

Marsh



Marsh along the Lower Truckee River, Washoe County. Photo by Elisabeth Ammon.

Key Bird-Habitat Attributes

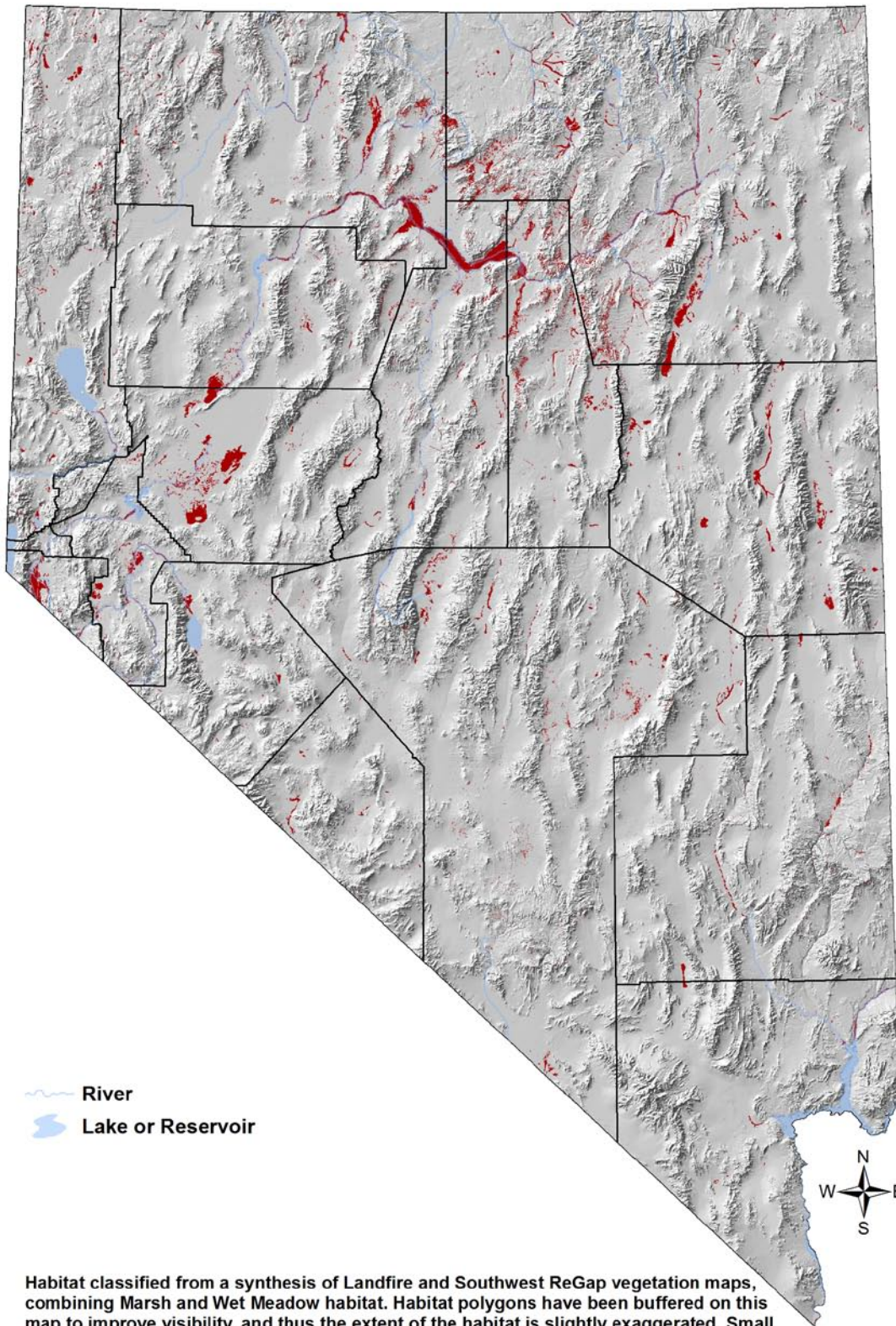
Plant Species Composition	Multi-species emergent and submerged vegetation, particularly with bulrush in deep sections and rushes and sedges at shorelines
Ideal Scale for Conservation Action	Marsh complexes > 5 ha [12 ac] ideal, but 1 ha [2.5 ac] and smaller patches useful also; > 100 m buffer of native vegetation around most shorelines ideal
Emergent Vegetation Cover	Mosaic of approximately 1:1 ratio of open water and emergent vegetation (hemi-marsh), with more open water in deeper sections
Hydrology	Marshes with inflow and outflow system ideal, but terminal marshes also valuable; permanent water ideal, or seasonal flooding during much of the year
Other Features	Islands particularly beneficial, especially in larger wetlands; sedge islands (semi-submerged) and islands with dry vegetation both useful

Conservation Profile

Estimated Cover in Nevada	35,500 ha [87,800 ac] 0.1% of state
Landownership Breakdown	Private = 41% Undesignated waterbodies = 18% BLM = 12% BOR = 11% Other = 18%
Priority Bird Species	Trumpeter Swan Tundra Swan Cinnamon Teal Northern Pintail Canvasback Redhead Lesser Scaup Eared Grebe Least Bittern (Mojave) Snowy Egret White-faced Ibis Clapper Rail (Mojave) Sandhill Crane Willet Marbled Godwit (western Nevada) Long-billed Dowitcher Wilson's Phalarope Franklin's Gull Black Tern Tricolored Blackbird (Carson Valley) (Willow Flycatcher and four other Priority species use marshes secondarily)
Indicator Species	None needed
Most Important Conservation Concerns	Surface water diversion and impoundments Groundwater pumping Climate change (change in precipitation and temperature) Livestock, wild horse and burro grazing Recreation
Habitat Recovery Time	5-10 years
Regions of Greatest Conservation Interest	Churchill, Humboldt, Washoe, Elko, Clark counties; Nye and Lincoln counties
Important Bird Areas	Carson Valley, Boyd Humboldt Valley Wetlands, Ruby Lake, North Ruby Valley, Boyd Humboldt Valley Wetlands, Franklin Lake, Lahontan Valley Wetlands, Carson River Delta, Washoe Valley, Swan Lake, Mary's River, Monitor Valley, Ash Meadows NWR, Pahrnagat Valley Complex, Moapa Valley, Virgin River, Oasis Valley

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Map shows combined extent of Marsh and Wet Meadow habitat types



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Overview

Marshes with emergent vegetation and permanent water occupy just a tiny fraction of Nevada, but, along with open water bodies, they support more Priority species than any other habitat type, as can be readily determined by examining the Conservation Profile table. Many of the Priority waterfowl species use marshes and their shorelines for nesting, and then shift to larger open water bodies for migration and wintering. In addition to the large number of Priority species that are wetland obligates, many upland birds also use marshes periodically for foraging, shelter, or access to water. Riparian / marsh landscape complexes are critical strongholds for birds in Nevada and should therefore be considered among the overall highest priorities for habitat conservation. In the marsh setting, intact emergent vegetation such as alkali and hardstem bulrush, sedges, and rushes are major determinates of bird-habitat value. Also, sago, horned, and Richardson's pondweeds, water buttercup, milfoil, widgeon grass, pickleweed, Olney three-square and other aquatic and emergent vegetation are important to some Priority species, particularly waterfowl (Kadlec and Smith 1989).

An "ideal" marsh for birds consists of approximately equal proportions of open water and emergent vegetation, and aquatic birds usually prefer that emergent vegetation stands contain patchy open water inclusions. Islands are especially valuable for nesting and resting for many species because they are free of terrestrial predators. Therefore, restored or artificial wetlands should be designed, where possible, to incorporate emergent or dry islands near the center of the marsh, surrounded by relatively deep water (Picman et al. 1993). Our patch size recommendation for marsh conservation is ≥ 5 ha [11 ac] (Brown and Dinsmore 1986), although smaller marshes also have bird habitat value, particularly in more arid areas where they may be a critical resource for upland birds. In a landscape context, connectivity of marshes with other mesic habitats, including additional marshes, open waterbodies, wet meadows, riparian areas, and agricultural areas is very desirable, and should factor into conservation prioritization and restoration design. In Figure Hab-10-1, we illustrate an idealized marsh landscape that shows important habitat features that support conservation priority species.

The hydrology of a marsh can be critical for bird conservation. Ideally, a marsh will be fully inundated and have a stable water level during the period when most birds are nesting, and water levels will remain reasonably high throughout the fall migration period. However, where marshes become overgrown due to lack of natural disturbances, or where invasive plants are a problem, occasional water draw-downs, mowing, or prescribed fire, followed by re-inundation (> 20 cm [8 in] depth) can be effective treatments (Kadlec and Smith 1989). We also encourage land managers to actively pursue opportunities for creating shrub willow habitat in saturated wetland soils (recommended patch size > 0.4 ha [1 ac], but smaller patches are useful, too), as this habitat element has been historically lost to agricultural uses in many wetland sites. The Willow Flycatcher's dramatic decline in historic times, both in the southwest and the Great Basin, is most likely attributable to widespread losses of this habitat feature.

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Main Concerns and Challenges

The following top six conservation concerns were identified in our planning sessions for marshes in Nevada:

- Surface water diversion and impoundments
- Groundwater pumping
- Change in precipitation and snowmelt related to climate change
- Change in temperature related to climate change
- Livestock, wild horse and burro grazing
- Recreation

Marshes, of course, require water in order to function as marshes, and therefore the first four conservation concerns are all related to maintaining sufficient water supplies. They include water diversions, which were mostly engineered long ago but which continue to impact the amount of water available to marshes, as well as more recently developing concerns about the impacts that climate change may have on the overall water supply. All of these factors are related to one another, and collectively they will determine the amount of water that eventually finds its way into marshes. Unfortunately, this amount of water will be limited, and therefore it is important to determine how to prioritize our efforts to conserve and restore marshes. Our conservation recommendation is to focus protection and enhancement efforts on sites that can be sustained in the long term. Additionally, although all marshes are valuable, the greatest conservation return can be realized by adding effective acreage to existing wetland or wetland/riparian complexes, as opposed to protecting or restoring smaller, more isolated marshes.

Where overgrazing occurs, it can have detrimental effects on marsh vegetation and local impacts on breeding birds, but this issue is less of a concern than it is in riparian areas. Likewise, recreational use may have impacts, but these are usually local in nature.

Marshes, along with riparian woodlands, differ from most other focal habitat types in two important ways that bear consideration. First, they are largely privately owned. Although Nevada's most productive marsh complexes are already protected in NWR's and WMA's, there is significant potential to conserve birds by engaging in a concerted and sustained effort to form partnerships and stewardship agreements with private landowners. The Tricolored Blackbird's only regular Nevada breeding location, which is privately owned and not formally protected, is a case in point. Partnerships can be accomplished through vehicles like the Nevada Important Bird Areas program, or the public outreach offices of resource management agencies. Second, marshes respond quickly and positively to well-planned enhancement or restoration efforts. Ideally, these would occur in high priority landscapes, as described above, but there is also value in seizing opportunities to create (or re-create) marshes wherever water supplies become available.

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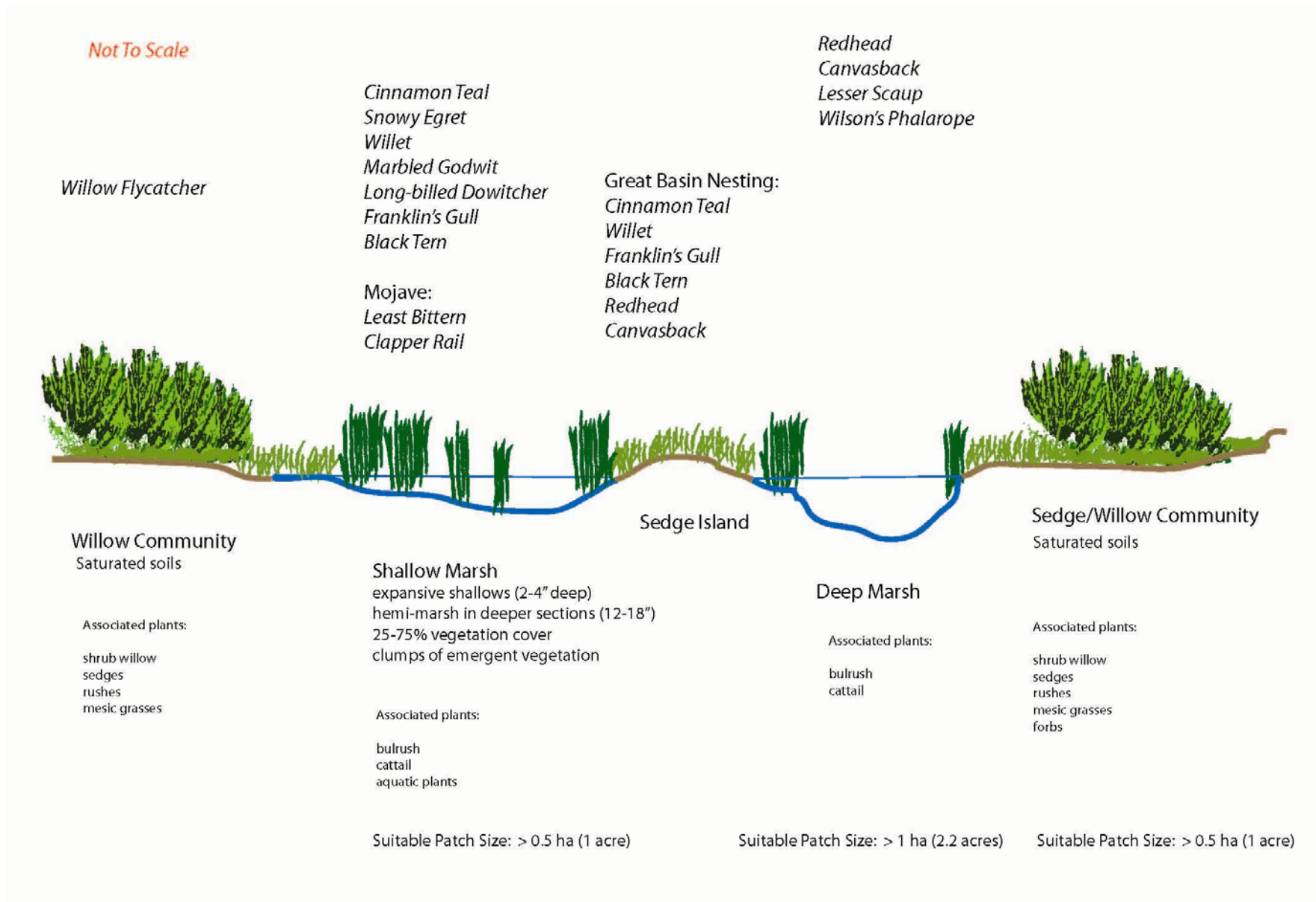


Figure Hab-9-1: Idealized marsh landscape to maximize the number of marsh associated Priority bird species.

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Conservation Strategies

Habitat Strategies

- **Manage at the scale of the entire wetland or wetland complex** that can be supported by available water. Small patches are also valuable, but ideal patch sizes exceed 1 ha [2.5 ac]. Buffers of native vegetation around marshes are beneficial for many bird species
- **Islands** are particularly valuable in marsh complexes and should be protected from disturbances during the breeding season, and possibly during migration
- **Intensive agricultural practices**, such as sustained grazing and heavy pesticide use, should be avoided because they increase the risk of weed invasion and negatively impact water quality
- Proximity to **other marshes, open water, riparian areas, springs, wet meadows** and **cliffs** > 30 m [100 ft] tall raise the priority level of a site for bird conservation.
- Hydrology of the wetland ideally features **year-round (or near year-round) inundation** with an **inflow/outflow system**, but terminal marshes that are semi-permanent from spring runoff are also valuable
- The majority of priority bird species nest between **May 1 and July 15**, and some of them are particularly sensitive to nest disturbance. This is the time period when intensive treatments or heavy land uses should be largely avoided, and when water levels should remain stable whenever possible

Research, Planning, and Monitoring Strategies

- Develop a comprehensive, statewide wetlands conservation strategy that seeks out **all opportunities** for protecting existing wetlands (particularly in **Important Bird Areas**), and expanding wetland acreage in areas where these can be sustained in the long term. **Close coordination** among resource management agencies, private landowners, and other organizations will be necessary for maximum effectiveness.
- A comprehensive **inventory of all wetland systems** of Nevada, including small habitat patches, has not been completed in recent times, and will be necessary for documenting wetland losses and effects of climate change.
- Continue and increase **long-term monitoring of aquatic birds, shorebirds, and marshbirds** statewide through existing programs (NWR and WMA counts, NDOW and USFWS aerial waterfowl, shorebird, and colonial waterbird surveys, and the Aquatic Bird Count program), and explore mechanisms to share and integrate data produced by different monitoring programs

Public Outreach Strategies

- **Promote wildlife-friendly wetland practices** with **private landowners** and agencies. Highlight wetland protection and enhancement as one of the most important overall bird conservation measures that can be implemented in Nevada
- **Promote low-impact recreational uses** to raise public appreciation of wetland resources, using careful outreach and recreational infrastructure planning, including trail design, board walks and observation decks, hunting blinds, and educational material available to visitors.