

# FRENCH CREEK TOWNSHIP

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<u>PNDI Rank</u>		<u>Legal Status</u>	
Global	State	Fed.	State

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*NATURAL HERITAGE AREAS:*

DEER CREEK BDA *County Significance*

FRENCH CREEK BDA *Exceptional Significance*

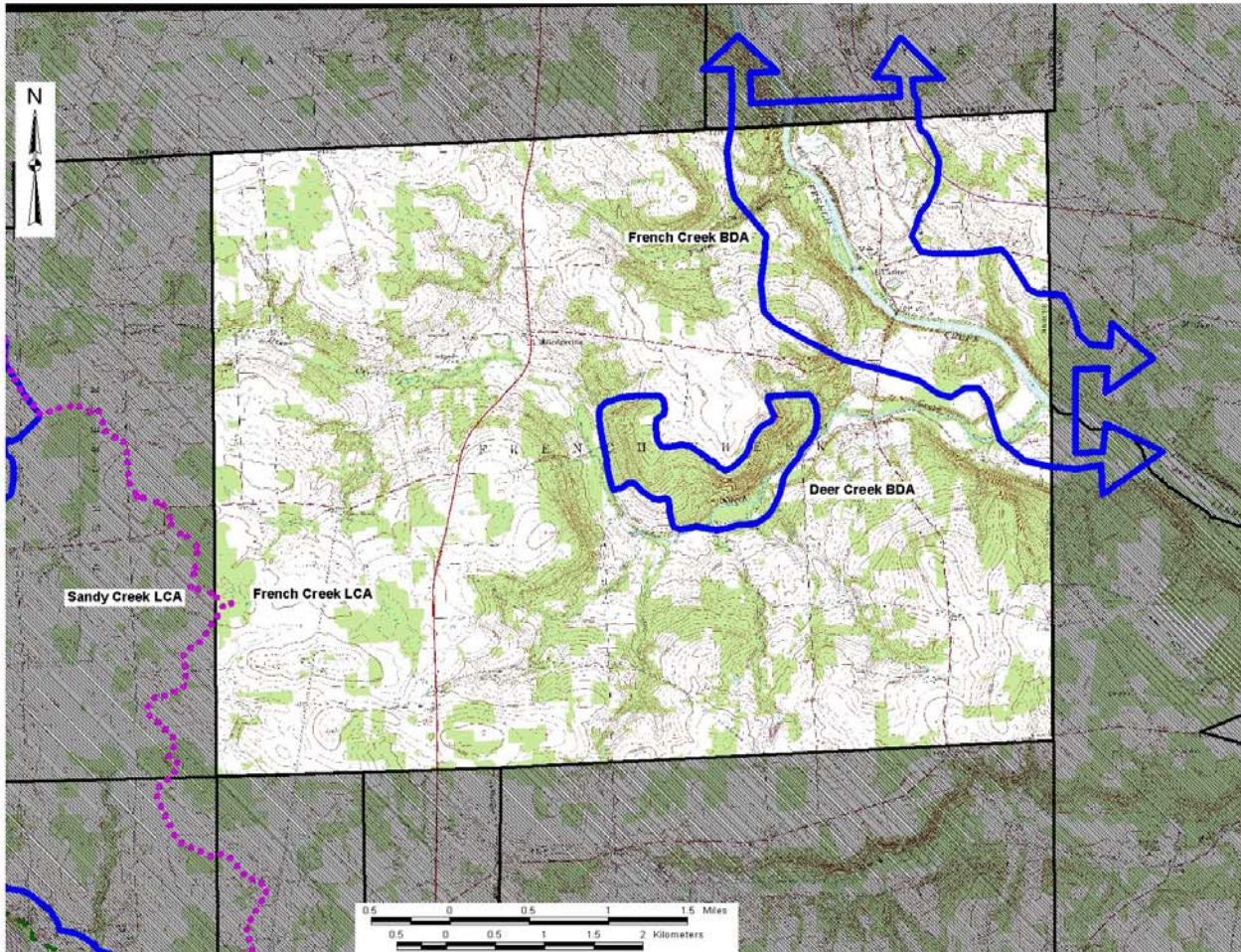
Red-head Pondweed ( <i>Potamogeton richardsonii</i> )	G5	S3	PT
Special Animal 1	G4	S2	PT
Special Animal 2	G2	S2	PT
Special Animal 3	G3	S2	PT
Special Animal 4	G3G4	S2S3	PC
Special Animal 5	G5	S3	PC
Special Animal 6	G4	S1S2	PE
Special Animal 7	G3	S2	PT
Water willow ( <i>Decodon verticillatus</i> ) shrub wetland	G?	S3	

FRENCH CREEK LCA *Exceptional Significance*

SANDY CREEK LCA *Exceptional Significance*

*MANAGED LANDS:* None

# French Creek Township



## French Creek Township

### Mercer County Natural Heritage Inventory

#### Biological Diversity Areas:

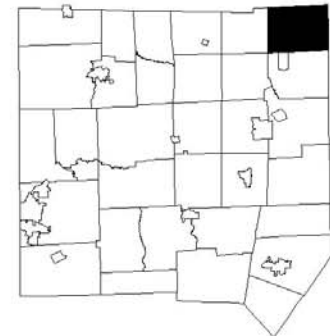
Deer Creek  
French Creek

#### Landscape Conservation Areas:





French Creek  
Sandy Creek

#### Managed Areas:

None



#### Map Legend

-  Biological Diversity Area (BDA)
-  Landscape Conservation Area (LCA)
-  Audubon Society Important Bird Area (IBA)
-  Managed Area
-  Municipal Boundary

## FRENCH CREEK TOWNSHIP

French Creek Township is located in the northeast corner of Mercer County. French Creek and its tributary, Deer Creek, are important natural features in the township. There are four Natural Heritage Areas and no managed lands located in French Creek Township.

### Deer Creek BDA

Deer Creek BDA focuses on a south-facing slope north of Deer Creek and is recognized for its diversity of plant species and for the contiguous forested habitat it offers within a fragmented landscape. The BDA can be divided into roughly two sections, the floodplain south of Deer Creek and the drier south-facing slope to the north.

The slope forest has a mature canopy of red maple (*Acer rubrum*), black cherry (*Prunus serotina*), red oak (*Quercus rubra*), white oak (*Quercus alba*) and American beech (*Fagus grandifolia*). The understory is well developed with cucumber tree (*Magnolia accuminata*), witch-hazel (*Hamamelis virginiana*) and black gum (*Nyssa sylvatica*). Spicebush (*Lindera benzoin*) grows on the lower sections of the slope. A diversity of herbaceous species include mayapple (*Podophyllum peltatum*), sallow sedge (*Carex lurida*), sessile bellwort (*Uvularia sessilifolia*), beard short-husk (*Brachylyletrum erectum*) and black cohosh (*Cimicifuga racemosa*).

The floodplain of Deer Creek is widest on the southside of the creek. The slope described rises above the narrow floodplain on the northside. Groundwater seepages originate on the northern slope and support an interesting array of plants including eastern swamp saxifrage (*Saxifraga pennsylvanica*), joe-pye-weed (*Eupatorium purpureum*), sallow sedge (*Carex lurida*), colt's foot (*Tussilago farfara*) and hairy bittercress (*Cardamine hirsuta*). Sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*) and an occasional American beech (*Fagus grandifolia*) compose the primary canopy species in the floodplain. The understory contains a lot of black cherry seedlings/saplings with associates of green ash (*Fraxinus pennsylvanica*) and slippery elm (*Ulmus rubra*). The herbaceous layer in this area is dominated by two primary species: blue cohosh (*Caulophyllum thalictroides*) and false hellbore (*Veratrum viride*). Other associates are false solomon's seal (*Smilacina racemosa*), large flowered trillium (*Trillium grandiflorum*), sharp-leaved hepatica (*Hepatica nobilis* var. *acutiloba*), bloodroot (*Sanguinaria canadensis*) and partridge-berry (*Mitchella repens*).



**Figure 14. Seepage along Deer Creek**

### Threats and Stresses

Deer Creek BDA is managed as a registered tree farm and is part of the Forest Stewardship Program administered by the DCNR, Bureau of Forestry. These designations ensure that the forest will be harvested in way that will help ensure the ecological integrity of the forest while providing forest products. While not currently a threat on the interior of the BDA, invasive species, such as multiflora rose (*Rosa multiflora*) are present in the nearby area. Timber harvests and the accompanying trails and roads could provide opening in the canopy which may inadvertently allow these species to invade. Other than the above concerns, there are no immediate threats to this BDA.

### Recommendations

Informing the landowner of the diversity already present on the property would help in their efforts to continue to maintain a viable forest. Forest management on this land should continue with the same high regard for best management practices and eye toward stewardship of all ecological resources. Additionally, forest managers on this property should monitor invasive species to ensure that they do not gain a foothold in the BDA.

## French Creek BDA

French Creek BDA includes the aquatic habitats and adjacent floodplain of French Creek throughout its length in Mercer County. Additionally, the floodplain of lower Deer Creek and a glacial bog (Patterson Swamp) on the north side of the creek are included. Near the confluence of Deer Creek is a large north-facing slope dominated by a Red Oak - Mixed Hardwood Forest punctuated with scattered, exposed boulders. This type of habitat is uncommon in Mercer County. Other notable features are small glacial kettle holes scattered through the floodplain of French Creek that were created from ice blocks left on the valley floor as the glaciers retreated during the last ice age.

The Red Oak - Mixed Hardwood Forest is dominated by sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), black cherry (*Prunus serotina*), red maple (*Acer rubrum*), tuliptree (*Liriodendron tulipifera*) and American beech (*Fagus grandifolia*). The understory is sparse and includes witch-hazel (*Hamamelis virginiana*), mountain holly (*Ilex montana*) and bitternut hickory (*Carya cordiformis*). Common herbs are starflower (*Trientalis borealis*), big-leaf aster (*Eurybia macrophylla*), marginal log fern (*Dryopteris marginalis*), sharp-leaved hepatica (*Hepatica nobilis* var. *acutiloba*) and silvery glade fern (*Deparia acrostichoides*). The overstory changes with increased elevation and yellow birch (*Betula allegheniensis*) adds to the dominant tree species. The forest on the upper slope is more mature forest and the understory includes cucumber tree (*Magnolia accuminata*).

The floodplain of French Creek, disturbed from the construction and maintenance of a canal running parallel with the creek is covered by mostly young age trees but has a few large trees present. Sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), black cherry (*Prunus serotina*), white oak (*Quercus alba*) and red maple (*Acer rubrum*) make up the bulk of the canopy species. Understory is almost wholly dominated by spicebush (*Lindera benzoin*). Herbs include orange-spotted jewelweed (*Impatiens capensis*), crooked stem aster (*Symphotrichum prenanthoides*), wild ginger (*Asarum canadense*), Gray's sedge (*Carex grayii*), great bladder sedge (*Carex intumescens*), nodding sedge (*Carex gynandra*) and false nettle (*Boehmeria cylindrica*). Multiflora rose (*Rosa multiflora*) and Japanese barberry (*Berberis thunbergii*) are present in the floodplain as well.

Close to Carlton, a bluff overlooks French Creek. Above the bluff, timber has been removed. The bluff forest is dominated by hemlock (*Tsuga canadensis*) and shagbark hickory (*Carya ovata*) in the canopy. Serviceberry (*Amelanchier arborea*) dominates the understory and herbs include black cohosh (*Cimicifuga racemosa*), large flowered trillium (*Trillium grandiflorum*) and wild strawberry (*Fragaria virginica*).



**Figure 15. Old canal along French Creek**

At Carlton, the aquatic community is considered to be exemplary and is the location of seven animals and one plant species of special concern (**Special Animals 1-7** and **red head pondweed (*Potamogeton richardsonii*)**).

Patterson Swamp is the location of two glacial bogs. The northernmost bog is a **water willow (*Decodon verticillatus*) shrub wetland** dominated almost entirely by water-willow. Other associates include swamp milkweed (*Asclepias incarnata*), silky dogwood (*Cornus amomum*) and American burr-reed (*Sparganium americanum*). Surrounding this bog are uplands and slopes dominated by red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), black cherry (*Prunus serotina*), a few hemlock (*Tsuga canadensis*) and quaking aspen (*Populus tremuloides*). The understory is dominated by cucumber tree (*Magnolia accuminata*), black gum (*Nyssa sylvatica*) and sassafras (*Sassafras albidum*).



**Figure 16. Patterson Swamp**

**Focus Area: Patterson Swamp**

The southernmost bog appears drier than the northern bog. Water-willow is present in the open wetland but shares dominance with halbeard-leaved tear-thumb (*Polygonum sagittatum*) and cinnamon fern (*Osmunda cinnamomea*). The edges of the bog are crowded with buttonbush (*Cephalanthus occidentalis*), poison sumac (*Toxicodendron vernix*), creeping raspberry (*Rubus hispidus*), silky dogwood and silver maple (*Acer saccharinum*). Herbaceous species on the edges include skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*) and running ground pine (*Lycopodium clavatum*).

The nearby floodplain of French Creek is bisected by a railroad. Canopy species growing along the bank of the creek between the water and the railroad include silver maple, sycamore (*Platanus occidentalis*) and slippery elm (*Ulmus rubra*). No understory is present and wrinkle-leaf goldenrod (*Solidago rugosa*) and woodland sunflower (*Helianthus divaricatus*) are common herbs. There is little forested buffer between the creek and the railroad corridor.

## Threats and Stresses

Most of the downstream part of the BDA is owned by the Boy Scouts of America, French Creek Council and is known as Camp Custaloga Town. There are no immediate threats of development and the landowner is interested in protecting the natural values of the property. The biggest immediate threat to this site may be the expansion of invasive exotic species already present in the floodplain. Activities of the scouts such as shelter building, establishment of camps and trail construction may inadvertently cause harm to the natural communities on the property and contribute to the establishment of exotic species. The aquatic community of French Creek, long considered one of the most biologically diverse communities in eastern North America, is threatened by zebra mussels from upstream sources.

The natural community in Patterson Swamp depends on ground water flow. Changes in the water quality and quantity feeding the area could affect the wetlands making them less suitable to the present community. Addition of nutrients into the wetland system could alter the community and increase susceptibility to aggressive wetland exotic species such as common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*). Changes on the slopes around the bog could also impact the swamp.

## Recommendations

Informing the French Creek Council of the Boy Scouts of America of the designation and significance of the land would be a good first step in the protection of the property. The Boy Scouts can use the information in the inventory as an educational resource in inspiring a greater appreciation of the value of French Creek and the greater watershed of which it is a part.

Any activity that may compromise the canopy or disturb the forest would be detrimental to the structure of this community and would fragment this area of contiguous forest. Expanding the acreage in forest within and adjacent to the BDA would help provide a buffer for the forest communities within. Monitoring of invasive species should be conducted at some regular frequency. Boats used by the scouts or others should be washed thoroughly before entering the creek to prevent the spread of zebra mussels into French Creek and into other waterways.

Informing the landowner of Patterson Swamp of the significance of the wetlands would be a good first step in the conservation of this area. Activities that lead to changes in hydrology of the wetlands including draining, ditching or upstream development should be carefully evaluated. Impacts of development and forestry activities on the hydrology and nutrients loads of these sensitive communities should be analyzed.

Additionally, checking any invasion by aggressive exotics would be an important component of stewardship at this site. Further work with the landowner may provide opportunities to monitor invasive plants.

## **French Creek LCA**

French Creek LCA includes the entire watershed of French Creek in Erie, Crawford, Mercer and Venango counties. Discussed here is the section in Mercer County. The French Creek Watershed Conservation Plan (Western Pennsylvania Conservancy 2002) contains further information on the French Creek Watershed as a whole.

French Creek flows through the northeastern part of Mercer County for about four miles before crossing into Venango County. On its course, it picks up one large tributary, Deer Creek, near the Venango County line. The aquatic communities of French Creek in Mercer County are impacted by runoff and nutrients from Cochran just upstream of Mercer County line in Crawford County. One large wetland is present just north of the creek before it reaches Carlton. The wetland is described in Patterson Swamp BDA.

Agricultural land and forest are the dominant land covers in the Mercer County portion of the French Creek watershed. At and above the confluence with Deer Creek is Camp Custaloga Town – a Boy Scouts of America camp. The village of Carlton is the main population center in the Mercer County portion of the watershed.

### Threats and Stresses

A primary threat to French Creek is a lack of understanding of the creek and the hydrogeologic processes that define the health of the watershed. As the French Creek Conservation Plan details, many issues such as agriculture, runoff and sewage discharges are potential threats to the health of the creek. Unfortunately because of a dearth of scientific data on the creek we cannot know the actual extent of the impacts from any one source or the total impacts from all the sources. Invasive species already present in the watershed and invasive species not yet noted can wipe out habitats occupied by rare species that are confined to a limited area. Zebra mussels have recently been documented in the creek and the rapidity and extent of their spread will need to be monitored.

### Recommendations

More scientific studies are needed in the French Creek watershed to better understand the ecology of the stream and the hydrogeology of the stream. Also the invasive species present in the watershed need to be mapped and their spread checked. Additional and more complete data can be used to assist in informed decisions on land use, suggest approaches to management and educate the public and landowners.

Once key studies are completed, stakeholders in the watershed need to work together to achieve common goals. Financial incentives can be provided to encourage Best Management Practices (BMPs) on the lands in the watershed. By working together with a complete data set and a better understanding of the creek, stakeholders can consider their responsibility in protecting the biotic resources of the creek for generations to come.

Education programs informing landowners and encouraging the use of BMPs would be a good first step in reducing the amount of nutrients that are currently going into French

Creek. Fencing streams in pastures would keep cattle out of the stream, help improve the health of cattle and reduce the amount of sediment going into the stream. Additional programs designed to identify and prevent the spread of invasive species would help reduce the impacts of these species. Signage at all of the boat launches instructing boaters when and how to wash their boats would help reduce the spread of zebra mussels in the creek.

### **Sandy Creek LCA**

Sandy Creek LCA is discussed in New Vernon Township.