PRODUCTION NOTE

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Population Viability Assessment
For
Least Bittern (Ixobrychus Exilis Gmelin)

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Illinois Natural History Survey
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Prepared for:
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30071 South State Route 53
Wilmington, IL 60481

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POPULATION VIABILITY ASSESSMENT FOR LEAST BITTERN (IXOBRYCHUS EXILIS GMELIN)

SCIENTIFIC NAME: Ixobrychus exilis

COMMON NAME: Least Bittern

FAMILY: Ardeidae

SYNONYMS: Ardea exilis - Gmelin, 1789.

USFS REGION 9 STATUS: Recommended for Regional Sensitive Status.

USFWS STATUS: Not listed.


GLOBAL AND STATE RANK: G5 / S2

RANGE: Breeding: The least bittern nests in wetland areas throughout the eastern United States and southern Canada, south to Texas, and along the Pacific coast. However, as one of the most secretive of wetland birds, Ixobrychus exilis is seldom observed. For a map of its breeding distribution in North America, see: http://www.mbr-pwrc.usgs.gov/bbs/cbcrea/1910ra.html

Wintering: Ixobrychus exilis winters from the southern states of the United States south to Columbia, South America. For a map of its wintering distribution in North America, see: http://www.mbr-pwrc.usgs.gov/bbs/cbcrea/h1910ra.html

In Illinois, this species is an uncommon migrant and summer resident. Recent records include the following counties: Carroll, Cass, Coles, Cook, Crawford, DuPage, Fulton, Grundy, Henry, Kane, Kendall, Lake, Lawrence, Lee, Marshall, Mason, Massac, McHenry, Putnam, Rock Island, Sangamon, Tazewell, Vermilion, Will, Williamson, Winnebago.


PHYSIOGRAPHIC DISTRIBUTION: Ixobrychus exilis can be found in appropriate habitat throughout the entire state of Illinois, and thus it can occur in each of the major physiographic provinces (Keys et al. 1995) making up the state. These include the Eastern Broadleaf Forest Province, the Prairie Parkland Province, and the Lower Mississippi Riverine Forest Province.
HABITAT: *Ixobrychus exilis* is found primarily in cattail marshes, and it prefers extensive marshes dominated by dense emergent vegetation. It is a shy and secretive bird, often hiding in tall cattails and sedges. *Ixobrychus exilis* is normally shy and retiring, and breeding pairs skulk through dense vegetation and are seldom observed. They vocalize infrequently.

*Ixobrychus exilis* usually feeds at edge of water and retreats into vegetation after capturing prey. Food is primarily small fish, amphibians, insects and small mammals.

SPECIES DESCRIPTION: The smallest member of the heron family, the least bittern is 28 - 36 cm (11 to 14 inches) in length and has a 41 - 46 cm (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. For more information on identification, see: [http://www.mbr-pwrc.usgs.gov/id/framlst/i1910id.html](http://www.mbr-pwrc.usgs.gov/id/framlst/i1910id.html).

Similar species: Green Heron lacks buff color to head and wings. All other herons are much larger.

LIFE HISTORY: Generally little known. *Ixobrychus exilis* may be single or double brooded, and it is seasonally monogamous. The male typically chooses nesting site. In Virginia, breeding season occurs from mid-May through August, with eggs laid from mid-May to mid-July; young in nest mid-June to mid-August. Copulation occurs on nest, prior to and during laying, and continues into early incubation. Eggs usually 4 - 5, usually laid one egg/day until clutch is complete. Dimensions are 31.3 x 23.93 mm. The shell is smooth and is not glossy, of pale bluish green color. Incubation period is approximately 16 - 18 days. Average number of offspring are 3 or 4.

Nest usually nest built over water 7.5 - 71 cm (3-28 inches) deep, although in an Iowa study most nests were built over water 41 - 51 cm (16-20 inches) deep. Most nests are located 0.15 - 6.1 m (0.5 - 20 feet) from open water.

Feeds at edge of water in marshes; darts head toward water; captured fish is swallowed head first; besides small fishes, eats amphibians, aquatic insects and other invertebrates. Retreats into vegetation after captures prey. Both adults and juveniles feed in cattails (*Typhus* spp.), buttonbush (*Cephalanthus occidentalis*), sawgrass (*Cladium jamaicense*), smartweeds (*Polygonum* spp.), and sedges (*Carex* spp.).

NATURAL AND HUMAN LAND USE THREATS: Least bittern habitat is adversely affected by marsh drainage, pollution, insecticides, and development activities. Marsh wren (*Cistothorus palustris*) is known to puncture eggs.

VIABILITY: To maintain minimum viable populations of *Ixobrychus exilis* throughout its habitat range, protection, management, and restoration of habitat should be provided as is feasible. A minimum viable population is defined as a population size likely to give a population a 95% probability of surviving over a 100 year period (Menges 1992). To insure viability:

1. Maintain large wetland areas (≥ 6 ha) with shallow water and robust emergent vegetation whenever possible.

2. Minimize both point and nonpoint pollution of wetland areas.

3. Minimize loss of existing wetlands to human development.

MANAGEMENT: To maintain minimum viable populations of *Ixobrychus exilis* throughout its habitat range, specific management practices are helpful.

1. Areas where this species is known to nest could be protected. Surveys could be conducted to determine where it does actually nest, and marshland habitats could be managed to provide additional nesting habitat.

2. Control exotic vegetation (e.g., purple loosestrife, *Lythrum salicaria*) following techniques such as described in Integrated Pest Management Methods for Control of Invasive Exotic Species (Carroll and White 1997).

MONITORING: Systematic censuses of wetland areas could be conducted to determine distribution and abundance of *Ixobrychus exilis*. These census activities should commence in late April (in south of species range) or mid- to late May (in north of species range) and extend through the length of the breeding season, which may last through August.

RESEARCH NEEDS: Specific research needs associated with *Ixobrychus exilis* include:

- Reproductive ecology, including nest site selection, clutch size, and nest success. This work is important to understand more clearly how the species responds to environmental heterogeneity. Such studies should examine movements and patterns of habitat use, causes and rates of juvenile and adult mortality, sources of nest failure, ability to renest, juvenile dispersal patterns, mating systems and philopatry, and diet.

- Habitat associations, particularly associations with emergent aquatic vegetation, and landscape characteristics. This information will further clarify the key components of the landscape necessary for occupation by the species, such as wetland vegetation, water levels, water quality, and minimum wetland area during nesting, migration, and
over-wintering seasons.

- Foraging ecology, including foraging sites and diet selection. This research will help clarify how the species exploits its environment, and will provide critical information on how the environment could be improved for the species.
- Demographic characteristics of the population, such as sex ratios and age structure. This information is vital for understanding the long term population trends of the species.
- Identify major stop-over sites for overwintering and migrating.
- Evaluate the effects of open-water management and mosquito-ditching programs at brackish and salt marshes.
- Determine the effects of diseases, parasites, contaminants, and weather during breeding and overwintering.
- Monitor contaminant levels in birds and their eggs in agricultural and industrialized regions.
- Impact of recreational activities on population size, habitat selection and nest success. This research will help identify how human use of the environment impacts the species.
- Impact of management practices on population size, habitat selection, and nest success. As above, this research will help identify how human use of the environment impacts the species.

REFERENCE LIST


b) Web pages cited.
http://www.inhs.uiuc.edu/chf/pub/ifwis/maps/least-bittern.htm
Figure 1. Breeding and winter distribution of least bittern in United States and Canada as determined by Breeding Bird Survey (Fish and Wildlife Service).

Breeding Season

Winter Season

Figure 2. Known historical and current breeding locations of least bittern in Illinois.