Decision Support from the Nevada Comprehensive Bird Conservation plan

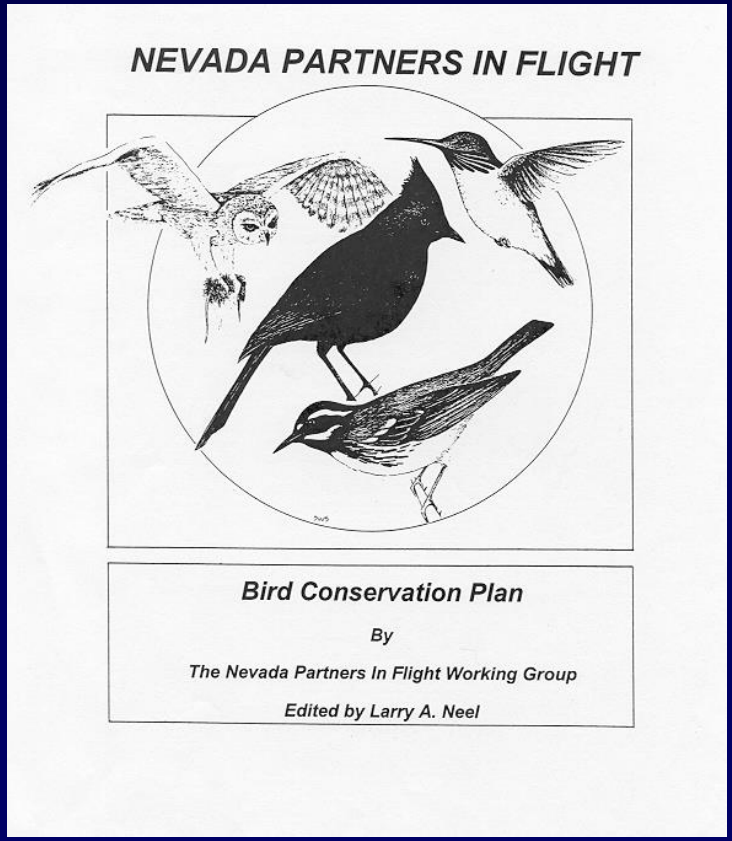
Version 1.0, December 2010

Elisabeth Ammon
Jen Ballard
John Boone
Shawn Espinosa
Larry Neel
Ralph Phenix
Jock Young

Nevada Comprehensive Bird Conservation Plan

Complete revision of State PIF plan (Neel 1999)

- ~ 30 months to complete
- ~ 15-20 PIF meeting participants
- > 30 additional reviewers



Nevada Comprehensive Bird Conservation Plan (www.gbbo.org)

Intended Audience:

resource managers in Nevada, who may or may not have bird expertise, but are experienced land managers

Therefore:

Focus on bird conservation needs, desired bird outcomes

Plan Features: Concepts

- Data-driven and science-based

-Threats analysis

- Translatable into conservation action by any resource manager

Photo by Martin Meyers

- Actions that a typical resource manager can incorporate into work plans

Plan Features: Content

- New data and analyses (NBC, Atlas, CC MSHCP, LCR MSCP, WMA and NWR data, and species specific data sets)
- Includes gamebirds, waterbirds, shorebirds from regional planning efforts
- Data-driven range maps
- Synthesized habitat map
- Density estimate by habitat for many priority species

Photo by Steve Ting

Photo by Fred Petersen

Plan Features: Content

Threats Assessment

Habitat Accounts (20 habitat types)

Species Accounts (78 species)

Species Accounts

Sage Sparrow
Amphispiza belli

Photo by Jacque Lowery

Conservation Profile

Priority Status	
Conservation Priority Species	
Species Concerns	
Historical and possible recent declines Habitat threats High stewardship responsibility	
Other Rankings	
Continental PIF	Stewardship Species
Audubon Watchlist	Yellow
NV Natural Heritage	S4B S4N
USFWS	Bird of Conservation Concern, Migratory Bird
BLM	None
USFS	None
NDOW	Conservation Priority
Trends	
Historical ●	Rangewide declines[14]
Recent ○	Assessments vary, but probably close to stable[1, 14]
Population Size Estimates	
Nevada (NBC) ◑	2,900,000
Global ○	3,900,000 [11]
Percent of Global	> 50%
Population Objective	
Maintain[11, EO]	
Monitoring Coverage	
Source	Nevada Bird Count
Coverage in NV	Good
Key Conservation Areas	
Protection	Extensive, intact sagebrush landscapes
Restoration	Degraded / burned sagebrush

Habitat Use Profile

Habitats Used in Nevada	
Sagebrush Salt Desert Scrub	
Key Habitat Parameters ●	
Plant Composition	Sagebrush, saltbushes, greasewood, and other xeric shrubs
Plant Density & Height	Variable shrub density with shrub height up to 1 – 2 m [3.3 – 6.6 ft]; typically low amounts of grass / forb cover[7]
Mosaic	Treeless sagebrush or salt desert shrubland with little or no cheatgrass invasion[7]
Distance to Water	No relationship[3, 7]
Response to Vegetation Removal	Negative; but exotic weed control encouraged[7, EO]
Area Requirements ◑	
Minimum Patch Size	Unknown, but avoids small patches
Recommended Patch Size	> 200 ha [430 ac][8, EO]
Territory Size	0.65 – 5.8 ha [1.6 – 14.3 ac][7]

Natural History Profile

Seasonal Presence in Nevada	
Spring – Summer (Great Basin) Winter (Mojave)	
Known Breeding Dates in Nevada	
Early April – early August[2]	
Nest and Nesting Habits	
Nest Placement	In dense crown of 50-100 cm [20 – 40 in] tall shrub, [9] or on ground under shrub[EO]
Site Fidelity	High for breeding territory[7]
Food Habits	
Basic	Ground forager
Primary Diet	Arthropods[7]
Secondary Diet	Seeds and other plant matter[7]

Confidence in Available Data: ●High ◑Moderate ○ Low

Sage Sparrow

Amphispiza belli

Photo by Jacque Lowery

Habitat Use Profile

Habitats Used in Nevada	
Sagebrush Salt Desert Scrub	
Key Habitat Parameters ●	
Plant Composition	Sagebrush, saltbushes, greasewood, and other xeric shrubs
Plant Density & Height	Variable shrub density with shrub height up to 1 – 2 m [3.3 – 6.6 ft]; typically low amounts of grass / forb cover[7]
Mosaic	Treeless sagebrush or salt desert shrubland with little or no cheatgrass invasion[7]
Distance to Water	No relationship[3, 7]
Response to	Negative; but exotic weed control

Conservation Profile

Priority Status	
Conservation Priority Species	
Species Concerns	
Historical and possible recent declines Habitat threats High stewardship responsibility	
Other Rankings	
Continental PIF	Stewardship Species
Audubon Watchlist	Yellow
NV Natural Heritage	S4B S4N
USFWS	Bird of Conservation Concern, Migratory Bird
BLM	None
USFS	None
NDOW	Conservation Priority
Trends	
Historical ●	Rangewide declines[14]
Recent ○	Assessments vary, but probably close to stable[1, 14]
Population Size Estimates	
Nevada (NBC) ◑	2,900,000
Global ○	3,900,000 [11]
Percent of Global	> 50%
Population Objective	
Maintain[11, EO]	
Monitoring Coverage	
Source	Nevada Bird Count
Coverage in NV	Good
Key Conservation Areas	
Protection	Extensive, intact sagebrush landscapes
Restoration	Degraded / burned sagebrush

Natural History Profile

Seasonal Presence in Nevada
Spring – Summer (Great Basin) Winter (Mojave)
Known Breeding Dates in Nevada

Photo by Jacque Lowery

Habitat Use Profile

Habitats Used in Nevada	
Sagebrush Salt Desert Scrub	
Key Habitat Parameters ●	
Plant Composition	Sagebrush, saltbushes, greasewood, and other xeric shrubs
Plant Density & Height	Variable shrub density with shrub height up to 1 – 2 m [3.3 – 6.6 ft]; typically low amounts of grass / forb cover[7]
Mosaic	Treeless sagebrush or salt desert shrubland with little or no cheatgrass invasion[7]
Distance to Water	No relationship[3, 7]
Response to Vegetation Removal	Negative; but exotic weed control encouraged[7, EO]
Area Requirements ◑	
Minimum Patch Size	Unknown, but avoids small patches
Recommended Patch Size	> 200 ha [430 ac][8, EO]
Territory Size	0.65 – 5.8 ha [1.6 – 14.3 ac][7]

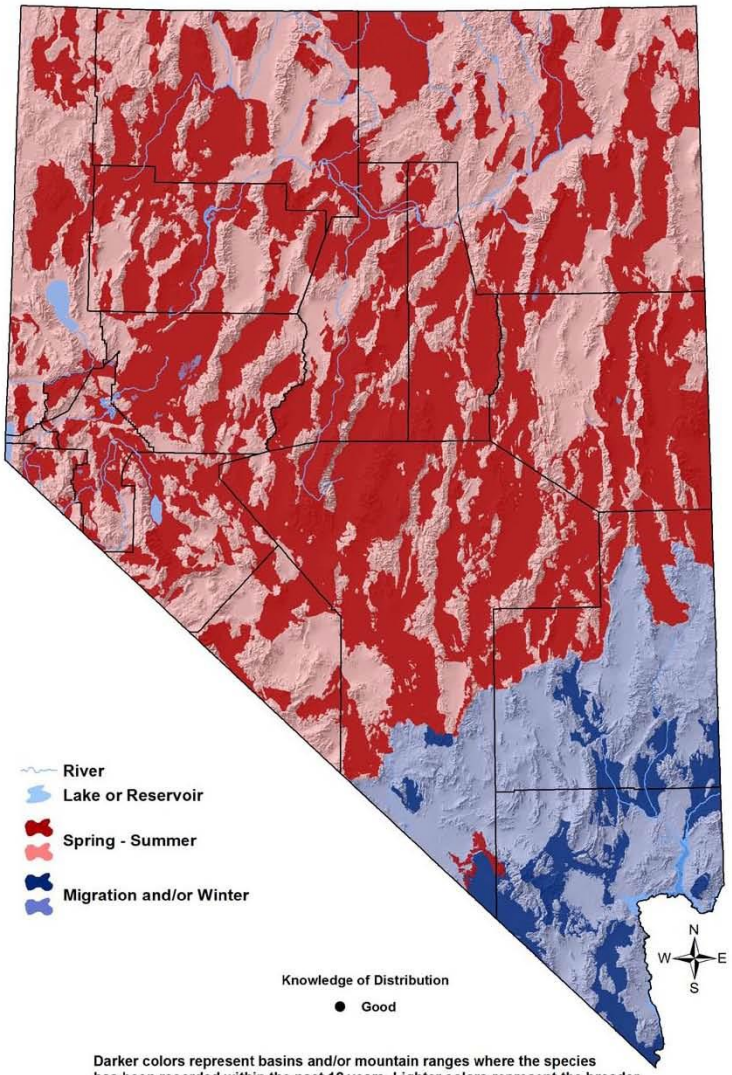
Trends	
Historical ●	Rangewide declines[14]
Recent ○	Assessments vary, but probably close to stable[1, 14]
Population Size Estimates	
Nevada (NBC) ◑	2,900,000
Global ○	3,900,000 [11]
Percent of Global	> 50%
Population Objective	
Maintain[11, EO]	
Monitoring Coverage	
Source	Nevada Bird Count
Coverage in NV	Good
Key Conservation Areas	
Protection	Extensive, intact sagebrush landscapes
Restoration	Degraded / burned sagebrush

Natural History Profile

Seasonal Presence in Nevada	
Spring – Summer (Great Basin) Winter (Mojave)	
Known Breeding Dates in Nevada	
Early April – early August[2]	
Nest and Nesting Habits	
Nest Placement	In dense crown of 50-100 cm [20 – 40 in] tall shrub, [9] or on ground under shrub[EO]
Site Fidelity	High for breeding territory[7]
Food Habits	
Basic	Ground forager
Primary Diet	Arthropods[7]
Secondary Diet	Seeds and other plant matter[7]

Sage Sparrow

Amphispiza belli



Darker colors represent basins and/or mountain ranges where the species has been recorded within the past 12 years. Lighter colors represent the broader area within which the species is presumed to occur in appropriate habitat types.

Density Estimates

also be used as a breeding substrate with some frequency, although existing evidence is ambiguous.[17] Some Sage Sparrows winter in southern Nevada, usually in sagebrush or Mojave scrub shrublands, but also in honey mesquite stands.[7]

Sage Sparrows avoid highly fragmented landscapes and are most abundant in large expanses of unbroken shrubland.[5, 16] Where present in fragmented landscapes, they are usually found nesting in only the largest shrubland fragments, although the minimum patch size threshold differs among studies,[6, 8] and nest success is typically reduced as fragmentation increases.[15] Landscape level attributes that have been positively correlated with Sage Sparrow abundance include high sagebrush density, large patch size, spatial homogeneity, and low levels of disturbance.[5, 12] At a microhabitat scale, Sage Sparrows are positively associated with density of sagebrush, total shrub cover, and amount of bare ground, and they tend to occur where shrub height is locally greater than is typical of surrounding areas.[4, 8] Sage Sparrows may also prefer a locally heterogeneous shrub-clumping pattern, but the data are not definitive.[7] The Sage Sparrow is thought to be sensitive to cheatgrass invasion because it results in less sagebrush cover for nesting and less bare ground suitable for foraging.[8] Although such information is valuable, managing directly for sagebrush microhabitat structure is difficult, in part because preferred microhabitat may vary among years, across space, and with different landscape contexts.[10, 12, 13] Fortunately, if sagebrush habitat is managed to ensure the presence of healthy intact landscapes, appropriate microhabitat will be present within this mosaic.[12]

Abundance and Occupancy by Habitat

Birds / 40 ha on NBC Transects in the Great Basin and Mojave Regions

Primary Habitat at Transect	Transects Occupied	Birds/40 ha (95% C.I.)
Great Basin		
Sagebrush	76% (25/33)	14.4 (9.8 – 19.0)
Salt Desert Scrub	70% (16/23)	8.0 (5.1 – 10.9)
Montane Shrubland	35% (7/20)	5.5 (1.6 – 9.4)
Mojave		
Sagebrush	46% (12/26)	12.4 (5.6 – 19.2)
Salt Desert Scrub	20% (2/10)	0.4 (0.0 – 0.9)

Habitat Accounts

Sagebrush

Sagebrush habitat in Duck Creek Valley, White Pine County. Photo by Elisabeth Ammon.

Key Bird-Habitat Attributes

Plant Composition	In sagesteppe (northern NV), about a 1:1 ratio of sagebrush and herbaceous vegetation (mostly perennial bunchgrasses and forbs); in sagebrush shrublands (central and eastern NV), multiple size classes of sagebrush with lesser component of herbaceous understory including forbs
Ideal Scale for Conservation Action	200 ha [500 ac] or larger to accommodate different patch types and avoid fragmentation
Vegetation Structure	Taller sagebrush (~ 1 m [3.3 feet]) are the most valuable, but large landscapes should contain different shrub canopy heights; understory and bare ground preferences vary among Priority species, so maintaining landscape diversity is important
Plant Species	Multiple shrub and forb species increase habitat value for birds
Distance to Water	Water-associated habitats (riparian, marsh, open water, springs) within 1000 m [3,300 ft] increase habitat value
Other Features	Mammal burrows, mineshafts, cliffs, and ephemeral washes add significant value for some priority species

Conservation Profile

Estimated Cover in Nevada	10,450,000 ha [25,800,000 ac] 37% of state
Landownership Breakdown	BLM = 76% Private = 13% USFS = 5% Other = 6%
Priority Bird Species	Greater Sage-Grouse Swainson's Hawk Ferruginous Hawk Golden Eagle Prairie Falcon Burrowing Owl Common Poorwill Gray Flycatcher Sage Thrasher Brewer's Sparrow Sage Sparrow (Sharp-tailed Grouse) (Short-eared Owl) (Pinyon Jay) (Black Rosy-Finch)
Indicator Species	None needed
Most Important Conservation Concerns	Increased fire frequency or intensity Invasive weeds Livestock, wild horse and burro grazing Energy development Conifer encroachment Climate change (change in precipitation and temperature) Urban, suburban, and industrial development Motorized recreation Mining
Habitat Recovery Time	25-100 years
Regions of Greatest Conservation Interest	Northern, northeastern, eastern, and central Nevada
Important Bird Areas	Bilk Creek – Montana Mountains Goshute Mountains Great Basin National Park High Rock Resource Area Jarbidge Mountains Monitor Valley North Ruby Valley Northern Snake Range Ruby Mountains Sheldon NWR Toiyabe Range Washoe Valley Wellington – Pine Grove Hills

Figure Hab-17-1: Idealized sagebrush landscape to maximize the number of sagebrush associated Priority bird species.

Sagebrush

Conservation Strategies

Habitat Strategies

- **Manage at a landscape scale of 200 ha [500 ac])** or larger, if possible. The sagebrush landscape should be allowed to vary in size classes, shrub densities, and amount of understory at a natural scale, depending on soil conditions and fire history. Fragmentation through habitat conversion should be avoided to the extent possible. Because adjacent habitats, especially **mesic areas**, are beneficial to Priority species, impacts should largely be avoided in areas within 1,000 m [3,300 ft] of these features
- Where **Greater Sage-Grouse** occur, species-specific conservation strategies (Spp-8-1) should be implemented at the recommended spatial scales. The majority of these strategies favor other sagebrush-associated species, as well.
- **Native grass and forb understories** should be protected wherever possible. Grazing impacts can be decreased by focusing it on the plants' dormant season and by protecting current season's growth through the nesting season. Manage for at least 50% of annual vegetative growth to remain (Paige and Ritter 1999)
- **Fire prevention and green-stripping** may be a necessary stop-gap measure in areas of critical importance to sage-grouse (e.g., Montana, Bilk Creek, Santa Rosa ranges), but interagency **fire response planning** is needed to ensure long-term maintenance of high-quality sagebrush
- Proximity to **water** (riparian areas, desert springs, wet meadows), presence of **cliffs** > 30 m [100 ft] tall, or **abandoned mines** (which may be gated) raise the priority level of a site for bird conservation. Cliffs and abandoned mines should be surveyed for cliff-nesting Priority species and Black Rosy-Finches in proposed development projects site (see also Hab-4-1)
- 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 disturbances should be avoided to the extent possible

Research, Planning, and Monitoring Strategies

- Interagency planning of fire management, livestock management, and cheatgrass prevention efforts may be expanded into a **climate-change effects response network** emphasizing increased drought effects (Chambers et al. 2008, 2009)
- **Monitor effects of pinyon-juniper treatments** for effectiveness, and monitor habitat variables important to Priority species, as well as bird responses

Project Planning Workshops

- Help prioritize habitats and species
- Focus conservation action on species needs
- Calculate bird benefits/losses

Crosswalk Habitats and Species

Sagebrush

Sagebrush habitat in Duck Creek Valley, White Pine County. Photo by Elisabeth Ammon.

Key Bird-Habitat Attributes

Plant Composition	In sagesteppe (northern NV), about a 1:1 ratio of sagebrush and herbaceous vegetation (mostly perennial bunchgrasses and forbs); in sagebrush shrublands (central and eastern NV), multiple size classes of sagebrush with lesser component of herbaceous understory including forbs
Ideal Scale for Conservation Action	200 ha [500 ac] or larger to accommodate different patch types and avoid fragmentation
Vegetation Structure	Taller sagebrush (~ 1 m [3.3 feet]) are the most valuable, but large landscapes should contain different shrub canopy heights; understory and bare ground preferences vary among Priority species, so maintaining landscape diversity is important
Plant Species	Multiple shrub and forb species increase habitat value for birds
Distance to Water	Water-associated habitats (riparian, marsh, open water, springs) within 1000 m [3,300 ft] increase habitat value
Other Features	Mammal burrows, mineshafts, cliffs, and ephemeral washes add significant value for some priority species

Conservation Profile

Estimated Cover in Nevada	10,450,000 ha [25,800,000 ac] 37% of state
Landownership Breakdown	BLM = 76% Private = 13% USFS = 5% Other = 6%
Priority Bird Species	Greater Sage-Grouse Swainson's Hawk Ferruginous Hawk Golden Eagle Prairie Falcon Burrowing Owl Common Poorwill Gray Flycatcher Sage Thrasher Brewer's Sparrow Sage Sparrow (Sharp-tailed Grouse) (Short-eared Owl) (Pinyon Jay) (Black Rosy-Finch)
Indicator Species	None needed
Most Important Conservation Concerns	Increased fire frequency or intensity Invasive weeds Livestock, wild horse and burro grazing Energy development Conifer encroachment Climate change (change in precipitation and temperature) Urban, suburban, and industrial development Motorized recreation Mining
Habitat Recovery Time	25-100 years
Regions of Greatest Conservation Interest	Northern, northeastern, eastern, and central Nevada
Important Bird Areas	Bilk Creek – Montana Mountains Goshute Mountains Great Basin National Park High Rock Resource Area Jarbidge Mountains Monitor Valley North Ruby Valley Northern Snake Range Ruby Mountains Sheldon NWR Toiyabe Range Washoe Valley Wellington – Pine Grove Hills

Sage Sparrow

Amphispiza belli

Photo by Jacque Lowery

Habitat Use Profile

Habitats Used in Nevada	
Sagebrush Salt Desert Scrub	
Key Habitat Parameters ●	
Plant Composition	Sagebrush, saltbushes, greasewood, and other xeric shrubs
Plant Density & Height	Variable shrub density with shrub height up to 1 – 2 m [3.3 – 6.6 ft]; typically low amounts of grass / forb cover[7]
Mosaic	Treeless sagebrush or salt desert shrubland with little or no cheatgrass invasion[7]
Distance to Water	No relationship[3, 7]
Response to Vegetation Removal	Negative; but exotic weed control encouraged[7, EO]
Area Requirements ◑	
Minimum Patch Size	Unknown, but avoids small patches
Recommended Patch Size	> 200 ha [430 ac][3, EO]
Territory Size	0.65 – 5.8 ha [1.6 – 14.3 ac][7]

Conservation Profile

Priority Status	
Conservation Priority Species	
Species Concerns	
Historical and possible recent declines Habitat threats High stewardship responsibility	
Other Rankings	
Continental PIF	Stewardship Species
Audubon Watchlist	Yellow
NV Natural Heritage	S4B S4N
USFWS	Bird of Conservation Concern, Migratory Bird
BLM	None
USFS	None
NDOW	Conservation Priority
Trends	
Historical ●	Rangewide declines[14]
Recent ○	Assessments vary, but probably close to stable[1, 14]
Population Size Estimates	
Nevada (NBC) ◑	2,900,000
Global ○	3,900,000 [11]
Percent of Global	> 50%
Population Objective	
Maintain[11, EO]	
Monitoring Coverage	
Source	Nevada Bird Count
Coverage in NV	Good
Key Conservation Areas	
Protection	Extensive, intact sagebrush landscapes
Restoration	Degraded / burned sagebrush

Natural History Profile

Seasonal Presence in Nevada	
Spring – Summer (Great Basin) Winter (Mojave)	
Known Breeding Dates in Nevada	
Early April – early August[2]	
Nest and Nesting Habits	
Nest Placement	In dense crown of 50-100 cm [20 – 40 in] tall shrub, [9] or on ground under shrub[EO]
Site Fidelity	High for breeding territory[7]
Food Habits	
Basic	Ground forager
Primary Diet	Arthropods[7]
Secondary Diet	Seeds and other plant matter[7]

Confidence in Available Data: ●High ◑Moderate ○ Low

Habitat Type:_____

Priority Species Name	Population trends: has the species declined significantly? Y/N (list %, if available)	Global population size: is it < 100,000? Y/N	Does this species have a ranking in your agency/other important agencies? Y/N	Is the population objective 50% or higher? Y/N	**Summary rank for priority from first 4 questions** High = yes to most or all; Med = yes to some; Low = mostly no's	What are the species' **minimum** and **recommended** patch sizes? In acres (enter n/a for species without habitat-based densities)		How many times are these patch sizes present in the pre-project area? ½ X, 1X, etc. (include adjacent lands, if appropriate)		How many times will these patch sizes be present in the post-project area, if applicable? ½ X, 1X, etc. (include adjacent lands, if appropriate)		Can your project improve habitat for the key habitat requirements of this species? (All, most, some, none)	**Overall conservat ranking** (1 highest prio species, all and habitat met, 2= high priority spec most needs be addresse etc.)
Common Poorwill	Unk	N	N	N		Unk	Unk	Unk	Unk	Unk	Unk	Unk	
Gray Flycatcher	N	N (but high stewardsh)	N	N		Unk	120		58		58	Most	
Sage Thrasher	N	N	N	N		Unk	250		28		28	All	
Brewer's Sparrow	Y; 2%/yr	N	Y	N	Med	50	350		20		20	Most	
Sage Sparrow	Y	N	Y	N	Med							Most	
Golden Eagle	Y	N	Y	N	High (agency override)	60 k	250 k	0.11	0.03	0.11	0.03	Some	
Greater Sage-Grouse	Y	N, but high stewardsh	Y	Y	High	10k	Very big!	0.7		0.7		All	
(Pinyon Jay)	Y; 4.4 – 6.4%/yr	N	Y	Y			7400		0.95		0.95	Some	

account). Use scratch paper and a calculator.

Species Name: Sage Sparrow

Density Estimate for ___sagebrush__ (habitat type): _14.4 birds/40 ha

Occupancy Rate in __sagebrush__ (habitat type): 76% of random locations.

Estimated Number of birds currently present based on this average density and occupancy rate: _766__

How many acres of the main habitat will your project **convert** to another habitat? ___n/a__ acres

How many acres of the main habitat will be **enhanced**? _7000_ acres. By how much will they be enhanced (estimated)? _50 %

TO ESTIMATE FUTURE NUMBER OF BIRDS FROM POST-PROJECT ACRES: (judgment calls required!)

Method 1: In cases of habitat conversion (acres will be created or lost), simply apply average density to net # of acres gained/lost (see conversion chart).

40 ha = 98.8 acres	1 ha = 2.47 acres
	1 ha = 0.01 km^2
1 acre = 0.405 ha	1 acre = 0.00405 km^2
1 km^2 = 247 acres	1 km^2 = 100 ha

Method 2: If you expect an increase or decrease in bird density, but not in acres of habitat, either

a) **Apply the estimated current density based on estimated current habitat condition**. If it's degraded, go lower, if it's in great shape, go higher, and if it's average, go with the average density. Either way, try to stay within the 95% confidence limits reported for that species. When you have the estimated current number of birds, apply your estimated percent improvement/degradation in habitat

Acknowledgments

- Nevada State Lands (Q1 Bond Issue)
- Nevada Department of Wildlife
- All NV bird conservation planners
- USFWS
- USFS
- NPS
- BLM
- USBR
- NV PIF and Western Working Group
- USGS
- And others

More info

- www.gbbo.org for plan download, suggestions for revision, etc.
- plan@gbbo.org for more info about Nevada PIF, the plan, and plan updates
- www.partnersinflight.org for PIF