

INTERIM PROGRESS REPORT

March 30, 1985

Subagreement #4
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A STUDY OF BACKCOUNTRY USER ATTITUDES AND
COMPLIANCE WITH MINIMUM IMPACT PROCEDURES
MT. RAINIER NATIONAL PARK

Submitted by

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Summary of the Research

The progress in the development of the Mount Rainier National Park Backcountry User Attitude Survey has been excellent. Over the last quarter, there was a considerable amount of interaction between the Cooperative Park Studies Unit at the University of Washington and the staff at the park.

The first NPS/CPSU meeting was held at the University of Washington on January 7, 1985. The purpose of this meeting was to review the literature search that had been conducted by Tommy Swearingen in related areas. Two annotated bibliographies and other shorter lists of references were compiled of related research. The annotated bibliographies have been printed and distributed to MORA personnel. A second purpose of the meeting was to discuss with Pete Thompson from MORA Resource Management the nature of the exact issues to be addressed in this study. Valuable insight was gained into the nature of the management concerns relating to the study. A report of the meeting is attached in Appendix A.

As the meeting of January 7 had identified many issues that were yet to be resolved, another series of meetings was scheduled for February 25, 1985, at Mount Rainier National Park between CPSU staff and representatives from the MORA Park Administration, Resource Management staff, Rangers, and Interpreters. Prior to that meeting, Tommy Swearingen of the CPSU reviewed all of the requested additional material received from Pete Thompson. Based on this material and pending discussions from the prior meeting, an agenda for the next meeting was developed. The Feb. 25 meetings proved very productive. Particularly noteworthy was the interest and involvement of the Ranger and Interpretation staffs in the planning process. Their input into the process

has proven invaluable. Since time constraints precluded extended discussions with the field personnel, it was determined that the CPSU personnel involved in the administration of the survey this summer, Tommy Swearingen and William Salvi, would return to MORA at a later date to continue the discussions. The report on this meeting is attached in Appendix B.

Following the meeting of February 25, Tommy Swearingen discussed related topics with Park Service and Forest Service representatives stationed in Sedro Wooley. The purpose of the meetings was to discuss and review the efforts of the North Cascades National Park and the Mt. Baker-Snoqualmie National Forest to discourage depreciative backcountry behavior through the use of passive communications and interpretation in their respective jurisdictions. Materials were collected and compared to the information available for the backcountry user at MORA. Of particular interest is the short narrated slide show on minimum impact backcountry practices at the joint NPS/NFS ranger station near the NW entrance to the park.

The third CPSU/MORA staff meeting was held on March 19, 1985 at Longmire and Paradise Visitors Center in Mount Rainier National Park. The agenda for these meetings was a continuation of the topics discussed at the February 25 meeting, as well as requests for additional information. The general intention of the meetings was to begin to narrow the scope of the surveys planned for this summer to a manageable level while still addressing management concerns. An important development is the consideration of a longitudinal research design to test the efficacy of signing on the day hiking trails at Paradise Visitor Center (for explanation, refer to the next section of this report). The input from the staff at MORA has been exemplary in this respect, and the CPSU staff has been able to move in very specific directions

in focusing the research to key considerations. A summary of the March 19 meeting is contained in Appendix C.

The aforementioned meetings and related reviews of materials constituted a significant portion of the work on the Mount Rainier National Park Backcountry Users Attitude Survey for this quarter. Additional work included a continued analysis of relevant literature and research in the fields. A number of newer references and two British publications on the evaluation of the effectiveness of interpretation have been located and reviewed. William Salvi, a Research Analyst from the CPSU, has been assigned to the survey, and several meetings were held to brief him on the project. In general, progress on the research is proceeding very well and problems have been minimal. As previously mentioned, the cooperation between the CPSU and the MORA staff has been excellent, which should enhance the value of the results.

Two problems that relate to the project have evolved in the course of this quarter. The first problem concerned the lack of concrete data on the number of users in the relevant areas of the park. After several meetings, the problem seems to be nearing resolution as a few key documents have been identified that will yield rough estimates of use levels that will be sufficient to plan the sampling schedule and size estimates for the relevant subsamples of the survey. A problem that is yet to be resolved is the issue of the apparent unavailability of SCA's to assist in the research project this summer. The original Cooperative Agreement for this project between the National Park Service and the University of Washington CPSU did specify that the Park Service was responsible for the provision of SCA's to work with the project. According to recent conversations with MORA Park Administration, there is no budgeted item for this contingency. It has been suggested that

there might be some way to use work-study students from the University or part-time help, but monies have not been allocated for this purpose. At this time, the issue has not been resolved.

Pending Developments:

As the project enters the next quarter, the emphasis is on the final draft of the survey instruments and the development of a tightly controlled logistical schedule. As such, the project is on schedule according to projections in the December 30, 1984 report. Due to the nature of the research, the time frame must be tightly controlled to take into consideration the shortness of the season at MORA and the multi-faceted approach of the research. Coordination with the Park Service field personnel will be essential. As a result of the literature review and the series of CPSU/NPS-MORA meetings, the staff of the CPSU is currently nearing the point where the drafts of the survey instruments and the related observation plans will be completed. The methodology, questionnaires, and other logistical concerns are in process for completion by the projected date.

In accordance with the Cooperative Agreement, descriptions of research designs for all components of the project are included in the next section of this report.

Preliminary Research Plan and Design

I) Indian Henry's Meadow Experimental Minimum Impact (EMI) Platform

A) Instrument

The Indian Henry's EMI platform survey instruments will consist of two questionnaires. The first will be administered to overnight users; the second to day hikers and backpackers passing through the area. The instruments will consist of two parts; the first will be standard throughout the Backcountry User Attitude Survey, a series of brief questions designed to elicit basic relevant socio-economic and demographic data. The second part of the instrument will be site specific. Questions will pertain to attitudes toward the EMI platform and related issues. Visitor contact will be minimized by getting names and addresses of individuals and mailing questionnaires to them.

B) Methodology

The questionnaires will be administered to a random sample of the day hiker/pass through overnight hiker populations and to the population of platform users, throughout the season to control for weather, user variations during the season, and day of the week. Since the number of persons passing the site is fairly large (estimated 1900), a smaller random sample of those persons actually observing the site is adequate (estimated N=200). The field worker should be able to gather this data in six to eight

days, with the balance of his time devoted to other elements of the research project.

Since the platform installation timing is dependent on the snow melt pattern, the time frame of the sampling is variable according to the vagaries of the weather. While this should not present any problem relating to the day and pass through backcountry hikers sample, it will be a very important constraint to be addressed with the platform user group. It is expected that the total number of parties actually using the platform will be relatively small (estimated N=20-30 parties). As a result, a census survey of the population is desired. Seasonal Ranger Nancy Swain will contact the platform user groups when the CPSU staff person is not on site.

Due to several constraints primarily of a site specific nature, pretest of these instruments will be limited. First, there may be a seasonal bias in the platform user population, such that, with the small sample size, the response time required to redesign the instrument would possibly omit certain user types. Furthermore, the length of the season could be so short as to preclude a considerable latitude in "down time" associated with instrument pretesting. These problems will be taken into consideration but are essentially beyond the control of the researchers.

II) Camp Muir Waste Management Program

A) Instrument

As mentioned previously, one section of all of the instruments in this project will gather the socio-economic and demographic data. Second, the site specific section of the instrument designed for the Camp Muir segment of the MORA Backcountry User Attitude survey will be devoted to issues and attitudes relating to the Park Service human waste management policies and facilities in the climbing areas of MORA. A third, objective of the instrument will be to ascertain climbers perceptions of the effectiveness of the MORA passive communication and interpretive efforts to encourage low impact usage of the climbing routes. To control potential bias due to the type of data collection method, approximately one-half of the questionnaires from this segment of the research project will be mailed and one-half will be on-site interviews. During the administration of the questionnaire at Camp Muir, the interviewer will attempt to obtain passive observations of the deprecative acts around the solar assisted toilet.

B) Methodology

It is expected that approximately one-third of the work schedule of the CPSU person involved in the Muir/Paradise surveys will be devoted to the administration of the instrument at Camp Muir. The sampling will occur over the season to control for any bias of time. Due to the large population of climbers (estimate 2600),

the sample will be fairly large (estimated N=500). A larger sample will allow valid statistical analyses to be performed on subsamples of the climbers, thus offering some information on the nature of the relationship of experience and other variables to attitudes and behavior relating to waste management. Since the interview process will be at Camp Muir, there will also be an attempt to tap day hikers' reactions to the facilities at the camp. This data gathering will be done on an opportunistic basis and a random sample is not assured.

It is reasonable to expect the climbing season to be less dependent on the snow melt than other segment of this study. Therefore, it should be practical to pretest the instrument. Due to the complexity of the overall study, coordination of the logistics of the different facets of the study will be critical. The pretest must be prompt enough to allow a representative sample of the Muir climbers to be obtained despite down time relating to the redesign of the instrument, if required. Again, the constraints introduced by the shortness of the season at MORA demand strict attention to the logistical timing of the study.

III) Paradise Day Use Area

A) Instrument

1) Critique of Exhibits and Brochures

The first stage of the analysis of the effectiveness of the passive communication systems relating to low impact backcountry usage will be a critique of the exhibits and

brochures. A class of interpretive students from the University of Idaho under Sam Ham will be at MORA in late April to view the Paradise Visitors Center. At that time, they will critique the effectiveness of the exhibits and other passive communication systems relating to the management concerns that are the subject of this project. A panel of experts (including Dr. Ham) will also be asked to critique the passive information systems.

2) Observations of Exhibits

In order to determine the number of visitors actually observing and reading the passive information exhibits relating to low impact backcountry use, a dual observation procedure will be established. Subject to the availability of the camera, time lapse photography randomly taken at relevant exhibits will give an estimate of the number of visitors actually observing the low impact passive information exhibits. Subsequently, a randomized observation procedure correlating time spent in observation by visitors with actual reading time required to comprehend the exhibits will give an indication of the proportion of the visitors who actually read the entire exhibit. This procedure should determine an estimate of the number of backcountry users who read and could conceivably comprehend the exhibits designed to influence their behavior.

3) Baseline Observations of Depreciative Behavior

The design of a longitudinal observation and interview procedure to monitor the efficacy of signing in the day use areas is relatively complex. A short period of participant observation by the CPSU staff should serve to determine if there is any site specific reason, such as trail design or scenic destination, which could explain depreciative behavior of visitors in specific day use areas around Paradise Visitors Center. These sites will not be subjected to sampling or treatment.

Several sites will be selected that are the location of problematic behavior which will satisfy objectives of the experimental design. An observation procedure will then be established to allow randomized application of two different texts of signs (or in some cases, physical barriers) to be compared individually with a control situation without any treatment at the selected sites. The experiment will test the effectiveness of signing as well as the effectiveness of different texts in signing (or barriers), while also controlling for seasonal variations through a longitudinal sampling process. The behavior of the visitors in the backcountry at the relevant sites will be monitored as an indication of the effectiveness of the treatments. Upon observation of depreciative behavior, the researcher will then attempt to establish, through a short structured interview, a motive for the behavior and to determine if the

visitor has observed any of the exhibits relating to low impact usage prior to engaging in the depreciative behavior. This interview might prove adversarial in nature and must be approached with caution.

D) Survey Instrument

An attitude survey with specific questions designed to indicate the effectiveness of passive communications to encourage low impact backcountry ethics will be administered to day hikers in the Paradise area. This instrument will again contain the standard questions on socio-economic and demographic variables. The instrument will attempt to measure amount of exposure to passive communications on the issue on low impact usage and knowledge of the ethics involved. The short questionnaire will be incorporated in a random interview schedule over the season which will alternate with the interview schedule at Camp Muir.

E) Trail Counters

The MORA staff has indicated that trail counters will be installed in the Paradise area to establish estimates of the total user population. Beyond a mere descriptive function, the information will be used to determine proportions of the total user population exposed to the relevant low impact information systems and other relevant proportions such as percentage of users engaging in depreciative acts.

F) Pretest Considerations and Methodology

The questionnaire for the Paradise day use project will be pre-tested and revised as necessary. It is expected that the Paradise segment of the study will require two-thirds of the time of the second CPSU staff member. An additional person will be required, as well as NPS staff assistance.

IV) Comment On Logistics And Methodology

It is evident based on the foregoing discussion that the study in question has evolved into a very complex undertaking since its inception in the summer of 1984. A few observations are relevant. The coordination of the efforts of the CPSU and MORA staffs is critical for the success of the experimental dimensions of this project; the treatment applications are actually administered by the Park personnel. Due to the time constraints of this project introduced by the short peak summer season at MORA, the research support staff at the University of Washington must also be closely attuned to the needs of this study, particularly as related to the possible revisions of the survey instruments that might be forthcoming from a pretest procedure. Finally, in view of the critical need to obtain the best trained personnel to assist the researchers involved in this project, it is advisable to consider the use of work-study students from the University of Washington in the project.

APPENDIX A

MORA BACKCOUNTRY USER ATTITUDE PROJECT
REPORT AND OBSERVATIONS:

MORA-NPS/CPSU-UW MEETING

January 7, 1985

Submitted by

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Meeting Date: January 7, 1985
Meeting Location: UW, South Campus Center, Conference Room
Attending Meeting: Pete Thompson NPS-MORA
Darryll Johnson CPSU
Tommy Swearingen "
Richard Converse "
William Salvi "

Introduction:

The January 7, 1985, meeting between Pete Thompson from NPS-MORA and CPSU personnel from University of Washington CFR was held in the South Campus Center on the University of Washington campus. The purpose of the meeting was to inform Pete Thompson of progress to date and to clarify some questions CPSU researchers had concerning the Backcountry User Attitude Project at MORA. Darryll Johnson, Social Science Program Project Leader, delivered the quarterly report and presented a list of topics to be discussed at the meeting. Tommy Swearingen presented some of the bibliographical materials collected on impact and management in subalpine and ark areas. A question and answer session then followed which is summarized below.

According to Pete Thompson, the overall primary park objective to be addressed in the project is an evaluation of the effectiveness of passive communication systems in the park. The NPS general premise is that good trail and facility design combined with effective interpretive media will passively control user behavior without physical barriers or direct authoritarian regulation. This general concept is then to be considered in light of several specific areas of concern relating to backcountry impact due to depreciative user behavior and user attitudes concerning management facilities, policies, and objectives.

Summary:

- 1) The first topic discussed was a user attitude survey concerning the elevated wood platform (96 sq.ft.) at Indian Henry's Meadow. The intention was to reopen the Indian Henry's site to overnight visitors without impacting the meadow; it was previously closed for meadow rehabilitation. The primary user season at the site runs from late July to about September 20, with most users permits originating from the Longmire entrance to the park. A brochure was distributed (and comments solicited) by NPS personnel last year. The response to the experimental minimum impact (EMI) platform concept was overwhelmingly negative, with users being somewhat more receptive than day hikers, and some design improvements being offered by users.

Observations:

Questions to be addressed in an attitude survey concerning the EMI platform include:

- a) Socio-economics, experience levels and organization affiliation of users, potential users, and day hikers in the area.
- b) Attitudes toward the EMI platform.
- c) Attitudes and suggestions concerning other site hardening options.
- d) Understanding of the dichotomy of the options.
- e) Is there a relationship between wilderness knowledge and sensitivity to the EMI site?
- f) Are shelters more acceptable? Why?
- g) More future sites? Locations?
- h) General open-ended comments.
- i) Degree of no-impact compliance, knowledge, and attitudes.
- j) Effectiveness of existing interpretive education efforts/improvement suggestions.

Summary:

- 2) The Sunrise/Sherman, Paradise/Camp Muir Waste Management Policy is the second concern to be addressed in this survey. These two climbing routes are the most heavily used routes in the park. The Camp Muir/Disappointment Cleaver route is climbed by 8500 users/season, with an estimated 75% of the use being private groups. All climbers must register and check out; entry is at Paradise and White River Visitor Centers. Human waste at the high camps was previously collected at the sites in drums/outhouses and flown out by helicopter. The NPS has designed a \$30,000 experimental solar toilet to see if the efficiency of the waste management procedure could be improved. Normal composting toilets (e.g., Clivus) will not work in the cool, high environment, and the new design is intended to be a compromise between composting and bulk collection, with a solar evaporator to handle liquid wastes and a solid waste collector which might presumably be packed out by llamas. NPS needs more weather data (none exists) for consideration of the design efficiency and intends to install a weather data station adjacent to the solar outhouse facility at Camp Muir. There have been problems in the past with climbers throwing trash into the collection containers. Current education efforts consist of a brochure in the backcountry information package, produced in conjunction with REI explaining the magnitude of the problem. The brochure is in every information package mailed to potential backcountry users and is distributed at registration to all climbers.

As outlined above, current education efforts are judged ineffective by NPS since problems continue. If the problems are not brought under

control, the long-term implication might be a limitation on the number of users on the climbing routes because of an ecological carrying capacity.

A related concern is the growing problem of waste management above the high camps. A three-sided screen was erected at Ingraham Flats to provide some privacy and to localize the area impact. Another option under consideration is the proposed regulation that climbers be required to bag their wastes and pack it down to a collection point (at high camps?) to be evacuated by the same means as the solid waste collected at the camps.

Observations:

Topics to be considered in this survey include:

- a) Problem of vandalism to outhouse and weather station.
- b) Disposal of trash in the solar outhouse facility.
- c) Climbers' attitudes concerning that facility.
- d) Socio-economic characteristics of users and experience levels.
- e) Organizational affiliation of individual and groups, group types, and educational efforts in these organizations.
- f) Degree of no-impact compliance and knowledge and attitudes.
- g) Attitudes and suggestions concerning policies and facilities for waste management procedures for climbing routes above the high camps.
- i) Attitudes concerning user number regulations, if deemed necessary.
- j) Correlations between socio-economic characteristics, organization affiliation, and experience levels of users related to attitudes.
- k) Effectiveness of existing interpretive education efforts/ improvement suggestions.

It should be noted that there is an opportunity for an early pretest of this instrument because the climbing season is not as dependent on the summer snow melt as is the backcountry and day use hiking season.

Summary:

- 3) The third problem to be addressed in the backcountry user survey is the impact in backcountry day use areas around Paradise Visitor Center. There is a problem with day hikers cutting switchback, hiking off trail and impacting subalpine meadows, and ignoring meadow rehabilitation signs and walking on the restricted rehabilitation plots. The problem is perceived by the NPS to be at least partially due to a lack of information, and the goal is to relate modification of this behavior to possible improvements in no-impact passive communication designs (i.e., interpretive education information exhibits and brochures).

Observations:

Questions to be included in the survey instrument or otherwise considered include:

- a) General socio-economic characteristics, organization, affiliation, experience levels of day users.
- b) Observational baseline data on frequency of depreciative trail/backcountry usage.
- c) Knowledge of and degree of exposure to passive communications on no-impact by both the in-compliance and the noncompliance population.
- d) Day hikers attitudes concerning no-impact compliance.
- e) Correlations between a,b,c and d above.
- f) Assessment of effectiveness of existing interpretive efforts including passive information systems.

Summary/Conclusion:

At the close of the meeting it was agreed that the group would meet again in mid-March to review development of the project with the study design to be the main topic of discussion.

In addition, Pete Thompson was to seek permission for CPSU personnel to stay in NPS housing while engaged in research and obtain approval for the use of two S.C.A.'s for the summer season's research. Finally Tommy Swearingen was to make arrangements to meet with Lynn Arthur, past NPS librarian at MORA, to review relevant materials in the Longmire library.

Observations/Additional material was to be provided by the NPS:

- 1) 1984 survey of attitudes concerning Indian Henry's EMI platform.
- 2) Current backcountry management plan.
- 3) Impact assessments on all relevant sites, especially related to the Paradise day hiking trails.
- 4) Paradise trail system layout and design.
- 5) Backcountry users information package.
- 6) Climber use data/organization affiliations, if available.
- 7) Backcountry and day user data 1983, 1984.
- 8) Day hikers' brochures.
- 9) Clarify Muir/Sherman questionnaire administration concerning an addition on solar outhouse.
- 10) Information on the extent of the bag waste program.
- 11) Extent of prior site hardening experience at Indian Henry's Meadow. M

As of the date of this report, January 17, 1985, an information package containing items 1,2, & 5 has been received and reviewed by Tommy Swearingen.

APPENDIX B

MORA BACKCOUNTRY USER REPORT:
NPS/CPSU MEETING

FEBRUARY 25, 1985

SUMMARY, COMMENTS, AND ADDITIONAL TOPICS
FOR CONSIDERATION

Submitted by

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I. Introduction

As a consequence of a prior meeting between Pete Thompson from MORA and CPSU personnel (see Report, Jan.7, 1985), another meeting was planned to allow for additional interchange between the two agencies during the planning stage of the Backcountry User Survey. The following is a report derived from that subsequent series of meetings held on Monday, February 25, 1985. The CPSU staff met first with MORA Resource Mgt. staff at the Tahoma Woods Park Headquarters, then attended another meeting with field personnel (Rangers and Interpreters) at Longmire. A third meeting between CPSU staff, Park Superintendent Guse, and Asst. Supt. Dunnegan was held later in the day that involved a possible study only peripherally related to the Backcountry User Study, and is not included in this report.

II. Meeting - Monday, 25 February 1985, 10 AM, Tahoma Woods

MORA staff attending: Bob Dunnegan, Pete Thompson, Stan Schlagel, Cat Hawkins, Gina Rochefort, Janet Edwards.

CPSU staff attending: Darryll Johnson, Tommy Swearingen, William Salvi.

Summary:

After introductions, Tommy Swearingen gave a brief review of the objectives of the project. The review was followed by a discussion of CPSU concerns for clarification of issues related to the research project or needs for additional information. It was determined that

Pete Thompson had collected the desired data, as available, and other CPSU questions were answered. Following this interchange, an open discussion ensued relating to each of the key components of the research projects. A topical review of salient comments follows.

1. Indian Henry's Meadow Experimental Minimum Impact (EMI) Platform

The first observation on the EMI component of the study was that, due to NPS internal problems, there was some question as to whether the platform would be installed in the summer, 1985. This question was affirmatively resolved later that day, but no additional platforms are under consideration at this time. The Rangers who conducted the 1984 informal survey of visitor reaction to the EMI platform, Bob Martin and John Wilcox, were not present, so the discussion moved to the next topic.

2. Paradise Backcountry Day Use Area

Pete Thompson stated that there is no existing database on day use levels, so this portion of the Backcountry Users Study should provide a valuable input. Trail counters will be in use this summer, and a time lapse camera might also be available to aid in research. A discussion of the social trails and related problems and management policies was quite informative for the CPSU staff. A map of the area was to be forthcoming shortly, with impacted social trail overlays to aid in identifying areas of concern. It was noted that the Park Service maintains a very visible physical presence in the backcountry areas, and most of the personnel involved are trained in interpretation. However, sheer volume of

use (estimated at 5000 visitors/day on peak weekends) prevents much actual personal contact. The number of users of the Paradise area has significant ramifications in this research project.

3. Camp Muir/Ingraham Flats Waste Management

A question concerning expansion of the solar assisted outhouse to other sites was answered negatively. The Muir outhouse and weather station will be in full operation this season. A second topic of discussion was the emphasis of the bag waste program (limited, to date) and the relationship of that program to the Ingraham Flats privacy screen. The privacy screen is to limit area-wide impact by concentrating use and has been judged generally effective for that purpose. The "clothespin brochure" was a segment of a larger publicity effort that never completely materialized.

4. Trailhead Information/Closing Discussions

Tommy Swearingen of the CPSU staff wanted to know more about the nature of the entry point passive information systems, having already reviewed the Paradise exhibits and the backcountry mail information package. The reply was that trailhead information may be different from the mail package, for instance, the seasonal Hikers Information Center at Longmire has a slide show on backcountry low impact ethics. The Paradise climbers also obtain different brochures and can observe exhibits upon registration at Paradise. Another trip was discussed to view the additional passive communication media mentioned, as well as to review climber's registration information. Final topics covered at the

meeting by Bob Dunnegan were related to the uncertain availability of SCA's to assist in research this summer, and a MORA administration concern for evaluation of acceptance by employees of management policies relating to this study.

The CPSU staff position is that active involvement by the MORA administration and the Rangers stationed in the relevant study areas is a key component of this research effort. Active involvement by MORA staff will facilitate the study administration, improve the design of the instruments, and enhance the flow of information between management, researchers, and field personnel. In this context, the second meeting at Longmire between CPSU and MORA field personnel is particularly relevant.

III. Meeting - Monday, 25 February 1985, 11:30 AM, Longmire

MORA staff attending: Pete Thompson, Bill Dengler, Ed Wilson, Bill Swift, Rick Kirschner.

CPSU staff attending: Darryll Johnson, Tommy Swearingen, William Salvi.

Summary

The second MORA/CPSU staff meeting was with field personnel (Rangers and Interpretation). The discussion was oriented more toward site specific considerations than the prior meeting and was viewed by the CPSU staff to be a very successful, informative meeting, offering considerable insight into the experiential dimensions of the backcountry management problems. Again, important comments follow, arranged by sites as discussed.

1. Indian Henry's EMI Platform

An important idea discussed is that, given the levels of use, even a successful information program might still fail to reach some users, thus failing to prevent a certain amount of impact. One concern expressed about the EMI platform is that the public might perceive the platform as a policy reversal with actual encouragement of meadow usage. There was some question as to whether the public perceives the crosscountry camping names as an alternative to designated sites by allowing limited use of alpine meadows. Another point raised was that the North Cascades National Park has installed some permanent platforms. Finally, the CPSU personnel expressed a desire to obtain a brochure that is distributed on site concerning the EMI platform.

2. Paradise Backcountry Day Use Area

Reflections concerning existing trailhead signing pointed to the perceived ineffectiveness of the new signs. Older signs were more site specific and seasonally rotated, but were considered too verbose. A key issue related to signing is the question of when signing might be less effective than physical barriers, and which barriers might be most cost effective and least obtrusive while still accomplishing the desired control function. High standard trails are perceived as one of the best design methods to prevent depreciative trail usage, but are also quite expensive and labor intensive to build. Another question is the degree of impact caused by foreign users unable to comprehend existing passive information materials. A suggestion which was received with

considerable interest was the concept of instituting specific changes in information systems after the base line data on depreciative behavior has been derived, thus allowing an experimental analysis of the effectiveness of the changes. Priority messages would need to be determined due to the nature of the potential experiment. Some signing suggestions were the use of positive wording and multilingual signs.

A comment was made that a large proportion of the backcountry impact is caused by military personnel from Ft. Lewis. A solution might be to plan specific educational efforts for that audience. In some instances, specific social trails are caused by a desire to review an interesting site. This implies that there is a definite need to identify motives in off trail usage.

An explanation of the role of work crews in interpretation was offered as this method of personal contact is perceived to be very effective by field personnel. An idea raised was the value of the NPS/FS information numbers in the metropolitan areas as an interpretation tool.

3. Camp Muir/Ingraham Flats Waste Management

The field staff thought the "clothespin" brochure was ineffective and obsolete in view of the current waste management programs. They did think the privacy screens at Ingraham Flats were effective and wanted public feedback on the idea. The bag waste program wasn't deemed especially effective, but comments suggested

lack of emphasis as a possible reason for this. Concentration in a specific area was the preferred policy, judged quite ineffective with a 26% increase in compliance in one year. Finally, there was some concern expressed as to the public perception of the obtrusiveness of the solar assisted outhouse at Camp Muir. Due to time constraints, the meeting ended sooner than desired with CPSU personnel interested in pursuing further discussions at a later date.

IV. Concluding Remarks

The meetings with MORA and CPSU staffs at Tahoma Woods and Longmire were very productive. The administrative and field personnel offered valuable insight and suggestions into the project that are the result of direct contact with the problems. In subsequent meetings among CPSU staff at the University of Washington, the value of continuing these consultations was recognized.

In review of the February 25th meeting, the CPSU staff has compiled a list of observations, discussion topics, and information to be covered in the next meeting:

1. Visit Hikers Information Center to observe exhibits.
2. Collect hikers trailhead brochures.
3. Collect climbers' registration data and information distributed at registration to climbers.
4. Interview John Wilcox, Bob Martin concerning their 1984 informal survey of EMI platform comments.
5. Reaction from MORA staff on tentative survey designs.
6. Further discuss use of trail counters and time lapse camera.

7. Discuss Camp Muir situation fully; meet with climbing ranger.
8. Determine nature of North Cascades permanent platforms.
9. Obtain copies of EMI platform brochure.
10. Discuss nominal decision process to obtain priorities for experimental design, if still deemed desirable.
11. Review Paradise trail map and social trail overlay with informed personnel.
12. Locate phone number, address of Seasonal Ranger Nancy Swain from Indian Henry's Meadow.
13. When will 1985 backcountry user data be available?

In conversation with Pete Thompson and Tommy Swearingen, meetings were scheduled for Tuesday, March 19, at 10 AM at Longmire and thereafter at Paradise Visitors Center.

APPENDIX C

MORA BACKCOUNTRY USER ATTITUDE SURVEY
REPORT: NPS/CPSU MEETING

MARCH 19, 1985

SUMMARY, COMMENTS, AND ADDITIONAL TOPICS
FOR CONSIDERATION

Submitted by

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I. Introduction

The subject of this report is a summary of the meetings between MORA staff and CPSU representatives held at Mount Rainier National Park on March 19, 1985. This meeting was the third in a series of CPSU/MORA meetings held to discuss the 1985 MORA Backcountry User Attitude Survey. The purpose of this particular meeting was to continue discussions of related issues that were initiated in prior meetings (see Report, February 25, 1985). The agenda for the meetings on March 19 is included at the conclusion of the summary report of the prior meetings. Notes from each meeting are followed by comments on the meetings.

II. Meeting - Tuesday, 19 March 1985, 10 AM, Longmire

MORA staff attending: Pete Thompson, Bill Swift, Bill Dengler

CPSU staff attending: Tommy Swearingen, William Salvi

Summary:

The first topic of discussion was the Indian Henry's EMI platform and related information for hikers and day users of the area. Day hikers had no prior warning that they were to encounter the platform until they actually entered the meadow. The responses to last summer's questionnaire were distributed on site only. The seasonal ranger, Nancy Swain, will again be stationed in that area, and she will be available for assistance as time allows. The number of day hikers at Indian Henry's is unknown, but there was a traffic survey conducted in 1980 by Bill Larsen which might shed some light on this subject, and help to establish the size of the population to be sampled this summer.

The next topic of discussion concerned the use of trail counters this summer. Tentative plans call for the counters to be placed at Paradise, Sunrise, and White River, but the instruments can be moved to assist in the Backcountry User Attitude Survey as needed. It was noted that the time lapse camera mentioned in the prior meeting is rather conspicuous, but might prove of value if concealed in the Visitors Center or at the trailhead to monitor the effectiveness of exhibits relevant to the survey.

A question was raised as to the nature of the camping platforms in the North Cascades National Park. Pete Thompson replied that the platforms in that park are permanent installations and are not immediately relevant to the MORA project. Particularly important was the continued discussion of the possible longitudinal experimental research design to monitor trail signing effectiveness.

Final conversation concerned other requests from the CPSU for brochures and relevant information which were subsequently received from the MORA staff. Pete Thompson mentioned that some of the decrease in use over the last few seasons might be due to the decline in the faddish element in outdoor recreation. Concluding remarks were by Tommy Swearingen concerning the tentative design of the research instruments for this summer, and by William Salvi concerning the nature of the possible general users survey at MORA. After the meeting, the CPSU staff and Bill Swift reviewed the stored Hikers Information Center passive information exhibits relating to low impact usage in the Longmire warehouse.

III. Meeting - Tuesday, 19 March 1985, 1:30 PM, Paradise

MORA staff attending: Garry Olsen

CPSU staff attending: Tommy Swearingen, William Salvi

Summary:

In response to a request for information on the number of day users at Camp Muir, Garry Olsen mentioned that Tammy Smith had collected some data on estimated day use volume that should be in the Resource Management Library. He then gave the CPSU staff climbing reports for 1984. A discussion of waste management on the climbing routes followed. Comments were that the public seems receptive to the solar assisted outhouse and the privacy screens, but they are less enthusiastic about the bag waste program. Still, the climbing rangers feel that the bag waste program is increasingly successful. Personal contact with the climbing public is considered to be one of the primary reasons that the sanitation conditions are improving at Camp Muir. The RMI climbing concessionaire is credited with doing a reasonable job of helping with the program to improve waste management practices at Camp Muir, but they are resistant to the bag waste program. The ranger staff at Camp Shurman has been less interested in pushing the program to lessen the impact of human waste on the climbing routes in their jurisdiction. Olsen mentioned several reports which might assist in the research effort (see Concluding Remarks).

After discussing the waste management program on the climbing routes and at the high camps, Garry Olsen and Tommy Swearingen reviewed in detail the day users hiking trail map with a social trail overlay to identify rehabilitated areas, social trails with a recreational destination, trails that indicated a design problem, and trails that indicate continued impacts due to unexplainable depreciative acts. The intention of the map review was to

identify key areas to consider for monitoring to establish a data base of depreciative behavior this summer, as well as to narrow the range of areas to consider for the signing experimental procedure, if pursued. At the conclusion of the map review, Ranger Olsen led the CPSU personnel on a tour of the Paradise Visitors Center to observe the information exhibits related to low impact backcountry use and to collect brochures for hikers and other backcountry users at the information desk.

Upon leaving the Paradise Visitors Center, the CPSU staff returned to Longmire to copy some of the reports from Garry Olsen. They also stopped at the Tahoma Woods headquarters to speak with Bill Larsen concerning the traffic survey he had worked with in 1980. A copy of the survey results was made, but the questions relating to the data abstracts were not immediately available.

IV. Concluding Remarks

The CPSU/MORA staff meetings on March 19 were useful because the MORA staff was able to answer several key CPSU questions concerning information on use levels during the main season at the park. Many logistical decisions relating to the Backcountry User Attitude Survey are dependent on the topics discussed. The flow of information concerning use levels, areas of impact, logistical and equipment concerns, and current management policies and practices has been of immeasurable value in the ongoing development of the plans and the instruments for the survey. The participation and cooperation of the MORA staff have been exemplary.

Additional information to be forthcoming as a result of these meetings includes the following:

- 1) A copy of the 1980 traffic survey questionnaire.
- 2) Interview John Wilcox concerning the 1984 informal survey of EMI platform comments.
- 3) Obtain a copy of the 1984 Paradise Meadow Report by Jane Ruckman.
- 4) Obtain a copy of the 1984 Paradise Backcountry Report by Bundy Philips.
- 5) Obtain a copy of Camp Muir day use estimates from Tammy Smith.

Additional meetings are indicated, but it was agreed that such meetings should be delayed until rough drafts of the survey instruments were completed. These meetings will probably be scheduled for May and should include CPSU staff and the Chief Ranger, Area Rangers, Interpretation, and Resources Management staff from MORA.

APPENDIX D

Recreation Interpretation in Management;
Applications and Evaluation

A Working Bibliography

February 6, 1985

By

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- Allison, J.C. 1965. Analysis of Interpretive Media and Their Application to Spence Gulch, Idaho. M.S. Thesis. Utah State University. 65 p.
- American Camping Association. Bibliography of Research Related to Organized Camping, Environmental Education, and Interpretive Services. Bradford Woods, Martinsville, Indiana. 1979.
- Badaracco, R. 1976. A Guide to Literature Retrieval in Outdoor Recreation. *The Interpreter* 8(2):6-13
- Berrier, D.L. 1980. The Effectiveness of Information on Dispersing Wilderness Campers. M.S. Thesis. Dept. of Forestry, VPI. Blacksburg, VA. 118 p.
See Roggenbuck and Berrier, 1982, for discussion. Study contains thorough literature review and a theoretical framework of communication principles is included.
- Bradley, J. 1977. The 1977 Wilderness Education Program, Moore Creek Ranger Station. Nezperce National Forest. 64 p.
Summary of an in-town effort to reach visitors before they come into the wilderness. Goals were low impact camping, appreciation of a natural fire management program, and improvements in the land use ethics of visitors, all without increasing actual use in the wilderness. Public comments on the program were positive.
- Bradley, J. 1978. Fall Accomplishment Report, Eagle Cap Wilderness. Wallowa-Whitman National Forest. Joseph Ranger Station, Joseph, OR 11p.
In this paper, NFS officials evaluated the effectiveness of information and education in improving behavior at the Eagle Cap Wilderness. The majority felt the program was successful.
- Bradley, J. 1979. A Human Approach to Reducing Wildland Impacts. in *Recreational Impact on Wildlands. Conference Proceedings*. R. Ittner, et.al., eds. USDI-NPS, USDA-FS #R-6-001-1979. p. 222-226.
Paper is a discussion of the author's efforts to reduce impact through education. A discussion of communication media and interpretive mechanisms is included.
- Brandborg, S.M. 1983. On the Carrying Capacity of Wilderness. *Living Wilderness* 84(summer):28-33.
General discussion using education to accomplish management objectives in wilderness user problems; interpretation, maps and interpretive guide materials, and direct contact are some of the methods discussed.
- Brown, P.J. and J.D. Hunt. 1969. The Influence of Information Signs on Visitor Distribution and Use. *Journal of Leisure Research* 1(1):79-83.
Early study used informational road signs to stimulate and redistribute visitation in rest stops. Experiment was successful

at P=95%. Cites references in advertising media using informational signs.

- Bury, R.L. and C.B. Fish. 1980. Controlling Wilderness Recreation: What Managers Think and Do. *Journal of Soil and Water Conservation*, 35(2):90-93.
- Butterworth, S. 1970. Development of Model Guidebooks for Glacier Peak Wilderness. M.S. Thesis. University of Washington, College of Forest Resources.
- Butler, J.R. 1980. The Role of Interpretation as a Motivating Agent Toward Park Resource Protection. M.S. Thesis (?). University of Washington, College of Forest Resources.
- Canon, L.K., S. Adler, and R.E. Leonard. 1979. Factors Affecting Dispersion of Backcountry Campsites. USDA-FS Research Note #NE-276.
A study using observation and surveys found users were not complying with the rules to disperse. Users perceived risk in dispersing; convenience as the primary determinant of a site. An increase of information did not decrease use of impacted sites, but it did increase distance from the trail. Signing was judged to be effective.
- Castro, Nash. 1972. Humanizing Park Signs. *Parks and Recreation* 7(9):39:74-76.
Article concerning examples of successful control of depreciative behavior in parks with the use of signs and the value of effective signs. MORA was one example of success.
- Cole, D.N. 1981. Managing Ecological Impacts at Wilderness Campsites: An Evaluation of Techniques. *Journal of Forestry*, 79(2):86-89.
Dispersion, site rotation and closure are likely to increase areal impact. Yet recovery will be slow even as impact is spreading with light use levels to new areas faster than that recovery of previously impacted sites. Paper argues for closure of particularly fragile sites and concentration on resistant sites or hardening of sites.
- Croctic R.L. 1976 Measurement and Evaluation of Visitor Center Interpretive Messages and Media. M.S. Thesis. Utah State University. Logan, Utah.
- Dalle-Molle, J. 1976. Interpretive management communications with G. Sharpe. Mt. Rainier National Park, Longmire, Wa. cited in Sharpe and Gensler, 1978.
Note on the success of interpretive exhibits and signing in meadow rehabilitation areas.
- Dick, R.E., Erik Myklestad, and J.A. Wagar. 1975. Audience Attention as a Basis for Evaluating Interpretive Presentations. USDA-FS Research Paper #PNW-198. 7p.
Audience attention observation techniques were developed to

evaluate the effectiveness of interpretation. Technique produced marked results, and evaluations were judged to be useful for field personnel.

Dick, R.E., D.T. McKee, and J.A. Wagar. 1974. A Summary and Annotated Bibliography of Communications Principles. *Journal of Environmental Education*, 5(4):7-13. 28 principles are presented and used to index 57 annotated articles.

Downing, K. (Ex.Dir.) and J. Shaw (Ed.). 1980. *Dispersed Recreation and Natural Resource Management: A Focus on Issues, Opportunities, and Priorities: A Symposium*. Utah State University.

Dunmire, W.W. 1976. Servicewide Goals for Interpretation. In *Touch* 1(12):2-3. USDI-NPS. Wash., D.C.

Dutcher, R.L. and B.G. Asmuss. 1970. *Visitor Response to the Nature Centre in Prince Albert National Park*. Parks Canada. Ottawa, Canada.
A study to gauge the effectiveness of interpretation at a park visitor center. Multidimensional and moving exhibits were judged to be more effective. The center was redesigned following this study.

Fazio J.R. 1974. *A Mandatory Permit System and Interpretation for Backcountry User Control in Rocky Mountain National Park: An Evaluative Study*. PhD Dissertation. Colorado State University. Fort Collins, Colorado. 264 pp.
Extensive interpretive methods combined with a permit system significantly improved backcountry behavior, sensitivity to wilderness values, and attitudes concerning management rules and policies. Study consisted of two parts; an evaluation of the permit system rationing use, and an evaluation of selected media effectiveness in promoting no impact usage. Visitors generally approved of the permit system, and the interpretation efforts had little effect on their already good attitudes. Knowledge of low impact increased with a slide show but not with brochures, television, or newspapers.

Fazio, J.R. and W.W. Bramlette. 1977. *Communicating with the Wilderness User: Final Report to the Pacific Northwest Regional Commission, Forest, Wildlife, and Range Experimental Station*. University of Idaho. 167 p.
A user questionnaire was designed to determine characteristics, attitudes, and knowledge of users to aid in improving the educational program aimed at promoting responsible backcountry use. Study also analyzed the information packages mailed to potential users by agencies. Conclusion was that much improvement in educational efforts was desired; includes a list of management suggestions.

Fazio, J.R. 1979. *Communicating with the Wilderness User*. University of Idaho, College of Forestry, Wildlife, and Range Sciences Bulletin

#28.

65

p.

Three studies were conducted to aid managers in the use of communications as a management tool. 1) Wilderness knowledge was related to user groups, socio-economics, information levels, and media. 2) Effectiveness of specific media were evaluated. 3) An analysis of mail information packages was conducted. Included in the report are questionnaires, sample tests, and a content analysis for wilderness literature, and an extensive literature review.

Fazio, J.R. 1979. Agency Literature as an Aid to Wilderness Management. Journal of Forestry 77(2):97-98. Author analyzed mail information packages from three federal agencies responsible for wilderness management. Replies were prompt, but were judged to be only moderately effective.

Feldman, R.L. 1978. Effectiveness of Audio-Visual Media for Interpretation to Recreating Motorists. Journal of Interpretation, 3(1):14-19.

Study is a comparison of the effectiveness of a brochure and a cassette tape in educating motorists and motivating them to take a nature hike. Both increased knowledge, but the brochure was judged to be more effective. Neither had a significant effect in prompting the nature hike. see also Feldman's dissertation, 1975, at Cornell University, N.Y. 223 p.

Field, D.R. and J.A. Wagar. 1973. Visitor Groups and Interpretation in Parks and Other Outdoor Leisure Settings. Journal of Environmental Education 5(1):12-17.

Effective interpretation must be based on the audience groups. Five principles in dealing with groups in interpretation: 1) Visitors and settings are diverse. 2) Visitors seek a relaxed, enjoyable atmosphere. 3) Interpretation must reward the visitor. 4) Interpretation must be understandable. 5) Effectiveness must be continually evaluated.

Gebler, C.J. 1979. Reaching Your Public Through Television. in Recreational Impact on Wildlands; Conference Proceedings. R. Ittner, et.al., eds. USDI-NPS, USDA-FS #R-6-001-1979. p. 312-313. The use of television as an educational media for wilderness management appeared to be a success in the Pacific Northwest.

Gensler, G. 1977. The Role of Interpretation in Park Management. Senior Thesis. College of Forest Resources, University of Washington.

Gibbs, R. 1977. Living History and Historic Preservation: Incompatible? In Touch 1(18):11. USDI-NPS. Washington, D.C. Interpretive demonstrations led to active citizen participation in preservation of Ft. Washington on the Potomac River at Stones River National Battlefield, Tenn.

Gilbert, C.G., G.I. Peterson, and D.L. Lime. 1972. Toward a Model of Travel Behavior in the Boundary Waters Canoe Area. Environment and Behavior 4(2):131-157.

Study concerning a theoretical model to predict BWCA behavior based on the Markov Renewal Model from the transportation field. Paper includes a discussion of internal and external characteristics relating to the model, regulative vrs. manipulative management, user types, and BWCA conditions.

Hart, P. 1980. New Backcountry Ethic; Leave No Trace. *American Forests* 86(8):38-41,51-54.

Increased wilderness impact points to the need for visitor education to change behavior patterns. This paper offers several examples and a simple test of low impact usage.

Hendee, J.C. and R.C. Lucus. 1973. Mandatory Wilderness Permits: A Necessary Management Tool. *Journal of Forestry* 71(4):206-209. Paper emphasizes that mandatory permit systems allow management to disseminate information and can aid in achieving management objectives.

Horn, E.L. 1979. Without a Trace....The Wilderness Challenge. in *Recreational Impact on Wildlands; Conference Proceedings*. R. Ittner, et.al., eds. USDI-NPS, USDA-FS #R-6-001-1979. Paper is a report on the development of a slide-tape show on the necessity of no-impact camping and techniques. The educational presentation is available and can be ordered with slides, script, and a discussion guide.

Hunt, J.D. and P.J. Brown. 19 . Who Can Read Our Writing? *Journal of Environmental Education* 2(4):27-29. Article explores a method of analysis of text to determine level of intelligence needed to comprehend the material. Study used Flesch formulas to judge readability and human interest of 18 USFS, NPS, and BLM publications intended for public consumption. Materials were judged to be more difficult than such magazines as *Harpers* and *Atlantic Monthly*, as well as receiving an interest rating of very dull.

Johnson, P.R. 1975. Protective Interpretation. *The Interpreter* 7(3):17-19.

Article discusses the use of interpretive techniques to protect native American rock art sites in a park in California.

Kneeland, D.T. 1979. Educational Programs to Reduce Impact Upon Wildlands. in *Recreational Impact on Wildlands*. R. Ittner, et.al., eds. USDI-NPS, USDA-FS. #R-6-001-1979. Summary of a study to monitor mail information packages for potential wilderness users. Article includes some of the programs tried and a discussion of management attitudes concerning the value of education to reduce impact. Methods are suggested.

Krumpe, E.E. 1979. Redistributing Backcountry Use by a Behaviorally Based Communications Device. PhD dissertation. Colorado State University, Ft, Collins, CO. 156p. Research into dispersion using a trail selector to 1) Determine its' effectiveness, and 2) Identify additional decision factors.

Approach was a success, improvements suggested, a good bibliography included. See also Krumpe and Brown, 1982.

- Krumpe, E.E. and P.J. Brown. 1982. Redistributing Backcountry Use Through Information Relating to Recreation Experience. *Journal of Forestry* 80(6):360-364.
A Yellowstone National Park controlled experiment used a trail selector brochure and map designed to enable visitors to select trails offering the type of recreation they desire and to encourage dispersion from heavily used areas. Brochure used a decision tree format with specific information on 28 lightly used trails. The experiment was successful. Good model with good theory and references.
- Kuehner, R. 1978. Visitor Behavior at Lake Tahoe Visitor Center. Association of Interpretive Naturalists Annual Workshop, Tuscon, AZ.
- Lime, D.W. 1979. Visitor Observation: A Tool for Appraising Interpretive Activities. in *Proceedings: 1979 AIN Workshop*, Bloomington, MN. p.49-54.
Observations at two USDA-FS visitor centers revealed that many visitors did not view all of the exhibits or listen to the messages in their entirety. Few asked questions or used the nearby nature trails.
- Lime, D.W. and L.C. Lucus. 1977. Good Information Improves the Wilderness Experience. *Naturalist* 28(4):18-21.
Brochure was mailed to prior BWCA users in advance to encourage dispersion. Large majority of the subsequent users avoided the crowded areas based on information from the brochure. Their advance planning was enhanced and they had a better understanding of the rules, wildlife, and safety procedures.
- Lucus, R.L. 1980. Redistributing Wilderness Use Through Information Supplied to Visitors. USDA-FS Research Paper #INT-277.
A brochure pointing out use levels in Selway-Bitterrott Wilderness was designed to encourage dispersion. The experiment met with limited success because of the late timing of the distribution of the material in the recreation planning process. Information provided was also felt to be inadequate, but it was somewhat effective with users new to the area.
- Lukens, A.J., and D.T. Taylor. 1979. Backcountry Information Posters: A Pilot Project Evaluating Winter Information Displays. *Appalachian Mountain Club*. 40p.
Study evaluated the effectiveness of posters in equipment stores and visitor centers to teach appropriate winter backcountry behavior. Questionnaires indicated posters were effective but could be improved.
- Mahaffey, B.D. 1970. Effectiveness and Preference for Selected Interpretive Media. *Journal of Environmental Education* 1(4):125-128.

Condensation of an earlier paper (Dept. Information Report #1, Dept. of Recreation and Parks, Texas A & M University, College Station, 77843). Study of leaflets, signs, and message recorders for self-guided tours, related user characteristics and preferences to the effectiveness of the various media. Order of effectiveness was: 1) recorder 2) sign and 3) leaflet. Combinations were strongly preferred.

Makruski, Ed. 198. Environmental Interpretation; The Conceptual Framework. Ohio State University.

McDonough, M., D. Field, and J. Gramann. Applying Sociological Research to Interpretation in the Northwest. *The Interpreter* 9(3):7-11.

McKee, D.T. 1971. An Annotated Bibliography of Research in Communication and Related Areas as It Concerns Interpretation at Outdoor Recreation Facilities. USDA-FS Res. Paper Unpublished (?) Manuscript.

83 references relating communications, marketing, and advertising to interpretation with a subject key.

Metheny, S.J. A Successful Campaign to Reduce Trail Switchback Shortcutting. in *Recreational Impact on Wildlands: Conference Proceedings*. R. Ittner, et.al., eds. USDI-NPS, USDA-FS #R-6-001-1979. p.217-221.

Paper discusses various management strategies; 1) Personal contact was judged to be the most effective/expensive 2) Rehabilitation and signing were effective when users understood the reasons and management objectives.

Morris, M.S. 1974. A Method for Evaluating Interpretive Activities. M.S. Thesis. Colorado State University, Ft. Collins, CO. 138p.

Morrow, P. 1977. A Study of Attitudes of State Park Visitors Toward Interpretive Programs. M.S. Thesis. California State University.

Moses, Epstein, and Wiseman, Inc. Assessing the Impact of Interpretive Programs. Prepared for the Division of Interpretation and Visitors Services, USDI-NPS.

Peart, B. and J.G. Woods. 1977. A Communication Model as a Framework for Interpretive Planning. *The Interpreter* 9(3):21-22. also in *Interpretation Canada* 3(5):22-25. Study applies the communication model of sender-message-receiver to interpretive planning. Simplifies and illustrates the components: 1) Objectives 2) Message analysis 3) Receiver analysis 4) Approach development 5) Evaluation.

Putney, A.D. and J.A. Wagar. 1973. Objectives and Evaluation in Interpretive Planning. *Journal of Environmental Education* 5(1):43-45.

Evaluation of the effectiveness of interpretation can not take place until objectives are defined: 1) Overall policy objectives.

- Roggenbuck, J.W. and D.L. Berrier. 1982. A Comparison of Two Communication Strategies in Dispersing Wilderness Campers. Journal of Leisure Research 14(1):77-89. Communication strategies were a brochure and a brochure with personal contact in an attempt to disperse campers in a heavily used meadow. Both were effective, but they were effective with different audiences. A good example of information producing behavior. Good bibliography.
- Ross, T.L. and G.H. Moeller. 1974. Communicating Rules in Recreation Areas. USDA-FS Res. Paper NE 297. A random sample of 558 Allegheny National Forest campers was tested for knowledge of rules; study found low information levels. Paper identifies target audiences and communication strategies.
- Schechter, J.S. 1975. Interpretation as a Management Tool for Sections of the Malheur Wildlife Refuge, Harney County, Oregon. M.S. Thesis. College of Forest Resources, University of Washington. Paper includes 1) A review of the area 2) Survey of the interpretive features and potential clientele 3) General interpretive applications and 4) Suggestions and management considerations for implementation.
- Schlamp, P.G. 1976. Interpretation as a Management Tool. USDA-FS Eastern Region VIS Workshop, Milwaukee, Wi. Paper cited uses of interpretation to improve the public attitude concerning control burning, fishing management policies in Yellowstone National Park, and to control ORV use in Eldorado National Forest.
- Schlamp, P.G. 1971. A Survey of Interpretive Opportunities in the Helena National Forest. M.S. Thesis. College of Forest Resources, University of Washington. Thesis covering: 1) Features of and visitors to the forest 2) A review of the existing facilities, and 3) A critique of the interpretive signs. Paper also includes suggestions for improvement and development.
- Schoenfeld, S.S. 1971. Evaluating Some Aspects of VIS Activities in National Forests. Journal of Forestry 69(5):281-284. An analytical approach to visitor information services evaluation. Paper cites need for improvement in use of information communication situations, and urges the development of knowledge concerning the user types and motivations. Suggests some interpretation methods.
- Schomaker, J.H. 1975. Effect of Selected Information on Dispersal of Wilderness Recreationists. PhD dissertation. Colorado State University, Ft. Collins, CO. 95p. First experimental design to study the effectiveness of information in dispersal of wilderness users. An information map pointing out the heavy use areas was distributed at the trailhead. The control group received no information. A mail questionnaire

determined that the attempt was unsuccessful because the information was received too late to be effective. Theoretical framework: Fishbein's model of attitudinal prediction of behavior. A good bibliography is included.

- Schomaker, J.H. and T.R. Glassford. 1982. Backcountry as an Alternative to Wilderness? *Journal of Forestry* 80(6):359-364. Paper discusses the use of backcountry areas, as opposed to designated wilderness, for many user types to protect the actual wilderness for those users who need that specific type of recreational resource. Study found that many users in roadless areas held the same values as wilderness users, hence dispersion of users that are not wilderness oriented should not be toward the roadless backcountry areas.
- Sharpe, G.W. and G. Gensler. 1978. Interpretation as a Management Tool. *Journal of Interpretation* 3(2):3-9. Paper advocates use of a team approach in management utilizing interpretation. Cites extensive examples of success in different areas of concern for the manager.
- Shaw, J., ed. *Dispersed Recreation and Natural Resource Management: A Focus on Issues, Opportunities, and Priorities: A Symposium*. Utah State University. Logan, Utah.
- Shiner, J.W. and E.L. Shafer. 1975. How Long Do People Look At and Listen To Forest Oriented Exhibits? USDA-FS Res. Paper #NE 325. Time spent looking at and listening to exhibits in Adirondack Museum in New York was compared to the time required to read the materials or listen to the taped messages. Time spent ranged from 15% to 64% of the actual time required.
- Taylor, D.T. and R.D. MacKoy. 1978. Backcountry Information and Education Recommendations. Appalachian Mountain Club, Research Dept. 11p. A survey of 1500 backcountry users in the White Mountains. Users perceived a lack of information on the topics of trails and the weather, but considered unwanted and did not seek information on safety, management restrictions, and appropriate backcountry behavior. Recommendations are included.
- USDA Forest Service. 1976. *Forest Interpreter's Primer on Fire Management*. USDA-FS, Govt. Printing Office, Washington, D.C. The increased use of control burning increases the need to educate the public.
- Van Der Smissen, B. *Bibliography of Studies and Research in Camping and Outdoor Education*. American Camping Association. 1962, 1964.
- Wagar, J.A. 1972. The Recording Quizboard: A Device for Evaluating Interpretive Services. USDAOFS Research Report #PNW-139. 12 p. Design and use of a quizboard to assess the information retained by visitors to exhibits in order to judge the effectiveness of the

exhibits. Taped messages were judged to be more effective than reading materials.

Wagar, J.A. 1976. Evaluating the Effectiveness of Interpretation. Journal of Interpretation 1(1): Paper is a general review of objectives and evaluation in interpretation. Discusses 12 techniques for evaluation. Cites early work (1976) on interpretation.

Wagar, J.A. 1976. Cassette Tapes for Interpretation. USDA-FS Research Paper #PNW-207. 20p. Portable cassette tapes were more popular and effective than either signs or leaflets. The recordings used a question/answer format.

Wagar, J.A., G.W. Lovelady, and H. Falkin. 1976. Evaluation Techniques for Interpretation: Study Results From an Exhibition on Energy. USDA-FS Res. Paper #PNW 211. Related to Wagar's other paper on evaluating interpretation cited above. Techniques for evaluation discussed include: 1) Panel of outsiders 2) Suggestion boxes 3) Observed audience attention 4) Time lapse photography 5) Volunteered comments 6) Visitor voting 7) Following visitors. Other analyses in the paper were site specific. Evaluation should be rapid to avoid resistance due to personal involvement in the early stages of a project.

Washburne, R.F. 1971. Visitor Response to Interpretive Facilities at Five Visitors Centers. M.S. Thesis. College of Forest Resources, University of Washington. 91p. Visitor interest was greatest for exhibits with motion, sound, or changing lighting, and for violent subjects. Holistic presentations are more effective than isolated facts.

Washburne, R.F. and J.A. Wagar. 1972. Evaluating Visitor Response to Exhibit Content. Curator 15(3):248-254. Paper is a summary of Washburne's thesis. Visitors to five interpretive centers were found to be highly educated, professional, white. Interest was greatest for dynamic and violent exhibits, those that used an entertainment rather than an education format, and those that were holistic in focus. Findings were judged to be in general agreement with other research.

Weeks, G. 1971. Park Ranger Plan Proves Valuable. California Parks and Recreation 13(2):4-5. Paper cites the use of interpretation to aid in law enforcement in a park setting.

Western Interpreters Association. Interpretive Research. The Interpreter 9(3):Entire issue.1977.

Winzeler, E.R. and G.J. Cheren. 1978. An Interpretive Research Bibliography. Association of Interpretive Naturalists, Inc. Darwood, MD.

- Wolf, W., P. Womble, and D. Field. 1977. Hiking the Chilkoot Trail: Implications for Interpretive Services. *The Interpreter* 9(4):xx-xx.
- Wolf, W.C. 1978. Incorporating Visitor Use Data into the Development of Interpretive Services (Case Study - The Chilkoot Trail). College of Forest Resources, University of Washington. 48p. Paper is very site specific, but the basic premise is useful in interpretive planning and evaluation: base interpretive services on the expected audience characteristics as determined by socioeconomic surveys.
- Zube, E.H., J.H. Crystal, and J.F. Palmer. 1976. Visitor Center Design Evaluation. Prepared for the Denver Service Center, NPS. Institute for Man and Environment, University of Massachusetts, Amherst, 01002. IME #R-76-5. 138p.