

*Endangered and Threatened*  
**SPECIES of PENNSYLVANIA**

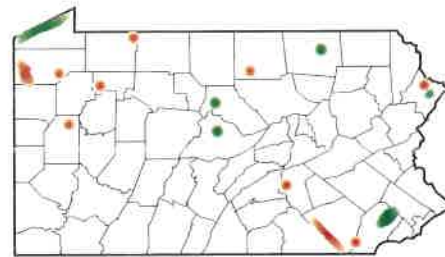


# Key to Maps

**Green areas** represent species records collected by scientists in the past. Information to describe these records has been gathered from museums, institutions and personal collections then entered into the Pennsylvania Natural Diversity Inventory (PNDI). In some cases, current field surveys have found these historically known locations to have been lost to habitat destruction. In other cases, plants and animals have not been located because past records are not specific enough to direct researchers to previously documented sites. Although historical records may not completely reflect the known range of a particular species, they are the best documentation available to estimate the former distribution of the Commonwealth's plants and animals.

**Red areas** represent species locations that are known to exist today. Many of these sites were found based on directions given in historical records, others were found by looking for species in appropriate habitats. Species ranges were identified using the PNDI information system.

PNDI is organized by computer, map, and manual files that describe locations of endangered, threatened and rare species and the most outstanding examples of the state's natural community and geologic features. PNDI was established in 1980 as a cooperative project of the Bureau of Forestry, The Nature Conservancy and Western Pennsylvania Conservancy, and is a member of the Association for Biodiversity Information.



● = verified after 1980    ● = historical occurrences

# Definitions

**Endangered:** Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania



**Threatened:** Species that may become endangered within the foreseeable future throughout their range in Pennsylvania



**Extirpated:** Species that have disappeared from Pennsylvania but still exist elsewhere

**Extinct:** Species that occurred in Pennsylvania but no longer exist across their entire range

# American Bittern

*Botaurus lentiginosus*

**IDENTIFYING CHARACTERISTICS:** This large, cryptically-colored heron is most often seen when flushed from marshes. It's most easily identified by its large size—up to 34 inches tall and with a 50-inch wingspan—and its streaked brown plumage. At rest, its black moustache-like cheek markings are diagnostic. In flight, conspicuous black outer wings are characteristic. The secretive American bittern may be best known for its habit, when it feels threatened, of standing upright with its bill pointing upward. At times it even sways from side to side, moving like the tall reeds and grasses surrounding it. In this pose the bird blends in with its surroundings and easily goes unnoticed.



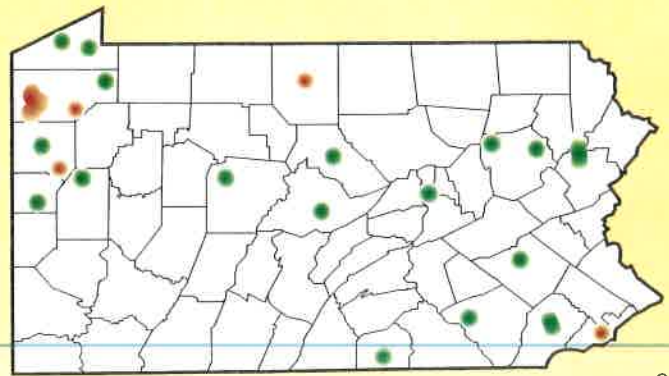
Neil Fennell, Cornell Lab of Ornithology

**BIOLOGY-NATURAL HISTORY:** American bitterns nest in marshes across the northern United States and southern Canada. They winter across the southern United States and down through Mexico and Central America. They nest singly, not in colonies like many other herons. This species may be found the year round in Pennsylvania, but bitterns are most often seen here during spring and fall migrations. A few nest in scattered marshes across Pennsylvania, particularly, in the Pymatuning area, in our northwest corner. American bitterns build platform nests of reeds and grasses near the water, and normally lay a clutch of three to seven buff- or olive-brown eggs. Young hatch in 24 to 28 days and leave the nest after another two weeks. They are often seen stalking along shorelines and marshes where they prey on frogs, fish, snakes, crayfish, insects and other aquatic organisms.

**PREFERRED HABITAT:** American bitterns require wetland habitats. They are most likely found in marshes and wetland borders along lakes, ponds, rivers and streams.

**REASONS FOR BEING THREATENED:** The American bittern is considered threatened because of the continuing disappearance of the wetland habitats it needs to exist.

**MANAGEMENT PROGRAMS:** Areas in Pennsylvania where American bitterns regularly nest need to be identified and, where possible, protected from development.



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# Bald Eagle

*Haliaeetus leucocephalus*

**IDENTIFYING CHARACTERISTICS:** Bald eagles are among the largest birds of prey. They may weigh up to 14 pounds and sport 7-foot wingspans. Bald eagles are most readily identified by their white heads and tails, however, they don't attain this characteristic plumage until five years of age. Until that time they are dark brown with varying amounts of white mottling.



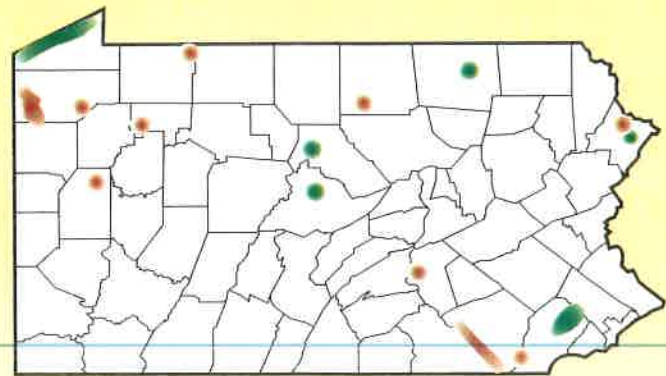
Hal Kober

**BIOLOGY-NATURAL HISTORY:** Bald eagles may be found throughout North America, most often around water where they scavenge on fish. Other carrion, captured fish and live small animals are also among their prey. Eagles don't reach adulthood and begin nesting until age four or five. They nest in large trees near water, and normally produce one to three young per year. Adults will continue using and seasonally add to the same nest for years. Today, thanks to recovery efforts, bald eagles are nesting across the state. Nonbreeding adults and subadults may be found throughout the state at any time of year.

**PREFERRED HABITAT:** Bald eagles thrive around bodies of water where adequate food exists and human disturbance is limited.

**REASONS FOR BEING ENDANGERED:** Water pollution made many areas of the state—and continent—unsuitable for eagles, and many former nesting sites have been lost to human development and encroachment. But the primary reason for the eagle's decline was the effect of the pesticide DDT and its derivatives on eagle reproduction. It accumulated in eagles and caused their eggs to be too thin to withstand incubation. As a result, the bald eagle population plummeted. In 1972, the use of this pesticide in the United States was outlawed, and this drastic decline halted.

**MANAGEMENT PRACTICES:** The future looks bright for bald eagles in the state. To hasten the return of breeding bald eagles, from 1983 through 1989, the Game Commission raised and released 88 eaglets. Some of these birds have since returned to build nests and raise young. When discovered, new nest sites are protected and production is monitored.



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## Black Tern

*Chidonias niger*



R.O. Coltrane, Cornell Lab of Ornithology

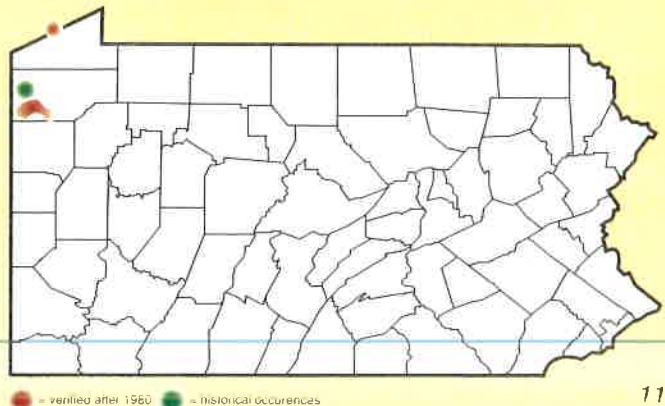
**IDENTIFYING CHARACTERISTICS:** Terns are slender, graceful fliers with long pointed wings. They are often associated with coastal environments, but the black tern is found inland. During the breeding season this bird is relatively easy to identify because it is the only all black tern. In the fall, juveniles and molting adults have black and white mottled plumages. Flashing light underwing linings make the black tern especially conspicuous in flight.

**BIOLOGY-NATURAL HISTORY:** Black terns nest across the northern United States and southern Canada, and winter in South America. They are regularly seen migrating through Pennsylvania, appearing in April and May, and then again in August. Nonbreeding adults can be found here in the summers, but our northwest corner is the only place in the state where they nest. This area represents the southeast extreme in the species' breeding range. These terns build fragile cup-shaped nests in reeds or on floating masses of dead plants, just above the water. A typical clutch consists of three olive or buff-brown marked eggs. Young hatch in three weeks, and first fly at three or four weeks of age. Black terns are primarily insectivorous, snatching up insects in flight. They also eat small fish and crustaceans which they pluck from the water surface.

**PREFERRED HABITAT:** Black terns leave coastal areas behind and come inland to nest in prairies and in the more extensive deep-water marshes or marsh complexes. Winter finds them back along the coast, often with other terns.

**REASONS FOR BEING ENDANGERED:** As black tern nesting colonies here are small and localized, they are extremely susceptible to both man-caused and natural disasters. In addition, the number of black terns nesting here has been declining over recent years.

**MANAGEMENT PROGRAMS:** Pennsylvania's black terns need to be annually monitored. After it's learned where and how many black terns are nesting here, measures may be taken to protect and expand their natural habitat. But, as Pennsylvania lies on the margin of this species' breeding range, the birds may not ever be found here in significant numbers.



## Delmarva Fox Squirrel

*Sciurus niger cinerus*



Pennsylvania Game Commission

### IDENTIFYING CHARACTERISTICS:

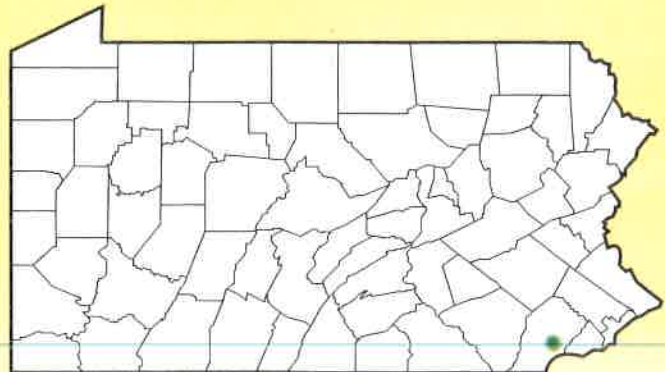
Averaging 2½ to three pounds, the Delmarva fox squirrel is up to twice as large as the common gray squirrel. The light, whitish-gray coat of the Delmarva also is a distinguishing characteristic. The feet are white and the tail has a pronounced black stripe on the outer edge.

**BIOLOGY-NATURAL HISTORY:** The historic range of this squirrel was southeastern Pennsylvania and southern New Jersey and in the Delaware, Maryland and Virginia portions of the Delmarva Peninsula. Today, it is mainly limited to several counties in Maryland and the Chincoteague National Wildlife Refuge in Virginia. Delmarvas were absent from Pennsylvania for the better part of this century or longer. Between April 1987 and October 1988, 20 Delmarvas were translocated from Maryland to a site in Chester County. Pending additional introductions, it is too soon to predict the outcome of this restoration attempt. Food seems to dictate litter size (two, three or four) and whether one or two litters are produced in a year. Food consists of fruits, seeds, buds and flowers of trees, along with corn and other agricultural products.

**PREFERRED HABITAT:** Seasonally, this squirrel may range over 40 acres. It spends more time on the ground than gray squirrels and will venture farther into open fields. Its typical habitat consists of woodlots and narrow tree zones along streams intermixed with scant undergrowth.

**REASONS FOR BEING ENDANGERED:** Cutting of old growth forests and development probably are the primary factors responsible for the last-century extirpation of this species from southeastern Pennsylvania. These are also thought to be two of the main reasons for its status as a federal endangered species. Additionally, in marginal habitat—mature trees with substantial undergrowth and few tree cavities—it is forced to compete with the gray squirrel.

**MANAGEMENT PROGRAMS:** The national plan to recover this species includes four primary actions: (1) inventory and management of essential habitat; (2) release of Delmarva fox squirrels into suitable habitat; (3) protection of populations; and (4) promotion of public support.



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## Eastern Woodrat

*Neotoma magister*



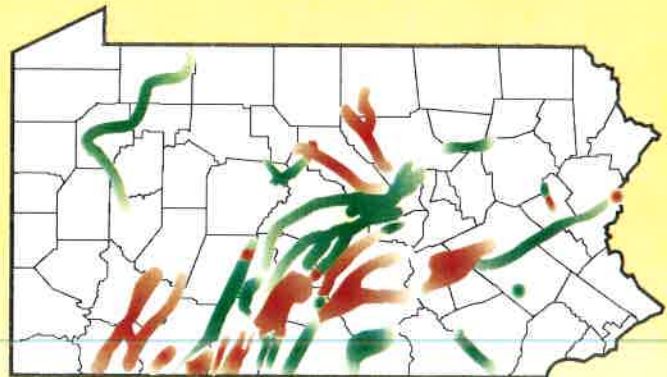
**IDENTIFYING CHARACTERISTICS:** The eastern woodrat is an eastern relative of the much better known packrat of the West. It is buffy gray above, with white underparts and paws. An adult averages just over a pound, and 17 inches in length, including an 8-inch tail. Its ears are large and may appear naked. The eastern woodrat is distinguished from the Norway rat—the only animal in Pennsylvania for which it may be confused—by its hairy, bicolored tail; the Norway rat has a naked tail.

**BIOLOGY-NATURAL HISTORY:** This animal is found along the Appalachian mountains, from northern Alabama to northeastern New Jersey. In Pennsylvania the eastern woodrat was historically found throughout the mountainous parts of the state, but recent surveys indicate its range here has diminished, with most colonies found west of the Susquehanna River. The presence of eastern woodrats is most often determined by characteristic toilet areas. Less frequently, surveyors find their bulky nests made of twigs and bark, built on ledges or in caves, or piles of fresh herbaceous vegetation stored under rock overhangs. The breeding season runs from February until September, during which up to three litters containing two or three young each may be produced.

**PREFERRED HABITAT:** The eastern woodrat does not thrive around civilization. It prefers rock strewn sites, usually mountaintops and valley sides. There, under tree canopy, a cave or boulders provide the network of subsurface crevices that shelter woodrats. This and their nocturnal habits make the woodrats largely unknown among the general public.

**REASONS FOR BEING THREATENED:** The eastern woodrat has been classified as threatened because populations have suffered significant declines across the northern part of its range. The woodrat is no longer found in Connecticut and New York. In Pennsylvania they are absent from many historic sites, particularly in the eastern part of the state. Where they persist, their numbers are low.

**MANAGEMENT PROGRAMS:** Little is known about the woodrat's requirements. Before any management procedures can be developed, more detailed life history characteristics need to be learned, including more precise information concerning its movements, habitat requirements, and the reasons for its apparent decline.



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# Great Egret

*Casmerodius albus*



© Stewart Cornell/Landmark Photography

## IDENTIFYING CHARACTERISTICS:

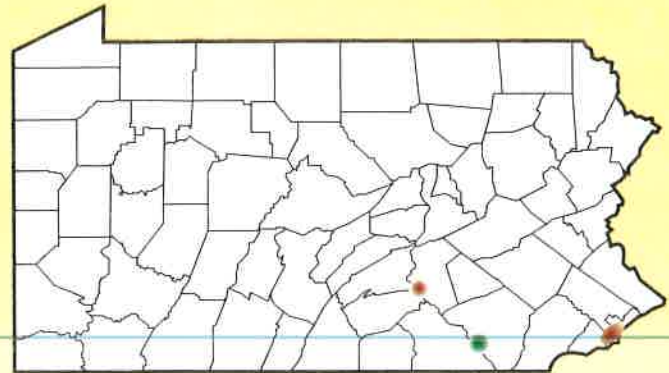
From bill to tail tip, adults are about 40 inches long. The wingspan is 55 inches. The plumage is white, bill yellowish, and legs and feet black.

**BIOLOGY-NATURAL HISTORY:** The major distribution of this species is south of Pennsylvania. Fingers of a Mid-Atlantic coastal population extend into the Delaware and Susquehanna drainages. During migration, this species drifts slowly southward. By mid-spring, nesting has started. A nest of sticks contains three to four pale bluish green eggs. After a 24-day incubation period and six weeks as nestlings, young are ready to fly. Maturity may not be reached until the third year. Food consists of frogs, minnows and other small aquatic animals.

**PREFERRED HABITAT:** This egret is typically found feeding in shallow rivers, streams, ponds, lakes and marshes. Nests are found in adjacent trees or shrubby growth, preferably on islands. The birds usually nest in colonies that may include other colonial nesting species.

**REASONS FOR BEING THREATENED:** Years ago, this species was hunted for its feathers. By 1917, some doubted this species could be saved from extinction. Pennsylvania's first documented nesting record was in 1957. By 1990, birds had established three modest colonies here. Today, the main threats faced by the great egret is habitat loss (inundation of shallow feeding areas as a result of dams, for example), water pollution, and disturbance of nesting colonies.

**MANAGEMENT PROGRAMS:** Colonial nesting birds are vulnerable to disturbance and direct persecution. All known nesting colonies should be closed to public intrusion and preserved from development pressures.



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# Indiana Bat

*Myotis sodalis*



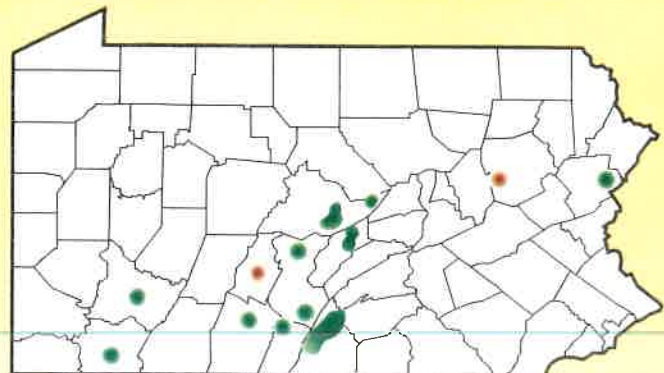
**IDENTIFYING CHARACTERISTICS:** The Indiana bat is difficult to distinguish from other species of bats, but three characteristics permit accurate identification. Unlike the common little brown bat, which has black-brown lips, the Indiana bat has pink lips. This characteristic is useful when a cluster of hibernating bats is encountered. The Indiana bat has a smaller hind foot with short hairs on the toes and a calcar (a spur extending from the foot) with a slight keel. The hair of the Indiana bat is black the first two-thirds of its length and then gradually fades to gray. The color of the tip varies from dark gray to black, or dark brown to brown. The hairs of the little brown bat, however, distinctly change from black to gray, and are black to brown on the tip.

**BIOLOGY-NATURAL HISTORY:** The Indiana bat was the last Pennsylvania mammal to become known to science. It was not described as a species until 1928. The Indiana bat occurs in the eastern half of the United States, from northern Alabama up through New England. In Pennsylvania it was historically found hibernating in caves in the Appalachian Mountains in the central part of the state, with a possible preference for those that were wet or contained pools or streams. Little is known about the Indiana bat when it's not hibernating. They apparently disperse widely over the countryside in summer. A few females and young have been found during the summer, resting behind loose pieces of bark.

**PREFERRED HABITAT:** Indiana bats apparently require specific atmospheric conditions for hibernation, namely, temperatures between 39 and 45 degrees F, and a relative humidity from 66 to 95 percent.

**REASONS FOR BEING ENDANGERED:** The Indiana bat is a federally listed endangered species. In the 1930s hibernating groups containing thousands of Indiana bats were found, but recent surveys of these same sites indicate a drastic decline. Man-caused changes to cave climates have caused an estimated 50 percent of the recent decline. Disturbance or vandalism during hibernation is another reason. These practices disrupt bats, causing them to burn up fat reserves, which lessens their chances of surviving until spring.

**MANAGEMENT PRACTICES:** Known hibernation sites in Pennsylvania have been gated to exclude human access. Surveys are conducted on a regular schedule to monitor changes in the number of Indiana bats hibernating at these sites.



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# King Rail

*Rallus elegans*



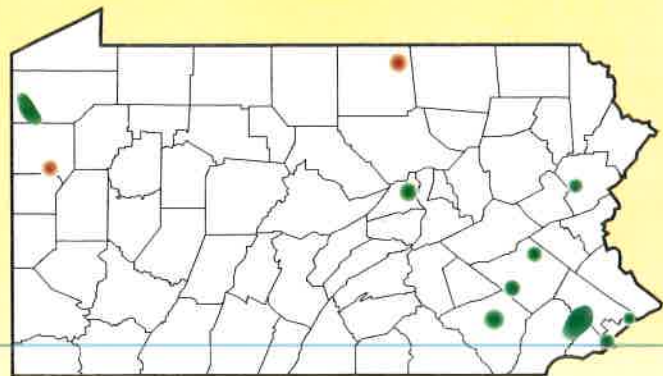
**IDENTIFYING CHARACTERISTICS:** The king rail is so named because of its large size and bright coloration. This plump chicken-sized bird is a bright rusty color. They range from 15 to 19 inches in height and have 21- to 25-inch wingspans. Males are larger than females. Bills are long, slightly decurved, and yellow with brown tips. These birds are extremely secretive and would rather run than fly to escape detection. They are rarely seen, therefore, and are most often located by their loud calls, a resonant grunting bup-bup, bup, bup, bup, more rapid at the end.

**BIOLOGY-NATURAL HISTORY:** King rail nests are platforms up to nine inches in diameter, six to 18 inches above the water. They are built of grasses, sedges and cattails in shallow water marshes, and roadside ditches. From six to 15 pale, slightly spotted brown eggs are laid in a shallow depression of the nest. Overhead cover is often pulled over the nest. Young are able to fly about 60 days after hatching. Wading in shallow water, king rails feed on crustaceans, small fish, frogs and insects. In winter, food items consist of grains—particularly rice—and berries.

**PREFERRED HABITAT:** This rail lives in freshwater and brackish marshes and roadside ditches in eastern North America, primarily along the Atlantic coast. It is a very rare breeder in the few larger marshes remaining in Pennsylvania.

**REASONS FOR BEING ENDANGERED:** King rails were never common in Pennsylvania, but annual reports indicate the bird today is much less abundant than historically. This apparent decline is considered to be due primarily to losses of marshland habitat.

**MANAGEMENT PRACTICES:** As with many other endangered and threatened species, the king rail needs wetlands in order to exist. Maintaining stable water levels during the summer will enhance the species' breeding success here.



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## Least Bittern

*Ixobrychus exilis*

**IDENTIFYING CHARACTERISTICS:** The smallest member of the heron family, the least bittern is 11 to 14 inches in length and has a 16- to 18-inch wingspan. This primarily black and tan bird has a blackish-green cap and back, brown neck and underparts, and a white throat. The least bittern is most readily identified in flight by conspicuous, light, chestnut-colored wing patches. A rare, darker phase also exists. When disturbed, the least bittern is more likely to run than fly, and like its relative, the American bittern, it also has the habit of freezing with its bill pointed straight up when alarmed.

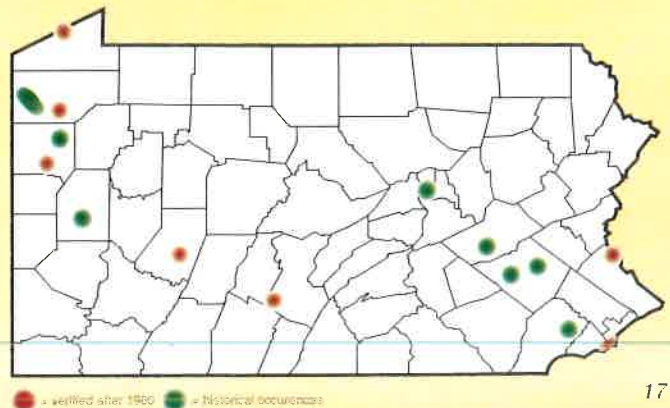


**BIOLOGY-NATURAL HISTORY:** The least bittern nests in wetland areas throughout the eastern United States and along the Pacific coast. It spends the winter from our southern states south to Columbia, South America. This species is a regular migrant through the state, but it nests here only in our northwest and southeast corners, and possibly in a few other locations, but not regularly or in significant numbers. The least bittern arrives in Pennsylvania in April and builds its platform nest of reeds and grasses near open water. Four or five pale blue or green eggs are laid in the 6-inch nest in mid or late May. The young hatch in slightly under three weeks.

**PREFERRED HABITAT:** Least bitterns thrive in dense marshland environments containing cattails and reeds, along the coast and inland, where they feed primarily on small fish, amphibians, insects and small mammals.

**REASONS FOR BEING THREATENED:** Nesting opportunities for this species in Pennsylvania are limited and decreasing as the wetland habitat it needs have been extensively drained or impounded.

**MANAGEMENT PROGRAMS:** Areas where this species is known to nest should be protected. Surveys are being conducted to determine where it does actually nest, and marshland habitats can be managed to provide additional nesting habitat.



## Least Shrew

*Cryptotis parva*



Gregory S. Pevason and James A. Hall

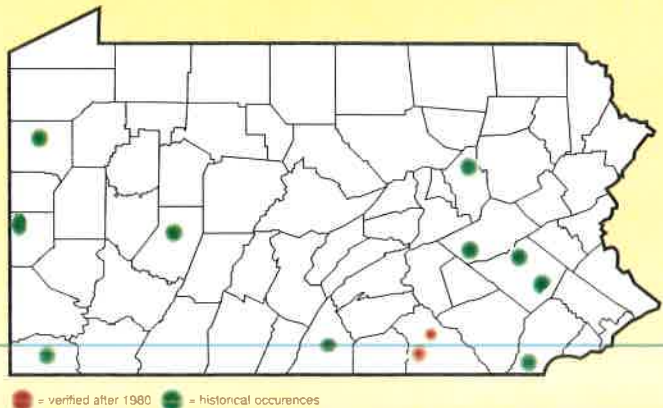
**IDENTIFYING CHARACTERISTICS:** The total length of an adult least shrew is three to  $3\frac{1}{2}$  inches. Its tail length ranges from  $\frac{1}{2}$  to  $\frac{3}{4}$  inches, which is the shortest tail of all Pennsylvania shrews. It has a black and ashy-gray belly. The only other species of shrew with a short tail, the northern short-tailed shrew, is larger (total length is four to five inches) and is dark slate colored.

**BIOLOGY-NATURAL HISTORY:** The least shrew is found throughout much of the eastern United States, ranging from Central America north and east to New York and Connecticut. Historically, this species may have been found throughout Pennsylvania. Most records, however, are confined to non-forested habitats in southern and western Pennsylvania. Least shrews have up to three litters, averaging five young per litter, between March and November. Like other shrews, they feed mainly on insects, earthworms and other invertebrates.

**PREFERRED HABITAT:** Unlike other shrews, this species does not inhabit moist, mature forests. Instead, it lives in meadows, pastures, old fields and other non-forested habitats.

**REASONS FOR BEING ENDANGERED:** Post-1970 surveys at historic Pennsylvania sites failed to reveal this species. In fact, numerous surveys in likely habitats have resulted in the collection of only three specimens in more than 20 years. Because this is a farmland shrew, it might have declined as a result of "DDT-era" (pre-1972) pesticide use. The loss of croplands to development and more intensive use of remaining farmlands may also be contributing to the apparent decline and current rarity of this shrew.

**MANAGEMENT PRACTICES:** Management practices beneficial for the short-eared owl and other grassland animals should also benefit the least shrew. Surveys to find this species need to be intensified. If found, populations should be protected. Habitat studies in the vicinity of known populations on public lands should precede restoration efforts.



# Loggerhead Shrike

*Lanius ludovicianus*



John Gustin, Cornell Lab of Ornithology

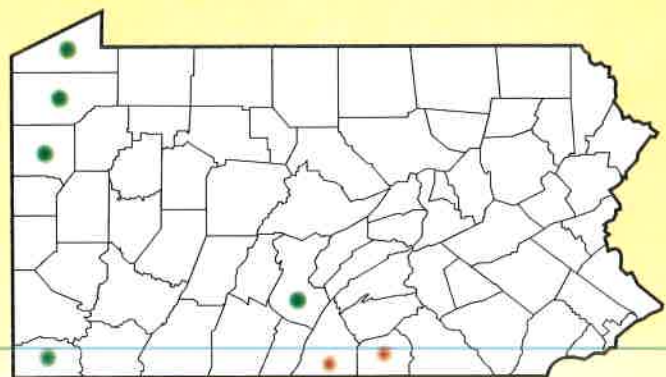
**IDENTIFYING CHARACTERISTICS:** Shrikes are medium-size, gray and black birds with a white patch on each wing. The loggerhead shrike is similar in size and appearance to a mockingbird. It differs by having a heavier, hooked bill and a black mask that extends across each eye, giving it a “masked” appearance. The loggerhead is distinguished from the winter visitor, the northern shrike, by having a more extensive black mask, which extends over its small bill. Also, the northern shrike pumps its tail, while the loggerhead does not.

**BIOLOGY-NATURAL HISTORY:** The loggerhead shrike is adapted to catching small birds, mammals and insects. Its strong, hooked bill compensates for its relatively weak feet. Shrikes frequently impale their prey on thorns or barbed wire to retrieve later. They are birds of open country, where they frequently perch on telephone wires or exposed branches. Nests are placed in dense thorn bushes, most often cedars or low hawthorns. A clutch of four to six white eggs, spotted with brown flecks, hatch in 16 days. Not particularly shy of people, the shrikes are susceptible to being hit by cars as they flash across rural roads.

**PREFERRED HABITAT:** Loggerheads prefer short grass pastures with scattered shrubs and fencerows or small utility lines. Historically, they nested across western Pennsylvania, especially in Erie and Crawford counties—the glaciated area of northwestern Pennsylvania. Recent nestings have occurred in Adams and Franklin counties. In winter, loggerhead shrikes may occur in any county.

**REASONS FOR BEING ENDANGERED:** Shrikes rely on pastures for the open, short grass conditions needed for hunting prey. This habitat type has decreased during the century, as marginal farmland has been abandoned and as agricultural practices intensify on remaining farms. Shrikes may also be susceptible to contamination by agricultural chemicals, but most studies point to collision with vehicles on country roads as a major factor affecting shrike populations.

**MANAGEMENT PROGRAMS:** The first loggerhead shrike nests in 55 years were found in 1992. Intensified surveys are needed to determine the extent of the current nesting range. Monitoring is also needed to assure nests are not disturbed. Landowners should be encouraged to manage their pastures to favor shrike habitat.



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# Osprey

*Pandion haliaetus*



Frank H. Bradlow, Cornell Lab of Ornithology

## IDENTIFYING

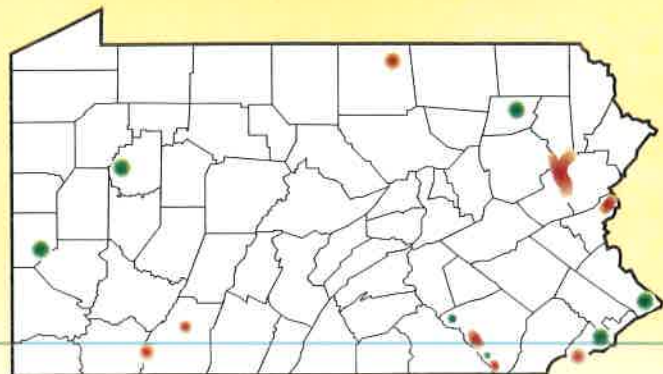
**CHARACTERISTICS:** Ospreys are large, striking, fish-eating birds of prey most often seen around water. They may exceed 24 inches in length and sport wingspans approaching six feet. Ospreys are dark brown above, bright white below, with some brown streaking across the breast. Key identification characteristics are the prominent dark eye stripes, black patches at the crooks of bent wings, and a characteristic silhouette.

**BIOLOGY-NATURAL HISTORY:** The osprey is one of the world's most widely distributed birds. They are found along seacoasts and major waterways on every continent except Antarctica. They prey almost exclusively on fish. Ospreys nest in colonies or singly. Their stick nests are large and usually built near water. A breeding pair adds to the nest every year it's occupied. They usually nest in large trees, but they may be found nesting on channel markers, telephone poles, chimneys and man-made platforms built specifically for their use. Usually three eggs are laid.

**PREFERRED HABITAT:** Ospreys may be found anywhere around open water containing adequate fishing opportunities. In recent years, ospreys have produced young in the Pocono and lower Susquehanna Valley regions of the state, and Somerset County. During spring and summer, nonbreeding subadults can be found throughout the state.

**REASONS FOR BEING ENDANGERED:** In the early 1900s ospreys nested along the state's rivers and streams, but habitat destruction and water pollution made these areas unsuitable. Osprey populations were further decimated through the effects of pesticides on their reproductive capabilities.

**MANAGEMENT PROGRAMS:** Between 1980 and 1986, 111 ospreys—obtained as nestlings from burgeoning Chesapeake Bay populations—were hand-reared and released in northeastern Pennsylvania. From 1982 to 1990, more than 30 of these released birds returned as adults and built nests. Through 1990, these birds produced 49 young. Similar releases in Tioga and Butler counties, at the rate of 8 to 12 young per year through 1994, should help extend the breeding population of ospreys farther westward along the headwaters of the Susquehanna and Allegheny. Concurrently, the Chesapeake Bay population is expanding up the Susquehanna River. Management includes monitoring, nest site protection and erection of artificial nest platforms.



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# Peregrine Falcon

*Falco peregrinus*



F. N. Schaeffer/VEED

## IDENTIFYING CHARACTERISTICS:

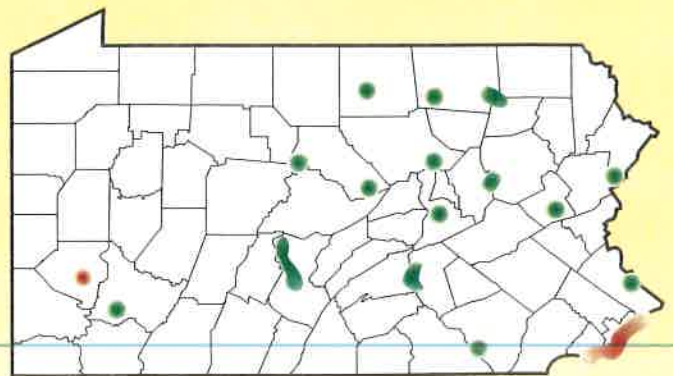
A 15- to 22-inch falcon, adults have dark-bluish gray upperparts and wings. Underparts are whitish to buffy colored, broken by horizontal bars. The head has a nearly black "helmet." Like all falcons, the peregrine has long pointed wings and rapid, steady wing beats in flight.

**BIOLOGY-NATURAL HISTORY:** The peregrine nests in many parts of the world. In Pennsylvania, peregrines once nested on high cliffs along the Delaware, Susquehanna and Juniata rivers. Nesting records come from at least 21 counties. They feed primarily on other birds, typically by striking them in flight. A clutch of four eggs is normally laid, and the birds may remain in Pennsylvania the year round.

**PREFERRED HABITAT:** Historically, this falcon nested on high cliffs overlooking river systems. Today, peregrines are more apt to be found nesting on high bridges and tall buildings within cities. As a result, they frequently feed on pigeons and other urban birds. After an absence of 30 years, the return of breeding peregrines to Pennsylvania was first documented on bridges spanning the Delaware and Schuylkill rivers in the Philadelphia area. In 1990, a pair began nesting in Pittsburgh.

**REASONS FOR BEING ENDANGERED:** By 1961, peregrines were no longer found in Pennsylvania. Their decline and extirpation has been attributed to egg collecting, falconry and shooting, but chiefly to pesticides—particularly DDT.

**MANAGEMENT PRACTICES:** The plan to restore this species includes annual surveys for new nest sites; protection of known nest sites, including hazard reduction to increase survival of young peregrines; restoration of peregrines at suitable historic sites; and promotion of public support. A reintroduction program has released birds into Harrisburg, Reading, and Williamsport.



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## Sedge Wren

*Cistothorus platensis*



Lang Elliot, Cornell Lab of Ornithology

### IDENTIFYING CHARACTERISTICS:

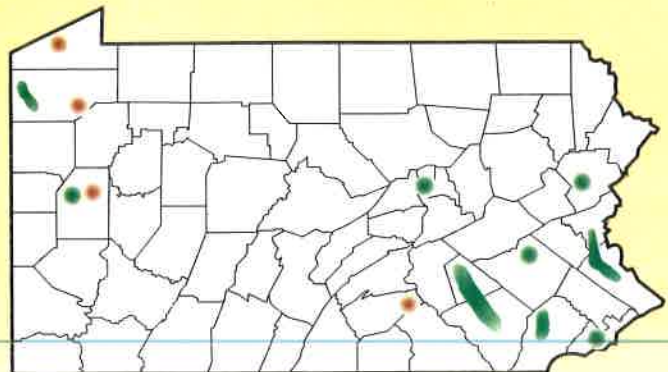
The sedge wren, formerly known as the short-billed marsh wren, can best be distinguished from other wrens by its relatively small size. It's only 4½ inches high and has a 6-inch wingspan, streaked crown and back, faint buffy eye stripes, and a short tail which is often held upright.

**BIOLOGY-NATURAL HISTORY:** In summer, sedge wrens are found from southern Saskatchewan and Minnesota across the Great Lake States to the east. They winter along the Atlantic and Gulf coasts, down into Mexico. Sedge wrens arrive in Pennsylvania in April and May, and migrate south to brackish coastal marshes from August to October. Among the last birds to nest in the state, sedge wrens may be found nesting here as late as August. They nest in wetland areas; a typical clutch of six or seven white eggs is laid in a globular nest built up to two feet off the ground. Young hatch in 12 to 14 days, and leave the nest at two weeks of age. Two broods can be produced each year.

**PREFERRED HABITAT:** For nesting, sedge wrens require damp meadows and marshes where sedges and grasses are interspersed with small shrubs. They apparently don't do well in cattail marshes.

**REASONS FOR BEING THREATENED:** Sedge wrens are rare throughout their range. They used to be found nesting in scattered locations across Pennsylvania. Over the past several decades, however, they have disappeared from many former haunts, and numbers have dropped significantly in others. The loss of habitat and changing agricultural practices are thought to be responsible for this decline.

**MANAGEMENT PROGRAMS:** The specific locations where sedge wrens currently nest in the state need to be determined and then, where feasible, protected.



● = verified after 1980 ● = historical occurrences



## Short-Eared Owl

*Asio flammeus*



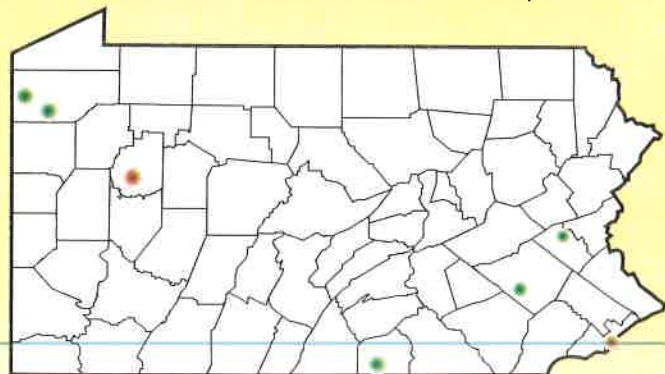
**IDENTIFYING CHARACTERISTICS:** The short-eared owl received its name from its lack of “ear” tufts. It’s about the size of a crow, 13 to 17 inches high, and has a 38- to 44-inch wingspan. Color is variable, from light to dark brown. The dark patches on undersides of wings, and large buff-color patches on upper sides are most distinctive. There are also dark patches around the eyes.

**BIOLOGY-NATURAL HISTORY:** Short-eared owls are birds of open country. They may be found in Pennsylvania throughout the year. They nest on the ground, sometimes in colonial groups. The nest is a slight depression, sparsely lined with grass and feathers, often at the base of a clump of weeds or grasses. A normal clutch consists of four to seven white eggs. Young hatch about three weeks after egg laying, and are able to fly in about a month. Unlike most other owls, the short-eared is active at dusk, dawn and—at times—even in mid-day; therefore, they are seen more often than other owl species.

**PREFERRED HABITAT:** These owls have been nesting in the southeast corner of Pennsylvania, in the marshland and meadows around the Philadelphia International Airport. Recently, they have been found nesting on reclaimed strip mine sites in Clarion County. Short-eared owls are more likely to be encountered here in the winter, when several may be seen together, hovering or flying low and in circles over agricultural fields in search of their main prey, meadow mice.

**REASONS FOR BEING ENDANGERED:** Suitable nesting habitat for the short-eared owl is extremely limited in Pennsylvania, and intensive agricultural practices make many potential habitats unsuitable.

**MANAGEMENT PROGRAMS:** In Pennsylvania, most open lands are farmlands and, therefore, subject to repeated disturbance. Accordingly, the welfare of grassland nesting birds is threatened. This may be why the only known nests of short-eared owls were discovered in extensive and low-disturbance open lands, e.g. a strip mine reclaimed to grass. Future management, based on the needs for safe nesting habitat for all grassland nesters, should include the creation of large, herbaceous reserves suitable for all grassland nesters. Such reserves might include airports, reclaimed strip mines and large pastures. Primary management of these areas must assure a disturbance-free nesting season.



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## Small-Footed Myotis

*Myotis leibii*



Media Guide

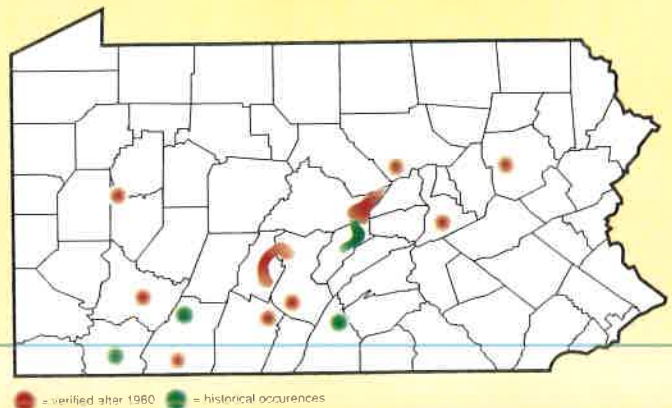
**IDENTIFYING CHARACTERISTICS:** The small-footed myotis may be distinguished from other small brown bats by its diminutive size (3½ inches, including a 1½-inch tail), black face, small feet (less than ⅓-inch), and short forearms (less than 1½ inches). Its wing and tail membranes are blackish brown. This bat, however, is so similar in appearance to our most common bat, the little brown bat, and several other species that field identification is difficult. Positive identification is best determined only by examining skull characteristics.

**BIOLOGY-NATURAL HISTORY:** The small-footed myotis is noted for hibernating closer to cave openings than other bats, and for hibernating alone, not clustered like the more common little brown bat. Because this bat occurs in such small numbers, the likelihood of encountering any outside hibernating areas is extremely remote. Therefore, little is known of this animal's habitats when not in hibernation.

**PREFERRED HABITAT:** Small-footed bats apparently prefer caves and abandoned mine shafts located in the Allegheny mountains, with a possible preference for those located in hemlock-covered foothills and near water.

**REASONS FOR BEING THREATENED:** The small-footed myotis has always been considered rare in Pennsylvania, but it is classified as threatened because of an apparent population decline between the 1930s and the late 1970s. Between 1930 and 1944 a mammalogist, Charles E. Mohr, made repeated surveys of hibernating bats in more than 100 caves in Pennsylvania and West Virginia. He found only 363 small-footed myotis, all in only seven of the surveyed caves, and all of these in central Pennsylvania. In 1978 and 1979 these seven caves were surveyed again, and no small-footed myotis were found. Subsequent to 1979, more than 200 abandoned mines and caves were surveyed for hibernating bats. Small-footed bats were found at 32 sites. At 25 of these sites, this species was represented by fewer than five individuals.

**MANAGEMENT PROGRAMS:** Some caves and mines where this species hibernates have been gated to eliminate human access, as disturbance during this period causes the animals to needlessly expend energy reserves needed to sustain them through the winter. Regular surveys are being conducted to monitor the status of the small-footed bat, and summertime mist-netting at likely caves and overrock-crevices may uncover more about where this species goes at that time.



# Upland Sandpiper

*Bartramia longicauda*



D. S. Ardinger, Cornell Lab of Ornithology

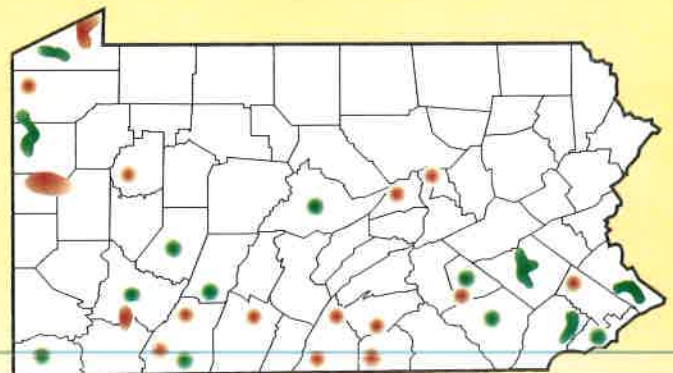
**IDENTIFYING CHARACTERISTICS:** The upland sandpiper, formerly called the upland plover, is a large light brown shorebird that comes inland to nest. This bird is about 12 inches tall and has a 20-inch wingspan. The upland sandpiper can be identified by its long neck, disproportionately small head, and long tail. Its back and wings are dark brown, its breast is streaked. The upland sandpiper is perhaps most readily identified by its preference for perching on wires and fenceposts, and its habit of holding its wings high above its back for a few moments after alighting.

**BIOLOGY-NATURAL HISTORY:** Upland sandpipers nest across North America; they winter in South America. These birds arrive in Pennsylvania in April, and then leave in August after nesting. They are almost exclusively insectivorous, feeding primarily on grasshoppers, crickets and weevils. Waste grain and weed seeds are sometimes eaten. This out-of-place shorebird typically nests on the ground in grassy fields. The normal clutch consists of four eggs. Young hatch in about three weeks, and the precocial young leave the nest as soon as the last one hatches. They can fly at about 18 days of age.

**PREFERRED HABITAT:** Upland sandpipers are birds of open country. They may be found in large fallow fields, pastures and grassy areas.

**REASONS FOR BEING THREATENED:** Upland sandpipers were once more common than they are today. Around the turn of the century they attracted the attention of market hunters looking for a bird to fill the void created by the decline—and ultimate, extinction—of the passenger pigeon. Loss of farmland and changing agricultural practices and extensive pesticide use, which eliminates insect life, are thought to be keeping its numbers low.

**MANAGEMENT PROGRAMS:** Before any management programs can be initiated, surveys need to be conducted to determine where and how many upland sandpipers are currently breeding in Pennsylvania. When possible, grasslands found to be used by upland sandpipers should be managed to avoid disturbance during the nesting season. Mowing after July 15 ensures that young sandpipers—and other grassland birds—will not be harmed.



● - verified after 1980    ● - historical occurrences

## West Virginia Water Shrew

*Sorex palustris punctulatus*



Roger W. Dandekar

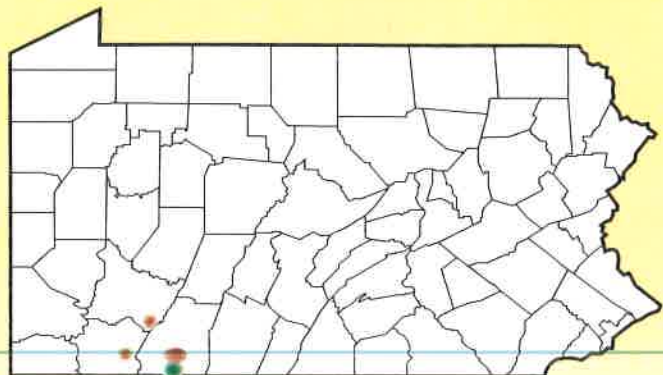
**IDENTIFYING CHARACTERISTICS:** This semi-aquatic shrew is nearly six inches long, including a  $2\frac{3}{4}$ -inch tail. It has a dark blackish upper body and tail, and light grayish underparts. The large hind feet are fringed with stiff hairs.

**BIOLOGY-NATURAL HISTORY:** The West Virginia water shrew is confined to the Appalachian-Allegheny mountain chain, from the Georgia-Tennessee-North Carolina border north to southwestern Pennsylvania. Little is known about this subspecies. Its diet probably consists of small, aquatic animals including insect larvae and snails. The breeding season of a close cousin—the northern water shrew—lasts from late March to August or September. It produces two or three litters of four to eight young.

**PREFERRED HABITAT:** Water shrews prefer the margins of remote mountain streams beneath overhanging banks and in rock crevices, usually at higher elevations. Look for them along rocky headwater brook trout streams bordered by hemlock, spruce and rhododendron.

**REASONS FOR BEING THREATENED:** Survey efforts have failed to produce more than a single specimen at most sites. It is guessed that acidification of many headwater streams in southwestern Pennsylvania, which has caused a loss of brook trout populations, has also seriously eroded the aquatic food base needed to sustain West Virginia water shrews.

**MANAGEMENT PRACTICES:** Surveys to find remnant populations need to be intensified. Likewise, the shrew's ecology and local distribution—if any remain—needs to be studied. Only after such research is underway can management recommendations to improve the status of this rare shrew be offered.



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## Yellow-Bellied Flycatcher

*Empidonax flaviventris*

**IDENTIFYING CHARACTERISTICS:** Brownish olive above and yellowish below, this 5-inch long flycatcher has whitish eye rings and wing bars. It's the only flycatcher found in the state that has a bright yellow throat.

**BIOLOGY-NATURAL HISTORY:** Commonly found breeding in the spruce-fir forests of Canada, this flycatcher reaches the southern extreme of its breeding range in northern Pennsylvania. The species nests on the ground, preferably in beds of sphagnum moss where three to five white eggs, sparsely flecked with brown, hatch by late spring. This species feeds mainly on insects and spiders. It winters in Central and South America.

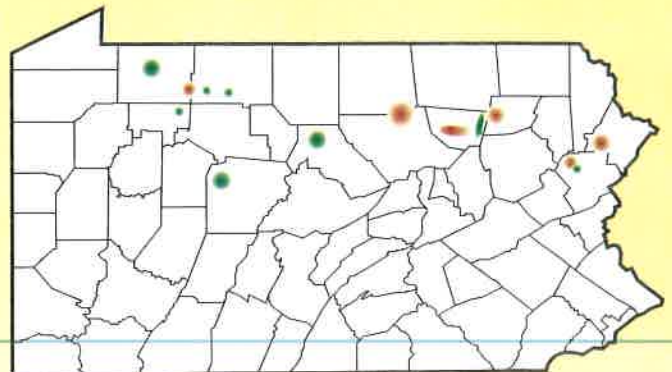
**PREFERRED HABITAT:** The yellow-bellied flycatcher is found in coniferous forests, alder thickets and high mountain bogs. In Pennsylvania, nests have been found in mossy, poorly drained areas (bogs and old beaver ponds) surrounded by extensive northern hardwood forests. Most nest sites are associated with standing water, sphagnum moss, conifers (spruce or hemlock), and the presence of high bush blueberries, alder, rhododendron or other shrubs.

**REASONS FOR BEING THREATENED:** Extensive development and peat mining within the Poconos has eliminated much of the habitat preferred by this species. Also, the impoundment of remote bogs in forested habitats has converted much of the habitat used by this species into small ponds.

**MANAGEMENT PRACTICES:** One of the state's rarest nesting species, this flycatcher can survive only if shrubby wetlands and conifer stands in extensive upland forests are preserved.



By Dr. Catherine Cornell-Lewis of Pennsylvania



● = verified after 1980 ● = historical occurrences

# Yellow-Crowned Night Heron

*Nycticorax violaceus*

**IDENTIFYING CHARACTERISTICS:** Adults are 22 to 28 inches in length, from bill tip to tail tip, gray with black head and a whitish cheek patch and crown. Eyes are red and legs yellowish. Immature is brown, finely spotted and streaked with white buff.

**BIOLOGY-NATURAL HISTORY:** Pennsylvania lies at the northern fringe of this species' breeding range, which is mainly in the southcentral United States. It nests singly or in small groups in the lower reaches of the Susquehanna. A typical clutch contains three or four eggs. Nesting starts as early as April. By mid-summer most young have fledged. Crayfish are a major part of this bird's diet.

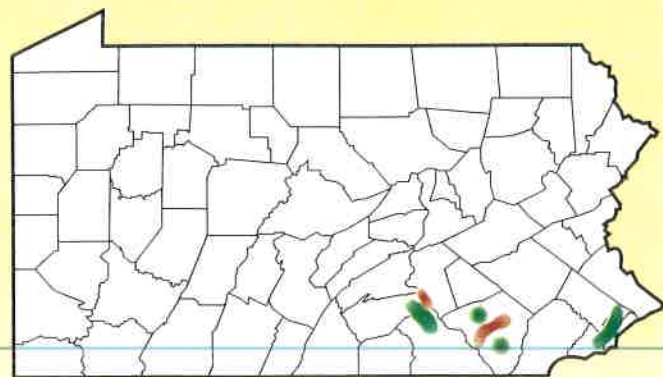
**PREFERRED HABITAT:** Feeds mainly along small shallow streams. Nests in brush or trees, usually sycamores, found on islands or along streams. Most nests found in recent years are along the Susquehanna River and its tributaries, in Lancaster County.

**REASONS FOR BEING THREATENED:** As a breeding bird, the combination of rarity and tendency to nest in small groups makes this species particularly vulnerable to local habitat disturbance or loss. The largest nesting colony known in Pennsylvania, representing more than half the state's known breeding population, is on a small river island. The integrity of this site and nearby shallow-water feeding areas are threatened by a proposed dam. Degradation of water quality, along with loss of the primary food source—crayfish—is an ever present threat.

**MANAGEMENT PRACTICES:** Known nest sites for this species are monitored and potential new sites need to be surveyed. Whenever possible, nesting habitats need to be protected.



A. F. MORRIS, ILLUSTRATION



● = verified after 1980 ● = historical occurrences

