

# **Assessing the Capacity of Vector Management Programs in the United States to Provide Comprehensive Community-level Tick Management Services**

Request for OMB approval of a New Information Collection

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## **Supporting Statement A**

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- **Goal of the study:** Determine the interest and capacity of current mosquito control agencies and companies to develop comprehensive tick control programs.
- **Intended use of the resulting data:** Data will be shared with the mosquito control community at meetings and published in a peer-reviewed journal with high readership in the target community.
- **Methods to be used to collect:** A digital survey will be distributed through using existing professional networks.
- **The subpopulation to be studied:** Vector control agencies and companies operating in Northeast, Mid-Atlantic, Upper Midwest, and Pacific coast states.
- **How data will be analyzed:** The analyses will mostly be descriptive, but some data will be analyzed using a series of ANOVAs and post-hoc Tukey HSD tests, or if the data do not conform to the assumption of normality, then data will be analyzed using a Kruskal-Wallis Test and a post-hoc Dunn's Test.

## 1. Circumstances Making the Collection of Information Necessary

The geographic range of medically important ticks and the incidence of tickborne diseases are increasing in the US, with expanding foci in the Northeast, mid-Atlantic, Upper Midwest, and Pacific coast (Kugeler et al. 2015, Eisen et al. 2016, Fleshman et al. 2021, Fleshman et al. 2022). Personal tick bite prevention methods are not widely practiced by the public (Niesobecki et al. 2019), and there are currently no vaccines for tickborne diseases in the US. Even if a Lyme disease vaccine is successfully developed and distributed, a plethora of tickborne bacterial, parasitic and viral pathogens pose persistent risks to the public, necessitating interventions that reduce the risk of tick bites. Tick control implemented by property owners and private pest management firms on residential properties is currently the primary mechanism for tick management in the US, but has not effectively addressed the rising incidence of tickborne diseases (Eisen and Stafford 2021). Many states maintain extensive mosquito management program networks and, in some states, such as New Jersey, there is mounting public and legislative pressure to include tick management in existing vector management programs. Other states have minimal or no formal, state, or local-level vector management capacity. In states without vector management programs, neither tick control program services nor the logistical framework to implement them have been fully assessed (Mader et al. 2020). While new tick control methods are being tested and the literature shows promising results from acaricide and host-targeted interventions there are currently no organized comprehensive tick management programs to test and deploy these methods on larger scales.

Previous surveys have focused on private pest management firms or agencies in a single state (Schultze et al. 1997, Stafford 1997, Jordan and Schultze 2020). The overall capacity for publicly-funded comprehensive tick management in the regions of interest remains poorly understood, especially in high incidence areas. Data collected by engaging vector management program staff will inform the development of sustainable and effective community-level tick management programs by assessing the feasibility of program components, the resources necessary to add new functions to existing vector management programs, and the expected costs associated with delivering comprehensive tick

management services. This survey will identify robust vector management programs with which CDC can partner to refine guidance for the development of comprehensive community-level tick management programs, which can be adapted to specific regional ecologies and communities. Ultimately, this survey is an important first step toward developing a community of practice for publicly-funded, comprehensive tick management programs in the US. The survey will lay the groundwork for efforts to establish local entities capable of first evaluating the efficacy of tick control methods, and then broadly deploying those measures proven effective, and publicly-acceptable in order to a) reduce the number of infected ticks in the environment and b) reduce human bites by infected ticks.

- Eisen, R. J., Eisen, L., & Beard, C. B. (2016). County-scale distribution of *Ixodes scapularis* and *Ixodes pacificus* (Acari: Ixodidae) in the continental United States. *Journal of Medical Entomology*, 53(2), 349-386.
- Eisen, L., & Stafford III, K. C. (2021). Barriers to effective tick management and tick-bite prevention in the United States (Acari: Ixodidae). *Journal of medical entomology*, 58(4), 1588-1600.
- Fleshman, A. C., Graham, C. B., Maes, S. E., Foster, E., & Eisen, R. J. (2021). Reported county-level distribution of Lyme disease spirochetes, *Borrelia burgdorferi* sensu stricto and *Borrelia mayonii* (Spirochaetales: Spirochaetaceae), in host-seeking *Ixodes scapularis* and *Ixodes pacificus* ticks (Acari: Ixodidae) in the contiguous United States. *Journal of Medical Entomology*, 58(3), 1219-1233.
- Fleshman, Foster, E., A. C., Maes, S. E., & Eisen, R. J. (2022). Reported county-level distribution of seven human pathogens detected in host-seeking *Ixodes scapularis* and *Ixodes pacificus* (Acari: Ixodidae) in the contiguous United States. *Journal of Medical Entomology*, *In Press*.
- Jordan, R. A., & Schulze, T. L. (2020). Availability and nature of commercial tick control services in three Lyme disease endemic states. *Journal of Medical Entomology*, 57(3), 807-814.
- Kugeler, K. J., Farley, G. M., Forrester, J. D., & Mead, P. S. (2015). Geographic distribution and expansion of human Lyme disease, United States. *Emerging infectious diseases*, 21(8), 1455-1457.
- Mader, E. M., Ganser, C., Geiger, A., Harrington, L. C., Foley, J., Smith, R. L., Mateus-Pinilla, N., Teel, P.D., & Eisen, R. J. (2021). A survey of tick surveillance and control practices in the United States. *Journal of medical entomology*, 58(4), 1503-1512.
- Niesobecki, S., Hansen, A., Rutz, H., Mehta, S., Feldman, K., Meek, J., Nicolaia, L., Hook, S., & Hinckley, A. (2019). Knowledge, attitudes, and behaviors regarding tick-borne disease prevention in endemic areas. *Ticks and tick-borne diseases*, 10(6), 101264.
- Schulze, T. L., Jordan, R. A., & Hung, R. W. (1997). Availability and nature of commercial tick control services in established and emerging Lyme disease areas of New Jersey. *Journal of Spirochetal and Tick Borne Diseases*, 4, 44-48.
- Stafford III, K. C. (1997). Pesticide use by licensed applicators for the control of *Ixodes scapularis* (Acari: Ixodidae) in Connecticut. *Journal of medical entomology*, 34(5), 552-558.

Authorizing legislation: Section 301 of the Public Health Service Act (42 U.S.C. 241) (Attachment 1).

## 2. Purpose and Use of Information Collection

Tick control is currently the primary mechanism for tick-bite prevention in the US, but area-wide deployment remains a major issue. This survey will focus on current vector control operators in the

Northeast, Mid-Atlantic, Upper Midwest, and Pacific coast to determine their interest and capacity to deploy tick control. The information derived from the responses to this survey are an important early step toward the development of comprehensive tick control services as new methods are developed and tested. These services have the potential to dramatically reduce the human incidence of tick-borne diseases in the US.

We estimate that we should have approximately 300 respondents, with ~200 from those working in public vector control agencies and an additional 100 from private vector control. These numbers are extrapolated from response rates of previous surveys of these communities (Burtis et al. 2021, Jordan and Schultze 2020, Mader et al 2021) and our team's knowledge of the number of state and local vector control agencies in the targeted area. The question logic is highly adaptive and the total length to complete the survey will depend upon the answers selected. Those writing the survey and a selection of team members have run through the survey multiple times and it generally takes between 10 – 20 minutes to complete the survey. Similarly, the section focused on private vector control usually takes between 5 – 10 minutes to complete. This survey will be deployed once, with possible annual follow-ups if we do not receive enough responses in a single year. Targeted agencies or companies will only be asked to fill out the survey a single time.

Burtis, J. C., Poggi, J. D., McMillan, J. R., Crans, S. C., Campbell, S. R., Isenberg, A., Pulver, J., Casey, P., White, K., Zondag, C., Badger, J. R., Berger, R., Betz, J., Giordano, S., Kawalkowski, M., Petersen, J. L., Williams, G., Andreadis, T. G., Armstrong, P. M., & Harrington, L. C. (2021). NEVBD pesticide resistance monitoring network: establishing a centralized network to increase regional capacity for pesticide resistance detection and monitoring. *Journal of Medical Entomology*, 58(2), 787-797.

Jordan, R. A., & Schulze, T. L. (2020). Availability and nature of commercial tick control services in three Lyme disease endemic states. *Journal of Medical Entomology*, 57(3), 807-814.

Mader, E. M., Ganser, C., Geiger, A., Harrington, L. C., Foley, J., Smith, R. L., Mateus-Pinilla, N., Teel, P.D., & Eisen, R. J. (2021). A survey of tick surveillance and control practices in the United States. *Journal of medical entomology*, 58(4), 1503-1512.

### **3. Use of Improved Information Technology and Burden Reduction**

The survey will be distributed digitally using REDCap. The survey uses adaptive logic to reduce the number of questions that each respondent will need to answer, thereby reducing response times. Data will be stored in a secure REDCap platform and will not contain personally identifiable information.

### **4. Efforts to Identify Duplication and Use of Similar Information**

CDC is not aware of the availability of any similar information.

### **5. Impact on Small Businesses or Other Small Entities**

This data collection will solicit responses from private and public vector control companies, some of which are small businesses or local agencies. Participation in this survey is entirely voluntary. The survey uses adaptive logic to reduce the number of questions that each respondent will need to answer,

thereby reducing response times. Specifically, private companies will be asked a very specific subset of questions. For agencies, the adaptive logic is based upon the program’s current activities and capacities, so smaller agencies will generally be asked fewer questions due to their more limited capacity. This will reduce response times. Questions have been held to the absolute minimum required for the intended use of the information.

## **6. Consequences of Collecting the Information Less Frequently**

This is intended to be a one-time collection in a single year. If we do not receive sufficient responses in our first year we distribute the survey for a second year. If this is the case, we would target localities from which we have not received responses to reduce the overall burden on our target community. As mentioned above, we are only asking for a single response from each agency or company.

## **7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5**

This request fully complies with the regulation 5 CFR 1320.5.

## **8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency**

A. A 60-day Federal Register Notice was published in the *Federal Register* on May 13<sup>th</sup>, 2022, vol. 87, No. 93, pp. 29321 (Attachment 2). CDC did not receive public comments related to this notice.

B. We consulted with researchers from CDC-funded regional Centers for Excellence in Vector-Borne Diseases to ensure our questions were understandable and well-focused on current tick control practices and research.

## **9. Explanation of Any Payment or Gift to Respondents**

CDC will not provide remuneration or incentives to participants.

## **10. Protection of the Privacy and Confidentiality of Information Provided by Respondents**

No PII is going to be collected as part of this survey. CDC’s Information Systems Security Officer reviewed this submission and determined that the Privacy Act does not apply.

## **11. Institutional Review Board (IRB) and Justification for Sensitive Questions**

### Institutional Review Board (IRB)

NCEZID’s Human Subjects Advisor has determined that information collection is not research involving human subjects. IRB approval is not required.

### Justification for Sensitive Questions

There are no planned sensitive questions.

## **12. Estimates of Annualized Burden Hours and Costs**

A. Estimated Annualized Burden Hours

Type of Respondent	Form Name	No. of Respondents	No. Responses per Respondent	Avg. Burden per response (in hrs.)	Total Burden (in hrs.)
Public Vector Control Operators	Assessing the capacity of vector management programs in the US to provide comprehensive community-level tick management services	200	1	0.25	50
Private Vector Control Operators	Assessing the capacity of vector management programs in the US to provide comprehensive community-level tick management services	100	1	0.13	13
<b>Total</b>					<b>63</b>

B. Estimated Annualized Burden Costs

Type of Respondent	Form Name	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Public Vector Control Operators	Assessing the capacity of vector management programs in the US to provide comprehensive community-level tick management services	50	\$19.54 (reference: occupation code 37-2021 from the department of labor website)	\$977.00

Private Vector Control Operators	Assessing the capacity of vector management programs in the US to provide comprehensive community-level tick management services	13	\$19.54 (reference: occupation code 37-2021 from the department of labor website)	\$254.02
<b>Total</b>				\$1,231.02

**13. Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers**

There are no costs to respondents other than their time to participate.

**14. Annualized Cost to the Government**

The estimated cost for the federal government is calculated to be approximately 5% of the workload of one GS-12 step 3 federal government employee salary at the Denver, CO locality:

Contract and Personnel	Role	Average Cost
Federal employee costs, per information collection 5% workload for one GS-12 at \$93,325/year)	1 GS-12 FTE (5%)	\$4,666.25

**15. Explanation for Program Changes or Adjustments**

This is a new information collection.

**16. Plans for Tabulation and Publication and Project Time Schedule**

Project Time Schedule	
Activity	Time Schedule
Survey distributed to target community	Jan 2023 – May 2023
Data Organization and analysis	May 2023 – Dec 2023
Survey distributed to target community <i>only if more responses are needed</i>	Jan 2024 – Mar 2023
Manuscript preparation and submission	Mar 2023 – Jun 2023 (dates are approximate and will be moved up if survey does not need to be distributed for a second year).

**17. Reason(s) Display of OMB Expiration Date is Inappropriate**

No exemption is being requested. The display of the OMB Expiration date is not inappropriate.

**18. Exceptions to Certification for Paperwork Reduction Act Submissions**

There are no exceptions to the certification.

**Attachments**

1. Authorizing Legislation
2. Published 60-Day FRN
3. Information Collection instrument