Virginia Rail, photo by ©George Andrejko

Conservation Profile

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

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)	Mixed trends, but west-wide lack of sufficient sample sizes[7]

PIF Urgency/Half-life (years)[5b]
> 50

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

Associated Breeding Birds
Ridgway's Rail, Sora, Common Gallinule, American Coot, Least Bittern, Marsh Wren, Common Yellowthroat, Song Sparrow

Breeding Habitat Use Profile

Habitats Used in Arizona
Primary: Wetlands
Secondary: None

Key Habitat Parameters	
Plant Composition	Robust emergent vegetation (e.g., cattails and bulrush), but species composition not as important as cover[8]
Plant Density and Size	Most common in wetlands with 40–70% upright emergent vegetation; avoids emergent stands with very high stem densities or large amounts of residual vegetation[8]
Microhabitat Features	Nests placed ≤ 6 inches above water that usually is < 12 inches deep; for foraging, prefers still water with depths < 7 inches[8]
Landscape	Most common in marshes > 2 acres[6]; most suitable if additional wetlands present within a mile and residential areas are > 1,600 feet away[8]

Elevation Range in Arizona
100 – 9,000 feet[9]

Density Estimate
Territory Size: 0.5 – 4 acres [0]
Density: < 1 – 4 pairs/acre[8]

Natural History Profile

Seasonal Distribution in Arizona	
Breeding	March – July[9]
Migration	March – early May; mid-August – Oct.[9]
Winter	Ice-free marshes of southern and central Arizona

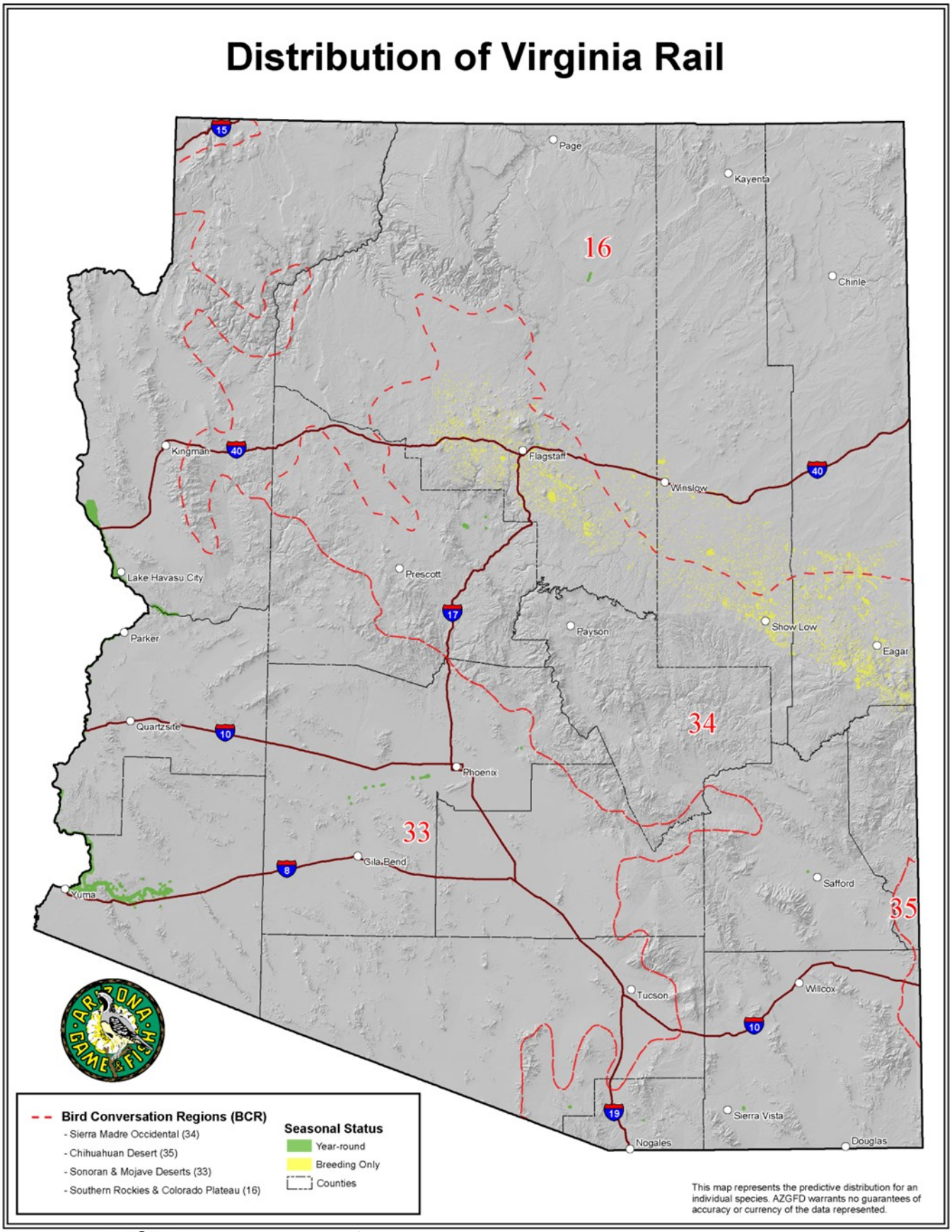
Nest and Nesting Habits	
Type of Nest	Cup with canopy[8]
Nest Substrate	Emergent vegetation
Nest Height	< 1 foot above water

Food Habits	
Diet/Food	Aquatic invertebrates[8]
Foraging Substrate	Shallow water or mudflats

SPECIES ACCOUNT ● *VIRGINIA RAIL Rallus limicola*

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

Last Update: April 2023


Distribution of Virginia Rail
Page
Kayenta
Chinle
16
Kingman
Flagstaff
Winslow
Lake Havasu City
Prescott
Parker
Payson
Show Low
Eagar
34
Quartzsite
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

Virginia Rails nest in widely scattered locations throughout Arizona where suitable habitat exists, such as along the lower Colorado River, in the White Mountains, and in the central part of the state (Burger 2005). The Arizona Breeding Bird Atlas documented Virginia Rail also breeding in southeastern Arizona (Burger 2005). They winter throughout southern, central, and western Arizona, primarily in unfrozen wetlands (Conway 1995).

Habitat Description

Virginia Rails breed in stands of tall, moderately-dense emergent vegetation (e.g., cattails and bulrushes) within early and mid-successional marshes and wetlands (Conway 1995), as well as in wet meadows, fens, permanent wetlands, restored wetlands, impoundments, and in emergent vegetation along the banks of streams, rivers, or lakes (Zimmerman et al. 2002). The key habitat features for Virginia Rails are shallow water, emergent vegetation cover, and high abundance of littoral and benthic invertebrates (Conway 1995). In Arizona, they use relatively homogeneous stands of emergent vegetation compared to other rails (Johnson 1984, Conway 1990).

Virginia Rails readily colonize newly created marshes and wetlands or recovering wetlands if they provide sufficient emergent vegetation (Conway 1995). Suitable wetlands have 40 – 70% emergent vegetation cover interspersed with open water, mudflats, or matted vegetation. Virginia Rails generally avoid wetlands that lack shallow water or mudflats (Krapu and Green 1978, Conway 1995). Virginia Rail winter and migratory habitat is similar to breeding habitat, but may birds range farther from open water and use a larger variety of emergent wetland vegetation (Conway 1995).

Microhabitat Requirements

Virginia Rail nests are woven into emergent vegetation that is at least 6 inches above water level. They prefer areas < 12 inches deep, but will nest in vegetation in water up to 30 inches in depth (Conway 1995). Nests are easily flooded if water levels fluctuate during the breeding season, risking wetland-wide nest failure. Virginia Rails probe for invertebrates in shallow muddy substrate (usually < 7 inches deep). Deep-water sections and very dense emergent vegetation are usually only used if sufficient matted vegetation exists for Virginia Rails to walk (Conway 1995).

Landscape Requirements

Virginia Rails can occur in small marshes but are more common in marshes > 2 acres in size (Conway 1995). Within a wetland complex, the shoreline and other shallow areas, including mudflats, are most important for Virginia Rails. Total wetland area on the landscape is also important, with Virginia Rails more likely to be present if other wetlands are within one mile, and if urban or rural residences are > 1,600 feet from the wetland's edge (Zimmerman et al. 2002).

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
Agriculture • Livestock farming and ranching	Medium
Natural System Modifications • Fire and fire suppression • Dams and water management/use	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.

Agriculture:
- Livestock farming and ranching

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

Wetland grading can cause loss of valuable shallow areas and important emergent vegetation. Similarly activities that lead to a lowering or fluctuation of water levels create habitat loss. Livestock grazing and fire can be used strategically to create early-successional stages of emergent vegetation, but if they occur during Virginia Rail nesting season or at high intensity, they may lead to habitat loss. Ephemeral and shallower pond wetlands are particularly vulnerable to excessive livestock grazing.

Periodic prescribed wetland fires outside the breeding season may benefit this species by removing accumulated layers of dead vegetation (Conway et al. 2010). This may also reduce chances of wildfires during late winter and early spring, which remove appropriate nesting habitat for much of the breeding season.

One of the most direct impacts to marsh habitat and Virginia Rails is water management, including dam operation both upstream and downstream. Upstream dams regulate timing and level of flows, and downstream dams at least partly determine where marshes occur upstream. Although water management is dependent on environmental conditions and water needs for cities, agriculture, and other users, considering wildlife and nature is also important. Where possible, dams should be managed to benefit native wetland habitat and wildlife species.

Recommended Actions:

1. Conserve wetlands or work to create new ones where conservation is not possible.
2. Create refugia wetlands during prolonged droughts; consider how these could be managed for maintaining long-term availability of shallow areas with moderately dense, tall emergent vegetation.
3. Determine the roles of water management (inflow and outflow controls), fire, and grazing in best management practices for maintaining Virginia Rail habitat.
4. Work with BLM and USFWS to use appropriately timed, controlled burns to improve habitat for rails.
5. Develop beneficial management practices for wetlands that address water level stability during the Virginia Rail breeding season and describe methods for maintaining shallow water and early-successional emergent vegetation, as well as healthy invertebrate populations.
6. Create and restore wetlands, focusing on areas that are near other wetlands occupied by Virginia Rails that are at least > 1,600 feet from human habitation.
7. Coordinate with the Lower Colorado River Multi-Species Conservation Plan to create marsh habitat that will benefit Virginia Rails.
8. Determine the effects of pesticides from runoff and other pollution on water quality and prey of Virginia Rail, and develop solutions where it is an issue.
9. Review existing unsuitable wetlands, lakes, and river backwaters for opportunities to create additional Virginia Rail habitat; grading shorelines to create shallows and mudflats is usually less costly than creation of new wetlands.
10. Provide these recommended actions to anyone working on wetland restoration and enhancement projects that could provide habitat for Virginia Rails.

Climate Change:

- Ecosystem encroachment
- Changes in precipitation and hydrological regimes

Prolonged droughts are a conservation issue for Virginia Rails if they lead to dewatering and shrinking of wetlands. Low winter precipitation, particularly snow fall, reduces breeding habitat availability at the many shallow, ephemeral, higher elevation wetlands of central and northern Arizona. Virginia Rails depend on permanently inundated shallow areas and emergent wetland vegetation, which is usually most at risk if water tables drop. Managed wetlands and alternative wetlands, such as sewage ponds, may be less at risk from effects of climate change and may be strategically used to mitigate for losses in natural wetlands.

Recommended Actions:

1. Determine habitat suitability in stronghold areas, particularly for successional stage of marsh vegetation, and use management actions (e.g., prescribed winter burns) to restore early successional stages where appropriate.

Research and Monitoring Priorities

1. Implement and expand the North American Marsh Bird Protocol annually to determine Virginia Rail population status and trends.
2. Determine potential for enhancing existing unsuitable waterbodies, creating new wetlands, and restor-

ing former wetlands.
3. Determine levels of pesticide contamination in existing Virginia Rail habitat and how it affects prey populations.
4. Determine the average concentration of selenium in Virginia Rail eggs to be able to determine risk.
5. Test effects of common wetland management practices and land uses on Virginia Rails and their microhabitats to determine beneficial practices.
6. Determine local impacts of extensive, non-native *Ludwigia* spp. (water primrose) infestation as a potential competitor of cattail and other native marsh vegetation.

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