

**Community-based Tick Control for the Prevention of Rocky Mountain spotted fever in  
Hermosillo, Mexico**

Request for OMB Approval of New Data Collection Instruments

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Statement B

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## TABLE OF CONTENTS

<b>PART B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS</b> .....	3
1. Respondent Universe and Sampling Methods.....	3
2. Procedures for the Collection of Information.....	3
3. Methods to Maximize Response Rates and Deal with Non-response.....	4
4. Test of Procedures or Methods to be Undertaken.....	5
5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data.....	5

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## **PART B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS**

### **1. Respondent Universe and Sampling Methods**

The respondent universe for the registration form will include an adult member of all 500 households in the target community of Poblado Miguel Aleman. Registration information will only be collected at one time at the start of the intervention. The respondent universe for the knowledge attitudes and practices survey will consist of 400 adult members of households within the target intervention community of Poblado Miguel Aleman in Hermosillo, Mexico, and 400 adult members of a control community also in Hermosillo, Mexico. Participating individuals will be solicited for their participation at two times during the data collection year, once for the pre assessment and a second time for the post. Individuals will likely be Mexican citizens, some of indigenous descent.

Collaboration with local community-based organizations and leaders will help ensure that data collection activities are conducted in a culturally and linguistically appropriate manner, and will also enhance participation from community members, which will reduce non-response bias. Sampling methodologies are preferred to census to reduce the burden on the populations. In total it is estimated that approximately 1,300 individual respondents may participate in data collection efforts under this data collection.

### **2. Procedures for the Collection of Information**

#### *Household registration:*

There are roughly 500 homes in the target community, estimating one respondent per household will be contacted for registration activities. Registration will be conducted via in-person interviews with an adult member of the household, preferably the homeowner. Registration information will include contact information for the consenting household member as well as information regarding number of members of the household, number of dogs per household, and any tick habitat risk factors which may be important in the program intervention. All homes wishing to participate in the program intervention will be required to provide the information collected on this form. This activity will involve no sampling or statistical methods. The purpose of this data collection is to gather consent from the homeowner, or other adult member of the household, to receive the project intervention items including environmental pesticide and tick collars for dogs. Questions involved in the registration of an individual household are used to provide basic contact information in case of emergencies, determine the number of dogs per household (i.e. number of tick collars that need to be provided) and assess the environmental risk factors which may impact pesticide application (e.g., is there a water source on the premises? are there tick harborage areas near the home? etc.).

#### *Project intervention:*

The project intervention will involve placing long lasting tick collars on all dogs in the community, providing routine acaricide treatment to the home and yard of registered participants and providing education at every interaction with community residents and homeowners. Progress in the intervention community will be marked by routine evaluation of tick burden in the environment and on dogs. The intervention and control communities will both participate in knowledge, attitudes, and practices (KAP) surveys before and after the intervention, and results will be compared. The control community was selected because it has a similar size, socioeconomic status, RMSF case burden, ecologic setting and yet it is geographically isolated from the intervention area (meaning that carry-over of project interventions is unlikely). The control community will receive education following each of the surveys, but tick control will be restricted to routine practices which are currently available throughout the state, which includes seasonal pesticide fogging (targeted towards mosquito prevention) and does not include provision of acaricidal products for dogs.

*Pre and post intervention knowledge, attitudes, and practices (KAP) surveys:*

Pre and post KAP surveys will be conducted in-person by trained interviewers on the project team. Households will be randomly sampled within the intervention and non-intervention community using numbered community maps. A maximum of 400 homes will be selected in the intervention area, and 400 homes in the control area will be asked to respond to the pre-survey at the start of the intervention, and then again at the end of the intervention (post survey). The same homes will be visited in the initial and final surveys. Homes will be sampled without replacement. The use of simple but scientifically sound sampling methods and power calculations will ensure that RZB collects data with enough accuracy to assess the efficacy and impact of the program intervention.

Data collection will be conducted to obtain information related to cases of rickettsial disease and program efficacy. For the pre and post KAP survey, 60-70% of the homes will be randomly sampled in the intervention area, as well as 60-70% of the homes in a comparably sized control community. This will allow for the comparison of key indicators between the intervention and control communities while accounting for a 20% refusal rate.

Sample size calculations for case control study using Fleiss statistical methods for rates and proportions, formulas 3.18 and 3.19 in Open Epi sample size calculator.

<b>Population of households in intervention area</b>	<b>Ratio of intervention to controls</b>	<b>Estimated percent frequency in intervention community (exposed)</b>	<b>Confidence level</b>	<b>Power</b>	<b>Estimated percent frequency in control community (unexposed )</b>	<b>Sample size of intervention homes</b>
500	1.0	20%	95%	80%	50%	39
500	1.0	10%	95%	80%	50%	20
500	1.0	1%	95%	80%	50%	15

500	1.0	42%	95%	80%	50%	612

Two surveys will be conducted, one prior to the program intervention (pre), and one following the program intervention (post). The same homes that were sampled in the pre survey will be visited again in the post survey. The participating communities contain migrant populations so although the same homes will be visited for both pre and post surveys, some turnover of residents is expected.

Survey questions may include:

- Knowledge about tickborne disease
- Knowledge of how to prevent tickborne disease
- Attitudes towards pesticide use
- Attitudes of animal control practices
- Satisfaction with community-based interventions
- Current tick prevention practices (including environmental and veterinary acaricide applications)
- Frequency of contact with risk factors such as free-roaming dogs
- Comment on the number of ticks they have observed in the household, in the yard, on domestic animals and on children

Respondents will be adult members of households within the intervention community or the control community of comparable size. Respondents will be visited at their home site and asked if they would like to participate. We estimate roughly 20% refusal rate.

### **3. Methods to Maximize Response Rates and Deal with Non-response**

RZB and collaborating partners will make every effort to contact potential participants in a study. We will attempt to contact a participant at least three times before deeming them ‘lost.’ Questionnaires will be designed to be administered in less than 20 minutes, so the burden on participants should be sufficiently low to maximize response rates. Surveys and registration interviews will be offered in English, Spanish, or local dialect as is appropriate for the population. Respondents will be informed of the time it will take to complete the survey, how their answers will be used, and will address data security and anonymity with respondents.

#### **B.4. Test of Procedures or Methods to be Undertaken**

Before any information collection is implemented, instruments and method of data collection will be determined. Collaboration with local community-based organizations and leaders will help ensure that data collection activities are conducted in a culturally and linguistically appropriate manner, and will also enhance participation from community members, which will reduce non-response bias. Collection instruments have been piloted with fewer than 10 local individuals prior to implementation to ensure that questions were easily understood and locally appropriate.

## **B.5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data**

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Members of the Rickettsial Zoonoses Branch, the Division of Global Migration and Quarantine, and the University of Sonora School of Medicine may be involved in the design, collection, and analysis of the data collected using this survey instrument.