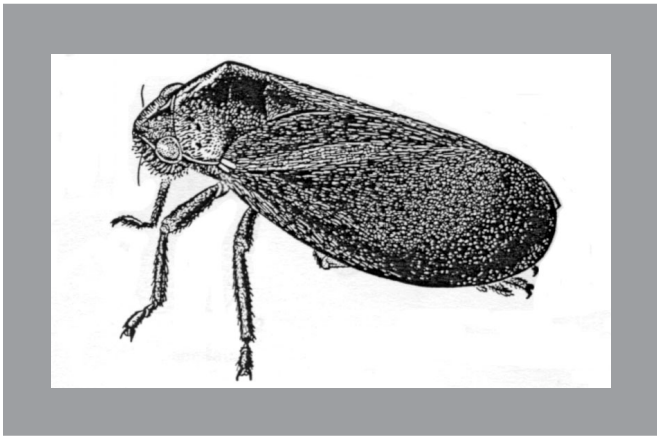
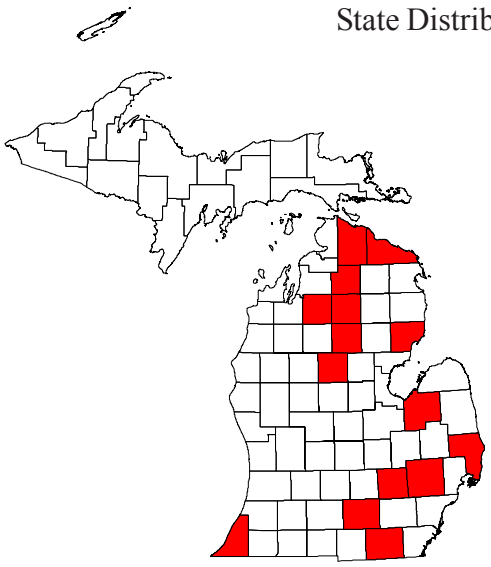
Prosapia ignipectus (Fitch) red-legged spittlebug

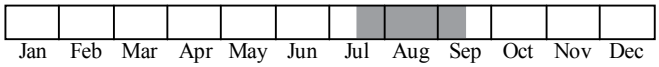


Drawing courtesy of:
Eastern Cereal and Oilseed Research Centre
For the Department of Agriculture and Agri-Food,
Government of Canada

State Distribution



Best Survey Period



Status: State special concern

Global and state rank: G4/S2S3

Family: Cercopidae (spittlebug, froghopper)

Range: The spittlebug genus *Prosapia*, as defined by Fennah (1949, 1953) and later by Hamilton (1977), is restricted to North America with only two species (*bicincta*, *ignipectus*) occurring in the northern United States and Canada. These taxa were considered the same species (but separate subspecies) until futher work by Hamilton (1977) elevated each to full species status. The red-legged spittlebug in Canada is found locally in southernmost Ontario. In the United States it appears to occur commonly in sandy regions of the northeast, south to southern Pennsylvania (Hamilton 1982), and west through Wisconsin, Illinois, and into eastern Iowa.

State distribution: Only two verified collection localities (Presque Isle and Berrien counties) were known from the state prior to 1994. During inventories, by Michigan Natural Features Inventory (MNFI), for lakeplain prairies in southern Michigan the species was recorded from St. Clair and Tuscola counties (Comer et al. 1995). During 1995-1999 additional surveys by MNFI documented the red-legged spittlebug from Cheboygan, Clare, Crawford, Jackson, Kalkaska, Lenawee, and Livingston counties. The species is now known in Michigan from 20 locations in 15 counties.

Recognition: The red-legged spittlebug (Homoptera: Cercopidae) is a medium-sized spittlebug with adult males ranging from 6.8 to 8.3 mm (0.27 - 0.33 in.); females are slightly smaller on average ranging 7.5 to 7.9 mm (0.30 - 0.31 in.)(Hamilton 1982). **This is the only black spittlebug in Michigan that has an undersurface boldly marked with scarlet near the leg bases and leg joints, and on the abdomen.** A very similar species *Prosapia bicincta* is slightly wider in form and usually is marked with three fine crossbands of yellow, orange, or scarlet on the upper side (Hamilton 1982). Rarely an unmarked specimen of *bicincta* is reported, which requires comparison of genitalia to positively separate the two species (Hamilton 1977).

Best survey time: Adults of the red-legged spittlebug have been recorded in Michigan from July 17 through September 19. The best way to survey for this species is to use a standard insect sweep net in suitable habitat. Several sweep samples may be needed to detect adults of this species in an area because the red-legged spittlebug occurs in small colonies that occupy diminutive portions of available habitat (Hanna 1970). Nymphs (sub-adult life stages) are believed to feed on the subterranean parts of little bluestem, *Schizachyrium scoparium* (Hamilton 1982), and therefore sampling for this life stage could prove to be extremely time consuming and potentially destructive.

Habitat: The red-legged spittlebug has been recorded in associaton with alvar grassland in Presque Isle County, from prairie fens in Berrien and Jackson

Michigan Natural Features Inventory
P.O. Box 30444 - Lansing, MI 48909-7944
Phone: 517-373-1552

counties, from jack pine barrens in northern lower Michigan, and lakeplain prairie in southern Michigan. At the lakeplain prairie sites the spittlebug occurs in areas dominated by big (*Andropogon gerardii*) or little bluestem and other prairie species including: switch grass (*Panicum virgatum*), common mountain mint (*Pycnanthemum virginianum*), bush clover (*Lespedeza capitata*), common polygala (*Polygala sanguinia*), colic root (*Aletris farinosa*), heath aster (*Virgulus ericoides*), sedges (*Carex* spp.), tall coreopsis (*Coreopsis tripteris*), marsh blazing star (*Liatris spicata*), shrubby St. John's wort (*Hypericum kalmii*), fringed close gentian (*Gentiana andrewsii*), ironweed (*Veronia missurica*), tall sunflower (*Helianthus giganteus*), Ohio goldenrod (*Solidago ohioensis*), Riddell's goldenrod (*S. riddellii*), Culver's root (*Veronicastrum virginicum*), and the grass pink orchid (*Calopogon tuberosus*).

Biology: Little is known about the life history and ecology of most spittlebugs, except for a few species of economic importance. Recent studies by Peck indicate that a closely related *Prosapia* species undergoes five nymphal instars (Peck 1999). Cercopid nymphs, or spittlebugs, occur in the protection of masses of spittle which they produce to surround themselves at feeding sites on host plants (Peck 1999). Adults, commonly known as froghoppers, do not produce spittle but rely on their jumping ability and warning coloration for defense as they move about and feed on similar grass host plants (Peck 1996). Both life stages feed on xylem sap of their host plants which include little bluestem (Morse 1921) and other grasses (Hamilton 1982). Adult red-legged spittlebugs have been found from mid-July to mid-September in Michigan. Peck (1999) found in one *Prosapia* species that adult males peak in abundance 3-4 weeks in advance of the maturation of females. Female red-legged spittlebugs likely lay their eggs in the fall, with eggs being the overwintering life stage. In this group relatively few eggs are laid, usually not exceeding 35 (Hamilton 1982). The nymphs first appear in spring and establish spittle masses on the surface roots and fine stems of grasses. Later instars are still largely limited to the litter layer or soil surface. A wider variety of feeding sites become suitable to late instar nymphs including mature stems, sometimes several centimeters into the grass canopy (Peck 1998). While it is unlikely that the species is restricted to a single plant species, in Michigan adults have been found in association with either big or little bluestem grasses and one adult was collected from redbud. (Hanna and Moore 1966).

Conservation/management: The most significant threats to the existence of this species have been identified as habitat destruction or alteration. Types of direct habitat loss include commercial and residential development, constructing pipelines, and filling of wetlands. Alteration of habitats include changing the hydrology of sites, succession of habitat due to fire supression, and invasion of alien plant species such as purple loosestrife and glossy buckthorn in southern Michigan and leafy spurge in the northern barrens. Hydrology alterations may include building roads, railways, pipelines, and ditches. Wetland hydrology and quality should also be mantained by preventing improper off-road vehicle use and controlling invasive weeds in these areas. Protection of known populations (and associated habitats) is a priority for sustaining this species. Additional surveys should be conducted throughout the state in appropriate habitats including mesic lakeplain prairie, barrens, and alvar grassland communities. Until more is known about the life history of this insect, it should be considered sensitive to fire during all life stages. Management of the surrounding prairie fens, prairies, alvars, and barren communities with prescribed burns should take into account known population sites leaving some unburned areas of host plant essential for recolonization. Additional information on the ecology and life history of the red-legged spittlebug is also needed to provide a stronger basis for management planning efforts.

Research needs: Additional surveys are needed across the eastern United States to determine the present distribution of this spittlebug and to further evaluate habitat specificity. Research on this species' life history should also be a top priority.

Related abstracts: wet-mesic lakeplain prairie, prairie fen, pine barrens, eastern prairie fringed orchid, blazing star borer, culver's root borer, Alleghany plum, Hill's thistle, pale agoseris, rough fescue.

Selected references

Comer, P.J., W.A. MacKinnon, M.L. Rabe, D.L. Cuthrell, M.R. Penskar, and D.A. Albert. 1995. A survey of Lakeplain prairie in Michigan. Report to Michigan DNR - Land and Water Mgmt. Div., Coastal Zone Mgmt. Program. 234 pp.

Fennah, R.G. 1949. New genera and species of Neotropical Cercopidae (Homoptera). Ann. Mag. nat. Hist. (12)1:605-620.

Fennah, R.G. 1953. Revisionary notes on Neotropical monecphorine Cercopidae (Homoptera). Ann. Mag. Nat. Hist. 12(6):337-360.

Hamilton, K.G.A. 1977. Review of the world species of *Prosapia* Fennah (Rhynchota: Homoptera: Cercopidae). Canad. Entomol. 109:621-630.

Hamilton, K.G.A. 1982. The spittlebugs of Canada. Homoptera: Cercopidae. The insects and arachnids of Canada, Part 10. Biosyst. Res. Inst., Ottawa, Canada. 102 pp.

Hanna, M. and T. E. Moore. 1966. The spittlebugs of Michigan (Homoptera: Ceropidae). Papers Mich. Acad. Sci., Letters 51: 39-73.

Hanna, M. 1970. An annotated list of the spittlebugs of Michigan (Homoptera: Cercopidae). The Mich. Entomol. 3(1):2-16.

Morse, A.P. 1921. *Monecphora bicincta* (Say) in New England. Psyche (Camb., Mass.) 28:27-28.

Peck, D.C. 1996. The association of spittlebugs with grasslands: Ecology of *Prosapia* (Homoptera: Cercopidae) in upland dairy pastures of Costa Rica. Ph.D. dissertation. Cornell University, Ithaca, NY.

Peck, D.C. 1998. Natural history of the spittlebug *Prosapia* nr. *bicincta* (Homoptera: Cercopidae) in association with dairy pastures of Costa Rica. Ann. Entomol. Soc. Am. 91:435-444.

Peck, D.C. 1999. Seasonal fluctuations and phenology of *Prosapia* spittlebugs (Homoptera: Cercopidae) in upland pastures of Costa Rica. Environ. Entomol. 28(3):372-386.

Abstract citation

Cuthrell, D.L. 1999. Special animal abstract for *Prosapia ignipectus* (red-legged spittlebug). Michigan Natural Features Inventory, Lansing, MI. 3 pp.

Updated September 2000.

Funding for abstract provided by Michigan Department of Natural Resources-Forest Management Division and Wildlife Division.