Prothonotary Warbler

(Protonotaria citrea)

Status:

Population size: 1.8 million

Photo by Glen Tepke.

Also known as Golden Swamp Warblers because of their stunning color and penchant for damp lowland woods, Prothonotary Warblers breed mainly in the southeastern United States and winter in mangrove forests of Central and South America. This species, which nests in cavities, is threatened by habitat destruction on both its breeding and wintering grounds.

Identification

The bright golden head of an adult male Prothonotary Warbler makes it one of the most striking birds in North America. The brilliant yellow of the head stretches down the breast before eventually giving way to white undertail coverts. The yellowish head and underparts of this bird are set off nicely by blue-gray wings, an olivish back, and a blue-gray tail with prominent white spots. Female Prothonotary Warblers share the same plumage pattern as males, but are not as brilliantly colored.

Distribution and Population Trends

Prothonotary Warblers can be found nesting across much of the eastern United States, ranging from Florida and eastern Texas north to Wisconsin, western New York, and northern New Jersey. Their breeding stronghold, however, is in the lowlands of the southeastern United States. Many Audubon Important Bird Areas (IBAs) provide nesting habitat for Prothonotary Warblers, including North Carolina's Roanoke River Bottomlands IBA and Florida's Osceola National Forest-Okefenokee and Pinhook Swamps IBA. Most birds winter in northern Venezuela, Colombia, and Panama, but the species can also be found in coastal mangroves as far north as Mexico's Yucatan Peninsula.

The most recent Breeding Bird Survey (BBS) data show a non-significant decline of 1.1% per year for Prothonotary Warblers between 1966 and 2000; during much of this period (1966 to 1996), however, the BBS data reveal a significant annual decline of 1.6%.

Ecology

Prothonotary Warblers breed in wooded swamps, flooded bottomland forests, and along slow-moving rivers. As the only eastern wood warblers that nest in cavities, the birds often use old Downy Woodpecker nests in dead snags. They will also utilize nest boxes for nesting, which begins in April. The female builds the nest, using mostly mosses and liverworts. The female then incubates a typical clutch of four to six eggs for 12 to 14 days. Young birds leave the nest after about 11 days at which time it has been claimed that they can swim if necessary. In the southern part of their breeding range, Prothonotary Warblers will nest twice in one season.

Prothonotary Warblers eat mostly insects and snails during the breeding season; the bulk of the food taken includes caterpillars, flies, midges, spiders, and mayflies. On its wintering grounds, this species will also eat fruits, seeds, and nectar along with insects. Birds depart for their winter territories beginning in late July, arriving on the wintering grounds from late August through October.

Threats

Destruction of mangroves on Prothonotary Warblers' wintering grounds is probably the greatest threat to these birds; coastal development, highway construction, agriculture, and aquaculture have eliminated 50 to 70% of the original mangroves in Colombia and Ecuador. Increased destruction of mangroves in the Neotropics seems to match the timing

of declines of Prothonotary Warblers in the heart of their breeding range, although no there is no direct evidence that this caused the decline. In addition, breeding habitat in the United States is being degraded and destroyed. Only 10% of the United States' historic bottomland forest--prime breeding habitat for the Prothonotary Warbler--remains. Besides eliminating possible nesting sites, logging can also change the hydrology of breeding sites, resulting in the drying of the seasonally flooded woods that Prothonotary Warblers prefer.

Conservation

Partners in Flight (PIF) lists Prothonotary Warbler as a high priority species for the Mississippi Alluvial Valley, an area that hosts 20% of the breeding population of this species. One of the goals of the Bird Conservation Plan for the Mississippi Alluvial Valley is to maintain or restore more than 1,500,000 hectares of predominantly mature, forested wetlands in 100 patches of contiguous forest; all of these forest patches should be large enough to support source populations of Prothonotary Warblers. This species has also been identified as a high priority species by PIF for the Mid-Atlantic Coastal Plain. Part of PIF's conservation objective for this area calls for 300,000 acres of forested wetland, to support 16,000 pairs of Prothonotary Warblers, along with other birds found in this habitat.

What Can You Do?

Audubon's Important Bird Area program is a vital tool for the conservation of Prothonotary Warblers as well as other species. To learn more about the Important Bird Areas program and how you can help, visit: http://www.audubon.org/bird/iba/.

U.S. National Wildlife Refuges provide essential habitat for Prothonotary Warblers, and a great number of other species throughout the U.S. and its territories. Unfortunately, the refuge system is often under-funded during the U. S. government's budgeting process. To learn more about how you can help gain much needed funding for U.S. National Wildlife Refuges, visit: http://www.audubon.org/campaign/refuge_report/

The Cornell Laboratory of Ornithology and the USDA Forest Service coordinate Birds in Forested Landscapes, a citizen-science project that links volunteer birders and professional ornithologists in a study of the habitat requirements of North American forest birds, including Prothonotary Warblers. To learn more about Birds in Forested Landscapes, and how you can participate in the project, visit: http://birds.cornell.edu/bfl/.

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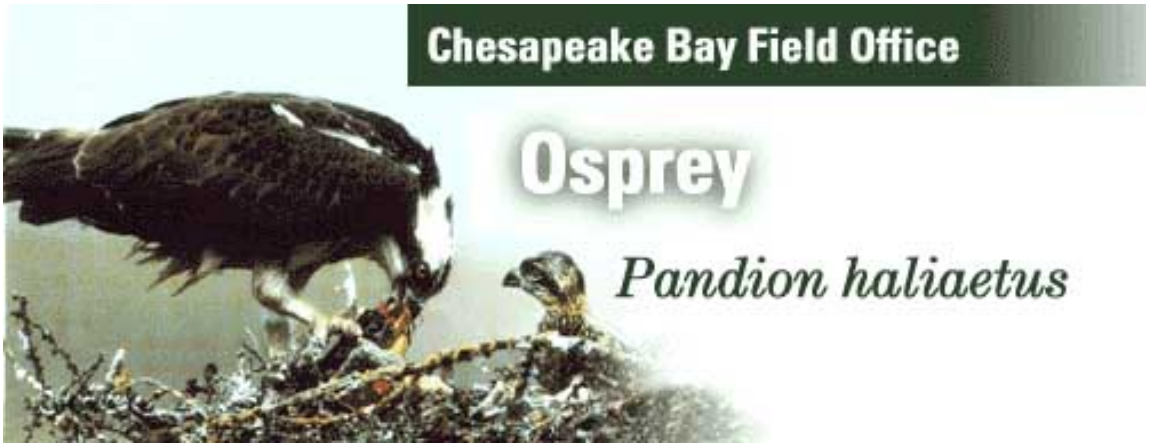


photograph by Tim Fitzharris

Ospreys occur in nearly every corner of the globe, but nowhere as abundantly as the Chesapeake Bay area. The Chesapeake nesting population is the largest known concentration in the world, numbering nearly 2,000 pairs! Some even refer to the Chesapeake as the "osprey garden." Ospreys migrate to the Chesapeake every spring, usually around the beginning of March.

The familiar swooping of ospreys plunging for fish and their distinctive "kyew kyew kyew" call is enjoyed by many boaters and fishermen. Fortunately, ospreys are doing very well on Chesapeake Bay and are common sights on navigational buoys and markers. Yet, there was a time not long ago when their survival on the Chesapeake was

Natural History

The osprey, or fish hawk, feeds exclusively on live fish. Its toes and talons (claws) are long and sharp for holding onto slippery fish. Ospreys are mostly brown on their backs, white below, and have long narrow wings in the shape of a stretched out "M". They have distinctive dark brown patches at the bend of each wing and dark brown stripes through the eyes. Ospreys are fairly large birds,with a body length of about 21-24 inches and a wing span from 4 1/2 to 5 1/2 feet. Females are larger than males, as is true of most birds of prey. Their habitats include shallow water estuaries, lakes, and rivers.

Foraging

During spring and summer, ospreys find an abundance of medium-sized fish on the Chesapeake to feed their young. Males typically forage far and wide for food, whereas females stay on the nest, or nearby. Ospreys hunt by soaring over water, periodically hovering on beating wings to scan for surface schooling or spawning fish. On breezy days, they let the wind keep them aloft as they search for fish. Cloudy conditions with rippled water lessen the osprey's fishing success, which can jeopardize hungry nestlings.

Upon sight of its prey, the osprey makes a spectacular dive. Folding its wings tightly, it descends swiftly and plunges feet first into the water, often submerging completely. Another technique is a shallow scoop for fish at the surface of the water and the osprey hardly gets wet. Clasping the twisting fish, the osprey takes flight and labors to climb ever higher. Successful early season hunts often end with a beautiful courtship flight, an undulating display of the male's flight power to its mate.

Nesting

Ospreys three years or older usually mate for life, and return to the same nest site year after year. Spring courtship marks the beginning of a five month period when the pair works together to raise their young.

A clutch of three or four eggs are laid by the third week of April. The bulk of the nest and its depressed center helps conserve heat. The eggs, usually mottled cinnamon brown, are about the size of jumbo chicken eggs, and must be incubated for nearly 5

threatened.

Other migratory birds of the Chesapeake:

Great Blue Heron

Canvasback

Canada Goose

Home

weeks.

The eggs finally yield their treasures, nearly 2-ounce helpless chicks that can barely beg for food. Amazingly, with a plentiful supply of fish, these balls of fluff will become soaring acrobats in just eight weeks. However, if food is scarce, the chick that hatches from the first laid egg stands the best chance of survival since it can outcompete its smaller siblings and may even push them out of the nest.

Osprey abundance in the Bay region is partially determined by favorable nesting sites. Offshore structures offer protection from terrestrial predators (such as raccoons) and human activity, permit rapid detection and escape from danger, and place the birds near their food supply. Ospreys may choose sites over the water such as duck blinds, navigation markers, or manmade nesting platforms or high trees and utility poles on land.

Fortunately, ospreys, if not harassed, are reasonably tolerant of human beings. When these raptors are respected as interesting, though noisy neighbors, they will nest close to people, and can be enjoyed at many sites around the Bay. An Eastern Shore river such as the Tred Avon has constant summer boating traffic, but also supports over 30 nests which fledge large numbers of young. Ospreys are also nesting successfully on heavily used western shore rivers like the South, Severn, Magothy, and Back. In recent years, there has even been a nest on the Potomac within the limits of Washington, D.C.

Migration

Ospreys return to the Chesapeake every spring, usually around the beginning of March. By late July, most young Chesapeake ospreys are on the wing. The young and adults begin their southern migration by the end of August to wintering grounds in the Caribbean, Central America and South America. Throughout September ospreys and many other birds of prey from the northeastern U.S. funnel through coastal Virginia just north of the Bay Bridge Tunnel near the Eastern Shore of Virginia National Wildlife Refuge. More than 100 osprey sail over the mouth of the Chesapeake during many of these "flight days" along with numerous other raptors ranging in size from bald eagles to kestrels.

Threats to Survival

Although ospreys are now a common sight on Chesapeake Bay, two to three decades ago they faced possible extinction along much of the Atlantic coast. For years, they were unable to produce enough young to maintain the population. Production was down because of egg failures caused by extremely thin and easily broken eggshells.

Years of research led to the discovery that their eggshell thinning was caused by the pesticide DDT, which had been in heavy use since World War II for spraying mosquitoes and crop pests. DDT was banned from use in the U.S. in the early 1970s and the osprey and some other affected birds of prey have made remarkable recoveries.

The help of people in constructing thousands of artificial nest platforms has also

benefitted the osprey. However, intensive human development along shorelines still can harm the aquatic environment which ospreys depend upon. Formerly, active nests were routinely removed from buoys and channel markers, reducing the number of young produced. Now, this can be done only with a permit and if safety is affected.

Some areas of the Bay are low in fish abundance and cannot support highly productive osprey colonies. In these areas, perhaps one young will survive for every nest whereas other areas with more fish can produce two or three fledglings per nest. The osprey's high visibility and position at the top of the aquatic food chain make it a valuable indicator species for detecting future habitat destruction, dwindling fish populations, and contamination of the environment.

The Future

The story of the osprey on Chesapeake Bay is one of beauty and promise. The beauty is in their spectacular flights and vociferous calls heard throughout the spring and summer. The promise arises from the resurgence of osprey abundance following the ban on harmful pesticides. And the promise can extend to the entire Bay and its living resources if people take strong measures to restore the Chesapeake's aquatic habitats. With our perseverance and determination, the osprey will remain a beautiful symbol of the Chesapeake and an environmental indicator for the future.

Top

Aunt Lucy

Ellisia nyctelea

Waterleaf family (Hydrophyllaceae)

Description: This native wildflower is a spring annual about 4-16" tall; it branches occasionally and is more or less erect. The stems are rather thick and succulent, pale green to pale purple, and glaucous; they have widely scattered to dense tufts of long white hairs. The lower leaves are opposite, while the upper leaves are alternate; they are widely spreading. Each leaf is up to 4" long and 1" across; it is simple pinnate or pinnate-pinnatifid in structure and oblong-ovate in outline. There are 7-13 narrow leaflets (or narrow lobes) on each leaf; they can be opposite or alternate. Each leaflet has 3-5 large teeth or cleft lobes. The upper surface of each leaf is medium to dark green and hairy. At the base of each leaf, there is a stout petiole that is flattened on top and somewhat hairy.

Individual flowers up to ¼" across are produced from the axils of the upper leaves; their pedicels are short, slender, and hairy. Each flower has a white or pale blue corolla with 5 petal-like lobes and a hairy green calyx with 5 large teeth. There may be fine purple lines within the interior of the corolla and tiny specks of purple on the petal-like lobes. The blooming period occurs from late spring to early summer and lasts about 1½ months. The flowers open up during the day; only a few flowers are in bloom at the same time. The corollas soon fall off, while the teeth of the calyxes become enlarged, spreading outward

from their seed capsules. Each seed capsule is globoid, slightly bifid, and hairy; it contains 4 seeds. The seeds are brown, ovoid, and finely pitted. The root system consists of a taproot.

Cultivation: The preference is partial sun to light shade, moist to mesic conditions, and a fertile loamy soil with abundant organic matter. Most vegetative growth occurs during the spring; the foliage turns yellow and withers away during the summer.

Range & Habitat: Aunt Lucy is occasional to locally common in most areas of Illinois, except the SE section of the state, where it is uncommon or absent (see Distribution Map). Habitats include deciduous woodlands, gardens and nurseries, partially shaded areas along buildings, and waste places. This wildflower prefers locations where the ground vegetation is scant as a result of overhead shade or a recent disturbance.

Faunal Associations: The nectar of the flowers attracts various kinds of bees, including Mason bees (*Osmia spp.*), Little Carpenter bees (*Ceratina spp.*), Halictid bees, and Andrenid bees. Bee flies are also attracted to the nectar of the flowers, while Syrphid flies feed mostly on the pollen. According to Ada Georgia in A Manual of Weeds (1913), the bruised foliage of Aunt Lucy has a rank disagreeable odor, therefore it is avoided by livestock and probably other mammalian herbivores.

Photographic Location: The webmaster's wildflower garden in Urbana, Illinois, where this wildflower developed spontaneously.

Comments: Aunt Lucy is an oddball member of the Waterleaf family. It is not very showy and often omitted from many wildflower guides. Aunt Lucy occurs in two quite different habitats: deciduous woodlands and disturbed areas where the ground is bare or lightly mulched. In the former habitat, it is one of our native spring wildflowers, while in the latter habitat it is a minor weed of nurseries and bare open ground in cities. The leaves of Aunt Lucy are fairly distinctive and help to distinguish it from many other kinds of plants. It resembles to some extent *Floerkia proserpinacoides* (False Mermaid), except the latter species has greenish flowers with only 3 petals and 3 sepals, and its leaflets (or lobes) are more narrow and smooth.

Return

Flat-Stemmed Spike Rush

Eleocharis compressa

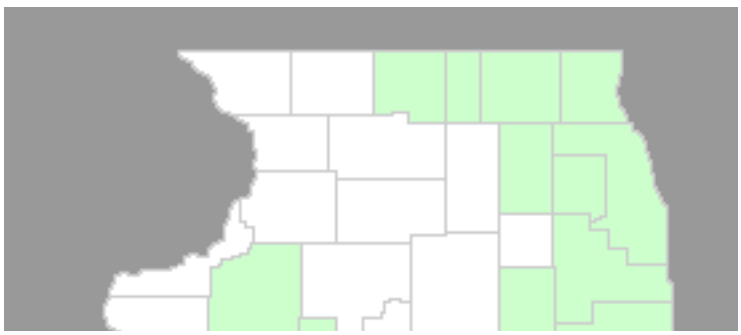
Sedge family (Cyperaceae)

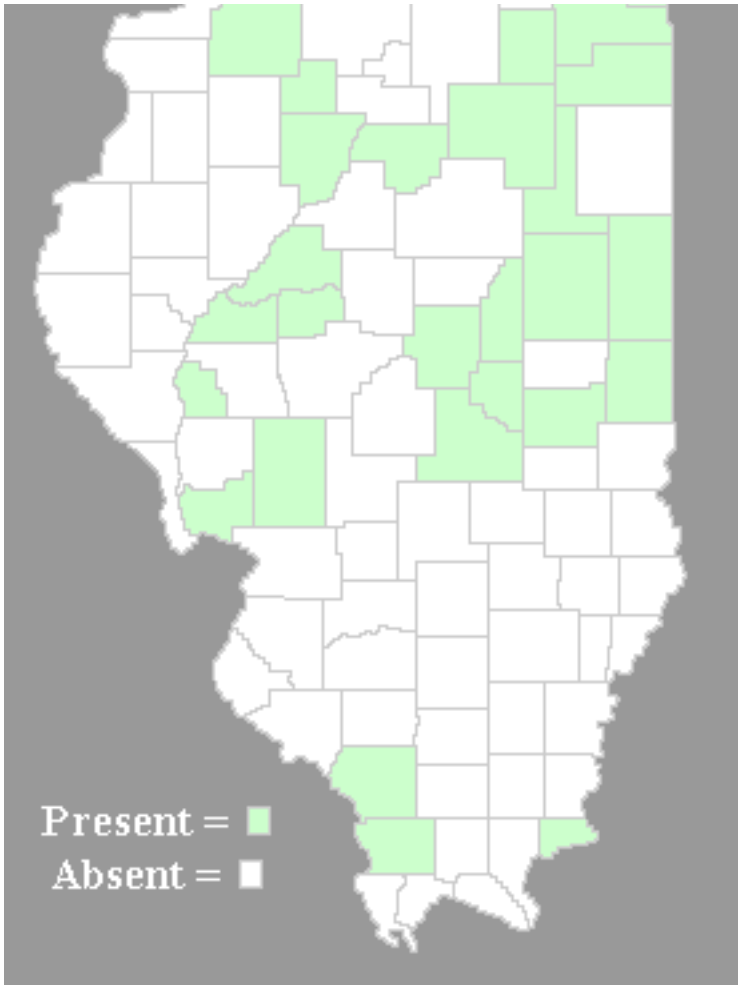
Description: This perennial spike rush forms an unbranched culm about ½–1½' tall. The stiff culm is medium green, hairless, and more or less flattened, spanning about 1 mm. in diameter. A basal sheath surrounds the base of the culm; this sheath becomes light brown to reddish brown with age and it is truncate at the apex. There is no leaf blade. The culm terminates in a single spikelet. This spikelet is lanceoloid to narrowly ovoid, medium to dark brown, and about 4-8 mm. long; it consists of a dense head of minute florets and their scales. The florets are perfect with 3 stamens and 3 styles. The floral scales are 2-3 mm. long and ovate in shape; their margins are membranous. The blooming period occurs during the summer; the florets are wind-pollinated. Fertile florets are replaced by tiny achenes, which can float on water or blow about in the wind. These achenes are 1 mm. in length (or a little less), light brown to dark brown, and obovoid in shape; each achene has a tubercle at its apex and 0-5 bristles that originate from its base (the bristles are usually absent). The tubercle has a flattened conical shape with a tiny point in its middle (apiculate); other tubercular shapes have been reported as well. The root system is fibrous and strongly rhizomatous. This spike rush often forms dense mats of culms from the rhizomes.

Cultivation: The preference is full sun and wet conditions; shallow standing water is tolerated. The soil can be muddy, sandy, peaty, or gravelly.

Range & Habitat: Flat-Stemmed Spike Rush is occasional in central and northern Illinois, while in the southern section of the state it is uncommon or absent. Habitats include damp depressions in rocky woodlands and limestone glades, prairie swales, wet dolomite prairies, sedge meadows, borders of ponds and streams, and roadside ditches. This species is associated with less degraded wetlands. It reduces shoreline erosion.

Faunal Associations: The caterpillars of *Oarisma poweshiek* (Poweshiek Skipperling) feed on the culms of *Eleocharis spp.* (spike rushes). This oligophagous species is a rare skipper. The caterpillars of





Cisseps fulvicollis (Yellow-Collared Scape Moth) also feed on spike rush, although this species is more polyphagous and common. Several leafhoppers suck juices from the culms of spike rush: *Deltocephalus gnarus*, *Dorydiella kansana*, *Limotettix bisoni*, *Limotettix elegans*, *Limotettix nigrax*, *Limotettix urnura*, *Limotettix truncatus*, and *Macrosteles potoria*. Semi-aquatic larvae of several leaf beetles (*Plateumaris spp.*) derive food and oxygen from the culms. These include: *Plateumaris aurifera*, *Plateumaris dubia*, *Plateumaris flavipes*, *Plateumaris fulvipes*, *Plateumaris germari*, *Plateumaris nitida*, *Plateumaris pusilla*, and *Plateumaris robusta*. Among vertebrate animals, the seedheads of spike rush are a source of food to ducks, geese, and rails during the summer (see Bird Table). Mallards and Canada Geese are typical examples of such birds in Illinois. These birds probably help to spread spike rush to new wetlands because the tiny seeds can cling to their damp feathers and muddy feet. The dense vegetation of spike rush provides cover for semi-aquatic insects, frogs, and other small animals.

Photographic Location: A roadside ditch along the Red Bison Railroad Prairie in Savoy, Illinois. The spikelets of the photographed plants are beginning to disarticulate their floral scales and achenes.

Comments: This medium-sized spike rush is fairly easy to identify because of its flat culms and the appearance of its achenes (which usually lack bristles). The small seedheads are often a darker shade of brown than those of other *Eleocharis spp.* (spike rushes), and they develop a chaffy appearance because of the transparent margins of the scales. Because there is some variability across local populations, some specimens may be more difficult to identify; hybridization across different species of spike rush may be responsible for some of these anomalies. Flat-Stemmed Spike Rush is regarded as a variety of Slender Spike Rush by Drepalik & Mohlenbrock (1960), or *Eleocharis elliptica compressa*. Under this taxonomic treatment, the typical variety has less flattened stems than *var. compressa*, otherwise they are very similar to each other.

Return

Ellisia; Waterpod (*Ellisia nyctelea*)

Plant Species of Concern

State Rank: S2 (imperiled), Global Rank: G4G5 (apparently secure/secure)

Identification

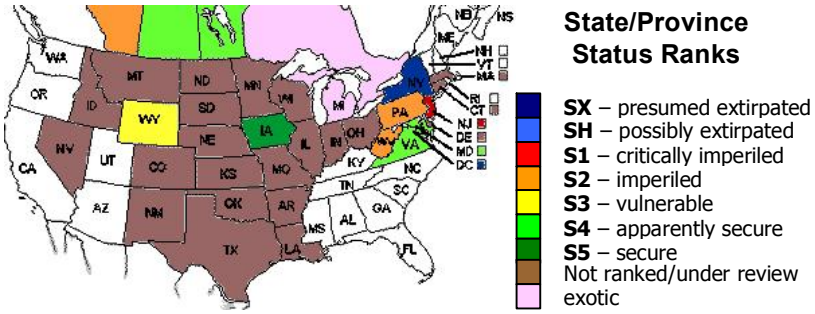
Ellisia is a spring annual that grows 4 to 16 inches (1-4 dm) tall. Its stems are light green or light purple and usually hairy along their length. The leaves tend to be oppositely arranged on the lower stem and alternately arranged on the upper stem. The hairy leaves are up to 4 inches (10 cm) long and deeply dissected into toothed lobes.

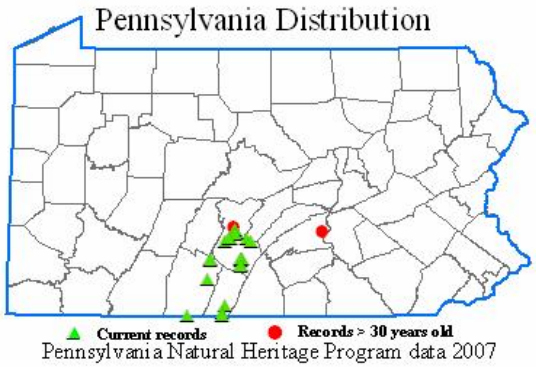
The flowers appear in April and May and grow individually from the upper leaf axils. The ¼ inch (6.5 mm) flowers are whitish-blue and have 5 petal-like lobes that are fused near the base to form a bell shaped flower. The sepals are united near the base and persist on the usually 4-seeded, capsule-like fruit.

photo source: www.missouriplants.com/index.html

North American State/Province Conservation Status

Map by NatureServe (2007)





Pennsylvania Natural Heritage Program data 2007

Habitat

Ellisia occurs throughout much of the United States, but is absent from northern New England, the Southeast, and the West Coast. In Pennsylvania, it grows on damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground.

Status

The PA Biological Survey considers ellisia to be a species of special concern, based on the relatively few occurrences that have been confirmed. It has been assigned a rarity status of Threatened. The rich shady stream banks that ellisia depends upon are highly influenced by flooding events. Alteration of the natural flood cycle, dam building, increased erosion, and clearing of floodplain forests all affect the quality of suitable habitat. Populations are also threatened by loss of habitat from development and displacement by invasive plants.

Conservation

Protection of ellisia will require maintenance of known populations and preservation of rich, shaded stream bank communities. This may include sustaining appropriate hydrology, removal of invasive plants, and establishment of buffers that can moderate the effects of scouring events and run-off. Management of the known sites requires long term monitoring of populations.

Pennsylvania Natural Heritage Program

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Short's Sedge (*Carex shortiana*)

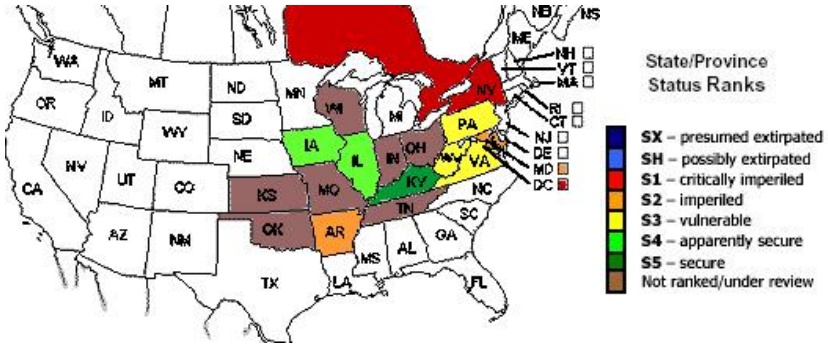
Plant Species of Concern
State Rank: S3 (vulnerable), Global Rank: G5 (secure)

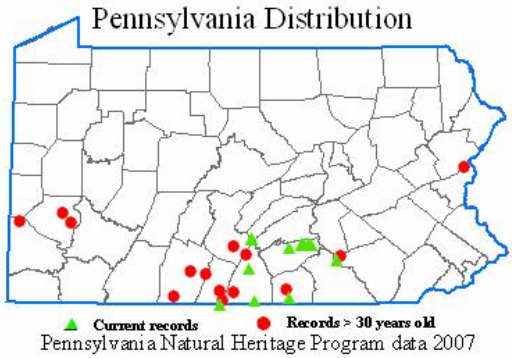
Identification

Carex shortiana is a tufted perennial grass-like plant that can reach from 8 to 35 inches (2-9 dm) in height. Its tall flowering stems are light green, hairless, and 3-sided, particularly near the base. The leaves grow from the base and alternately along the stems. The smooth, leaf blades are up to 12 inches (30 cm) long and ⅓ inch (1 cm) wide. Blades are often indented along the central vein, which gives the leaf a channeled appearance. The flowers are held in densely packed, cylindrical spikes that become dark brown as they mature. Clusters of 3 to 6 spikes are produced at the top of each flowering stem. The lower spikes usually contain all female flowers while the upper spikes have female flowers at the top and male flowers below.

photo source: John Kunsman (PNHP)

North American State/Province Conservation Status
Map by NatureServe (2007)





Pennsylvania Natural Heritage Program data 2007

Habitat

Short's sedge can be found in the U. S. from New York south to Virginia and west to Kansas and Oklahoma. It grows in calcareous wet meadows and swamps or in rich woods.

Status

The PA Biological Survey considers Short's sedge to be a species of special concern, based on the relatively few occurrences that have been confirmed and its relatively infrequent wetland habitat. It has been assigned a rarity status of Rare. Throughout the range of this species, habitat loss, land conversion for development, and displacement by invasive species have all played a part in its decline. Its wetland habitats are also sensitive to habitat fragmentation and changes in hydrology that could alter water levels or chemistry.

Conservation

Maintenance of known populations and preservation of the communities where Short's sedge grows will be crucial to its survival. Creating buffers around fragmented habitat and removal of invasive species will help to maintain populations and encourage new population growth. The management of the known sites requires long term monitoring of populations. Potential sites for restoration should be evaluated.

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