Surveys conducted	53	32	64	55	60	32
Signs displayed	8 + 4	8 + 4	8 + 4	7 + 2	7 + 2	7 + 2
Survey refusals	10	8	23	9	6	9
Initial car counter	47874	49387	49821	51507	52991	53905
Final car counter	48033	49569	50191	51754	53305	54070
Total car count	159	182	370	247	314	166
Visitor count	477	546	1110	741	942	497

Appendix 10: Applying the Marine Resource Management perspective to this project

Constant changes in political pressures, the economy, and the threat of environmental disasters due to human induced changes affect public focus. The shift between environmental protection and economic priorities is unpredictable and unstable. Congress continually weakens or strengthens environmental legislation depending upon a variety of factors. The public is often supportive of environmental protection until the regulations cause financial burdens. Lack of environmental protection affects the public also, just not as visibly as a dollar amount. Conflicting viewpoints on environmental issues are often exacerbated by the difficulty scientists sometimes have in quantifying habitat quality and environmental change. There are often deeply ingrained viewpoints by an assortment of people seeking to further their priorities in regulations and within society. Upland uses affect downstream coastal areas, yet responsibility and regulation enforcement for these geographic regions may be divided between several agencies. In light of the various interests in coastal areas (off-shore or near-shore fisheries, aquaculture, tourism, protection of endangered species and their habit and others), and the often fragmented management process of the coastal zone, a more integrated approach in managing our coastal resources is needed.

Integrated Coastal Management (ICM) is a continuous and dynamic process by which decisions are made for the sustainable use, development, and protection of coastal and marine areas and resources. There are four key considerations of ICM: intergovernmental, institutional, legal, and financial. The integrated approach is designed to overcome fragmentation and design institutional processes to accomplish management in a politically acceptable manner. Factors considered in the ICM approach are: area planning, promotion of economic development, stewardship of resources, conflict resolution, protection of public safety, and proprietorship of public submerged lands and waters. The ICM approach is gaining support in many regional areas, though a more integrated system is needed at the national level.

Regulation of activities in the coastal zone can sway between command and control approaches or promotion of economic incentives for industries to comply with priorities set forth by states or from the federal level. The general public, especially in tourist areas, is a large component of activity in coastal areas. Public outreach and education is another approach that can be used in these areas to improve stewardship, protection, and economic development of coastal sites. Low power radio is one management tool that can be used to educate coastal visitors of the opportunities available in areas, as well as guide visitors to be the best possible stewards of coastal resources. The public has a great stake in maintaining the pristine nature of sites, not only for their own edification, but also for future generations. Low power radio, along with other outreach methods, should be considered in any coastal planning process that involves public and private areas.

Reflections on the Marine Resource Management Program

I think the Marine Resource Management (MRM) is a fantastic program with numerous opportunities for students. The program promotes autonomy by allowing students to select their coursework and a project specific to the students' interests. I think this type of approach benefits most students in the program, though occasionally a student may need more direction than some of the faculty advisors are able to give.

I recommend that each student try to select committee members as early as possible and try to integrate the expectations of those members early on in their project. Due to the fluid and volunteer nature of the MRM faculty, finding committee members can be a quite a challenge. I would also suggest that the MRM Program review the faculty member list every few years to determine whether some faculty members should be removed from the advisor list due to inactivity with the program. It may be useful to faculty to be listed as an advisor, but if someone is not participating as an advisor or committee member, than they should be removed from the list. It can be misleading to prospective students and frustrating to enrolled students if a specialty is not truly represented.

One major problem I see with the graduate school as a whole, is the requirement of Oregon State University (OSU) that graduate level courses, when taught in combination with undergraduates, need an additional course test, term paper or other demonstration of higher effort from graduate students. I often had to write three to four term papers each quarter. Most course instructors mandated that the subject matter of these papers be different than my master's project topic. Due to the number of credits required for the MRM program, in addition to conducting my master's project, this practice required an enormous amount of effort that I feel was wasted because I simply did not have time to write quality papers for these courses.

Any program can use suggestions for improvements. Overall, I am very pleased with my MRM experience. Choosing the MRM program was one of the best decisions I have made. I would highly recommend the program to anyone interested in attending a challenging, rewarding, skill building master's program where you will also make some life-long friends. Thank you to everyone who works so hard to continue and improve the MRM program!