



Natural Heritage & Endangered Species Program

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Least Bittern

Ixobrychus exilis

State Status: Endangered

Federal Status: None

Description: The Least Bittern is a small, wading bird and member of the Heron (Ardeidae) family with a long neck and bill and a dark crown. Both sexes are similar in size but their colors differ. Length is 13 inches (33 cm) and wingspan 17 inches (43 cm) and weight of 2.8 oz (80 g) (Sibley 2000, Gibbs et al. 2009). In both the neck and sides are brown to orange and the front and neck have white stripes. Males have a black crown and back. In females, these are purple to dark brown (Sibley 2000, Gibbs et al. 2009). The song is a slightly descending, rapid *poo poo poo*, (Feith 2003) somewhat like that of a Black-billed Cuckoo (Forster 203), though the call of that species does not descend. The call is a loud, harsh quacking (*rick-rick-rick*) and in flight they make a short *kuk* or *gik* (Sibley 2000). They are most vocal at dawn (Forster 2003). Least Bitterns are reported to sit or stand still on approach with necks and beaks raised to the sky, perhaps to blend in with tall vegetation (Forbish 1929, Harrison 1975)

Similar Species in Massachusetts: Green Herons are similar in size and coloring, but have a shorter neck, blue-gray back and wings, and brown neck and chest, a white chin, some yellow coloration on the face and yellow legs. They also have some white striping on the breast. Green Herons they keep their necks close to the body, and not extended as Least Bitterns. Both male and female Green Herons have similar size and coloration (Davis and Kushlan 1994). Black-crowned Night Herons are slightly larger (Length 58-66 cm; 22-25 inches; wingspan 110 cm; 44 inches). Adults have a short neck and a black bill. They also have a black cap and back, gray wings and the underside is white. Juveniles, however, have a gray back and cap and brown and white striped breast. Both adults and juveniles have red eyes and yellow legs (Davis 1993, Sibley 2000).



Photo by William Fournier

Range: Least Bitterns breed from southeastern Canada through the eastern and central U.S to Mexico and Costa Rica. This species is largely absent from the Appalachians. Least Bitterns overwinter along the Atlantic Coastal Plain south to the Gulf Coast as well as Baja California and parts of Central America. Birds breeding in areas that are frost-free over the winter may not migrate (Gibbs et al. 2009).



Habitat: Least Bitterns inhabit freshwater and brackish marshes with dense, tall vegetation, particularly cat-tails (*Typha*), sedges (*Carex* sp.), bulrush (*Scirpus* spp.), and Arrowhead (*Sagittaria* spp.) interspersed with clumps of woody vegetation and substantial areas of open water. They will readily use impoundments that have associated wetlands (Gibbs et al. 2009). MANHESP occurrence records described habitat as primarily cat-tails and open water. However, some sites did have shrub vegetation, though not a dominant, as well as some Phragmites and purple loosestrife. In other northeastern states, habitat has been described as cat-tail marshes, sometimes with bulrush (*Scirpus fluviatilis*) in water depths of 25-60 cm but may range to one meter in depth (DeGraaf and Yamasaki 2001). They have been more frequently found in marshes 12.5 acres (> 5 ha) (Brown and Dinsmore 1986). They generally nest alone but may form loose colonies or with nests in close proximity (Kushlan 1973, DeGraaf and Yamasaki 2001). Both Pied-billed Grebe and Marsh Wren use similar habitat. Green Herons use wooded wetlands and nest in trees or shrubs. American Bitterns may nest in similar areas, but are found in wider range of herbaceous and graminoid wetland types and more shallow water depth. Virginia Rails also use similar wetlands to Least Bittern but nest in dryer portions (Conway 1995).

Life Cycle/Behavior: Least Bitterns generally arrive at nesting areas in Massachusetts by mid to late May, and pairs form soon after (Forbush 1929, Forster 2003). Eggs and fledglings have been observed in Massachusetts throughout June (Forbush 1929, Forster 2003). Least Bitterns construct a nest close to water within dense vegetation. The male constructs the nest in concealed areas high enough above the water level to avoid flooding. They pull and bend dead stalks to create a platform and then add other material to complete the nest (Forster 2003). Sometimes nests from previous year or nests of other birds are used (Weller 1961). A clutch of 4-5 bluish or greenish eggs is laid over a six day period and hatch in 17-20 days (Harrison 1975, Forster 2003). The emergence of aquatic insects in Massachusetts wetlands peaks in June when adults are feeding young. Young can fly in approximately 29 days, but are able to forage much earlier.

Second broods have not been clearly documented (Gibbs et al. 2009), but they may breed again if their first attempt fails (Forbush 2003). Least Bitterns build foraging platforms of bent reeds at feeding sites and use these to forage in deeper waters than their small size might allow them otherwise (Gibbs et al. 1995). They have not been observed frequently during fall migration but appear to migrate from late August to mid-September (Forbush 1929, Forster 2003), though this may extend to October. Young birds may remain near the nesting area longer and migrate later (Gibbs et al. 2009).

Population Status: Least Bitterns are reported as possible, probable or confirmed breeding in 12 blocks in the current (2007-2011) Massachusetts Breeding Bird Atlas project compared to 10 blocks in the 1975-1979 atlas (MassAudubon 2003-2010, USGS 2011), primarily at Plum Island and along the Sudbury River, though there are historic records in other locations prior to the 1950's (Veit and Peterson 1993). The MANHESP has recorded nine occurrences since 1992. Least Bitterns are not readily observed during surveys, including standardized surveys such as the North American Breeding Bird Survey. Least Bittern are secretive so that data from large-scale, standardized surveys, such as the North American Breeding Bird Survey cannot accurately determine status or population trends at state, regional, or national scales. However, specialized surveys that utilize call-playbacks can be quite effective in detecting presence of this species.

Limiting Factors: Invasion of wetlands by purple loosestrife and *Phragmites* are major threats as they alter and degrade habitat (Gibbs et al. 2009). Siltation resulting from erosion from development and farming and chemical pollutants, particularly insecticides from run-off or other sources may also degrade nesting habitats and reduce food supplies, which are primarily small fish, frogs, tadpoles, salamanders, small mammals and invertebrates. A nematode parasite, *Eustrongylides*, contracted from small fish, can reduce wading bird populations (Gibbs et al. 2009). Because they fly low to the ground, collisions with motor vehicles, barbed wire fences, and transmission lines can be a mortality factor (Forbush 1929, Gibbs et al. 2009). Wakes from boats and jet skis may swamp nests.

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Least Bittern adults and chicks are vulnerable to predation by various mammalian, avian, and reptilian predators including raptors, crows, raccoons, mink, snakes, snapping turtles, and bullfrogs. Least Bitterns seem tolerant of human presence, and may persist in highly urbanized areas (Gibbs et al. 2009).

Management Recommendations: Protection of suitable habitat is the priority for this species. Optimal habitat consists of shallow wetlands > 10 hectares (25 acres) with a dense growth of emergent vegetation, particularly cat-tails, and patches of open water. Wetlands need to be protected from siltation, chemical pollution and invasion by species that could alter vegetation composition, sedimentation and structure (Gibbs et al. 2009). Since structure can change with water depth, factors that affect water depth, such as interannual precipitation or alteration in the flow regime may significantly influence habitat suitability at any given location within a wetland. Therefore, wetlands managed for Least Bittern should be both large and structurally diverse enough to provide a range of microhabitats to buffer possible effects of water level variation. Wetlands created by beavers may be important habitat, and beaver activity at the landscape scale may be an important factor in creating suitable nesting habitat.

Systematic monitoring is needed to determine changes in population status. Playback of calls at known and potential sites should be used to determine presence of Least Bittern. While monitoring populations, information on habitat characteristics including water level should also be

collected. Changes in vegetation structure, water level fluctuation, and invasive species encroachment should be implemented at managed sites to determine if management strategies are effective. Further research in Massachusetts should focus on causes of nest failure, such as site disturbance or predation as well as causes of adult and juvenile mortality.

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