

1 Supporting Statement B for Paperwork Reduction Act Submission

Survey of Residents' Attitudes on Jaguar Conservation

OMB Control Number 1018-XXXX

1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample must be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection has been conducted previously, include the actual response rate achieved.

This is a one-time data collection event. The potential respondent universe is comprised of two main groups:

- Residents of Pima, Santa Cruz, and Cochise counties in Arizona and Hidalgo County, New Mexico.
- Members of selected stakeholder groups from the above listed counties.

The potential respondent universe for Group 1 is 1,163,923. Residents (Group 1) will be randomly sampled, with a target quota for each of the four counties being surveyed. The quota is based on the population of the counties, but with the consideration that rural residents be adequately sampled. A disproportionate random sample is justified to ensure that exurban and rural residents are included in the survey (Bernard 2011, p 155). Below is a table showing the population of each county, the percent of the total population residing in each county, and the interview quota for each county. Population numbers are drawn from the 2010 U.S. Census.

County	Population	Percent Total	Interview Quota
Pima County, AZ	980,263	84	60
Santa Cruz County, AZ	47,420	4	10
Cochise County, AZ	131,346	11	20
Hidalgo County, NM	4,894	1	10
Total	1,163,923	100	100

U.S. Census Bureau: State and County QuickFacts. Accessed online: <http://quickfacts.census.gov/qfd/index.html#>

A total of 100 interviews will be completed with residents. Social science studies indicate that in-person interviews have a higher response rate than mail, internet-based, or telephone surveys (Bernard 2011; Couper 2011; Denzin and Lincoln 2011; Spooner et al 1997; Willits and Luloff 2014). The literature surveyed indicated an in-person response rate from 74% to 97%. We estimate, therefore, an 80% response rate from Group 1, such that nonresponse bias will be minimized. Thus, we estimate that 125 people will be contacted and asked to participate in order to reach our target of 100 resident interviews. Residents will be randomly selected and asked to participate at public places within each county, an in-person interview method referred to as "street-intercept" sampling (Bernard 2011).

Stakeholders (Group 2) will be purposively sampled. In order to maximize the variation in our sample of stakeholders and to achieve saturation in responses from stakeholders, 100 interviews will be conducted. A list of stakeholder groups was developed to identify those groups whose missions or professional activities are related to or might be affected by jaguar conservation. The stakeholder groups are drawn from the following categories: land-based business owners/operators; government agency personnel; local wildlife associations; conservation and/or recreation organizations. Stakeholder representatives will be asked to participate based on their membership in one of these groups/organizations. Stakeholder groups will be balanced to insure representation in each category of Arizona and New Mexico-based groups/organizations. Given the stakeholder groups' interest in jaguar conservation, and our in-person interview format, we expect a 100% response rate.

The overall expected response rate for our 200 interviews is 90%. This study design method will minimize nonresponse bias in our data collection. Our survey is composed of qualitative questions and analyses will not be generalized to the respondent universe. Given the goals of the survey and chosen methods, our sample size, sampling method, and expected response rates are suitable.

2. Describe the procedures for the collection of information including:

- * **Statistical methodology for stratification and sample selection,**
- * **Estimation procedure,**
- * **Degree of accuracy needed for the purpose described in the justification,**
- * **Unusual problems requiring specialized sampling procedures, and**
- * **Any use of periodic (less frequent than annual) data collection cycles to reduce burden.**

This is a one-time data collection event, which will minimize burden. The proposed information collection uses a qualitative methodology to understand resident and stakeholder knowledge, attitudes, and beliefs about jaguars in the Arizona and New Mexico counties with designated critical habitat for jaguars.

The method of qualitative, semi-structured interviews was chosen to match the purpose of this data collection: to describe the range of attitudes, perceptions and knowledge about jaguars held by residents and stakeholder groups in this region; to explain the relationships between responses, individually and between groups; and to identify the attitudes about jaguars and conservation that present barriers and/or opportunities to Service conservation efforts.

In a semi-structured interview, most questions are open-ended. While a specific list of questions are asked of each participant, the interview is not rigidly scripted. Rather, questions are asked in a conversational manner, such that the exact wording and order of questions is adjusted to maintain an open flow of dialogue between participant and interviewer. This flexibility is necessary to the interviewer's ability to establish a rapport with the participant, and encourage a free flowing dialogue. This method of conducting interviews yields fuller responses, enables the interviewer to ask follow up questions, and results in more information than can be obtained through mail-in, internet-based, or telephone surveys (Bernard 2011; Denzin and Lincoln 2011). The base questions to be asked are included on the submitted survey instrument. Interviewers will take notes of participants' responses. These notes will be transcribed following the interview. While names and identifying details will not be purposely collected, any incidental recording of such details in interviewers' notes will be deleted from the data set at the transcription point, before analysis is undertaken.

The interview instrument includes one section of demographic questions. The demographic questions will allow us to characterize our sample and test for the impacts of these variables on responses to the open-ended questions. The proposed data collection will yield new information and contribute to the larger scientific study of large carnivore conservation.

The open-ended question responses will be analyzed through content and narrative analysis. Narrative and content analysis methods identify key themes in a text (assigning them to specific codes). Themes are examined to understand patterns of responses (Bernard 2011). Themes and patterns of responses are then related to each other and to other variables, such as group membership, demographic responses, and nominal data derived from the coding of the interview text. Aside from descriptive statistics of responses, the qualitative questions are not analyzed with quantitative methods. Narrative and content analysis of survey responses will be stratified by county and by demographics collected (i.e. income, education, rural/urban residency).

This qualitative methodology will enable a full understanding of the opportunities and barriers to jaguar conservation in this region, and thus is a good fit for the purposes of the proposed information collection. This method of conducting a relatively small number (200) of in-depth interviews, which allow for open-ended responses, is more appropriate to the purposes of this data collection than a larger quantitative survey.

3. Describe methods to maximize response rates and to deal with issues of nonresponse. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

The in-person interview format will maximize response rates. In order to achieve the estimated 100 interviews, we will contact relevant stakeholder groups and establish the rationale and utility of the information collection to the Service's jaguar conservation efforts. We will use a street intercept method to randomly sample residents in each of the four counties identified. In eliciting participation, we will continue asking a random sample of residents to participate until we reach the number of resident respondents required. With the expected response rate of 80%, we estimate that we will contact 125 residents.

Given the purposes of this information collection, and the relatively small number (200) of respondents required, this method of sample selection is justified and will maximize response rates and minimize nonresponse bias. Item nonresponse bias is minimized, as well, with clear questions, open-ended questions, and questions that are relevant to the stated purpose of the information collection. With a sample size of 200, it is not possible to identify or control for nonresponse bias.

In quantitative surveys that are mailed to respondents, unit nonresponse bias can be identified, through comparison of the demographic profiles of nonresponders with responders and the population. Item nonresponse bias can also be identified in large sample size surveys. With our qualitative methodology, small sample size, and street-intercept method of contacting potential respondents, we will not be able to test for unit nonresponse. We will not have any demographic information on nonresponders to test for systematic bias due to unit nonresponse. We will tabulate and report the number of survey items that respondents refuse to answer (item

nonresponse). Given our small sample size and expected high response rate, due in part to the in-person interview method, we do not expect to have a high enough number of item nonresponses to statistically compare to survey respondents or to the population.

One strategy to address nonresponse bias is to only generalize to the respondents, not to the population. The purpose of our in-person surveys and qualitative interviews generally, is *not* to produce results that are generalized to the population. Therefore, the impact of nonresponse bias on the analysis is minimal. Rather, the goal of the information collection is to better understand the reasoning behind people's attitudes to jaguars in this region, and the factors and policies that they describe affecting their attitudes. This goal requires the in-depth answers that result from in-person interviews in which interviewer and respondent engage in a structured conversation. Respondents' answers, however, cannot be considered representative of the population. The insight into the processes that affect people's attitudes and the identification from respondents' answers of actions the Fish and Wildlife Service might take to positively affect attitudes to both jaguars and jaguar conservation will be very valuable.

The total number of in depth interviews, including 100 with members of key stakeholder groups, is sufficient to achieve the accuracy and reliability needed for the intended purpose of this data collection.

- 4. Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.**

Several survey questions have been pretested with 9 respondents through collaboration with University of Arizona researchers who are interviewing area ranchers for the Landowner Incentive Project.

- 5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.**

The following individuals have been consulted on the design of our survey instrument:

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Harris Environmental Inc. is the contractor who will collect and analyze information for the Fish and Wildlife Service.

Cited References

Bernard, H.R. 2011. *Research Methods in Anthropology: Qualitative and Quantitative*, 4th ed. New York: Alta Mira Press.

Couper, M. 2011. The Future of Modes of Data Collection. *Public Opinion Quarterly* 75(5): 889 - 908.

Denzin, N. and Y. Lincoln. 2011. *The SAGE Handbook of Qualitative Research*, 4th ed. Los Angeles: SAGE Publications, Inc.

Spooner, C., Bishop, J., and J. Parr. 1997. Research methods for studying injecting drug users in a rural center. *Drug and Alcohol Review* 16: 349-355.

Willits, F., Luloff, A.E., and G.L. Theodori. Monitoring Controversial Environmental/ Natural Resource Issues: Differential Effects of Telephone and Mail Surveys. *Society and Natural Resources* 27(12): 1355-1358.