



IN REPLY REFER TO

United States Department of the Interior

NATIONAL PARK SERVICE
Coastal Research Center
Cooperative Park Studies Unit
University of Rhode Island
Narragansett Bay Campus
Narragansett, Rhode Island 02882-1197



LD-5

29 June 1992

MEMORANDUM

To: Chief Ranger, Morristown National Historical Park
Resource Management Specialist, MORRIS
Chief Scientist, North Atlantic Region
Director, NPS Coastal Research Center, URI

From: Invertebrate Ecologist, NPS Coastal Research
Center, URI

Re: Ticks in Wick Garden and vicinity at Morristown NHP

I visited Morristown NHP on 26 June 1992 to consult with staff on ticks and Lyme disease and to take tick surveillance samples in the Wick Garden and environs. Dr. Lance Risley of William Paterson College, who is in the early stages of a study of tick distribution in central New Jersey, accompanied us and sampled ticks.

Last year I had recommended several physical techniques to manage ticks in the Wick Garden. These were primarily sanitation techniques, such as the use of mulch material that would leave the ground surface dry (rather than the leaf litter mulch that was used in 1991), pruning plants to expose the ground to air and sun (to help dry the ground surface), removal of wood chips on the paths and wood piles near the garden, etc. As of June 1992, these techniques had been applied in the central part of the garden and the paths, but the periphery of the garden still had thick undergrowth and a layer of leaf litter.

We used standard tick flagging techniques; I used an unbleached muslin flag and Dr. Risley used a white corduroy flag. In over one hour of flagging in the Wick Garden (appx. 1330-1445 hrs), I found no ticks, and Dr. Risley found three nymphal deer ticks. All three ticks were collected in the area near the shed to the left as you enter the garden. This area has tree cover, thick undergrowth, and a substantial

layer of leaf litter; all conditions conducive to tick survival. No ticks were collected in the central part of the garden, where the ground was bare and relatively dry, or on the paths. No ticks were found in flagging samples on the grass surrounding the Wick Garden (outside the fence), and one larva was collected in flagging samples on the orchard proper. For comparison, I flagged on a footpath through the woods at the edge of the orchard (labelled Grande Parade Trail) and captured ten nymphal deer ticks in 20 minutes, suggesting a density several times greater than that in the Wick Garden.

Twelve of the nymphal deer ticks collected at Morristown were returned to the lab and tested for the presence of Lyme disease spirochetes, *Borrelia burgdorferi*, with a DFA procedure using a polyclonal antibody to *B. burgdorferi*. Six of the twelve were positive for the Lyme spirochete.

These samples indicate that Northern deer ticks infected with Lyme disease spirochetes are present in Morristown National Historical Park (as previously reported in my 1990 report, available from the North Atlantic Regional Office). Infected ticks were present in the Wick Garden, but they were found in only one area. This spot (near the shed) had tree cover as well as leaf litter and low vegetation. No ticks were found in areas that had been managed according to last year's recommendations. Note also, that thick undergrowth and leaf litter were present in several other areas at the outer edge of the Wick Garden. Although we did not find ticks in these areas, it is plausible that ticks could survive under these conditions. Therefore, I suggest two alternatives for managing ticks in the Wick garden:

- 1) Continue to practice sanitation in the central part of the Garden, and avoid the peripheral areas where ticks could persist, especially the area with tree cover near the shed, where ticks were collected;

or

- 2) Continue sanitation practices in the central part of the garden, and apply them in the peripheral areas of the garden as well. Thinning of undergrowth, discontinuing use of leaf litter mulch, and pruning to open the ground layer will produce dry conditions at the ground level. These conditions are not conducive to tick survival.

If vegetation or leaf litter is to be removed from the Garden, contact me for suggestions on methods to minimize exposure to ticks (appropriate times of year for procedure, appropriate precautions, etc.).

In the woods surrounding the orchard I found apparently high tick densities, and some of these ticks were infected

with Lyme disease spirochetes. I suggest that tick distribution be studied in Morristown NHP as a whole so that appropriate precautions can be instituted to minimize exposure to Lyme disease among the staff and visitors to the park.

If I can be of any further assistance, please don't hesitate to contact me.

A handwritten signature in cursive script, reading "Howard S. Ginsberg". The signature is written in dark ink and is positioned above the printed name.

Howard S. Ginsberg, Ph.D.