NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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7/14/16

Jill Lewis
Deputy Supervisor
Town of Riverhead
200 Howell Avenue
Riverhead, NY 11901

Re: Frosted elfin survey at EPCAL

Dear Jill;

On July 12th, 2016 Jeff Seeman, from the Town of Riverhead, and I conducted a field visit to the EPCAL site to determine whether the area contained suitable habitat for the threatened butterfly *Callophrys irus* (frosted elfin). This survey was conducted to supplement the Town's FSGEIS for the subdivision of the EPCAL property at Calverton. The best method for determining if a site contains suitable habitat for the frosted elfin is to verify the absence or presence of the two larval food plants found in the region- *Baptisia tinctoria* (wild indigo) or *Lupinus perennis* (wild lupine), both within the pea family. These two plants prefer similar habitats: dry open woods, grassland, and/or disturbed open areas. We tried to survey every eco-type found within the EPCAL subdivision boundary but we concentrated efforts in the three habitat types preferred by the two plant species.

Most of the wooded areas within the subdivision boundary are oak-pine or pine-oak forest with a dense understory of low blueberry and black huckleberry. These forested areas contained too dense of a canopy and understory to support either wild indigo or wild lupine and none was found. We also surveyed successional old field habitat that had started reverting to young pitch pine forest or shrubland. The young pitch pine forest had some remnant grassland species in the understory but low overall diversity due to shading and dense pine needle thatch. No plants in the pea family were found in these areas. The shrubland along the grassland edges had very dense shrub and understory layers dominated by scrub oak, black huckleberry, low bush blueberry, and a variety of tree saplings. Most of these areas contained too dense a shrub and understory layer to support indigo or lupine. There were some small openings but the host plants were not found there either.

The areas within the subdivision boundary that had the greatest potential for wild lupine and wild indigo were the grasslands surrounding both runways and the disturbed/successional old field habitat west and south of the Stony Brook Incubator, south of the Island Water Ski Park, and west of the western runway. We looked at the grassland north of the eastern runway, along Rte 25, and on both sides of the western

runway. Several members of the pea family including clovers and vetches were observed in the grassland but we did not find wild indigo or wild lupine. The successional old field habitat west and south of the Stony Brook Incubator and south of the water ski park consisted of disturbed areas and grassland with a sparse canopy of pitch pine and eastern red cedar. While it contained suitable habitat no lupine or indigo was found. Two small disturbed area/grassland pockets within the wooded areas west of the runway were surveyed and the two target species were not seen.

Based on the lack of larval host plant species found within the subdivision site during this survey it is unlikely to be suitable habitat for the threatened frosted elfin at this time.

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Frosted Elfin *Callophrys irus* (Godart, [1824])

(/media/i5385.jpg)
Frosted Elfin
Steve Walter

Class
Insecta (Insects)
Family
Lycaenidae (Blues, Coppers, Hairstreaks, Elfins)

State Protection
Threatened

Listed as Threatened by New York State: likely to become Endangered in the foreseeable future. For animals, taking, importation, transportation, or possession is prohibited, except under license or permit. For plants, removal or damage without the consent of the landowner is prohibited.

Federal Protection
Not Listed

State Conservation Status Rank
S1S2

Critically Imperiled or Imperiled in New York - Especially or very vulnerable to disappearing from New York due to rarity or other factors; typically 20 or fewer populations or locations in New York, very few individuals, very restricted range, few remaining acres (or miles of stream), and/or steep declines. More information is needed to assign either S1 or S2.

Global Conservation Status Rank
G3

Vulnerable globally - At moderate risk of extinction due to rarity or other factors; typically 80 or fewer populations or locations in the world, few individuals, restricted range, few remaining acres (or miles of stream), and/or recent and widespread declines.

Contents

Summary

Did you know?

The frosted elfin is extripated from Canada and some U.S. states. In states such as New York, where the species remains, populations are not secure and are highly management dependent.

State Ranking Justification

The Frosted Elfin has become globally rare and is extirpated in Canada. In the United States, there are no states where it is secure and it has become extirpated in some states. Much of the habitat has been lost in New York and small isolated colonies are unlikely to persist. Threats exist in many places and include high deer numbers and inappropriate habitat management. There are a few well known, protected, and adequately managed populations of the lupine feeding race. However, there may be fewer than five viable metapopulations in New York. This rare species has become highly management dependent.

Short-term Trends

The short-term trends indicate a decline of 10% to 30%.

Long-term Trends

Long-term trends indicate a large decline in the population of 75% to 90%, which is similar to or lower than nearby states.

Conservation and Management

Threats

Besides the destruction of habitats by development, threats that can quickly wipe out colonies. Threats include deer eating the foodplants (and eggs and larvae) and lack of appropriate habitat management, including applying herbicides to or disking utility right-of-ways. Mowing the foodplants before late June could eradicate or reduce an occurrence. Gypsy Moth (Lymantria dispar) spraying is also a potential threat, but the risk cannot be evaluated in the case of Bt (Bacillus thuringiensis - a bacterial biological control used on Gypsy Moth caterpillars). Depending on the application date, most larvae could be exposed, but their sensitivity is unknown. Habitat fragmentation may be the greatest threat in locations where potentially viable metapopulations still occur. Small isolated colonies are more likely to become extirpated because these populations sometimes fail to produce any adults in some years, due to deer browse or other variables, and subsequently are not recolonized. However, when populations are clustered, females can move between each of them and extirpations are often temporary.

Conservation Strategies and Management Practices

All habitats require disturbance, such as fire or mowing, to impede succession. Where fire is used, unburned habitat patches, or refugia, are needed since Indigo (Baptisia spp.) feeders will usually have very high mortality in these areas. Although Lupine (Lupinus perennis) feeders, which pupate in the sand, may not have the same high mortality rates, they may leave the burned areas. Winter mowing is a proven management option, but the footprint of the machinery should be minimized in order to avoid crushing the pupae. Populations can be maintained for decades with mowing. Generally, management that works for the Karner Blue (Plebejus melissa samuelis) should work for the co-occurring Frosted Elfin, although the elfins might be more vulnerable to deer since the larvae feed on the lupine flowers. Shelter from wind and the proximity of trees may be important for Wild Indigo feeders, although the adjacent habitat may be brushy with few trees. Maintaining connectivity of colonies where they are clustered is important and is likely to be critical for long term persistence of populations. See Albanese et al. (2006) regarding habitat needs.

Research Needs

Research into the effects of prescribed burning on populations, especially lupine (Lupinus perennis) feeders is needed. Lupine feeders, which pupate in the sand, probably do not incur much mortality, but they apparently avoid recently burned areas. Research is also needed to determine how long the post-fire effects persist and if they can be mitigated. Additional information on the situations that encourage females to move between foodplant patches is also needed.

Habitat

Habitat

The key habitat feature is an abundance of the foodplant or, perhaps, many moderate-sized patches of the foodplant within a few hundred acres or more, and associated with remnant pine barrens, oak savannas, or dry oak forest. The grassland/herbaceous checkoff revers only to right of ways and airports not natural grasslands. There are two varieties of Frosted Elfins, one that feeds mostly on the flowers or seed pods of Wild Blue Lupine (Lupinus perennis), and another that feeds on leaves and stems of Wild Indigo (Baptisia spp.), primarily the native Baptisia tinctoria in New York. Populations will feed on only of these plants or the other, even when both types of plants are present. Lupine feeders occur in the Albany area, western New York, and on Long Island, while Wild Indigo feeders occur on Long Island. Frosted elfins are not likely to be found in stands of foodplants that have been isolated for a long period of time. This species nearly always occurs in clusters of populations that function as metapopulations and small habitat patches may be unoccupied in some years. Females disperse within the habitat and larvae can turn up in appropriate habitat where adults are not usually seen. The most typical habitats are utility right-of-ways and, at least in neighboring states, airport approach zones. A few populations of the lupine feeders occur partially in more natural settings in the Albany Pine Bush and the Rome Sand Plains. No populations of the Wild Indigo (Baptisia spp.) feeders are known to occur in natural settings in New York. Typical habitat features include a shrubby or partially open aspect and a high density of the foodplant, although the observations of Albanese et al. (2006) may not apply fully to the lupine feeders which seem more capable of using open grassland with no tall shrubs or trees. Nectar might also be an important habitat feature.

Associated Ecological Communities

- Coastal oak-heath forest (guide(/coastal-oak-heath-forest/)) ℹ

  A low diversity, large patch to matrix, hardwood forest that typically occurs on dry, well-drained, sandy soils of glacial outwash plains or moraines of the Atlantic Coastal Plain. The forest is usually codominated by two or more species of scarlet oak, white oak, and black oak.

- Hempstead Plains grassland (guide(/hempstead-plains-grassland/)) ℹ

  A tall grassland community that occurs on rolling outwash plains in west-central Long Island. This community occurs inland, beyond the influence of offshore winds and salt spray.

- Pitch pine-heath barrens (guide(/pitch-pine-heath-barrens/)) ℹ

  A shrub-savanna community that occurs on well-drained, sandy or rocky soils. The most abundant tree is pitch pine and the shrublayer is dominated by heath shrubs.

- Pitch pine-oak forest (guide(/pitch-pine-oak-forest/)) ℹ

  A mixed forest that typically occurs on well-drained, sandy soils of glacial outwash plains or moraines; it also occurs on thin, rocky soils of ridgetops. The dominant trees are pitch pine mixed with one or more of the following oaks: scarlet oak, white oak, red oak, or black oak.

- Pitch pine-oak-heath woodland (guide(/pitch-pine-oak-heath-woodland/)) ℹ

A pine barrens community that occurs on well-drained, infertile, sandy soils. The structure of this community is intermediate between a shrub-savanna and a woodland. Pitch pine and white oak are the most abundant trees.

- Pitch pine-scrub oak barrens (guide(/pitch-pine-scrub-oak-barrens/))

  A shrub-savanna community that occurs on well-drained, sandy soils that have developed on sand dunes, glacial till, and outwash plains.

Range

New York State Distribution

The lupine (Lupinus perennis) feeding variety is very widely scattered on sandplains, mainly in the upper Hudson Valley, but also in Oneida and Genesee Counties and on Long Island. Indigo (Baptisia spp.) feeders occur in the lower Hudson Valley and on Long Island.

Global Distribution

The species as a whole has a very fragmented distribution from southern Wisconsin across Michigan, northern Indiana, northern Ohio, southern Ontario and New York, to southern New England, including a small portion of Maine (gone by 1900). It was, perhaps, most widespread in the Great Lakes region and from southern New England down the coast and Piedmont into the Carolinas, and from there extended very spottily westward, but not reaching the Mississippi Valley. There is a disjunct subspecies in Texas and adjacent areas.

Identification Comments

Identifying Characteristics

This species is identifiable with any recent butterfly book. It is a rather large, very gray elfin, closely associated with lupine or wild indigo.

Characters Most Useful for Identification

In the field, association with the foodplant is the first clue to the identity of this species. The combination of extensive gray beneath, tailed hindwing, and the relatively large size for an elfin are generally diagnostic for adults.

Best Life Stage for Proper Identification

The best life stage for identification is the adult stage, although the larvae are identifiable by experts.

Behavior

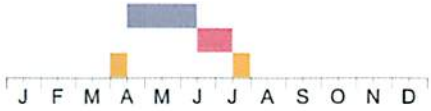
This species is almost always found within 50 feet of one of the foodplants.

Diet

The laval foodplant is Wild Indigo (Baptisia spp.) in some southeastern New York colonies and Wild Lupine (Lupinus perennis) elsewhere in the state. Both plants are used on Long Island, but no colony has been found to use both plants anywhere in the range of the species.

Best Time to See

There is one annual generation with adults starting about late April to mid-May and often persisting into June. Wild Indigo (Baptisia spp.) feeders probably occur a bit later than lupine feeders in similar climates. At least with the Baptisia feeder, adult emergence is staggered and some fresh individuals can be seen for approximately one month. The egg stage is brief and the larval stage lasts for about a month, depending on the weather. Most larvae pupate by the end of June and most of the year is spent in that stage.



Reproducing Larvae present and active Pupae or prepupae present

The time of year you would expect to find Frosted Elfin reproducing, larvae present and active, and pupae or prepupae present in New York.

Similar Species

- Henry's Elfin (*Callophrys henrici*) (guide(/henrys-elfin/)) ℹ

  Henry's Elfin is slightly smaller, much browner beneath and usually perches high.

- Hoary Elfin (*Callophrys polios*) ℹ

  Hoary elfin lacks tails and is unlikely to be found in Frosted Elfin habitats.

Frosted Elfin Images

(/media/i5385.jpg)

Taxonomy

Frosted Elfin

Callophrys irus (Godart, [1824])

Kingdom Animalia
- Phylum Mandibulata (Mandibulates)
  - Class Insecta (Insects)
    - Order Lepidoptera (Butterflies, Skippers, and Moths)
      - Family Lycaenidae (Blues, Coppers, Hairstreaks, Elfins)

Additional Resources

References

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Links

- Google Images(http://images.google.com/images?q=CALLOPHRYS+IRUS)
- NatureServer Explorer(http://natureserve.org/explorer/servlet/NatureServe?searchName=CALLOPHRYS+IRUS)

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