

WYOMING BASINS ECOREGIONAL PLAN

DESCRIPTION OF TARGETS, INITIAL SITES, AND CONSERVATION GOALS FOR VERTEBRATES

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This report documents the rationale and procedures used to identify areas of conservation interest for important vertebrates in the Wyoming Basins ecoregion. As outlined below, the analysis was essentially performed in 3 steps: (1) selection of target taxa within the ecoregion; (2) identification of "initial sites" for each target taxon; and (3) synthesis of conservation goals for each target taxon. Most of the information used for this project is documented in the Biological and Conservation Database at the Wyoming Natural Diversity Database, University of Wyoming; other information sources are noted throughout the report.

SELECTION OF TARGET TAXA

Target taxa were identified based on current rangewide abundance, historical and recent trends in abundance, severity and immediacy of threats, and degree of endemism. Selected taxa are either rare, declining, demonstrably threatened, endemic to the region, or some combination of these characteristics. The same information was used to categorize the taxa into high, medium, and low priority groups.

A total of 45 taxa were selected as targets (see appendices A and B). This includes 34 species (e.g., *Bufo baxteri*, *Urosaurus ornatus*), 8 subspecies (e.g., *Crotalus viridis concolor*, *Tympanuchus phasianellus columbianus*), and 3 species groups (Bear lake endemic fish, colonial nesting waterbirds, major bat roosts and hibernacula).

Prioritization yielded the following results:

HIGH PRIORITY	12 taxa
HIGH / MEDIUM PRIORITY	1 taxon
MEDIUM PRIORITY	9 taxa
LOW / MEDIUM PRIORITY	5 taxa
LOW PRIORITY	18 taxa

IDENTIFICATION OF INITIAL SITES

Large areas of suitable habitat, termed "initial sites", were identified for each target taxon based on known distribution and habitat use. This was an important step in the ecoregional plan because: (1) some taxa occur only in a restricted portion of the ecoregion, and thus their needs can be addressed only in that area; and (2) some taxa occur throughout the ecoregion but achieve their highest densities and reproductive output in only a few discrete areas. Initial sites for all target taxa are described in appendix B; digital files showing these sites within the ArcView geographic information system are available.

SYNTHESIS OF CONSERVATION GOALS

Conservation goals refer to the number, size, and distribution of patches within the initial sites necessary for long-term persistence of a given taxon in the ecoregion. Population viability is an extremely complex subject, and is the focus of much debate among conservation biologists; there are few universally accepted guidelines for determining the habitat configuration necessary for persistence of any taxon. Rules used in this project are described below.

Minimum patch size

For taxa (e.g., *Brachylagus idahoensis*, *Thomomys clusius*) that occur in relatively restricted portions of the ecoregion, the main principle that informed the conservation goals was that vertebrate populations require 50-500 individuals to maintain genetic variability over the short term. The mean of this range (275 individuals) was specified as the minimum population size. In most cases, the area required for such a population was derived by extrapolating from known densities and/ or home range sizes.

For wide-ranging habitat generalists (e.g., *Buteo regalis*, *Vulpes velox*) that occur throughout the ecoregion, it was difficult to identify discrete populations; indeed, many of these taxa exist as only one population throughout the whole ecoregion. In these cases, minimum patch sizes refer to areas of high-quality habitat that will serve as reproductive sources, and usually do not encompass enough area to support 275 individuals.

Minimum number of patches

Minimum number of patches required for persistence was scaled to taxon priority, and was different for taxa with restricted ranges in the ecoregion than for wide-ranging habitat generalists. For taxa that occur in only a restricted portion of the ecoregion, conservation goals were as follows: high priority = 4-5 separate populations; medium priority = 3-4 separate populations; and low priority = 3 separate populations.

For widespread habitat generalists, conservation goals were specified as: high priority = 8-10 patches of high-quality habitat; medium priority = 6-8 patches; and low priority = 5-6 patches.

Distance between patches

Spatial separation between individual patches is important to decouple patches from large-scale disturbances, and to insure that taxa are represented across as much of their geographic range as possible. For many taxa, separation between patches was defined by specifying that patches must be placed in separate initial sites; in effect, separation distance was determined by locations of the initial sites. For situations where multiple patches were placed in one initial site, separation distance was set at about 3X the diameter of a circular patch of the minimum area.

Intervening geographic features (e.g., major river, stream confluence) were specified in some cases to insure that patches were insulated from common disturbances. Finally, for taxa that occur throughout the ecoregion, patches were distributed across major river basins to insure rangewide representation.

APPENDIX A: List of vertebrate taxa selected as targets for the Wyoming Basins ecoregion. Taxa are listed from highest priority to lowest priority.

APPENDIX B: Description of target taxa, initial sites, and conservation goals for vertebrates in the Wyoming Basins ecoregion.

- Notes:**
- a. An asterisk indicates that only one initial site is identified for the taxon.
 - b. Stream sites include all backwaters, sloughs, oxbows, ponds and wetlands/ marshes immediately adjacent to the stream. In general, there is about a 100m upland buffer in all stream sites.
 - c. Wetlands sites and pond/ reservoir sites include all backwaters, sloughs, oxbows, ponds, and wetlands/ marshes immediately adjacent to aquatic features. In general, there is about a 100m upland buffer in all wetland/ pond/ reservoir sites.

1: White-tailed prairie dog.

Taxon priority: HIGH. Taxon is endemic to the ecoregion and is threatened by deliberate eradication efforts and introduced diseases (primarily bubonic plague). May be a keystone species within the ecoregion; produces vegetation conditions, burrows, and prey preferred by other target taxa (e.g., mountain plover, swift fox, burrowing owl, ferruginous hawks).

Initial Site Description / Data Sources: White-tailed prairie dogs occur throughout the ecoregion in varying densities. Each of the 21 sites identified here represents a large complex of white-tailed prairie dog towns. Wyoming complexes were derived from a memo/ map to Mary Jennings (USFWS) from Bob Luce (WG&FD) dated 2 October 1995; a few modifications were made to this map to produce a valid estimate of complex distribution in 1999. All Wyoming complexes are >5000 acres with prairie dog densities considered sufficient to support reintroduction of black-footed ferrets. The Coyote Basin site in Utah / Colorado is assumed to be a substantial white-tailed prairie dog complex because it is the site of a recent black-footed ferret reintroduction; boundaries of this site are approximate. The 21 initial sites are the best examples of white-tailed prairie dog concentrations in the ecoregion, and as such are likely to act as reproductive sources over the long-term.

- 1-1 Kinney Rim
- 1-2 Dad
- 1-3 Baxter Basin
- 1-4 Bolton Ranch
- 1-5 Saratoga
- 1-6 Shamrock Hills
- 1-7 Pathfinder
- 1-8 Small polygon southwest of Seminoe
- 1-9 Seminoe
- 1-10 Medicine Bow
- 1-11 Shirley Basin
- 1-12 Sweetwater
- 1-13 Big Piney
- 1-14 Flaming Gorge
- 1-15 Cumberland (Cumberland Flats)
- 1-16 Carter
- 1-17 Moxa
- 1-18 Fifteen mile
- 1-19 Meeteetse
- 1-20 Manderson
- 1-21 Coyote Basin, Utah / Colorado.

Goal: 5 populations with enough individuals for short-term genetic viability; assume smallest mapped complex represents the minimum size for a viable population.

- Minimum cumulative area:** 65,000 ha
- Minimum patch size:** 13,000 ha (approx. size of smallest mapped patch)
- Minimum no. of patches:** 5
- Minimum separation distance:** (defined by locations of initial sites)
- Distribution of patches:**
 - 1 in Wind / Bighorn
 - 1 in North Platte
 - 1 in Great Divide Basin
 - 1 in White / Yampa

2: Black-footed ferret.

Taxon priority: HIGH. Taxon is G1 / Endangered; recently thought extinct. Free-ranging, reintroduced populations are continually supplemented with releases of captive-bred individuals, and are extremely sensitive to introduced diseases like bubonic plague and canine distemper. Because they are prairie dog obligates, black-footed ferrets are also threatened by prairie dog control efforts. Although the historic range is peripheral to the ecoregion, the extreme rarity of the taxon and tenuous nature of reintroduced populations justifies the high priority.

Initial Site Description / Data Sources: Black-footed ferrets are prairie-dog obligates; they require large and dense concentrations of prairie dogs for prey and burrows. Reintroduced populations are currently centered on 3 white-tailed prairie dog complexes. These are the top priority black-footed ferret sites in the ecoregion, and are mapped as:

2-1 (white-tailed prairie dog sites 1-9, 1-10, and 1-11)

2-2 (white-tailed prairie dog site 1-1)

2-3 (white-tailed prairie dog site 1-21)

However, it is unlikely that these 3 sites will suffice for the long-term viability of black-footed ferrets in the ecoregion; disease tends to cycle through prairie dog complexes, periodically reducing their suitability as ferret habitat. Therefore, all 21 white-tailed prairie dog sites are included as initial sites for black-footed ferrets.

Goal: 5 white-tailed prairie dog complexes considered by the WG&FD as suitable for ferret reintroduction.

Minimum cumulative area: 78,000 ha

Minimum patch size: 13,000 ha (smallest mapped white-tailed prairie dog complex)

Minimum no. of patches: 6

Minimum separation distance: (defined by locations of initial sites)

Distribution of patches: 1 patch in each of initial sites 2-1, 2-2, and 2-3

At least 1 in Upper Green

At least 1 in Great Divide Basin

At least 1 in Wind / Bighorn

3: Razorback sucker.

Taxon priority: HIGH. Taxon is G1 / Endangered, population trends are steadily down, and populations are continually threatened by human-modification of flow-regimes in the Colorado River basin.

Initial Site Description / Data Sources: Initial sites are based on the locations of extant "presumptive stocks" identified in report by T. E. Czapla (4 February 1999. Final Draft Genetics Management Plan: Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. USDI-USFWS. 49pp). It is important to note that the 2 initial sites represent 2 branches of the same population; they are mapped as distinct sites only because the ecoregional boundary divides the population into artificial segments. Refer to note b.

3-1 Green River; from boundary of Dinosaur National Monument to confluence with Duchene River.

3-2 Yampa River; all of the stream in the ecoregion.

At a minimum, the entirety of these 2 sites needs to be under conservation action to ensure future viability of this wide-ranging taxon. The majority of its historic range in Wyoming is now flooded by Flaming Gorge Reservoir; therefore, upstream sites are not identified.

Goal: Both initial sites in their entirety.

Minimum cumulative stream length: (sum of 2 initial sites)

Minimum patch size: (shortest of 2 initial sites)

Minimum no. of patches: 2

Minimum separation distance: (ca. 66km; distance between the 2 sites)
Distribution of patches: (defined by locations of initial sites)

***4: Humpback chub.**

Taxon priority: HIGH. Taxon is G1 / Endangered, population trends are steadily down, and populations are continually threatened by human-modification of flow-regimes in the Colorado River basin.

Initial Site Description / Data Sources: Initial sites are based on the locations of extant "presumptive stocks" identified in report by T. E. Czapla (4 February 1999. Final Draft Genetics Management Plan: Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. USDI-USFWS. 49pp). Note that the 2 initial sites are actually 2 contiguous branches of the same population. Refer to note b.

4-1 Yampa River (same as site 3-2).

4-2 The first 15 km of the Little Snake River upstream of its confluence with the Yampa (contiguous with site 4-1)

At a minimum, the entirety of these 2 sites needs to be under conservation action to ensure future viability of this wide-ranging taxon. The majority of its historic range in Wyoming is probably now flooded by Flaming Gorge Reservoir; therefore, upstream sites are not identified.

Goal: Both initial sites (actually only one site with 2 branches) in their entirety.

Minimum cumulative stream length: (sum of initial sites)

Minimum patch size: (sum of initial sites)

Minimum no. of patches: 1 (with 2 branches, as described above)

Minimum separation distance: (none)

Distribution of patches: (defined by locations of initial sites)

5: Colorado squawfish (pikeminnow).

Taxon priority: HIGH. Taxon is G1 / Endangered, population trends are steadily down, and populations are continually threatened by human-modification of flow-regimes in the Colorado River basin.

Initial Site Description / Data Sources: Sites are based on the locations of extant "presumptive stocks" identified in report by T. E. Czapla (4 February 1999. Final Draft Genetics Management Plan: Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. USDI-USFWS. 49pp). It is important to note that the 3 initial sites actually define 2 segments of the same population; they are mapped as distinct sites only because the ecoregional boundary divides the population into artificial segments. Refer to note b.

5-1 Yampa River (same as sites 3-2 and 4-1).

5-2 The first 15 km of the Little Snake River upstream of its confluence with the Yampa (contiguous with site 5-1)

5-3 All of the Green River from Dinosaur National Monument downstream to the ecoregional boundary (includes site 3-1 plus the stretch downstream).

At a minimum, the entirety of these 3 sites needs to be under conservation action to ensure future viability of this wide-ranging taxon. The majority of its historic range in Wyoming is probably now flooded by Flaming Gorge Reservoir; therefore, upstream sites are not identified.

Goal: All 3 initial sites in their entirety.

Minimum cumulative stream length: (sum of 3 initial sites)

Minimum patch size: (shortest of 3 initial sites)

Minimum no. of patches: 2 (1 patch with 2 branches, as described above)

Minimum separation distance: (ca. 66km; distance between 5-1 and 5-3)

Distribution of patches: (defined by locations of initial sites)

6: Wyoming toad.

Taxon Priority: HIGH. Taxon is G1 / Endangered, and endemic to only a small portion of the ecoregion. Free-ranging populations are presumed to occur only at 2 sites and are continually supplemented with captive-bred individuals. Specific threats have not been identified, but native amphibians in general are threatened by predation by exotic salmonids, habitat degradation, pesticide use, and disease. Taxon has recently been declared a full species. Refer to notes b and c.

Initial Site Description / Data Sources: The first 2 sites described below are the only places at which the taxon is presumed to exist in free-ranging form. Because it is unlikely that these 2 sites will suffice for the long-term viability of this taxon, the latter 2 sites re included. Refer to notes b and c.

- 6-1 Hutton Lake National Wildlife Refuge, including all adjacent wetlands.
- 6-2 Soda Lakes; all ponds, streams, and wetlands from 12-mile Reservoir up to and including Twin Buttes Lake.
- 6-3 Little Laramie River, between confluence of Laramie River and Highway 130.
- 6-4 Laramie River, between confluence with Little Laramie River and Woods Landing.

Goal: 4 populations.

- Minimum cumulative area:** (see below)
- Minimum patch size:** (see below)
- Minimum no. of patches:** 4
- Minimum separation distance:** At least 15 km between sites 6-1 and 6-2 and any other site.
- Distribution of patches:** All of site 6-1
All of site 6-2
2, 5 stream-km patches in either site 6-3 or 6-4

***7: Sturgeon chub.**

Taxon priority: LOW. Taxon is G2 and a candidate for listing under the U. S. Endangered Species Act. However, it is peripheral to the ecoregion, with its main distribution lying in the large prairie rivers to the east. Main threats include alteration of native flow regimes, especially as they reduce turbidity; predation by introduced game fish may be a threat.

Initial Site Description / Data Sources: Although this taxon's historic distribution probably included the North Platte, it is unknown if it extended far enough upstream to include portions of the ecoregion. It is likely that the one site identified below is the only area of current and historic occurrence in the ecoregion. Refer to note b.

- 7-1 The Bighorn River from the upper end of Yellowtail Reservoir to Worland. Includes the Nowood River from the Bighorn River to the confluence of Paintrock Creek.

Goal: 3 populations.

- Minimum cumulative stream length:** 15 stream-km
- Minimum patch size:** 5 stream-km (refer to BCD-EGR)
- Minimum no. of patches:** 3
- Minimum separation distance:** 15 stream-km (3X minimum patch length) including 1 major confluence
- Distribution of patches:** 1 above Bighorn / Nowood confluence
2 below Bighorn / Nowood confluence

8: Whooping crane.

Taxon Priority: HIGH. Taxon is G1 / Endangered, and occupies only a small fraction of its historic range. High priority is justified based on extreme rarity and the fact that the ecoregion forms part of the core of its historic range. Main threats include general degradation of breeding and wintering habitat. At very low population sizes (as is currently the case) predation by generalist carnivores may be significant. Accidental mortality from collisions with powerlines may also impede population recovery.

Initial Site Description / Data Sources: Birds are present in the ecoregion during breeding season, but have not bred here in recent years. The ecoregion's main contribution is to provide stopover habitat during migration through the Green River Basin, although breeding may occur here in the future. Goals are based on providing adequate stopover habitat with potential to support some breeding.

8-1 Seedskahee National Wildlife Refuge.

8-2 Upper Green River Basin site. All major tributaries to the Green River (including the main stem of the Green River) from a point due west of Red Hill upstream to the ecoregional boundary. Site includes a 3 mile buffer around each major stream in region.

Goal: 8 areas of stopover habitat with potential to support some future breeding.

Minimum cumulative area: 20,000 ha

Minimum patch size: 2500 ha (reasonable stopover patch; assuming 50% overlap, would support 5 breeding pairs; refer to BCD)

Minimum no. of patches: 8

Minimum separation distance: 15 km (3X minimum circular patch diameter)

Distribution of patches: 2 in 8-1
6 in 8-2

9: American white pelican.

Taxon Priority: LOW / MEDIUM. Taxon is G3, but it is relatively widespread and its breeding range is peripheral to the ecoregion. Furthermore, the 2 identified breeding sites are likely artifacts of human manipulation of waterways (water storage) in the ecoregion; breeding was probably much rarer historically. Main threat is likely the general rarity of suitable breeding habitat.

Initial Site Description / Data Sources: Although observations of nonbreeding American white pelicans are common and widespread, these two initial sites represent the only known breeding concentrations of the taxon in the ecoregion. Note that both sites are also colonial waterbird sites; conservation action at other colonial waterbird sites will benefit American white pelicans in both the breeding and nonbreeding phases. Refer to notes b and c.

9-1 Bamforth National Wildlife Refuge.

9-2 Pathfinder Reservoir. West coast, including large island.

Goal: Both initial sites in their entirety.

Minimum cumulative area: (sum of both initial sites)

Minimum patch size: (defined by initial site descriptions)

Minimum no. of patches: 2

Minimum separation distance: (defined by locations of initial sites)

Distribution of patches: (defined by locations of initial sites)

10: Colonial nesting waterbirds.

Taxon Priority: LOW / MEDIUM. This group includes relatively rare (e.g., American white pelican) and regionally endemic (e.g., white-faced ibis) taxa, as well as relatively common (e.g., American coot, double-crested cormorant) taxa. Low/ medium priority is based on the former group. Note that human manipulation of waterways (i.e., water storage and irrigation) may have increased the abundance of this target in the ecoregion relative to historic levels; however, the dramatic continental-scale loss of riparian areas is probably the major threat to this group.

Initial Site Description / Data Sources: Most of the initial sites are considered by the WG&FD Non-game Program as the most important colonial waterbird sites in Wyoming, as documented in the WG&FD Non-game program Annual Completion Report (April 1998). WYNDD data supports this designation. Site 10-13 is included based on information from the Idaho Conservation Data Center. Note that there are 11 other pond / reservoir complexes in the ecoregion that support significant waterbird concentrations, but are considered less-important than the 12 listed below. Refer to notes b and c.

10-1 Bamforth National Wildlife Refuge (same as 9-1).

- 10-2 Cokeville meadows (Bear River Marshes). Wetlands along Bear River from Cokeville south to state line.
- 10-3 Pathfinder Reservoir (same as 9-2). West coast, including large island.
- 10-4 Aurora Lake, Carbon Co.
- 10-5 Bucklin Reservoir, Carbon Co.
- 10-6 Caldwell Lakes, Albany Co.
- 10-7 Eden Reservoir, north of Farson.
- 10-8 Pilger Lake, Albany Co. Not shown on state scale map.
- 10-9 Hutton Lake National Wildlife Refuge (same as 6-1).
- 10-10 Soda Lake (Yant's Puddle) north of Casper.
- 10-11 Webb Lake, Albany County.
- 10-12 Kay Ranch pond complex southwest of Laramie.
- 10-13 Large marsh complex immediately north of Bear Lake.

Goal: 7 colonial nesting waterbird concentrations.

Minimum cumulative area: (defined by initial site descriptions)

Minimum patch size: (size of smallest initial site)

Minimum no. of patches: 7

Minimum separation distance: (minimum distance between any 2 initial sites)

Distribution of patches: (defined by locations of initial sites)

***11: Columbian sharp-tailed grouse.**

Taxon Priority: MEDIUM. A T3 taxon that is being considered for listing under the U. S. Endangered Species Act. At continental scale, extant populations are widely isolated from each other. This fragmentation is likely the major threat; hunting mortality is probably low.

Initial Site Description / Data Sources:

11-1 Western foothills of the Sierra Madre Mountains south along the Elkhead mountains in Colorado. Eastern boundary of the initial site corresponds to the ecoregional boundary.

Goal: 4 populations.

Minimum cumulative area: 6400 ha

Minimum patch size: 1600 ha (530 ha / pop. * 3 caution factor; refer to BCD for prairie sharp-tail grouse)

Minimum no. of patches: 4

Minimum separation distance: 12 km (3X minimum circular patch diameter)

Distribution of patches: All within the one initial site

13: Western smooth green snake.

Taxon Priority: LOW: Taxon is somewhat rare (G5T3Q), and populations in the ecoregion are disjunct from adjacent populations; this population fragmentation (probably non-anthropogenic in origin) is likely the main threat to the taxon. Taxonomic questions over subspecific validity force the low priority rank.

Initial Site Description / Data Sources: These sites all abut the ecoregional boundaries.

- 13-1 Battle Creek/ Sandstone Creek site. Several individuals documented here.
- 13-2 Northeast end of the Laramie Mountains. Three individuals documented here.
- 13-4 Utah site 1.
- 13-5 Utah site 2.

Goal: 3 populations.

Minimum cumulative area: 1500 ha

Minimum patch size: 500 ha

Minimum no. of patches: 3

Minimum separation distance: (defined by site locations)

Distribution of patches: 1 each in 3 of the 4 initial sites

14: Pygmy rabbit.

Taxon Priority: LOW. Taxon is somewhat rare (G4), and the population in southwestern Wyoming may be partially or wholly disjunct from the main populations in the Great Basin. Rarity of high-quality habitat (very tall sagebrush) is likely the main threat; predation during periods of extremely deep snow may be significant.

Initial Site Description / Data Sources: Taxon occurs primarily in sagebrush dominated environments; patches selected for portfolio inclusion need to be predominantly covered by sage.

14-1 Fossil Butte. Encompasses the Cumberland prairie dog complex and at least 12 high-quality occurrences from (Katzner, T. MS thesis, University of Wyoming).

14-2 Green River cluster, based on about 6 occurrences.

14-3 Jack Morrow Hills, based on 4 occurrences.

14-4 Seedskaadee vicinity, based on 3 occurrences.

Goal: 3 populations.

Minimum cumulative area: 3300 ha

Minimum patch size: 1100 ha (2 ha / individ * 275 individuals * 2 [caution factor]; see Clark and Stromberg 1987)

Minimum no. of patches: 3

Minimum separation distance: (defined by location of initial sites)

Distribution of patches: 1 in initial site 14-1

1 each in 2 of the 3 remaining initial sites

15: Wyoming pocket gopher.

Taxon priority: HIGH. Taxon is G2 and endemic to only a small portion of the ecoregion. Threats are unknown; the taxon is likely robust to most human-caused disturbances.

Initial Site Description / Data Sources: Little is known about this taxon; the initial sites are based on positions of known occurrences.

15-1 Sweetwater Co. 1 (LATLONG 413200 / 1083312)

15-2 Sweetwater Co. 2 (LATLONG 411142 / 1085035)

15-3 Sweetwater Co. 3 (LATLONG 413735 / 1081755)

15-4 Sweetwater Co. 4 (LATLONG 412655 / 1083140)

15-5 Carbon Co. 1 (LATLONG 413340 / 1071505)

Goals: 5 populations.

Minimum cumulative area: 1350 ha

Minimum patch size: 225 ha (0.41 ha / individual X 275 individuals X 2 [caution factor]; refer to BCD for *T. talpoides*)

Minimum no. of patches: 5

Minimum separation distance: (defined by coordinates listed below)

Distribution of patches: 1 at each initial site

16: Leatherside chub.

Taxon priority: LOW / MEDIUM. Taxon is rare (G3 / G4), but its main distribution is peripheral to the ecoregion. Specific threats are unknown; in general, factors that degrade streams have negative impacts.

Initial Site Description / Data Sources: Little is known about life-history. Refer to note b.

16-1 Bear River site. All of the Bear River in Wyoming, including all permanent tributaries for 20

miles from the Bear River or until permanent flow is lost (whichever occurs first). Site also includes the first 20 miles of Rock Creek (tributary to Twin Creek) and the first 20 miles of Muddy Creek (tributary to Smith's Fork).

16-2 Slate Creek site. All of Slate Creek from its mouth at Fontanelle (Green River) upstream to the head of both the North and South forks of Slate Creek.

Goal: 3 populations.
Minimum cumulative stream length: 15 stream-km
Minimum patch size: 5 stream-km
Minimum no. of patches: 3
Minimum separation distance: 15 stream-km (3X minimum patch) including at least 1 major confluence
Distribution of patches: 1 in site 16-2
2 in site 16-1

17: Flannelmouth sucker.

Taxon Priority: LOW / MEDIUM. Taxon is rare (G3 / G4) but its main distribution is peripheral to the ecoregion. Specific threats are difficult to define; in general, factors that degrade streams have negative impacts.

Initial Site Description / Data Sources: Little is known about the life-history of this taxon; relatively large patches are designed to accommodate its migratory habits. Refer to note b.

17-1 Green River site. Includes the main stem of the Green River from the ecoregional boundary on the north to Flaming Gorge Reservoir on the south. Also includes the first 5 miles of each permanent tributary, with the following exceptions: site includes all of the Big and Little Sandy rivers, all of the Black's Fork and Ham's Fork rivers, and all of the Henry's Fork River.

17-2 Little Snake River, including the first 5 miles of all permanent tributaries.

Goal: 3 populations with enough individuals for short-term genetic viability.
Minimum cumulative stream length: 21 stream-km
Minimum patch size: 7 stream-km
Minimum no. of patches: 3
Minimum separation distance: 21 stream-km (3X minimum patch) including one major confluence
Distribution of patches: 1 in site 17-2
2 in site 17-1

18: Bluehead sucker.

Taxon Priority: LOW. Taxon is somewhat rare (G4), and the ecoregion forms part of the core of its rather broad range. Recent population trends are down. Specific threats are difficult to define; in general, factors that degrade streams have negative impacts.

Initial Site Description / Data Sources: Refer to note b.

18-1 All of the Bear River plus the first 5 miles of all of its permanent tributaries.

18-2 All of the Green River from the ecoregional boundary to the upper end of Flaming Gorge Reservoir. Site includes the first 5 miles of all permanent tributaries with the following exceptions: site includes the Big Sandy River from the Green River to the confluence of the Little Sandy River, all of the Black's Fork River, and the first 20 miles of the Ham's Fork River.

18-3 Little Snake River including the first 5 miles of all permanent tributaries. This site is based on old (1979) sightings and should be considered lower priority than the Green River site.

Goal: 3 populations with enough individuals for short-term genetic viability.

Minimum cumulative stream length:	21 stream-km
Minimum patch size:	7 stream-km (based on information for flannelmouth sucker).
Minimum no. of patches:	3
Minimum separation distance:	21 stream-km (3X minimum patch) including one major confluence
Distribution of patches:	1 in site 18-2 2 in site 18-1

19: Roundtail chub.

Taxon Priority: LOW / MEDIUM. Taxon is somewhat rare (G3G4), but its main range is peripheral to the ecoregion. Specific threats are difficult to define; in general, changes to native flow regimes and factors that degrade streams have negative impacts.

Initial Site Description / Data Sources: Relatively large patches are suggested to accommodate the migratory habits of the taxon. Refer to note b.

19-1 Green River from the confluence of the New Fork River downstream to Flaming Gorge Reservoir, including the first 5 miles of all permanent tributaries, with the following exceptions: all of the Big Sandy River from the Green River upstream to about 5 miles above the confluence with the Little Sandy River, the Little Sandy River from its confluence with the Big Sandy River to 5 miles above that confluence, all of the Black's Fork River, and the first 20 miles of the Ham's Fork River.

19-2 Little Snake River including the first 5 miles of all permanent tributaries. This site is based on old (1979) sightings and should be considered lower priority than the Green River site.

Goal: 3 populations, each large enough for short-term genetic viability.

Minimum cumulative stream length:	30 stream-km
Minimum patch size:	10 stream-km
Minimum no. of patches:	3
Minimum separation distance:	30 stream-km (3X minimum patch) including one major confluence
Distribution of patches:	1 within site 19-2 2 within site 19-1

20: Swift fox.

Taxon priority: MEDIUM. A G3 taxon that is a candidate for listing under the U. S. Endangered Species Act. Has suffered a steep population decline over the past century; historic range is peripheral to the ecoregion. Conversion of prairie to agriculture is the major factor causing rarity; reductions in black-tailed and white-tailed prairie dog populations likely have negative impacts. Broad-spectrum carnivore poisoning was probably a significant threat historically.

Initial Site Description / Data Sources: Swift foxes are so widespread throughout the ecoregion, and exhibit such general habitat use, that identification of discrete sites is difficult. Recent field surveys sponsored by the Wyoming Game and Fish Department indicate that swift foxes are very rare west of the Continental Divide / Great Divide Basin in Wyoming, and expert opinion suggests that swift foxes are more abundant in the vicinity of large prairie dog complexes. Therefore, 10 initial swift fox sites are identified in the ecoregion, corresponding to the 12 white-tailed prairie dog complexes within swift fox range. Note that these sites do *not* represent 10 discrete populations, but rather 10 well-distributed patches of high-quality habitat that will serve as reproductive sources for the single swift fox population in the ecoregion.

- 20-1 Bolton Ranch (white-tailed prairie dog site 1-4)
- 20-2 Saratoga (white-tailed prairie dog site 1-5)
- 20-3 Shamrock Hills (white-tailed prairie dog site 1-6)
- 20-4 Pathfinder (white-tailed prairie dog site 1-7)

- 20-6 Single polygon encompassing white-tailed prairie dog sites Seminoe (1-9), Medicine Bow (1-10), and Shirley Basin (1-11)
- 20-7 Sweetwater (white-tailed prairie dog site 1-12)
- 20-8 Fifteen mile (white-tailed prairie dog site 1-18)
- 20-10 Manderson (white-tailed prairie dog site 1-20)
- 20-11 Meetetsee (white-tailed prairie dog site 1-19)
- 20-12 Small polygon southwest of Seminoe (white-tailed prairie dog site 1-8)

Goal: 6 patches of high-quality habitat distributed throughout the ecoregion.

Minimum cumulative area: 46,800 ha

Minimum patch size: 7800 ha (784 ha / pair X 10 pairs; refer to BCD)

Minimum no. of patches: 6

Minimum separation distance: (defined by locations of initial sites)

Distribution of patches: 2 in Wind / Big Horn
2 in North Platte
2 in Great Divide Basin

21: Ferruginous hawk.

Taxon priority: LOW. Taxon is somewhat rare in the ecoregion, and increasingly rare in adjacent ecoregions. The Wyoming Basins form part of the core of its rather broad year-round range, and may become somewhat of a stronghold for the global population. Conversion of prairie to agriculture and reductions in prairie dog populations are likely the largest threats.

Initial Site Description / Data Sources: Ferruginous hawks are so widespread throughout the ecoregion, and exhibit such generalized habitat use, that identification of discrete sites is difficult. Expert opinion suggests that prairie dog complexes are high-quality habitat for ferruginous hawks, due in large part to their high density of prey. Therefore, there are 21 initial ferruginous hawk sites identified in the ecoregion, corresponding to the 21 mapped white-tailed prairie dog complexes. As with the sites identified for swift fox, it is important to note that these sites do *not* represent 21 discrete populations, but rather 21 well-distributed patches of high-quality habitat that will serve as reproductive sources for the single ferruginous hawk population in the ecoregion.

(see initial sites for white-tailed prairie dog)

Goal: 6 patches of high-quality habitat distributed throughout the ecoregion.

Minimum cumulative area: 72,000 ha

Minimum patch size: 12,000 (1200 ha / pair X 10 pairs; refer to BCD)

Minimum no. of patches: 6

Minimum separation distance: (defined by locations of initial sites)

Distribution of patches: 1 in North Platte
1 in Wind / Big Horn
1 in Great Divide Basin
1 in White / Yampa
1 in Upper Green
1 in Uinta Basin (Lower Green, lower White / Yampa)

22: Burrowing owl.

Taxon priority: LOW. This taxon is somewhat rare, and the ecoregion forms part of the core of its rather large breeding range. Population and range trends appear to be down in recent decades, especially in adjacent ecoregions; trends in the Wyoming Basins ecoregion may be a little more stable. Reductions in prairie dog populations are likely the main threat.

Initial Site Description / Data Sources: Burrowing owls are widespread throughout the ecoregion, and although they use badger burrows, ground squirrel burrows, and even human-created cavities, it is

generally assumed that that they achieve their highest densities and reproductive success on prairie dog towns. Therefore, there are 21 initial burrowing owl sites identified in the Wyoming Basins, corresponding to the 21 large white-tailed prairie dog complexes. As with the sites identified for swift fox and ferruginous hawk, it is important to note that these sites do *not* represent 21 discrete populations, but rather 21 well-distributed patches of high-quality habitat that will serve as reproductive sources for the single burrowing owl population in the ecoregion.

(see initial sites for white-tailed prairie dog)

Goal: 6 patches of high-quality habitat distributed throughout the ecoregion.

Minimum cumulative area: 1320 ha
Minimum patch size: 220 ha (11 ha / pair X 10 pairs X 2 [caution factor]; refer to BCD)
Minimum no. of patches: 6
Minimum separation distance: (defined by locations of initial sites)
Distribution of patches:
1 in North Platte
1 in Wind / Big Horn
1 in Great Divide Basin
1 in White / Yampa
1 in Upper Green
1 in Uinta Basin (Lower Green, lower White / Yampa)

***23: Allen's 13-lined ground squirrel.**

Taxon Priority: LOW. Taxon is an ecoregional endemic, but there are serious taxonomic questions that force the low priority ranking. It was originally described from only 6 specimens, and has not been collected in the wild since 1938 despite extensive trapping. Specific threats are unknown; the taxon is likely robust to most human-caused disturbances.

Initial Site Description / Data Sources: Only one initial site is identified for this taxon. Because of the taxonomic questions outlined above, goals include just enough of this site for one population. If future work establishes the subspecies as a valid, unique taxon, the goal should be expanded.

23-1 Southwestern foothills of the Bighorn Mountains.

Goal: 1 population.

Minimum cumulative area: 700 ha
Minimum patch size: 700 ha (ca. 2.5 ha / individ *275 individ; refer to BCD for full-species)
Minimum no. of patches: 1
Minimum separation distance: (none)
Distribution of patches: (not applicable)

***24: Virginia's warbler.**

Taxon Priority: LOW. Taxon is a regional endemic, but its occurrence in the ecoregion is on the periphery of its main range. Specific threats are difficult to define; in general, loss and degradation of riparian areas may have some negative impacts.

Initial Site Description / Data Sources: Taxon occurs most reliably in the Flaming Gorge region of southwestern Wyoming. In general, habitat studies suggest a preference for riparian areas; goals therefore specify areas encompassing major streams and adjacent uplands.

24-1 Flaming Gorge region. The southern boundary of the site is the ecoregional boundary.

Goal: 3 populations.

Minimum cumulative area: 2100 ha, including at least 6000m of permanent stream
Minimum patch size: 700 ha, including at least 2000m of permanent stream

Minimum no. of patches: 3
Minimum separation distance: 8 km (3X diameter of minimum circular patch)
Distribution of patches: All within the single initial site, but at least 1 patch on either side of Green River / Flaming Gorge Reservoir

***25: Northern plateau lizard.**

Taxon Priority: LOW. Taxon is a regional endemic, but its occurrence in the ecoregion is on the periphery of its main range. Specific threats are unknown; the taxon is likely robust to most human-caused disturbances.

Initial Site Description / Data Sources: Taxon occurs most reliably in Flaming Gorge region of southwestern Wyoming.

25-1 Flaming Gorge region (same as 24-1).

Goal: 3 populations large enough for short-term genetic viability.

Minimum cumulative area: 600 ha
Minimum patch size: 200 ha (ca. 0.33 ha / individ * 275 individs * 2 caution factor; refer to BCD)
Minimum no. of patches: 3
Minimum separation distance: 4.2 km (3X diameter of minimum circular patch)
Distribution of patches: All within the single initial site, but at least 1 patch on either side of Green River / Flaming Gorge Reservoir

***26: Northern tree lizard.**

Taxon Priority: LOW. Taxon is a regional endemic, but its occurrence in the ecoregion is on the periphery of its main range. Specific threats are difficult to define; in general, loss and degradation of riparian areas may have some negative impacts.

Initial Site Description / Data Sources: Taxon occurs most reliably in Flaming Gorge region of southwestern Wyoming. In general, habitat studies suggest a preference for riparian areas; project goals therefore specify areas encompassing major streams and adjacent uplands.

25-1 Flaming Gorge region (same as 24-1).

Goal: 3 populations large enough for short-term genetic viability.

Minimum cumulative area: 600 ha
Minimum patch size: 200 ha including at least 1000m of permanent stream (see information for northern plateau lizard)
Minimum no. of patches: 3
Minimum separation distance: 4.2 km (3X diameter of minimum circular patch)
Distribution of patches: All within the single initial site, but at least 1 patch on either side of Green River / Flaming Gorge Reservoir.

***27: Midget faded rattlesnake.**

Taxon Priority: HIGH. Taxon is T3 (may soon be declared a full species at G3) and endemic to only a portion of the ecoregion. Significantly threatened by uncontrolled reptile collection; if trends continue, T2 (G2) status will likely be applied. Human-caused mortality may also be significant in areas of high human use.

Initial Site Description / Data Sources: Taxon occurs generally throughout the Flaming Gorge region of southwestern Wyoming, and is encountered most reliably in the canyons on either side of the reservoir and Green River / Ham's Fork Green River south of Interstate 80. Patches selected for portfolio inclusion need to encompass canyon environments.

27-1 Flaming Gorge region (same as 24-1)

Goal: 6 populations.
Minimum cumulative area: 10,200 ha
Minimum patch size: 1700 ha (12 ha / male * 138 individs; refer to BCD for prairie rattlesnake)
Minimum no. of patches: 6
Minimum separation distance: 12.4 km (3X diameter of minimum circular patch)
Distribution of patches: All within the single initial site, but at least 3 patches on either side of Green River / Flaming Gorge Reservoir.

***28: Uinta ground squirrel.**

Taxon Priority: LOW. Taxon is a regional endemic, and the ecoregion forms part of the core of its range. However, it is relatively abundant within its range and is somewhat of a habitat generalist. Tends to prefer foothills environments in the ecoregion. Specific threats are unknown; the taxon is likely robust to most human-caused disturbances.

Initial Site Description / Data Sources:

28-1 Southern terminus, Wyoming range.
 28-2 Northern foothills, Uinta range.

Goal: 3 populations.
Minimum cumulative area: 4125 ha
Minimum patch size: 1375ha (5ha / individ. * 275 individs; refer to BCD for Wyoming ground squirrels)
Minimum no. of patches: 3
Minimum separation distance: 11 km (3X diameter of minimum circular patch)
Distribution of patches: 2 in 28-2
 1 in 28-1

29: Dwarf shrew.

Taxon Priority: LOW. Taxon is somewhat rare, and the ecoregion forms part of the core of its rather broad range. Specific threats are unknown; the taxon is likely robust to most human-caused disturbances.

Initial Site Description / Data Sources: Within the ecoregion, taxon occurs in the foothills of major mountain ranges.

29-1 Absaroka foothills; western boundary is ecoregional boundary.
 29-2 Uinta foothills; southern boundary is ecoregional boundary.
 29-3 Snowy Range foothills; western boundary is ecoregional boundary.

Goal: 3 populations.
Minimum cumulative area: 825 ha
Minimum patch size: 275 ha
Minimum no. of patches: 3
Minimum separation distance: (defined by initial site location)
Distribution of patches: 1 in each of the above sites

***30: Idaho pocket gopher.**

Taxon Priority: MEDIUM. Taxon is essentially endemic to the ecoregion, but is likely rather common within its known range. Specific threats are unknown; the taxon is likely robust to most human-caused disturbances.

Initial Site Description / Data Sources:

30-1 Ecoregion west. Essentially all of the ecoregion south of Sublette Co., north of the Uinta Basin, and west of Sweetwater Co.

Goal: 4 populations, each large enough for short-term genetic viability.

Minimum cumulative area: 900 ha
Minimum patch size: 225 ha (see information for Wyoming pocket gopher)
Minimum no. of patches: 4
Minimum separation distance: 4.5 km (3X diameter of minimum circular patch)
Distribution of patches: All 4 within the single initial site

31: McCown's longspur.

Taxon Priority: LOW. Taxon is a regional endemic, and the ecoregion forms part of the core of its range. However, it is somewhat abundant within its range. Specific threats are difficult to identify; general loss of native short-grass prairie is likely the most significant.

Initial Site Description / Data Sources: This species is associated primarily with true grasslands; the initial sites therefore encompass relatively large areas whose primary cover type is either mixed grass prairie or Great Basin foothills grassland, as defined and mapped by the Wyoming GAP Analysis (1996).

31-1 Laramie Plains / Shirley Basin. Essentially all of the ecoregion south and east of a line drawn from the town of Casper to the northern tip of the Snowy Mountains.

31-2 Owl Creek Mountains / Bridger Mountains.

31-3 Southwestern Bighorn Mountains

Goal: 3 populations.

Minimum cumulative area: 3600 ha
Minimum patch size: 1200ha (8.5 ha / pair * 138 pairs; refer to draft EO specs)
Minimum no. of patches: 3
Minimum separation distance: 10.4 km (3X diameter of minimum circular patch)
Distribution of patches: 2 within site 31-1
1 in 1 of the 2 remaining sites

32: Yellowstone cutthroat trout.

Taxon Priority: MEDIUM. Taxon is a regional endemic, and is significantly threatened by genetic introgression and competitive exclusion by exotic salmonids. Exclusion by other introduced game fish is likely a problem at lower elevations.

Initial Site Description / Data Sources: Initial sites encompass populations that have suffered minimal genetic introgression from exotic salmonids or other cutthroat subspecies, as identified by C. Kruse (1998). Influence of non-native trout and geomorphology on distributions of indigenous trout in the Yellowstone River drainage of Wyoming. Ph.D. Dissertation, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming). Most include genetically pure sub-populations, often near tributary headwaters, connected by downstream population segments with minimal hybridization. The degree of intra-basin stocking (i.e., human-mediated exchanges of Yellowstone cutthroat trout from one native, endemic population to another) is unknown for all these populations. All sites about the ecoregional boundary, and some barely extend into the ecoregion. Refer to note b.

32-1 S. Fork Paint Rock Cr. (ca. T49N R87W); ecoregional boundary to confluence with Paint Rock Cr.

32-2 Deer Creek (ca. T58N R93W); ecoregional boundary to confluence with Porcupine Creek.

32-3 Greybull River; ecoregional boundary to confluence with Wood River. Includes all perennial tributaries to their headwaters or ecoregional boundary (whichever is encountered first).

32-4 Wood River; ecoregional boundary to confluence with Greybull River. Includes all perennial tributaries to their headwaters or ecoregional boundary (whichever is encountered first).

32-5 Marquette Creek (ca. T51N R103W); ecoregional boundary to Buffalo Bill Reservoir.

Goal:	4 populations.
Minimum cumulative stream length:	44 stream-km
Minimum patch size:	11 stream-km (refer to information for Colorado River cutthroat trout)
Minimum no. of patches:	4
Minimum separation distance:	(defined by locations of initial sites)
Distribution of patches:	1 each at sites 32-3, 32-4, and 32-5 1 as close as possible to either 32-1 (may need to include stream reaches downstream of the site).

33: Colorado River cutthroat trout.

Taxon Priority: MEDIUM. Taxon is a regional endemic, and is significantly threatened by genetic introgression and competitive exclusion by exotic salmonids. Exclusion by other introduced game fish is likely a problem at lower elevations.

Initial Site Description / Data Sources: Initial sites encompass populations of Colorado River cutthroat trout that have suffered minimal genetic introgression from exotic salmonids or other cutthroat trout subspecies, as identified by Young et al. 1996 (Colorado River cutthroat trout. pp. 87-120 in D. Duff [technical editor]. Conservation assessment for inland cutthroat trout: distribution, status and habitat management implications. USDA Forest Service General Technical Report). Initial sites 33-1, 33-2, and 33-5 encompass "conservation populations", which are populations of Colorado River cutthroat trout that are indigenous, genetically pure (i.e., no introgression from exotic salmonids or other cutthroat subspecies), allopatric above a barrier, and not believed to be in a recently stocked watershed. Populations within the other sites are at least genetically pure. Many sites about the ecoregional boundary, and some may just barely extend into the ecoregion (some are likely not within the ecoregion at all). Refer to note b.

33-1 Beaver Creek (ca. T29N R114W); includes all permanent streams above the confluence of Beaver Creek and Trail Ridge Creek, extending to the ecoregional boundary.

33-2 Rock Creek (ca. T27N R114W); from confluence with LaBarge Creek to headwaters.

33-3 Lead Cr. (ca. T35N R113W); entire stream.

33-4 Red Creek (ca. T13N R104W); from headwaters to confluence with Green River.

33-5 North Fork Little Snake River; includes all permanent streams above the confluence with Little Snake River.

Goal:	4 populations.
Minimum cumulative stream length:	44 stream-km
Minimum patch size:	11 stream-km (52 adults / 1 stream-km * 5 stream-km * 2 caution factor; refer to BCD)
Minimum no. of patches:	4
Minimum separation distance:	(defined by locations of initial sites)
Distribution of patches:	1 each as close as possible to sites 33-1, 33-2, 33-3, and 33-5 (may need to include stream reaches downstream of the sites)

34: Bear River/ Bonneville cutthroat trout.

Taxon Priority: MEDIUM. Taxon is a regional endemic, and is significantly threatened by genetic introgression and competitive exclusion by exotic salmonids. Exclusion by other introduced game fish is likely a problem at lower elevations.

Initial Site Description / Data Sources: The distribution of genetically pure stocks of Bear River/ Bonneville cutthroat trout is not as well-known as it is for other cutthroat trout subspecies. Available information suggests that pure stocks occur only in high-elevation headwaters and do not occur in the

Wyoming Basins ecoregion. Initial site 34-1 encompasses a population of unknown genetic purity (probably hybridized); waters upstream of this site support genetically pure populations. Site 34-2 also encompasses a population with a high probability of hybridization; although no known genetically pure populations occur in this drainage, it is possible that (a) they occur here but have not yet been documented, or (b) the higher reaches of this drainage are suitable for re-establishing pure populations. Because conservation action at just these 2 sites is probably not adequate to insure long term viability of this taxon in the ecoregion, we identify 2 more sites (34-3 and 34-4) based on likely habitat for future population enhancement / reintroduction. Refer to note b.

34-1 Smith's Fork Bear River; all permanent streams from the confluence of Smith's Fork and Bear River upstream to the ecoregional boundary.

34-2 Rock Creek (ca. T22N R118W); Rock Creek and all permanent tributaries (all permanent waters above confluence of Rock Creek and Twin Creek).

34-3 Idaho Bear lake tributary to Bear Lake.

34-4 Headwaters, Bear River; permanent streams along the upper Bear River abutting the ecoregional boundary.

Goal: 4 populations.

Minimum cumulative stream length: 44 stream-km

Minimum patch size: 11 stream-km (refer to information for Colorado River cutthroat trout)

Minimum no. of patches: 4

Minimum separation distance: (defined by locations of initial sites)

Distribution of patches: 1 each as close as possible to sites 34-1, 34-2, 34-3, and 34-4 (may need to include stream reaches downstream of the sites)

35: Major bat roosts and hibernacula.

Taxon priority: MEDIUM. This group contains multiple species ranging from rare and declining (e.g., *C. townsendii*, *E. maculatum*) to relatively common (e.g., *M. lucifugus*, *E. fuscus*); medium priority is justified based on the former group. Note that human activities, especially hard-rock mining, may have increased roost / hibernacula availability in the ecoregion; however, human-mediated disturbance and even elimination of roosts / hibernacula is now likely the main threat.

Initial Site Description / Data Sources: The initial sites were derived from survey maps presented in the WG&FD Non-game program Annual Completion Report (April 1998). Each site encompasses a significant cluster of day and night roosts, maternity roosts, and/ or hibernacula for multiple species. Roosts and hibernacula of high-priority species (e.g., *Corynorhinus townsendii*, *Myotis evotis*) were especially noted and included in the sites. The sites are obviously mapped at too small of a scale to define individual roost structures, and are intended to encompass roosting substrate in general as well as adjacent foraging habitat. Patches selected for portfolio inclusion should encompass cliff / canyon environments to insure capture of roosting / hibernating substrate.

35-1 Big Horn River.

35-2 Tensleep; the northeast boundary should correspond to the ecoregional boundary.

35-3 North Wind River Canyon.

35-4 Bridger Mountains.

35-5 Shirley Mountains.

35-7 Town of Green River.

35-8 Seedskaadee National Wildlife Refuge.

35-9 Cokeville; the northeast boundary should correspond to the ecoregional boundary.

35-10 Northern Uinta basin, Utah.

Goal: 6 areas of high-quality habitat, including roosting / hibernating substrate and foraging range.

Minimum cumulative area: 12,000 ha

Minimum patch size: 1500 ha

Minimum no. of patches: 6

Minimum separation distance: (defined by initial site locations)

Distribution of patches: 1 in initial site 35-10
 1 in initial site 35-5
 1 each in 4 of the 7 remaining sites

36: Bald eagle.

Taxon Priority: LOW. Taxon is G4, will soon be de-listed, and the ecoregion forms part of the core of its rather broad wintering range (ecoregion is on the southern periphery of its breeding range). However, population trends are steadily increasing and the main threat (pesticide accumulation) has been adequately addressed. Major threats now include human disturbance of nests and communal roosts.

Initial Site Description / Data Sources: Sites are based on WYNDD records and WG&FD expert opinion. In all cases except the Pine Mountain site, each site is a 100m buffer on both sides of the named streams (and shorelines of major reservoirs) except where the streams (or shorelines) are bordered by patches of cottonwood (WY GAP land cover patches where forest dominated riparian [61001] is either a primary or secondary cover type). In these cases, the site boundary should follow the boundary of the cottonwood patches. Goals are directed at providing good wintering habitat (because ecoregion is at core of winter range) with some potential for breeding.

- 36-1 Pine Mountain, northwest of Casper. Supports wintering habitat.
- 36-2 Bighorn Basin. Along the Bighorn River from upper end of Yellowtail Reservoir to Thermopolis. Site includes the first 25 miles of : Shoshone River, Dry Creek, Greybull River, Gooseberry Creek, Cottonwood Creek, Owl Creek, Shell Creek, and Nowood River (also includes Paintrock Creek from Nowood River confluence to Hyatville). Supports both breeding and wintering habitat.
- 36-3 North Platte. Along the North Platte River from Casper south to the Colorado border or ecoregional boundary (whichever is encountered first), including the first 12 miles of Cow Creek. Supports both breeding and wintering habitat.
- 36-4 Little Snake River. Along the Little Snake River from the Colorado border east to the ecoregional boundary. Supports wintering habitat.
- 36-5 Green River. Along the Green River from the town of Green River north to the ecoregional boundary, including the first 25 miles of Cottonwood Creek, New Fork River, Fontanelle Creek, and LaBarge Creek. Supports both breeding and wintering habitat.
- 36-6 Bear River South. Along the Bear River from the town of Evanston north to the Utah border, including all of Woodruff Narrows Reservoir. Supports wintering habitat.
- 36-7 Bear River North. All of the northern section of the Bear River in Wyoming (the reach between Twin Creek and Border Junction). Site includes Twin Creek to its headwaters, and Rock Creek (tributary of Twin Creek) to its headwaters. Supports wintering habitat.
- 36-8 Wind River. Along the Wind River from Dubois southeast to Morton. Supports both breeding and wintering habitat.

Goal: 6 areas of high-quality winter habitat, each with the ability to support some breeding.

Minimum cumulative area /stream length: 3000 ha
Minimum patch size: 500 ha (100 ha / nest * 5 nests; refer to BCD)
Minimum no. of patches: 6
Minimum separation distance: (defined by locations of initial sites)
Distribution of patches: 1 in 36-8
 1 in either 36-7 or 36-6
 1 in 36-5
 1 in 36-4
 1 in 36-3
 1 in 36-2

37: Peregrine falcon.

Taxon Priority: LOW. Taxon was recently de-listed. The ecoregion forms part of the core of its relatively large breeding range. Although it is still somewhat rare (G5T3), population trends are steadily increasing and the major cause of the historic decline (unrestricted pesticide use) has been adequately addressed. The main threat now may be human disturbance of nest sites.

Initial Site Description / Data Sources: Similar to the bald eagle sites, these sites are based on WYNDD records and WG&FD expert opinion. Many of these sites are in the foothills of major mountain ranges, and about the ecoregional boundary. Patches selected for portfolio inclusion need to include cliff / canyon environments to capture breeding habitat.

- 37-1 Absaroka front.
- 37-2 Yellowtail Reservoir.
- 37-3 Shell Canyon.
- 37-4 Tensleep Canyon. This site is the same as site 35-2, with the eastern boundary corresponding to the ecoregional boundary.
- 37-5 Wind River Canyon. Site encompasses a 5 mile-wide strip on both sides of the Wind River from Thermopolis south to Boysen Reservoir.
- 37-6 Upper Wind River.
- 37-7 Upper Green River.
- 37-8 Bear River North.
- 37-9 Flaming Gorge.
- 37-10 Pathfinder / Muddy Gap.

Goal: 6 areas of high-quality habitat, each with ability to support at least 5 breeding pairs.

Minimum cumulative area:	21,000 ha
Minimum patch size:	3500 ha (700ha / pair * 5 pairs; assumes 50% overlap; refer to BCD)
Minimum no. of patches:	6
Minimum separation distance:	(defined by initial sites)
Distribution of patches:	1 in site 37-10 1 in site 37-9 1 in site 37-7 1 each in 3 of the 7 remaining sites

38: Bighorn sheep.

Taxon Priority: MEDIUM. Taxon has suffered large population and range declines in past century, and is chronically threatened by disease transfer from domestic livestock. Extant populations are isolated from each other; afforestation of traditional migration corridors can exacerbate this fragmentation. The ecoregion forms part of the core of the taxon's historic range. Repeated re-introductions and population supplementation has altered much of the original genetic structure of bighorn sheep populations in western North America.

Initial Site Description / Data Sources: These sites were derived via a phone conversation with K. Hurley (WG&FD Bighorn Sheep Task Force); essentially, they represent important winter / year-round range segments for herds in the ecoregion. Although historically the taxon was more widespread in the ecoregion, its long-term viability will probably be insured by conservation of existing populations. Note that the WG&FD is pursuing bighorn sheep reintroduction at several other sites within the ecoregion, including Sweetwater Rocks, Seminoe Mountains, and the North Platte corridor. Patches selected for portfolio inclusion need to include canyon / cliff environments (escape cover) to insure they capture suitable habitat.

- 38-1 Absaroka front. Herds along the Absarokas generally do not range below 6000 feet in elevation. Therefore, this site encompasses all areas along the east slope of the Absarokas above 6000 feet, extending from the Montana line south to the Owl Creek Mountains.
- 38-2 Owl Creek Mountains / Wind River Canyon.
- 38-3 Upper Wind River / Dubois.

38-4 Bighorn Canyon.

Goal: 8 areas of high-quality winter / year-round range.

Minimum cumulative area: 20,000 ha
Minimum patch size: 2500 ha
Minimum no. of patches: 8
Minimum separation distance: 21 km (3X diameter of minimum circular patch)
Distribution of patches: At least 2 each in 38-1, 38-2, 38-3
1 in 38-4

39: Sage grouse.

Taxon Priority: HIGH / MEDIUM. Taxon has suffered dramatic population and range declines in recent decades, and is being petitioned for listing under the U. S. Endangered Species Act. Although it occurs in adjacent ecoregions, the high priority is justified by the fact that the Wyoming Basins populations are among the few that are documented as stable or increasing; i.e., this ecoregion is the current global stronghold. Major threats are difficult to define. In general, changes in sagebrush amount and quality (i.e., particular seral stages) are thought to contribute to population declines.

Initial Site Description / Data Sources: The initial sites were derived from several conversations with WG&FD personnel. It is generally recognized that although sage grouse occur widely throughout the ecoregion, 4 of the 7 WG&FD Districts support the highest densities; District 1 (Pinedale), District 4 (Green River), District 5 (Laramie), and District 6 (Lander). The below sites are areas within these districts that are known to support very high densities and/ or reproductive output for sage grouse, according to the sage grouse experts in each district.

39-1 Hudson / Beaver Divide.
39-2 Atlantic City / Twin Creek.
39-3 Oregon Buttes / Antelope Hills.
39-4 Upper Green River.
39-5 Farson / Eden.
39-6 Flaming Gorge / Black's Fork.
39-7 Upper North Platte.
39-8 Seminoe.
39-9 Pathfinder.
39-10 Marshall.
39-11 Laramie North.

Goal: 10 patches of high-quality habitat, each with the ability to support at least 50 individuals.

Minimum cumulative area: 7000 ha
Minimum patch size: 700 ha (ca. 100 ha / 15 birds * 50 birds * 2 caution factor;
refer to recent Birds of North America account)
Minimum no. of patches: 10
Minimum separation distance: (defined by locations of initial sites)
Distribution of patches: 1 in site 39-6
1 each in 9 of 10 remaining sites

40: Bear Lake endemic fish (*Prosopis gemmifer*, *P.spilonatus*, *P.abyscicola*, *Cottus extensus*).

Taxon priority: HIGH. Taxa are all G1 and endemic to only Bear Lake. Major threats are difficult to define, but likely include competition with and predation by introduced fish and possibly changes in water quality.

Initial Site Description / Data Sources: These 4 taxa are endemic to Bear Lake, which serves as the only initial site. Note that the large marsh complex north of the lake is also included to insure water quality concerns are minimally addressed.

40-1 Bear Lake, Idaho, and large marsh complex north of the lake.

Goal: The one initial site in its entirety.
Minimum cumulative area: (entire site)
Minimum patch size: (Bear Lake)
Minimum no. of patches: (1)
Minimum separation distance: (not applicable)
Distribution of patches: (not applicable)

41: Mountain plover.

Taxon Priority: HIGH. Taxon is G2 / Proposed Threatened, and chronically threatened by conversion of native prairie to plowed agriculture. Although the historic range is peripheral to the ecoregion, the rarity of the taxon and continued downward trend in population and habitat justifies the high priority.

Initial Site Description / Data Sources: Mountain plover distribution in the Wyoming portion of the ecoregion has been modeled using topographic slope and vegetation cover (see Beauvais, G. P. and R. S. Smith. 1999. Occurrence of breeding mountain plovers (*Charadrius montanus*) in the Wyoming Basins ecoregion. Report prepared by the Wyoming Natural Diversity Database for the USDI Bureau of Land Management, Rock Springs, Wyoming). Initial sites 41-1 through 41-8 are derived from this modeling effort; they are large areas predicted to have a >80% probability of presence of breeding mountain plovers. Because habitat is patchy at a fine scale, areas selected for portfolio inclusion should be checked to insure they encompass flat areas with low and sparse vegetation (as defined in the above report). Initial site 41-9 is based on a cluster of recent mountain plover observations during the breeding season in Utah.

- 41-1 Laramie Plains / Shirley Basin. Essentially all of the ecoregion south and east of a line drawn from the town of Casper to the northern tip of the Snowy Mountains (same as 31-1).
- 41-2 Rawlins South. Large area of suitable habitat south of Rawlins and north of the northern terminus of the Sierra Madre Mountains.
- 41-3 Lyman / Mountain View. Large area of suitable habitat east-southeast of Lyman and Mountain View.
- 41-4 Southwest Carbon County. Large area of suitable habitat in southwest Carbon County.
- 41-5 Southeast Sweetwater County. Large area of suitable habitat in southeast Sweetwater County.
- 41-6 Southeast Fremont County. Large area of suitable habitat in southeastern Fremont County.
- 41-7 Central Bighorn Basin. Large area of suitable habitat in central Bighorn Basin.
- 41-8 Greybull Southwest. Large area of suitable habitat southwest of Greybull.
- 41-9 Uinta Basin. Cluster of recent breeding-season observations in Utah.

Goal: 8 patches of high-quality habitat, each with the potential to support 10 breeding pairs.
Minimum cumulative area: 8,000 ha
Minimum patch size: 1000 ha (100 ha / 1 pair * 10 pairs; refer to F. Knopf, Birds of North America account)
Minimum no. of patches: 8
Minimum separation distance: 9.5 km (3X diameter of minimum circular patch)
Distribution of patches: 3 within site 41-1
 1 within site 41-9
 1 in 4 of the remaining 7 initial sites

42. Black-tailed prairie dog.

Taxon Priority: LOW. Taxon is being petitioned for listing under the U. S. Endangered Species Act, but is peripheral to the ecoregion. Major threats include deliberate poisoning and introduced disease (primarily bubonic plague).

Initial Site Description / Data Sources: There is only one substantial black-tailed prairie dog town known in the ecoregion (personal communication, B. Luce, WG&FD-Lander). There is some speculation that this town was originally introduced.

42-1 Sage Creek Basin

Goal: The one initial site.

Minimum cumulative area: (area of the one site)

Minimum patch size: (area of the one site)

Minimum no. of patches: (1)

Minimum separation distance: (not applicable)

Distribution of patches: (not applicable)

43. Bonytail chub.

Taxon priority: HIGH. The bonytail chub is considered extirpated from the ecoregion; brood stocks are currently being developed for reintroduction. Taxon is G1 / Endangered, and reintroduced populations will be continually threatened by human-modification of flow-regimes in the Colorado River basin.

Initial Site Description / Data Sources: Initial sites are areas of historic range (see T. E. Czapla. 1999. Final Draft Genetics Management Plan: Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. USDI-USFWS. 49pp) into which the brood stocks will likely be introduced. It is important to note that the 2 initial sites will represent 2 branches of the same population after reintroduction; they are mapped as distinct sites only because the ecoregional boundary will divide the reintroduced population into artificial segments. Refer to note b.

43-1 Green River; from boundary of Dinosaur National Monument to confluence with Duschene River (same as site 3-1)

43-2 Yampa River; all of the stream in the ecoregion (same as sites 3-2).

At a minimum, the entirety of these 2 sites needs to be under conservation action to ensure future viability of this wide-ranging taxon. The majority of its historic range in Wyoming is now flooded by Flaming Gorge Reservoir; therefore, upstream sites are not identified.

Goal: Both initial sites in their entirety.

Minimum cumulative stream length: (sum of the 2 initial sites)

Minimum patch size: (shortest of 2 initial sites)

Minimum no. of patches: 2

Minimum separation distance: (ca. 66km; distance between 43-1 and 43-2)

Distribution of patches: (defined by locations of initial sites)

ELEMENTS FOR WHICH NO DISCRETE SITES WILL BE IDENTIFIED IN WYOMING

American bittern. Priority: LOW. This taxon is somewhat rare (G4), and the ecoregion does form part of its relatively large breeding range. However, its conservation within the ecoregion is adequately addressed by identifying sites for colonial nesting waterbirds.

Wyoming ground-squirrel. Priority: MEDIUM. This taxon is important to consider as a target element because it is essentially endemic to the ecoregion. However, because it occurs in relatively high densities in many habitats throughout the ecoregion, it is difficult to define discrete Wyoming ground squirrel sites. Conservation action applied to almost any upland habitat within the ecoregion would likely benefit populations of Wyoming ground squirrels (i.e., the coarse-filter will adequately address the needs of this taxon).

Sage sparrow. Priority: LOW. This species is important to consider as a target element because it is a regional endemic and is thought to be declining. However, because it occurs in most sage-dominated habitats throughout the ecoregion, it is difficult to define discrete sage sparrow sites. Conservation action applied to almost any sage-dominated habitat within the ecoregion will benefit populations of sage sparrows (i.e., the coarse-filter will adequately address the needs of this taxon).

