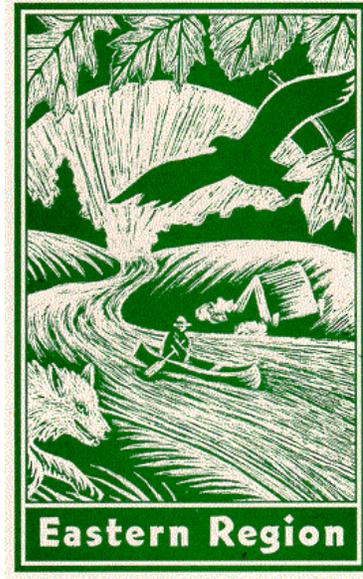


*Conservation Assessment
For
Red-Veined Prairie Leafhopper (*Aflexia rubranura*)*



USDA Forest Service, Eastern Region
2003

Prepared by:



This Conservation Assessment was prepared to compile the published and unpublished information and serves as a Conservation Assessment for the Eastern Region of the Forest Service. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject community, please contact the Eastern Region of the Forest Service - Threatened and Endangered Species Program at 310 Wisconsin Avenue, Suite 580 Milwaukee, Wisconsin 53203.

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NOMENCLATURE AND TAXONOMY

Scientific Name: *Aflexia rubranura* DeLong

Common Name: Red-veined Prairie Leafhopper

Family: Cicadellidae (Leafhopper Family)

Synonyms: *Flexamia rubranura* DeLong

USFS Region 9 Status: Sensitive

USFWS Status: No status

Illinois Status: Threatened

GLOBAL AND STATE RANK:

The Illinois Natural Heritage Program ranks this species as G1G2/S2. It hasn't been determined at this time whether *Aflexia rubranura* should be listed as G1 or G2. The G-ranking means *Aflexia rubranura* is critically imperiled globally or imperiled globally. In Illinois *Aflexia rubranura* is considered imperiled (Illinois Natural Heritage Database 1999). *Aflexia rubranura* has been extirpated in much of its historic range and is rare throughout its current range. Reasons for this decline are loss of prairie habitats. The populations vary from several large to most being fairly small. All of the populations are isolated from other populations.

RANGE:

Aflexia rubranura appears to be a Great Lakes endemic. *Aflexia rubranura* only occurs only in the tallgrass prairies from Illinois into Canada where its larval food plant prairie dropseed (*Sporobolus heterolepis*) is found. Figure 1 shows the range of the larval food plant in North America. The actual range of *Aflexia rubranura* was probably more restricted around the Great Lakes region. In Illinois, this species is found in: Grundy, Lake, McHenry, and Will counties (Illinois Natural Heritage Database 1999, Ron Panzer pers. comm.), see Figure 2.

PHYSIOGRAPHIC DISTRIBUTION:

In Illinois *Aflexia rubranura* is currently known from the Keys et. al. (1995) Central Till Plains Section of the Prairie Parkland Province and the Southwestern Great Lakes Morainal Section of the Eastern Broadleaf Forest Province. *Aflexia rubranura* occurs in the Grand Prairie and Northeastern Morainal Natural Divisions of Illinois (Schwegman et. al. 1973).

HABITAT:

Dry to wet-mesic prairie. In Illinois *Aflexia rubranura* is associated with moderately disturbed to relatively undisturbed prairies.

SPECIES DESCRIPTION:

This is a small (3mm), yellowish, brachypterous species (Ron Panzer, pers. com.). Diagnostic characteristics include a broad black mark composed largely of transverse black bars extending from the apex of the vertex (head) back to the claval triangle.

LIFE HISTORY:

Aflexia rubranura larvae feed exclusively on prairie dropseed.

It is a bivoltine (two generations/year) species in Illinois (Ron Panzer pers. com.). Females lay eggs in host plants in mid-August/September and again in mid-June.

NATURAL AND HUMAN LAND USE THREATS:

Since *Aflexia rubranura* is host specific to prairie dropseed it is dependant upon the survival of its host plant. Prairie dropseed although a common prairie plant, rarely grows in highly disturbed conditions and is restricted too high to medium quality relatively undisturbed prairies. Since these quality prairie remnants are rare, habitat for *Aflexia rubranura* is somewhat restricted. Existing habitat can be restored or augmented by planting prairie dropseed. Prairie dropseed can be planted in reconstructions of crop fields.

Because *Aflexia rubranura* over winters in the duff it is very sensitive to fire. Panzer (1998) found consistent reductions in population sizes (75-95%) following several fires on several sites between 1992-1996. However, despite its inability to fly, fire-impacted populations were generally found to recover in one year when adjacent unburned recolonization sources were maintained. The complete burning of prairie dropseed habitat within a natural area may result in the extirpation of this species. Conversely, Panzer and Bess (1997) believe that long-term fire suppression and the resultant loss of prairie habitat that can occur may represent the greatest threat to a related leafhopper (*Flexamia* spp.). Although the impact of grazing on *Aflexia rubranura* has not been studied, Panzer and Bess (1997) list this as a possible threat for *Flexamia* leafhopper species if the grazing is heavy.

VIABILITY:

The overall goal is to maintain a viable population of *Aflexia rubranura* throughout appropriate habitat. Soule (1980) suggested that minimum viable populations are the smallest size that can persist over a period of years (usually 100 is used) with a low extinction probability (less than 5%) and with enough genetic diversity to adapt to changing conditions in the environment. Good population information doesn't exist for the few sites currently known to have *Aflexia rubranura*. Until population data is available it's impossible to determine a minimum population size. In the mean time the following specific goals would increase the likelihood of maintaining a viable population:

1. Maintain and increase the existing population of *Aflexia rubranura* by improving the current habitat.
2. Reintroduce populations into patches of prairie dropseed as restoration proceeds. Prairie dropseed is a common prairie grass and should be planted in most prairie restoration and reconstruction projects. This will provide habitat for *Aflexia rubranura*. Disjunct populations of prairie dropseed may need *Aflexia rubranura* reintroduction efforts.

MANAGEMENT:

1) Maintain and increase the existing population of *Aflexia rubranura* by improving the current habitat through the following management practices. Most of these specific management recommendations are normal prairie management techniques.

A) Prescribed burning, should be initiated in the current habitat to control woody plant encroachment. Since *Aflexia rubranura* overwinters in the duff, they are sensitive to fire. Only a portion of the existing *Aflexia rubranura* habitat (approximately 33%) should be burned at any particular time. This species is susceptible to fire but resilient as long as adjacent, unburnt areas remain as refugia (Ron Panzer pers. com.).

B) Mowing is another method that could be used to control woody vegetation. Little is known about the impacts of mowing on *Aflexia rubranura* and until the impacts are known this management tool should only be used conservatively. The impacts of mowing on the host plant prairie dropseed also need to be determined.

C) Exotic species encroachment into the current habitat should be controlled (including herbicides if appropriate) as outlined in an integrated pest management strategy such as Carroll and White (1997). Care should be taken to minimize impact on *Aflexia rubranura* host plants, prairie dropseed.

D) Woody plants too large to be controlled by prescribed fire should be removed. The woody plants either can be girdled and left in place to slowly decompose or cut off and removed during the dormant season. All cut surfaces should be treated with a herbicide to prevent resprouting. Care should be taken to minimize impact to *Aflexia*

rubranura host plants, prairie dropseed.

F) Recreational activities that would disturb the newly restored populations should be avoided in the short term. Recreational activities that allow the introduction of exotic species should be avoided.

G) Development of trails within areas where the host plant, prairie dropseed, is being restored should be minimized to prevent any harm to the population until the population of prairie dropseed is quite large, in the thousands.

2) Reintroduce populations into patches of prairie dropseed as restoration proceeds. Prairie dropseed is a common prairie grass and will be a common prairie grass planted as prairie restoration and reconstruction proceeds. These potential restoration areas will provide habitat for *Aflexia rubranura*. Both *Aflexia rubranura* and prairie dropseed should be managed by the management techniques outlined above.

Prairie dropseed is a common prairie grass and should be a major component of any wet-mesic to dry prairie reconstruction seed mix. Prairie dropseed can be established through seeds and plugs. Large patches of prairie dropseed are needed for *Aflexia rubranura*. It takes a number of years for prairie dropseed to get established in restorations and reconstructions. For this reason restoration and reconstruction should proceed near existing populations with the use of plugs to speed up the process. For these reasons as restoration proceeds thousands to hundreds of thousands of host prairie dropseed plants will probably be available for *Aflexia rubranura*. *Aflexia rubranura* should colonize newly established prairie dropseed plants from existing ones if the distance between them is small.

Once good populations of *Aflexia rubranura* have been established and there are thousands of prairie dropseed plants, little specific management will be necessary other than normal prairie management as outlined above. No specific recreational activities need be prohibited other than those general ones necessary to protect the prairie habitat.

Collecting of *Aflexia rubranura* should be prohibited except for scientific purposes and only with a permit.

MONITORING:

A monitoring protocol should be set up to locate subpopulations of *Aflexia rubranura*. Two techniques, sweep netting and vacuum collecting can be used but vacuum collecting is the most effective technique.

RESEARCH NEEDS:

1. Information on the impacts of grazing on *Aflexia rubranura* is needed. *Aflexia rubranura* has survived a history of grazing at Goose Lake Prairie State Park. Factors such as degree of grazing, timing of grazing, size of habitat, etc. may be important.
2. The impacts of prescribed burn timing (spring vs. fall) needs to be better studied.
3. Population genetics of *Aflexia rubranura* are unknown. Such factors as gene flow among populations and diversity of populations).

REFERENCE LIST

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FIGURES

- 1) Figure 1. North American Distribution of *Sporobolus heterolepis*, host plant of *Aflexia rubranura*.
- 2) Figure 2. State Distribution of *Aflexia rubranura* By County.