National Park Service
U.S. Department of the Interior

Social Science Program

Expedited Approval for NPS-Sponsored Public Surveys

1. **Project Title | Submission Date:** Preliminary study of the Tread Lightly! off highway vehicle visitor education efforts on public lands (Big Cypress, Canyonlands, Imperial Sand Dunes) | 7 / 27 / 08

2. **Abstract:**

The purpose of this research is to explore how visitors to a diverse set of public land areas respond to the "Tread Lightly" off-highway vehicle (OHV) skills and ethics education program. The three areas selected for study include two NPS units and one BLM unit.. Attitudes toward recommended "Tread Lightly" principles will be investigated in Big Cypress National Preserve (BICY) and Canyonlands National Park (CANY) and one Bureau of Land Management site, Imperial Sand Dunes Recreation Area (ISDRA). Mail-back surveys will be used, following a modified Dillman approach (2000).

(not to exceed 150 words)

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Project Information

5. **Park(s) For Which Research is to be Conducted:** Big Cypress National Preserve, Canyonlands National Park, Imperial Sand Dunes Recreation Area

6. **Survey Dates:** 8/01/2009 (mm/dd/yyyy) to 12/15/09 (mm/dd/yyyy)

7. **Type of Information Collection Instrument (Check ALL that Apply)**

X Mail-Back questionnaire ❑ **On-Site Questionnaire** ❑ **Face-to-Face Interview** ❑ **Telephone Survey** ❑ **Focus Groups**

❑ **Other (explain)**

8. **Survey Justification: (Use as much space as needed; if necessary include additional explanation on a separate page.)**

Social science research in support of park planning and management is mandated in the *NPS Management Policies 2006* (Section 8.11.1, "Social Science Studies"). The NPS pursues a policy that facilitates social science studies in support of the NPS mission to protect resources and enhance the enjoyment of present and future generations (National Park Service Act of 1916, 38 Stat 535, 16 USC 1, et seq.). NPS policy mandates that social science research will be used to provide an understanding of park visitors, the non-visiting public, gateway communities and regions, and human interactions with park resources. Such studies are needed to provide a scientific basis for park planning, development, operations, management, education, and interpretive activities.

Land managers need the ability to predict and influence recreational behavior in order to manage wildlands effectively. This includes further understanding of off-highway vehicle (OHV) drivers' practices and ethics, particularly compliance with recommended minimum-impact practices. Currently, there is currently a lack of compliance research and literature regarding minimum-impact OHV visitor education generally and Tread Lightly! (TL!) programs specifically. TL! is the most widely used minimum-impact OHV education program. Research describing how visitors perceive and respond to TL! and other minimum-impact educational programs has been described as insufficient, and the current research base and state of knowledge remains inadequate (Chavez & Knap, 2006; Vancini, 1989).

This study is designed to identify salient variables that account for OHV operators' compliance with TL! recommended practices in three different ecosystems with different types of educational efforts. The research utilizes Fishbein and Ajzen's Theory of Reasoned Action (Ajzen & Fishbein, 1980). The study also investigates from which source(s) OHV visitors learn about TL!, and whether the type of source influences their behaviors (Rogers, 1995).

The majority of items included in this questionnaire are based on earlier work by Powell, Wright, and Vagias (2008) on "Leave No Trace" practices among backcountry hikers. Items used in the earlier research were pre-tested extensively before being implemented (OMB #1024-0224, NPS 07-038).

The results will be utilized to inform management decisions regarding the future direction of the Tread Lightly! program and to improve existing educational tools to reach a broader segment of the OHV public to enhance both enjoyment and resource protection.

9. **Survey Methodology: (Use as much space as needed; if necessary**

(a) Respondent universe:
Adult visitors, age 18 or older, who are 2008 annual permit holders for OHV travel in Big Cypress (BICY); 2008 backcountry OHV permit holders in Canyonlands (CANY); and members of the American Sands Association OHV club that supports travel to the

include additional explanation on a separate page.)

Imperial Sand Dunes Recreation Area (ISDRA).

(b) Sampling plan/procedures:
A systematic random sampling technique will be used to sample OHV visitors to the three sites. The areas where data are to be collected represent a range of ecosystems and TL! education efforts. The variation in educational programming between sites means investigators will treat each unit as a case study to gain further understanding of the impact of site-specific educational approaches. No attempt will be made to generalize the findings to other contexts in which minimum-impact OHV programs are being employed.

The OHV permit holder address lists at BICY and CANY and the 2008 American Sands Association membership list will be utilized as sampling frames. The American Sands Association works closely with BLM to provide TL! educational information for ISDRA. All drivers of OHVs in BICY and CANY are required to obtain permits. A random numbers table will be utilized to identify the first individual to be selected from the mailing lists and then every k^{th} individual from the lists will be selected. The sampling interval will be determined by dividing the number of 2008 permit holders/members by the necessary sample size (700 initial contacts from each site).

(c) Instrument administration:
Selected individuals will first be sent a postcard indicating their selection for the study. Cooperation from these individuals will be solicited using a modified Dillman approach (Dillman, 2000). Individuals in the sample will be mailed an introductory letter and the survey instrument. Ten days later, those who have not yet responded will be mailed a postcard, reminding them about the survey. Approximately two weeks following the postcard mailing, respondents who have not responded will be mailed a follow-up letter and a replacement questionnaire.

(d) Expected response rate/confidence levels:
An overall response rate of 60% is expected for the mail-back questionnaire. This is expected to be consistent across all three areas studied. Although a 2007 survey of OHV permit holders at BICY only achieved a 46% response rate, the PIs and the NPS at BICY have undertaken extensive stakeholder outreach and allowed for the review of the research instruments to promote greater participation and trust in the research results. Because of this, and because of our experience using similar methods which have resulted in response rates of 70% or greater (Powell, 2004; Powell, Wright, & Vagias, 2008), we consider 60% response rate to be a reasonable estimate of the final response rate.

A sample of approximately 700 individuals from each site will be mailed the survey. Approximately 420 individuals per research site are expected to complete and return the survey. A confidence interval of +/-5.0% is expected for each research site.

(e) Strategies for dealing with potential non-response bias:
A portion of the original sample that did not return the questionnaire will be contacted via telephone in order to ascertain potential differences between those who returned a completed questionnaire and those who chose not to participate. Telephone numbers are available from OHV permits at CANY and BICY and from the American Sands Association membership list at ISDRA. In addition to comparing respondent data with available frame data, we will attempt to complete 30 phone interviews from non-respondents. Non-response bias will be checked by sampling the age, sex, and experience use history of non-respondents and statistically comparing these data with those of the respondents.(script attached in appendix).

(f) Description of any pre-testing and peer review of the methods and/or instrument (recommended):

A number of processes and procedures were undertaken to develop the Tread Lightly questionnaire based on recognized social science research procedures (Babbie, 2001; DeVellis, 2003; Foddy, 1993; Fowler, 1993). The TL! instrument is identical for all three study locations, except where exact locations are referenced in the questionnaire. There are, however, additional modules of questions specific to each research site included at the request of agency personnel in the respective units. (Section G in the attached questionnaire).

Developing the questionnaire involved the following processes:

First, the initial draft of the survey instrument was based on prior research, most notably the recently completed "Leave No Trace" (LNT) study that also assessed a minimum-impact visitor education program and utilized a related theoretical framework and a similar data collection method (Powell, Wright, & Vagias, 2008). The LNT questionnaire was extensively pilot tested and refined prior to collecting data in three NPS units in 2007/08. After analysis of these data, including writing an NPS Technical Report (Powell, Wright, & Vagias, 2008), a Ph.D. dissertation (Vagias, 2009), and three journal articles (in final draft stages) (Vagias, Powell, & Moore, a+b, Vagias & Powell), the researchers further refined the TL! questionnaire.

Second, a literature review of previous OHV research was undertaken and an item pool developed. and refined based on this review (Cordell, Betz, Green, & Owens, 2005; Fly, Stephens, Askins, & Hodges, 2002; Lewis & Paige, 2006; Lord, Elmendorf, & Strauss, 2004; Schoenecker, 2006; Smail, 2007; Yankoviak, 2005). Each of these studies was reviewed and the primary authors contacted to obtain full questionnaires.

After the initial item pool was developed, the questionnaire was constructed based on the results of the LNT study, the theoretical framework, and the research questions.

The TL! survey instrument was reviewed by NPS staff from BICY and CANY and by BLM staff at ISDRA..

After review by agency personnel, ORV stakeholder groups at two of the study sites and TL! staff members at the national Tread Lightly office completed an extensive review and provided written and oral comments. During this stage, the researchers attended a public BICY ORV Advisory Committee meeting in Everglades City, FL to present the purpose of the study and how the results will be used. Questions were answered, and a subcommittee of BICY ORV enthusiasts/representatives was formed to review and comment on the questionnaire and research design. Similar outreach efforts were undertaken in ISDRA with OHV stakeholders and BLM staff via conference calls.

Next, all items in the survey, especially questions 9 and 12, were extensively reviewed by stakeholders and comments were received and incorporated. Reviewers were asked to identify questions that might elicit socially desirable answers (King & Bruner, 2000) or were confusing or poorly worded. This process had similar goals and results to cognitive testing (Conrad, Blair, & Elena, 1999; Presser, et al., 2004).

10.	**Total Number of Initial Contacts | Expected Respondents:**	Survey: 2100 Phone: 50	1260 30	11.	**Estimated Time to Complete Instrument (mins.):**	Survey: 1 Phone: 1	15 3	**Total Burden Hours:**	347

13. **Reporting Plan:**

(a) General: A full technical report of results will be written and submitted to each of the three participating research sites in May 2009 (depending on approval date). Additionally, a copy of the survey report will be submitted to the NPS Social Science Program in order to be archived. Finally, subsequent peer-reviewed journal articles will be submitted in 2010.

(b) Statistical Analyses: Data will be subjected to the following analyses upon conclusion of collection phase:

- Assessment of quality/completeness of data. This includes examination for coding errors, univariate and multivariate outliers, and distribution of missing data.
- Descriptive statistics. This includes developing a description of the sample, comparing respondents to nonrespondents, testing the reliability of the study's scales, and correlation analysis of the study's variables.
- Inferential statistics. This includes model building utilizing multiple regression analyses, path analysis, or structural equation modeling techniques.

The study is designed to be a series of three case studies. The sites do not represent all NPS parks where OHV use occurs. Consequently, the results cannot be generalized beyond the three parks. Nor can they be combined across the 3 study sites.

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