NATIONAL WILDLIFE FEDERATION

INSPIRING AMERICANS TO PROTECT WILDLIFE FOR OUR CHILDREN'S FUTURE.

Fact Sheet

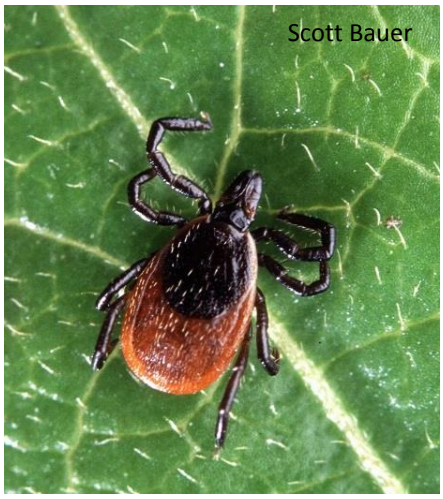
Climate Change Bites!

The impacts of ticks on wildlife, public health, and outdoor recreation.


Charlie Archambault

Ask any hunter, angler, birder, or gardener and they will tell you that the environment is changing. Americans have a passion and heritage for the outdoors. Unfortunately, climate change is posing a new challenge to people, wildlife, and the outdoor experience. Across the United States and around the world, climate change poses an increasingly dire threat to wildlife, communities, and public health. Changes to our climate are destroying critical wildlife habitat, causing species' ranges to shift, decreasing available food and water for wildlife, changing the chemistry of the ocean, and increasing the rate of species' extinction.[i]

But perhaps the most immediate threat to most outdoor enthusiasts is the impact that climate change is having on the incidence of pests and invasive species. We are seeing mosquitoes and fire ants expanding their ranges while invasive species threaten native plants and wildlife.[ii] Of huge concern are warmer winters, which serve as a welcome mat for pests like ticks to expand their range.


Scott Bauer

There are many different species of ticks, but the most well-known is the blacklegged tick (Ixodes scapularis), commonly known as a "deer tick," which transmits Lyme disease.[iii] Widely distributed throughout the eastern half of the United States, deer ticks are projected to be more widespread than ever, primarily due to climate change.[iv] These ticks and their diseases pose a huge threat to outdoor recreation in the U.S.

Average minimum winter temperatures below about 19°F keep deer ticks from establishing stable populations.[v] As the climate continues to change, milder winters are projected to significantly increase their range. However, in some places, like Ohio, their range is already spreading faster than projected.[vi] And despite the recently harsh winter in the Northeast, ticks are expected to be just as prevalent this spring and summer. The large amount of snow received in many places may have even acted as an insulating, protective layer for ticks.[vii]

Winter ticks *(Dermacentor albipictus),* also known as moose ticks or elk ticks, have a completely different life cycle than deer ticks, being most active during the winter. Unlike deer ticks, they do not parasitize humans and aren't known to carry any diseases that can infect humans, but are harming several northern species such as moose, caribou, and elk. Climate change is also allowing these tick populations explode.[viii]

Impacts to Outdoor Recreation


Carla Brown

Nearly half of the people in the U.S. spend time engaged in outdoor recreation including canoeing, fishing, hiking, camping, hunting, kayaking, swimming, bird and wildlife watching and more.[ix] But a changing climate, with rising temperatures, weather that is more extreme and increasing in frequency, and the rise of pests like ticks are impacting these activities.

The nearly 14 million people who engage in hunting annually provide a clear example.[x] Professional wildlife management has enabled the United States to maintain healthy wildlife populations while providing an abundance of game wildlife for this popular fall tradition. But the hunting tradition is changing as the climate warms. Heat waves have caused widespread outbreaks of hemorrhagic disease and die-offs in white-tailed deer, necessitating a reduction in the number of deer hunting permits allowed. Waterfowl hunters are finding delays in the fall duck migration. Bird hunters need to be aware that their bird dogs, like humans, are susceptible to tick-related diseases**.** [xi] For most Americans who are increasingly spending their time indoors, ticks and Lyme disease are threatening the precious and all-too-rare outdoor experience.

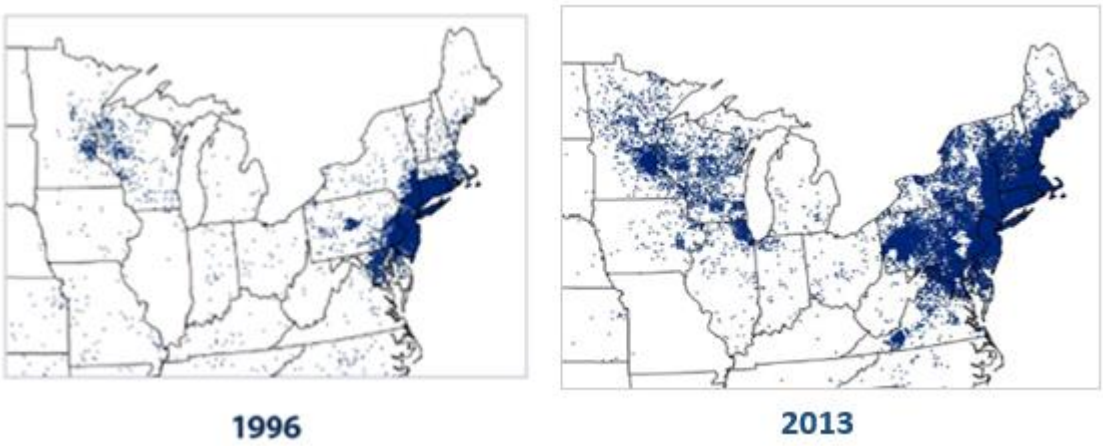
Lyme Disease

Though climate change is impacting outdoor recreation in many ways, Lyme disease poses a direct threat to those who enjoy spending time outdoors. Lyme disease in North America can cause a variety of debilitating symptoms, from fever and headaches to chronic joint and central nervous system impacts. In rare cases, Lyme disease can be deadly. Deer ticks can also transmit the diseases anaplasmosis and babesiosis, which have similar symptoms to Lyme, to humans.[xii]

Deer ticks feed on rodents, other wildlife, and people at different stages of their life cycle: larva, nymph, and adult. The bacterium that causes Lyme disease is picked up by deer tick larvae and nymphs when they feed on infected mice. Most of the ticks that bite and infect humans with the disease are nymphs, which are most active in the summer months when people and pets are also most active.

Nationwide, the rate of reported cases of Lyme disease has almost doubled since 1991.[xiii] The Centers for Disease Control and Prevention (CDC) reports that 95% of confirmed Lyme disease cases come from just 14 states on the East Coast and in the upper Midwest, and is expanding. [xiv] Even within their current range, the tendency for adult ticks to become active during winter thaws suggests that warmer winters will increase exposure of humans to ticks and contraction of Lyme disease. More than 30,000 cases of Lyme disease are reported annually to the CDC, but the actual number of cases may be 10 times greater than that. Pennsylvania had the most reported cases of any state in the U.S. in 2013 – almost 5,000 cases![xv]

Reported Lyme Disease Cases in 1996 and 2013



This map shows the distribution of reported cases of Lyme disease in 1996 and 2013. An increase of cases can be seen in nearly every state on the map. The percent increase in reported Lyme cases in the following states, is particularly jarring: Maine – 400%, New Hampshire – 460%, and Virginia - 330% increase between 2004 and 2013. (Data from CDC http://www.cdc.gov/lyme/stats/)

May is Lyme Disease Awareness Month; it's when ticks are in peak activity and people start spending more time outdoors. However, many are now suggesting that the awareness month be moved to April, since climate change has led to earlier spring tick feeding.[xvi]

Impacts on Wildlife

Winter ticks are a common parasite for large game in North America. During the fall, winter tick larvae transfer from vegetation to large mammals such as a moose when they brush by them. A moose can be parasitized by thousands of ticks at a time, as they stay on their host throughout their winter lifecycle.[xvii]

As noted before, climate change is helping winter tick populations grow. Tick activity increases as temperatures increase, meaning they have more time to find a host during a warmer fall. A late onset of winter also means higher tick populations, since snow and cold normally help kill some of them off. In the spring when adult ticks drop off their host to lay eggs, their survival rate is higher on bare ground than it is on snow, meaning that earlier springs with less snow on the ground also help winter tick populations grow.[xviii]

Winter ticks can infect moose, elk, caribou, white-tailed deer, and mule deer, but moose are the most susceptible to severe infestation. It is unclear why, but their vulnerability appears to be related to the fact that they are less effective at grooming the ticks off their body. Severe infestations can cause high moose mortality as the

winter progresses. The body weight of infected moose can become so low that moose are unable to become pregnant. Heavily infected moose essentially starve to death because they eat less when irritated by ticks, lose body heat due to hair loss, and suffer extensive blood loss to the ticks.[xix]

Moose are in jeopardy across the U.S. – from New Hampshire, Vermont, and Maine; to Minnesota, Michigan, and even Wyoming. The rising winter tick populations in Maine and New Hampshire have contributed to increased mortality, reduced productivity, and population decline. The New Hampshire moose population has plummeted by more than 40% in the last decade from over 7,500 moose to just 4,000 today. In the winter of 2014, 64% of radio-collared moose calves died from tick overloads in New Hampshire. As a result, the moose hunting season has been cut back, with about 80% fewer permits issued.[xx] In 2014, moose hunting permits in Maine were slashed by 25% because of an explosion in the winter tick population.[xxi] In Minnesota, moose hunting has been completely closed due to a rapid population drop. As the moose population drops, the recreational activities and associated revenue surrounding the species is sure to follow.[xxii]

Take Action!


Timothy Hoeflich

Americans have a responsibility to defend their outdoor heritage from the threat of climate change. First off, there are ways to protect ourselves from the pests that climate change is helping to proliferate.

Ticks should not stop you from enjoying activities like camping, hiking, and playing outdoors – but make sure to take steps to prevent tick bites. Before you go outdoors be aware of where you may come in contacts with ticks – avoid piles of leaves and walk in the center of trails to avoid contact. You can also wear repellent containing DEET. After you have been in a tick-prone area check your body and clothing for ticks and shower within two hours after coming indoors. If you do find a tick, the CDC recommends removing it as soon as you see it. If you notice a rash or fever in the days or weeks following a bite, contact your health care provider.[xxiii]

Second, we must take action as a nation to combat the root of the problem – carbon pollution. The Clean Air Act was put in place to protect people from pollution. Now, the Environmental Protection Agency (EPA) has proposed the Clean Power Plan (CPP), which uses the Clean Air Act to set historic limits on carbon pollution from existing power plants.

EPA is expected to finalize the rule by late summer 2015. We need to ensure that they create a strong final rule that will adequately protect wildlife and public health. It is critical to keep the pressure on the EPA and our state and congressional leaders to make sure the CPP is strong and effective. This rule represents necessary action, not only for America's wildlife, fish and birds, but for the millions of sportsmen, wildlife watchers, and nature lovers who cherish America's outdoor heritage. The health of wildlife and outdoor enthusiasts can't wait for climate action!

Visit us at: www.nwf.org/climate

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