

Agriculture



Agricultural area south of Lovelock, Pershing County.
Photo by Elisabeth Ammon.

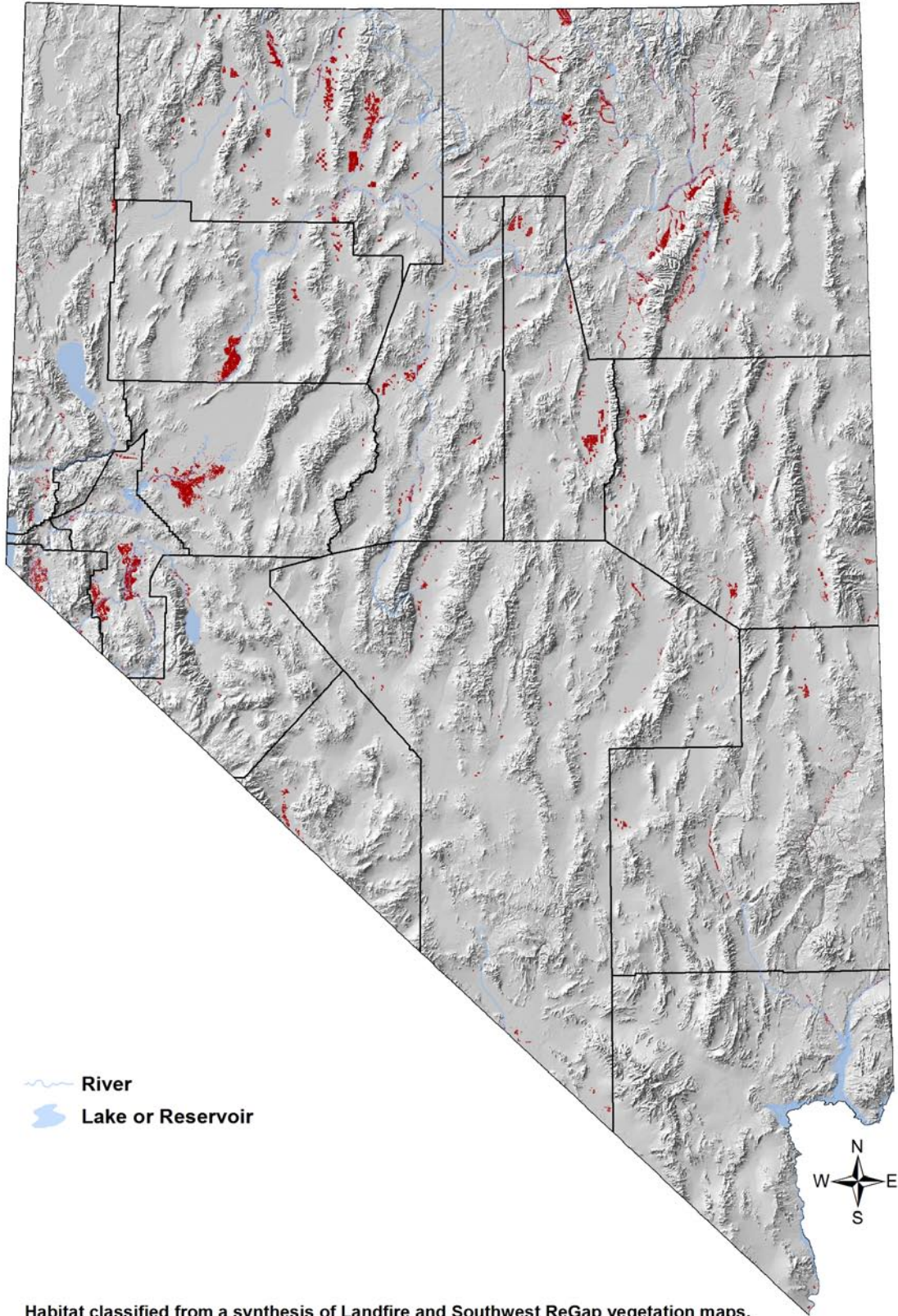
Key Bird-Habitat Attributes

Plant Species Composition	Multi-species mixtures ideal for grass; crops including barley, corn, wheat and similar large-seeded crops good for fall migrants; alfalfa suitable for Greater Sage-Grouse
Ideal Scale for Conservation Action	Whole field and border habitats
Crop Management	Haying schedules that avoid the main breeding season (May – mid-June) most suitable; flush-bars on agricultural equipment extremely beneficial
Trees	Old-growth deciduous trees desirable for nesting and perching of raptors and owls
Windbreaks and Hedgerows	Rows of native willows, alders, and other shrubs along ditches and streams particularly suitable for some species
Mosaic	Adjacent or imbedded wetlands, wet meadows, and riparian areas increase habitat value for Priority species
Other Features	Protection of nearby streams, springs, rivers from chemical and livestock impacts enhances overall wildlife value of agricultural lands Establishment of feral cats should be discouraged

Conservation Profile

Estimated Cover in Nevada	323,600 ha [800,000 ac] 1.1% of state
Landownership Breakdown	Private = 89% BLM = 5% Tribal = 3% Other = 3%
Priority Bird Species	Gambel's Quail White-faced Ibis Swainson's Hawk Sandhill Crane Long-billed Curlew (Cinnamon Teal) (Greater Sage-Grouse) (Snowy Egret) (Bald Eagle) (Prairie Falcon) (Franklin's Gull) (Short-eared Owl) (Abert's Towhee) (Tricolored Blackbird)
Indicator Species	Bobolink (in northern and NE Nevada) Winter raptors (Rough-legged Hawk, Ferruginous Hawk, and others)
Most Important Conservation Concerns	Climate change (change in precipitation and temperature) Groundwater pumping Change in agricultural practices Urban, suburban, and industrial development Invasive weeds
Habitat Recovery Time	2 years
Regions of Greatest Conservation Interest	Oasis, Overton, and Pahrnagat Valley areas in the south; Lahontan, Smith, Mason, Ruby, Paradise, Kings River, Quinn River, and Humboldt River valleys in the north
Important Bird Areas	Boyd Humboldt Valley Wetlands Carson Valley Lahontan Valley Wetlands Lower Muddy River Meadow Valley Wash North Ruby Valley Oasis Valley Pahrnagat Valley Complex Virgin River

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Habitat classified from a synthesis of Landfire and Southwest ReGap vegetation maps. Small patches of habitat may not be visible on this map, and some areas may be misclassified.

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Overview

Agriculture in Nevada centers in most cases around livestock production, with grasses, alfalfa, irrigated pastures, and a variety of grains being grown on the majority of active farmlands. For the purpose of this plan, we refer to agricultural lands as actively irrigated crop lands, although many of our conservation recommendations also apply to non-irrigated pastures and hayfields. Irrigated agricultural lands are geographically restricted in Nevada, comprising only about one percent of total land cover, yet they support several Priority bird species in Nevada, which in some cases use agricultural lands year-round. The beginning of irrigation season in April features such species as White-faced Ibis, Sandhill Crane, and Long-billed Curlew, which seek out flood-irrigated fields to probe and glean for invertebrates after arrival from migration. These species often end up nesting on the ground in or near agricultural fields in many parts of the state, usually from May through early July. Other species, such as Swainson's Hawk and Short-eared Owl, hunt for rodents in croplands. Greater Sage-Grouse occasionally bring their broods into agricultural fields for cover, forage, and night-roosting. During the fall migration season, waterfowl and waterbirds (including Sandhill Cranes) forage on crop waste and tilled fields to fuel up for migration and wintering.

Crops such as winter-wheat, rye, and corn are important resources for migrating, staging, and wintering waterfowl, and wheat and barley crops often support waterfowl at other times of year (Kadlec and Smith 1989). Old, deciduous border trees support raptor nests and roosts, and other native buffer zones around fields are often used by ground-nesters, such as Cinnamon Teal and Short-eared Owl. Nearby wetlands are also beneficial for birds in agricultural settings, because they provide additional foraging opportunities for species that rely on aquatic invertebrates and pond vegetation. Adjoining wet meadows with high species richness in grasses, sedges, rushes, and forbs increase overall habitat value for several species, including the Indicator species Bobolink. In Figure Hab-1-1, we illustrate an idealized agricultural landscape consisting of a hayfield or pasture with adjoining buffer areas.

Main Concerns and Challenges

The following eight concerns were identified in our planning sessions for Agriculture habitat in Nevada:

- Urban, suburban, and industrial development
- Change in agricultural practices (loss of traditional methods)
- Pesticides, insecticides, and herbicides
- Change in precipitation and snowmelt resulting from climate change
- Change in temperature resulting from climate change
- Groundwater pumping
- Invasive weeds
- Introduced or human-subsidized predators

The primary concerns for agricultural areas are habitat conversion for urban and other uses, and changes in agricultural practices from relatively small-scale operations to mechanically intensive industrial agriculture. Small-scale family-owned operations usually feature most of the habitat

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elements that maintain Priority bird species, particularly native buffer areas around fields, light applications of pesticides, retention of trees and shelterbelts, and allowing return-flow wetlands to persist. If herbicides, insecticides, and rodenticides are used intensively, they may inadvertently affect birds that ingest food items containing these chemicals.

We also included climate change effects (changes in precipitation, snowmelt, and temperature) in our list of concerns for agricultural lands. Because of the economic significance of agricultural lands of Nevada, water allocations will likely mitigate for these effects as long as it is feasible to sustain a given agricultural operation. However, in the longer term, our concerns are that climate change will have a compounding effect on other conservation concerns (e.g., increased groundwater pumping, reduction of nearby wetlands and shelterbelts, increased pressure toward water and crop efficiency), and that it will eventually threaten the sustainability of some agricultural operations.

Invasive weeds affect agricultural areas (especially native buffer zones and shelterbelts) in similar ways as wet meadow and riparian areas, by reducing habitat suitability for birds. Therefore, weed control for invasive species may not only benefit the agricultural operation, but also help to retain suitable habitat for Priority bird species. However, aggressive application of herbicides can have unintended effects on birds through toxicity and reduction in nest success.

Introduced or subsidized predators are a concern in agricultural areas, particularly feral cat colonies that are often associated with human settlement. Even if artificial food supplies are provided, feral cats can cause significant mortality rates in birds, particularly those that nest on or near the ground, or use ground vegetation for cover. Human-subsidized predators, such as raccoons, coyotes, and ravens, take advantage of increased rodent populations, crop waste, and livestock feed that is often available near agricultural operations, and in turn, they may engage heavily in nestling predation. This is why we recommend removing such subsidies as much as is feasible. Finally, one conservation concern that occurs occasionally in agricultural operations is the perception of raptors as a threat to livestock or pets, which is largely unfounded. Most raptors that occur in agricultural areas prey on rodents and rabbits that occur in open fields, and are therefore generally beneficial to the goals of agriculture.

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Not To Scale



Figure Hab-1-1: Idealized agricultural landscape to maximize the number of agriculture associated Priority species.

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Conservation Strategies

Habitat Strategies

- **Manage at the scale of one or multiple irrigated fields**, ideally with each field having a buffer of native vegetation, and the entire area having a 100 m [330 ft] buffer of mostly native vegetation (but may include maintenance roads, ditches, fences, or trails). **Single old trees** or tree stands are beneficial to several species and attract species that feed on rodents. Bordering windbreaks and **hedgerows** should ideally consist of native species such as willow, alder, rose, etc.
- If **wetlands** are nearby, any measures to protect water quality are beneficial to birds. Shorelines buffers (≥ 100 m [330 ft]) are important for ground-nesting species.
- Removal of **invasive plants** should be followed by **active restoration** of agricultural crops or native vegetation in the removal sites, as weedy species often take advantage of disturbed soils and become more easily re-established in the absence of competition.
- The majority of priority bird species nest between May 1 and July 15, and some of them are particularly sensitive to nest disturbance. We recognize that necessary agricultural operations also occur in this time period, but **recommend delaying harvest or other vegetation removal**, ideally through mid-June. The most sensitive period for ground-nesting species is the beginning of the nesting season (**1 May – June 15**), and any effort to defer removal of groundcover during all or even some of this period will be extremely beneficial for these species.
- Installation of **flush-bars** on agricultural equipment, **escape ramps** for livestock waterholes, **perch sites** for rodent-hunting raptors, and **wildlife-friendly fencing** are all extraordinarily valuable for reducing inadvertent bird mortality and attracting birds. Recommendations for these and for **wildlife-friendly shelterbelt plants** can be obtained through the Nevada Important Bird Area program and other partners.

Research, Planning, and Monitoring Strategies

- As losses of crop lands to **habitat conversion** continue, **mitigation** for these losses should be actively planned through open space, conservation easements, or other assistance programs for agricultural lands, particularly in **Important Bird Areas**.
- Continue **long-term monitoring of landbirds** statewide through the Nevada Bird Count.
- Consider **expansion of statewide monitoring** to assess status and habitat use of migrating and wintering species of agricultural areas.

Public Outreach Strategies

- **Promote pride of landowners in wildlife** attracted to their property. Outreach may include pocket field guides to birds, tips on agricultural practices and habitat features that enhance habitat value to birds, and natural history related “fun facts.”
- **Provide educational materials** on threats from domestic and feral cats to birds, benefits of birds to agricultural operation (control of rodents), and on wildlife-compatible crop management, grazing practices, and weed control.