

**Illinois Department of Natural Resources  
Office of Resource Conservation**

**Dwight to Pontiac High-Speed Rail  
Conservation and Mitigation Plan for the Eryngium Stem Borer  
(*Papaipema eryngii*)**

**Developed By:  
Union Pacific Railroad (UPRR) and the Illinois Department of  
Transportation (IDOT)**

**June 2012**

The Eryngium stem borer is a moth that lives in mesic and wet-mesic prairies. The moth is dependent upon the presence of rattlesnake master (*Eryngium yuccifolium*), its host plant. A population of 100-1,000 rattlesnake master plants is needed for the moth to persist (U.S. Forest Service, 2003).

Eggs are laid within the duff of the rattlesnake master plant in the fall. Larvae emerge in late May and bore into the rattlesnake master plant near the ground. The larvae live in the rattlesnake master until August, when they pupate either in the plant or the soil. Adults emerge in mid-September, and are on wing through early October. The adult moths are nocturnal.

Because the moth is dependent upon prairies with rattlesnake master, habitat destruction is a major threat. Larvae overwinter in duff. Therefore, the moth is very sensitive to fire. There is speculation that trampling of the eggs may also be a problem.

In March 2012, the UPRR and IDOT prepared a Conservation Plan for an Incidental Take Authorization through the Illinois Department of Natural Resources (IDNR). The public comment period ended on May 11, 2012 and public comments received have been addressed.

In the request for an Incidental Take Authorization (ITA), the UPRR and IDOT agreed to mitigate the potential impacts to both the species and its suitable habitat. The following documentation is the framework for the proposed mitigation.

**1) Plans to minimize affected area**

During the development of the Conservation Plan for the ITA, the UPRR and IDOT investigated ways in which to minimize impacts to the species and habitat. Because the project is based on improving an existing rail line, avoidance will not always be possible. The following measures will be implemented during planning and construction.

- 1) The existing railroad embankment will be used as much as possible; however, there is only a single track in this location. It is unlikely that this option will be practical due to rail traffic
- 2) Clearing, scraping, and storage/stockpiling activities will be limited to those areas required for actual construction, as will equipment operation.
- 3) Worker awareness training will be provided by a qualified environmental professional to help minimize and avoid impacts.
- 4) Prior to construction, areas of rattlesnake master plants have already - been identified and protected with non-intrusion fencing to alert workers and prevent accidental intrusions. For areas that will not be disturbed by construction of this siding, the non-intrusion fencing will remain in place throughout the construction sequence.

Where avoidance is not possible, the area of disturbance will be minimized. Rattlesnake master populations have been identified within the project area. To protect areas of rattlesnake master that will not be impacted but may be near construction activity, non-intrusion fencing has been installed to alert workers of sensitive natural areas. Signs will be posted at the edge of the stem borer habitat areas to minimize accidental intrusions into these areas.

In areas where construction activity is near habitat for the stem borer, strict adherence to erosion and sediment control will be enforced. Erosion and sediment control will protect the litter and duff at the base of the rattlesnake master plants. Erosion control measures will adhere to those presented in IDOT's Bureaus of Construction and Design and Environment Policy and Procedure Memorandum dated 2011. During construction, all solid waste will be disposed of properly offsite to avoid accidental deposition of material in habitat areas. Approximately 250 linear feet of habitat is proposed to be permanently impacted as a result of construction of the Odell Siding.

## **2) Plans for management of the affected area that will enable continued use by the listed species:**

Within the Odell Siding, the impact will result in permanent destruction of the Eryngium stem borer habitat. The rattlesnake master plants within this area will be relocated to a suitable location, which will be identified by the IDNR. No other areas of rattlesnake master populations will be impacted by the proposed siding project between Dwight and Pontiac. Other populations are currently unmanaged within the UPRR right-of-way (ROW). Local environmental groups have indicated that some minimal maintenance of the prairies along the ROW occurs by local entities. The UPRR currently does not manage the sites.

### **3) Description of all measures to be implemented to minimize or mitigate the effects of the proposed action:**

The translocation of the individual plants and root mass will not occur within the existing ROW. Areas outside the UPRR property with suitable conditions will be selected for the translocation site. By relocating the plants away from the railroad, suitable habitat will be expanded and these new habitat areas will not be subject to potential impacts that may be caused by the operation of the high speed rail activity after construction is completed.

The majority of land use adjacent to the project is agricultural, with small scattered urban areas, thereby reducing potentially available suitable sites near the project. The location of suitable translocation sites will be coordinated with local experts who currently are involved in the protection of the species to identify prime translocation areas. Potential translocation destination sites will be identified and presented to the IDNR and the landowner for approval. It is anticipated that more than one site may be selected to expand the populations of rattlesnake master to more sites.

The IDNR has indicated that the utilization of existing protected lands with suitable habitat components but no *Eryngium* stem borer moths is preferred over attempting to establish new habitat on new parcels. Mitigation will establish new populations of stem borer within existing prairies sites supporting populations of rattlesnake master that currently do not harbor the moth. Currently, it is believed that the Will County Forest Preserve District may be enhancing habitat for the species within certain preserves. The applicant in conjunction with the IDNR will coordinate with the Will County Forest Preserve District as necessary to guide them on habitat replacement. The Forest Preserve District may be aware of parcels of land that are suitable for the translocation of the stem borer and addition plants. The IDNR has also indicated that certain IDNR lands may also be suitable translocation sites for the stem borer and live plants.

Currently, there are no known new sites for which to relocate the actual caterpillars in spring/summer 2012 prior to construction. There are five known suitable translocation sites available in the region that are currently owned by either the local forest preserve districts or by the IDNR. These sites currently have hundreds to thousands of mature rattlesnake master plants that are needed to support the *Eryngium* stem borer. These sites would be suitable for both the translocation of the caterpillars and the salvaged plant material.

To accomplish the translocation, individual caterpillars will be safely trapped in spring 2012 and translocated live to the five suitable sites in the region. In addition, live plants which may harbor stem borer moth larvae will be manually removed. The goal will be to remove as much of the near surface root mass as possible to allow the highest potential rates of success of the translocation. Plants will be removed by shovel, with an approximate 24 inch wide root ball to get as much of the duff as possible. Care will be taken during the relocation activities to protect the duff and litter material at the base of

the plant and move this material carefully with the root mass and live plant. The moth may be sensitive to trampling during this period. The ideal time for translocation is during the dormant season, which is approximately November through March; however, due to project schedules, the plant translocation will be completed in late spring. If the plants are in flower, special care will be taken to protect the plant during translocation and once introduced into the suitable destination site, supplemental watering of the translocated plants will occur.

With approval of the receiving agencies, the destination sites will also be overseeded with rattlesnake master seed to supplement the development of the translocated plants. Overseeding will be completed by the selected contractor. Seeds will be obtained from sources within 50 miles of the Dwight to Pontiac project or from within the area encompassed by the Grand Prairie Natural Division (or a vendor with plant stock from those sources) (Figure X.).

Between seeding and relocation of individual rattlesnake master plants, the mitigation of rattlesnake master plants will be equal to a 5:1 ratio. Seeding should be completed between May and June using stratified seed, or between November and March using unstratified seed. The final size of the translocation sites and overseeded areas will be determined during the consultation process with the destination site agencies.

The selected contractor will follow management practices for the translocation destination sites as outlined in the Conservation Assessment for Eryngium Root Borer by the U.S. Forest Service. The conservation assessment states that only one third of the habitat should be burned at once, since the moth is sensitive to fire. In addition, any mowing should occur after June 15, although little is known about the impact of mowing on the moth. Mowing of the sites, if allowed, will be coordinated with the agencies overseeing the destination sites. Exotic species should be controlled using an integrated pest management plan, with care taken to minimize impact to the moth. Woody plants should be removed. Any potential impacts to the relocation area should be minimized.

The goal of the live capture will be to relocate the actual larvae in addition to the plants and root mass. The Contractor will work with local experts to conduct live capture. Through the development of this program, the IDNR will be able to document the results of the translocation and potential for future use of the live capture program. Methods for successful and safe capture, transport, and release of the larvae will be developed at this time with the goal of developing permanent protocols for this activity. This information will be shared with the US Fish & Wildlife Service as this agency is currently considering listing the Eryngium stem borer as a federally protect species.

#### **4) Plans for monitoring the effects of measures implemented**

The selected Contractor will be responsible for post construction follow-up visits to the project corridor between Dwight and Pontiac to monitor the condition of the rattlesnake master plants that were not within the work areas along with any remaining stem borer individuals. This will include assessing the condition of the non-intrusion fencing and

erosion control measures that were installed prior to construction and the condition of the areas that were regraded and revegetated.

The selected Contractor will follow the guidelines of the U.S. Forest Service Conservation Assessment for Eryngium Stem Borer for management of the rattlesnake master translocated site(s). The condition of the plants will be assessed biannually during this period to determine the success of the translocation. An annual report will be prepared to summarize the condition of the translocated destination sites as well as the plants remaining within the UPRR ROW. The annual report will be completed and submitted to the IDNR ITA Coordinator by January 31 of the following year. The yearly reports will indicate the percent survival of any relocated species. As stated previously, there are differing opinions on the success of translocating actual live rattlesnake master plants. Therefore, there is the possibility of 100% mortality of the live translocated plants; however, the overseeding of the site will be completed to replace the plants at a 5:1 ratio through seed.

The important factor in the translocation of the actual live plants is not the direct success of each individual plant translocated, but the litter and duff in the root ball at the base of the plant that may contain the eggs and larvae of the stem borer. With plants grown from seed on site, continued reproduction of the stem borer is anticipated. The reports will also provide photographs of the rattlesnake master translocation and seeding sites.

If construction extends into moth flight season (mid-September to October), a fifty foot buffer will be maintained around rattlesnake master populations remaining within the right-of-way. This buffer will be flagged in the field to identify the limits of the established buffer.

For the actual larvae or caterpillars, a count of the individuals to be relocated will be completed before release to the destination site. After the first full year within the destination site(s), a census for larvae will be conducted to determine whether the populations are succeeding at the new destination site.

Over the monitoring period, a census will be conducted once annually to determine the population of the species within the destination sites.

If population numbers are dropping over the monitoring periods, an assessment will be made if remedial actions are necessary. The decision process will include staff from IDOT, UPRR, IDNR, taxa experts under contract, and landowners involved in the mitigation implementation. If the drop in populations is considered critical, an assessment of the habitat and potential reasons for the reduction will be studied. From this analysis, the Applicant will be responsible for developing a remedial action plan in coordination with the destination site agency and selected Contractors.

The remedial action plan would be developed (if necessary) once the reason for the population reduction is identified. At that point, specific plans of action can be developed.

## **5) Adaptive management practices used to deal with changed or unforeseen circumstances affecting the effectiveness of measures instituted**

In the event that additional rattlesnake master populations will be impacted by the current project scope, the first step will be to translocate the plants and larvae if possible. UPRR and IDOT will coordinate with IDNR if this situation arises.

Current literature indicates that there is contradictory evidence on the success of translocated populations of rattlesnake master plants. One unforeseen circumstance that may occur is the unsuccessful transplanting of the rattlesnake master live plants. In the event the plants themselves do not survive, the translocation destination site will be overseeded with rattlesnake master to increase the population of this plant. The seeding will be done to replicate ideal habitat for the stem borer, of at least 100 to 1,000 plants within each translocated site. It is anticipated that the selected destination site(s) will already have a sustainable population of rattlesnake master plants and that the translocated individuals will only supplement existing populations.

If the live plant transplants do not survive, the root mass and duff/litter material will be left in place in the event larvae are still within the translocated plant mass.

It is anticipated that management activities will be conducted by the destination site agency as part of their on-going management of these sites, whether it is the local forest preserves or IDNR land. As special maintenance activities may be needed in the translocation destination site that may not be currently on-going, the Applicant will develop and escrow account to assist land managers in the proper maintenance of the sites used for the mitigation. Prior to the translocation, a budget will be developed for routine on-going maintenance for a period not to exceed five years.

If remedial actions are required, a specific budget will have to be developed after a determination of needs is completed.

## **6. Responsible Party**

The UPRR and IDOT will be responsible for obtaining a qualified contractor to conduct the translocation of the larvae and plants from the UPRR ROW. It is anticipated that the same Contractor will perform the monitoring of the destination sites once the translocation is completed. The Contractor may also have to perform management/maintenance activities on the translocation/destination site(s).

Annual reports will be prepared by the selected Contractor.

The management and maintenance of the destination sites (forest preserve and/or IDNR land) will be the responsibility of these respective agencies. The UPRR and IDOT will establish a maintenance fund to be used for activities related to specific management

activities in the destination site. Management may include mowing, prescribed burns, and manual or chemical removal of potentially invasive plant species.

The Contractor selected to conduct the translocation work will meet the following minimum requirements:

- 1) As an agency or individual, have or be able to obtain an IDNR Permit for the handling and care of the *Papaipema eryngii*.
- 2) Have a minimum of a four-year degree in conservation or environmental sciences (or entomology) with focus on habitat restoration and threatened and endangered species protection.
- 3) Knowledge of prairie habitats and *Papaipema eryngii*, with experience in conducting work or research on these topics including live trapping of individuals.
- 4) Familiarity in developing monitoring techniques for *P. eryngii* and applying them to the translocation sites.
- 5) Familiarity in the preparing of annual reports required by the IDNR

The destination site agencies shall meet the following requirements:

- 1) Have a land management plan that includes the restoration of prairie habitats that will enhance the growth of *Eryngium yuccifolium*
- 2) Have the ability to provide minimal maintenance activities in the area of the translocated plants and larvae that would include:
  - Prescribed Burns
  - Knowledge of mowing and maintenance activities in native prairie habitat
  - Licensed Illinois pesticide applicator
- 3) Ability to manage and disburse escrow funds and provide annual reporting on budget activities related to the translocation activities.

If the destination agency does not have the capability to conduct these maintenance activities, the representative Contractor to perform these duties for the UPRR and IDOT will also have to meet the three above referenced criteria for maintenance of the translocation destination site.