**Conservation Profile**

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

**Conservation Status Lists**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>USFWS</td>
<td>No</td>
</tr>
<tr>
<td>AZGFD</td>
<td>Tier 1C</td>
</tr>
<tr>
<td>DoD</td>
<td>No</td>
</tr>
<tr>
<td>BLM</td>
<td>No</td>
</tr>
<tr>
<td>PIF Watch List</td>
<td>Not covered</td>
</tr>
<tr>
<td>PIF Regional Concern</td>
<td>Not covered</td>
</tr>
</tbody>
</table>

**Migratory Bird Treaty Act**
- Covered

**PIF Breeding Population Size Estimates**
- Arizona: Not given
- Global: Not given
- Percent in Arizona: Not given

**PIF Population Goal**
- Not Covered

**Trends in Arizona**
- Historical (pre-BBS) BBS: Unknown
- Mixed trends, but west-wide lack of sufficient sample sizes

**PIF Urgency/Half-life (years)**
- > 50

**Monitoring Coverage in Arizona**
- BBS: 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

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**Breeding Habitat Use Profile**

### Breeding Habitat Use Profile

#### Habitats Used in Arizona
- **Primary:** Wetlands
- **Secondary:** None

#### Key Habitat Parameters

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

#### Elevation Range in Arizona
- 100 – 9,000 feet

#### Density Estimate
- Territory Size: 0.5 – 4 acres
- Density: < 1 – 4 pairs/acre

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**Natural History Profile**

### Seasonal Distribution in Arizona

<table>
<thead>
<tr>
<th>Season</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breeding</strong></td>
<td>March – July</td>
</tr>
<tr>
<td><strong>Migration</strong></td>
<td>March – early May; mid-August – October</td>
</tr>
<tr>
<td><strong>Winter</strong></td>
<td>Ice-free marshes of southern and central Arizona</td>
</tr>
</tbody>
</table>

### Nest and Nesting Habits

<table>
<thead>
<tr>
<th>Nested Habitat</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Nest</td>
<td>Cup with canopy</td>
</tr>
<tr>
<td>Nest Substrate</td>
<td>Emergent vegetation</td>
</tr>
<tr>
<td>Nest Height</td>
<td>&lt; 1 foot above water</td>
</tr>
</tbody>
</table>

### Food Habits

<table>
<thead>
<tr>
<th>Diet/Food</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foraging Substrate</td>
<td>Shallow water or mudflats</td>
</tr>
</tbody>
</table>

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**Confidence in Available Data:**
- High
- Moderate
- Low
- Not provided

**Publication Date:** 2020
Distribution of Virginia Rail

This map represents the predictive distribution for an individual species. ADFGD 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). In winter and during migration, Virginia Rails use similar habitats as they do for nesting, but may 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 depth). 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.

<table>
<thead>
<tr>
<th>Threat</th>
<th>Threat Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agriculture</strong></td>
<td>Medium</td>
</tr>
<tr>
<td>• Livestock farming and ranching</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Natural System Modifications</strong></td>
<td>Medium</td>
</tr>
<tr>
<td>• Fire and fire suppression</td>
<td>Medium</td>
</tr>
<tr>
<td>• Dams and water management/use</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Climate Change</strong></td>
<td>Medium</td>
</tr>
<tr>
<td>• Ecosystem encroachment</td>
<td>Medium</td>
</tr>
<tr>
<td>• Changes in precipitation and hydrological regimes</td>
<td>Medium</td>
</tr>
</tbody>
</table>

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 occurring during late winter and early spring that 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, consideration of wildlife and biological resources 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 best management practices for wetlands that address water level stability during the Virginia Rail breeding season and how to maintain 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 and 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 if 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 snowfall, 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 alternate 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 with regard to 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 restoring 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 assign risk.
5. Test effects of common wetland management practices and land uses on Virginia Rails and their microhabitats to determine best 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.

Literature Cited


2Arizona Game and Fish Department. 2012. Arizona’s State Wildlife Action Plan: 2012-2022. Arizona Game and Fish Department, Phoenix, AZ.


Recommended Citation