

# BIOLOGICAL ASSESSMENT

PROPOSED RAILROAD SPUR  
CALVERT CITY, KENTUCKY

PREPARED FOR FIRST MARINE PROPERTIES  
AND  
MARSHALL COUNTY-CALVERT CITY RIVER PORT  
AUTHORITY

Corps of Engineers Project No. LRN 2014-00120

May 17, 2014

PREPARED BY

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Biological Assessment  
Marshall County-Calvert City Port

Project Description

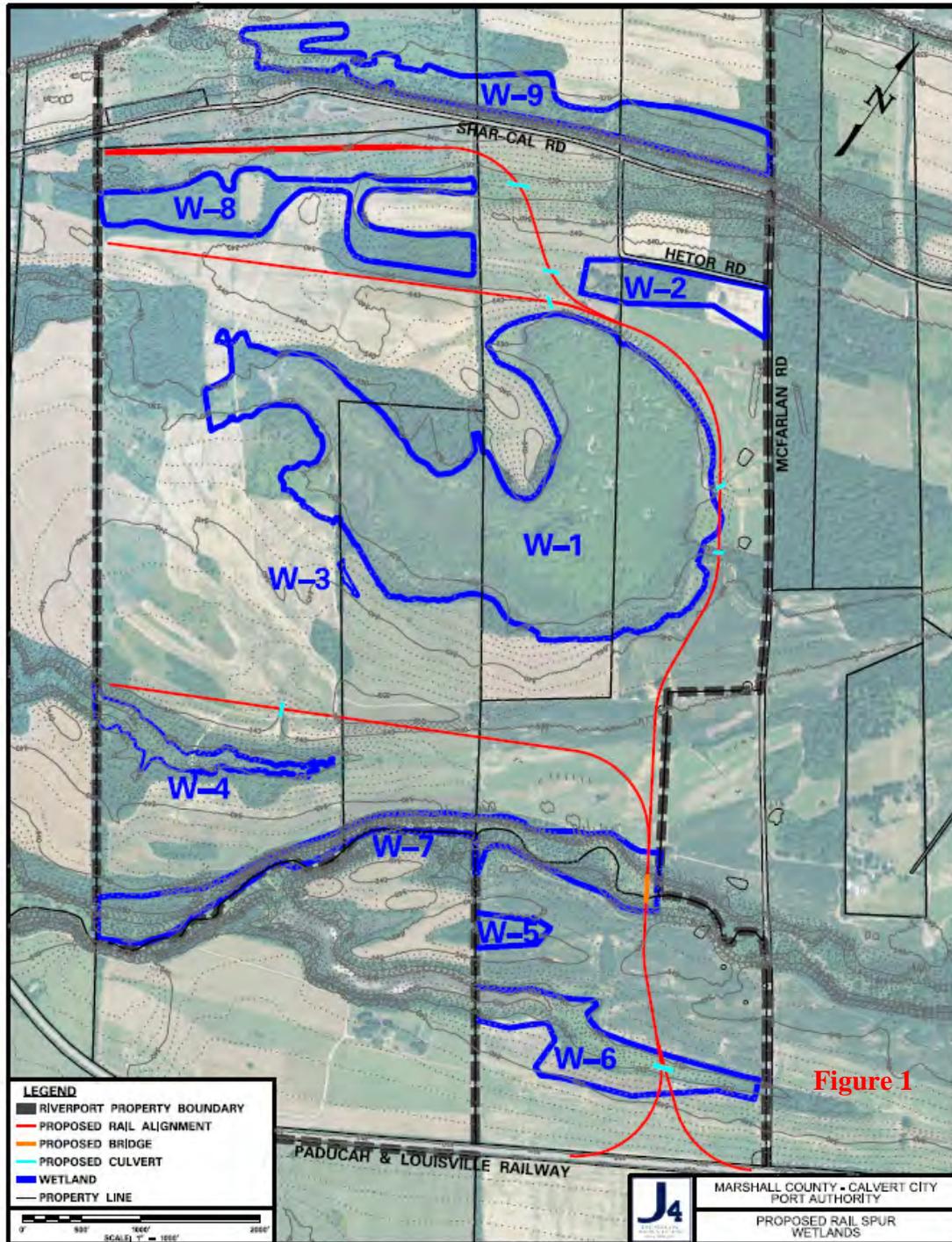
The proposed expansion of the Marshall County-Calvert City Riverport, which is located along the Tennessee River at Mile 10.7, is a direct result of the recent renovations to the Panama Canal that will enable larger ships to pass through the canal to ports along the Gulf of Mexico and the Atlantic. The expansion is a joint public and private effort with the Marshall County-Calvert City Port Authority taking responsibility for the railroad spur (please see Figure 1).

Working with the Louisiana International Gulf Transfer Terminal, the Marshall County-Calvert City Port would be an inland hub for container transfer by waterway, railroad and highways. Much needed new industry and concomitant jobs would be a major benefit to the citizens of Western Kentucky. The purpose of this portion of the project is to provide rail service to the port facilities. The overall project has been covered by a Biological Assessment prepared by Mainstream Divers and covers impacts to the three endangered bats, one endangered ave and Price's Potato Bean. This BA is a supplement that specifically covers the clearing of trees at three sites totaling 1.1 acre along the railroad right-of-way.

Rail access to the new facility requires a new wye connection and spur from the existing Paducah & Louisville Railroad mainline. The proposed rail spur will cross Cypress Creek approximately 1000' southwest of McFarlin Road. The proposed Cypress Creek crossing will be 240', 5 span bridge with battered piles and 2:1 abutment slopes located out of the floodplain with no impacts to jurisdictional wetlands. The proposed structure is sized to avoid any rise in the 100-year flood elevation and to maintain one foot of freeboard between the bottom of the bridge and the 100-year flood elevation.

This Biological Assessment covers three endangered bats, an endangered bird, and a threatened plant--Indiana Bat (*Myotis sodalis*), Northern Long Eared Bat (*Myotis septentrionalis*) and Gray Bat (*Myotis grisescens*), Interior Least Tern (*Sterna antillarum athalassos*) and Price's Potato Bean (*Apios priceana*). Primary source of guidance in preparing this Assessment was *Indiana Bat survey Guidance for Kentucky, May 1, 2013* by USFWS and KDFWR.

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## INDIANA BAT

Studies have identified at least 29 tree species used by Indiana bats (*Myotis sodalis*) during the summer and during spring and fall migrations. Since so many tree species are



utilized as roosts, tree species is likely not a limiting habitat requirement (<http://www.fs.fed.us/database/feis/animals/mammal/myso/all.html>). In addition to trees, Indiana bats have used a Pennsylvania church attic, a utility pole, and bat boxes as roosts. However, use of man-made structures appears to be rare. Roost selection by females may be related to environmental factors, especially weather. Cool temperatures can slow fetal development, so choosing roosts with appropriate conditions is essential for reproductive success and probably influences roost choice.

Two types of day roosts utilized by Indiana bats have been identified as primary and alternate roosts. Primary roosts typically support more than 30 bats at a time and are used most often by a maternity colony. Trees that support smaller numbers of Indiana bats from the same maternity colony are designated as alternate roosts. In cases where smaller maternity colonies are present in an area, primary roosts may be defined as those used for more than 2 days at a time by each bat, while alternate roosts are generally used less than 2 consecutive days. Maternity colonies may use up to 3 primary roosts and up to 33 alternate roosts in a single season. Reproductively active females frequently switch roosts to find optimal roosting conditions. When switching between day roosts, Indiana bats may travel as little as 23 feet (7 m) or as far as 3.6 miles (5.8 km). In general, moves are relatively short and typically less than 0.6 mile (1 km).

Primary roosts are most often found at forest edges or in canopy gaps. Alternate roosts are generally located in a shaded portion of the interior forest and occasionally at the forest edge. Most roost trees in a Kentucky study occurred in canopy gaps in oak, oak-hickory, oak-pine, and oak-poplar community types.

Roost proximity to water is highly variable and therefore probably not as important as once thought. In Indiana, roost trees were discovered less than 660 feet (200 m) from a creek, while roosts in another part of Indiana were 1.2 miles (2 km) from the nearest permanent water source. To the other extreme, roosts of a maternity colony from Michigan were all found in a 12-acre (5 ha) wetland that was inundated for most of the year. In Virginia, foraging areas near a stream were utilized. Intermittent streams may be located closer to roosts than more permanent sources of water. Ponds, streams, and road ruts appear to be important water sources, especially in upland habitats.

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PREFERRED HABITAT:

Habitat requirements for the Indiana bat are not completely understood. Bottomland and floodplain forests were once thought to be the most important habitats during the summer, but subsequent study has shown that upland forest habitats may be equally important, especially in the southern portions of the species' range. Indiana bats are found in hardwood forests throughout most of their range and mixed hardwood-pine forests in the southeastern United States. One study found a significantly greater proportion of old-growth forest (greater than 100 years), more hardwoods, and fewer conifers in stands occupied by Indiana bats than in random stands in Alabama.

Indiana bats typically spend the winter months in caves or mines. However, a few bats have been found hibernating on a dam in northern Michigan. Indiana bats need very specific conditions in order to survive the winter hibernation period, which lasts approximately 6 months. As the microclimate in a hibernaculum fluctuates throughout the winter, Indiana bats sometimes fly to different areas within the hibernaculum to find optimal conditions, but this does not appear necessary for every hibernaculum. Indiana bats may even switch between nearby hibernacula in search of the most appropriate hibernating conditions. Indiana bats are generally loyal to specific hibernacula or to the general area near hibernacula that they have occupied previously. Critical winter habitats of Indiana bats have been designated by the U.S. Fish and Wildlife Service and include 13 hibernacula distributed across Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia.

Three types of hibernacula have been designated depending on the amount of use each receives from year to year. Priority One hibernacula are those that consistently have greater than 30,000 Indiana bats hibernating inside each winter. Priority Two hibernacula contain 500 to 30,000 bats, and Priority 3 hibernacula are any with fewer than 500 bats. At least 50% of Indiana bats are thought to hibernate in the 8 Priority One hibernacula, which can be found in Indiana (3 hibernacula), Missouri (3), and Kentucky (2). Estimates of hibernating populations in 2001 suggest that Priority One hibernacula have experienced a 48% decline since 1983. Overall, populations have fallen approximately 57% since 1960 across all hibernacula. Evidence suggests that Priority Two hibernacula are becoming more important to Indiana bat survival.

NORTHERN LONG-EARED BAT

Northern long-eared bats (*Myotis septentrionalis*) spend winter hibernating in caves and mines (<http://www.fws.gov/midwest/conservation/mammals/nlba/nlbaFactSheet.html>). They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific



Northern Long-eared Bat

*Myotis septentrionalis*

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areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

In summer, they roost in a variety of shelters including under buildings, shutters, and tree bark, but at night return to caves (Harvey, et al. 1999). This bat is more solitary than other species of *Myotis* and is found individually or in small groups up to 100. As their name implies, they can be distinguished from other bat species by their long ears. Consuming small night flying insects, Northern long-eared bats forage on forested hillsides and ridges rather than in streamside or floodplain forests.

GRAY BAT



With rare exceptions, gray bats (*Myotis grisescens*) live in caves year-round (<http://www.fws.gov/midwest/Endangered/mammals/pdf/gray-bat.pdf>). During the winter, gray bats hibernate in deep, vertical caves. In the summer, they roost in caves which are scattered along rivers. These caves are in limestone karst areas of the southeastern United States. They do not use houses or barns.

INTERIOR LEAST TERN



Interior Least terns (*Sterna antillarum athalassos*) are the smallest member of the gull and tern family (<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.Actions?code=B07N>). Approximately 9" in length and unlike gulls, terns will dive into the water for small fish. The body of least terns is mostly gray and white, with black streaking on the head. Least terns have a forked tail and narrow pointed wings while terns less than a year old have less distinctive black streaking on the head

and less of a forked tail.

Least tern is a migrant, present in Ill. from late May- early Sept (<http://wwx.inhs.illinois.edu/collections/birds/ilbirds/37/#life>). This tern is not as colonial as some tern species, nesting in well scattered groups that are defended by both sexes, with the space between nests neutral territory. When young are able to fly, terns desert the colony and

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continue to feed along the river near the nesting area, eventually the terns travel along rivers and lakes several weeks before migration. Preferred fishing sites occur along sandbars or near the colony during breeding season and extend along river and accompanying waters later in season.

Importantly, sandbars are preferred nesting habitat and water levels dictate start of breeding activities. As one would expect, severe floods may delay or prevent nesting. For example, a colony at St. Louis was consistently flooded and apparently abandoned nesting activities.

PRICE'S POTATO BEAN

**IDENTIFICATION:** Price's Potato-bean (*Apios priceana*) is a climbing yellow-green vine growing from a stout, potato-like tuber ([http://www.forestry.state.al.us /PDFs/ResourceSheets/Plants/Price's\\_Potato-bean.pdf](http://www.forestry.state.al.us/PDFs/ResourceSheets/Plants/Price's_Potato-bean.pdf)). Vines may be up to 15 feet long with pale pink or greenish-yellow pea or bean type flowers that bloom from July - August. The fruit is a pod about 4 - 6 inches long. The plant grows in forest openings in mixed hardwood stands where ravine slopes grade into creek or stream bottoms. Plants often found with this plant include cane, chinquapin oak, basswood, and slippery elm.



Materials and Methods

Since most of the land associated with the railroad spur construction is in agricultural production for row crops (sow beans in 2013), forested areas along the railroad alignment were reviewed for possible bat habitat and Price's potato bean.

As part of the railroad construction, three distinct areas totaling 1.1-acre of deciduous mixed hardwoods would be removed. Area 1 is located at the crossing of Cypress Creek and is 0.8-acre in size; area 2 is adjacent to McFarlin Road and is 0.2-acre in size; and area 3 is located at the northwest portion of the property near Shar-Cal Road and is 0.1-acre in size (please see Figures 2, & 3). All three sites were dominated by young trees with dbhs running from 6 to 12 inches. However, single trees ranging from 18 to 26+ inches could be found at areas 1 and 2. Lightening struck trees were nonexistent and dead trees were hard to find along the railroad corridor because of dormancy, but no obviously dead trees were located.

Tree composition at the sites consisted of sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), American elm (*Ulmus Americana*), hackberry (*Celtis occidentalis*), northern red oak (*Quercus rubra*), and white oak (*Quercus alba*). No shagbark hickory

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(*Carya ovata*) or silver maple (*Acer saccharinum*), species that have exfoliating bark suitable for bat use, were found in the areas to be cleared.

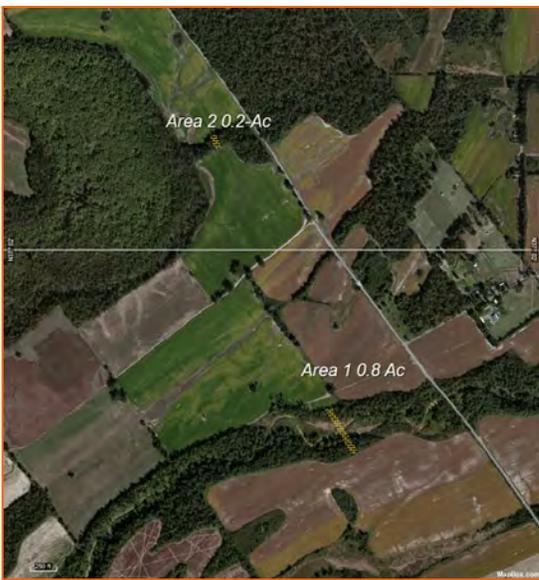
Results and Conclusions

**Endangered Bats**

There are no caves, mines, or rock shelters within the project boundaries; therefore, no winter habitat exists for the Indiana, Northern Long-eared or Gray bats. As such, there would be no impacts to Gray bats winter or summer roosting habitat, since they depend on caves, mines and rock shelters that do not exist onsite. Because there are many forested habitats in the lower Tennessee and Ohio Rivers for the bats to roost and feed, the project is not likely to adversely affect the Gray Bat from clearing 1.1 acres of trees for the railroad right-of-way.

Based on observations at Areas 1, 2, and 3, summer habitat for Indiana Bats is very poor with few preferred roost tree species along the right-of-way. However, there is excellent summer habitat near the rail spur, especially in the 120+ acre “Comma” wetland to the west of the alignment. There are no plans at this time to disturb this wetland. As such, the railroad spur right-of-way clearing 1.1-acre of trees is not likely to adversely affect the Indiana Bat. Similarly, the Northern Long-eared Bat prefers forested hillsides and ridges for feeding and this type habitat is sparse along the railroad spur right-of-way. Again, removing 1.1-acre of trees in order to construct the railroad spur is not likely to adversely affect the Northern Long-eared Bat.

Finally, because of the relatively small area (1.1 acre) of habitat cleared for the rail spur and the existence of large blocks of forested tracts in the vicinity of the project, it is not likely to adversely affect these endangered bat species.



Figures 2 and 3 depicting areas where tree removal will take place along the 40-foot railroad right-of-way.

### **Endangered Ave**

There are no suitable nesting sites (sand bars) along the railroad spur right-of-way; and regarding possible feeding areas, the Tennessee River is quarter mile away from the closest point to the railroad spur. With this tern preferred habitat being big rivers with exposed sand bars for nesting and feeding, the construction of the rail spur is not likely to adversely affect this endangered bird.

### **Threatened Plant**

For detailed coverage of Price's Potato Bean, again, the reviewer is referred to the project's overall BA prepared by Mainstream Divers as part of the environmental compliance process for the Marshall County-Calvert City Port project.

As part of the Wetland Delineation process for this project, the author was ever on the watch for threatened and endangered plants in the study area. This was also the case for Price's Potato Bean. Although a good variety of plants were observed, Price's Potato Bean was not found.

Price's Potato Bean preferred habitat is moderately disturbed open rocky wooded slopes and floodplain edges in well drained loamy soils ([http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular\\_report.wmt&loadTemplate=species\\_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular\\_report.wmt&elKey=138209&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=155895&offPageSelectedElType=species&offPageYesNo=true&post\\_processes=&radiobutton=radiobutton&selectedIndexes=155895&selectedIndexes=138209](http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=138209&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=155895&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=155895&selectedIndexes=138209)). Sites are usually under mixed hardwoods or in associated forest clearings, often where bluffs or ravine slopes meet creek or river bottoms. Soils are well-drained and loamy, formed on alluvium or over calcareous boulders. Several populations extend onto road or powerline rights-of-way.

Price's potato-bean is an inhabitant of open, mixed-oak forests, forest edges and clearings on river bottoms and ravines, being unable to tolerate deep shade. The species occurs on well-drained loams on old alluvium or over calcareous boulders. Associates typically include *Quercus muhlenbergii*, *Campanula americana*, *Lindera benzoin*, *Arundinaria gigantea*, *Tilia americana*, *Fraxinus americana*, *Acer saccharum*, *Ulmus rubra*, *Cercis canadensis*, *Toxicodendron radicans* and *Parthenocissus quinquefolius*.

Four extant populations of *A. priceana* are known from Kentucky. The type location near Bowling Green, Warren County, Kentucky, was characterized as a rocky woods; it has been destroyed. A population in Livingston County (estimated at 50-65 plants in 1984) has been severely degraded by cattle since their introduction into the area in 1986. Additional collections in Kentucky have been made in Lyon and Trigg counties. The Lyon County site consisted of 25-30 individuals, extending onto a right-of-way.



Figure 4. Floodplain of Cypress Creek at the bridge crossing shown by arrow. 5-29-2013 photo by Joe Cathey.

In conclusion, railroad right-of-way Areas 2 and 3 have soils that are not well drained and there are no limestone outcroppings anywhere in the project area (please see Figures 2 and 3). Area 1 located along Cypress Creek has habitat that appears to be acceptable to Price's Potato Bean, i.e. steep slopes leading to a floodplain; however, an electrical transmission line crosses this location and herbicides are used to keep it clear and that would prevent the plant from establishing along the

treated areas. Likewise, the floodplain of Cypress Creek experiences severe flooding from the backwaters of the Tennessee River (please see Figure 4), while the northern and southern banks are forested and not conducive to establishment of this threatened plant, which is not tolerant of shade. As such, construction of the rail spur is not likely to adversely affect the endangered Price's Potato Bean.

#### References

Harvey, Michael J., J. Scott Altenbach, and Troy L. Best. 1999. Bats of the United States, Published by Arkansas Game & Fish Commission. 64p