

## **KEY PARTNERSHIPS AND IMPLEMENTATION MECHANISMS**

Once evaluated and prioritized, project implementation, particularly habitat manipulation, must be programmed into existing land use planning structures, whether federal, state, tribal, or private. While there are as many planning structures out there as there are land management partners, the Nevada WAP Development Team has identified several major planning processes, or implementation mechanisms that are particularly important to the success of the WAP. It is impossible to describe all of the potential partnerships and implementation mechanisms that might be activated during the life of the WAP, so the Team hopes that by describing these key implementation mechanisms in considerable detail, readers can develop a sense of the general preferred approach to integrating WAP objectives and strategies into appropriate land use planning structures. Please keep in mind that these integration “models” are only being proposed as the “preferred method” from the viewpoint of the WAP Development Team, and do not necessarily represent any endorsement or official sanction from any of the identified partners. The details of these collaborations may need to be adjusted in order to achieve agreement among the entities involved. Those dialogues have already started with most of the featured entities, and consensus will be pursued over the earliest months of implementation past ratification of the WAP.

### **National Scale Efforts**

#### ***National Fish, Wildlife and Plants Climate Adaptation Strategy***

In 2009, Congress urged the White House Council on Environmental Quality and the Department of Interior to develop a national climate adaptation strategy to assist fish, wildlife in becoming more resilient and adapting to the impact of climate change.

The recently developed “National Fish, Wildlife and Plants Climate Adaptation Strategy” is a comprehensive, multi-partner blueprint for addressing the threat of climate change across the country. It provides natural resource professionals and other decision makers with a basis for sensible actions that can be taken now in spite of the uncertainty about precise impacts of climate change on natural resources. The strategy is structured around five ecosystem sections: inland waters, the marine environment, forests, and grasslands/shrublands/deserts/tundra. Each ecosystem section identifies climate impacts and key goals, strategies and actions for managing species and natural resources in a changing climate. In addition the strategy includes indicators of success to help track progress and also national level strategies for cross-cutting issues such as the role of agriculture, transportation and invasive species on the resiliency of fish, wildlife and plants.

The U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration (NOAA) and the New York Division of Fish Wildlife and Marine Resources (representing state fish and wildlife agencies more broadly) co-lead the development of the strategy. The Association of Fish and Wildlife Agencies also provided support for the strategy. The strategy was developed with input from an intergovernmental Steering Committee with federal, state, and tribal governments participating along with input from non-governmental organizations, industry, and private landowners.

## Regional Landscape Scale Efforts

### ***Southwest Climate Science Center***

In 2009, Secretary Salazar called for the establishment of a network of eight regional Climate Science Centers (CSCs) to provide scientific information needed by natural and cultural resource managers as they address the impacts of climate change. The order also called for the establishment of Landscape Conservation Cooperatives (LCCs) that bring together resource managers to plan for landscape scale conservation. LCCs offer another opportunity for involvement in climate adaptation planning.

In 2010, DOI's Secretary announced the establishment of the Southwest Climate Science Center (SWCSC) to be one of eight Regional Climate Science Centers in a national network to help foster the research needed to understand regional implications of climate variability. Nevada falls within the administrative jurisdiction of the SWCSC. The SWCSC is a federal-research institution partnership. With a director and small federal research staff, the SWCSC will integrate the expertise of a consortium of six research institution hosts and will be based in Tucson, Arizona (See below for list of institutions.) The specific research, monitoring, and data management activities of the SWCSC will be shaped by the needs of natural and cultural resource managers in the region. Neighboring regional CSCs are based at Fort Collins, Colorado (North Central CSC), Lubbock, Texas (South Central CSC), and Corvallis, Oregon (Northwest CSC). Each of these CSCs has a consortium of research institutions.

The overall goals of the network of CSCs are to:

- assess the vulnerability of natural and cultural resources to climate change;
- predict changes in natural and cultural resources in response to climate change;
- link the output from climate models (such as projected temperature and precipitation changes) with models that predict responses to climate variation;
- standardize approaches to monitoring and link existing monitoring efforts to models of climate variability and resource response; and
- develop data management policies and practices to ensure that data generated at NCCWSC and the CSCs are shared and interoperable with other datasets.

Within this broad mandate, each CSC will define an overall regional Science Agenda based on input from resource managers. This process will be overseen by an executive-level Stakeholder Advisory Committee (SAC) with representation from tribes, states, federal agencies, and LCCs in the region. SAC members will advise the SWCSC about its Science Agenda and research activities. Both NDOW and DCNR have membership on the SAC. The SWCSC research program will be undertaken by federal researchers and a consortium of research institution scientists supported by the SWCSC.

The SAC will help develop guidance for high level science planning and priority climate science needs related to land, water, and cultural resources management in the Southwest (executive and senior level leaders who create a long-term strategy for addressing current and future impacts of climate variability on our region's lands, water, fish, wildlife, and cultural heritage. The SWCSC will provide assistance to natural and cultural resource managers who are faced with planning and implementing actions for mitigating and adapting to climate change.

#### *SWCSC Host Institutions:*

- University of Arizona, Tucson
- University of Colorado, Boulder
- University California, Davis

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- University of California Los Angeles,
- Desert Research Institute (University of Nevada System, Reno)
- Scripps Institution of Oceanography, University of California, San Diego.

*In addition to the six host institutions, the SWCSC also includes the following as partners:*

- Arizona State University, Tempe
- Northern Arizona University, Flagstaff
- University of California, Merced
- University of Nevada, Las Vegas
- NASA Ames Research Center
- U.S. Institute for Environmental Conflict Resolution, Tucson

## ***Western Governor's Association: Crucial Habitat Assessment Tool (CHAT)***

With the adoption of its *Wildlife Corridors Initiative Report* in June 2008, the Western Governor's Association (WGA) created the Western Governors' Wildlife Council - consisting of designees from 17 WGA member states – and tasked its members to develop policies and tools to identify and conserve crucial wildlife habitat and corridors across the region. The Wildlife Council is working to make information on important fish and wildlife habitat compatible across the West and available to the public in 2013 for use in informing land use decisions.

Economic progress across the West depends on the successful completion of energy, transportation, land use and other large-scale development projects that must incorporate potential wildlife impacts into their planning. To help ensure both wildlife and local economies remain viable, WGA began examining how state wildlife agencies could be more innovative in providing wildlife species and habitat information to their various “customers” – including Federal agencies, other state agencies, local and tribal governments, conservation advocates, business and industry groups, private landowners, outdoors enthusiasts and even foreign countries.

A collaborative effort among 17 states, the Western Wildlife Crucial Habitat Assessment Tool (CHAT) aims to bring greater certainty and predictability to planning efforts by establishing a common starting point for discussing the intersection of development and wildlife. The CHAT will be an easily accessible online system of maps displaying crucial wildlife habitat and corridors across the West. While not intended for project-level approval, CHAT will lead to fewer conflicts and surprises while ensuring wildlife values are better incorporated into land use decision-making as well as large-scale conservation projects.

In addition to helping states establish their individual CHATs, the Wildlife Council is creating a “regional CHAT” to provide an informed and continually updated picture of crucial wildlife habitat across the West. The state and regional CHATs will be non-regulatory but give project planners and the general public access to credible scientific data at the broad scale for use in project assessment, siting and planning – including on large-scale development projects spanning multiple jurisdictions.

In June 2010, Governors across the West committed to having their states complete regionally compatible CHATs and make them public within three years. From now through October 2012, the Western Governors' Wildlife Council will develop options for constructing and maintaining the regional CHAT, while their state agencies will continue working together to compile important data sets, apply crucial habitat definitions and build and improve upon their individual state CHATs. From November 2012 to December 2013, the focus of activity will be to knit each state's crucial habitat layers together in the regional CHAT.

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During 2010-2011, Nevada partnered with California, Arizona and Utah on a four state pilot project funded by the Department of Energy through the Western Governors' Association. This effort will provide proactive decision support GIS tools among the western states in the form of identifying crucial habitat for all wildlife species for use in land management environmental and planning efforts. NDOW views the development of Nevada's CHAT as essential for us to improve our understanding of crucial wildlife habitat and corridor information and to provide that information to our stakeholders.

The strategy for land-managing agency conservation project planning has changed in the last few years from one of a small (thousands of acres or smaller), packaged, single year, single treatment approach to a large (hundreds of thousands of acres), multi-year, multi-component effort. The landscape level effort is usually addressed in a single (usually EIS-level) document and involves a coordinated group of agencies or organizations in the effort. The landscape approach is better integrated with neighboring activity and addresses a wider range of issues than the smaller-scale projects have addressed. This has been particularly important when looking at the cumulative impacts to landscape species such as sage grouse and mule deer. The projects incorporate both pre and post implementation monitoring and are more comprehensive in their accommodations of other land uses and activities.

The landscape approach examines such larger areas to more fully recognize natural resource conditions and trends, natural and human influences, and opportunities for resource conservation, restoration, and development. The approach seeks to identify important ecological values and patterns of environmental change (such as climate change) that may not be evident when managing smaller, local land areas.

The broader perspective provided through a landscape approach will help focus and integrate local management efforts. A landscape approach also provides an important foundation for developing coordinated management strategies with partner agencies, stakeholders, and American Indian Tribes. There is a growing group of landscape-level efforts in progress in Nevada, which will be briefly discussed below. Most of these efforts have websites that provide much greater detail for those interested in learning more about them and how they relate to NDOW and the Wildlife Action Plan.

## ***Bureau of Land Management Rapid Ecological Assessments (REAs)***

Climate change and other widespread environmental influences are affecting western landscapes managed, in part, by the Bureau of Land Management (BLM). In response, the BLM in 2010 launched seven Rapid Ecoregional Assessments (REAs) to improve the understanding of the existing condition of these landscapes, and how conditions may be altered by ongoing environmental changes and land use demands. Three of these are in Nevada – the Northern Great Basin (NBR), the Central Great Basin (CBR) and the Mojave Basin and Range (MBR), collectively called Nevada's REAs (NV REAs). REAs are called "rapid" assessments because they synthesize existing information, rather than conduct research or collect new data, and are generally completed within 18 months.

NV REAs began as a list of management questions from an ecoregion's resource managers. The questions identified management issues or concerns that could not be resolved by individual offices alone and have regional importance. These REAs examine ecological values, conditions, and trends within ecoregions, which are large, connected areas that have similar environmental characteristics. Ecoregions span administrative boundaries and typically encompass areas much larger than those managed by individual BLM field offices. Assessments of these larger areas provide land managers additional information and tools to use in subsequent resource planning and decision-making.

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NV REAs look across the NBR, CBR, and MRB ecoregions to more fully understand ecological conditions and trends; natural and human influences; and opportunities for resource conservation, restoration, and development. They seek to identify important resource values and patterns of environmental change that may not be evident when managing smaller, local land areas. The REAs provide regional information that will inform and benefit local management efforts.

REAs describe and map conservation elements (species), which are of high ecological value. REAs look across all lands in an ecoregion to identify regionally important habitats for fish, wildlife, and species of concern. REAs then gauge the potential of these habitats to be affected by four overarching environmental change agents: climate change, wildfires, invasive species, and development (both energy development and urban growth). The selection of conservation elements and change agents is done in a collaborative process with NDOW, FWS, FS, and others. REAs also help identify areas that do not provide essential habitat; that are not ecologically intact or readily restorable; and where development activities may be directed to minimize impacts to important ecosystem values.

In addition, REAs establish baseline ecological data to gauge the effect and effectiveness of future management actions. In this way, REAs provide a foundation for an adaptive management approach that enables implementation strategies to adjust to new information and changing conditions.

It is important to note that these REAs do not allocate resource uses or make management decisions. They provide science-based information and tools for land managers and stakeholders to consider in subsequent resource planning and decision-making processes.

The BLM will use the REAs to inform resource management at the ecoregional and local levels. At the ecoregional level, along with input from stakeholders, partner agencies, and Tribes, the REAs will aid in developing broad-level management strategies for an ecoregion's public lands. This ecoregional direction will identify priority areas for conservation and development, including focal areas for conserving wildlife habitats and migration corridors, and focal areas for potential energy development and urban growth. Ecoregional direction will also provide a blueprint for coordinating and implementing these priorities through the BLM's state and field offices.

At the local level, the REAs will enhance the quality of land-use planning and environmental analysis conducted by BLM field offices. The information, maps, and tools provided by the REAs will strengthen analyses of the potential and cumulative effects of climate change and other environmental disturbances on important ecological values.

In addition, the REAs present an opportunity for all land managers within an ecoregion to share information and discuss resource management conditions and needs. These REAs will provide a science-based information platform for formulating coordinated, multi-agency strategies that can respond effectively to climate change, wildfire, and other environmental challenges that transcend local administrative boundaries.

The BLM plans to use the information from the Rapid Ecoregional Assessments (REAs), along with input from partner agencies, stakeholders, and American Indian Tribes, to develop landscape-level management strategies for BLM-managed lands. These landscape-level management strategies are called ecoregional direction.

The purpose of ecoregional direction is to help focus and coordinate the BLM's local management efforts so they work together to achieve vital resource management goals that span field office jurisdictions. To accomplish this, ecoregional direction will identify focal areas on BLM-managed lands for conservation and

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development, including focal areas for conserving wildlife habitats and migration corridors, and focal areas for potential energy development and urban growth. Ecoregional direction will also provide a blueprint for implementing this integrated resource conservation and development strategy through the BLM's national and field-level organization.

## ***Landscape Conservation Cooperatives***

In 2010, the Department of Interior developed a plan for a coordinated, science-based response to climate change impacts on land, water and wildlife resources. The Landscape Conservation Cooperatives (LCCs) were developed as the applied science branch of this strategy. Each of the 22 LCCs functions in a specific geographic area and form a national network that serves as a management-science partnership. Nevada encompasses portions of both the Great Basin and the Desert LCCs. NDOW has a representative sitting on the Steering Committees of both the Desert and the Great Basin LCCs ensuring Nevada's issues are addressed and also to ascertain the integration of state planning processes such as Nevada's Wildlife Action Plan into the LCCs.

### **Desert LCC**

The Desert LCC encompasses portions of five U.S. states and 10 states in northern Mexico, and includes the Mojave, Sonoran, and Chihuahuan deserts. The LCC also includes several large river systems including the lower Colorado, Gila, Rio Grande, San Pedro, and Verde Rivers. The Colorado River Basin is one of the most critical sources of water in the West. The Bureau of Reclamation and the USFWS have partnered to administer the Desert LCC. The Desert LCC will be a self-directed partnership managed by a steering committee comprised of government agencies (federal, state, Mexican, tribal and local) as well as non-governmental organizations, universities and other stakeholders.

The primary goals of the Desert LCC are to:

- Develop a shared conservation vision for the Desert LCC;
- Determine threats to priority resource, habitats, species and science needs; and to
- Identify existing resource and science partnerships relevant to the LCC.

The Desert LCC will develop science capacity to support resolving various management issues identified by the Steering committees including:

- The effect of long-term drought on the composition, abundance and distribution of species;
- The effect of reduced water available on vegetation, wildlife and human populations;
- The effects of warming on insect outbreaks and increasing tree mortality; and others.

### **Great Basin LCC**

The Great Basin LCC will help link and integrate science information providers with resource managers and science users; bring additional DOI resources to bear on landscape-scale conservation issues and opportunities; and help to apply science and facilitate coordination on a wide range of efforts to respond to climate change, invasive species, wildfires, human development and other stressors across the Great Basin. Specific objectives and shared priorities will be determined by the partnership itself. The LCC is not intended to replace existing organizations already accomplishing conservation work in the Great Basin. The aim is to facilitate, enhance and inform that work.

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The mission of the Great Basin LCC is to enhance the understanding of the effects of changing climate and other natural and human impacts across the region and promotes the coordination of science-based actions to enable human and natural communities to respond and adapt to those conditions.

The primary goals of the Great Basin LCC are to:

- Provide leadership and a framework linking science and management to address shared ecological, climate, and social and economic issues across the basin.
- Focus science and management actions to sustain natural resources in the context of changing environmental conditions.
- Enhance collaboration to integrate science and management among Great Basin LCC partners particularly as related to climate change and other landscape-scale change agents.
- Promote communication and education.

## **A Multi-Layered Conservation Example: Greater Sage-Grouse**

### **Current Status of Sage Grouse Planning in Nevada**

There are two huge planning efforts designed to prevent a full listing of the Greater Sage-Grouse in process in the State of Nevada. The last U.S. Fish and Wildlife Service (USFWS) listing evaluation under the regulations of the Endangered Species Act (March 2010) assigned the Greater Sage-Grouse a Candidate status with a listing priority of 8 and the Bi-State population a listing priority of 3. The listings were determined warranted but precluded due to other species under consideration having a higher priority. This was a wake-up call for the agencies involved and a time to take action to prevent a full listing. As a result, the State and federal resource management agencies where Sage grouse habitat is present, have been working feverously to put into place scientifically defensible data and management directions to provide sufficient protection for Sage grouse and its habitat in order to prevent a full listing of the species.

In 2004, under former Governor Guinn, a series of local working groups developed plans to provide a comprehensive strategy for conservation measures to provide protection and minimize habitat loss in Nevada. Although some actions recommended by those plans have taken place, sufficient funding has not (until recently) come available to provide a broad series of projects or institute land management practices that were sufficient to reverse the bird's decline. Lead by the Nevada Department of Wildlife (NDOW), the Nevada Governor's group has remained active and meets regularly to address issues in relation to conservation actions.

#### **Bi- State Population**

There have been great efforts already put into place by both agencies and private landowners to provide for habitat restoration and protection for the Bi-State Population. It has been identified that although these efforts are beneficial, there has been a lack of coordination among these efforts.

In 2004, the Bi-State local working group produced a Conservation Plan which identified conservation strategies to be employed to restore degraded habitat and provide protection to the remaining population. Since production of the plan, many projects have been implemented but the information on them is not centralized and efforts have not proven to be sufficiently coordinated.

More recently, the local working group has been meeting and sharing information. There has been a joint interagency technical group meeting to discuss the issues of the population and a move towards a more organized approach of management. The Natural Resource Conservation Service (NRCS) and NDOW have a

shared position, with specific responsibilities to the Bi-State population and the Nevada Partners for Conservation and Development have initiated joint agency-funded habitat restoration projects and a massive organizational effort is in progress.

A Bi-state Interagency Executive Oversight Committee (Bi-state EOC) has been established to provide strategic direction and ensuring funding and other resources are committed for three interagency working groups (technical, strategy and policy) to develop and implement an action plan to respond to the population threats identified by the USFWS in their 2010 listing evaluation. The first action by the Technical Working Group will be to meet and work with the local working group to develop the Action Plan by January 1, 2012. The next listing evaluation of the Bi-State population is scheduled to occur by October 2013. By that time, demonstrable successes and management direction will be in place to hopefully offset the need for a full listing.

### Greater Sage Grouse Populations – Federal Land Management Agencies Efforts

Similar to the Bi-state population, a great deal of work has already been completed on projects designed to restore Sage-Grouse habitat in Nevada. The Governor's Sage Grouse Conservation Team (representing State and federal agencies and a wide range of public and private interests and public land users) have been meeting regularly and last year produced the "Nevada Energy and Infrastructure Development Standards To Conserve Greater Sage-Grouse Populations and Their Habitats" publication.

Results from the USFWS 2010 listing evaluation have pointed to the need to provide greater policy direction and regulatory controls to ensure protection of Sage-Grouse habitat. Towards that end, the Bureau of Land Management (BLM) has prepared a nationwide Instructional Memorandum (IM) to provide interim guidance on lands that they manage until such time that policy direction and conservation measure can be inserted into their Resource Management Plans (RMP's).

The BLM has already established a National Technical Team that is developing a set of conservation measures, while at the same time, state wildlife management agencies are constructing habitat classification mapping to prioritize habitat to aid in the implementation of conservation measures. A much greater organizational effort by the BLM is under way to fulfill the National Environmental Policy Act requirements to incorporate these measures into the RMP's in those areas where Sage-Grouse habitat is present. National, Regional and Sub-Regional interagency teams have been formed. Nevada and California comprise one sub-regional team who will manage the production of an Environmental Impact Statement (EIS) to address adding the conservation measures to the RMPs in the two states. A total of four EISs are planned for the western-most states.

Outreach has started and is ongoing. To date, the BLM has discussed their plans with: the Nevada Cattlemen's Association, The Grazing Advisory Board, and the Nevada Mining Association and has had discussions with specific Nevada agencies including the Energy Office and Department of Conservation of Natural Resources. A presentation was also made to the Governor's Sage Grouse Conservation Team that represents many interests in the state. Public Scoping for the EIS were scheduled in 2012 with meetings in Elko, Reno, Winnemucca, and Susanville. Land Use Plans and a Record of Decision are planned for completion in September 2014.

The US Forest Service controls approximately 8% of the Greater Sage-Grouse habitat across the west and more than 45% of the Bi-state. Currently, the USFS is formulating plans to evaluate and modify their Forest Plans to address threats to the Sage-Grouse. More information will be forthcoming as these plans are unveiled.

In March 2010, NRCS announced a \$21 million Sage-Grouse Initiative (SGI) to restore and conserve declining populations of Sage-Grouse and their habitat using two popular USDA conservation programs — the Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentive Program (WHIP). The SGI will

give participating landowners the opportunity to help conserve Sage-Grouse and contribute to efforts that may make listing under the Endangered Species Act (ESA) unnecessary. To promote conservation of both the greater and the Gunnison Sage-Grouse, NRCS Chief Dave White and Acting Director of FWS Rowan Gould signed a Partnership Agreement on March 12, 2010, to aid these species while helping sustain working ranches and farms in the West. The Partnership Agreement initiated development of a Conference Report for Sage-Grouse that was completed on July 30, 2010. To date NRCS has committed approximately \$120 million to this effort

Through the NRCS SGI, significant financial and technical assistance is available to private landowners to implement voluntary, proactive conservation actions, both on their own land and leased Federal and State lands. The goal of the SGI is to increase Sage-Grouse populations by improving habitat while sustaining working farms and ranches. The Initiative is focused strategically on core areas with significant populations of Gunnison and greater-sage grouse and habitat in 11 western States – Wyoming, Montana, Idaho, Colorado, Utah, Nevada, California, Washington, Oregon, South Dakota, and North Dakota.

NRCS and FWS used the “conferencing” provisions under Section 7 of the ESA to assess the potential benefits and adverse effects of specific NRCS conservation practices to be implemented and maintained by landowners under SGI. The conference report analyzes the expected cumulative effects of the implementation on the species through careful review of specific NRCS conservation practices and how they will be implemented to remove or reduce the known threats to these sagebrush dependent species. Should either Sage-Grouse species be listed in the future, the report can be used as the basis for preparing a Biological Opinion under Section 7 of the ESA that would include “incidental take.”

During development of the conference report, USFWS worked closely with NRCS to determine the effects of 40 individual conservation practices, both those that will be beneficial and those that could potentially adversely affect the birds and their habitat. Conservation measures were developed to avoid, ameliorate, or minimize the identified adverse effects that could result from implementation of the practices prescribed in landowners’ conservation plans. Each State NRCS office is collaborating with State Wildlife Agencies to develop blanket requirements to limit physical disturbance of Sage-Grouse.

## **Implications for other Sagebrush Species**

There are more than 25 projects either in progress or far along on the planning designed to restore or enhance sage grouse habitat in Nevada. The majority of these efforts are occurring on Public Lands. The cost is in the millions of dollars and tens of thousands of acres are involved. While this is a considerable benefit to sage grouse, many other sagebrush species will benefit from these actions. It is expected that for the majority of projects weedy species will be replaced by native vegetation, pinyon-juniper encroachment will be held in check or reduced and the fire cycle will be lengthened by the construction of green strips and other fire breaks which will also act as a barrier to halt the spread of large catastrophic fires.

Another large benefit of the anticipated Sage Grouse conservation measures will be the identification and protection of high value habitat. It is anticipated that large tracts of land critical to sage grouse conservation will be protected from development and other forms of disturbance. The same activities and land uses which have eliminated habitat and caused disturbance during critical life-cycle periods for sage grouse have also resulted in impacts to many other species. The removal of these areas from certain land uses will provide opportunities for passerines, raptors, reptiles and some game species. Similar efforts will be realized on private property as conservation easements for sage grouse are established.

## Site-specific Efforts within Nevada

### *Partners for Conservation & Development*

The Nevada Partners for Conservation and Development (NPCD) was formed in 2010 to provide leadership and a forum for collaborative, landscape scale and scientifically based habitat restoration program in Nevada. The NPCD is using the highly successful Utah Partners for Conservation and Development (UPCD) and the Utah Watershed Restoration Initiative (WRI) and see <http://wildlife.utah.gov/watersheds/> as the models for Nevada.

Through time, it has become increasingly evident that individual agencies and entities operating solely within their own jurisdictions has not resulted in the highest ecological quality habitat. Further, the standard “top-down” approach often employed by agencies has likewise not translated into highest quality habitat. The UPCD and WRI model provides strong evidence that working in a genuinely collaborative and cross boundary fashion will show results in the form of increasingly healthy habitat and the ability to respond to large ecological problems. One example is the Milford Flats fire. The UPCD/WRI was largely responsible for the availability of seeds, equipment and personnel so that the spatial extent of that fire was addressed quickly. To date, the UPCD/WRI has treated about 1,800,000 acres of public and private land employing the best science and common sense methods.

From the outset the NPCD has made every effort to include all stakeholders and to put the onus for project ideas, proposal generation and implementation at the local level while ensuring there is support from all the major agencies, NGOs, researchers and others at the state level. This “ground-up” approach is a significant reason why the Utah programs have been so successful and have garnered support from the general public.

A large part of the NPCD’s habitat project process includes ensuring that each project is reviewed in the context of NDOW’s Wildlife Action Plan and other plans relevant to the project’s focal species or focal habitat type. Other plans may include the local BLM’s Resource Management Plan, an individual ranch’s land management plans, NRCS conservation plans or the recovery plans for a species listed under the Endangered Species Act.

### **Current Project Work**

The NPCD is involved in numerous projects across northern Nevada. The main focus of current project work is within the sagebrush vegetation types. The NPCD intends to expand into the Mojave and all vegetation types across Nevada. Examples of ongoing projects include:

- Clover Fire Revegetation in and Tuscarora Mountains
- Monitor Range prescribed burning
- Paradise Valley medusahead treatments
- Double H Range post fire revegetation
- Pine Nut Mountains PJ thinning and aspen treatments
- Desatoya Range PJ thinning and riparian area treatments
- Overland Pass of the Ruby Mountains sagebrush habitat restoration
- Lincoln County PJ thinning
- Rye Grass Fire revegetation in the Kern Mountains
- China Camp sage grouse lek restoration
- Long Doctor sage grouse lek restoration
- Spruce Mountain PJ thinning and springs restoration

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- Schell Creek Mountains (east bench) mule deer/sage grouse habitat restoration

## **Memorandum of Understanding**

The NPCD has formal agreements in place that set the tone for cooperation, leveraging of resources and to foster more open communication. Signers of the MOU include: BLM, US Forest Service, US Fish and Wildlife Service, NRCS, Bureau of Indian Affairs, Agriculture Research Service, Rocky Mountain Research Station, NV Dept. of Agriculture, NV Dept. of Conservation and Natural Resources, NV Division of Forestry, NV Division of State Lands, NV Division of Conservation Districts, NV Dept. of Wildlife, NV State Historic Preservation Office and various UNR Departments.

NGOs such as Nevada Bighorns Unlimited, the Nevada Mining Association, the Nevada Cattleman's Association, various weed districts, cooperative weed management areas, individual landowners and other citizen groups are participating at all levels within the NPCD.

## ***WAP and USFS Forest Plans and BLM Resource Management Plans***

Resources addressed in USFS Forest Plans and BLM Resource Management Plans include wetland and riparian resources, wild horses, biological diversity, forage production, forest health, watershed conditions, wildlife habitats, recreation, and invasive weeds, among others. During implementation, opportunities exist to provide WAP guidance and recommendations into these plan revisions. During implementation, a mechanism to build WAP and BLM RMP coordination will be further developed through BLM and WAP Implementation Team collaboration with opportunities for input by wildlife conservation partners and stakeholders. In the same manner, a mechanism to build WAP and USFS Forest Plan coordination will be further developed through Forest Service and WAP Implementation Team collaboration, with input from partners and stakeholders encouraged. Key to success in meeting the overall intent of Nevada's WAP will be the commitment within land use plans to the monitoring and adaptive management actions identified.

## ***National Wildlife Refuge Comprehensive Conservation Plans***

NDOW and USFWS have been close partners in refuge management in Nevada for almost six decades. For instance, the Stillwater National Wildlife Refuge was originally named the Stillwater Wildlife Management Area and was co-managed by NDOW and USFWS until the Truckee-Carson Settlement Act of 1990 transferred ultimate management authority distinctly to the USFWS. Today, Stillwater NWR and NDOW still cooperate very closely in the areas of water procurement and management for Stillwater and the Carson Lake Wetlands, the two primary wildlife wetlands within the Lahontan Valley Wetlands complex. The management of non-migratory game animals on the Sheldon NWR and the Desert National Wildlife Refuge complex is also very much a cooperative venture between the two agencies. Therefore, it is very important that the two agencies act as partners in the implementation of the Refuge Comprehensive Conservation Plans (CCPs), a System-wide planning process sparked by the passing of the National Wildlife Refuge Management Act of 1997. To date, the Stillwater NWR CCP and the Desert Refuge Complex have completed CCPs while the Sheldon NWR is in the final stages in the Sheldon NWR CCP process which is due to be completed in early 2012. Ruby Lakes NWR CCP is in the preliminary development stage and is scheduled for completion by 2013.

The pathways for WAP input into CCP development and implementation would include that of providing scientific support to the development of various management alternatives. The WAP would primarily assist in the identification of key wildlife ecological processes for priority management attention and the development of

projected species outputs associated with various management scenarios resulting in different habitat acreages and management schemes. While objectives in the Stillwater CCP appear to be almost wholly habitat-based, the WAP could assist in the interpretation of habitat-based management objectives into wildlife population outputs that would contribute to statewide, regional, and continental population objectives. The WAP could assist in the analysis of the impacts of various visitor services alternatives, and through the development of best management practices, inform the process of selecting the visitor management strategy best suited for each Refuge. The WAP could also assist in the development and coordinated implementation of Refuge monitoring strategies, particularly with respect to coordinating Refuge monitoring methods and priorities with statewide, regional, or continental monitoring frameworks.

## ***WAP and Tribal Lands Conservation***

With the availability of Tribal Wildlife Grant (TWG) funds, a sister program to State Wildlife Grants, and access to Wildlife Habitat Incentive Program (NRCS), the opportunities to build effective wildlife conservation programs on tribal lands in Nevada are better than ever before. It appears there is also a unique opportunity for the Nevada WAP Implementation Team to provide valuable services to tribal conservation programs through planning assistance and coordinated scientific support. During the review period of the 2005 WAP, Tribes were given the opportunity to contribute their ideas on improving the coordination between NDOW and Nevada tribes. The strongest message that came across was the direct need for improved communication between NDOW and the tribes individually. The following is a small list of potential projects for coordination with Nevada tribes based on their current interests, issues, or existing programs:

- Wildlife strategy for big game management
- Wetland restoration
- Invasive species management
- Wetland grazing plan development
- Management of nesting migratory birds
- Biological program developments – hire biologists; buy equipment, etc.
- Resource inventory – reptiles, amphibians, and small mammals specifically mentioned
- Native plant conservation
- Reservoir fisheries management
- Greater Sage-Grouse conservation and land acquisition
- Off-highway vehicle encroachment
- Pipeline revegetation - best management practices being implemented for revegetation and recruitment of native plant species
- Spring habitat restoration – endemic fishes
- Reintroduction of Lahontan cutthroat trout into native waters
- Endangered butterflies

## ***WAP and County Resource Planning***

Over the last decade, Nevada's counties have expanded their role in the management of wildlife resources within their boundaries considerably beyond their traditional involvement of participation in the County Advisory Boards to manage wildlife that provide assistance, guidance, and local input into the management and harvest of game and sport fish. Two major conservation planning structures have facilitated the growth of county wildlife conservation planning – habitat conservation planning (HCPs), largely driven by concerns about the mutual impacts upon one another of urban/industrial development and endangered species conservation,

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and Greater Sage-Grouse planning within its range. The success of the local implementation model developed for the Governor's Greater Sage-Grouse Conservation Strategy and the phenomenon of county-proposed land bills that identify federal lands suitable for disposal to private development will continue to drive county interest in addressing their own wildlife conservation issues. Other key county planning processes for which wildlife conservation support could be provided include county master plans and public lands policy plans. In addition to maintaining working relationships with county planners, WAP products and services could also be made available to Public Land Use Advisory Committees (PLUACs).

The WAP is uniquely positioned to provide comprehensive wildlife planning and implementation services to county planning processes through the integration of species-based objectives and strategies into HCPs, sage grouse habitat restoration, and other issues certain to develop over time. It is also the intent and purview of the WAP to develop products and services that will assist local planning groups with the assessment, monitoring, and conservation of Species of Conservation Priority. The WAP Implementation Team can develop the support services and products and introduce them into local planning processes through the field personnel of the WAP partnership (NDOW, Nevada Natural Heritage Program, The Nature Conservancy, Lahontan Audubon Society). Because there are other county planning processes that would also benefit from WAP products and services (e.g., Quality of Life Plans, other open space and recreation plans), it is important that the WAP Implementation Team build direct lines of communication to the various county planning departments very similar to the tribal conservation support model described above. The Nevada Division of State Lands has invested much program development into the facilitation of county planning, and Nevada Division of State Lands stands to be a critically important partner in the transfer of WAP knowledge and support into the county planning community. The delivery of this county-state collaborative model should be recognized as the result and primary achievement of Nevada Division of State Lands' investment into the development of the WAP through the Question One Conservation Bond grant that pulled the WAP Development Team together in the first place.

## ***Private Lands and Natural Resources Conservation Service***

Much of the conservation focus in Nevada in the last 30 years has been directed toward public lands, mainly because public lands make up approximately 86% of the Nevada land base; yet some of the most important wildlife habitats, most notably lowland riparian habitats are predominantly in private ownership. The current shift of management focus toward the management of larger land systems (the watershed is currently a popular land management unit being discussed) is revealing a need to incorporate the wildlife values contributed by private lands into the overall management scenario because these private lands contributions are often critical to and inextricable from the wildlife population needs of the larger landscape.

The USDA Natural Resources Conservation Service (NRCS), assisted by the local Conservation Districts, has a long history of providing land conservation services to private landowners, primarily agriculturalists. NRCS maintains a suite of resource conservation assistance programs, several of which have already been described elsewhere in the document (Wildlife Habitat Incentives Program – WHIP; Environmental Quality Incentives Program – EQIP; Wetlands Reserve Program – WRP; Conservation Security Program – CSP). There are now also private lands assistance programs available through the U.S. Fish and Wildlife Service and Federal Aid that are being administered either directly by USFWS (Partners for Fish and Wildlife) or through NDOW (Landowner Incentives Program). All of these programs focus on essentially the same customer base. All have the potential to become highly successful in Nevada, where financial support for the maintenance of wildlife values on private land is a relatively undeveloped concept. Success is particularly likely if the three agencies can successfully coordinate their efforts in a network drawing on varied funding sources. We believe that the Nevada WAP can help catalyze this interagency network through the provision of scientific support into the various internal planning systems. Potential services provided to the network include identification of key species and ecological processes

supported by private lands into both the Nevada WHIP Plan (currently under development) and CSP, tailored for specific watersheds as they are approved for program action on an annual basis.

## Applying Conservation Action

When the Wildlife Action Plan was first developed in 2005, the overarching goal was to maintain healthy, self-sustaining populations of Nevada's Species of Conservation Priority and their habitats, and the implementation of the WAP objectives and actions would support maintenance of Nevada's biodiversity. However the importance of monitoring implementation success was recognized as a critical element of conservation effectiveness. It was our full intent to monitor plan implementation at two levels – program development/application and species/habitat response. By analyzing our data, we fully intended to take what we were learning and adjust our priorities and actions as objectives were achieved or new priorities were identified (i.e., adaptive management). In the following revised adaptive management discussion, we take the opportunity to both report on how much of the monitoring target set in 2005 was realized as well as set a new monitoring target for the implementation period of this 2012 Revision.

In order to demonstrate the effectiveness of the 2005 WAP, we intended to establish indicators for monitoring which included tracking the creation or continuation of multidisciplinary teams, documenting funding for WAP projects, and evaluating community support through polling and/or levels of involvement in WAP implementation. Priority action was applied toward 1) the construction of internal program development structures to allow NDOW biologists to successfully pursue Action Plan implementation and 2) the activation of several external stepdown planning processes to provide Action Plan priorities and approaches through a series of multi-partnered efforts at regional and specific ecological system scales (Steptoe Valley Conservation Assessment, Nevada Wetlands Conservation Plan, etc.).

The second monitoring component of the WAP relates directly to biodiversity health, and the status of problems facing species and their habitats. Nevada's WAP provides a strategic framework for accomplishing species and habitat goals, and success can be directly measured through monitoring species and vegetative community response. The "Applying Conservation Action" chapter of the 2005 WAP outlined a process for prioritizing strategies, setting quantitative habitat and species objectives, designing research and monitoring programs, and partnering to set up on-the-ground implementation. Existing efforts already in place (mostly species-based) in 2005 were adopted by Nevada's WAP as the starting point, and supplementary monitoring needs were identified and described to cover the full range of concern and action.

In this Revision, we have attempted to set quantitative objectives for conservation action as part of the revision process rather than identify the task as a "next step". These quantitative objectives can be found in each Key Habitat chapter in the Conservation Strategies. Levels of complexity in the objectives were set using a sliding scale dependent on the quality of the data available. More specific objectives were set for species for which the available data were extensive and developed enough to project actual population estimates (e.g. birds and game mammals). Directional objectives (maintain, increase) were set for species for which the data were adequate to demonstrate general trends, (e.g. and "presence/absence"). The following discussions will be grouped by taxa to demonstrate how species conservation is likely to proceed from the design and application of projects, through the likely species monitoring programs to collaborative evaluation and adjustment. Following the various taxonomically-grouped monitoring and adaptive management sections is a description and summary of Nevada's Wildlife Action Plan Performance Indicators Project and how it will continue to provide adaptive management guidance to the Phase IV implementation of this Revision.

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## Birds

Conservation planning for birds at the continental and regional/state level is considerably advanced compared to other terrestrial species planning. Four major bird initiatives have continental plans in place (Partners In Flight North American Land Bird Conservation Plan; North American Water Bird Conservation Plan; U.S. Shorebird Conservation Plan; and North American Waterfowl Management Plan) and Nevada is currently covered by a complete suite of regional/state plans associated with those initiatives (Intermountain West Joint Venture Habitat Conservation Plan; Nevada PIF Bird Conservation Plan; Intermountain West Shorebird Conservation Report; Intermountain West Water Bird Conservation Plan). These bird conservation plans provide guidance and support to statewide or local conservation strategies by identifying species priorities, setting conservation goals and objectives, and providing technical support through the development of best management practices using up-to-date science. The bird conservation initiatives are also very active in the identification of potential funding opportunities and linkage of potential partnerships. Bird conservation strategies in Nevada's WAP were structured to link with the four bird conservation initiatives and contribute their conservation achievements toward regional and continental priorities and objectives.

### **Land Birds**

#### ***Land Birds-Setting Conservation Objectives***

The PIF North American Land Bird Conservation Plan (2004 PIF Plan) used the best population databases available (including 30 years of Breeding Bird Survey data) to assess population status and trend for 448 species of land birds occurring north of Mexico. From this massive population assessment, PIF has developed population estimates, directional species population objectives and species population conservation targets based on 30-year trend. These population estimates, objectives, and targets were "stepped-down" to the state level (Rosenburg, 2004), and provided to the states for support in the initial WAP development phases (pre-2005). Nevada's 2005 WAP stated "These support materials will be used in Nevada when quantifiable objectives for the bird Species of Conservation Priority are set during the Phase II implementation process." However, after performing habitat capability analyses at the local and statewide scales, the objectives of the 2004 PIF Plan have proven to be too difficult to adopt from continental to state scale. The opportunities to effect habitat improvement sufficient to "double the population" for almost all such species are too limited; therefore, the 2004 PIF Plan population objectives are limited in value to providing a general measure of degree of priority and need among and between species.

As part of the data analysis that informed the revision of the Nevada Comprehensive Bird Conservation Plan (2010), a "bottom-up" habitat capability inventory was performed using ten years of Nevada Bird Count data. that, Using habitat type acreage (SW ReGAP) and local breeding density estimates derived from the NBC point counts, statewide landscape-scale breeding population estimates were computed and reported for the priority species in the revised NCBCP. Population objectives for Species of Conservation Priority in this Revision were based on those population estimates along with applicable trend information from the USGS Breeding Bird Survey analysis. Where population estimates were set as targets, we generally chose to maintain the 2010 estimates; where trend was set as the target, we generally communicated a desire to "reverse a declining trend" or "maintain or increase current trend". Attempts to directly link objective achievement to the 2004 PIF Plan will be limited to general acknowledgement of priority based on relative conservation need.

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## **Land Birds-Project Development and Implementation**

Bird conservation projects will be designed to meet the State’s most pressing bird conservation needs and prioritized by an integration of local and continental priorities. Species with significant downward trends that have been assigned directional objectives in the PIF North American Land Bird Conservation Plan (NABCP) of “100% increase” and “50% increase” will likely receive priority for project development in Phase IV implementation. Those species are listed below by ecoregion:

*Priority Species from the PIF NABCP that occur in Nevada with directional objectives of “increase 50 or 100%” (in 30 years).*

<b>Great Basin and Columbia Plateau - Bird Conservation Region 9</b>		
<b><i>Species Common Name</i></b>	<b><i>PIF Objective</i></b>	<b><i>Primary Key Habitat</i></b>
Dusky Grouse	increase 100%	Intermountain Coniferous Forests and Woodlands
Brewer's Sparrow	increase 100%	Sagebrush
Greater Sage-Grouse	increase 100%	Sagebrush
Olive-sided Flycatcher	increase 100%	Intermountain Coniferous Forests and Woodlands
Pinyon Jay	increase 100%	Lower Montane Woodland
Short-eared Owl	increase 100%	Marshes
Willow Flycatcher (adastus)	increase 50%	Rivers and Streams
<b>Mojave Desert - Bird Conservation Region 33</b>		
<b><i>Species Common Name</i></b>	<b><i>PIF Objective</i></b>	<b><i>Primary Key Habitat</i></b>
Bell's Vireo	increase 100%	Mojave Rivers and Streams
Bendire's Thrasher	increase 100%	Mojave Mid-Elevation Mixed Desert Scrub
Black-chinned Sparrow	increase 50%	Lower Montane Chaparral
Willow Flycatcher (extimus)	USFWS recovery plans	Mojave Rivers and Streams
Dusky Grouse	increase 100%	Intermountain Coniferous Forests and Woodlands
<b>Sierra Nevada - Bird Conservation Region 15</b>		
<b><i>Species Common Name</i></b>	<b><i>PIF Objective</i></b>	<b><i>Primary Key Habitat</i></b>
Sooty Grouse	increase 100%	Sierran Conifer Forests and Woodlands
Olive-sided Flycatcher	increase 100%	Sierran Conifer Forests and Woodlands
Rufous Hummingbird	increase 100%	Alpine and Tundra
Spotted Owl	USFWS recovery plans	Sierran Conifer Forests and Woodlands
Tricolored Blackbird	increase 100%	Marshes
Willow Flycatcher (brewsteri)	increase 50%	Rivers and Streams

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A short list of local priority species added from the Nevada PIF Bird Conservation Plan may include:

Species Common Name	PIF Objective	Primary Key Habitat
Northern Goshawk	300 nesting pairs	Aspen Woodland
Ferruginous Hawk	stable/increasing	Lower Montane Woodland
Golden Eagle	maintain	Cliffs and Canyons
Bobolink	stable/increasing	Wet Meadows

The species listed above will not be the only species prioritized for conservation effort in Phase IV implementation. If actions from the key habitat strategies are prioritized according to this list of priority bird species, the first-order projects designed in Phase II might include:

- Restore degraded sagebrush to healthy range condition
- Restore Mojave desert scrub to healthy range condition
- Science-based piñon-juniper management strategy that maintains high quality piñon-juniper wildlife habitat while manipulating its distribution in sites where it has encroached into sagebrush sites
- Riparian habitat restoration
- Securing more water for wetlands
- Retain old growth/late successional stage forest
- Treatment of second growth forest to enhance attainment of old growth/late successional classes
- Aspen stand regeneration

High priority wildlife research and inventory needs for this list of birds identified in Nevada's WAP include:

- Distribution and population status of *brewsteri* and *adastus* subspecies of Willow Flycatcher
- Habitat suitability models for sagebrush birds relative to Greater Sage-Grouse management action
- Statewide Dusky/Sooty Grouse population assessment
- Pinyon Jay nest colony site selection/multi-year nesting dynamics
- Population assessment for Bendire's Thrasher
- Assessment of current aspen stand condition relative to Northern Goshawk nest site suitability
- Development of effective restoration techniques for Mojave Desert shrub

## **Land Birds – Monitoring, Adaptive Management, Partnerships**

Land bird monitoring is already in place in Nevada via the National Breeding Bird Survey and the Nevada Bird Count. In addition to long-term population monitoring, the Nevada Bird Count is designed to focus some of its resources on the investigation of bird/habitat relationships with the eventual objective of constructing habitat suitability models for key species adequately monitored by the survey. These habitat suitability models will have habitat states and transitions built into them so that land managers will have the ability to predict multi-species population responses to land management actions, as well as the capability to make assumptions about habitat health by assessing the bird community found on the site in question.

Birds are relatively easy to monitor when compared to other taxa, and for this reason it makes sense to incorporate bird monitoring protocols in measuring the effectiveness of habitat improvement projects. Quantitative assessment tools were developed after the completion of the 2005 WAP using density information from the Nevada Bird Count to assist biologists and land managers in communicating the projected bird population benefits of habitat improvement projects (e.g., a 4,000 hectare sagebrush improvement project that

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increased Brewer's Sparrow breeding density from 10 birds per 40 hectares to 20 birds per 40 hectares would add 1,000 new pairs of Brewer's Sparrows to the population). An to deliver quantitative assessment tools is currently underway following the completion of the Nevada CBCP being administered by the Great Basin Bird Observatory. We still believe bird monitoring supported by these same quantitative assessment tools is one of the best available biometric tools for project effectiveness monitoring after projects have been implemented.

The Nevada Bird Count is multi-agency funded and scientific oversight to the program is provided by Nevada Partners In Flight, which is also supported by all the major resource agencies, conservation organizations, and academic institutions in the state. The Intermountain West Joint Venture will play a key role in building the funding partnerships necessary to effect large-scale habitat improvement on behalf of bird conservation in the state. County planning teams with multi-agency support, whether focusing on Greater Sage-Grouse in the north or on multi-species conservation in the south, are expected to continue to be major implementors of habitat improvement on the ground.

## **Water Birds and Shorebirds**

### ***Water Birds and Shorebirds - Setting Conservation Priorities***

Population sizes for water birds and shorebirds have not been estimated at the continental level with any great degree of precision, and state population estimates have not been calculated and "stepped down" as have land birds. Population estimates and breeding population targets for water birds have been generated in the Intermountain West Waterbird Conservation Plan, and they can be refined at the state level with proper coordination between monitoring efforts, which is the aim of Great Basin Bird Observatory's Aquatic Bird Count (GBBO 2004). Shorebird breeding population estimates will be very difficult to generate, but migration populations at key staging sites can be constructed with a concerted inventory effort over a complete ten-year drought cycle. Such data are available for the Lahontan Valley Wetlands where peak migration shorebird counts have been conducted since 1986.

Population estimates for shorebirds and water birds were generated using local data rolled up to statewide scale. Implementation of Nevada's WAP and will be based on a calculated capability of hitting 10-year peak projections (because of the cyclic nature of Nevada wetlands).

### ***Water Birds and Shorebirds – Project Development and Implementation***

Again, for aquatic birds, bird conservation projects will be designed to meet the State's most pressing bird conservation needs and prioritized by an integration of local and continental priorities. Bird Species of Conservation Priority in the Intermountain West identified as of High or Moderate Concern (Water Bird Plan) or of High or Moderate Importance (Shorebird Plan) are listed in the table below.

Key habitat strategies for Marshes, Desert Playas and Ephemeral Pools, Lakes and Reservoirs, Intermountain Rivers and Streams, and Mojave Rivers and Streams are most relevant to the conservation of these species. Key research and inventory needs identified in Nevada's WAP include:

- Statewide population assessment of Least Bittern
- Statewide population assessment of Yuma Clapper Rail
- Statewide surveys for breeding shorebirds
- American White Pelican post-breeding dispersal and regional colony connectivity

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## *Water Bird and Shorebird Priority Species for all ecoregions in Nevada* Intermountain West Waterbird Conservation Plan

### Water Birds

<b>High Concern</b>	<b>Objective</b>
Greater Sandhill Crane	TBD
Black Tern	550
American White Pelican	12,620
Common Loon	1,000
Yuma Clapper Rail	TBD
<b>Moderate Concern</b>	
Least Bittern	TBD
White-faced Ibis	12230

### Shorebirds

<b>High Importance</b>	
Snowy Plover	breeding
American Avocet	breeding
Long-billed Curlew	breeding
Long-billed Dowitcher	migratory
<b>Moderate Importance</b>	
Western Sandpiper	migratory
Red-necked Phalarope	migratory

### ***Water Birds and Shorebirds – Monitoring, Adaptive Management, and Partnerships***

Monitoring for water birds and shorebirds will occur throughout a network of important sites via the Aquatic Bird Count administered by Great Basin Bird Observatory. Conservation targets for species will be developed for each site and accumulated into statewide targets, which in turn will be contributed to coordinated wetland bird objectives at the regional level as a coordinated wetland bird management network is developed for the Intermountain West (Oring et al., 1999). Unlike land birds, area-density calculations for wetland birds are not useful in measuring site productivity or project performance. Conservation effectiveness will be measured on a site-by-site basis in terms of total birds using the site and will likely have to be adjusted for consideration of climatic cycles. For example, sites or projects will be evaluated in terms of increases in peak bird numbers, increases in bird numbers at the low point in the climatic cycle, or possibly in the “flattening” of the oscillations between lows and highs through the increased stability of available habitat. Aquatic bird monitoring schemes will need to be somewhat flexible to accommodate the irregular nature of breeding shorebird populations – a rotation scheme that tries to put breeding population surveys on a fixed interval is not flexible enough to catch the most important breeding years, which can crop up with very little notice, but are generally coincidental with high water years.

The aquatic bird partnership is similar to that of land birds through multi-agency support of GBBO and Nevada Partners In Flight. An aquatic bird monitoring working group was convened by NDOW and GBBO in 2002 and has been working on implementation of the Nevada Aquatic Bird Count since then. This aquatic bird working group consists of NDOW biologists, USFWS refuge biologists, USFS, BLM, and University of Nevada researchers. The full-scale project has yet to be implemented, but progress toward full implementation has been steady since the group’s inception. The Intermountain West Joint Venture will play a key role in wetland and riparian habitat improvement through North American Wetlands Conservation Act grant projects and IWJV Cost-Share grants.

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Habitat improvement will proceed through the efforts of staff from National Wildlife Refuges, Nevada Wildlife Management Areas, BLM, USFS, BOR, NRCS, Nevada State Parks, and county working groups.

## **Waterfowl**

### ***Waterfowl – Setting Conservation Objectives***

Waterfowl population sizes are closely monitored by the states and the federal governments of the U.S., Canada, Mexico, and Russia. Population estimates are generated through established consultation structures called Flyways. Nevada is a member of the Pacific Flyway Council and its technical arm, the Pacific Flyway Study Committee. The 2004 update of the North American Waterfowl Management Plan (NAWMP) presents continental population estimates and objectives for all duck species and goose populations. Waterfowl population objectives for this WAP Revision were set for seasonal occurrence using ten-year averages from the statewide waterfowl survey datasets.

### ***Waterfowl – Project Development and Implementation***

Project development for the attainment of waterfowl objectives will be predominantly wetland based; therefore it is easily integrated with the water bird/shorebird project development approach. Waterfowl habitat improvement projects are less likely to be driven by individual species objectives than group-based – e.g. dabbling ducks, diving ducks, geese and swans – although individual species breeding objectives such as Cinnamon Teal in montane meadows might be identified to integrate waterfowl habitat improvement with other initiatives such as Greater Sage-Grouse conservation.

### ***Waterfowl – Monitoring and Adaptive Management, and Partnerships***

Waterfowl monitoring in Nevada consists of four aerial surveys that are connected to the continental survey strategy – December swan surveys, mid-winter inventory, goose pair surveys, and duck pair surveys. Survey results are forwarded to the U.S. Fish and Wildlife Service through the Pacific Flyway Council. Nevada's breeding population surveys were modified in 2009 to align them with the western mallard adaptive harvest management (AHM) strategy currently endorsed by The Pacific Flyway Council (PFC) and implemented by the U. S. Fish & Wildlife Service (FWS). The current breeding population survey deploys a stratified random site sample framework with specific stratum sampling objectives (e.g. 40% rivers/lakes/reservoirs; 10% agriculture; 10% marsh; etc. Two Nevada marsh sites (Carson Lake and Stillwater marshes) receive 20% coverage to generate more precise estimates for cinnamon teal and redhead.

Survey results are analyzed by the U.S. Fish and Wildlife Service and harvest recommendations are made by the Pacific Flyway Study Committee made up of representatives from all the Pacific Flyway state wildlife agencies and key personnel from the USFWS Migratory Bird programs in Pacific Flyway administrative regions. This committee also develops species management plans based on need.

### ***Waterfowl – Partnerships***

Waterfowl and wetland conservation are facilitated by the North American Waterfowl Management Plan (NAWMP) and its implementation arms, the Joint Ventures. A NAWMP revision began in 2009 with an expected completion date of 2012. The new revision's intent is to provide a more inclusive purpose for waterfowl conservation that will reflect the full range of fundamental goals of Plan stakeholders and result in collective agreement on the desired future state of waterfowl management across North America. The Intermountain

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West Joint Venture is Nevada’s NAWMP implementation partner over most of the state working in close collaboration with Ducks Unlimited’s Sacramento office. Key action groups within the state include the Nevada Waterfowl Association and the Nevada Wetlands Coalition. These four groups are available for planning, design, funding support and implementation of the full range of projects relevant to waterfowl conservation.

## Mammals

Conservation planning for game mammals has been in place at NDOW for over 50 years because of the intensive demands of harvest management. For the purposes of the WAP, mule deer and bighorn sheep conservation strategies will follow the course set by existing management plans updated on an as-needed basis. The mammal Species of Conservation Priority classified as “furbearers” in Nevada Administrative Code (northern otter, American marten) have not received priority planning emphasis in the past. Collaborative conservation planning for nongame mammals in Nevada has taken a significant step forward with the completion of the Nevada Bat Conservation Plan, but planning for other species is lacking or in rudimentary stages of development.

### ***Bighorn Sheep***

NDOW’s Bighorn Sheep Management Plan was completed in 2001 and currently guides conservation action for bighorn sheep in the state. The Nevada Department of Wildlife’s Game Division is currently working on a “Sheep Separation Strategy” in cooperation with Nevada’s woolgrowers and federal land management agencies to address issues related to potential disease interactions between wild bighorn sheep and domestic sheep.

### ***Bats***

Completed in 2006, The Revised Nevada Bat Conservation Plan presents conservation strategies for all 23 species of bats found in Nevada, of which 13 are Species of Conservation Priority in the WAP. Priority Phase II implementation action centered around the integration of bat surveys with Abandoned Mine Land closure projects of the Bureau of Land Management, Forest Service, and Nevada Division of Minerals. This program is projected to also provide the major impetus for bat survey work in Phase IV WAP implementation.

Bats delineate into four basic groups based on their roost behaviors – subterranean roosters (mines and caves); forest roosters (conifer, woodland, riparian); cliffs/talus roosters; and man-made structure roosters (buildings and bridges). These four roosting groups can then be divided into three basic strategy groups because man-made structures can be included in a subterranean conservation strategy – subterranean/structure; forest; cliffs/talus.

#### ➤ ***Subterranean/Structure Conservation Strategy***

<b>Priority Species</b>	<b>Inventory</b>
California leaf-nosed bat little brown myotis fringed myotis cave myotis Allen’s big-eared bat Townsend’s big-eared bat Mexican Free-tailed bat	The Abandoned Mine Lands closure program has provided the structure for what may eventually develop into a comprehensive statewide survey of caves, mines, and structures in Nevada. Key elements of such an inventory continue to include the identification and GIS mapping of key roosting sites – maternity, hibernacula, lekking, and migratory staging – across the state for the entire suite of bat Species of Conservation Priority in this strategy group.

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## Selection of the Monitoring Network

Roost sites would be prioritized in order of importance to each species (roost size, percent of total inventoried population), and the key sites for each species will be included so that all are significantly part of the monitoring strategy. These sites would likely have been secured through bat-friendly closures, uniquely lending them to long-term monitoring. An integrated monitoring protocol that combines the various strengths of the array of techniques – acoustic (ANABAT), exit counts, net capture, and internal roost counts – would then be applied to the priority network of sites.

## Setting Population Objectives

Upon implementation of the monitoring network, quantifiable conservation objectives could then be set by species for the cumulative populations of the site network, with a baseline objective of “no decline” and after management action points are identified, percentage increases in total population by species. In this instance, the act of bat-friendly closure could be expected to produce an increase by site over time, as unprotected sites continue to experience disturbance and closure and displaced bats find the protected sites.

## Research and Conservation Action

Once the key roost sites are secured, research investigations can be initiated to find the key habitat elements and foraging sites associated with each roost. This knowledge can then be used to develop a conservation strategy for each roost that includes treatments of habitat intended to improve conditions. Species response to conservation actions can be documented through the monitoring protocol, and conservation objectives can be adjusted based on findings.

### ➤ *Forest/Woodland/Riparian Conservation Strategy*

#### Inventory

Because of the dispersed nature of forest-roosting bats, a site-based comprehensive inventory will be more difficult to achieve than one for subterranean sites. An inventory of forest-roosting bats will require the implementation of a stratified random sample of suitable habitat (conifer forest, lower montane woodland, aspen, riparian) with an initial acoustic survey assessment followed by capture network at selected water sources. Captured bats will be fitted with radios and tracked to their roosts.

Priority Species
western red bat
silver-haired bat
hoary bat
long-eared myotis

#### Habitat Suitability Models For Roosting Habitat

Upon delineation of the key forest-roosting sites as identified by the bats themselves, key roosting landscapes would be identified and prioritized for each species. Habitat suitability models will be constructed for roosting habitat in all the pertinent key habitats.

#### Conservation Action and Performance Monitoring

Barring significant unforeseen advances in technology, it is unlikely that forest bat monitoring will be able to produce reliable trend results through this WAP planning period; therefore, the conservation strategy for forest bats will rely on the translation of the habitat suitability models into habitat management strategies implemented through BLM Resource Management Planning and Forest Service Forest Plan processes. The provision of suitable roosting habitat on all priority landscapes will be the sole conservation action. Conservation success will be measurable only in terms of persistent species presence in a selected management area. Roosting sites are expected to shift with time as habitat conditions transition from one state to another, and as bat populations respond to an array of ecological factors, some of which are not forest-habitat-related. Long-term monitoring is likely to occur at some appropriate interval using the same integrated protocol described above. Shifts in site priority will be documented and conservation action will be adjusted appropriately.

## ➤ *Cliffs and Talus Conservation Strategy*

Priority Species	Inventory
western small-footed myotis spotted bat	Cliffs and cliff complexes are fairly easy to identify and target for a statewide inventory, but talus slopes, for example, in piñon-juniper habitat, are much more extensive and dispersed across the landscape, so the Cliffs and Talus inventory strategy will require a two-phase approach, including a comprehensive statewide inventory of cliffs and a stratified random sample of talus slopes. Survey protocol will be similar to the forest bat strategy – integrated use of acoustic survey equipment to determine presence, capture net activity to determine rough population demographics, and radio telemetry to track individuals back to their roosts.

### **Selection of the Monitoring Network**

Important roost sites would be identified and prioritized for each species. These sites would form the basis of a cliffs/talus monitoring network where the integrated monitoring protocol would be implemented on a regular basis at some appropriate interval.

### **Conservation Action and Performance Monitoring**

As the important cliff and talus roost sites are identified, they can be proposed for priority management in the appropriate land management agency land use planning process. Priority management for these sites should start with fairly passive strategies such as identifying the priority areas on RMP or Forest Plan maps, with a consensus-based progression of protective measures developed to address elevating levels of disturbance or threat. Key human activities to be monitored are rock-climbing activity and decorative rock removal. Conservation action triggers should be identified to initiate appropriate protective action based on intensity of the threat. Performance monitoring would be similar to the forest bat strategy – persistent presence being the key biometric.

### **Partnerships in Bat Conservation**

The Nevada Bat Working Group is comprised of biologists from state and federal agencies, university biologists, and private consultant biologists. Key to the success of the three bat conservation strategies are the involvement of Nevada Department of Minerals and the Nevada Bureau of Mines and Geology; federal agency staff in minerals, recreation planning, range and forestry; spelunking and rock-climbing clubs; the Nevada Mining Association and individual mines. Monitoring protocols are likely to remain under the leadership of NDOW, Nevada Natural Heritage Program, university researchers and key private consultant biologists.

### **Small Mammals**

Following the completion of the 2005 Wildlife Action Plan, significant inventory and study time was expended on several of Nevada's limited-distribution small mammal species, including:

- pygmy rabbit
- American pika
- dark and pale kangaroo mouse
- Humboldt yellow-pine chipmunk
- Hidden Forest chipmunk
- Aplodontia
- northern flying squirrel
- Pahrnagat Valley montane vole
- Ash Meadows montane vole

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- Fish Spring botta pocket gopher
- San Antonio botta pocket gopher

Much of the work involved “rediscovering” species or subspecies that had not been surveyed in decades and applying modern genetic analysis on tissues to update taxonomic status since E. Raymond Hall’s highly morphological species delineations from the 1930’s. Two species, Ash Meadows montane vole and Hidden Forest Uinta chipmunk, were searched for and not found and may be extinct. Recent field and genetic studies of the kangaroo mouse complex have resulted in a significant rearrangement of taxonomy for the genus in Nevada, causing a shift in how we address conservation concerns in the WAP.

## **Inventory**

The following small mammal Species of Conservation Priority should receive further attention in this plan revision period:

- Five species of shrews
- Mountain pocket gopher
- Sagebrush vole
- Shadow (Allen’s) chipmunk
- Western jumping mouse
- Wyoming ground squirrel
- Desert pocket mouse

## **Conservation Action and Monitoring**

Small mammal species will be evaluated for the degree of conservation protection they will require to maintain population viability, and proper recommendations to adjust their conservation status under Nevada Administrative Code will be made. Conservation plan development will then proceed through population viability analysis, identification of current and potential suitable habitat, identification of conservation partnerships, and the development of a collaborative action plan. Key habitat types of particular importance to this group of species as a whole include:

- Intermountain Rivers and Streams
- Sagebrush
- Grasslands and Meadows
- Intermountain Coniferous Forest and Woodlands
- Mesquite Bosques and Desert Washes

Conservation objectives will be set, appropriate strategies will be implemented, and monitoring will occur as needed as a function of conservation plan development.

## **Statewide Performance Indicators Small Mammal Monitoring Network**

Small mammal species of Conservation Priority will be inventoried and monitored via the Wildlife Action Plan Performance Indicators project for sagebrush and Mojave desert habitats.

## **Conservation Objectives and Project Development/Implementation**

The small mammal monitoring element of the Sagebrush Performance Indicators project designed by the Wildlife Action Plan Sagebrush Technical Advisory Team (2010) uses presence/absence statistical methodology to detect population trends from small mammal trapping results (reference needed). If the performance

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indicators survey work begun in 2010 can be continued, the next revision of the WAP should be able to set specific quantitative objectives for small mammals of conservation priority using occupancy rates from the survey dataset. Habitat improvement projects will be designed to meet the life history needs of the suite of Conservation Priority species occurring at the site and applied through the appropriate land use planning venues, likely bundled into landscape treatments with Species of Conservation Priority from other taxonomic groups.

## **Monitoring, Adaptive Management, and Partnerships**

The permanent grid of small mammal monitoring sites is expected to be maintained to document presence, statewide population demographics, and shifts in distribution. Site-specific monitoring on treated landscapes will measure project effectiveness while contributing to the statewide database.

To date, the partnership for the conservation of small mammals is in its very early stages. The Nevada Natural Heritage Program has been very successful in convening a small working group of mammalogists to refresh Natural Heritage scores (2003) and to provide expert input into the mammal assemblages used in this WAP (2005). This working group exhibits considerable dual membership with the Nevada Bat Working Group, and in cooperation with the technical advisory committees that are developing performance indicator methodology for sagebrush and Mojave desert habitats should be expected to provide expertise and leadership in the small mammal conservation effort. NDOW, BLM, Forest Service, USFWS, University of Nevada staff from both major campuses and some satellite campuses, NNHP, USGS-BRD, Southern Nevada Water Authority biologists, and biological consultants are just a few of the regular attendees. Implementation partnerships with state and federal land managers and private landowners assisted by NRCS and USFWS Conservation Planning Tools will be required to implement small mammal conservation in the field.

## **Carnivores**

<b>Priority Species</b>
American marten
northern river otter

These two mustelids have been retained for Wildlife Action Plan conservation attention in the 2012 Revision, while Sierra Nevada red fox, kit fox, and ringtail have been deactivated from the list. Both marten and otter are classified in Nevada Administrative Code as furbearers, although neither

contributes significantly to the trapping economy in Nevada. American marten are closed season, and have not been trapped legally in Nevada in years. Open seasons for river otters still occur on the Humboldt River system.

## **Inventory and Monitoring**

Espinosa (2002) and Catalano (2009) have successfully documented American marten visitation to camera stations in the Carson Range. Population densities in Nevada are so sparse that more detailed study involving radio-tracking etc. are not considered to be cost-effective at this time. River otters have been successfully documented via riverbank tracking surveys (Bradley 1986). Baited camera station surveys will continue to be implemented in marten habitat to monitor distribution and rough relative abundance. Current monitoring needs for otter have not been assessed.

## **Conservation Strategy**

The conservation needs of these species in Nevada are not very well understood at this time, so conservation strategies for each species would vary with the details of the knowledge gained from inventory and monitoring. The American marten is the most restricted species of the two. Conservation of this species would likely entail assessment of potential suitable habitat using the latest habitat suitability models, a calculation of the number of potential territories in the Carson Range, followed by efforts to document presence/absence in all potential territories. A rough population size might be projected based on the findings, and population viability analysis

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would be applied to determine the feasibility of maintaining Carson Range habitat in marten-capable condition. Any PVA of American marten in Nevada must consider linkage to California populations as a source.

Otter conservation is generally understood to be linked with good riparian habitat stewardship in the Humboldt River system. Otters are usually found in productive stretches of river with healthy willow and meadow habitats along their banks that support diverse wildlife communities and productive fish populations in the river itself.

## Partnership

The partnership to implement the conservation strategy for small carnivores would include NDOW biologists from both the Game and Wildlife Diversity Bureaus, mammal experts from the mammals working group described above, the Nevada Trappers Association and other sportsmen’s organizations, state and federal land management agencies, and tribes.

## Reptiles

As a taxonomic group, reptiles have received the least amount of planning emphasis and are among the hardest to develop adaptive management strategies because of the difficulty of inventorying and monitoring them. The exception in Nevada is the desert tortoise, of which its listing under the Endangered Species Act in 1990 initiated massive planning efforts that culminated in the development of the Clark County Multiple Species Habitat Conservation Plan, the current archetype of local collaborative conservation planning in the state.

The ongoing permitted activity of commercial collection of most species of reptiles should require that adequate population monitoring protocols be in place to assess the capability of the resource to sustain harvest. The NDOW reptile program has consisted of a single biologist assigned primarily to reptiles in the entire state since 1985, and the demanding conservation priorities of the desert tortoise have overwhelmed this position since even before the 1990 listing, effectively forestalling the development of a responsive reptile monitoring and conservation program. The identification of 19 reptile Species of Conservation Priority in the 2005 WAP effectively initiated much-needed basic inventory work for Sonoran mountain kingsnake and pygmy short-horned lizard , but much more work remains to be done to implement a fully comprehensive reptile program. This Revision identifies 25 reptile Species of Conservation Priority (with the northern alligator lizard recognized as two subspecies Sierra and Shasta).

### Comprehensive Inventory

#### Priority Species for Comprehensive Inventory

western banded gecko  
desert iguana  
Great Basin collared lizard  
long-nosed leopard lizard  
desert horned lizard  
desert night lizard  
western brush lizard

Reptiles as a group may be the most difficult terrestrial vertebrates to inventory and monitor. NDOW recently found a walking transect survey protocol based on visual observations to be inadequate because the surveys were labor-intensive and detection rates were low for all but the most common lizard species (NDOW 2003). Nighttime road surveys conducted in the spring after emergence have produced better results for nocturnal species, but have their implementation limitations, as well. Pitfall trap methodology was tested on a limited scale post-2005 WAP, but was discontinued due to more pressing program priorities. Other survey protocols may have promise,

including walking or driving “berm” surveys that mimic commercial collectors’ primary collection protocol – that of driving unpaved roads and collecting off the rocks and raised grader berm along the road margin. An integrated survey protocol using road surveys, pitfall traps, and habitat stratified visual surveys is expected to produce the most comprehensive results. From the integrated survey, an index will be derived that will reliably serve as a trend indicator to inform management action.

## **Single-species Investigations**

To accumulate the knowledge necessary to construct adequate conservation strategies for any of these species will require considerable focused effort on each individual species. Inventory protocol must be specifically devised and considerable search time should be dedicated. These investigations are more likely to be conducted as focused academic studies for Master’s or Doctorate candidates. The highest priority species for such study at this time appear to be chuckwalla, Gila monster, Sonoran mountain kingsnake, and the recently discovered rosy boa. For instance, a priority research need for chuckwalla is to measure population response to commercial collection activity on Nevada sites using unharvested sites in California as study controls. Focused single-species investigations of the rest of this contingent may have to wait for issues of habitat loss, disease, or other concerns to elevate their conservation priority to the point of initiating action. In the meantime, information can be gathered from the literature and chance encounters that may be useful in constructing suitable habitat models for coarse-scale reptile habitat management.

<b>Priority Species for Single Species Investigations</b>
chuckwalla Greater short-horned lizard Pygmy short-horned lizard Western red-tailed skink Sierra and Shasta alligator lizard Panamint alligator lizard Gila monster Sonoran mountain kingsnake rosy boa

## **Snakes**

In addition to rosy boa, seven new snake species have been identified as Species of Conservation Priority in the 2012 Revision. Six of these snakes share a suspected vulnerability to the impacts of habitat fragmentation that are certain to continue with urban development of Clark County now assisted by the installation of large tracts of solar panel energy fields proposed for the Mojave region. The seventh, the northern rubber boa, is a northerly distributed species that may suffer from the impacts of climate change on mesic habitats, particularly aspen. The six Mojave snakes listed here can be monitored collectively as part of a specifically-designed snake inventory that would set hypotheses relevant to documenting the degree and impacts of habitat fragmentation over the next ten years. Likewise, baseline inventory of northern rubber boa should be initiated and hypotheses relating to climate change and mesic habitat conditions set.

<b>Priority Species for Integrated Snake Inventory</b>
Ring-necked snake Northern rubber boa Mojave shovel-nose snake Sidewinder Smith’s blackhead snake Spotted leaf-nosed snake Western threadsnake

## **Partnership**

The multi-agency initiative Partners in Amphibian and Reptile Conservation (PARC), modeled after the successful Partners In Flight effort for landbirds, has made significant advancements in nationwide and regional conservation planning for reptiles and amphibians. Participants include staff from NDOW, federal land management agencies, the University of Nevada system, and others. So far PARC has completed a best management practices manual for reptiles and amphibians as well as an exploratory document detailing the issues of commercial reptile collection and documenting the various regulations developed by the states to administer commercial collection. PARC is currently working on a species prioritization process modeled after Partners In Flight’s landbird conservation assessment database. Developing working relationships with the commercial collectors is also paramount to devising functional collaborative conservation action for reptiles.

## Aquatic Species

### ***Fishes***

Significant conservation planning efforts exist for fishes in Nevada, although the majority of these are focused on species which are already under Federal or State protected status. This does mesh well with the focus of priority conservation species in the WAP effort as there is a close parallel between existing protected status and high conservation need ranking in the species evaluation process for fishes. As would be expected from the typically sporadic and isolated distribution of aquatic habitats and associated fish species assemblages in Nevada's arid environment, conservation planning for aquatic species tends to be focused on individual species or assemblages, and their discrete and spatially isolated habitats, which is in contrast to the more regional approach which can be taken for some terrestrial species groups such as land birds. Although there are significant similarities in the threats and stressors to fishes across the state, such as invasive species and habitat alteration, which has allowed some commonalities between these individual conservation planning efforts, there has been little ability or need to link these efforts into larger regional approaches because of the uniqueness of conservation requirements for each aquatic system and species assemblage. However, the majority of these efforts share key partners and participants, which has encouraged the exchange of information and strategies across species and habitats to the benefit of individual conservation efforts. An important output of the Nevada WAP in this regard is its focus on key habitats and the need for coherent and implementable statewide partnership based strategies for habitat protection and restoration. To the extent that this strategy approach will encourage broad based benefits to aquatic habitats, existing and future individual fish conservation efforts will be enhanced.

### ***Endemic Fishes***

#### **Setting Conservation Objectives**

For the majority of fish species of conservation need, conservation objectives are defined at some level by existing recovery plans and documents, or have been developed by individual recovery teams or partnership-based recovery implementation teams (RITs). For many of these species, recovery plans produced by the USFWS are outdated or do not provide a level of detail adequate to direct recovery and conservation implementation, and individual RIT teams and working groups have developed recovery implementation plans and ecosystem conservation strategies which address priority conservation needs encompassing, where feasible, the full species assemblages within aquatic habitats where the priority species occur. Some gaps do occur in this coverage of available conservation planning, primarily due to limits on existing funding to support planning efforts, but to the extent that this guidance is available the Nevada WAP is linked to and defers to those existing efforts for species- or system-based conservation objectives. Where adequate conservation planning does not yet exist, the development of partner-based RIT and working groups and the formulation of those conservation strategies is a key action captured within the WAP aquatic key habitat descriptions.

#### **Project Development and Implementation**

Specific conservation actions are identified in existing recovery and conservation planning for the majority of the fish Species of Conservation Priority, where they are included under existing Recovery Team, RIT and conservation working group processes. An important element of these ongoing efforts has been the attempt to focus where feasible on actions and strategies to address threats and stressors affecting species assemblages and habitats on a broader system level, such as habitat fragmentation, and invasive species, which will maximize benefits to endemic fish assemblages rather than just select individual species of highest concern. The key habitat strategies for aquatic habitat types also identify important areas of focus for conservation actions, and in some cases identify gaps in this coverage where additional future efforts are needed to develop a structure for

project definition and implementation, particularly for species or species assemblages and habitats which are not well covered by these existing conservation processes.

## **Monitoring, Adaptive Management and Partnerships**

Monitoring programs are in place for the majority of the fish Species of Conservation Priority, generally conducted as status and trend assessments on an annual or biennial basis using methods and protocols developed by NDOW or partner working groups on an individual species or assemblage basis. Where gaps exist in this monitoring network, strategies to develop additional system-based conservation implementation teams are intended to address this deficiency. These implementation groups also serve a critical role by periodic, generally at least annual, review of conservation activities and status which provides an adaptive process to modify implementation actions and strategies as required.

Existing partnerships for fish conservation efforts, although largely subdivided into individual working RITs and sub-groups by the unique and isolated distribution of aquatic habitats and their associated species assemblages, are significant and broad based. Although leadership for individual conservation programs varies, with USFWS responsible for formal recovery team processes and RIT teams under the guidance of NDOW, federal agencies including BLM, the USFS, and USGS-BRD, and state and local partners including NNHP, conservation organizations and landowners play key roles on individual teams, particularly for the design and review of conservation strategies and in the implementation of conservation actions. For Colorado River endemic fishes, conservation strategies and actions are closely linked to rangewide planning and priorities encompassing neighboring states in both the upper and lower Colorado River Basin. Both USFWS and USBR (through the Lower Colorado Multi-Species Conservation Program) are key partners in identifying and implementing Nevada-specific conservation actions for those fish species.

## ***Non-native Sport Fishes***

Planning for important non-native sport fisheries is similarly well advanced, although this is focused primarily on the development and implementation of Fisheries Management Plans developed for individual waters or species. These documents emphasize development of specific management actions and direction to manage important sport fisheries under a framework of management emphasis as trophy waters, general and urban fisheries, or other categories defined by fishery potential and public demand and desires. Of particular importance in Nevada is the integration of planning for native endemic and non-native sport fish resources. Historic ignorance of the potential conflicts between these resources has significantly and negatively impacted Nevada's endemic sport and non-game fishes. Current fisheries management planning processes insure that potential conflicts will be minimized and allow more effective management of sport fish resources in companion with the aggressive implementation of essential conservation actions for endemic fish species.

## ***Amphibians***

Although interest exists for amphibian species at the continental and regional level through efforts such as the Amphibian Population Task Force and Partners in Amphibian and Reptile Conservation (PARC), these groups serve primarily as a coordination and information-sharing resource rather than as a mechanism to set guidance for conservation actions and objectives. Some Nevada amphibian species have regional distributions which extend beyond our borders, but much like endemic fishes, amphibian conservation efforts in Nevada are largely focused on a local level directed by the isolated distribution of their habitats and the corresponding spatial focus of conservation efforts on individual amphibian population centers. The primary tool used to date to direct and consolidate these efforts has been the development of the Conservation Agreement and Strategy (CAS), with four individual CAS documents in place directing individual partner working group conservation efforts for

Columbia spotted frog, Amargosa toad, and the relict leopard frog. Other endemic amphibian species in Nevada have received minimal attention for conservation planning with limited conservation efforts focused primarily on developing better baseline information on distribution and occurrence. To the extent that planning needs for additional amphibian species are not addressed in key habitat conservation strategies in this document, identification and implementation of a conservation planning structure for them will be developed as part of WAP phase II design and implementation.

## **Setting Conservation Objectives**

The four CAS documents for Columbia spotted frog, Amargosa toad and relict leopard frog were developed through a partnership process and define conservation objectives and strategy approaches for those species in substantial detail and those guidance documents are reviewed periodically by the respective conservation working groups to adaptively update and modify conservation approaches. Other amphibian species in Nevada do not have similar guidance available other than detailed generically at the key habitat level through this process, and development of appropriate conservation objectives for them will be an important component of our WAP phase II process, including completion of a more detailed Native Aquatic Species Plan, and establishment of a northern leopard frog working group and conservation plan.

## **Project Development and Implementation**

Specific conservation actions are identified in the existing CAS documents for included amphibian species, with collaborative work group processes established to direct implementation. Those CAS strategies are relatively recent in development and are undergoing periodic, annual review to determine the need to modify or develop new projects for specific species programs and substantial updating and renewal of the agreements and strategies for Columbia spotted frog and Amargosa toad are anticipated to occur by 2013. For other amphibian species of concern, little effort has occurred to develop specific projects or implementation strategies to effect conservation, primarily because of the absence of active conservation processes which include them at a species-specific level. Developing that baseline information and identifying and prioritizing conservation needs at an action level for other conservation need amphibian species will be an important output direction from the Nevada WAP, the Native Aquatic Species Plan (in development) and the projected northern leopard frog working group and conservation plan.

## **Monitoring, Adaptive Management and Partners**

Structured monitoring programs are in place for those amphibian species included in CASs, but with the exception of a few northern leopard frog and western toad populations are limited for other amphibian species to incidental and occasional efforts. Accordingly, significant gaps exist in distribution and status information which makes adequate assessment of conservation status for those amphibians difficult. Addressing those information needs will need to be an important focus of future efforts. Existing conservation efforts include a strong adaptive management component with periodic review of conservation efforts and efficacy, but this will need to be included as a component for other species through the development of more structured conservation programs. Significant partnerships already exist for those species included in the CAS implementation processes, including federal and local government partners. Structured monitoring programs for other amphibian species will be addressed during development of the northern leopard frog conservation plan and in the Native Aquatics Species Plan, but implementation of these activities will be dependent on funding availability.

## ***Aquatic Gastropods***

### **Setting Conservation Objectives**

The aquatic gastropods have the most complete distribution information of all the aquatic priority conservation species; though only a fraction of potential habitats have been surveyed. The majority of the gastropods of conservation priority are located on BLM lands. Conservation objectives for those species are defined in A Guide to Managing, Restoring, and Conserving Springs in the Western United States; U.S. Dept. of the Interior, BLM Technical Reference 1737-17.

### **Project Development and Implementation**

Completion of the Nevada Springs Conservation Plan (2011) was an important first step in compiling available information on the status and condition of Nevada's springs, many of which support important gastropod populations and habitats. However, the Plan is focused largely on state-wide goals and objectives and only identifies more detailed conservation needs and opportunities for a limited subset of significant spring landscape focus areas. Conceptual approaches in the 2011 Plan apply equally to the many important isolated springs in Nevada which support gastropods and aquatic biodiversity across Nevada's landscape, and an important next step will be establishment of a focused working group to contribute expertise, pool data, set objectives and priorities for site-based conservation actions and develop and implement more detailed management planning for the many Nevada springs not already addressed under the Nevada Springs Conservation Plan and other existing management plans.

Because many key springs are in a degraded condition, one of the key objectives will be to restore degraded springs and associated riparian areas, identify factors affecting site potential and adjust land uses to allow for natural spring and springbrook recovery.

### **Monitoring, Adaptive Management and Partnerships**

These issues will be addressed once a working group is established; an implementation schedule will be developed, including monitoring progress and adapting management as needed. Partners should include at a minimum BLM (the principal land manager of aquatic gastropod habitat), academic gastropod experts, NDOW, and the USFS, another significant land manager of gastropod habitats.

## ***Bivalves***

### **Setting Conservation Objectives**

Less than a dozen records are readily available for native freshwater mussel distribution, although anecdotal and historic records indicate that approximately 6 species occur or have occurred in Nevada. The California floater has a Nevada Natural Heritage Program state ranking of Critically Imperiled and is ranked from Vulnerable to Critically Imperiled throughout its range. It is dependent on fish during an important phase in its life history, and its fate is therefore linked with that of fish and fish habitats. No targeted surveys have been documented for freshwater mussels in Nevada. Conservation objectives will be detailed in the Native Aquatics Species Plan, but the main initial objective is to better determine current distribution.

### **Project Development and Implementation**

Conservation strategies identified for key habitats and for fish that share these habitats are the main emphasis for bivalve conservation given available funding. Other bivalve projects will be designed to improve bivalve sighting information and fish host data. The Northwest Freshwater Working Group is developing plans, educational programs, and other conservation strategies for freshwater mussels, including the six putative

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Nevada bivalve species. These tools will be used for bivalve conservation project development and implementation in Nevada where possible.

## **Monitoring, Adaptive Management and Partnerships**

Monitoring of the effectiveness of efforts to increase knowledge of bivalve species distribution will be measured through annual assessments of documented records. This feedback will allow for better assessment of conservation status and potential need for intensified conservation planning.

Existing partnerships for bivalve conservation actions are the Northwest Freshwater Working Group. Other potential partners would include land management agencies, other governmental entities, and the general public (through outreach and reporting strategies). Many of the current partnerships for other aquatic species could be extended to include bivalves.

## **Crustacea**

Nevada crustacea can be broken into three major taxa: the classes Malacostraca (crayfish, amphipods, scuds, etc.), Ostracoda (ostracods), and Branchiopoda (fairy, clam, and tadpole shrimp). Most crayfish species found in Nevada are non-native.

## **Setting Conservation Objectives**

No crustacea are currently on the Aquatic Species of Conservation Priority list, and there is little information readily available about native crustacea. The first step therefore will be to learn more about what species occur in Nevada and their distribution so that their conservation status can be evaluated.

## **Project Development and Implementation**

Species experts and potential partners will be determined in large part through literature searches and networking (listserves, etc.). Some experts have already been identified through these processes, and they will be consulted to assist with providing life history information and developing a list of conservation concerns.

## **Monitoring, Adaptive Management and Partnerships**

Partnerships will be developed as described above, and monitoring and adaptive management strategies may be developed once conservation status is clarified.

## **Shellfish**

Little documentation or planning currently exists for most native shellfish species in Nevada, with the exception of native aquatic gastropods.

## **Performance Indicators**

With key support from the University of Nevada, Reno Biology Department, Nevada Department of Wildlife participated as a “demonstration state” in a project aimed at developing a framework for selecting key “performance indicators and measures” to monitor the effectiveness of conservation actions emanating from the State Wildlife Action Plans. The project was developed by a science team convened by the H. John Heinz III Center for Science, Economics, and Environment and Nevada was brought in as a demonstration state through the participation and recommendation of Science Team member Dr. Dennis Murphy of UNR. A workshop was convened in March 2008 to address three major topics:

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1. the selection of targets for management and monitoring
2. the identification of threats, opportunities, and desired conditions for targets
3. development of conceptual models for each target

Participants in the first workshop were invited from the ranks of wildlife/habitat program leaders from federal and state natural resource management agencies. After process instruction from the Heinz Team, the working group selected three targets: 1) sagebrush; 2) Mojave shrub; and 3) riparian/springs. Breakout groups then built conceptual models for each of the targets incorporating what they knew about key stressors associated with the target and opportunities to take action.

A second team of sagebrush ecologists was convened in August 2008 with the task of actually selecting performance indicators for sagebrush habitats and building a draft monitoring protocol for measuring sagebrush performance statewide. By the end of the second meeting held December 4, the team had selected a list of sagebrush wildlife species best thought to reflect various trends in sagebrush habitat health and was working on a draft multi-taxa monitoring protocol based on a presence/absence statistical model led by Dr. James Sedinger of UNR's Natural Resources and Environmental Science Department.

Performance indicators for riparian/springs were selected as part of a multi-partner Springs Conservation planning effort headed by the Nevada Natural Heritage Program in collaboration with The Nature Conservancy's Northern Nevada Office funded by a Question One Bond Planning Grant. The performance indicators team for the Mojave shrub target was first convened in October 2010.

## ***Sagebrush Technical Advisory Team***

In 2010, The Sagebrush Technical Advisory Team for Nevada's Wildlife Action Plan (STAT) developed an experimental sagebrush wildlife and vegetation sampling framework to monitor and assess the effects of applied management and climate change on the sagebrush ecosystem and the wildlife that sagebrush supports in Nevada.

The Bureau of Land Management, through a generous grant from its Washington, DC office, made funding available to put the first phase of project implementation into motion. A network of sample locations was selected at random from the Great Basin Bird Observatory Nevada Bird Count Network sagebrush sites. A team of two wildlife technicians implemented a small mammal trapping scheme along with visual reptile surveys and line-intercept shrub crown measurement at 38 selected sites. Two summers of data have been collected to date. Data analysis is conducted by the UNR Conservation Biology Department. Results are presented to the STAT for review and comment annually. Recommendations from the STAT will eventually flow to key sagebrush management decision bodies such as The Nevada Habitat Partnership to assist their planning and implementation decision-making processes.

## ***Mojave Technical Advisory Team***

The first meeting of a group of experts to build a performance monitoring framework for Mojave desert types was convened in Las Vegas October 2010. Scientists and land managers from NDOW, both the Las Vegas and Reno campuses of the University of Nevada, Audubon Important Areas Program, Bureau of Land Management, National Park Service, U.S. Geological Survey, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, The Nature Conservancy, and Nellis Air Force Base all attended. The group started with the Mojave conceptual model developed at the 2008 Heinz Center workshop, made a couple of adjustments to the model to

fit their own perceptions, and developed a list of key habitat “targets” within the ecosystem. Key stressors were developed for each target, a short list of key species of conservation concern was derived from each target, as well as a key “indicator species” that could realistically be monitored given available survey techniques. On the second day, the group developed by consensus a “Desired Condition for Wildlife for the Mojave ecosystem -- Resilient wildlife communities representing the full complement of native and desired biodiversity on a landscape of connected mosaics of protected and managed natural habitats.” The group then explored possible performance monitoring frameworks after a presentation of the model developed by the Sagebrush Technical Advisory Team. An inventory of ongoing monitoring efforts by workshop participants as well as everything outside the group known in the Mojave ecosystem was then gathered as the last item before the meeting was adjourned. Follow-up of this very productive first meeting is expected to occur in the near future.

### ***Springs/Riparian Performance Indicators***

The WAP Phase II Team discussed the possibilities of starting a technical discussion for the third Heinz Center workshop target for WAP Performance Indicator development, Springs/Riparian, but progress toward pulling a group together seemed to be hindered by the delayed completion of the Springs/Springbrooks Report, a conservation assessment funded with Nevada Question One Conservation Bond money. This advisory committee will be convened in the near future.

### ***Performance Indicators Summary***

It is the intent of the Wildlife Action Plan Team that these three advisory committees develop roles in guiding Phase IV implementation of this WAP Revision. A task of Phase IV will be to put the conservation strategy sections of the Revision to the test to see if other conservation targets may benefit from the collaborative action of expert technical groups. New targets could be habitat-based as are the current three, or they could be species-based (such as the Governor’s Sage Grouse Conservation Team) or species-group-based (e.g. Partners In Flight, Nevada Bat Working Group, etc.).

Monitoring strategies for SOCP are well-documented in the Nevada WAP. As the state agency with expertise and legislative authority for Nevada’s wildlife, NDOW has the ability to undertake and accomplish many of the monitoring strategies for species listed in the plan. Comprehensive monitoring strategies for the 22 key habitats are not as well defined in the plan. Some references to habitat monitoring are found within individual conservation actions but are not as comprehensive as those provided for species. Although NDOW does currently conduct and will continue to conduct monitoring of habitats, often to monitor the success of habitat restoration projects, the BLM and other land management agencies are the lead for most habitat monitoring activities. NDOW and the Wildlife Action Plan Team will continue to work closely with federal land management agency partners to fulfill the habitat monitoring needs of key habitats during the implementation of this plan. This may include developing new habitat-based conservation targets (e.g. Aspen Woodlands), through the collaboration of expert technical groups.

## **WAP Revision**

The proceeding implementation and integration strategies make clear that much of the adaptive management analysis will occur by integrating the WAP into existing plans. The WAP itself will be updated and adjusted according to results, changing issues and conditions and increased knowledge from implementation and research. The Nevada WAP is designed to be a 10-year plan, so complete evaluation and revision is scheduled to occur on a 10-year rotation. Because issues and conditions can change so quickly in natural resources

management, the Wildlife Action Plan Team will work with the greater Nevada wildlife conservation partnership to keep the plan current and on-track.

## **Tracking of Conservation Actions**

NDOW will be using the USFWS tool *“Wildlife Tracking and Reporting on Actions for Conservation of Species (TRACS)”*, during the implementation of this plan to report progress to the Wildlife and Sport Fish Restoration Program. We will also be using the AFWA and USFWS document: *“Measuring the Effectiveness of State Wildlife Grants Final Report”* as guidance during the implementation of this revised plan.