

Ehrlichiosis in North Carolina

This fact sheet provides information about the occurrence of the tick-borne disease ehrlichiosis in North Carolina. Ehrlichiosis is caused by ehrlichial bacteria spread by the bites of the ticks *Ehrlichia chafeensis*, *Ehrlichia ewingii* and another species that is still under investigation. Symptoms usually occur within one to two weeks of the bite of an infected tick and may include fever, headache, fatigue and muscle aches. Some children and adults may develop a rash. Ehrlichiosis is a serious illness and can be fatal if not diagnosed promptly and treated correctly. It can be treated with antibiotics such as doxycycline.

In 2012, North Carolina reported 112 cases of ehrlichiosis among 38 counties. Most cases were diagnosed and treated as “probable” by symptoms and tick exposure history; 19 cases were laboratory confirmed for disease surveillance purposes. In comparison, during the five-year period of 2008-2012, 387 cases were reported from 64 counties. Ehrlichiosis occurs year-round in North Carolina, with most cases occurring between April and September, peaking in June.



Figure 1: Lone star ticks, left to right: Female, nymph, larva and male, compared to a dime and to 12-point newspaper type.

The **lone star tick**, the main cause of tick bites in North Carolina, is the primary vector (carrier) for ehrlichiosis in the United States. Data suggest that the lone star tick was not native to North Carolina but was introduced into the state, and its numbers have been increasing since the early 1990s.¹ Previously confined to the coastal plain, the tick can now be found statewide. Lone star ticks are generally most active from April through September, but have also been found active on warm days during fall and winter.

The lone star tick moves quickly and is an aggressive biter. Since the bite is generally painful or itches, detection can occur quickly. Unlike other species of ticks in the state, three stages of the tick’s life cycle (except for the eggs) – adult, larva and nymph – will bite people and their pets. The female is easily recognized by the single white dot on her back. Males and nymphs (best described as the teenager of the family) will also bite. Although individually very small, larvae (“seed ticks”) are often encountered in ‘clumps’ of several hundred to thousands on the tips of grasses or other vegetation. When a warm-blooded animal or person brushes past, the larvae swarm onto their victim and inflict multiple painful bites. In addition to ehrlichiosis, lone star ticks are known to cause other human diseases, including tularemia and STARI (southern tick-associated rash illness), and are being studied for their role in Rocky Mountain spotted fever and their connection to meat allergies.

Because of the aggressive nature of this tick, personal protection measures are especially important to avoid bites. When in lone star infested areas, the best protection may be a combination of methods. Wear long pants and long-sleeved shirts, and tuck pant legs into socks and shirttails into pants. For extra protection, use tick repellents and pre-treat clothing with insecticidal products, carefully following label directions. Be sure to check your body for ticks before and after showering. Lone star ticks will also hide in clothing and gear, especially along seams and pockets, and will crawl out of their hiding places later to find a host. Kill any hitchhiking ticks by removing outdoor clothes promptly and drying them in a hot clothes dryer.

For general information on ehrlichiosis and on preventing tick-borne illnesses, and for the fact sheet, Making Sense of Repellents, see the N.C. DHHS Communicable Disease website at <http://epi.publichealth.nc.gov/cd/diseases/ehrlichiosis.html>. For more detailed information, including disease diagnosis and treatment, please see the CDC’s web site at www.cdc.gov/ehrlichiosis.

¹ Unpublished data, Marcee Toliver, 2013. Photo by Marcée. Tolliver, 2013.