Least Bittern, photo by ©Gordon Karre

Conservation Profile

Species Concerns
Habitat Loss and Degradation
Surface and Groundwater Losses
Climate Change (Droughts)

Conservation Status Lists	
USFWS[1]	No
AZGFD[2]	Tier 1C
DoD[3]	No
BLM[4]	No
PIF Watch List[5b]	Not covered
PIF Regional Concern[5a]	Not covered

Migratory Bird Treaty Act
Covered

PIF Breeding Population Size Estimates[6]	
Arizona	Not given
Global	Not given
Percent in Arizona	Not given

PIF Population Goal[5b]
Not Covered

Trends in Arizona	
Historical (pre-BBS)	Unknown
BBS[7] (1968 – 2013)	Not given

PIF Urgency/Half-life (years)[5b]
Not Covered

Monitoring Coverage in Arizona	
BBS[7]	Not adequate
AZ CBM	Covered (Marsh Bird Surveys)

Associated Breeding Birds
Ridgway's Rail, Virginia Rail, Sora, Common Gallinule, American Coot, Marsh Wren, Common Yellowthroat

Breeding Habitat Use Profile

Habitats Used in Arizona
Primary: Wetlands
Secondary: None

Key Habitat Parameters	
Plant Composition	Cattail, bulrush, sedges[8, 9]
Plant Density and Size	Dense emergent vegetation[8]
Microhabitat Features	Water depth at nest 3 – 37 inches and < 30 feet from open water areas of wetland; < 23 inches water depth for foraging[8]
Landscape	Shallow marsh with emergent vegetation interspersed with open water and woody vegetation; approximately equal proportion of open water and emergent vegetation[8]

Elevation Range in Arizona
100 – 3,880 feet[9]

Density Estimate
Territory Size: ≥ 4 acres[8]
Density: 0.4 – 6 birds/acre[8]

Natural History Profile

Seasonal Distribution in Arizona	
Breeding	April – July[9]
Migration	March – May; mid-July – mid-September[9]
Winter	Resident below 1,300 feet[9]; locally to 3,100 feet

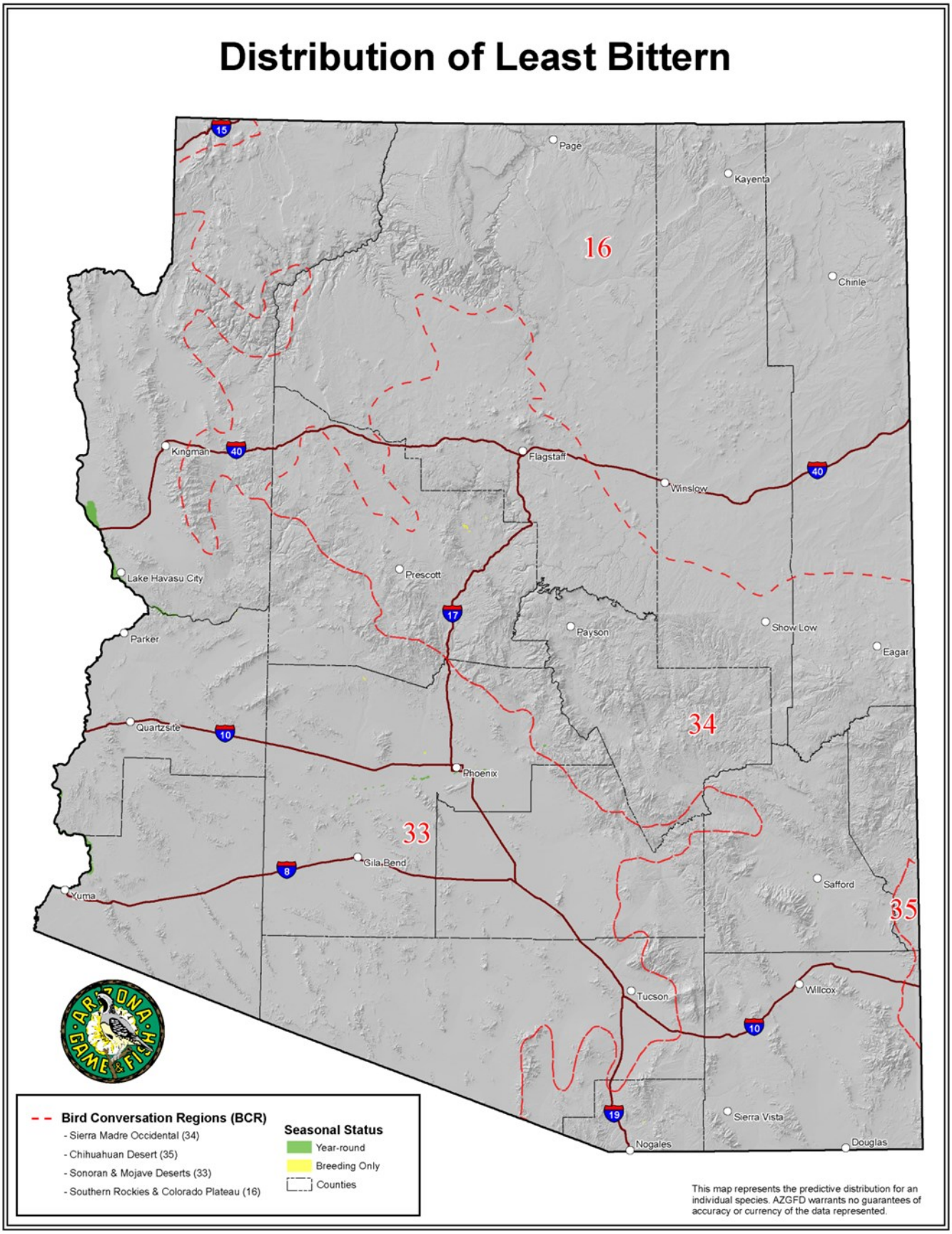
Nest and Nesting Habits	
Type of Nest	Platform with canopy[8]
Nest Substrate	Bent-over cattails[8]
Nest Height	6 – 30 inches above water[8]

Food Habits	
Diet/Food	Small fish, aquatic invertebrates[8]
Foraging Substrate	Water surface

SPECIES ACCOUNT ● *LEAST BITTERN Ixobrychus exilis*

Confidence in Available Data: ● High ◑ Moderate ○ Low ^ Not provided

Last Update: April 2023


Distribution of Least Bittern
Page
Kayenta
Chinle
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Kingman
Flagstaff
Winslow
Lake Havasu City
Prescott
Parker
Payson
Show Low
Eagar
Quartzsite
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Phoenix
33
Gila Bend
Yuma
Safford
35
Tucson
Willcox
Sierra Vista
Nogales
Douglas
Bird Conversation Regions (BCR)
- Sierra Madre Occidental (34)
- Chihuahuan Desert (35)
- Sonoran & Mojave Deserts (33)
- Southern Rockies & Colorado Plateau (16)
Seasonal Status
Year-round
Breeding Only
Counties
This map represents the predictive distribution for an individual species. AZGFD warrants no guarantees of accuracy or currency of the data represented.

General Information

Distribution in Arizona

Least Bitterns are found primarily along the lower Colorado River from Yuma to Topock Marsh, and they are particularly abundant in the large marshes of the lower Colorado River's National Wildlife Refuges (Corman 2005). Additional populations occur along the middle Gila and Salt rivers in Maricopa County, along with a few isolated constructed ponds and wetlands elsewhere in the greater Phoenix area. Isolated breeding records also exist from small marshes across the southern half of the state, from Tavasci Marsh and Dead Horse State Park near Cottonwood to Patagonia and Roper lakes in southeastern Arizona (Corman 2005). The Least Bittern is primarily a year-round resident along the lower Colorado River Valley and lower Gila River Valley upstream approximately to its confluence with the Salt River in Maricopa County. It is typically only a spring and summer resident elsewhere in Arizona.

Habitat Description

Least Bitterns occur most often in large marshes along rivers, ponds, and lakes (Gibbs et al. 1992). In Arizona they occasionally use irrigation canals and run-off ditches with emergent vegetation in nearby agricultural areas (Corman 2005). Most habitat studies were conducted in populations far from Arizona, and further study of habitats of southwestern populations is needed. However, the Arizona Breeding Bird Atlas found that Least Bitterns prefer dense, tall stands of emergent vegetation, particularly cattail, interspersed with open water (Corman 2005). They also use stands of California bulrush for foraging (Rosenberg et al. 1991). Studies from other regions suggest that an equal ratio of open water to emergent vegetation cover and a small amount of woody vegetation are most suitable for Least Bitterns (Gibbs et al. 1992).

Microhabitat Requirements

Least Bitterns construct nests in dense emergent or woody vegetation 3 – 37 inches above water and < 30 feet from the open water edge (Gibbs et al. 1992). Due to the short distance from the nest to the water table, they are vulnerable to flooding during the breeding season. Foraging habitat typically consists of dense emergent vegetation at the edge of 1.5 – 2.5 feet deep, open waters of a wetland (Gibbs et al. 1992).

Landscape Requirements

Area requirements and minimum wetland complex sizes of western populations of Least Bittern have not yet been studied. In other regions, Least Bitterns were most often found in wetlands larger than 11 acres, although individual birds may be found in smaller wetlands, suggesting that the species is somewhat area sensitive (Gibbs et al. 1992). Given its common use of large patches of dense emergent vegetation along fairly deep, open water, larger marsh and wetland complexes are more likely to provide suitable habitat for Least Bitterns than small systems.

Conservation Issues and Management Actions

Threats Assessment

This table is organized by Salafsky et al.'s (2008) standard lexicon for threats classifications. Threat level is based on expert opinion of Arizona avian biologists and reviewers. We considered the full lexicon but include only medium and high threats in this account.

Threat	Threat Level
Natural System Modifications • Fire and fire suppression • Dams and water management/use • Other ecosystem modifications	Medium
Climate Change • Ecosystem encroachment • Changes in precipitation and hydrological regimes	Medium

In the following section we provide more detail about threats, including recommended management actions. Threats with similar recommended actions are grouped.

Natural System Modifications:
- Fire and fire suppression
- Dams and water management/use
- Other ecosystem modifications

Climate Change:
- Ecosystem encroachment
- Changes in precipitation and hydrological regimes

Channelization, water diversions, and other stream alterations likely reduced the historic extent of Least Bittern habitat in Arizona. While impoundments off-set these losses somewhat, the remaining bittern populations are likely smaller and more disconnected. Impacts to water quality from sedimentation and agricultural runoff have also been cited as conservation concerns (Gibbs et al. 1992). Climate change (i.e., prolonged drought) and compounding land use changes, such as surface water diversions and dispersed groundwater pumping, are likely current threats to Least Bittern habitats in Arizona, but impacts of these processes on habitat suitability have not been studied.

Periodic prescribed wetland fires outside the breeding season may benefit Least Bitterns by removing accumulated dead vegetation layers. This may also reduce chances of wildfires occurring during late winter and early spring, which may remove appropriate nesting habitat for much of the breeding season.

Recommended Actions:

1. Preserve, create, or restore wetlands for Least Bitterns, particularly large (> 25 ac) wetlands with dense growth of robust, emergent vegetation along < 2 feet deep, open water (Gibbs et al. 1992).
2. Protect water quality of wetlands suitable for Least Bittern from chemical contamination, siltation, eutrophication, and other forms of pollution.
3. Maintain consistent water levels in known breeding sites during the Least Bittern nesting season.
4. Discourage development and disturbances in or near known Least Bittern breeding locations.
5. Coordinate with the Lower Colorado River Multispecies Conservation Plan to meet their goal of creating 512 acres of habitat for Least Bittern.
6. Work with BLM and USFWS to use controlled burns to improve habitat for Least Bittern and to protect habitat from wildfire.

Research and Monitoring Priorities

1. Implement the North American Marsh Bird Protocol annually to determine Least Bittern population status and trends.
2. Study habitat requirements of migrants and wintering Least Bitterns.
3. Monitor and evaluate the effects of contaminants on Least Bitterns in agricultural, industrial, and undisturbed regions.
4. Determine the average concentration of selenium in Least Bittern eggs to be able to assign risk.
5. Conduct experimental restoration techniques to enhance wetlands for Least Bittern, particularly in currently unoccupied wetlands, such as creating a 1:1 ratio of open water to emergent vegetation, creating deep-water areas, or adjusting the wetland size and complexity.
6. Monitor effectiveness of restoration efforts on Least Bittern occupancy.
7. Determine local impacts of extensive, non-native *Ludwigia* spp. (water primrose) infestation as a potential competitor of cattail and other native marsh vegetation.

Literature Cited

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[6]Partners in Flight Science Committee. 2019. Population Estimates Database, version 3.0. Accessed on March 31, 2020.

[8]Poole, A.F., P. Lowther, J.P. Gibbs, F.A. Reid, and S.M. Melvin. 2009. Least Bittern (*Ixobrychus exilis*), The Birds of North America Online (A. Poole, ed.) Ithaca: Cornell Lab of Ornithology.

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Recommended Citation

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