



Alaska Park Science *Review and recommendations*

Natural Resource Report NPS/AR/NRR/2010-76





Alaska Park Science Review and recommendations

Alaska Park Science Review Panel (listed alphabetically)

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Natural Resource Report NPS/AR/NRR/2010-76

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Executive summary

The *Alaska Park Science* (APS) journal has been published cooperatively by the National Park Service (NPS) and Alaska Geographic Association (AKGEO) since 2002, and has received multiple awards for publication excellence in judged competitions. However, determining the impact of the journal relative to the NPS mission has proved challenging. In 2010, the Alaska Regional Office convened a panel of seven NPS science education, interpretation, and communication professionals to design and carry out an assessment of the journal's effectiveness. The panel accomplished its charge through a combination of quantitative measures, interviews with a cross section of readers, and professional evaluation. In this report, the panel presents its findings and recommendations in 10 principal areas, which are listed in priority order. (Additional details about the journal's purpose, distribution, questionnaires, and full-text comments from respondents, are provided in the appendixes.)

The panel finds that *Alaska Park Science* is already doing many things well and does not require substantial changes. However, specific enhancements could improve sustainability and its usefulness to its most important audiences. Based on its review of the journal, the panel recommends that

- *Alaska Park Science* continue to be produced at least twice annually, in both printed and Internet versions;
- the distribution of printed copies be managed efficiently to control costs;

- publication staff should continue to improve Web site functions and add digital subscriptions as a new format; and
- a long-term, sustainable funding source and staffing plan be developed to ensure journal continuity.

The panel also provides suggestions relative to obtaining additional reader feedback, publication content and design, composition of the journal advisory board, and development of new products.

Purpose of the review

Alaska Park Science is a semiannual publication of the Alaska Region, National Park Service. As its name suggests, this multidisciplinary journal reports the contributions of physical, biological, cultural, and social sciences and history to better the understanding and management of Alaska's national parks. (See Appendix A for a complete description of the journal.)

In 2009, the Alaska Regional Director asked the *Alaska Park Science* project leader to coordinate an evaluation of journal effectiveness to help determine its future direction. The review originated from recommendations made during a review of the Alaska Regional Office by the Alaska Region Transitional Management Assistance Program (TMAP). General content, design, and editing had previously been evaluated for several individual issues and thus were not the primary focus of this review. Rather, this assessment would focus on how effectively *Alaska Park Science* accomplishes NPS goals to deliver and interpret information from scientific and scholarly studies about Alaska's national parks to people who can benefit from it. It also would investigate whether other cost-effective means of communication could be employed to improve timely delivery of science information to appropriate audiences.

At a minimum the Alaska Regional Office and *APS* advisory board expects to use the feedback to adjust the journal's content and delivery. More substantial findings and recommendations could lead to major course corrections, possibly including commitments for funding and staffing or discontinuation of the journal. A report of the review findings was to be delivered to the Regional Director by September 30, 2010.

Planning the review

The review was coordinated by Robert Winfree, the project leader for *Alaska Park Science*, and conducted by a panel of NPS employees having detailed knowledge and experience in communicating science findings to multiple audiences. The review coordinator sought the assistance of the Natural Resource Program Center (NRPC) through its annual technical assistance call and was given the help of the NRPC Office of Education and Outreach. The review panel also included Alaska educators, journal editors, and members of the Inventory and Monitoring (I&M) science communicators group.

Review panel

Christie Anastasia, education coordinator, Murie Science and Learning Center, Denali National Park

Tami Blackford, writer-editor, *Yellowstone Science*, Yellowstone National Park

John Morris, education coordinator, Alaska Regional Office, and *Alaska Park Science* advisory board

Virginia Reams, writer-editor, Office of Education and Outreach, Natural Resource Program Center

Jeff Selleck, technical writer-editor, *Park Science*, NRPC Office of Education and Outreach

Joanne Welch, interpretive ranger, Alaska Public Lands Information Center

Mike Whatley, chief, NRPC Office of Education and Outreach

The review panel convened by teleconference on multiple occasions beginning in January 2010 to discuss the approach for the review. Objectives for the design of the review were to

- develop a method to determine the (positive and negative) impacts of *Alaska Park Science* on targeted audiences and others;
- assess the content and its delivery relative to the needs and interests of targeted audiences;
- examine distribution and marketing practices for printed and online versions of the journal, including the effectiveness of targeted and bulk mailing lists; and

- identify priorities to expand positive impacts.

The panel initially focused on gathering basic information about the publication such as its objectives, results of earlier reviews, and the kinds of information needed to evaluate publication effectiveness. (See Appendix A for a full-length description of the purpose and management of *Alaska Park Science*.) It also reviewed a series of questions developed by the Alaska Regional Office to stimulate discussion for the review. The panel concluded that the review design necessarily include quantitative and qualitative measures of effectiveness.

Quantitative measures

The panel considered the following examples of numerical indicators that could be used to gauge use of *Alaska Park Science*. It was important to select only measures that are pertinent to the intended purpose of the journal and to evaluate any measures used in the appropriate context. Indicators placed near the top of this list were considered more relevant to the purpose and mission of the publication.

- Numbers and types of awards received indicates recognition within peer groups
- Google hits indicate the number of Web sites citing or mentioning *Alaska Park Science*
- Web statistics count the number of people using the *APS* Web site
- Reader reply card responses indicate reader interest in receiving free copies
- Academic journal citation indexes count citations in “primary” scientific literature
- Bookstore sales indicate visitor interest in buying printed copies

- Twitter statistics indicate interest among Twitter users in sharing information

Qualitative measures

There was some initial discussion regarding the exclusive use of an online survey tool because of its strengths in data organization; however, the panel decided that telephone interviews would encourage greater participation and allow the group to gather more information.

The panel wanted to be cautious not to design an overly complex or intrusive survey, and to limit the target audience. Hence, the panel proposed to survey a statistically representative cross section of individuals who receive and are familiar with the journal, targeting 3–5% of readers. Particular emphasis was placed on making contact with information “users” in each category listed below, with every unit of the National Park System in Alaska, and with several cooperating groups. To fully comply with OMB Paperwork Reduction Act requirements, most of the interviewees were federal employees. General categories for contacts include:

- Researchers (scientists, scholars, data analysts, and inventory and monitoring, CESU, RLC, U.S. Geological Survey, and university staff)
- Resource managers (e.g., natural, cultural, subsistence, fire)
- Educators (teachers, interpreters, science writers, public information specialists)
- Other professions, including nongovernmental organizations and libraries

Interview questions

The panel set out to develop a series of questions for a phone interview process and return-mail postcard to address the purposes of the review. The questions were derived from a series of questions developed initially by the Alaska Regional Office and were refined by panel members through several iterations of review and editing. Reviews of the questionnaire included all panel members, the review coordinator, the regional director, and an NPS social scientist. The questions were designed to elicit information about readers’ likes, dislikes, and information and media needs related to *Alaska Park Science*, as well as for

science information about Alaska’s national parks in general.

Panel members decided to contact a cross section of readers, contributors, sponsors, and others’ familiar with the journal to ask a common set of questions addressing topics such as:

- How important is it for the National Park Service to present information from recent scientific studies?
- How effective are magazines and journals for providing this kind of information?
- How effective is *Alaska Park Science* for conveying such information?
- Is the information contained in *Alaska Park Science* appropriate and useful?
- Does *APS* content duplicate information that they already receive?
- Are some types of articles and issues more or less interesting and helpful?
- How would they prefer to receive the publication (print/mail, e-mail, Web)?
- Which audiences should be a priority for distributing printed copies?
- Suggestions for expanding use by Internet audiences.
- Suggestions for other ways to expand science education and interpretation.
- How much use do library copies receive (asked only of librarians)?

The panel developed a companion interview guide for use in conducting and recording responses from the phone interview. (See Appendix C for a list of the questions asked in the interviews, and Appendix E for the return-mail postcard.)

Interview guide and survey Web site

Additionally, panel members developed and tested the utility of a parallel survey in SurveyMonkey, a free-of-charge online survey tool. Data from the interviews were transcribed to SurveyMonkey forms following the pattern of questioning developed in the interview guide. This survey instrument was open for data collection from April 26 to July 16, 2010. Subsequently, data was downloaded from the SurveyMonkey site, collated, and analyzed. Panel findings are summarized and recommendations made in this report.

¹ Others included people who had submitted comments to *APS* in the past, were formal cooperators with the National Park Service, and non-U.S. readers.

The return-mail reader reply cards had a small subset of questions and were primarily intended for updating the mailing list. These cards were distributed as an insert to each individually mailed copy of the June 2010 issue (volume 9, issue 1) of *Alaska Park Science* in September. In total, about 940 single copies with cards were mailed to readers, offices, schools, and libraries.

Collaboration

The panel established an NPS Sharepoint site for digital file sharing as it developed, reviewed, and settled on the final list of interview questions, the guide for the interview, and the postcard. The group coordinated meetings using doodle.com for scheduling. Over the course of the project the group met approximately five times by teleconference. Interviews took place from April through August 2010.

The interviewer recorded responses on printed survey forms. Results were entered into a computer program for analysis (e.g., SurveyMonkey, Excel). Personally identifiable information, such as a respondent's name and e-mail address, was not included in the analysis.

Timetable

Benchmark dates for the review were as follows:

January–March 2010	Planning
April–August	Phone interviews
May–September	Distribution of return-mail reader reply card
August–September	Data analysis
September 30, 2010	Final report

Considerations and methods

The *APS* review panel selected a cross section of current readers, contributors, sponsors, and others from targeted groups, especially those categorized as education-interpretation readers, for the interviews. (See Appendix B for a list of the reader groups targeted for phone interviews, and Results for a summary of completed interviews.)

The panel sought to sample 3–5% of the *APS* mailing list (75–125 individuals for about 2,500 printed copies) through phone interviews and return-mail postcards. This level of effort was targeted for a representative sample of the surveyed population (95% confidence +/- 10%).

To comply with the Paperwork Reduction Act, the review coordinator advised the panel to restrict its contacts with people qualifying as American public to just nine individuals. The remainder comprised primarily government employees, for which the act did not restrict participation in the interviews. This latter group also reflected the largest category of *APS* readers, so the act's requirements were not especially limiting.

As mentioned, the review targeted 3–5% of the total number of *Alaska Park Science* readers. Allowing for restrictions of the Paperwork Reduction Act, the review coordinator worked with panel members to compile a list of approximately 90 eligible people representing a cross section of *APS* readers who were familiar with the publication and had received

copies of *Alaska Park Science* in the past, as candidates for the formal interviews. The list was categorized by profession and also included the *APS* advisory board. Each panel member selected up to 12 individuals for the interviews until nearly all of the names on the list of eligible participants had been assigned to an interviewer. The panel member's choices were based on prior relationships with the interviewees, personal interest in a particular category of reader, or by assignment of the review coordinator. Concurrently, complimentary printed and digital copies of *Alaska Park Science* were delivered early to the anticipated interview participants. Additionally, the panel recommended that individual recipients of regular, mailed printed copies of the journal receive the return-mail postcard with *Alaska Park Science* in summer 2010.

Results

The *APS* review panel gathered data from (1) informal dialogue among the *APS* review panel members via teleconference, (2) quantitative measures of printed journal and Web site use, and (3) formal phone interviews with targeted audiences. Data from return-mail reply cards, which were inserted into the June 2010 edition of *Alaska Park Science*, will be compiled as it is received.

Panel members contacted prospective participants by e-mail to explain their interest in conducting a formal interview about *Alaska Park Science* and to schedule a convenient time for the phone call. Interviewees were allowed to opt out of the survey for any reason including, for example, not responding to the e-mail request. Additionally, interviewees were given the option of having all or some of their responses remain confidential. For purposes of this review, “confidential” meant that their names would not be associated with their answers and answers would be altered slightly to convey their meaning accurately, but to conceal the identity of the interviewee. Additionally, no personally identifiable information about interviewees was recorded on the SurveyMonkey forms. Instead, the online surveys were coded to match a separate list of those interviewed that was not publicly available. For his or her convenience, at least one interviewee participated in the survey directly through SurveyMonkey instead of participating in the phone interview.

Phone interviews began on April 20, 2010. Twenty-five of the targeted interview candi-

dates could not be reached, were unavailable during the interview period, or declined to participate. A total of 65 people were interviewed and most of the interviews lasted 20–30 minutes. This constituted 2.6% of the print-copy distribution for the June 2010 edition (volume 9, issue 1) of *Alaska Park Science*. The panel conducted an initial data analysis to determine the need for additional surveys. The initial results indicated clear trends among the responses, and the panel concluded that the level of sampling effort was appropriate to the task. About half of those interviewed had no particular connection to the journal except as readers (especially those in the education, interpretation, and library professions). The others included *APS* advisory board members, journal contributors, and people who had previously contacted the National Park Service with questions or comments about the publication. Nine individuals (14%) were considered “American public” under provisions of the Paperwork Reduction Act.

Table 2 shows interview participation numbers based on reader categories.

Table 2. Interview participants in the *Alaska Park Science* review

Number	Category
18	NPS interpretation and education specialists in the Alaska Region (mostly Education Advisory Group members)
17	Science and resource management specialists in NPS natural and cultural resource programs and from other institutions: e.g., Alaska Leadership Council (ALC), Natural Resource Advisory Committee (NRAC), Cultural Resource Advisory Committee (CRAC), Natural Resource Advisory Group (NRAG), Cultural Resource Advisory Group (CRAG), Research Learning Centers (RLC), Inventory and Monitoring Networks (I&M), Cooperative Ecosystem Studies Units (CESU), Natural Resource Stewardship and Science (NRSS), Natural Resource Program Center (NRPC), university and other government agencies
13	Science educators, interpreters, and writers other than NPS Alaska Region employees (e.g., other federal agencies, universities, public schools, and nongovernmental organizations)
5	Librarians for community and public school libraries in Alaska
3	NPS public information officers
3	Program managers from cooperating nonprofit organizations in Alaska
6	Anonymous respondents and other NPS employees
65	Total

Approximately 940 pre-stamped return-mail reader reply cards were distributed as inserts to individually mailed copies in September 2010. Responses will be used to update the mailing list for the December 2010 issue. Additional cards may be included in the December issue for recipients who do not return the first card.

Data analysis

Survey results were compiled from the SurveyMonkey forms and reported to the whole review panel in the form of quantitative graphs and qualitative answers given to each question. The graphs and selected responses follow below while the questions and answers are listed in their entirety in Appendix D.

Quantitative measures

Five issues of *Alaska Park Science* received a total of eight awards for publication excellence from four independent organizations in 2007, 2008, and 2009.

In September 2010 the popular search engine Google reported 177,000 references to *Alaska Park Science* on the Internet, a 20% increase over the number reported just two months earlier. Weekly Google Alerts also reported new Internet references to *APS* over the review period. The academic search engine Google Scholar found 73 citations for *Alaska Park Science* in scholarly and academic journals at the same time. The relative number of

references in Google and Google Scholar is consistent with the intended purpose of *APS* as a semitechnical journal, as compared with a primary and fully referenced scientific journal.

Internet use statistics are available for individual national park Web sites; however, the National Park Service does not yet have capacity to collect similar statistics for regional office Web pages. Consequently, the panel was unable to review Web page use statistics for *Alaska Park Science*.

Information about the use of *Alaska Park Science* in the popular press is incomplete and anecdotal. However, information received by journal staff and the Alaska Regional Office Communications Office indicates that articles in *Alaska Park Science* have been used for writing a number of newspaper and magazine articles, for production of a series of short-length videos, and as a model for the design of similar publications by others.

Sales of 10 recent issues of *Alaska Park Science* by Alaska Geographic and in-park bookstores have averaged about 10% of the total volume printed, with the climate change, Denali, and Kenai Fjords thematic issues being the most popular with the buying public (table 3). (Alaska Geographic prints extra copies for sale with their own funding.)

Table 3. Sales of *Alaska Park Science*

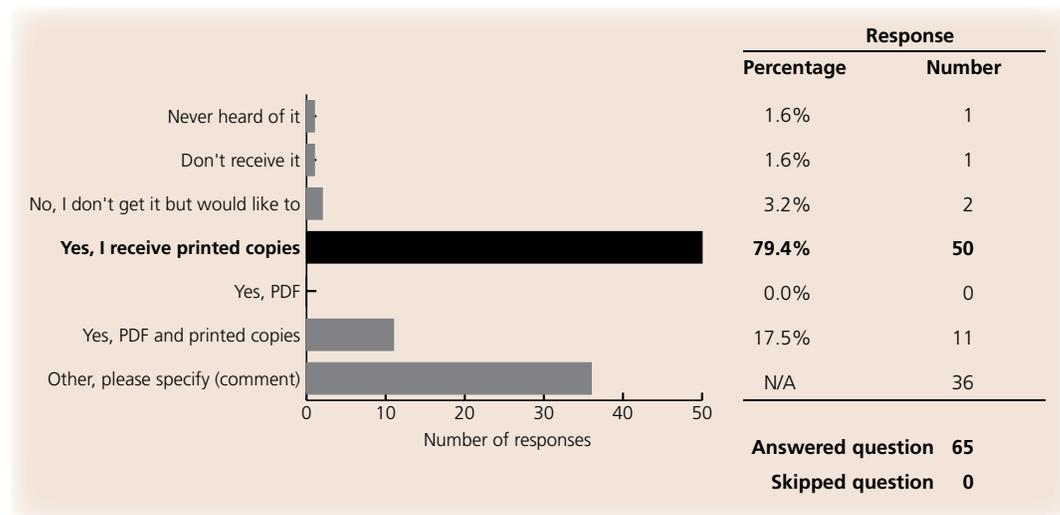
<i>Alaska Park Science</i> Issue	Copies Received (AKGEO Warehouse)	Ending Inventory (2009)	Sold
Volume 3(2): Kenai Fjords	480	100	380
Volume 4(1): Fungi	200	116	84
Volume 4(2): ANILCA	220	178	42
Volume 5(1): Denali	2,000	625	1,375
Volume 5(2): Points	300	209	91
Volume 6(1): Climate Change	2,000	667	1,333
Volume 6(2): Proceedings	210	200	10
Volume 7(1): Lava	200	132	68
Volume 7(2): Marine	300	227	73
Volume 8(1): Aurora	240	176	64
Total			3,520

Summary of main survey findings

Survey responses excerpted on the following pages were chosen for their lucidity, insights,

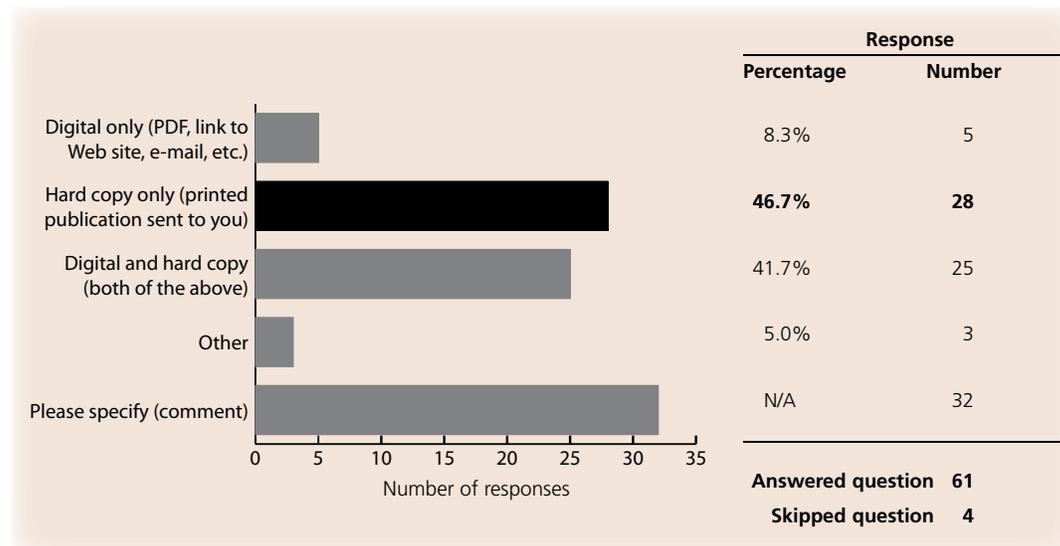
and ability to represent commonly expressed opinions among the sample group.

Question 1. *Alaska Park Science* is published twice a year in print and on the Internet. Have you received a copy?



Most people surveyed (88%) wanted to continue to receive printed copies. About half of them (42%) also wanted to receive digital (PDF or Internet) versions.

Question 2. Would you like to continue receiving the printed publication?



Main findings

Most people surveyed (88%) wanted to continue to receive printed copies. About half

of them (42%) also wanted to receive digital (PDF or Internet) versions.

Selected comments

It's not easy reading on the Web, which is why I read the print version. I admire trying to be green, but it's not easy to read online. (Anonymous)

Printed copy is so much easier for those of us that didn't grow up on Facebook. Having a PDF is much easier to share. Want to extract single article to send to people. (NGO cooperator)

I really like the hard copies. I also like to have the online version for broader distribution. (Research Learning Center)

Seasonals use the hard copies, but it's nice to have digital versions to share. (NPS interpretive specialist)

Have it available on Web site for me to access is good. An e-mail notification when posted would also be nice. (Research Learning Center)

Bound copies are important. A picture says a thousand words. (NPS education specialist)

Hard copy is my preference for extended reading materials. (Research Learning Center)

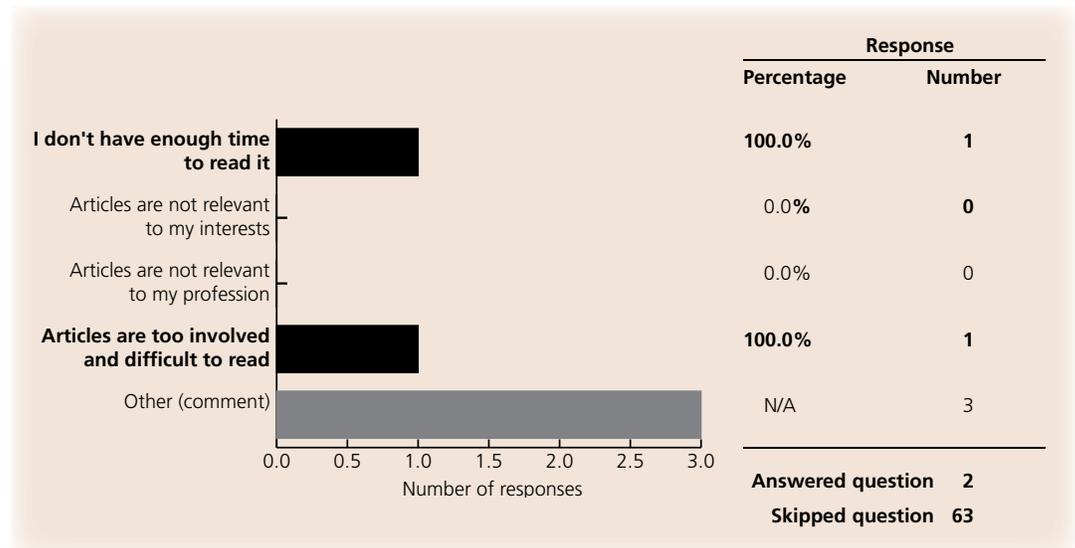
Prefer hard copies—if searchable online, will also prefer both. (NPS interpretive specialist)

E-book, Kindle, are more readable than going to a Web site or e-mail. There is opportunity in the whole electronic book or magazine realm. (NPS interpretive supervisor)

Need both for full range of readers. (APS review panel member)

Question 3. If you would not like to continue receiving the printed publication, can you tell us why?

More than 95% of the people surveyed skipped this question, because they wanted to continue receiving the publication. One person indicated that the publication was too difficult to read and that he/she did not have time to do so.



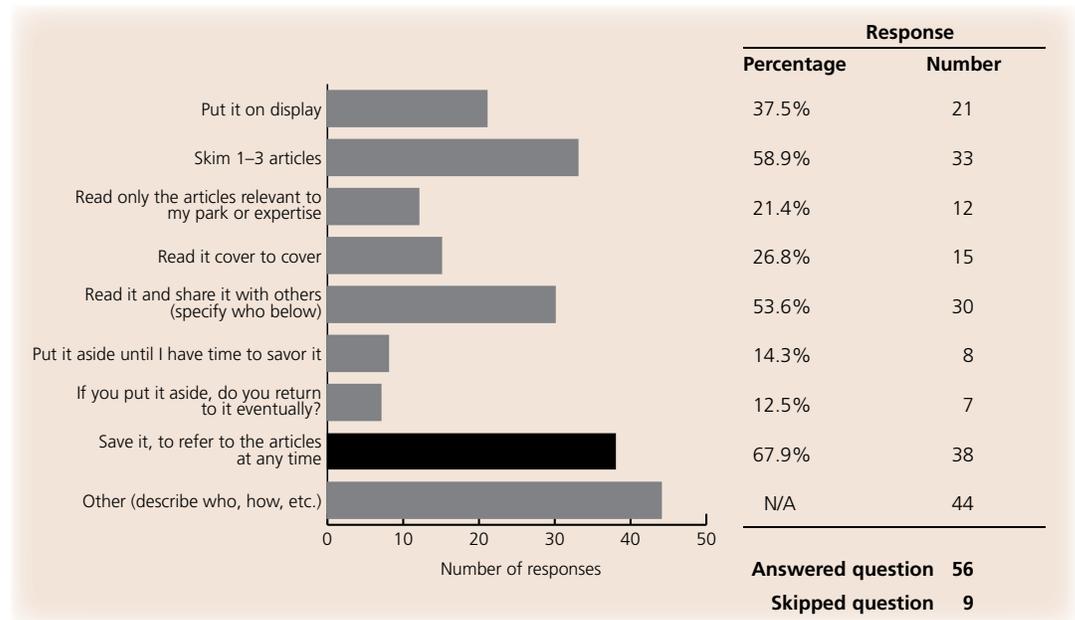
Main findings

More than 95% of the people surveyed skipped this question, because they wanted to continue receiving the publication. One

person indicated that the publication was too difficult to and that he/she did not have time to do so.

Question 4. What do you do with *Alaska Park Science*? (Mark all that apply.)

Readers indicated that they use *APS* in many different ways (see Appendix D). Most of them also like to save the printed copies for future reference.



Main findings

Readers indicated that they use *APS* in many different ways (see Appendix D). Most of them also like to save the printed copies for future reference.

Some of all of the above. I scan through it in its entirety. It’s all interesting and the production is nice. I don’t throw them away. Sometimes I loan them and usually don’t get those copies back. I have a stack of them. (Scientist and best-selling author)

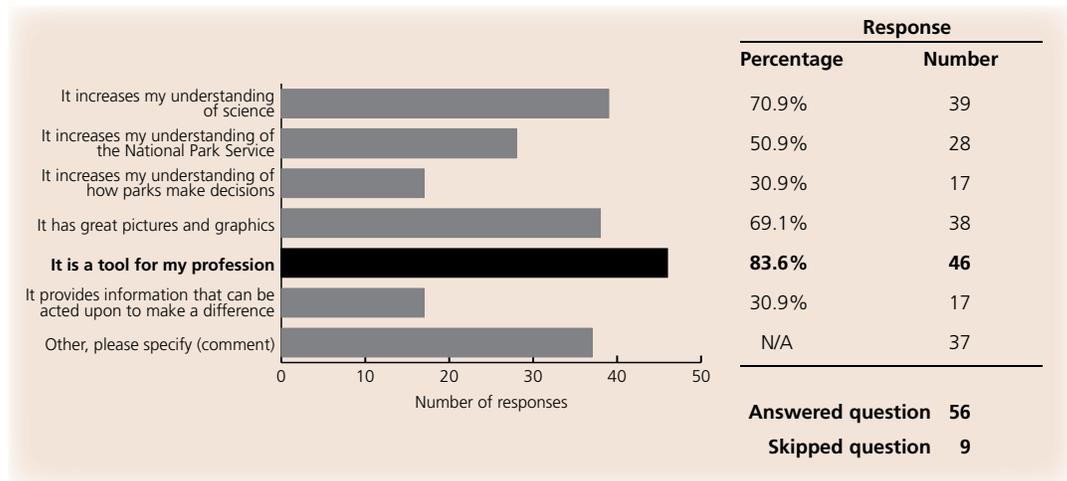
Selected comments

I skim it to see what articles are pertinent to my park and interests. I try to go back to those articles (with mixed success) when I have time to read them. However, I also skim it for pictures and graphs that will draw me in to a story. I hold on to them, keeping copies in my office, but don’t refer back to them very regularly unless they’re really pertinent. I skim it and put it on the shelf. I do share pertinent articles with others, as appropriate. (Anonymous)

I take a quick skim of the publication and table of contents, and immediately go to those articles that interest me most. Then I put it aside and come back to it later. (University scientist)

Question 5. Why do you read *Alaska Park Science*? (Mark all that apply.)

More than 80% of the people surveyed consider *APS* to be a tool for their professions, and most felt that the articles increased their understanding of science and of the National Park Service.



Main findings

More than 80% of the people surveyed consider *APS* to be a tool for their professions, and most felt that the articles increased their understanding of science and of the National Park Service.

It's the best way that I can learn about projects in Alaska. (NPS interpretive specialist, outside Alaska)

Mostly I read it for policy implications, an eye towards useful information for a park protection policy. (NGO cooperator)

Selected comments

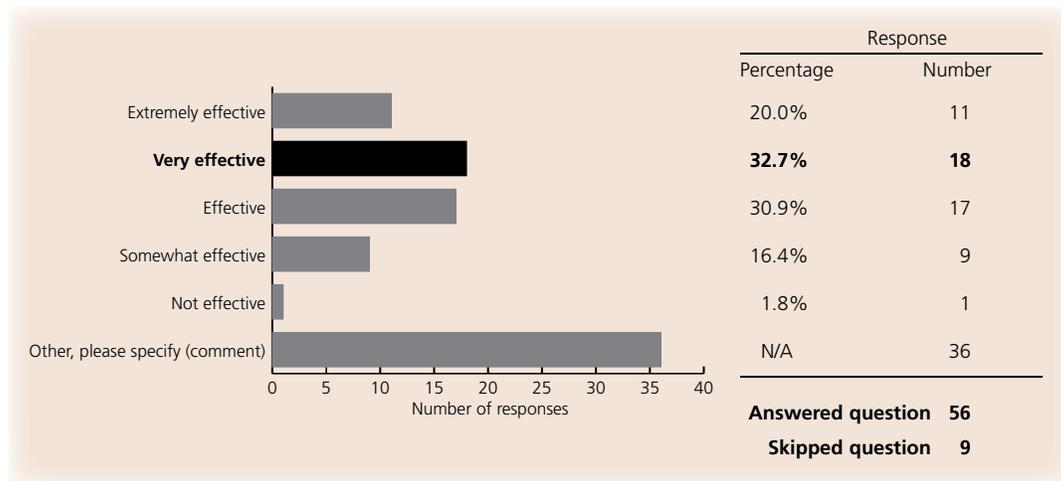
This publication is the only thing of its kind that does what it does. I have never seen such a complete publication that covers park science in Alaska. (Independent science media specialist)

I use the publication to stay abreast of what is happening in Alaska national parks as a part of my job. (NGO cooperator)

Probably one of the best ways I have to find out about park research in more depth and variety than anywhere else. (Marine education specialist, nonfederal)

Question 6. In your opinion, how effective are magazines and journals, in general, for providing information about recent scientific studies?

More than 80% of the individuals surveyed consider magazines and journals, in general, to be effective, very effective, or extremely effective for providing this type of information.



Main findings

More than 80% of the individuals surveyed consider magazines and journals, in general, to be effective, very effective, or extremely effective for providing this type of information.

Selected comments

Hard copies are priceless. (Review panel member)

Hard copies are needed in some numbers, some people are good at using Web sites, others read printed copies later. (Review panel member)

Likes printed copies, every publication has some need for them. (Review panel member)

Printing costs for *Alaska Park Science* (\$2–3/ copy) are comparable to those for *Park Science*. (NPS science editor)

The nonprofit Yellowstone Association gets lots of donations to the *Yellowstone Science* printing account. (NPS science editor)

This depends on the audience you are talking about. We are on a cusp, the concept of a magazine is about to change. We are seeing that as a society, when electronic copies have most of the same benefits of paper copies, we won't need to put the paper copies in people's hands. (NPS Alaskan park manager)

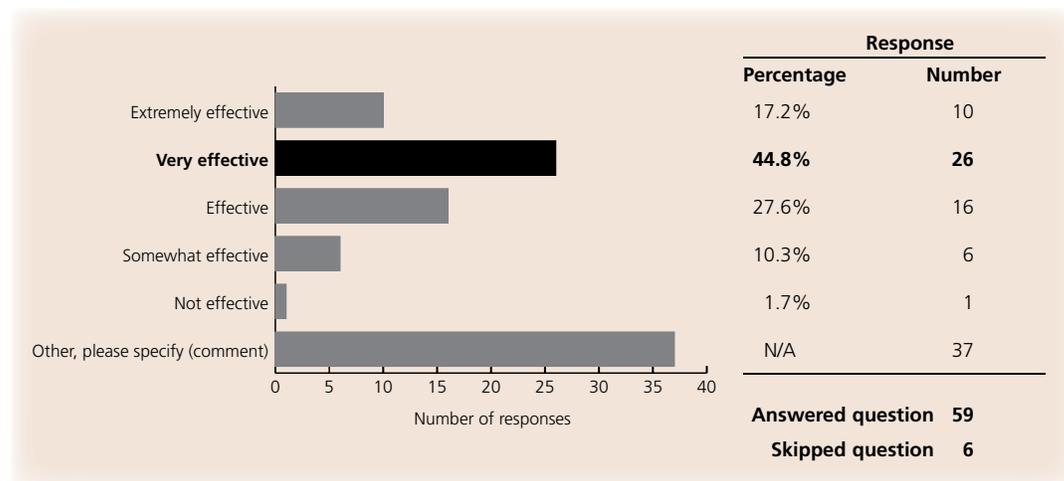
Certainly magazines and journals are effective to reach older people, but I'm not sure of younger people. Journals can't do it all alone. Public discourse and print and digital media are needed in combination with journals. (University scientist)

Alaska Park Science appeals to the general public—it's really good. There are peer-reviewed journals that are not for the average person to synthesize and remember. *APS* manages to make science "absorbable." (Independent science media specialist)

I am old fashioned, I find printed publications very effective. I use the Web, but there is no substitute for printed versions . . . You can choose to use it as you wish. (University scientist, author)

Question 7. In your opinion, how effectively is the information in *Alaska Park Science* presented?

Ninety percent of the respondents indicated that the information in *Alaska Park Science* is presented in an effective, very effective, or extremely effective manner.



Main findings

Ninety percent of the respondents indicated that the information in *Alaska Park Science* is presented in an effective, very effective, or extremely effective manner.

Selected comments

Quite a few people pick them up to read—for the right folks it’s interesting. It’s different depending on the location of the parks . . . In remote locations, it seems to be more valuable. (Chief of interpretation)

I don’t have the time to go to conferences and meetings to get the science first-hand. This is one channel that consolidates the studies into a format that helps to keep me informed. (RLC education coordinator)

The variety of articles, the level of text (understandable by the public and not just professionals), and the numbers of illustrations in the articles make this very much a public education and awareness oriented magazine. (Scientist, author, international)

I’m a visual person and I like the pictures and graphs especially; I also appreciate the concise analysis. (Park ranger)

One thing I really love about this journal is the first page with the map of article locations and the authors. It’s very easy to pick an article to go to. It is fairly comprehensive and all articles have references. It’s different than mainstream magazines. (Independent science media specialist)

Given that you are trying to target multidisciplinary audiences with one publication, it’s really well done. (Science author)

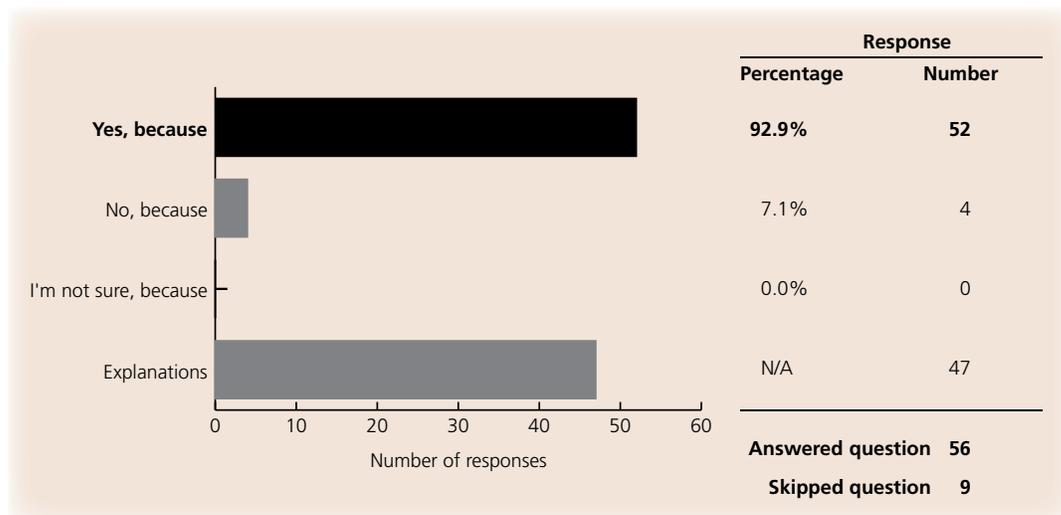
I don’t know how it can be done much better than it already is. If it improves, wonderful, but it will be surprising. (University scientist)

The person likes the reading level—not too scientific. You don’t have to spend a lot of time reading it to get a “lot of information.” You can learn a lot in 10 minutes. If I want more data, I can find it elsewhere. (Independent science media specialist)

Because it’s written in somewhat technical scientific terms, it’s not universally helpful to all audiences. But I find it useful. (NPS education specialist)

Question 8. Is the information contained in *Alaska Park Science* appropriate and useful for you to better understand what the National Park Service is learning through scientific and scholarly studies in Alaska's parks?

Ninety-three percent of the respondents indicated that the information in *Alaska Park Science* is appropriate and useful to them.



Main findings

Ninety-three percent of the respondents indicated that the information in *Alaska Park Science* is appropriate and useful to them.

Selected comments

I need to know what science is going on in parks to stay on top of my job; science is a critical issue for NPS, part of our mission. (NPS education specialist)

The publication allows me to understand what is being done in terms I can understand. (NGO cooperator)

From everything that I have heard, other agencies are envious of our ability to do this. Other agencies have problems getting their information out in a way that they can bring interest to the science in a significant manner. (NGO cooperator)

The information is made available all in one place, there's more info than you can get on a Web site, and it's easier to absorb than technical papers and final reports. (NPS Inventory and Monitoring program staff)

It presents info in a highly readable manner than can be understood by nonscientists. (NPS Public information officer)

Being outside Alaska, there is no other way to find this information. If it is not presented to me, I would not hear it. (NPS writer-editor)

I use it as a reference. (NPS education/interpretation specialist)

It helps me share science with visitors. (NPS education specialist)

I don't know where else I would read about those topics. (University science communicator)

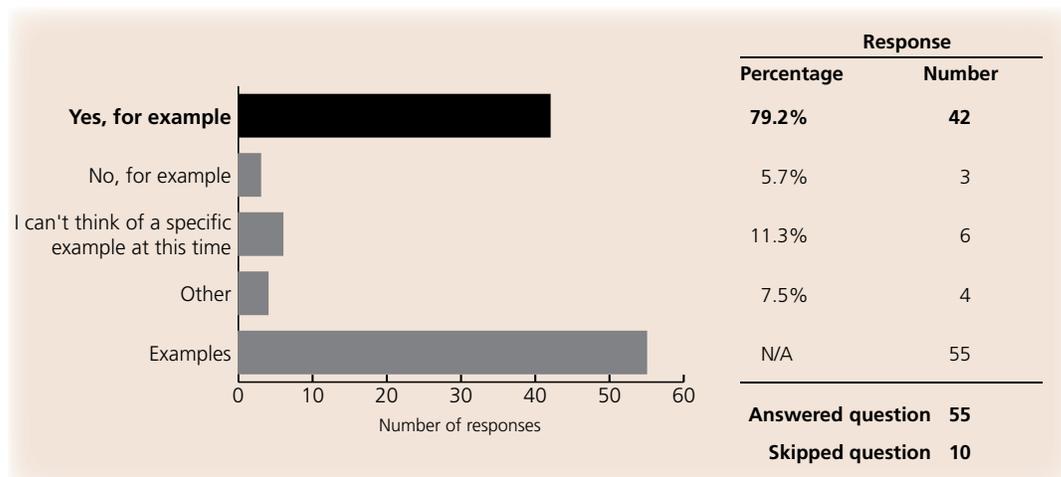
There is more to Alaska and to Alaskan parks than any particular specialty is aware of. This magazine presents a wide cross section of information on the content and intrinsic values of the parks. As a general oriented magazine it brings anything and everything about the parks and work within before the public—and that is an important role in making people understand the values of parks (conservation, preservation, recreation). (Scientist, author, international)

It is not useful for education and interpretation in its present form. (Anonymous)

The reading level is too high to use with teachers and students. Topics seem randomly chosen. There is no indication of where to go for more information. A version or middle section for students would be good. (Park employee)

Question 9. *Alaska Park Science* publishes articles on a wide range of topics. Are some types of articles and focused issues more or less interesting and helpful to you? Can you provide examples?

Most readers appear to like the multidisciplinary mix of thematic and general issues ... though some had clear preferences for particular topics and themes.



Main findings

Most readers appear to like the multidisciplinary mix of thematic and general issues covering physical, biological, cultural, and social sciences, and humanities, though some had clear preferences for particular topics and themes.

Selected comments

I like the mix, a dynamic mix; climate change as an issue is pervasive, park-specific editions are good, not only for the park featured, but for others as well; I find the diverse approach may be challenging, but I think it has rich results. (NPS Research Learning Center)

It's good overall to have a blend of focused issues and mixed-topic issues. Both have a place. (University scientist/author)

Order of preference: (1) park-specific issues; (2) general; and (3) focused (unless relevant to park/work). (Park natural resource program manager)

I think we all want articles that are specific to our parks. (Park interpretive specialist)

Thematic issues are best for me; I need to know a lot about climate change, for example; I've referred to those articles a lot. (Park interpretive specialist)

The thematic issues make effective "keepers" since they compile related articles into an eas-

ily maintained reference. (University science education specialist)

I prefer nonthematic issues because there is more likely to be something of interest to me and that I might not otherwise be exposed to. (NPS science editor, outside of Alaska)

Encourages to continue on with a wide range of topics and interests beyond own area of expertise. (NPS natural resource specialist, outside of Alaska)

I like the diversity of topics. You've pretty much nailed it with this mix. (Independent scientist and national best-selling author)

Symposium proceedings are the penultimate products. (NPS park manager)

Translate harder to find information for the readers. (APS review panel member)

Park Science and *Yellowstone Science* focus more on how science is used for applied management and less on general interest science. (APS review panel member)

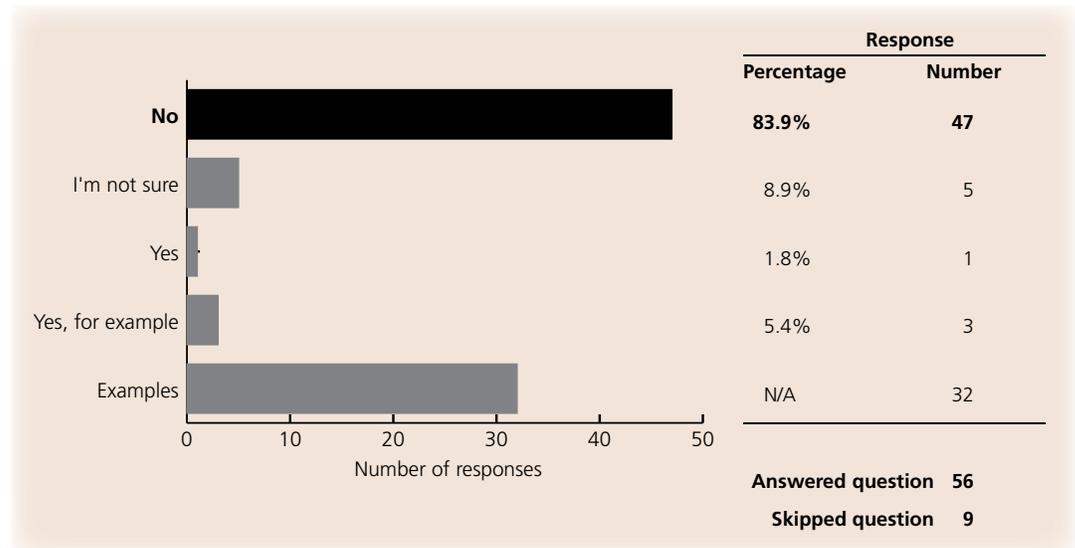
Topics mentioned in surveys more than once (listed in order of decreasing frequency):

- Cultural, including archeology and ethnography
- Climate change
- Geology and paleontology

- “My particular park”
- Social science
- General awareness about Alaska and large landscapes
- History, including marine history
- Coastal and marine
- Symposium results
- Natural
- Wildlife
- Education and interpretation
- Other topics: “hot topics,” subsistence life-style, biology, ecology, wolves, predator-prey, weather, snow/ice/glaciers, botany

Question 10. Does the content of *Alaska Park Science* duplicate much information that you already receive in other publications, Web sites, NPS programs or personal contacts?

Eighty-four percent of the respondents indicated that *Alaska Park Science* does not duplicate information that they receive from other sources.



Main findings

Eighty-four percent of the respondents indicated that *Alaska Park Science* does not duplicate information that they receive from other sources.

Selected comments

It does not duplicate a lot. In [my park] we have fact sheets, which are scientific articles in condensed form. *Alaska Park Science* is similar but appears on more pages. However, the information may or may not be in [my park’s] fact sheets. (Anonymous)

It may duplicate information on Web sites, but I wouldn’t be looking at those sources. I work better with print publication than the computer [versions]. (Independent scientist and author)

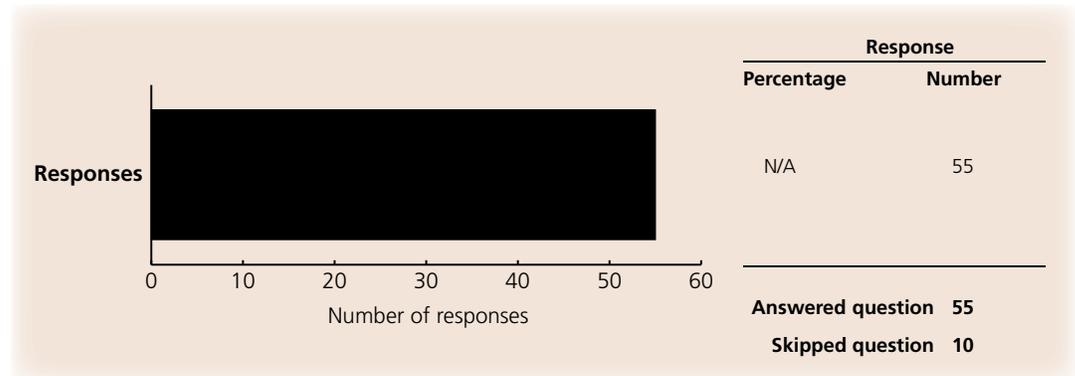
Although it’s not the only place for science info, this journal is as good as a Google search in helping me get good leads on topics. (NPS interpretive specialist)

I would have to dig into many professional journals to get this type of science information. It is a stand-alone resource for NPS science. (NPS education specialist)

It is the only publication with in-depth science articles on Alaska’s national parks. (NPS interpretive specialist)

Question 11. If *Alaska Park Science* were to be discontinued, how would that affect your ability to understand and communicate about science in Alaska's national parks?

Ninety-five percent of the people responding to this question (52 of 55) indicated that discontinuation of *Alaska Park Science* would make it more difficult or impossible for them to receive this type of information. Many described this scenario as a serious loss, or stated that there is no other source for this type of information.



Main findings

Ninety-five percent of the people responding to this question (52 of 55) indicated that discontinuation of *Alaska Park Science* would make it more difficult or impossible for them to receive this type of information. Many described this scenario as a serious loss, or stated that there is no other source for this type of information.

Selected comments

It would be hard to duplicate the breadth and depth of info in *APS*. It provides the best source of material ... for professional people and community stakeholders in a compilation and format that works well. (University education specialist)

It would reduce knowledge relevant to Alaskan parks by 50%. (NPS natural resource specialist)

I think it simply would remove a valuable source of ideas for me. (Nonfederal cooperator)

I don't know where else I would get information about Alaska science in parks. Many of my students are new to Alaska and it's important that they know there is world-class science being done in the state. Teacher can learn about places to go to study and learn about Alaska. They may not make the effort to use *APS* to create curriculum. (Public school teacher)

It would considerably hamper my ability to understand natural resource studies and natural resources in Alaskan parks [and] would be an unfortunate hindrance to my ability to communicate any kind of park science to the public. (Cultural resources specialist)

I would end up with whatever I hear in the news ... no other outlets for this information. (NPS editor)

I honestly don't think I'd have another go-to source [if it were to be discontinued]. I don't know of any other journal that provides the information that this journal does. (NPS public affairs specialist)

Dramatically. This publication is my window into science in the parks. (Independent science author)

I would lose a sense of scope of projects being done across the state, as well as lose perspective on other parks. Scientific information is shared effectively within Denali, but there would be a loss of the kinds of work being conducted elsewhere. (Anonymous)

I'd feel like I'd be missing what's going on at other parks, not so much at my park. This journal provides me with a more complete awareness of what's currently happening; I would miss using [it] as an outreach tool with remote villages and schools. It has also forced researchers to focus in and produce some very usable tools that are helpful in our work. (Research Learning Center)

I wouldn't learn about science in Alaska's national parks. That's a bad thing. (NGO park advocate)

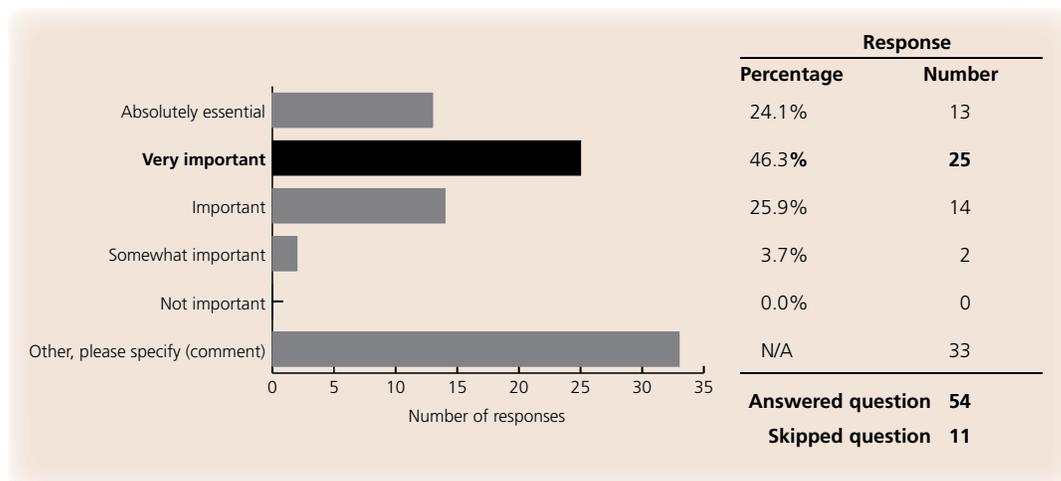
It would have some impact. Most research I receive and look for is from scientific journals. I would have to look harder for the materials covered in *APS*. (NPS education specialist)

I wouldn't want to lose it, the concept of it especially. It helps to keep me in the media stream of what's going on in Alaskan parks.

But if there are other ways of getting this info, perhaps through AK2Day links to an APS Web site. (Research Learning Center)

Question 12. Overall, how important do you feel this publication is to the National Park Service's ability to present information from recent scientific studies in Alaska to multiple audiences?

Ninety-six percent of the individuals surveyed consider *Alaska Park Science* to be important, very important, or extremely important to the National Park Service's ability to present this type of information.



Main findings

Ninety-six percent of the individuals surveyed consider *Alaska Park Science* to be important, very important, or extremely important to the National Park Service's ability to present this type of information.

Selected comments

Absolutely important to increase scientific literacy and provide credibility for NPS research (APS review panel member)

Very important, especially articles that show how science is used to inform management decisions (APS review panel member)

The National Park System Advisory Board, as discussed in their 2001 report *Rethinking the National Parks for the 21st Century*, feels that increasing scientific literacy is valuable. (APS review panel member)

For a target audience of professionals, community members and stakeholders, this format and plain language presentation is quite helpful. More so than other interpretive programs or films/media products might be for that audience. (Marine education specialist, non-federal)

Prior to this publication the National Park Service was not doing much or being very effective with communicating scientific information on Alaska's national parks. (Anonymous)

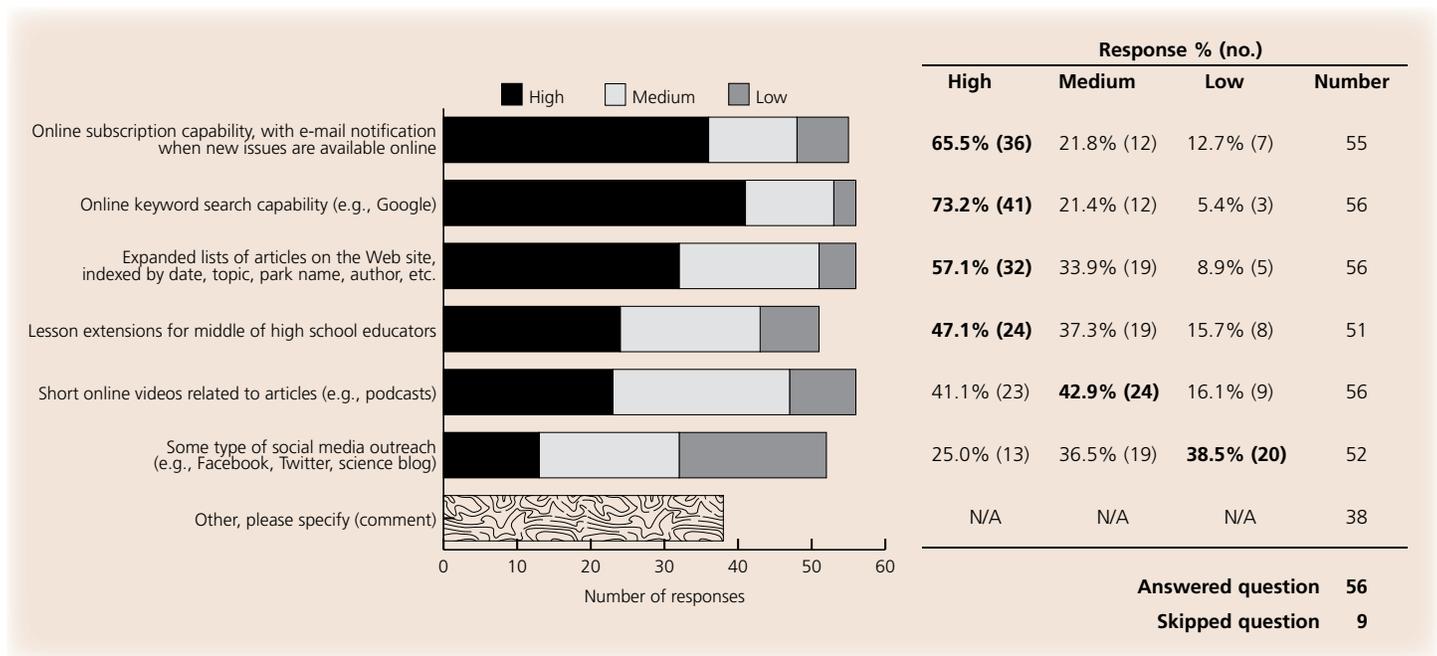
If it went away it would be missed, it serves a broad audience. How else are we going to get the word out about these studies? It's also very good for the interested public. (Research Learning Center research coordinator)

In terms of my source of information about NPS it's the only source I use. The hard copy is important to me. I don't make any special effort otherwise to seek out this information. (Education services manager, nonfederal)

APS is good marketing of what NPS is doing. I want others to see it as well, really attractive publication—good way to highlight some of the great work of the NPS. (NPS subsistence)

I think that what you do pushes other regions to do the same. It inspires others. (RLC science education coordinator)

Question 13. The NPS Alaska Regional Office is considering improvements to the *Alaska Park Science* Internet site. Please indicate whether the following ideas should be high, medium, or low priority. (Mark all that apply; leave blank if answer is "I don't know." Specify other.)



Main Findings

Readers mainly suggested improving keyword search capabilities, providing for online subscriptions by e-mail, and wanting the ability to find articles quickly by date, topic, park name, and author. Timely posting of current issues is also a basic need, as is providing all back issues and updating article links whenever Internet addresses (URLs) change. Lesson extensions for teachers, linking to podcasts, and using social media can help to expand Web-based audiences, but having a current, complete, reliable, and easy to search Web site should come first.

Selected comments

Online subscriptions/keyword searches are high [priority] since they may also be easy to do. Podcasts: where they exist we link to them. We should link to existing related sources rather than generate our own. Online social media: let's experiment with some pilot products and see how it goes before we choose a format. Proceed where demand merits. Current *APS* Web site: Links are not all active, there's not much depth, and current *APS* issues are not always available online when hard copies are already out. (Research Learning Center)

If you have the staff to make them, podcasts would get you a younger audience. Teachers may have enough curricula already. Social me-

dia would be useful if you have one topic you want to engage the public in, if you want dialogue. (NPS science editor, panel member)

The timely posting of material (same time as published journal) is important for getting out information. If not, it loses effectiveness. (NPS Cultural resources)

These are all great things, but I think we need to look for ways to simplify production of the journal. (NPS I&M)

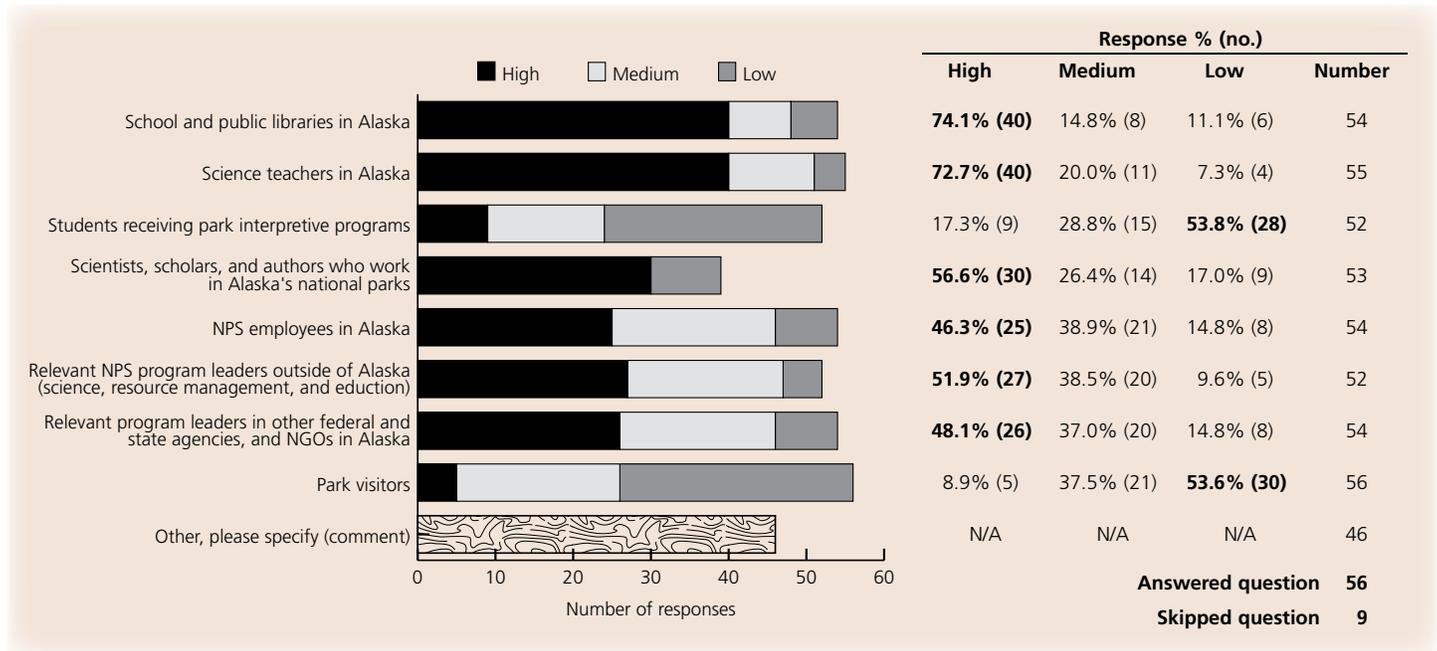
It would help if teachers knew how to use the information in the classroom with extensions. I like blogs, but not Twitter or Facebook. I like to look for my own information and not have it just appear. (Public school teacher)

Taking science and translating it into materials that teachers can use is very valuable. . . . Lesson extensions . . . go above and beyond traditional park visitors [as an audience]. Podcasts are popular and we're seeing a growing use of them in education. . . . Social networking is very popular with young people and that's an important audience for the National Park Service to try to reach. (University scientist)

Educational outreach may be critical in a state like Alaska. (Author, scientist, outside U.S.A.)

Readers mainly suggested improving keyword search capabilities, providing for online subscriptions by e-mail, and wanting the ability to find articles quickly by date, topic, park name, and author.

Question 14. In your opinion, if we had a limited supply, which of these audiences should be high, medium, or low priority for receiving free printed copies? Why? (Mark all that apply; leave blank if answer is “I don’t know.” Specify other.)



Main findings

The audiences currently targeted for distribution of printed copies were all identified as “high priority” by the majority of respondents. Two potential audiences that do not routinely receive complimentary printed copies, students and park visitors, were identified as “low priority” by the majority of respondents.

Selected comments

Best audience for *Alaska Park Science* is park staff in Alaska. (NPS education specialist)

Good for the target audiences already identified—scientists and researchers. (NPS interpretive specialist)

The public relations value of a hard copy is high, especially outside of Alaska. When I’ve presented the publication to people it can have a significant impact. (NGO cooperator)

Good idea to give to federal and state agencies and NGOs. (CESU)

Relevant program leaders in other federal and state agencies and NGOs in Alaska should get at least an e-mail saying it’s ready. (NPS science editor, outside Alaska)

Program leaders outside of Alaska probably do the least with this publication, but they might see opportunities to use the information more effectively given their relationship to national programs, and ability to attract and direct fiscal and human resources. (Anonymous)

Make them available to science teachers, but not every one of them, but to the schools. (Science educator, public schools)

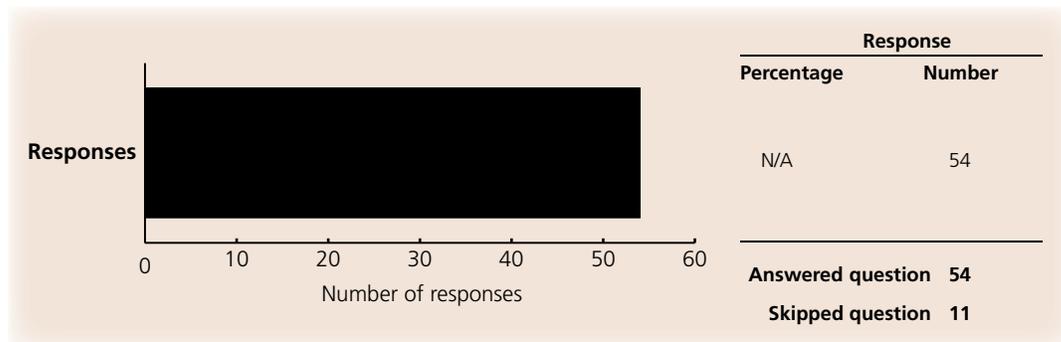
Educators/students—very effective teaching tool and I’ve seen from experience with college and high school students that it’s an effective way to teach about the parks; scientists—it’s a luxury for them (NPS cultural resources)

Keep option to purchase open to visitors (NPS cultural resources)

The audiences currently targeted for distribution of printed copies were all identified as “high priority” by the majority of respondents. Two potential audiences that do not routinely receive complimentary printed copies, students and park visitors, were identified as “low priority” by the majority of respondents.

Question 15. Are there other ways or methods that you feel NPS should be doing more to provide science information to visitors, schools, cooperators, and the general public?

Survey results suggests developing other products for general and younger audiences, using different writing styles and formats.



Main findings

The National Park Service already transfers science information to visitors, schools, cooperators, and the public in multiple ways. *Alaska Park Science* fills part of that role. There are many other communication efforts that the Park Service could accomplish, though some are limited by available staffing and funding. Different people learn in different ways. Survey results suggest developing other products for general and younger audiences, using different writing styles and formats. These include expanding outreach to villages and schools, and providing Alaska Public Radio spots and TV interviews, podcasts, tweets, press releases about science, and science interpretive training for bus drivers and guides.

Selected comments

Keep Web site current. (APS review panel member)

[Facilitate] search capability on the Web. Build keywords into header for HTML. (APS review panel member)

E-mail subscribers when issue is available on the Internet (NPS science editor, outside Alaska)

Tweet. (APS review panel member)

Use Web use statistics (e.g., Constant Contact). (NPS science editor, outside Alaska)

Younger audiences want podcasts. (NPS Research Learning Center)

The redirects for NPS FTP sites (nps.gov/akso), *Alaska Park Science*, and also AlaskaCenters.gov stopped working for several months during spring 2010, substantially limiting the ability of readers to find regional office

Web pages through Google and related search engines. The Google search button on the Alaska Regional Office Web site also has not functioned reliably (AKRO)

Provide options for Internet or printed subscriptions, or both (about 15% of *Park Science*'s subscribers prefer to receive digital copies [370]) (NPS science editor, outside Alaska)

Ask the NPS Educational Advisory Group [for advice to better reach school audiences] (APS review panel member).

Provide call-out (text) boxes with the main points for articles (APS review panel member).

Consider slip-in study guides for schools (comes down to available time) (APS review panel member).

Engage kids in career ideas. Profile how scientists came into the field. (APS review panel member).

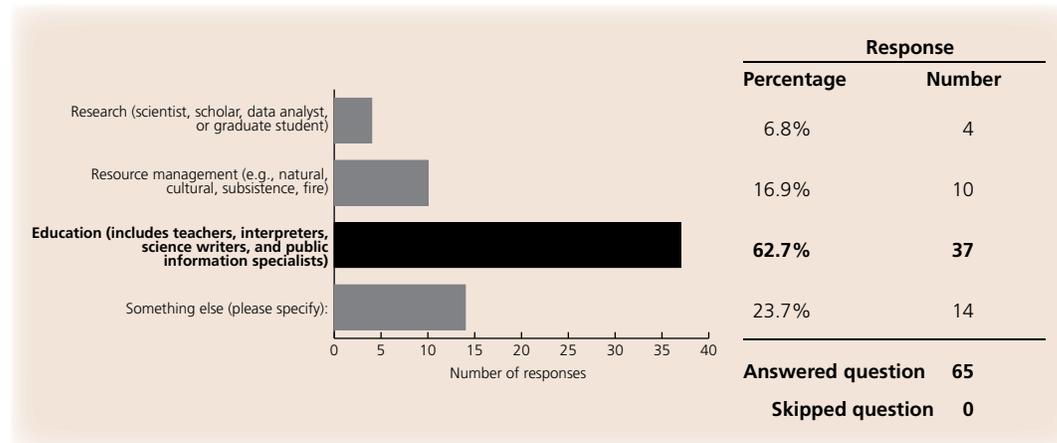
Keep publications like this and other materials as a priority. (NPS Natural Resources specialist)

The stories are all fascinating, but they need to be expertly honed to meet the interests of the audience (i.e., public). One type of writing (i.e., the kind employed in this publication) does not meet the needs of all of the possible audiences. (Anonymous)

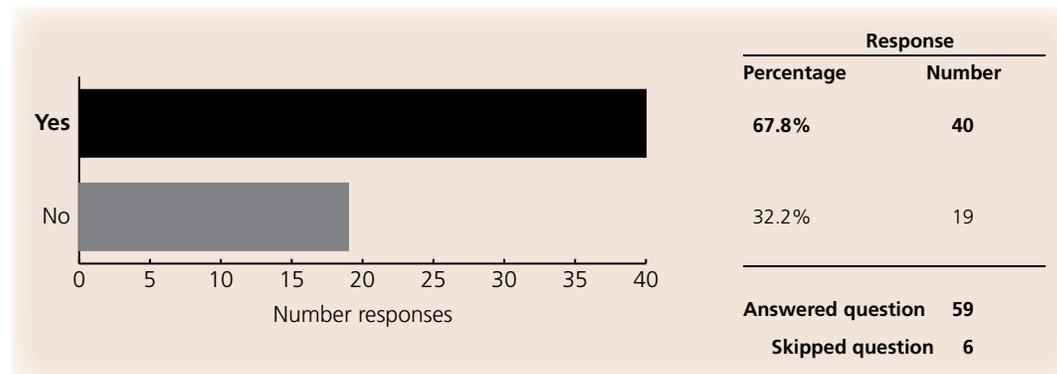
We need to have staff more involved in high schools and universities ... (e.g., guest lectures, graduate committees). We should be on a first-name basis with folks at universities. (NPS Natural Resources supervisor)

Questions about the person being interviewed

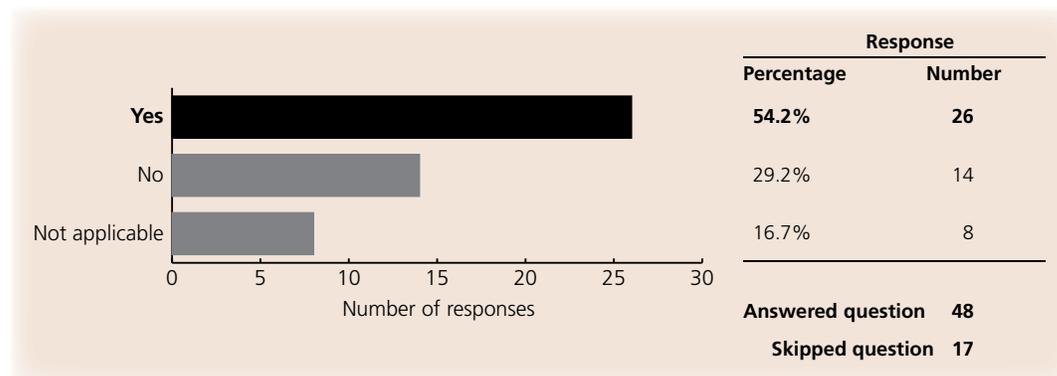
Question 16. Which one of the following four groups best describes your line work?



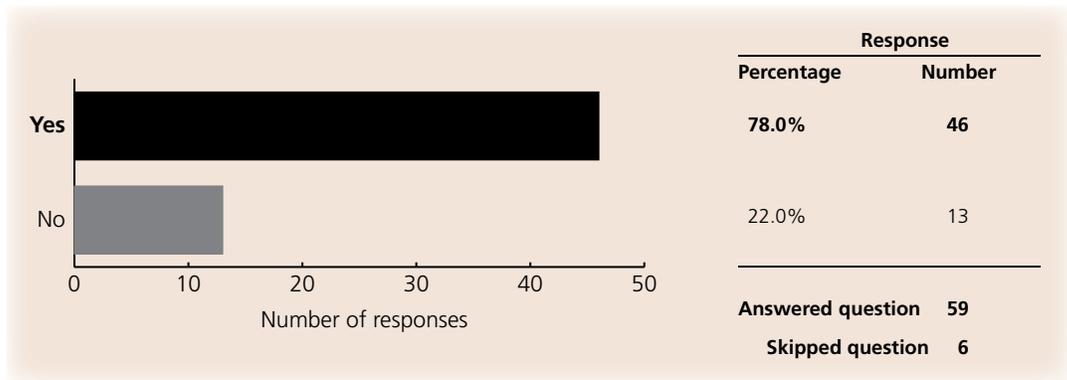
Question 17. Are you an employee of the National Park Service?



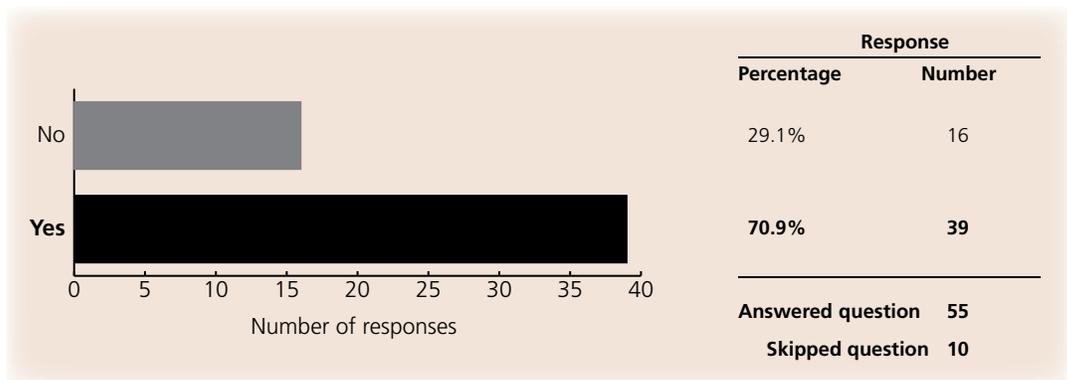
Question 18. If you are an NPS employee, are you employed directly by a park?



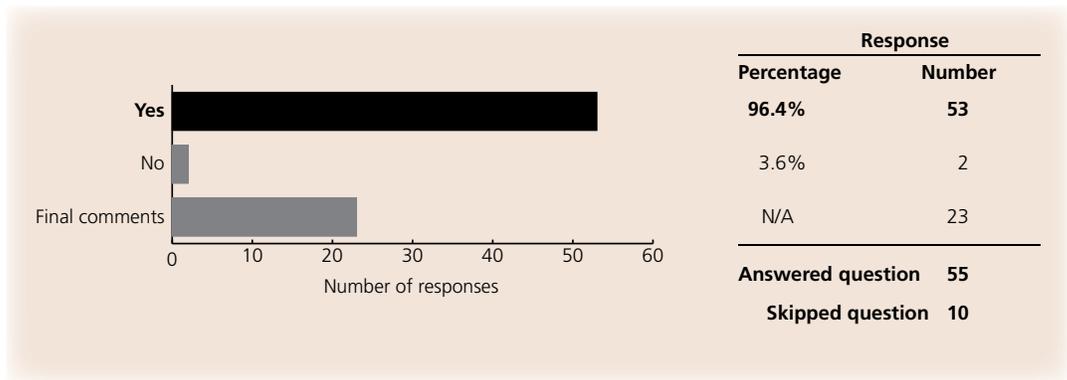
Question 19. Do you live in Alaska?



Question 20. Would you like us to send you a copy of the final report when it becomes available?



Question 21. Identifier (first and last initials of interviewee/initials of interviewer) and any final comments



Recommendations

The *APS* review panel offers the following recommendations in priority order, taking into consideration the survey results as well as the expertise of panel members. The panel finds that *Alaska Park Science* is already doing many things well and does not require substantial changes, but specific enhancements could improve sustainability and its usefulness to its most important audiences.

1. Provide long-term base funding and staffing for production of *APS*

Develop a long-term, sustainable funding source and staffing for the production and distribution of *APS* in printed and digital formats. Producing current and improved *APS* products will require additional staff time on a regular, recurring basis for expanded Internet presence and management of digital and printed subscriptions (see recommendations below). Since its inception, *APS* has been funded through a series of competitive grants from federal and nonfederal sources. However, grant funding does not appear to be a sustainable approach. Base funding would provide consistency, allow for long-term planning, and reduce competition for funding with other short-term projects. Continue to invite authors to publish in *APS* free of charge.

2. Continue to produce *APS* at least twice a year

The panel strongly recommends the continued production and distribution of *APS* in print and online. Support for this publication among those interviewed is very broad. Survey participants identified the need to continue to produce *APS* because it positively impacts their ability to learn about, understand, and share NPS science efforts in Alaska. To our knowledge, this is the only publication that provides multiple audiences with information about science and humanities in all of Alaska's National Parks. The connections it fosters, particularly with academics, media editors and writers, and state agency employees, is valuable. Readers and contributors look forward to receiving new issues, and the high quality of this multiple-award-winning publication reflects positively on the entire Alaska Region. Interest by authors and readers indicates that producing less than two issues a year would make *APS* less effective at providing current and relevant information.

3. Continue to print and distribute a limited number of hard copies to targeted audiences

Continue producing printed copies of *APS*. As people learn in different ways, the distribution of printed copies is equally important to making digital copies available on the Internet. The majority of surveyed readers (88%) indicated that they would like to continue receiving printed copies. These copies are often shared, and are especially useful for promotion.

Refine the *APS* target audience and write to, design for, and distribute to that audience. The audiences we find it serves well are technical and semitechnical, including park resource managers, superintendents, interpretive rangers, and a variety of academic, NGO, and media audiences outside of parks.

- Continue to actively manage the mailing list, revising it regularly by cutting or adding complimentary copies based on particular issue interests.
- Work with parks to ensure efficient distribution of copies. Each park should receive a number of printed copies based on park size and number of divisions. Target individually mailed copies to U.S. addresses where they are likely to be read by multiple individuals.
- Target particular libraries with hard copies, such as academic libraries and public libraries near park units, and reduce circulation to other libraries.
- Limit subscriptions of printed copies to individual K-12 educators and students.
- Expand circulation of printed copies to Alaskan villages near NPS-administered park areas (perhaps post offices and libraries) to establish better contact with this important audience.
- Limit the number of hard copies distributed to parks for free distribution to the public.
- Continue to make *APS* available for sale through park bookstores.

4. Add an e-mail subscription option

Provide easy-to-use digital subscriptions patterned after the national *Park Science* journal to increase readership without increasing costs and send e-mail notifications to subscribers when *APS* is published. About half (42%) of surveyed readers want digital copies in addition to printed copies, as they use them differently. Less than 10% of readers indicated that they prefer only digital copies, but this percentage could be expected to increase over time. Online formats are more attractive to many younger readers and can be shared more easily. Encourage readers to use online formats to gradually shift to more online use and fewer printed copies.

- Design a kick-off event to signal a new online era for the *APS*. Folks need to register online, select their preferences, and realize not everyone will have a stack of printed copies in their office.
- Increase use of the Web edition through e-mail and Listserv announcements of new editions.
- Use the e-mail distribution of digital editions also as a way to notify readers when printed editions are mailed to parks.
- Consider options for incorporating an online subscription check box to “alert me when articles about my park/this specific park are in the issue.”

5. Improve the digital format and Web site, and better connect *APS* to parks

Continue to improve the Web site and ensure that it is current. It is vital that the Web site always has the most recent issues and all articles from past issues or readers will stop using it. Ensure that all links are active and working. Expand functionality for indexing and Google and related search engines.

- Release print and Internet editions concurrently, or the Internet version a week or two before the print edition.
- Continue to make PDFs (both individual articles and entire issues) available online.
- Use a robust search engine on the Web site that locates articles by topic, park, and author, similar to professional journal searches.
- E-mail park webmasters with potential links to articles about their park as reported

in each issue of *APS*, and encourage them to post links on their Web pages.

6. Continue to evaluate and seek feedback on all aspects of *APS*

Continue to explore additional ways to receive feedback from audiences through use of a reader reply card (distributed in the September mailing of the June 2010 issue [volume 9, issue 1]) and an online comment field on the Web site.

7. Suggestions for content improvements

Continue to target half or more of the issues to be multidisciplinary and half to be relevant focused/thematic issues. Continue to include cultural/social science topics along with other sciences. Readers seem to save thematic issues for reference and consider them convenient for sharing. Distribution of thematic issues is easy, logical (e.g., marine topical issues for marine parks).

- Continue to seek articles relevant to many parks through a combination of means, including calls for proposals for new articles and focused issues, direct contact with researchers and program managers to request articles about their projects, and publication of proceedings from relevant science symposia and workshops.
- *APS* should continue to present scientific information with sufficient explanation and in sufficient detail that it can be used as a reference by interpreters and educators. However, the methods section of articles could be condensed in most issues to a short description of the scientific approach (though perhaps not for symposium proceedings).
- Minimize the use of nonessential technical terms and jargon so that article will be more accessible by nontechnical audiences.
- Publish briefer departments in a popular style that commands immediate attention of readers. Also continue to produce full-length features. The variety appeals to audiences in different ways.
- Continue to highlight the scientific process and NPS management decisions related to scientific input.
- Consider highlighting the background need for the research, the findings, and applications of the information.

- As part of the research permitting process, request that principal investigators consider contacting *APS* editors about the possibility of publishing their research in appropriate depth and style in *Alaska Park Science*.
- Conduct and publish interviews with researchers.

8. Suggestions for design improvements

The award-winning format and design are working well. The high quality, color, visual, multidisciplinary, plain-language science aspects distinguish *APS* from other journals, magazines, and newsletters. These are features that readers look forward to with each new issue.

- Consider revamping a few layout and design concerns of readers: left justify text for easier reading, avoid underlining for emphasis (use italics instead), and reduce the amount of text slightly for full-length articles.

9. Enhance the journal board

Continue to use a multidisciplinary journal advisory board (natural, cultural, interpretation, education, inventory and monitoring, Research Learning Centers, NGO, and other agencies) to review proposals for new articles and issues and to recommend adjustments to content.

- Think strategically when replacing journal advisory board members to gain energy, insight, and capacity from new members.
- Consider adding rotating board positions to involve more parks and other readers in advising the journal staff.
- Invite the board to revisit the mission and vision statements of the journal based on the outcomes of this report. For example, there may be a difference in “targeted audiences” (as articulated in the current mission/vision) being served.

10. Collaborate with Interpretation and Education to support the development of new products

Consider developing and introducing new media products to publicize scientific information about Alaska’s national parks only if additional fiscal and human resources can be allocated to these tasks. Be cautious not to over-commit staff to these tasks, and move slowly with the use of social media and multimedia content. Evaluate whether it is useful to the intended audience and whether staff can manage it.

- Consider a means to reach younger audiences with shorter stories, possibly through social media options, brief videos, and podcasts.
- Use the most appropriate media for the corresponding purpose. For example, where dialogue is desired, use Facebook, Twitter, and blogs. For one-way messages use press releases, podcasts, radio spots, and possibly videos.
- Meetings are popular venues for sharing science findings and promoting networking among collaborators and the public.
- Consider the opportunities for producing complementary information products, and other products derived from *APS* information, during the earliest phases of planning new issues.
- Consider developing fact sheets on Web sites to profile particular science and park management issues.
- Consider lesson plans for educators and teacher guides.
- Include a career feature in issues designed for school-age audiences.

Appendix A

Purpose and management of *Alaska Park Science*

Vision

NPS employees, cooperators, scientists and scholars, and the general public appreciate that science expands our understanding of the world around us, that parks provide exceptional opportunities for science, and that science is critical for managing parks in a changing world.

Mission

Alaska Park Science fosters connections to natural and cultural resource studies in Alaska's national parks by providing broad audiences with information from a wide range of scientific and scholarly studies in plain language.

Content

Alaska Park Science is a semitechnical, multidisciplinary journal about the physical, biological, cultural, and social sciences and history of Alaska's national parks. The interpretation of science and culture through the humanities has also been a recurring theme in several issues.

This journal distinguishes itself from progress reports in that it emphasizes what we have learned rather than what we have done or accomplished. It also differs from more technical reports in that it is written for general audiences (secondary school to undergraduate college reading levels).

Content is selected by a 12-member advisory board composed of employees of the National Park Service, U.S. Geological Survey, and the Alaska Geographic Association (AKGEO, the cooperating association that produces *APS* in conjunction with the National Park Service). The journal board reviews proposals from authors and makes recommendations for focused issues about annually.

The journal board seeks to produce at least one general issue annually. Though external reviewers have encouraged more focused is-

ssues, readers have indicated an interest in general topics issues. Nine topical issues have also been produced or are planned. Topical issues have dealt with:

- A single park: Denali, Kenai Fjords
- A single topic: climate change, marine science, ANILCA, inventory and monitoring
- The proceedings from the *Alaska Park Science* symposia and selected scientific meetings.

Organization

Employees of the Alaska Region provide project leadership, document reviews, and Internet and distribution services as additional work duties. Alaska Geographic provides editing, design, and printing through a cooperative agreement.

Authorship

All articles and pictures in *Alaska Park Science* are contributed; the journal does not pay for articles or charge authors for printing costs. As the interest in publishing in the journal has continued to grow, the number of articles and the average length of the issues have also increased. Some articles also have been declined for lack of space or for editorial reasons.

Costs

The direct costs of producing *Alaska Park Science* average about \$48,000/year for editing and design (40%), printing (40%), and distribution (20%). Approximately half of the printed copies (1,200 of 2,500 for the June 2010 issue) are shipped to parks for employees and local cooperators. Printing costs through commercial print brokers (using nonfederal funding) have averaged about \$3/copy, with substantial greater discounts for larger print runs. The June 2010 issue was printed through the U.S. Government Printing Office (GPO) using appropriated funds. Printing through a GPO-contracted printer is required when using appropriated funds, although estimated

printing costs through GPO were higher than through other printers.

Funding

Since 2002, funding for *Alaska Park Science* has been secured through annual grants from the National Park Service (for design and editing) and from nonprofit sources (for printing). However, the sustainability of annual project funding is questionable over the long term. Funding for each issue needs to be secured about two years before the issue is published. This is because journal staff, cooperators, and authors are generally working on different production phases of four semiannual issues at the same time (e.g., concept and planning writing and illustrations, editing and design, printing and distribution). A funding gap could affect production of several issues and tarnish the journal's reputation with authors, cooperators, and readers.

Printing for most issues since 2004 has been funded through annual grants, supported by investment earning from the National Park Foundation's (NPF) Alaska marine settlement fund. However, the total amount of funding available from the NPF has declined markedly since 2007, and no NPF funds were available for *APS* in 2010 and 2011. Professional editing and design through AKGEO have been supported through a series of competitive proposals to the NPS Alaska Regional Natural Resources Block "Grant." However, there is resistance at several levels to supporting long-term programs through short-term project funding.

The journal board had considered several recommendations for alternative funding streams but deemed them infeasible at the time. These included page charges to authors, paid subscriptions, increased bookstore sales, and base funding through the Alaska Regional Office.

Distribution and audiences

Alaska Park Science is published twice annually. Printed copies are distributed on a complimentary basis to targeted mailing lists within and outside of Alaska. A majority of printed copies are distributed in bulk to park offices for NPS employees in the Alaska Region. Park contacts (designated by superintendents) identify the number of printed copies needed

by their park for employees and key local co-operators. The mailing list is updated for each issue and numbers periodically adjusted based on information from the parks. Although paid subscriptions are not available, Alaska Geographic prints additional copies for sale online and through their bookstores at low cost (\$5–\$7). The journal also is freely available in portable document format (PDF) for public audiences on the Internet.

Complimentary distribution includes:

- NPS science advisors, decision makers, and other influential individuals
- Other NPS employees in the Alaska Region
- Scientists, scholars, resource staffs, and cooperators, who work with parks, publish in the journal, or participate in *Alaska Park Science* symposia
- Park interpreters
- Educators
- Public library users (i.e., community, school, and university libraries)
- Internet users (for the digital edition)

The mailing list is revised regularly and is being augmented with a reader-reply card in the June 2010 issue (responses from reader-reply cards will be used to update the mailing list). An e-mail Listserv with links to the Internet site remains a future possibility.

Citations of *Alaska Park Science* on the Internet and in the press

A recent Google search indicated more than 177,000 references to "*Alaska Park Science*" currently on the Internet. Reviews of these and other citations indicates *Alaska Park Science* articles being mentioned in the general press (e.g., *Denver Post*, *Alexandria Times*, *Wrangell–St. Elias News*), special focus sites and publications (Alaska Travel Industry Association, *National Parks Traveler*, *Outside Magazine*, *Polar Times*, *International Polar Year*), and in social media sites (Facebook, Twitter, weblogs). The articles in *Alaska Park Science* are intended as semitechnical summaries, not primary scientific literature. Therefore, it is not unexpected that relatively few articles have been cited in the primary scientific literature (73 were listed in Google Scholar in July 2010).

Recognition

Over the last few years, five issues of *Alaska Park Science* have been recognized through at least eight awards for publication excellence, including “best of class” and “best of show” in several international competitions. The inspirational effect of *Alaska Park Science*

articles is harder to quantify. However, it is apparent from feedback that the journal has been suggested and used as a model for other publications, and by journalists seeking both topics and contacts for magazine articles (e.g., *Outside Magazine*) and video (e.g., Wondervisions).

Appendix B

Snapshot of the *Alaska Park Science* mailing list, January 2010

The *Alaska Park Science* mailing list has largely been created from mailing lists for groups that the journal board wanted to know about science in Alaska's parks. Revisions are made throughout the year to reflect changes in the other lists and because of returned mail and new requests. About half of the printed copies are bulk-mailed to the parks for internal distribution, with the other printed copies going to a targeted mailing list. The surveys for this review targeted a representative cross section of people from most of the categories listed below.

National Park Service

- NPS employees in Alaska (mailed in box-lots to parks).
- NPS National Leadership Council members (regional directors, senior management in resources, education, interpretation, and communication programs)
- NPS national office resource and education program leads (natural, cultural, education)
- NPS regional science advisors and senior scientists nationwide
- NPS CESU coordinators nationwide
- NPS Research Learning Center coordinators nationwide
- Other NPS employees as recommended or by request

Other federal and state agencies and NGOs

- Regional directors and science program managers of other federal resource agencies in Alaska (e.g., BLM, FWS, USGS, MMS, BIA, USDA-FS, NRCS)
- Alaska Department of Fish and Game (regional supervisors and senior managers)
- Alaska Sea Grant (program leaders, communications, and marine advisory agents, statewide advisory committee members)
- US Arctic Research Commission (members and senior staff)
- Alaska Lands Action Coordinating Committee members (coordinating group for nongovernmental conservation groups in Alaska)

- Other agencies, NGOs, Canadian cooperators as recommended or by request
- Scientists, scholars and authors
- USGS Alaska Science Center (box-lots for internal distribution)

Registered participants in *Alaska Park Science* Symposia (2004, 2006, 2008)

- Scientists having research permits in Alaska national parks (this list from the NPS RPRS system is difficult to keep current).
- Alaska conservation writers and press (some receive printed copies; others press releases notifying them of new issues on the Web site).

***Alaska Park Science* authors**

Public institutions

- Libraries. (Sample copies of *APS* were sent to all Alaska depository libraries, universities, public, community, and school libraries to determine interest in complementary subscriptions. Printed copies were subsequently mailed only to those that responded positively.)
- Public schools. (Sample copies were provided to all public school libraries in Alaska, all science teachers in Anchorage, and others as requested. Printed copies are provided only to those who responded positively)
- Museums in Alaska

Sale outlets

- Alaska Geographic bookstores in NPS areas, Alaska Public Lands Information Centers, and AKGEO on-line bookstore. (Alaska Geographic prints extra copies at their own expense and offers them for sale at \$5–7. The decisions about which publica-

tions to offer in park bookstores are made by the individual parks.)

Online

- *Alaska Park Science* is also freely available on the Internet.

Appendix C

Interview questions and survey script

INTRODUCTION

My name is . . . and I am assisting the Alaska Regional Office with a review of the publication *Alaska Park Science*. We want to determine the impact and effectiveness of printed and electronic versions of this publication and would like your help. Can I have up to 20 minutes of your time to conduct a phone interview on the effectiveness of *Alaska Park Science*? We have about 20 questions.

(Optional, as needed)

Let me tell you a little more about the purpose of the review. Information about effectiveness will help the Alaska Region determine the future direction of the journal. At a minimum, the journal board and Alaska Regional Office would use feedback to adjust journal content, delivery, etc. More substantial panel findings and recommendations could lead to major course corrections, possibly including commitments for funding/staffing or discontinuation of the journal if warranted. General content, design, and editing have already been reviewed favorably by several peer groups, and are not a primary purpose of this review.

In terms of this survey, I want to cover our confidentiality understanding with you:

- Your name, title, and office/park affiliation will be included as someone who participated in this study in a list of all other folks who participated. Is this okay with you?

- If there is something you say that we feel is important to keep in its entirety, may we match your quote with your name?
- During or at the end of the interview you reserve the right to have a section of your interview (or all of it) kept as confidential. By this, we mean that we will not attribute your name, title, or affiliation to your quote. If part of your quote can logically be linked to you, we will change it a bit to keep the essence of what you said without the attribution (example: “As Superintendent of Whoosiwahsit Monument I hated receiving publications” . . . to “I hated to receive publication”)

One last item before I ask questions. Let me read you the current vision and mission statement for *Alaska Park Science*.

- The Vision of *Alaska Park Science* is that NPS employees, cooperators, scientists and scholars, and the general public appreciate that science expands our understanding of the world around us, that parks provide exceptional opportunities for science, and that science is critical for managing parks in a changing world.
- *Alaska Park Science*'s mission is to foster connections to natural and cultural resource studies in Alaska's National Parks by providing broad audiences with information from a wide range of scientific and scholarly studies in plain language.

EASY, OPENING QUESTIONS

1. *Alaska Park Science* is published twice a year in print and on the Internet. Have you received a copy? (Check to see if they got one of the batch of 50. If answer is yes in any capacity move onto rest.)

- Never heard of it
- Don't receive it
- No, I don't get it but would like to
- Yes, I receive printed copies
- Yes, PDF
- Yes, PDF and printed copies
- Other (please specify): _____

2. Would you like to continue receiving the printed publication? (If no, proceed to question 3.)

If yes, answer the following:

- Digital only (PDF, link to Web site, e-mail, etc.)
- Hard copy only (printed publication sent to you)
- Digital and hard copy (both of the above)
- Other (please specify): _____

3. If you would not like to continue receiving the printed publication, can you tell us why?

- I don't have enough time to read it
- Articles are not relevant to my interests
- Articles are not relevant to my profession
- Article are too involved and difficult to read
- Other (please specify): _____

4. What do you do with *Alaska Park Science*?

- Put it on display
- Skim 1-3 articles
- Read only the articles relevant to my park or expertise
- Read it cover to cover
- Read it and share it with others. (Specify who below)
- Put it aside until I have time to savor it
- If you put it aside, do you return to it eventually
- Save it, to refer to articles at any time
- Other (please describe, including who's/how's): _____

5. Why do read *Alaska Park Science*? (Mark all that apply)

- It increases my understanding of science
- In increases my understanding of the National Park Service
- In increases my understanding of how parks make decisions
- It has great pictures and graphics
- It is a tool for my profession
- It provides information that can be acted upon to make a difference
- Other (please specify): _____

QUESTIONS PERTAINING TO MAGAZINES AND JOURNALS AS INFORMATION SOURCES

6. In your opinion, how effective are magazines and journals, in general, for providing information about recent scientific studies?

- Extremely effective
- Very effective
- Effective
- Somewhat effective
- Not effective
- Other (please specify): _____

7. In your opinion, how effectively is the information in *Alaska Park Science* presented?

- Absolutely effective
- Very effective
- Effective
- Somewhat effective
- Not effective
- Other (please specify): _____

8. Is the information contained in *Alaska Park Science* appropriate and useful for you to better understand what the National Park Service is learning through scientific and scholarly studies in Alaska's parks?

Yes, because:

No, because:

I'm not sure, because:

Explanations: _____

9. *Alaska Park Science* publishes articles on a wide range of topics. Are some types of articles and focused issues more or less interesting and helpful to you? Can you provide examples:

Yes, for example:

No, for example:

I can't think of a specific example at this time.

Other: _____

10. Does the content of *Alaska Park Science* duplicate much information that you already receive in other publications, Web sites, NPS programs, or personal contacts?

No

I'm not sure

Yes

Yes, for example: _____

11. If *Alaska Park Science* were to be discontinued, how would that affect your ability to understand and communicate about science in Alaska's national parks? (Open-ended question)

Response: _____

12. Overall, how important do you feel this publication is to the National Park Service's ability to present information from recent scientific studies in Alaska to multiple audiences?

Absolutely essential

Very important

Important

Somewhat important

Not important

Other (please specify): _____

QUESTION ABOUT POSSIBLE IMPROVEMENTS TO ALASKA PARK SCIENCE

13. The NPS Alaska Regional Office is considering improvements to the *Alaska Park Science* Internet site. Please indicate whether the following ideas should be high, medium, or low priority. (Mark as many as needed for each priority level. Leave blank if answer is "I don't know.")

Online subscription capability, with e-mail notification when new issues are available on-line.

Online keyword search capability (e.g., Google)

Expanded lists of articles on the Web site, indexed by date, topic, park name, author, etc.

Lesson extensions for middle or high school educators.

Short online videos related to articles (ex. podcasts)

Some type of social media outreach (ex. Facebook, Twitter, science blog)

Other (please specify): _____

QUESTIONS REGARDING DISTRIBUTION AND USE

14. In your opinion, if we had a limited supply, which of these audiences should be high, medium, or low priority for receiving free printed copies? Why?

(Mark as many as you want for each priority level. Leave blank if answer is "I don't know.")

- School and public libraries in Alaska
 - Science teachers in Alaska
 - Students receiving park interpretive programs
 - Scientists, scholars, and authors who work in Alaska's national parks
 - NPS employees in Alaska
 - Relevant NPS program leaders outside of Alaska (science, resource management, and education)
 - Relevant program leaders in other federal and state agencies, and NGOs in Alaska
 - Park visitors
- Explanations: _____

15. Are there other ways or methods that you feel the National Park Service should be doing more of to provide science information to visitors, schools, cooperators, and the general public?

(Open-ended question)

Explanations: _____

QUESTIONS ABOUT THE PERSON BEING INTERVIEWED

For statistical purposes, I'd like to ask you a couple of questions about your work.

16. Which one of the following four groups best describes your line of work?

- Research (scientist, scholar, data analyst, or graduate student)
- Resource management (e.g., natural, cultural, subsistence, fire)
- Education (includes teachers, interpreters, science writers, and public information specialists)
- Something else? (Please specify): _____

17. Are you an employee of the National Park Service?

- Yes
- No

18. If an NPS employee, are you employed directly by a park?

- Yes
- No
- Not Applicable

19. Do you live in Alaska?

- Yes
- No

20. Would you like us to send you a copy of the final report when it becomes available?

- No
- Yes, please e-mail it to me at: _____

21. Can we include your name, title, and office or park affiliation in our report?

How would like it to appear: _____

CONCLUSION

That was the last question. Do you have any questions for me? If you think of anything else after we hang up, you can call me at ... or e-mail me at ... with follow-up comments. Thank you for your time.

Appendix D

Complete list of responses to survey questions

Question 1. *Alaska Park Science* is published twice a year in print and on the Internet.

Have you received a copy? (Check to see if they got one of the batch of 50. If answer is yes in any capacity move onto rest.)

Shared with staff.	It's a great publication to have in print, but it's also a good idea to reduce paper where possible.
Through GAAR, at the AAPLIC, and Kodiak NWR.	[He prefers printed copies over the Internet edition.]
From park, not individually through the park in bulk, not individually.	I'm one of the old-fashioned people who prefer the hard copy. I tend not to read PDFs.
Shared with other staff.	I like the printed version because it's so easy to open and show to people.
As a former wildlife biologist with USGS, not through the Anchorage School District.	Primarily printed.
He receives via Resources & MSLC, shared with other people. I prefer hard copies instead of PDFs.	I have received printed copy (I like hard copy and it is such a nice publication to have lying around) and have also received PDF files of papers I have authored on request.
I did not realize I could get a PDF version.	Printed copies are delivered to the park—I get mine from them.
Printed copies to the park.	Directly mailed to me.
Looked at available copies at work and online.	We get a box of them for the park—so I get a park [copy].
I like to download the PDF and have for future reference.	Don't really use PDFs.
Sporadically, through the Anchorage School District at West High School.	Printed copies are delivered to the park.
I will search archives if I want to read it online.	Printed copies delivered to park.
I am on mailing list. I never receive a PDF but will sometimes look for articles on the Web site. There is sometimes a lag between printed copy and copy on Web site.	I get hard copies.
I receive boxes of them for distribution from regional office.	See stacks, but don't automatically receive them.
Don't often make their way to the office—must go find it.	Both. Use both formats.

I received mine directly this last time. Normally I get a copy from those sent to the park.

I like getting hard copy of my own!

I don't get a personal copy in the mail, but generally find a hard copy at my park when they arrive.

Hardcopy and e-mail sent to person

I seek out copies of it. I don't know a way to subscribe to it . . . If I did, I would. I go to park bookstores and see what I don't have and pick them up that way.

Question 2. Would you like to continue receiving the printed publication? (If no, proceed to question 3. If Yes, answer the following:)

Shared copy with staff is enough.

If I were still in Alaska. I have a new job in Minnesota. Bound copies are important. A picture says a thousand words.

Through the park.

I don't receive them now, but would like to.

I'll continue to view copies sent to others. I don't need a copy to myself.

Electronic for sound bites; hard copy more versatile (in depth, reading at airport, etc.)

Seasonals use the hard copies, but it's nice to have digital versions to share.

Puts out newsletter saying it's online.

I would like to ultimately dispense with the paper copy and rely on PDFs.

I would be interested in an e-mail letting me know when each issue is available.

Pictures make it nice to show to people, but sometimes I want just a single article, so the PDF version better for that.

I love the hard copy.

I like to keep the printed edition in my professional files.

They're fun to get. I like the printed copies because you can stack them up one after the other. You notice the improvements with each issue.

It's not easy reading on the Web, which is why I read the print version. I admire trying to be green, but it's not easy to read online.

Digital copies are easier to share, but I like the hard copy too.

Hard copy is my preference for extended reading materials.

Use the Internet version as a link for my outreach.

Prefer hard copies—if searchable on-line, will also prefer both.

Since I work remotely, away from computers, I prefer hard copy.

I read in different places away from computer, on flights and odd times—carry the hard copy.

I don't like to read on computer screens.

E-book, Kindle, is more readable than going to a Web site or e-mail. There is opportunity in the whole electronic book or magazine realm.

Since I already get it as a hard copy, I like that way best. I'd also use it online.

This is the first time I received a digital copy.

Recently was the first time I received it digitally.

I really like the hard copies. I also like to have the online version for broader distribution.

Likes to take it home—doesn't like to read things on monitor.

Printed copy is so much easier for those of us that didn't grow up on Facebook. Having a PDF is much easier to share. Want to extract single article to send to people.

Training myself to be carbon neutral.

Have it available on Web site for me to access is good; an e-mail notification when posted would also be nice.

Digital is my preference, but I like hard copy. (I wouldn't want both.)

Question 3. If you would not like to continue receiving the printed publication, can you tell us why?

The publication is too scientific for use in my profession (education & interpretation).

I don't have room to store them, it's a logistics situation.

Training myself to be carbon neutral.

Question 4. What do you do with *Alaska Park Science*? (Mark all that apply.)

I share articles that relate to my park with K-12 teachers.

I share it with staff and visitors. We put it on display and visitors ask for copies. It's also popular with educators. We use the issue on [in-park] training.

We get special requests for it from locals. I share it with other staff and put it in the break room.

The ANILCA issue was of particular interest to teachers.

I put it in the park library. I read it only if I have time or if there is a particular article that interests me.

Put it in the visitor library and we also send it to some students with certain information requests.

Put it on the bookshelf.

If I did receive it . . .

Use it for training seasonal. I share it with seasonals.

I put it on display so my team and others can look at it if and when they choose.

Used to share it with other educators, interpreters; not so much anymore since I changed jobs.

Read select items in detail when time permits.

We also sell it to the public; like to share it with staff.

I will make available to press if there's an issue specific article they are interested in. Put copies out in the superintendent's office. I save the [my park] specific ones.

I read the majority of articles.

I save about three back issues at a time.

Share with peers in the fire community, and some interagency contacts

When I receive it I scan it for interesting and relevant articles to my [job function]. If anything leaps out at me in this way, I read those articles. If I have time, I may delve into other articles. I don't have time to read it cover to cover. I share it with staff about 12 people. It winds up on a library shelf where it may not

get looked at again. However, I may remember an article and can go back to it.

Skims the entire publication and goes back to read what interests her.

Sometimes share with other anthropologists or people in the community that was part of the article.

Share with small staff (science communicators) and make available in division to researchers, other staff.

Sometimes share issues with others; it depends on articles. I tend to skim it right away then put aside until I have more time to read.

I look through table of contents and all articles. Topics sort themselves out. May read all in first week or just parts. Then put it aside. Don't read all of it every time. Read all half of the time and 25% the rest of the time. Have on display. Have a collector's set. Has been really handy over the years because I can go back and pick articles out of it. I always have about 10 copies that I can give to particular people.

Send to staff, other people in park, share with friends and relations outside NPS (paper copies), colleagues in other agencies and university.

Some of all of the above. I scan through it in its entirety. It's all interesting and the production is nice. I don't throw them away. Sometimes I loan them and usually don't get those copies back. I have a stack of them.

I take a quick skim of the publication and table of contents, and immediately go to those articles that interest me most. Then I put it aside and come back to it later.

I have shared the articles with journals. I've been coeditor on something called the *Polar Times* and on the editorial board of the journal *Arctic*. I've also spent time at the [university], so it's nice to be able to do some comparative things. I'm impressed by frequency of this publication—two times per year—and also of that of *Polar Science* journal. You just get one done before the next one needs to be started.

I skim it to see what articles are pertinent to my park and interests. I try to go back to those articles (with mixed success) when I have time to read them. However, I also skim it for pictures and graphs that will draw me in to a story. I hold on to them, keeping copies in my office, but don't refer back to them very regularly unless they're really pertinent. I skim it and put it on the shelf. I do share pertinent articles with others, as appropriate.

I write weekly science comps. Therefore, I skim *APS* to see if there are topics I can write about for my audience. Several times there have been. I like *APS* because it doesn't compete with my writing. [He writes for public audiences and *APS* is intended more for a technical or semitechnical audience.] It is an excellent resource for me because the stories are not published in newspapers. They have good detail and are written by the researchers themselves. *APS* is a great outline to work from in retelling the science stories to the public.

I read it and then have it filed on hand for reference and share with others.

Share with staff and coworkers, especially seasonals.

"Kenai Fjords" focused copies I used to distribute multiple copies; not so much any more. Share it mostly with educators and schools.

Share it with students, teachers, and with visitors to the park as well. Even use the older copies that are surplus.

Like to make sure it's available for others in the office.

I do make sure copies are available around the office for parks staff.

In Eagle, out for public. Low on time available to truly read it.

Use it as an example with others, not convinced that seasonals know about it—so I use it during seasonal training.

I read many articles, not "only" the ones that relate to my park or expertise; we also distribute to staff and to the public, I share it with

program participants for my presentations and for some issues, we even provide it to those partners and community members on our mailing list.

I am very happy when it comes and I read the most intriguing articles. I keep some copies at home and some at work.

Right away, I browse it. There are four other folks in my office of about 20 who also receive copies and we share them.

Like to share mostly with partners as opposed to colleagues, or staff. Likes to treat it like a *National Geographic* magazine, read it for enjoyment as well as for work.

I like to bookmark specific articles, copy out articles for activities/resources I'm doing in the park, and I display it in the [RLC] with a sign that refers people to the Web site; also read it occasionally to my son—he likes dinosaurs.

Like to share it with staff, with supervisors. I like to read it what speaks to my experiences.

I use it as a point of reference, also as reading material. If I am traveling to a park, say for a vacation, the first thing I would do is read this publication before coming to the park.

Question 5. Why do you read *Alaska Park Science*?

I don't read it for the graphics and pictures.

and understand how to translate it and what is and is not working.

I used it in visitor services (interpretation).

The magazine is not at all about management issues. I have an interest in science . . . I have some specific interests such as birds.

Less so on the last one—providing info that can be acted upon to make a difference.

I don't read it.

I use it to see how another journal approaches the printing of the same kind of information that *Park Science* publishes, and how similar subject matter is presented.

I do not receive it anymore.

The publications are definitely eye-catching.

Tool for my profession. It gives me a wider view of what type of science is being conducted in Alaska. We fund science. This publication rounds out the picture of what colleagues are studying. [I'm mostly interested in articles] with a focus on marine issues but also cultural studies and issues.

I use the publication to stay abreast of what is happening in Alaska national parks as a part of my job.

Probably one of the best ways I have to find out about park research in more depth and variety than anywhere else.

Also have great data. Would use the data in her ecology and environmental systems classes in studying wildlife populations. It has a variety of articles and good content.

Provides updates on science issues in Alaska and action being taken and needed

I like to have some familiarity with the projects that are taking place.

On editorial board—for evaluation of potential articles for future issues.

All true in my perception. I have a personal motivation for reading. I like to maintain an awareness of research occurring in the region

None of the above. It's information on what colleagues in the Alaska region are interested in doing. I wouldn't otherwise know what

people were doing. Good communication vehicle.

It's really interesting to see what is happening in other parks, especially being based in a park where you may not hear about other parks. It provides a summary of all Alaskan parks.

[He mentioned enjoying the photographs such as comparative photographs of a place over time.] I'm a big user of the parks. I'm not so much interested in what NPS is doing [to manage parks] but I'm interested in the science going on in the parks. I'm very envious [of scientists conducting research in national parks].

I'm just interested in science. With *Alaska Park Science*, I can feed my interest in what types of science are going on in the north. I study snow and ice and have a project at [an Alaska] national park.

I encourage people [students] to contribute to it. I'm in a crowd that does work with the National Park Service. We've been able to say to graduate students that there's an opportunity to have your work published in a journal that is not as intimidating as competing for publication in a fully refereed journal where you may have to wait months and months to be published. You can be somewhat exploratory with your scientific ideas more easily in this publication than a fully refereed journal.

It is a tool for interpretation. The publication articles are the in-depth stories on which some interpretive information is based. The publication serves as background information for park stories.

To get story ideas.

It is readable (not too technical), profusely illustrated, nonspecialist (articles cover a wide range of topics), and gives a good idea what is going on in parks in Alaska. Its format is also very suitable for having on display at work or at home.

Picture and the graphics are a big plus, in particular.

I think it should do more of the last item—include more information that can be acted

upon—what people can do into their own lives to become better stewards.

As interpreter, I like to stay informed about current park related research—to do my job.

Science is a critical part of NPS mission—this is important to me to understand research.

It's interesting.

Crossover, the nature of [my program] is that we fund a lot of work in other parks; this journal helps me to understand key issues in other parks, and helps me focus on issues that might be grant priorities.

Since our NPS staff is very diverse and busy, this is a good source of information about many projects that I don't normally hear about.

This is the best way to find out about projects in Alaska.

It's the best way that I can learn about projects in Alaska.

I use *Alaska Park Science* for ideas, especially in terms of social science. Your data is very specific to Alaska, but the kinds of questions asked are very important and transferable. You have a very tough situation in terms of wide distribution, you have such unique issues and resources . . . It does not translate well into other regions.

Read for enjoyment—articles well written; like to read any of the articles that catch my fascination.

Mostly I read it for policy implications, an eye towards useful information for a park protection policy.

It's professionally useful to me in my job. This publication is the only thing of its kind that does what it does. I have never seen such a complete publication that covers park science in Alaska.

Question 6. In your opinion, how effective are magazines and journals, in general, for providing information about recent scientific studies?

Other materials (like park fact sheets) are more important.

Our visitors research the area before visiting [our park]. European and Asian visitors mail this and others home. Items like *APS* have a very broad reach.

I like the publication from the National Wildlife Federation. It is short and relevant and can be easily understood.

It provides a view of science as it relates to careers. This is an important element in education these days.

Some do an excellent job, some do a terrible job due to superficial or sensationalizing the science.

I am not sure the publication has much of an audience beyond the Alaska Region Staff. Articles are often almost entirely about the process and not about any conclusions or outcomes. I think the general public is usually not interested in the process.

That's how we get good information in a limited time.

Don't have enough time to read or study them thoroughly, but they can be useful.

Depends on distribution.

You can leave it on tables.

This depends on the audience you are talking about. We are on a cusp—the concept of a magazine is about to change. We are seeing that as a society, when electronic copies have most of the same benefits of paper copies, we won't need to put the paper copies in people's hands.

Hard to gauge. I like to be able to hold something . . . If I had to go and find it, I might not happen upon it.

But, journals are really intended for specialists and subject matter experts in their field, while

popular magazines are more effective at reaching general audiences.

People must manage info pretty fast in today's world; in this format, *APS* serves mostly just scientific audiences well. To be more useful to broader audiences, it could be less focused on process and methodologies, and more specifically about the relevance of the science to people, and outcomes.

They can be effective, but it depends on the journal/magazine. I rarely go to scientific journals for information. For me, more general magazines are useful. Newsletters from organizations with resource issue responsibilities are especially useful to scan. I may follow up with agency and NGOs based on things I read in their newsletters. Newsletters are key for me.

Reads 10–20 other publications since she was a biologist before becoming a teacher. She likes to learn. Likes that the publication cover Alaska-specific science. The material could be useful for teaching.

Depends on audience, but in general very effective

They are not only the tool but they are an important one.

I love them. I'm way up at the top.

For baby boomer generation, it's very effective, but perhaps not so effective for younger people.

Tough one. I don't know. How do you measure effectiveness? For me [journals and magazines] are effective because I read them, but not all audiences do.

I believe that paper still has a considerable role to play in communication.

I wish I had the luxury of going out to make surveys to determine public opinion about *Polar Times*, for example. It's hard to answer this question. I wish I had better feedback. The information world is so fluid now. We were

recently wringing our hands at how hard it is to get students to cite anything older than 10 years. It's sad because students are reinventing the wheel with respect to research that may be done very well in the 60s, 70s, and 80s but they're missing it. Certainly magazines and journals are effective to reach older people, but I'm not sure of younger people. Journals can't do it all alone. Public discourse and print and digital media are needed in combination with journals.

Some are much more effective than others. (I think she mentioned *Natural History* as a very effective science magazine for the public and contrasted it with *American Scientist* as one that's denser.)

In getting people interested—but not so much in fully informing them about the details—but that's why I like them.

It depends on what magazine concerned.

Mostly, I use Google searches on the Internet to stay informed, since I don't have ready access to lots of magazines/journals.

My gut reaction is to use the Internet to search for items—it's easier. Magazines and [incomplete sentence].

Depends of the person.

E.g., *Smithsonian*.

In Kenai Fjords National Park it depends on the audience.

The information is easier to access than directly from the sources; it also summarizes the findings which are a time-saver for me.

I am old-fashioned; I find printed publications very effective. I use the Web, but there is no substitute for printed versions . . . You can choose to use it as you wish.

This journal is an integral part of the work and process of my job. I like that it has the feel of a peer-reviewed journal, but that it's a bit more readable.

This is hard to say—it varies widely depending on the publication.

Alaska Park Science appeals to the general public—it's really good. There are peer reviewed journals that are not for average person to synthesize and remember. *Alaska Park Science* manages to make science "absorbable."

Question 7. In your opinion, how effectively is the information in *Alaska Park Science* presented?

The layout does not have a date on the front. The cover may not indicate the true content of the magazine. There is no listing or preview of what is inside. Articles do not put information in context . . . What other parks have similar studies? Are they continuing this study? It would be nice to have a summary of the article in the margin as well.

The publication needs to be readable and understandable by the lay person. It needs to be more reader-friendly to the nonscientist.

Sometimes the topics seem random (why are they important?) or the stories are not particularly compelling.

It is too technical for my use.

It is not at a reading level appropriate for my students (7th and 8th grades). Students cannot distill information from the articles as it is presently written. I would need to explain most of the articles.

Effectiveness varies with the audience. It is not effective for students and lay people. The writing is at too high a level for the general audience. It is good solid science for scientists, but needs adjustments for visitors and schools.

It's pretty good—I would say it errs on the side of accurate solid science, and I like that.

It looks nice, but again I think the content is not usually that interesting to nonscientists

It deals specifically with the parks in reasonable simple language.

Unless I have time, I often seek out one specific article of topic. I don't get the chance to delve into most of the content very extensively.

As we transition to other methods of delivery (Web sites for example) we may become more effective.

For resource specialists and the educated public, not for the general public.

Just to the target audience: scientists. Doesn't really serve other groups as well.

She likes the reading level—not too science-y. You don't have to spend a lot of time reading it to get a “lot of information.” You can learn a lot in 10 minutes. If I want more data, I can find it elsewhere.

There is a surprising level of peer and editorial review on the articles, given that it's not a peer-reviewed journal per se. It's well done.

It's really quite good in this way. The editing and presentation are really good.

Given that you are trying to target multidisciplinary audiences with one publication, it's really well done.

The publication is generally well designed and edited. I had a paper published in it and was very pleased with the outcome and how the editors turned it into the *Alaska Park Science* style.

I don't know how it can be done much better than it already is. If it improves, wonderful, but it will be surprising. It's a huge job what [the people who produce this journal] undertake: huge geographic area, huge topics, lots of work to be done, and lots of people in Alaska who don't get along well with the National Park Service.

For the audience I represent (interpreters and the public) it is somewhat effective.

The variety of articles, the level of text (understandable by the public and not just profes-

sionals) and the numbers of illustrations in the articles make this very much a public education and awareness oriented magazine.

I'm new to the region—so I think it's a good orientation—but I'm still learning about it. Don't know as much about previous issues and their use.

I don't have the time to go to conferences and meetings to get the science first-hand—this is one channel that consolidates the studies into a format that helps to keep me informed.

Written well and good cover images, in particular.

Effective for scientists, not so much for teachers and general audiences

Because it's written in somewhat technical scientific terms, it's not universally helpful to all audiences. But I find it useful.

Sometimes, the writing is a bit scientific, technical in places. It requires a bit of effort.

Quite a few people pick them up to read—for the right folks it's interesting. It's different depending on the location of the parks; at Cold Foot it's different from Fairbanks or Eagle. In remote locations, it seems to be more valuable.

Write in creative nonfiction rather than scientific manner.

Tough one, not everyone supports it. It's not heavily weighted in data, it does what we need it to do, and it clearly and concisely introduces and summarizes the studies. It's great at that.

Between extremely and very effective. Descriptions and images are good. I'm a visual person and I like the pictures and graphs especially. I also appreciate the concise analysis.

I have mixed feelings here. You are trying to make a publication accessible to many audiences. Sometimes specific articles have too much jargon and other times in another article it is not specific enough. It's like an identity crisis with the wide variability between articles.

Very well written and well presented, with appropriate blend of text, graphics, and photos.

It's a nice blend of good science in understandable language.

APS is well written and fairly concise but it does not necessarily serve all audiences.

One thing I really love about this journal is the first page with the map of article locations and the authors. It's very easy to pick an article to go to. It is fairly comprehensive and all articles have references. It's different than mainstream magazines.

Generally effective for NPS audiences. Beyond that, some of the context may be missing. I wouldn't give it to a family member or member of the public without some explanation. That is, the most recent journal is the proceedings from the Arctic conference, which may not make any sense or seem relevant to nonparticipants.

Question 8. Is the information contained in *Alaska Park Science* appropriate and useful for you to better understand what the National Park Service is learning through scientific and scholarly studies in Alaska's parks?

The reading level is too high to use with teachers and students. Topics seem randomly chosen. There is no indication of where to go for more information. A version or middle section for students would be good.

Many articles explain "how" we are learning not "what" we are learning.

[Yes, because] . . . It just does.

Same as last answer.

It is more useful to me than annual reports.

This is not really a scientific park so I don't use it much—but it still helps keep me familiar with issues that are going on around the state.

Alaska's national parks are spread out over the whole state. I sometimes don't get information from the more remote parks.

It presents info in a highly readable manner [that] can be understood by nonscientists.

I use it as a reference.

I don't know where else I would read about those topics.

It is not useful for education and interpretation in its present form.

The information is made available all in one place, there's more info than you can get on a Web site, and it's easier to absorb than technical papers and final reports.

It is a good representation of science in parks.

It is an important tool in the toolkit, but it is not the only tool.

It helps me share science with visitors.

The publication allows me to understand what is being done in terms I can understand.

I think so. If I were to comment, I think it's too "science-y" . . . If a goal is to reach the general public, it's not that easy. I read them because I work on them. Your eyes glaze over sometimes.

It is all interesting and multidisciplinary

Provides overview of Alaska issues and important topics. Summarizes key items.

Because of the variety of subjects treated in *APS*. I have never been to Alaska and know very little about the science there. For the NPS, Alaska is big in natural resource management.

Provides background for current management needs and actions

When I have time to skim it.

It's concise enough so that I'm not daunted by it. I have so many things to do each day. I can make my way through the articles [because they're concise] and then the illustrations help too. Length, tone, and reading level are appropriate. Not too technical, but not too dumbed down. Strikes a nice balance with my background. Including so much about methods is not necessary for me. I won't repeat the experiment. I assume it's a well-designed project that is being reported and that it has been peer reviewed, so a short summary of the findings will suffice.

Being outside Alaska, there is no other way to find this information. If it is not presented to me, I would not hear it.

I know what is going on in my park but *APS* has whole range of what is happening with science throughout Alaska; it provides a broader spread in an easy to find place.

There's no other easy exchange forum between parks. It's a mess on our regional ... We used to have meetings once a year about resources. Way more people now, travel ceilings, and don't happen. This publication helps fill the void a little. There would be other ways to do that effectively.

APS covers such a broad spectrum from a lot of authors outside NPS who work in parks. The research permit system is ineffective at getting results to us; *APS* is filling part of that role to keep people informed about what is going on.

Without it, how would we know what science is taking place? The studies would go in a drawer as they did before this publication was started. The chance to distill scientific information for the general public is a good goal. We should try to reach a little higher than an interpretive brochure with this type of information.

Though I'm an active scientist, I only hear about NPS science through this publication. I normally wouldn't hear of it. It seems like individual park staffs are learning from the magazine too.

At the very least it gives a good general overview of the scope of science going on in different parks in Alaska. It is not a traditional journal, but there's enough scientific information there to learn about the outcomes of the research, and it provides for ways of readers to learn more about the topic by contacting the authors [or reading related works].

It highlights myriad studies going on to understand park ecosystems and cultures.

There is more to Alaska and to Alaskan parks than any particular specialty is aware of. This magazine presents a wide cross section of information on the content and intrinsic values of the parks. As a general-oriented magazine it brings anything and everything about the parks and work within before the public—and those are important roles in making people understand the values of parks (conservation, preservation, recreation).

There's a bit of a disconnection between divisions in NPS, they don't always communicate with each other. This journal helps the bridge the gap. It helps me know about what's going on in science in the parks.

It makes people more aware of the studies under way and presents info about them.

I need to know what science is going on in parks to stay on top of my job. Science is a critical issue for NPS, part of our mission.

It lets me know about things I wouldn't already know about.

It's a difficult read. Articles written by scientists for scientists.

Exceptionally, on a lot of levels, it opens our eyes to what other parks are doing, what they're grappling with. With their processes, it helps to establish who would be good contacts and gives you good leads on solving management issues. It helps provide knowledge, is very effective for partners, and for schools science teachers.

As I said before, because it summarizes and articulates the topics so concisely and clearly.

I think it is a very good mix. I like the way natural and cultural resources are mixed.

It provides a broad sample of what's going on in Alaska and all the science necessary to understand it.

Very appropriate—what I like is that the articles address things that are currently happening. There's a lot of info especially about natural resource and cultural resource topics. It's current and it includes global issues. Cultural articles are probably my favorite—for enjoyment reading.

Some of it. There's a lot of this stuff that doesn't pertain to my professional worldview, but I always look to see what's in there that might help me.

APS is written concisely and often has well chosen graphics to accompany articles.

Especially with interpreters, or folks close to Park Service—groupies. It's professionally done, but the themes lack consistency, and it's hard to easily determine at a glance when the issue is just general articles, or a thematic issue.

Absolutely, It's relevant to our park, to Alaskan parks, and to better understanding of science.

Incredibly so . . . What I didn't realize before reading the journal was (1) the amount of research done in the NPS and (2) the number of people employed by the NPS to do the work. *Alaska Park Science* is a nice cross section of NPS staff and researchers from other places doing the research.

Question 9. *Alaska Park Science* publishes articles on a wide range of topics. Are some types of articles and focused issues more or less interesting and helpful to you? Can you provide examples:

Professionally, I read the articles having to do with my park first. Personally, I read the cultural articles because I know less about those subjects.

Climate change is huge. NPS does climate change well and it is so relevant. *APS* is relevant to other agencies as well.

I like history, paleontology, geology, cultural and subsistence life-style articles (they apply to my park). I am less interested in botany.

The social science articles are the most relevant to my office. I would like to see more articles on social science.

Those associated with my park. Articles on climate change. General Alaska information.

Perhaps the topic of global warming, but at more of a layman's level.

Although I enjoy the wildlife biology articles (it's my former career), I also like the ethnobiology articles.

I enjoy the articles on ([the park] where I work now), but will expand to the rest of the

state later as I become more familiar with the science of this park.

The cultural elements are especially interesting, especially in terms of academic studies. I would like to see more.

Since I'm a geologist I really enjoy geologic/paleontological articles but they're all interesting to me.

I especially liked the coastal focused issues, or ones on coastal parks, and I have a personal interest in archeology as well. The themed issues make effective "keepers" since they compile related articles into an easily maintained reference.

It is easy to read and not super technical. It is a mix of cultural and natural.

Encourages to continue on with a wide range of topics and interests beyond own area of expertise.

I skim everything, like personal and professional information

Well, I think we all want articles that are specific to our parks.

Better in they're focused on themes or topics; climate change edition is good example.

The one on artifacts was particularly helpful because we were dealing with archeology in the park at the time. More cultural or historic topics might make it more useful here.

Denali issue was important to me; other topics of interest would be those where other parks have the same issues as Denali.

Hot topics, themed issues.

Presenting the science symposium results.

In my opinion, the symposium proceedings are the penultimate products. Across other issues, the materials are not at the same level of quality, although generally the quality is very high. It's as though in filling a niche you receive lower quality.

I like the focused issues . . . when it's focused. It's easier for us to find a place to sell them (example, marine ones at marine parks).

I prefer nonthematic issues because there is more likely to be something of interest to me and that I might not otherwise be exposed to. You would be more likely to capture me as a reader with a general issue, although I might be more interested in wildlife studies than other topics.

I like themed editions, and would like it even more if the articles focused first on why the research was relevant to people, and detailed the process and results within that context.

I prefer the editions with a variety of issues being covered [i.e., not the single-focus issues]. This is because I come across articles that I wouldn't think of being interested in but I am [when I leaf through the publication]. Then there are others that relate to what I do and I wouldn't think about them either. An example is on marine history—shipwrecks on Bering Strait, which told of NOAA's involvement. I may try to establish cooperative projects with authors of articles. [He is interested in tourism-related issues. For example, he is trying to

induce greater interest among scuba divers in commercial shipwrecks that were reported in one of the *Alaska Park Science* issues.] There are more exploration possibilities for scuba divers. [He also produces a radio series and finds the information in *Alaska Park Science* helpful to compare NPS work on marine issues with his organization's work on the same. He likes being able to contact authors of articles for possible joint projects.]

I gravitate toward articles that relate to biology and ecology because of my biology background, but I am also interested in anthropology and culture because I don't know much about them.

Social science information or historical reports. Articles on geographic areas where I work or am interested in are more interesting in as well (e.g., arctic articles interesting because I worked there and was interested to see results). Topical themes, like climate change, are especially appropriate.

I like the broad range of topics. I don't want to narrow down focus too much . . . like it the way it is. Topical issues are helpful (can share with folks outside NPS).

[She looked for a particular issue and couldn't find it.] I'm not interested in some of them, but some were really great. The ones from science symposia have been really handy references. A couple on topics that I knew nothing about (maritime guy). Sort of depends.

Order of preference: (1) park-specific issues; (2) general; (3) focused (unless relevant to park/work). Suggestions for new topics: wolves, predator-prey relationships, North Pacific weather systems (understanding them).

I think it's effective. [When we started this publication] we tried to balance coverage of natural and cultural resources. This was really important. People are part of the landscape and the magazine reflects that to this day. The balance between general and thematic issues is effective.

I like the diversity of topics. You've pretty much nailed it with this mix.

I don't remember a particular theme issue, but its good overall to have a blend of focused issues and mixed-topic issues. Both have a place. I'm a snow and ice geophysicist, so articles about glaciers, permafrost, and climate change would catch my eye first.

Some issues are immediately relevant and some less so. A particularly relevant issue was the one I just reviewed: volume 7, number [missed the number, but I think he said it has a picture of lava on the cover]. For example, figure 2 on page 23 is very, very useful on making a point with students. It shows all of the terrain that makes up Alaska. Also, the material on Yukon-Charley Preserve was useful. Great textbook. I'm going to some of these places now. The issue helps people understand why geology is such a vibrant field in Alaska.

A focused issue, especially if on my park, is very useful. When the topic swings away from my park I use it less.

I could find any of the material interesting and useful. I'm looking for something I have not seen before that would be of interest to a lot of people.

As an outsider working in Alaska: the geological and ethnic (including archeological) oriented articles, the occasional article related to environmental recovery (after the *Exxon Valdez*, or the earthquake in Cook Inlet, for example) and, I hope, the general awareness type articles that I have been involved in (fungi, bryophytes, forest ecosystem relationships).

I tend to like to see articles on cultural resource issues. It helps me if they're all included in issues with a more general mix; rather than park-specific.

The focused issues I like a lot, they're more memorable or easier to reference; it's also an easy way to keep them all organized.

Climate change—topics that might have some direct impacts or influence on my life, I receive it as a nonscientist—not as necessarily in a professional context.

Thematic issues are best for me; I need to know a lot about climate change, for example; I've referred to those articles a lot.

Thematic issues tend to be more memorable, however, I'm interested in specific themes so that might . . .

I only recently became aware of it, last eight months. I prefer a general mix, or thematic focus to issues, the park-specific editions aren't as useful unless they're my park that's featured.

I like having the breadth of information there.

I like the mix, a dynamic mix; climate change as an issue is pervasive, park-specific editions are good, not only for the park featured, but for others as well; I find the diverse approach, may be challenging, but I think it has rich results.

When I first moved to Alaska, the issue I saw was for Denali—I didn't even open it because Denali wasn't my park. The park-focused editions aren't very helpful to me, unless it's my park that's featured. On the other hand, I use the climate change edition a lot; it's huge—public interest, also the ANILCA issue. I also like the general topic editions; I can pick and read what interests me most.

Again, I like the cultural/natural blending and I especially remember the dinosaur and most recent issue. I don't recall being very interested in the one with a salmon on the cover.

Social science articles/issues. We don't do enough of this in our region and this is an area that is very interesting to me.

Like the articles on cultural topics, ethnographic and archeological topics are most enjoyable; also, especially drawn in by cover photos and feature articles.

Less interested in plant specific minutia stuff. More interested in social, wildlife, and large landscape stuff. Focused issues no more interesting to me than general topics.

Climate change issue.

I like everything personally, all fit my work well. Sometimes it seems like the articles dealing with educational topics are like an afterthought, rather than a featured article.

Yes. When it relates to interpretation, or to this park, GLBA; and if it's something personally engaging and that relates to my broader experience.

I like the focused issues. For example "climate change" was really good . . . there was variety in this issue that made it interesting . . . broad enough topics to appeal to many people.

Question 10. Does the content of *Alaska Park Science* duplicate much information that you already receive in other publications, Web sites, NPS programs or personal contacts?

But my park's fact sheets are more useful to me. I have lots of access to other science material anyway (because my location is associated with a learning center).

APS covers same topics but in different format . . . doesn't duplicate presentation of the information.

It is so specific to Alaska.

Well it might, but I probably don't read those. Lots of stuff on the Web that I ignore because I don't have time. That's why I really like the book form. It's handier than the computer. On occasion it does.

APS enhances other information and is more interesting.

It is the only publication with in-depth science articles on Alaska's national parks.

It goes more in depth than other sources, and can be used to look up authors to find out more information.

. . . Because I don't read it.

It may duplicate information on Web sites, but I wouldn't be looking at those sources. I work better with print publication than the computer [versions].

It enhances information about the parks.

I would have to dig into many professional journals to get this type of science information. It is a stand-alone resource for NPS science.

It's a mixture. I learn a lot of new things from the publication and that's very valuable. On the other hand there are articles that repeat what I already happen to be aware of. One of the reasons I value it is that it's a source of new information for me.

There may be some duplication, but the presentation is better in *Alaska Park Science*

I'm not a scientist so don't otherwise receive such info.

Only this most recent issue but that is because I happened to be involved in it. I can't think of examples where the information hasn't been fresh for me.

Because it's specific to Alaska.

Park Science occasionally gets an article from Alaska, but it doesn't duplicate what's found in *APS*. It doesn't duplicate other info for me because I don't otherwise look for it.

It does not duplicate a lot. In [my park] we have fact sheets, which are scientific articles in condensed form. *Alaska Park Science* is similar but appears on more pages. However, the information may or may not be in [my park's] fact sheets. Sometimes they overlap, sometimes they do not.

I find much of my info on I&M Web sites or other online scientific resources. The *APS* sometimes directs me to something new; but I rarely go to *APS* first as a starting point for good ideas or sources.

Not too much.

There is some overlap concerning ecology articles (the *Orca* article). A lot is not duplicated because *Alaska Park Science* is specific to Alaska.

Not much.

Occasionally, there's some duplication with [my I&M network]—the information is more accessible in *APS*.

If I worked in a research capacity, I suppose I would encounter the stories more often, but for me, and with the amount of time I have available, this works well.

Because I don't have time to do that much research on studies, if it was my job then maybe.

That might change as our parks produce more research results and products.

At times, it can. But because of the way it's written, it's a different level, and that more depth is available in other places, it's unique in this way—it's also good as a developmental

step for studies that need a little more time to evolve fully.

Although it's not the only place for science info, this journal is as good as a Google search in helping me get good leads on topics.

Perhaps a little bit with *Park Science*.

Maybe one or two projects [that] I've also seen as a poster or presentation at a conference; otherwise the topics are pretty unique.

Only thing—Recently, [I received] a natural resource newsletter via e-mail that seemed duplicative —“northern latitudes?” Do we need multiple products like these?

Not that I know of.

Question 11. If *Alaska Park Science* was to be discontinued, how would that affect your ability to understand and communicate about science in Alaska's national parks? (Open-ended response.)

I use the summary of science projects in my park more than *APS*. It would be nice to have a summary of these projects for all the parks. Although I believe *APS* is under used, it is missing an opportunity to convey research to educators.

It is more convenient. I would have to search other resources to find pertinent information. *APS* represents the Park Service well in regard to science.

It would be very difficult to search through resource management plans and annual reports to gain the same information. *APS* is a concise compilation of Alaska science.

It would greatly affect the information I get from the more remote parks. I already have a network with more local parks.

It's the only publication with in-depth science articles that is not a peer-reviewed professional paper. The language is somewhat technical (and not for the average teenager), but it is digestible.

I don't read it.

It would be a detriment to the public since NPS is one of the largest land managers in Alaska. It's good communication about science in the parks.

It would be a huge loss as a source of science information.

It would impact it in such a way that I would have to then seek out the information and I would probably not do that.

I believe there would be less understanding of who's doing what in Alaska.

It would be hard to duplicate the breadth and depth of info in *APS*. It provides the best source of material it seems, for professional people and community stakeholders in a compilation and format that works well.

It would narrow understanding considerably. Would be limited to knowledge of issues from smaller range of sources.

It would reduce knowledge relevant to Alaskan parks by 50%

Additional resources that help with understanding Alaskan issues would have to be sought out to seek solutions.

I would get it from the Web, but others may not be able or willing to track it down.

Honestly, it would cause us to do a little more digging, as far as research to do. Hard copy is easier sometimes than Web-based search.

I don't know—we don't use it that much. It does help me when I have it.

There is a compilation annually of research taking place but not results, so it would be somewhat detrimental as it wouldn't be as easy for me to find this info.

It would be hard to find the info elsewhere.

It wouldn't have much affect.

I wouldn't know as much . . .

I don't know. It might affect me if I were a more dedicated reader. It would be a loss of that source of info.

If it were removed, I'd have to look for my info from multiple sources, rather than get them in one stop as provided in *APS*. It's kind of like a Costco for scientific research studies in parks.

I think it simply would remove a valuable source of ideas for me.

I don't know where else I would get information about Alaska science in parks. Many of my students are new to Alaska and it's important that they know there is world-class science being done in the state. Teachers can learn about places to go to study and learn about Alaska. They may not make the effort to use *Alaska Park Science* to create curriculum.

It would considerably hamper my ability to understand natural resource studies and natural resources in Alaskan parks . . . would be an unfortunate hindrance to my ability to communicate any kind of park science to the public.

I would end up with whatever I hear in the news . . . no other outlets for this information.

[Without *Alaska Park Science*,] I would have a less broad picture of what was going on unless it was replaced by something else. With an online-only version, I could still get the information but I like the paper copy. If *APS* totally goes away it would be a loss.

Oh. It wouldn't impact my ability to understand, but it would affect my ability to easily share examples of NPS projects and programs. Huge impact. I love being able to hand it out. I teach on campus at [the university], I work a lot with people over there. Really nice to have that publication to add credibility to NPS for science. It's helpful to raise the stock of the NPS in this way. Nice looking publication.

I would have to do it all myself, and I don't have the time . . . just can't do it. It is a color/glossy vehicle for an educated audience that I can hand to the public, discuss with colleagues. There is no other thing that does it; it's unique to NPS (not other agencies, universities, etc.).

I honestly don't think I'd have another go-to source [if it were to be discontinued]. I don't know of any other journal that provides the information that this journal does.

Dramatically. This publication is my window into science in the parks.

Well I don't think it would affect my ability to communicate *about* science in Alaskan parks, but it would be regrettable because it would mean that this information is no longer being disseminated and, speaking personally and professionally, it's a very useful source of information.

Right away it would hurt our persuasiveness with all kinds of people. For example, it's been an uphill battle to convince funding agencies like NOAA, NSF, NIH, and private foundations and people outside Alaska that Beringia is a very important concept. The National Park Service is a tremendous ally in this way. They've bought into this idea. They don't need persuading, but other agencies do. It's sometimes fun to compare universities [possibly he means the University of Alaska] with the

National Park Service. Once in awhile it's the university that is less progressive than NPS. When you leaf through *Alaska Park Science* you have to be impressed by how many different participants and institutions are involved in its production and writing. [The partnerships and collaboration are well illustrated by this participation.]

I would lose a sense of scope of projects being done across the state, as well as lose perspective on other parks. Scientific information is shared effectively within DENA, but there would be a loss of the kinds of work being conducted elsewhere.

I would be less effective [at my job] because I wouldn't learn about these stories.

Without it, there would be nothing. This must surely be one of the best means of getting interesting information (and images) before the public—Alaska resident, tourists, etc. It would be folly to do away with such a useful information vehicle.

Well, it would greatly decrease my information knowledge base; I don't have much time available to engage in a detailed study about many of these topics, Especially when it comes to research being done at other parks. We keep copies very accessible, in the office and not the break room, so it's very convenient to use.

I'd feel like I'd be missing what's going on at other parks, not so much at my park. This journal provides me with a more complete awareness of what's currently happening; I would miss using them as an outreach tool with remote villages and schools. It has also forced researchers to focus in and produce some very usable tools that are helpful in our work.

It would greatly do so—I really do use it and depend on it for my outreach activities. For my intern programs, I rely on these journals to help me prepare since I have little time available to do in-depth research on topics myself. Lacking the *APS* would limit my ability to do my job.

It would, but since I'm not using it extensively for my work now, maybe not too much. I just don't have adequate time to meet the needs.

I'd miss out on many of the stories and issues it covers; I don't know what I'm missing without it; or I'm not prompted to learn more about the things it covers without it.

I'd miss the current real life stories about science in the parks, its convenience, and current, and reminds us to stay informed. If not provided, it would be hard to keep up with it. It is an easy prompt to help choose.

I'd have fewer resources, especially on topics that are bigger than our parks. Information about studies at my parks is easier to obtain, than information on a bigger scale, or concerning other places that may have similar concerns. I'd miss that larger perspective.

Probably wouldn't have a big effect on my ability, but I think we're on to something good, and I'd hate to see it go away.

Disappointed, management hat—for funding sake, this journal is cheap for what we get from it, especially on the Web. It fills a gap to the parks, to science, to other disciplines, and for researchers as well.

It would take a valuable tool from me that I use for partnering, for schools, and for community outreach. The articles that relate to programs in the schools, or that participants can use in their library (which keeps copies) are especially helpful; and in my daily work, I'd greatly miss this resource that points me in the right direction so often.

It would be a tremendous loss. I have always used it as an example of how high the bar is. It has paved the way . . . it is very high on my list

I would lose my connection to what Alaska is doing.

I don't know that it would have a direct impact, really—but *APS* makes me aware of the many things I don't already know or keep in touch with—in that respect, it's where I get the most value from it. Helping me to learn about the things I don't know that I don't know!

I wouldn't learn about science in Alaska's national parks. That's a bad thing.

It would have some impact. Most research I receive and look for is from scientific journals. I would have to look harder for the materials covered in *APS*.

I wouldn't want to lose it, the concept of it especially. It helps to keep me in the media stream of what's going on in Alaskan parks. But if there are other ways of getting this info, perhaps through AK2Day links to an *APS* Web site, our through briefing statements that are retrievable; that would be okay. AKR is really missing out nationally, outside of AKR—on InsideNPS, AKR needs to be more present on service-wide sources.

There would be a huge gap. I don't know where else you would find this information in bite-sized pieces. It's relevant material—a one-stop shop for current science information about parks.

I think it would be a big loss. I'd like to see a similar journal for other parks. I don't think we know enough . . . national parks are not just maintained by [being] carefully examined. I would personally lose the ability to know more about scientific evolution of the parks in Alaska.

Question 12. Overall, how important do you feel this publication is to the National Park Service's ability to present information from recent scientific studies in Alaska to multiple audiences?

Because of inadequacies in how it is laid-out, random selection of topics, and high reading level.

It would have global use if it is on the Web, but I want to see it both in print and on the Internet.

. . . But *Alaska Park Science* is not the right vehicle for communicating with the public. How are the sales of the publication in bookstores? . . . That would be telling about how the visiting public view the publication.

Not everyone can visit a park.

It's possible that the distribution of this publication is not as wide as it could be. People are bombarded with electronic notices, how can we share this publication in a way that the electronic is somehow not lost in the blur (if we went in that direction)?

For a target audience of professionals, community members and stakeholders, this format and plain language presentation is quite helpful. More so than other interpretive programs or films/media products might be for that audience.

It does a good job!

Good publication for the region, but not comprehensive.

It's a good overview.

It is one of many tools, one of the best available to us right now.

If nothing was put in as a substitute, we would lose a tremendous capacity. If we lost the whole concept (not just the printed copies) we would have lost something in this region.

In terms of multiple audiences, it probably reaches more scientists.

Science symposia/meetings are another good way.

Because it targets scientists; it needs to take from the interpreter's skill set to make the content more relevant to other audiences. Maybe one product can't serve multiple audiences—perhaps it's best to let this serve one audience well, and develop other products specifically designed to best serve each of the other audiences.

In terms of my source of information about NPS it's the only source I use. The hard copy is important to me. I don't [put forward] any special effort otherwise to seek out this information. I wonder how well this publication is marketed and how well the audience is chosen. I don't know. Selection of audience is important.

If you can't visit the parks, the publication will help you know what is going on there.

Really good vehicle. I think it is particularly suited to Alaska because there are a lot of constituents that live in remote areas, native people primarily, that expecting them to look these articles up by computer are unrealistic. Ability to hand this out is really great to our publics. Folks tend to keep it. Magazines are great. A poster also might be good. I like it for Alaska. The parks are embedded in native regions with scattered villages and you may have low education and reading skills and this fits nicely with being able to give people. Looks nice, good pictures. Works better than almost any other vehicle.

Prior to this publication the NPS was not doing much or being very effective with communicating scientific information on Alaska's national parks.

It is not just scientific articles. Even the scientific articles have been presented in a way that is comprehensible by the general public.

It's not the only way to get this info. But people learn by reading—at least at my house.

It meets scientific audiences, not as important in reaching general audiences.

It works well for NPS employees and scientists; less so for educators and the general public—because it's a bit technical.

We put these out in the visitor center. They are being taken by people and used more often, but it's a small audience—not wide spread.

Depends on what you're comparing it to. It's important especially for interpreters—to help them in communicating a broad understanding of science to others, and in staying current with recent developments.

Good that we have a publication out there, but too complex for the average person to pick up and read. Good to change the writing style, like someone with writing skills writes another product based on the articles.

If it went away—it would be missed, it serves a broad audience. How else are we going to get the word out about these studies? It's also very good for the interested public.

I'm not sure that "very important" fully describes how useful the journal is to me. It may not be essential, but I use it a lot.

When we work with international parks and state parks . . . they look to the NPS as having a long history of communicating science.

I think that what you do pushes other regions to do the same. It inspires others. I have tried to publish some materials that resemble your publication.

Between important and very important—not only for the good information, but because *APS* is good [for] marketing what NPS is doing. I want others to see it as well, really attractive publication—good way to highlight some of the great work of the NPS.

APS has value for specific audiences. It loses value with multiple audiences. Great for NPS staff.

It's not really effective, except for targeted audiences, not for multiple audiences. It serves NPS in Alaska well—for other audiences there may be better mechanisms.

It is for interpreters in parks. As for other audiences or the public—I'm not sure? I'd have to know more specifically about the needs of each audience to respond.

Question 13. The NPS Alaska Regional Office is considering improvements to the *Alaska Park Science* Internet site. Please indicate whether the following ideas should be high, medium, or low priority. (Leave blank if answer is "I don't know.") Other (please specify):

NPS needs to address the younger, tech-savvy audiences. They need to invest in social media specialists within their own organization (as important positions).

I am less interested in podcasts than having visitors actually come to a park. I am taking a course at National Association for Interpretation that may change my mind, but it is important for visitors to actually touch and see the actual area than visit it virtually.

Social media takes a lot of time and [some dedication to it]. Although I recognize that lesson extensions are important, I absolutely do not have time to take on this task.

Teachers do not have time to read *Alaska Park Science*.

Putting *APS* on the Internet as a Web quest would help students hold interest.

As a former high school teacher, I would like to help develop lesson extensions.

It might be nice to adapt it to an asset database site based on the articles and lessons that relate to each topics. An example of what it might be like is the following: <http://cosee.umaine.edu/cfuser/index.cfm>

Some of these would be nice to do for certain audiences if you had the staff.

These are all great things, but I think we need to look for ways to simplify production of the journal.

Some manipulation of how searches on topics in *Alaska Park Science* appear in search results would be beneficial.

Younger generations might not want to read; watching videos may be better. Lesson plans sound good, but they may be under utilized considering the amount of effort needed.

If you have the staff to make them, podcasts would get you a younger audience. Teachers may have enough curricula already. Social

media would be useful if you have one topic you want to engage the public in, if you want dialogue.

Podcasts [are] medium to low [priority]. We produce videos and put them on YouTube with links back to the online bookstore for further information that people can buy. We find this useful. It depends what you actually do with the social media. Video clips related to articles probably would be popular and attract people to the publication. Depends on the quality of the videos.

It would help if teachers knew how to use the information in the classroom with extensions. I like blogs, but not twitter or Facebook. I like to look for my own information and not have it just appear.

Social media—low personally, medium for general public.

For lessons/online videos, would be great if the resources existed. Social media is useful if connecting with the right audience.

The timely posting of material (same time as published journal) is important for getting out information. If not, it loses effectiveness.

At a loss on social media.

The issue about dinosaurs and the curriculum developed to go with it is a good example. Part of the original intent of this publication was to help teachers use it as a tool [for science and park education]. We would be trying to connect with different and younger audiences in sound bites that they're used to. Social media is about dialogue, so if it you want to have a dialogue, then yes [social media is an important communication tool]. Social media give certain readers a chance for online dialogue about Alaska without visiting Alaska. They can become part of the conversation.

[He does not use the two items for which he did not provide an answer.]

I have a personal and professional bias having worked a lot with students around Alaska. I think taking science and translating it into materials that teachers can use is very valuable. It's a good way to increase the size of the audience who is aware of the National Park Service and its work in parks. Lesson extensions for schools go above and beyond traditional park visitors [as an audience]. Podcasts are popular and we're seeing a growing use of them in education. Social media are a medium to score high. There's no question that social networking is very popular with young people and that's an important audience for the National Park Service to try to reach. The point here is that these are the latest communications technologies, young people are using them, and the National Park Service wants to reach them.

Curricula [or extensions] at the middle or high school levels might be useful, but not at the college level. I'd be very cautious about developing podcasts. Use of video is overdone now. It annoys me. I have a slow Internet connection at home and I get impatient waiting for videos to download. I don't have to see every talking head or news story developed as a video to learn the pertinent news. It clutters a Web site. If used judiciously to show what can't otherwise be explained easily then videos are great, but otherwise they are emphasized too much. I'm not sure how well Twitter and other social media fit into the picture [for *Alaska Park Science*]. I like the meetings the National Park Service supports directly or indirectly through RLCs like the Murie Center at Denali. These meetings are great venues for meeting people and hearing talks.

If videos were well done, then great. However, there's a bit of a disconnection between the current *Alaska Park Science* writing style and the Twitter audience. E-mail notification is certainly a good thing for sustainability. Keyword searching and expanded indexes are useful approaches to finding content. Curriculum, videos, and social media, again, make me ask who the intended audience is. Clearly it's scientists. It is not clear that the audience now includes interpreters or educators. These audiences want to be able to explain scientific issues to the public, but *Alaska Park Science* is not written for them [or the general public]. That's where the last three things from the list

above drop off. The journal *Natural History* is well done in this way. I don't get the same type of energy or spark from *Alaska Park Science* that comes from that type of writing [used in *Natural History*]. For a teacher who would want to tie in curriculum with a park science issue it would require a very special person to be able to do this [from the way the publication is written now]. Trying to get general public interested may be tough. It would be stunning and it would take a degree of letting go [by the authors and editors of *Alaska Park Science*]. To make the stories compelling is to dumb them down—that's what's going to connect with people. It's a cultural barrier the publication needs to let go of. So many articles would benefit from a fun little hook at the beginning and a similarly clever way of concluding. Now all of the articles are long. Having some short snippets would be good to interest those people who are short on time. It's work to read this publication. I don't read it like a normal magazine.

The educational outreach may be critical in a state like Alaska. The more information linked online, the greater the resource value (not withstanding the time it takes to design and update the Web information). Can all previous articles also be scanned and made available online? If so, searchable indexing will be important. Greater teacher resource material would also assist teachers as a learning resource and a means to publicize Alaska and its content, not just the National Park Service.

I haven't used the Web site much—so don't know much about this.

Don't use the Web site much ...

Not quite certain about the role for social media, yet.

High areas—would be even better with more of these new technologies—they could make *APS* more relevant.

If curriculum lessons are high quality, they may be higher priority; but this journal isn't the best vehicle as it is now.

I haven't looked at it—so don't know what else.

Lesson extensions [are] a good idea. Podcasts sound cool, but given the other stuff, might be medium priority. Social media would take a lot of work to get there—not low-hanging fruit.

Lesson plans: low if lack of support from teaching community, high if at request of teachers.

NPS audiences are pretty savvy, for the social networking—Twitter should be first step.

Lesson extensions would be exciting. I think the social media would be exciting for youth.

No opinion on last one (social media).

Unless it's directly involved or if there is a specific agreement in place, it's difficult to get teachers really involved with the research. Wonder if it's that cost-effective to develop something for teachers on these topics; perhaps if we were to pilot something specific in

advance and determine if the teachers would find it of value or use it.

Online subscriptions/keyword searches are high [priority] since they may also be easy to do. Podcasts: where they exist we link to them. We should link to existing related sources, rather than generate our own. Online social media: let's experiment with some pilot products and see how it goes before we choose a format. Proceed where demand merits. For the current APS Web site: I'm a little frustrated, as links are not all active, there's not much depth, and current APS issues are not always available online when hard copies are already out.

I don't really know this Web site since I receive hard copy mostly. If I had a Web site about it, I'd value the links above accordingly. Also, perhaps some additional related links for each article (high), biographies of the authors and scientists (high), or more photos or podcasts (medium). Scientists' bios links to park Web sites.

Question 14. In your opinion, if we had a limited supply, which of these audiences should be high, medium, or low priority for receiving free printed copies? Why? (Mark as many as you want for each priority level. Leave blank if answer is "I don't know.")

There should be lobby copies only for visitors. Scientists may already know about the science. Outside leaders can access it online; send them a link.

Many visitors and students may not appreciate it. High school teachers would be high priority; college science teachers would be medium priority.

Some NPS employees may not have an interest in the publication. We have great partnerships with program leaders in Canada.

It is too expensive for the general public who may not use them.

Only to visitors who express an interest, not just on a counter. Students can access it online. Will science teachers really use them?

It is not in a visitor-friendly format.

It's too high cost to give away to visitors. Park scientists may already know about the science out there.

NPS scientists might already know about what's going on. Program leaders can use the Web site.

The public relations value of a hard copy is high, especially outside of Alaska. When I've presented the publication to people it can have a significant impact.

Middle/high school teachers might be the prime target audience as far as science teachers go.

Keep option to purchase open to visitors

Number 14 was a hard one to answer because I don't feel that the publication has a single voice, which is problematic. Who is the audience? I don't think it can be effective if it at-

tempts to reach all of the groups mentioned above.

It works best for certain target audiences, not so well for others.

To scientists and employees only as requested so as not to waste them.

For NPS employees, two copies per park or such for routing. Relevant program leaders in other [locations] . . . send an e-mail. Park visitors if they are interested.

If we have association with a partner, park manager, or research professionals, paper distribution would be high. In the case of the general research community, paper distribution would be low.

Mixed feelings about providing free copies to scientists. They are a key audience and the group most likely to buy copies. Sometimes people value things more if they pay for them. It can be a conflict for [AKGEO] if in some places the free and priced copies are both available.

NPS employees in Alaska: send copies to parks and circulate, not to each employee. Relevant NPS program leaders: be picky. Relevant program leaders in other federal . . . : most important.

Maybe develop public “rack” card to market the online site better would be nice, or a short 1–2 page fact sheet.

K–12: medium. This publication is more oriented to college, so that kind of student might get more out of it than K–12. NPS employees: publication should be targeted to certain employees, not broadcast to all. Single-topic issues, then OK to give to those involved in that issue. NPS program leaders: might send e-mail alert. NGOs and other agencies: send e-mail alert. Park visitors: low, but offer on a selective basis.

Libraries are going away these days. Make them available to science teachers, but not every one of them, but to the schools. Park visitors vary so much. Don’t make them available for free or they will be wasted.

Educators/students: very effective teaching tool and I’ve seen from experience with college and high school students that it’s an effective way to teach about the parks. Scientists: it’s a luxury for them.

Relevant program leaders in other federal and state agencies and NGOs in Alaska should get at least an e-mail saying it’s ready. Low priority for park visitors unless requested.

For visitors, it should be a high priority for those who request it.

Good idea to give to federal and state agencies and NGOs.

College students: yes [but] over head of high school [students]. Very high for NPS employees. USGS, USFWS, state fish and game: very important, may not be getting them, focus on them. Visitors: some high, some not at all.

I am responding with respect to the premise that there are limited printed copies available. Therefore, some of the one’s I rate low are good audiences for the online, podcast, or curriculum means of dissemination, but not high priorities for the printed edition, which is limited.

If given to park visitors they’d end up as trash. Not a very good idea.

Libraries [in general] are a tough [case to make]. Particular libraries and certain schools should be ranked higher than others. It’s not a good idea to hand out *Alaska Park Science* to all librarians because they may not be able to deal with them. Also, this publication won’t mean much to people in Barrow or Wainwright because there is not much NPS land near there. BLM is the big landowner there. Science teachers should get a crack at using the publication. It can be very useful, as local stuff can be meaningful in a classroom. Once student groups come to a park they are probably pretty excited and receptive; therefore, *Alaska Park Science* would probably go over well with school groups at a park. The really great virtue of *Alaska Park Science* is that it is interdisciplinary. By the time a person is doing research in a park they’re going to want to know about research involving disciplines other than their own. They’re going to want

to be intelligent in their discussions with others around the campfire, so the publication can provide this well-rounded picture of park research. Yes it should go to NPS staff outside of Alaska because people do rotate [in their NPS careers], don't they? We sure wish we could impress [other agencies] with the good behavior of the National Park Service. It might be tough to try to give paper copies to park visitors, but this is a good idea.

Program leaders outside of Alaska probably do the least with this publication, but they might see opportunities to use the information more effectively, given their relationship to national programs and ability to attract and direct fiscal and human resources.

Park visitors could purchase copies (why give them free if many are potentially never looked at or binned). I think it is important for educators in Alaska and also for school libraries to receive the publication. As an author and also user/researcher in the parks, I have appreciated receiving the publication—it is very useful to show what I have done and what others are doing. Not sure about the protocol (necessity) of keeping other agencies in the loop.

It seems like all of them are high. The printed nature of it makes it most valuable to me.

Also add students outside of Alaska, and teachers outside of Alaska.

Good for the target audiences already identified: scientists and researchers.

It's directed at those without technical knowledge. NPS staff and interpreters are best target audience, and we could use fewer quantities.

For low priority-audiences make sure it's available online.

Students: low, because I assume it's too advanced for them. Have a few available that employees can pick up if they want. For cooperators, it depends on the agency. Also, how about one-pagers for each article that comes up quickly on a search.

For low audiences: make them available online in PDF format, or in display in parks.

Sometimes it's good to let others outside our state know what's going on in Alaska, [for example], with regard to critical issues like climate change.

I would want to get these publications into the hands of people we want to get excited about science in Alaska (e.g., youth). I would think the two I marked as "low" would utilize the online versions.

It might be best to target specific disciplines rather than provide it to all NPS employees in hard copy—i.e., may not be necessary to target maintenance, administrative staff, or seasonals. Maybe send enough copies to parks so it's accessible, but target hard copies to program managers, and natural and cultural resources and interpretive staffs; let the online subscription suffice for the rest.

Anyone in school now lives online. Printed copies are important for older people. OK to offer for sale to park visitors.

Best audience for *APS* is park staff in Alaska.

It would be interesting to send one copy out to high school educators—as a marketing tool referring them to the Web site, and to see how effective they find it. Printed free copies could be used as a hook, to raise awareness, but not for long-term subscriptions. Nice to provide a courtesy copy for contributors; some printed copies may always be needed, but size/format is awkward for bookshelves or archives. It looks nice, but NPS needs to embrace going green. Alaskan stories are well circulated within Alaska, not so much outside the Alaska region.

I don't know enough about the needs of these audiences.

Keep the publication locally in schools and libraries. All the audiences marked as "medium" above should be able to access it online (or as a subscription).

Question 15. Are there other ways or methods that you feel NPS should be doing more to provide science information to visitors, schools, cooperators, and the general public?

Print business cards with Web site links on them so people can access the materials if they choose.

Public Listserv and subscription to *APS*. Virtual visitors to Alaska are important. Make a mobile version of *APS* and develop an application on the iPhone. Offer a free online subscription to *APS* and maybe charge later. Don't dumb it down; just make it more accessible in a lot of formats. Offer it free with an Alaska Geographic membership. Continue to involve your partners and other agencies in proliferating science.

NPS should partner with native corporations in presenting traditional knowledge along with NPS science. The APLICs do a great job of working with schools.

Interpreters could develop a way to use *APS* (I don't know who would do that), but that would make them more useful.

This is related to capacity. It would be great to have *APS* easily searchable and available online. *APS* is usable in the classroom only if there is ancillary material available. The average teacher already has too much to do to translate the material for their class. Developing teacher materials would be a huge improvement.

Short videos and interviews with researchers (3–4 minutes), directed by interpreters.

NPS should have greater outreach about the programs they offer in town for educators.

Internet and podcasts are not as effective as a high-quality publication targeted to a lay audience. Needs to be adjusted toward a lay audience.

I [can't?] think of any more.

Keyword searches are good, and might work best if you check with teachers or other target audience and have them select the best keywords that work for them.

Hold public events like Earth Day, [which] reach lots of people, with quick educational presentations; also science fairs, etc.

Keep publications like this and other materials as a priority.

There is always more we can do. *Alaska Park Science* fills part of that role.

Make the Web-accessible version available to the public—on a public site.

There are many other interpretive efforts we could do, if we had staff and funding.

I really like one-page briefs (hard copy and posted on Web sites) on specific science projects or resource topics—fact sheets. These are great.

Monthly newsletters from CESUs.

We should be requiring every principal investigator in a park to produce something that our interpreters and educators can use.

Yes, do we have three days to write them all down? This is a huge responsibility and there are a number of actions. If we did this as a larger group, there could be an enormous value in understanding how we are getting what information to which group.

I don't know about the other things being done.

I am a National Public Radio listener, and I very occasionally hear an NPS story—that's good. It would be nice to have more spots on radio. Note to [the journal board]: keep *Park Science* in mind for articles of broad interest that get submitted but won't be published in *APS*. *Park Science* would like to publish articles on Alaskan parks and issues too.

Yes, anything and everything, especially online, kid-friendly podcasts, tweets, news releases about science research—we need more capacity to serve more audiences.

We've found radio useful. [You could try] getting some fun facts published in newspapers and public service announcements on radio. Low-frequency radio broadcasting is another possibility. The broadcasts could be changed every few weeks on scientific studies. You could refer people to visitor center to find out more about particular research.

Enhance the Web site. Provide online access to the publication.

I think they're doing a pretty good job now.

The movement is going on right now . . . lots of folks working toward this (I&M/RLCs).

Lots of good things being done—e.g., resource briefs by I&M program. However, some take more staff and resources than may be available. More staff/resources to assist with producing attractive publications (color printing, design, etc.) would be helpful.

Other ideas I have for highly important audiences are people in villages that surround the Park Service areas in Alaska. How would you do that? They don't have an airport or library. They do have a post office and that's the meeting place. Maybe send a dozen each issue to post office and ask them to put them out. They'd love it. I bet people would look forward to it and share it around. The only better thing would be a summary poster of a study with lots of pictures. Dealing with a population where English isn't the first language, but nobody cares more than they do about living off the land. We're they're backyard. They also watch Animal Planet.

At the science level, we need to have staff more involved in high schools and universities . . . to be involved with educational institutions (e.g., guest lectures, graduate committees). We should be on first-name basis with folks at universities.

Definitely curriculum [is needed] to get into the schools. Curriculum [or education extensions] can tie these studies to education lessons. It's easy to do. New audiences need "now" media: podcasts, social media. I'm not saying we dumb the information down to them, but we need to speak in their language. Other audiences might "get it" [meaning our

message about science and resource management in Alaska's national parks] if we are able to develop curriculum and social media products.

You ought to talk to Alaska Public Radio—do interviews—and get knowledge of the magazine [and issues] out that way.

Nothing springs to mind.

I would think that there might be a way to make the public more appreciative of ongoing scientific inquiries in parks. I don't have much experience in this area, but my collaborators mention that it's an extreme pain to have to try to stay out of sight of bus drivers on the Denali Park Road. The public should understand that there's a good reason for those researchers to be out there [in view] and that they're pursuing exciting stuff. If somehow the National Park Service could involve bus drivers to realize that science is an important part of park management, maybe the passengers could come to realize there's a special privilege in seeing science in action [or possibly talking with the researchers]. For example, in Denali there's a fascinating site called the Dinosaur Dance Floor near Sable Mountain. It has a great story to tell. If the bus driver could tell the basics of that story to his or her passengers and then explain "that's why you see those people going out in the park" to learn more about this resource. The bus drivers could give the inside story and make the passengers feel good about the presence of the researchers.

If we could take advantage of media (e.g., podcasts and really well done conferences given to class rooms) that would be huge. A 15-minute presentation pitched at the right level could be more effective in engaging an audience than wading through in-depth articles. The articles could back these things up, but they must be relevant. The stories are all fascinating, but they need to be expertly honed to meet the interests of the audience (i.e., public). One type of writing (i.e., the kind employed in this publication) does not meet the needs of all of the possible audiences.

No. Pretty this is a good method.

Small information leaflets on particular topics (e.g., trees, mammals, geology and geomorphology, spring flowers, fungi, mosses and lichens [but the illustrations must be close-up and high definition to be useful], historical aspects [e.g., the relationship to Beringia; native peoples], environmental issues, particular park projects). These could be single page or fan-fold, and are great educational tools.

Not really, at this time.

More video podcasts would be good as another good communication mechanism.

For our park in particular there seems to be a disconnection between what science is being done and hearing about the results. The front-line communicators need to hear more about the science if possible.

Maybe create a shorter free newsletter for this kind of info (instead of the hard copy journal format) with related and more extensive materials available only in an online version.

It would be nice if we could get scientists to present their scientific presentations with better techniques and relevance. Getting sound science into our parks, or into schools, is a good thing, and scientists are eager to make a difference; we just need to help scientists become better communicators.

One thing that naturally springs to mind that would be helpful is to figure out ways to help scientists make clearer and more effective presentations. Maybe have interpretive peer-reviews of their products.

More interpretation and interdisciplinary efforts, working between organizations and divisions.

Yes. Important that people appreciate everything that parks provide in that area. Get more science information out. How to do it is the challenge. Talk with Alaska Geographic about Children's Forest and how to get *Alaska Park Science* into the schools. More apps for iPhones, educational games, something that's interactive. Podcasts are already dated, relevancy diminishing rapidly. Also for publications, people are going to e-books right now.

May need to redesign format to fit e-books. Apple wants applications in the schools.

Definitely, interactive kiosks in parks that feature monitors with access to *APS* to page through the current issues.

Maybe e-mailing webmasters at parks when there are related links from *APS* articles that could be linked to the park Web sites. Increase *APS*'s visibility with parks and visitors; market the journal more—to advisory groups. Science is very interdisciplinary. We should all be more engaged and well informed on these topics.

Utilize publications such as *Alaska Park Science* in a more targeted and advanced manner. For example, if students are coming to study a topic, provide the teacher with articles on that topic before they come to the park.

I am a great believer in personal contacts through education and interpretation programs.

Yes—many things. Especially would like to see more citizen science activities; involve resident zone communities in a lot of different ways. Maybe YCC-based citizen scientists, helping to provide monitoring or index indicators.

Redoing your Web site is the way to go. The wave of the future is certainly the Web. Older folks need tangible copies, to guide them to the Web.

There are a myriad of ways. There is much potential for citizen science, podcasts, social media, study guides, etc.

Absolutely, the region needs a comprehensive matrix showing all the current products, gaps, and educational programs, as well as the various audiences to target with each issue. Then, we need to scan for duplications of effort, for places to gain efficiencies, and to identify new needs and issues that need attention. We need to do more strategically in sharing the science messages, in an informed way.

There are a million things—one journal is not the solution to all audiences or issues. We need good place-based science. We need products that engage our audiences with the researchers. We need to fit into existing cur-

riculum, existing textbooks, and online curriculum. We need to develop long-distance learning opportunities and build PBS documentaries and programs; there's huge potential.

More press releases would be good. I believe the interest in research in Alaska is very high.

Much of the media comes from the east coast ... the melting of glaciers has just recently gotten attention. If you could find a way to get through the "media blockade" on stories from Alaska or find the gateway/channel, I believe it would be well received.

Question 21. Identifier (first and last initials of interviewee/the initials of interviewer) and any final comments:

I don't like the horizontal format (portrait would be better). Full glossy pictures may be wasteful for printing. Thematic copies are better than mixed topic copies. I only give out one copy/year to teachers (it's not used much as a resource for teachers).

Maybe we should market them more to teachers.

Issues need to be more prominently dated and with bibliographic information that students can use to reference in reports.

From everything that I have heard, other agencies are envious of our ability to do this. Other agencies have problems getting their information out in a way that they can bring interest to the science in a significant manner.

It's a great resource. It's good that it comes out in timely periods—it remains useful and vital and easier to make use of that way.

I like the publication, but I would really like to see it find its audience.

Yes, we receive it [at our library]. I don't know if it's been checked out. No feedback. Would like to continue receiving it.

It is a high-quality publication. The issue is how best to distribute it to make it more highly used by a wide audience without wasting hard copies.

Yes, we receive it and check it out to folks. No feedback. Would like to continue to receive it.

It should be on Inside NPS somewhere. Post individual articles as PDFs.

It has no bar code for circulation, but it is available for pickup in the periodicals section. There is no way to know who or how many people look at it. She has personally scanned it when it comes in, depending on what's on the front cover. It came to the library's attention because someone brought in several old copies and she thought it was something the library should make available, so she asked to be added to mailing list. Science magazines do well at the library, as people don't normally otherwise have access to them.

We have six issues of *Alaska Park Science*, beginning with 2007. The first issue we hold [in our library] was catalogued on 1/16/2008. From our statistics the total of uses for all issues to date is 26. We have no way of tracking how many people browsed an issue and returned it to the shelves. I know we have several patrons who love this publication, who speak highly of it, and look forward to the next issue. We do have a local interest in maritime history and the development of a maritime history museum in Homer. I shared the article "The lost fleets of the western Arctic: Preserving a significant element of the maritime and cultural heritage of Alaska and the United States" with a person here who is especially interested in that topic. I also spoke with a local archeologist about the current issue of *Alaska Park Science*. She receives her own copy but had not yet had a chance to read it. The photographs, maps, graphs, and other illustrations are wonderful. We really appreciate what you are doing—please keep doing it. When a new issue arrives, I treat it as a

monograph and create a bibliographic record that lists the title and authors of each article. I add subject headings that are appropriate for each issue so that an OPAC search makes the contents visible. This is not something I routinely do for any other serial resource. Having the issues available online is also useful, but we hope you continue with the paper copies as well. People access information in multiple ways and both formats are great. I do add a URL link to the online resource in the bibliographic record of each issue. I also have a separate bibliographic record for the electronic version of *Alaska Park Science*. If you search “Alaska Park Science” [as a keyword search] in our online catalog, <http://library.ci.homer.ak.us/>, you will see what we have available.

APS is a valuable tool, but it can be improved to be even more effective.

I have a few layout and design points I'd like to make . . . as follows: Justified text is difficult to read, as spacing is not optimal. It detracts from the visual quality of the book. Right margin of caption extending beyond right margin of photo is bothersome. Publication is perhaps too text heavy. Concentration on methods is not so necessary. Underlining is passé as a way to emphasize words.

Would like an e-mail of the final report. Final comment: Would hate to see *APS* go away, especially with the increased effort to share science information.

I've never looked at this as an education tool for elementary, junior high, or high schools. It's more targeted to [NPS management] and the educated public. It fills the gap where we don't even know ourselves what we're doing. So how can other agencies know this? I don't see that it justifies why science is good and why it's being done in parks. We're not justifying the science; we're telling people

what we've found. It would be diluted if it were tailored to kids. Teachers are not hunting for curriculum stuff. They are programmed to teach for tests.

I have a major concern about how *APS* is funded, from a small pot of project money, which takes away from other projects that desperately need it. *APS* should have long-term base funding. Maybe we could make it less fancy . . . not as many pretty pictures, cheaper paper, economize on looks (e.g., printed on newsprint). Don't go back to once a year; produce twice a year at minimum.

Report could be e-mailed. No need for printed report. [I'd like to give] kudos to those doing this survey. You have to do a check now and then. . . . While the basic concept and design has been preserved, the publication has continued to get better. Researchers welcomed the chance to share their findings. They felt what they're doing is important and here it is. Good to see it's alive. I would have made it more folksy; [the project lead] has been a good addition to see that the science is well presented.

Who is the intended audience? I really like that we have the publication. We're trying to please too many audiences. Need a simplified version.

Happy to be involved, both on the survey and on the editorial board.

I like the publication. I could use it online more. It's especially great for helping manage partnerships.

Appreciated being asked—thanks!

No other questions. This has been thorough.

Appendix E

Return-mail survey card

Front

I M P O R T A N T

Did you receive this copy of *Alaska Park Science* by mail?

We are updating our mailing list for *Alaska Park Science* and considering a shift to complementary digital subscriptions by email. To confirm your interest in receiving future issues by mail, email, or both please complete and return this card today.

To request complimentary copies by mail, please provide your mailing address (work or equivalent).

Name: _____
Organization: _____
Street Address/PO Box: _____
City: _____ **State:** _____ **Zip Code:** _____
Country: _____

Providing an E-mail address will allow us to notify you when new issues of *Alaska Park Science* are posted on the Internet. **E-mail:** _____

Please tell us what you think about *Alaska Park Science*.

My interest in receiving *Alaska Park Science* by mail is as a

<input type="radio"/> Researcher (scientist, scholar, analyst, or graduate student)	<input type="radio"/> Educator (teacher, interpreter, science writer, communicator)
<input type="radio"/> Resource Manager (e.g. natural, cultural, subsistence, fire)	<input type="radio"/> Other (please explain): _____

Which topics particularly interest you? _____

Do the articles and illustrations have enough information for you?
Or too much information?

Have any issues been especially interesting or helpful to you?

			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How many other people normally read your copies of *Alaska Park Science*? _____
Have you used the Internet editions of *Alaska Park Science*? Yes. No.

Back

Thank you for your interest in *Alaska Park Science*. We welcome suggestions or questions about any aspect of this publication. You can also contact us by E-mail (AKR_Alaska_Park_Science@nps.gov) or fax (907-644-3816).

Note: Your name will be removed from the Alaska Park Science distribution list unless you confirm your interest to continue receiving copies by mail or email.



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Appendix F

Awards and recognition summary

During the last few years, several issues of *Alaska Park Science* have received recognition through reviews in other journals, as well as multiple awards in judged competitions for writing, design, and illustration. Feedback from external reviews is used by the journal's staff and advisory board to suggest changes where warranted.



2007

(1) *Alaska Park Science* received an Honorary Mention in the Complimentary Publications category in the Media and Partnership Awards from the Association of Partners of Public Lands.



2008

(2, 3, and 4) In 2008, *Alaska Park Science* was recognized with three awards for publication excellence from the Society for Technical Communication (STC). A set of three consecutive issues of the journal *Alaska Park Science* produced during 2006–2007 were recognized with the top Award of Distinguished Technical Communication for scholarly and professional journals and then collectively received the Society's highest award for publications—Best of Show—among all 18 categories of technical publications in their 2008 international competition. *Alaska Park Science* had qualified to advance to the international competition by first winning a Distinguished award in the Puget Sound chapter competition. The STC is the world's largest individual membership organization dedicated to advancing the arts and sciences of technical communication. Its 14,000 members include technical writers and editors, content developers, illustrators, designers, academics, Web designers and developers, and translators in more than 130 chapters and 21 countries worldwide. More information about the STC is available at: <http://www.stc.org/>.



(5) The *Alaska Park Science* "Climate Change" issue was also recognized with the Grand Award for science and environment publications in the Annual Publication Excellence (APEX 2008) competition sponsored by Communications Concepts, Inc.

(6) The June 2008 issue of *Alaska Park Science* received an excellent review in *The Polar Times*. Their review started with the following sentence: "Once in a great while, a publication commands a reader's immediate and full attention, by combining provocative ideas, images and insights across barriers separating scholarly specialties and by vaulting extents of space and time. Such was a paper copy of the current issue of the semiannual *Alaska Park Science* when it arrived by mail a few days after the June solstice of 2008."

2009

(7) The December 2008 issue "Scientific Studies in Marine Environments" received an APEX Award of Excellence from Communications Concepts, Inc., publishers of *Writing That Works*, a subscription bimonthly for professional communicators (http://www.apex-awards.com/announcingthewinners_2009.htm).

(8) The December 2007 issue "Crossing Boundaries in a Changing Environment: Proceedings of the Central Alaska Park Science Symposium" was one of 10 recipients of an Eco Awards of Excellence for Environmental Writing, in a national competition by Global Environmental Communications, LLC., publisher of *The Environmental Communicator*. (<http://www.environmentalcommunicator.com/ECO Awards.aspx>).

(9) The December 2008 issue "Scientific Studies in Marine Environments" also received an Eco Award of Merit for Environmental Design and Illustration from Global Environmental Communications, LLC.

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

National Park Service
U.S. Department of the Interior



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