



The Role of Local Environmental Health Departments in Tick-Related Activities and Services

July 2019



Executive Summary

Key findings, conclusions, and recommendations

Executive Summary

Tickborne diseases increasingly threaten the health of people in the United States. Local health departments are the “boots on the ground” in preparing for, responding to, and recovering from disease outbreaks and other public health emergencies.

However, little is known about the role local environmental health (EH) professionals play in tick-related activities, such as the surveillance and control of ticks across the country. To better understand this role, the National Association of County and City Health Officials (NACCHO) conducted key informant interviews with eight local EH departments and one tribal EH department.



Executive Summary

KEY FINDINGS FROM THE NINE RESPONDENTS

THE LANDSCAPE

- Local EH professionals are commonly involved in passive tick surveillance and community education and outreach but are less likely to be involved in tick control and management activities.
- Local EH professionals utilize resources from the Centers for Disease Control and Prevention (CDC) website, state health departments, and local universities to answer tick-related questions.
- Local EH professionals find it useful to partner both internally and externally for tick-related activities. Partnerships increase capacity to conduct tick-related activities such as public outreach, surveillance, control, and management.
- Local EH professionals are aware of current and emerging tick issues in their jurisdiction. Lyme disease is the top concern for many respondents.

CHALLENGES

- Local EH professionals face barriers to performing tick-related activities, including lack of direct funding and staff. In some jurisdictions, the public, upper-level management/board of health, and medical community are unaware that ticks are an issue.
- Uniform training is not available for local EH professionals that conduct tick-related activities.

OPPORTUNITIES

- Routine tick surveillance, even on a small scale, can establish baselines and provide insight into trends.
- EH professionals can use a community health improvement plan to identify ticks as a priority for their community and help justify resourcing tick-related activities.
- Engaging constituents in decisions and development of tick-related policy can provide understanding into community concerns and priorities.
- Additional training and resources would be helpful for local EH professionals performing tick-related activities.

Executive Summary

CONCLUSIONS AND RECOMMENDATIONS

The information collected as part of the key informant interviews represents a novel contribution to the knowledge base on how local EH professionals are conducting tick surveillance and control activities across the country. This effort provides valuable information on the strategies, challenges, and needs related to tick surveillance and control activities present in local EH departments.

Respondents shared the strategies they use to conduct tick-related activities and to maximize resources by collaborating with internal and external partners. However, local EH professionals struggle with performing tick-related activities due to barriers such as funding and staff constraints. A more comprehensive understanding of tick surveillance and control activities in the U.S. is necessary to further identify needs and gaps.

NACCHO, federal agencies, and other national organizations can assist local EH professionals in performing and enhancing tick-related activities through providing:

- Tools and resources for tick education and outreach to the public, local media, upper-level management/Boards of Health, and medical community to help elevate community awareness of local tick issues;
- Recommendations on uniform core tick competencies and recommended trainings for local EH professionals;
- Resources to local EH professionals on how to form partnerships with internal and external collaborators for tick-related activities;
- Sustainable funding and resources dedicated to local vector programs to maintain properly trained staff and adequate supplies;
- Guidance for local EH professionals on how to start a local tick program; and
- Additional tick training and resources that would aid and enhance local EH professional tick-related activities.

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Background

Project background, objectives, and methods

Background

THE IMPACT OF TICKS ON PUBLIC HEALTH

According to the CDC, “tickborne diseases increasingly threaten the health of people in the United States. The growing threat includes newly discovered disease-causing germs, an increasing number of reported tickborne illnesses, expanding geographic ranges for ticks, and a novel tick species found in the United States.”¹ Between 2004 and 2016, more than 640,000 tick, mosquito, and flea disease cases were reported and nine new mosquito-borne and tickborne diseases were discovered or introduced in the United States.¹

Understanding the local landscape of tickborne disease threats in communities and educating the public may reduce the risk of human exposure to tickborne diseases. However, “84% of local vector control organizations lack at least one of five core vector control competencies” that are necessary to better manage vector-borne diseases.²

PROJECT BACKGROUND

EH professionals are commonly charged with carrying out responsibilities in vector control at the local level.^{3,4} Currently, there is a lack of research and understanding of the tick-related roles and activities that EH professionals are involved in.

This project is an exploratory assessment to determine how local EH departments are involved in tick-related activities and what additional research is needed in the future.



Objectives

- Identify the level of involvement EH professionals have in tick activities.
- Identify best practices and resources used by EH professionals to carry out various tick activities.
- Identify technical assistance and resource needs of EH professionals to carry out various tick activities.

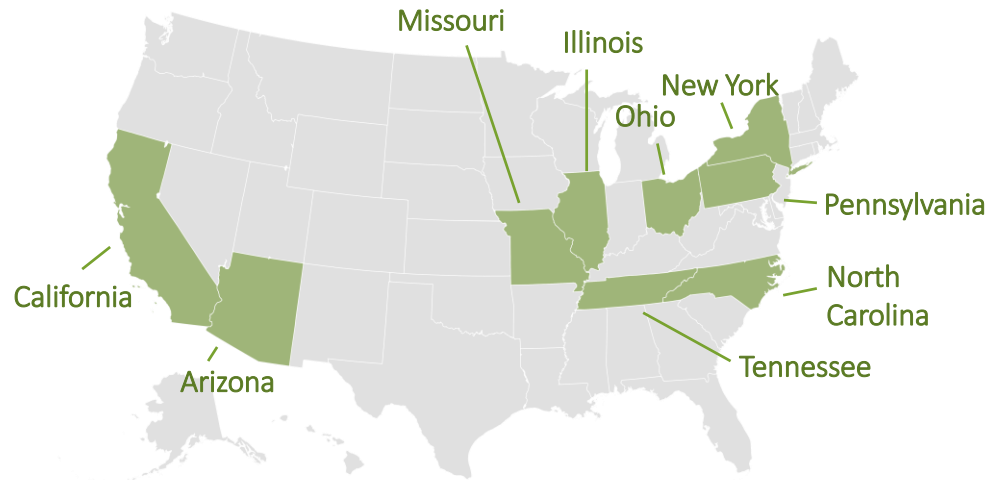
Methods

Outreach: NACCHO conducted outreach to eight local EH departments and one tribal EH department. These departments represented a diverse range of subjects with varying geographic location, population size, population density, and level of sophistication of their tick/vector control programs.

Written Questionnaires: Eight local EH departments and one tribal EH department from nine states filled out a questionnaire.

Phone Interviews: All nine respondents participated in phone calls to answer follow-up questions.

Limitations: The nine EH departments involved in the assessment are not a representative cross-section of EH departments across the country.





Findings

Compilation of findings among all the local EH departments interviewed

Of the local EH departments interviewed, EH professionals indicated that ticks are a concern but not always a priority in their communities.



Respondents who say that ticks are an issue in their community say it is because of increased local reports of tick-related diseases and an increased number of ticks captured during active surveillance activities.

Lyme disease recognition and education are identified priorities in one respondent's community health improvement plan.

In areas where ticks are not a priority, respondents said it was due to a lack of awareness and a shortage of funding to perform tick-related activities.

Challenges:

Lack of funding and staffing:

"We saw a significant cut to our vector surveillance grant this year, almost a 30% cut. That's a big deal to us because that limits further what we're able to do in this program. We have to be very creative with funding."

Lack of awareness from the public and upper management that ticks are an issue in their community:

"From a programmatic standpoint, we have to sell the importance of this to our administration... We also have to educate our Board of Health."

Some EH professionals reported increased community interest in ticks in the last five years.

One EH professional attributed the increased interest in ticks to (a) growing local news and Internet reports on ticks and (b) their department's tick education and outreach efforts. The respondent said their department has done a good job of reaching out to local news outlets, social media, and children about ticks.



Other respondents reported that the increased interest in ticks from the community may be due to rising tick encounters and heightened tick-related concerns from health professionals.



EH professionals face challenges with funding for tick-related activities.

Respondents reported that they do not receive dedicated funding for tick-related activities, and funding came out of their general funds.

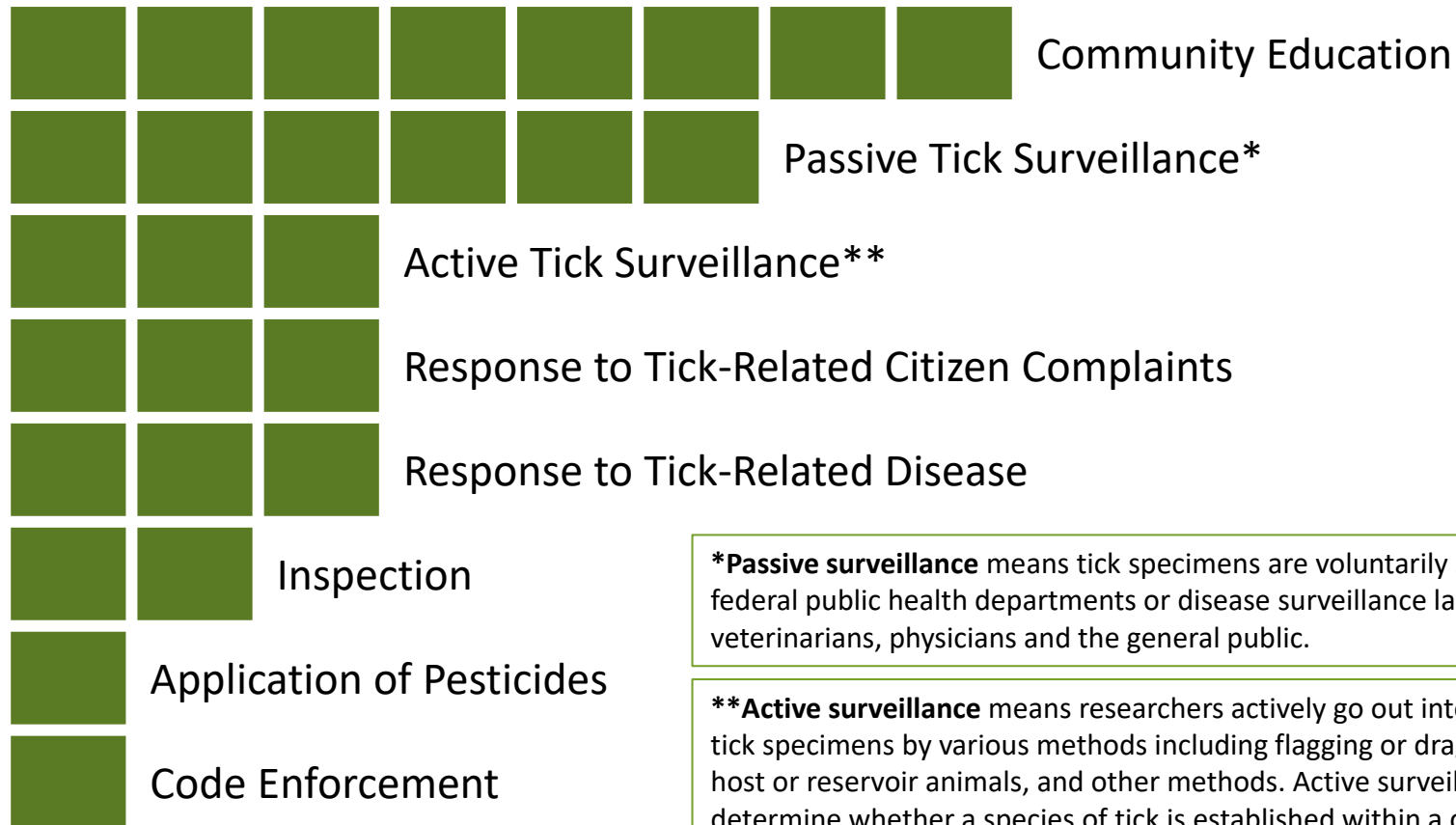
Example: One respondent said that due to limited resources, they have to focus on vectors that are seen as most pressing. From the 1960s to 1980s, rats were the focus, so their resources were targeted toward resolving rat issues. Once the rat issues were resolved, they were able to focus on the next pressing issue, which was West Nile virus and other mosquito-related issues. They currently do not have the resources to make a case for dedicated funding for tick-related activities.

Example: Another respondent reported that their vector surveillance grant got cut by approximately 30%, further limiting their ability to conduct tick-related activities.

Example: One respondent hoped to focus on tick-related activities after being hired full-time in their department's vector program but has been too overwhelmed with mosquito and rat issues.

Success: One respondent reported working with their state department of environmental protection to conduct active surveillance on select sites in their jurisdiction. They have also been successful in securing limited funding to post signs with Lyme disease education and warnings in community parks.

Most of the EH professionals interviewed perform community education and passive tick surveillance.



***Passive surveillance** means tick specimens are voluntarily submitted to state or federal public health departments or disease surveillance laboratories by veterinarians, physicians and the general public.

****Active surveillance** means researchers actively go out into the field to collect tick specimens by various methods including flagging or dragging, collection from host or reservoir animals, and other methods. Active surveillance is used to further determine whether a species of tick is established within a certain area.⁵

Partnerships can assist local EH professionals.

Collaborating with internal and external partners helps EH programs perform various tick-related activities, including community education and active tick surveillance.



EH professionals engaged in these activities:

- Worked with their state's department of environmental protection to conduct tick drags;
- Helped to start a coalition of local stakeholders that includes universities, state agencies, and others to identify tick-related research and management needs in the region;
- Worked with local code enforcement to help enforce local ordinances that would help reduce tick habitat; and
- Coordinated with their state health department and local universities for help with identifying ticks and answering tick-related questions.

EH professionals discovered cases of potential human tickborne diseases through a variety of methods.

State health department epidemiologist, communicable disease reporting systems, or state weekly disease reports

Example: One respondent said that their public health nurse logs into the state communicable disease reporting system every day to see what is reported. If there is anything environmental health-related, the nurse will inform the EH professionals.

Laboratory and medical provider reports

Example: One respondent reported that laboratories send them pending, suspect, and confirmed tickborne disease cases.

EH departments' vector control laboratory reports

Example: One respondent reported that their EH department has their own vector control lab and conducts in-house testing on ticks.

Challenge: One EH department reported that in the past they received case history reports from their county public health department. Through these reports, they were able to determine where people picked up the ticks that transmitted the Lyme disease. However, due to confidentiality issues, the county public health department has stopped delivering case history reports to them.

EH professionals are called upon to respond to tick-related disease cases.

Example: One EH professional reported that they would respond to a report of a positive human case of Rocky Mountain spotted fever by conducting a neighborhood-wide campaign.

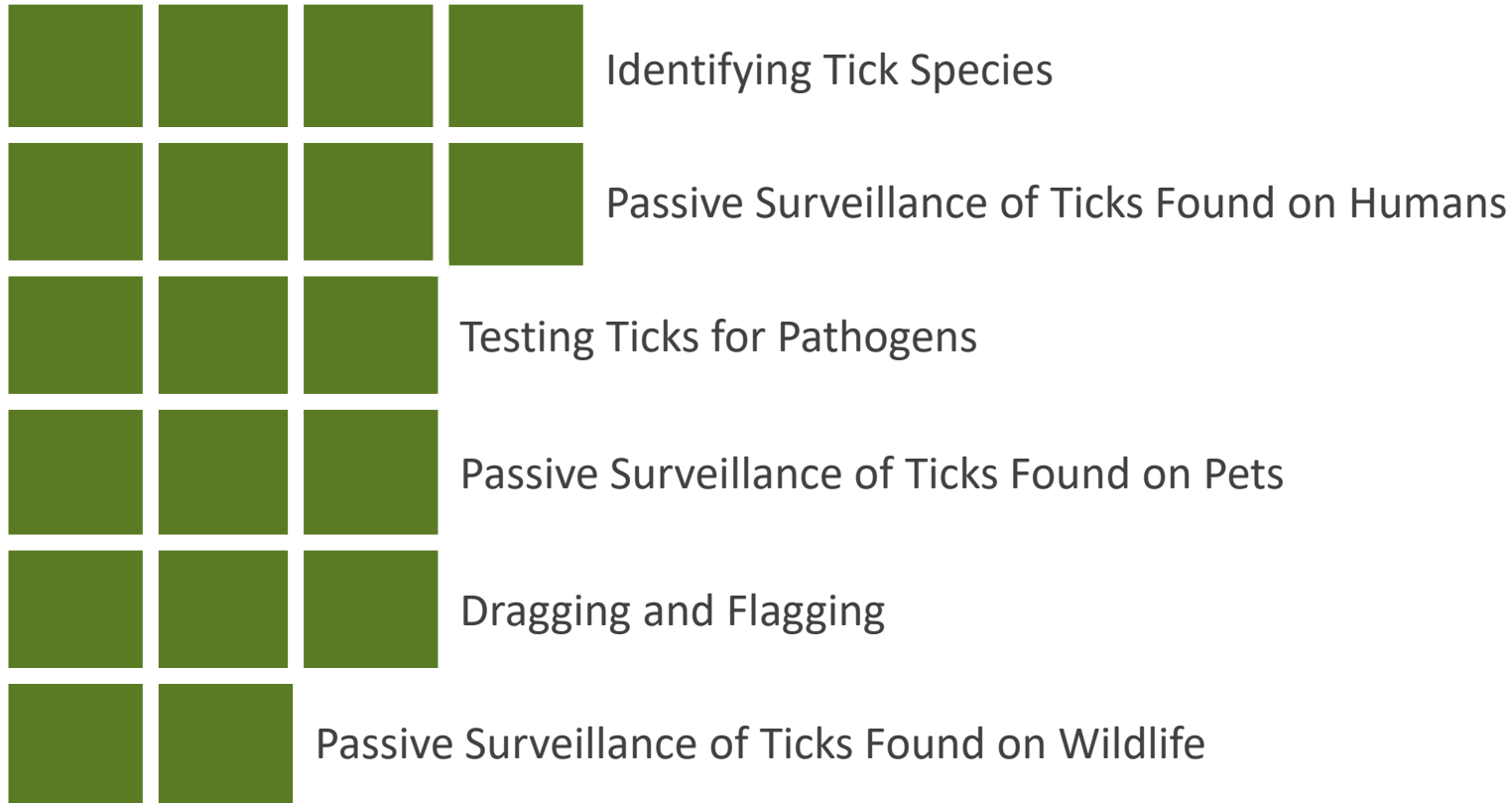


“We would work with our animal control people. They would do a crackdown on stray dogs, and at that point, we would probably consider doing a tick trapping and just try to get a handle on what kind of problem the neighborhood would have. We would treat the whole neighborhood at that point if we did get a positive human case.”



Example: Another EH department reported that the state public health department would initially respond to human tickborne disease cases. If any surveillance assistance is needed, the EH department would develop a surveillance program to see how extensively the pathogen has spread.

The nine EH professionals interviewed perform a variety of tick surveillance activities.



Routine tick surveillance, even on a small scale, can establish baselines and provide valuable insight into tick trends.

Success: One respondent reported that they are able to overcome lack of funding for surveillance activities by using a single sentinel surveillance site to help identify tick trends in their area.

Success: Among the respondents that used data to identify trends, one said that they are able to identify increases in infection rates through routine surveillance, which helps them identify hot spots and inform public messaging.

Example: One EH department reported performing tick spraying for individual homeowners and public agencies. Through a software program, the EH department tracks every complaint and every request for tick spraying. They are able to assign the tick spray request to an individual inspector, but they will always send staff out in pairs with an environmental health technician as a lead. They call to make sure the homeowner is available, and they have the homeowner sign a release form that allows the EH department to spray the homeowner's property.



Challenges:

One respondent reported that the lack of routine tick surveillance activities was a barrier for identifying tick trends and informing interventions.

Respondents use integrated pest management (IPM)* concepts in their tick activities.

Example: One EH department reported using IPM concepts in teaching tick life cycles and biology to the public during education and outreach efforts. They also use the life cycle information for their surveillance program to inform monitoring, sampling, and establishing an action threshold.



Example: Another EH department incorporates IPM concepts in recommendations they provide to homeowners. If a homeowner complains of ticks on their property, the EH department may recommend environmental alterations so the property will not sustain nymphal ticks. They may also recommend making safe zones on the property and putting in vegetation that ticks will not utilize.



*According to the CDC, IPM is a science-based, common-sense approach for reducing populations of disease vectors and public health pests. IPM simply means (1) don't attract pests, (2) keep them out, and (3) get rid of them, if you are sure you have them, with the safest, most effective methods.⁶

EH professionals collaborated with medical providers to educate physicians about ticks and form partnerships.



The following are examples of collaborations with medical providers:

Partnering with the communicable disease team to visit every clinic in their county to provide information on tick populations and percentage of ticks collected that were positive for Lyme disease.

Conducting a large survey of 440 physicians to learn about their views and knowledge on Lyme disease.

Conducting an hour-long didactic session on ticks with 10 doctors at a nearby hospital.

Informing physicians of tick-related information whenever physicians call them or having physicians instruct their patients to call the vector control department for tick-related advice. Through this effort, the department has been seeing more physicians referring patients to contact them about tick information and assistance.

Some EH professionals reported their health department has a tick-related communication plan in place.

Respondents with tick-related communication plans in place reported that their plans included guidance on developing messages and materials for different communication channels and appropriate messaging for at-risk populations.

Respondents also reported that they often work with their communications department, public health educators, or public information officers to develop and distribute tick-related messaging.



EH professionals educate the public about ticks using a variety of methods.

Videos

One respondent reported that a social media post went “viral” when she shared videos of larval ticks they had inadvertently hatched in a specimen jar. The jar had been left in a closet for seven months and the ticks had survived. The department received a lot of publicity through this incident.



Press Releases

Another respondent said that they generally do a press release or post on social media to remind people that seasons are changing, and they might encounter nymphal ticks, which always have a higher infection rate with Lyme disease than adult ticks.



EH professionals educate the public about ticks using a variety of methods.

Community Campaigns

One EH department reported that their Fight the Bite campaign focuses on mosquitoes and ticks. They receive many more mosquito-related complaints than tick-related complaints because people are not aware that their department is also a resource for tick information. They have begun to promote tick awareness in their community.



Tick Identification Programs

One respondent reported that their EH professionals educate the public on ticks through their tick identification program. The public can email a photo of a tick to the department for identification. In addition, they provide links to resources and advice on seeking medical consultation.



Some EH professionals have an active outreach and referral mechanism to link community members to tick services.



Example: One EH department reported that their EH professionals refer community members to tickborne disease testing services and medical providers through their community presentations and social media messages.

Example: One respondent reported that they disseminate pamphlets, put information on their website, and utilize public service announcements to link community members to tick services.

Example: One respondent said linking community members to tick services is part of their main outreach. They make an effort to regularly participate in events to make sure tick services information is readily available.

EH professionals engaged constituents in key decisions and development of tick-related policy.

Example: One respondent reported engaging constituents through their community health improvement plan (CHIP). Through the CHIP, Lyme disease recognition and education were identified as a priority. In addition, the respondent also engages the community through presentations to mayors, managers, the board of health, and division advisory boards.

Example: Another respondent reported engaging constituents through their community Lyme Disease Advisory Group. The meetings are informative for the EH department because they can hear the challenges people are experiencing, and the meetings inform the type of information that needs to be reported out to the public.



EH professionals use resources from the CDC, state health departments, and local universities to answer tick-related questions.

CDC Resources:

- Tick-related factsheets
- Tickborne disease prevention materials
- Tickborne disease information (incubation periods, symptoms, laboratory testing, and test result interpretations)

State Health Department Resources:

- Tick-related pamphlets
- Tick education/outreach materials
- Entomology support

University Resources:

- Training for staff on tick and other vector-borne diseases
- Entomology support



EH professionals also use the website [Tickencounter.org](https://www.tickcounter.org) to train newer staff on tick identification and obtain tools for outreach events and talking points for community tick presentations.

Not all respondents have a process to ensure the training and education of EH professionals to conduct tick-related activities.

Examples from respondents with processes in place:

One EH department reported that their staff are first presented information on Lyme disease and tick behavior. The next training is on tick collecting, which includes personal safety and how and where to collect ticks. Then, staff are educated on tick identification, laboratory procedures, and documentation.

One respondent said their staff is trained on community outreach. They make sure that their staff is knowledgeable on teaching the public about tickborne disease signs and symptoms. In addition, staff are trained to have the broad knowledge of ticks and tick-borne elements that the public are looking for when they start to inquire about ticks.

Another respondent reported that their staff attend vector seminars and conferences, such as the NACCHO Vector Summit, state-sponsored vector trainings, and national conferences such as the National Environmental Health Association Annual Educational Conference.

Examples from respondents with NO process in place:

One respondent said they use materials from the CDC website and attend the American Mosquito Control Association national meeting, which had tick-related content.

Another respondent said their EH professionals are self-taught and think any training would be helpful. They taught themselves by reading the United States Armed Forces Tick Surveillance Guide.

Some EH departments participated in state-sponsored tick-related programs.

Example: One EH department that currently participates in a state-sponsored tick-related program works with their state Department of Environmental Protection. Their staff collaborates with the state to conduct active tick surveillance in their county. It is a state-wide initiative where each county selects a few sites for tick drags and tickborne disease testing.

Example: Another EH department currently participates in a state-sponsored program operated through a local university. The program utilizes local health departments and other departments for free surveillance. The respondent serves as a hub to disseminate vials to volunteers that work in outdoor settings. Ticks are placed in the vials, brought to the hubs, and then picked up by the sponsor staff. The respondent also plans to partner with the sponsor on a tick workshop.



EH professionals reported that tickborne diseases are an issue in their jurisdiction.

Several respondents reported that their jurisdictions faced increasing cases of Lyme disease, receive inconsistent messaging on Lyme disease from the medical community, and lack the support for potential complications with Lyme disease infection.



Top Tick-related Concerns Among EH Professionals:

- Rocky Mountain spotted fever
- Tick bites, their associated disease transmissions, and educating medical providers about tick-related issues
- Code enforcement issues dealing with unkept property on abandoned properties
- Rickettsial illnesses
- Anaplasmosis
- Babesiosis
- Tularemia
- Pacific Coast tick fever
- Bourbon virus
- Lone star tick progression into their state at a rapid rate

EH professionals provided input on additional resources and trainings that they would find helpful.

Canned tick
press release

Training on tick
control methods

List of local
testing services

Training/guide for
medical providers

Webinar trainings
on tick species and
identification, and
tickborne diseases

Mentorship
program
(e.g., NACCHO
Vector Control
Collaborative)

Examples of
successful and
cost-effective tick
activities from
other health
departments

Establishing a
group to share tick
information with
surrounding
counties

Guide on starting
a tick program
for small local
programs

Regional tick ID
cards and
informational
handouts

Training on how
to get services
to pet owners

Training on
preventative
measures for
the public

Find links to existing resources and trainings on the [Resources page](#).

Some respondents reported concerns about local tick-related activities that no agency is currently addressing.

Example: One respondent reported concern that their state program only conducts two tick drags per county. In counties with large land area and population, the two tick drags do not accurately capture the different habitats in the county.

Example: Providing continuing education to medical providers is a concern of one EH department. They would like to see medical providers receive continuous training on when to treat for tick bites and types of tickborne diseases.



Example: Another EH department reported concern that their county was the only one to have a tick surveillance and outreach program in their region.

EH professionals would expand their tick programs if they had increased funding.

Respondents reported that if their tick programs had increased funding, they would enhance tick surveillance, hire additional staff devoted to tick-related activities, strengthen tick education and outreach, expand tick-related services related to pets, and research and test pesticide resistance in their tick population.

Example: *"I would really start trying to focus on what our tick issues are, look at the epi data pretty closely, buy some software with dashboards that would kind of keep us in-the-know on where the human cases are. Have extra people, start maybe doing a little bit of extra [surveillance], at least do some focus on ticks and tick dragging and just seeing what our numbers really are inside... And then educate. We do all kinds of festivals. We have animal control groups that are under the same umbrella as the health department, partnering with them on tick-related issues."*

Example: *"I would like to find out what kind of ticks are on the wildlife. I'd like to see if we have the same kind of rickettsial diseases moving back and forth between the ticks and the coyotes, say, as between the dogs. I think that might tell us something. Some people believe that the Rocky Mountain spotted fever came in from other communities, and dogs that were going back and forth between the communities. I think it could well be that it was always out here and it was just in the wildlife. I think it would be nice to know if it was endemic."*



Resources

List of recommended tick surveillance and control resources

Resources



Click the links below to access recommended resources for EH professionals who perform tick-related activities:

[NACCHO Vector Control Toolkit](#)

Filter by “Vector Control Toolkit” and keyword search “tick”

[CDC Training: Vector Control for Environmental Health Professionals](#)

[CDC Tickborne Diseases Webpage](#)

[CDC Ticks Webpage](#)

[CDC Lyme Disease Webpage](#)

[CDC Tick Surveillance Guidance](#)



Acknowledgements

Acknowledgements

This publication was supported by cooperative agreement 6 NU38OT000172-05-01 awarded to the National Association of County and City Health Officials and funded by the Centers for Disease Control and Prevention. The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the U.S. Department of Health and Human Services.

NACCHO thanks Alameda County Vector Control Services District, CA; Erie County Department of Health, PA; Kendall County Health Department, IL; Buncombe County Environmental Health, NC; and Oswego County Health Department, NY for contributing to this report.

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The mission of the National Association of County and City Health Officials (NACCHO) is to improve the health of communities by strengthening and advocating for local health departments.

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