



Black Flies

New Hampshire is home to approximately 40 species of black flies. Of these species, only 4 or 5 are considered to be significant human biters or annoying. In some cases, black flies may not bite but merely annoy as they swarm about the head or body. Only the females bite and fortunately most species feed on birds or other animals.

Habits & Life Cycles

Black flies breed exclusively in running water. Some species live in large, fast-flowing streams, others in small, sluggish rivulets. Almost any kind of permanent or semi-permanent stream is occupied by some species.

Large black fly populations indicate clean, healthy streams since most species will not tolerate organic pollution. Since New Hampshire is well known for its clear streams, it is not surprising that black flies also are abundant and at times a serious annoyance to residents and visitors.

Females lay their eggs on vegetation in streams or scattered over the water surface. The eggs hatch in water and larvae attach to rocks, leaves, grass or other submerged objects. The larvae feed by filtering water for tiny bits of organic matter. Mature larvae pupate underwater and emerging adults ride bubbles of air to the surface and fly away. Adults mate near the breeding site and females, who need a blood meal so they can lay eggs, begin their search for blood. Once they have fed and digested, they lay eggs in a suitable stream habitat.

Black fly species in New Hampshire exhibit two types of life cycles. One type overwinters in the egg stage. The eggs remain submerged in streams over the winter and hatch in spring when water temperatures reach about 40° to 50°F. The larvae develop during early spring and adults emerge in spring or early summer. Some species have more than one generation per year.

The second type overwinters in the larval stage. Larvae hatch in the fall when stream temperatures are falling and develop during the winter months. They pupate in early spring when water temperatures reach about 37° to 38°F. Adults emerge from late April through May and females deposit eggs in May and June. The eggs remain in the water until fall when they hatch. In general, biting black fly species tend to breed most abundantly at the outlets of ponds and lakes, perhaps because of more abundant food or warmer temperature.

Only two species of black flies in New Hampshire consistently and abundantly bite humans. These are *Prosimulium mixtum* and *Simulium venustum*. *Simulium venustum*, the so-called “white-stockinged” black fly emerges in early to mid-May in southern New Hampshire and remains a pest until the end of May. In the north, it emerges in late May to early June and can remain abundant until the end of June in some areas and even into July in higher mountain localities.

Simulium jenningsi is a late season species and is most annoying along the larger rivers in northern New Hampshire in August and September. These flies swarm around the head in large numbers but do not usually bite.

Control

Individuals should not try to control black fly larvae. Treating a small area, or part of a single stream, will do little to alleviate a black fly pest problem. The State of New Hampshire requires a special permit to apply pesticides to surface waters, but because black fly nuisance problems are rarely confined to one location, state regulators are not likely to grant permits to individuals for black fly control. A commercial license to apply pesticides is also required before a permit is issued.

Controlling black flies in the adult stage usually is not practical, unless you wish to obtain temporary relief (hours) on local property. Fogging to control black flies in the adult stage may provide a brief period of relief, but because adults are strong fliers, relief is temporary. Sustained control is not possible using this method.

Avoidance

Proper clothing offers good protection against black fly bites. Keep short sleeves and front closely fastened and tuck trousers inside socks or high boots. Zippered front shirts will keep flies out better than button shirts. Light colors such as orange, yellow and light blue are less attractive to black flies than dark green, brown and red. Shoulder-length head nets are sometimes useful. These can also be impregnated with repellents. “Bug baffler” makes various forms of net-like clothing to keep black flies from reaching your skin.

Black flies are active only during the day. They do not bite at night. Depending on weather, black flies tend to be more active at certain times of day. Activity peaks tend to occur around 9:00 to 11:00 AM and again from 4:00 to 7:00 in the late afternoon and early evening, or until the sun falls below the horizon. They tend to be most active on humid, cloudy days and just before storms. If possible, avoid activity during times when black flies are most active. Early morning, midday and late evenings are the best times to work outside.

Chemical Repellents

The same repellents used for mosquitoes are effective against black flies, but apparently do not last as long against black flies. Since black flies tend to crawl up sleeves and under socks and trousers, repellent applied around the wrists, ankles and belt line will help prevent flies from crawling under clothing and biting. Garments impregnated with repellent may also be effective in preventing black fly attacks. Currently the most effective ingredient is N, N-diethyl-meta-toluamide, for DEET. This material is not recommended for use on infants. Some people, especially young children, can be sensitive to DEET, so use it with caution. Skin reactions, eye irritation, slurred speech, confusion and seizures have been reported. In recent years, two new active ingredients have been registered that are nearly as effective as DEET. You will have to look at the ingredients list on the label to find them. Many brands use these

materials. They do not dissolve plastics and finishes, as DEET can, and no allergic reactions have been reported. One material is called **picaridin**. The second is **IR3535**, commonly incorporated in combination sunblock and repellent products. For more information on repellents see the extension face sheet “Insect Repellents.”

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