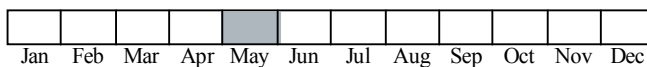


Best Survey Period



**Status:** State special concern

**Global and State Rank:** G5/S3S4

**Family:** Nymphalidae

**Total Range:** Freija's fritillaries occur throughout northern Eurasia and, in North America, they are found from Labrador and Quebec north and west to Alaska, down to the Rocky Mountains in northern New Mexico, and in northern Minnesota, Wisconsin, and Michigan (Opler and Krizek 1984, NatureServe 2006).

**State distribution:** This species is known from six counties in the Upper Peninsula.

**Recognition:** These are small butterflies, with the forewings of males ranging from 1.7-1.8 cm. (Opler and Krizek 1984). The **upper surfaces of the wings are orange with black markings**, typical of other fritillaries (Nielsen 1999). Freija's fritillaries are distinguished by a **duck head pattern on the underside of the hindwing, characterized as a combination of the dark cell with a black "eye" and an adjacent white "bill" that points to a small white crescent or patch** (Glassberg 1999). Larvae are **dark brown** with many black spines (Nielsen 1999).

**Best survey time:** Freija's fritillaries are difficult to survey for due to their extremely short flight period (4-7 days), early spring emergence, the unpredictability of spring weather, and localized populations (Kriegel and Nielsen 2000). Their flight period is during the month of May. Frequent visits to the sites are recommended due to the short flight period. Freija's fritillaries are most easily found during sunny days (Opler and Krizek 1984)

**Habitat:** In Michigan, this species is restricted to open, wet, sphagnum heath bogs on Greenwood and Dawson peat soils in the Upper Peninsula (Kriegel and Nielsen 2000). Characteristic of these habitats are bog-rosemary (*Andromeda polifolia*), wild cranberry (*Vaccinium macrocarpon*) and an abundance of leatherleaf (*Chamaedaphne calyculata*).

**Biology:** Freija's fritillaries have one brood per year. They lay their eggs haphazardly near or on the host plants (Scott 1986). Larvae feed on wild cranberry (*Vaccinium macrocarpon*) leaves and other heaths. Overwintering behavior is unclear, as Freija fritillaries have been reported to overwinter both as fourth instar larvae (Scott 1986) and pupae (Kriegel and Nielsen 2000).



Males patrol for females during the warmer daylight hours along the edges of the habitat near hostplants (Opler and Krizek 1984, Scott 1986). They are known to stop flying when the sunlight is blocked by cloud cover (Opler and Krizek 1984).

**Conservation/management:** The mining of peat from bogs is currently the greatest threat to the species. Changes to hydrology can also negatively impact bog habitats, and known sites should be protected from both forms of alteration.

**Research needs:** There is very little life history information on Freija's fritillaries and further studies on larval foodplant preferences, development, and behavior would be valuable. Surveys should be conducted of all suitable habitat to determine the conservation status of the species in Michigan and to obtain information on metapopulation structure.

**Related abstracts:** Muskeg, poor conifer swamp.

**Selected references:**

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**Abstract citation:**

Barton, B. J. 2007. Special animal abstract for Freija's fritillary butterfly (*Boloria freija*). Michigan Natural Features Inventory. Lansing, MI. 2 pp.

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