



## **PHASE II PROPOSAL: Utah's Collaborative Bat Initiative Targeting INRMP and State Wildlife Action Plan Coordination through Habitat Modeling, Conservation Objective Development, Data Manipulation, and Regional and State Working Group Coordination**

---

### **Abstract:**

In recognition of the importance of DoD lands to the conservation of bats throughout the nation, a memorandum of understanding (MOU) was signed in October of 2006 to “develop a policy of cooperation and coordination between the DoD and Bat Conservation International (BCI)”. Within the spirit and intent of this MOU we have developed this 2008 Legacy Program funding proposal which brings together five DoD Command Groups – Dugway Proving Ground (DPG), Hill Air Force Base (HAFB), Utah National Guard (UNG) - Camp Williams and Washington County, Deseret Chemical Depot (DCD), and Tooele Army Depot (TEAD). This group of Defense Department land managers has coordinated with the U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS), U.S.D.A. Natural Resources Conservation Service (USDA), UT Division of Wildlife Resources (UDWR), UT Division of Oil, Gas, and Mining (DOG M), UT Division of Parks and Recreation, Utah State University (USU), The Nature Conservancy (TNC), Southern Utah State University (SUU), Rocky Mountain Power, and Kennecott Utah Copper. Through the Bonneville Basin Conservation Cooperative (B2C2) and Utah Bat Conservation Cooperative (UBCC) this group of partners coordinated extensively to complete the FY2007 Legacy Proposal (#07-346) that created the Utah Bat Database (UBD), a comprehensive database managing all bat data in Utah and the Important Bat Habitat Model (BHM) which ranks and spatially identifies areas most suitable for a diversity of bats in the state of Utah using expert opinion in lieu of occurrence data. Future action to be coordinated through these groups is the integration of conservation objectives and plans over all the land managing agencies. This proposal would work with these groups to integrate existing Integrated Natural Resource Management Plan (INRMP) and State Wildlife Action Plan (WAP) goals and objectives throughout the state to ensure coverage for all 18 species of Utah's bats and in particular its 6 sensitive bat species. Data gathered through this proposal will be provided to the 5 DoD installation NR Managers for incorporation within existing INRMPs as part of the mandatory 1-year update process. This team of regionally comprehensive State of Utah partners is proposing to coordinate deliverables from the funding of this grant through the UBCC, B2C2, Range Environmental Group, and policy level managers within the Utah Test and Training Range group.

With the support of the 2007 Legacy Program grant (DoD Proj # 07-346), the UBD was created as step one in a 3-part process focused on developing a comprehensive bat conservation program for Utah. This 2008 proposal will serve as the second year of an ongoing collaborative partnership effort to cooperatively manage 18 species of bats at state-wide level, 100% inclusive of all DoD lands within the State of Utah. Cumulative benefits of the analysis of the UBD's contents and its application to state cooperative efforts include the greater use, applicability, and therefore long-term value of the UBD deliverable from 2007. We propose to complete six main objectives-

- 1) Work with regional and state-wide partners to integrate existing Integrated Natural Resource Management Plans' (INRMPs) and the State Wildlife Action Plan's (WAP) goals and objectives throughout the state to facilitate mutually beneficial aspects for all 18 species of bat,
- 2) With the help of national bat experts, create a statistically-defensible data collection protocol based on conservation objectives (currently lacking) that will be implemented in all regions of the state to standardize bat data collection, improve usability and comparability of data, and address future listing concerns,
- 3) Create measurable conservation objectives to address data vulnerabilities identified during the data gap analysis of the Legacy funded Utah Bat Database (UBD) and the risk and threats assessment in Utah's WAP,
- 4) Conduct an analysis of the populated UBD (creation was funded by Legacy Proj #07-346 funded) to identify data gaps potentially inhibiting development of conservation strategies for Utah's 18 species of bats,
- 5) Update and improve upon the state's existing Important Bat Habitat Model (v 2.0, BHM) to incorporate data stored in the UBD, and

6) Cooperate with State in integrating INRMP Range and Test Grid sustainability and management objectives within a jointly funded Utah Bat Conservation Plan. This document will be approved by the state Wildlife Board and RAC process and will contain conservation objectives, protocol, and an innovative State of Bats report that addresses all known information and data vulnerabilities for each species based on the UBD data gap analysis.

## **Background:**

The DoD military lands in Utah comprise several different specific missions, but all depend on the availability and sustainability of testing and training lands. DPG (798,214 acres) is a major range and testing facility and the primary chemical and biological defense testing center under the Reliance Program. TEAD (23,610 acres) provides America's joint fighting forces with munitions and ammunition equipment in support of military missions before, during and after any contingency. DCD's main mission is to destroy 45% of the US stockpile of chemical weapons and the Utah National Guard at CW (28,000 acres) provides quality training lands for the Utah National Guard and others. Finally, HAFB (968,774 acres) is home to many operational and support missions with Ogden Air Logistics Center, who provides worldwide engineering and logistics management and operates in the Military Operating Area (MOA) with approximately 10,723,079 acres of airspace. These five DoD partners control a substantial amount of land in Utah. Together they comprise 1,818,958 acres that contain significant bat habitat where little research has been carried out to determine the extent of use by bats or the ecology and biology patterns within the Great Basin. As a result, DoD land managers do not have a good idea of what bat species exist on their training and testing lands. This project is focused on the usability and sustainability of DoDs testing and training lands to support our country's war fighters in all times of need.

To further the problem, not only do DoD land managers lack an understanding of Utah bats, but state, federal, and private land holders do as well. A recent exhaustive review of bat research indicates that little information is available regarding the basic ecology of Utah's bat species, including data on population dynamics and trends, roost site selection, foraging behavior, reproduction, and migration (Oliver 2000). Existing data on habitat selection and resource use were, until recently (more below) poorly consolidated and scattered among federal, state, private and university information holdings making it difficult to identify and address statewide management issues related to the conservation of bats (Fenton 1997). In addition to the management and conservation problems created by sparse data is the potential for significant amounts of habitat loss resulting from human population growth and land development. The census, conducted by the U.S. Census Bureau in 2000, identified Utah as having the fourth fastest growing population in the nation, increasing by almost 30 percent between the years 1990 and 2000. This population explosion may be creating island oases for Utah bats on remote DoD installations and surrounding lands as natural, native habitat is taken over by developing cities and expanding human populations. Utah's rapid development combined with the high species diversity of bats has certainly created a situation where six of the eighteen bat species, or 30 percent, are listed as state of Utah species of concern. Currently, Endangered Species Act (ESA) listed bat species do not occur in Utah, however the fact that 30 percent of Utah bats species are of sensitive status creates a large concern for not only the state but DoD land managers. It is our team's belief that instituting proactive conservation actions and planning measures now will prevent more economically, politically, and biologically costly solutions in the future.

These facts led to the writing of a Legacy Program proposal in FY 2007 (#07-346). The FY 2007 Legacy grant received by Dugway Proving Ground in 2007 funded a now completed geodatabase (UBD) that has been populated with all known bat data in Utah. This database, although a functional product on its own, can serve a much greater function with an analysis of its content (this submittal). Such an analysis would provide direction to bat management and allow for the greater use and applicability of the database. The UBD involves a user-friendly online interface and solicited Utah data from regional partners. Over 12,000 records previously lost to the bat research community at large were obtained and used to populate the UBD. Organizations that have contributed data and support the UBD and its mission of data consolidation for the better management of sensitive bat species throughout the State are - UDOGM, UDWR (5 of 5 regions), the USFS (Spanish Fork Ranger District, Sawtooth NF, Wasatch-Cache NF, Fish Lake NF, Dixie NF, and Manti-LaSal NF), BLM (10 of 10 Field Offices and the Grand Staircase Escalante National Monument), contracting/consulting firms (SWCA and JBR), academics/researchers (Utah State University, Southern Utah University, Weber State University, Brigham Young University, and University of Utah's Natural History Museum), and 5 DoD installations. Specific and binding data use agreements are in place to protect data from exploitation but will encourage the use and meta-analysis of data by all parties. This six-step Legacy proposal will continue the work started last year (Legacy funded UBD FY2007), will enhance DoD's understanding of the status of 18 species of bats in Utah, will lead the way in creating measurable conservation objectives for the 6 species currently designated as state sensitive, and provide the funding to work with national experts and regional working groups to provide Utah partners with standardized survey protocols. An understanding of bat population status coupled with established, statistically based data collection protocols and a state-wide database for data consolidation will allow DoD land managers to make educated decisions about command liability without extensive, exhaustive, and expensive surveys. Regional and state-wide knowledge of population health will allow DoD managers to approve and support testing and training activities with minimal input or survey work for bats with increasing or stable populations. For those species whose populations are declining, early detection, action and management of species on DoD lands will allow the continued

use of testing and training areas without restrictions. If declining populations are managed on a state-wide level, DoD activities will not have a significant impact on population stability with proper coordination with state and federal agencies and members of the Bonneville Basin Conservation Cooperative (B2C2) and Utah Bat Conservation Cooperative (UBCC).

## **Approach:**

With the success of the Legacy FY07 #07-346 project, DoD managers and Utah Department of Wildlife Resource (UDWR) biologists are teaming up again to take the next step in implementing a comprehensive conservation strategy for Utah's bats. The most fundamental, and relatively easy, part of species management is figuring out what is known about a species. Perhaps the hardest, most difficult step is what we are now proposing. Although our summary of known data is complete, we now need to identify what information we don't have and how to remedy those shortfalls. This requires the creation of a process that will systematically fill these data vulnerabilities and standardize data collection so that these information deficits are specifically addressed within the scope of measurable, partner initiated conservation objectives.

The six objectives outlined in the Abstract will be completed through a three-step approach - Data Mining, Protocol Development, and Outreach – each is discussed separately below.

Step one, Data Mining, clearly defines what we know and where we are going. This step will involve the creation of a State of Bats Report (SBR), a gap analysis, and the creation of measurable conservation objectives. All three of these items will comprise separate chapters in the Utah Bat Conservation Plan (discussed in step two – Protocol Development below) and will be developed by the Project Lead (individual to work exclusively on Legacy grant efforts) with UBCC partner participation using the data stored in the Legacy funded Utah Bat Database (UBD).

The data in the database will be used to draw conclusions/assessments of bat distribution (by county/military base/land ownership, sex, species, breeding status, and relative abundance) to include positive and negative occurrences and maps for each species for the SBR. The SBR will also include analyses of 1) habitat associations calculated with a Spatial Data Modeler that uses a weights-of-evidence analysis, 2) Important Bat Habitat Model version 2.0, built using results from the weights-of-evidence analysis, 3) correlation of known diversity indices (from UBD datasets) with Important Bat Habitat Model, v . 2.0, 4) analysis of species occurrence relative to elevation gradients, 5) relative abundance of species by site, 6) mapping of subterranean data with buffered maternity and winter roost locations, 7) accounting of survey effort over time with species saturation curves by county, 8) define breeding season status and map breeding range by species, and 9) investigate the relationship between temperature and bat activity . The gap analysis will identify 1) habitats, elevation bands, and land ownerships that are under-represented in the data, 2) locations or areas where we have data vulnerabilities/gaps, and 3) deficiencies in life history information by species (roost locations, breeding ecology, migration corridors), and 4) survey effort deficiencies and trends across time and geography.

The last phase of Step One will be the creation of measurable conservation objectives. This will take place at a state-wide meeting of UBCC participants that will represent all involved land management agencies and conservation entities in Utah (DoD, USFWS, UDWR, UDOGM, BLM, NPS, USFS, TNC). Utah's conservation objectives will be developed using established Conservation Action Planning (CAP) and SWOT (Strength, Weakness, Opportunity, and Threat) methodologies. A review and consideration of regional and national objectives will take place to insure consistency between Utah objectives and other objectives of regional and national organizations and agreements to include the Western Bat Working Group, NABCP (North American Bat Conservation Partnership), the Pacific North West Bat Grid Team (USFS Pat Ormsbee), and the Memorandum of Understanding (MOU) between Bat Conservation International (BCI) and the DoD.

Most importantly, these objectives will develop consistency amongst and between DoD's INRMP's, the State Wildlife Action Plan (WAP), and efforts throughout the bat research community nationwide. Working towards the same goals and objectives will lead to a faster and more efficient management of bat populations that will surpass any one organization's attempts at managing species populations. This is a win win approach for DoD in the state of Utah!

Step two, Protocol Development, provides the mechanism for how to get where we want to go. The majority of this development will take place at a facilitated workshop hosted by DoD and UDWR. National experts in statistics, survey design, regional biology, field biology, and bats will be invited to review existing national and regional protocols and customize them to fulfill Utah's predefined needs and vulnerabilities. Each invited participant will receive pre-workshop materials that will include the measurable conservation objectives created in Step One and survey protocols previously created for bat data collection in other western states. Development of the survey manual will be directed by the Project Lead and will be the written using results of the SME workshop. This protocol and manual – to be placed on the website created with Legacy funding in FY07 – will outline how to implement the official, statistically defensible, objective based bat data collection protocol of Utah by containing detailed instructions, bat species keys for

identification, datasheets, materials and equipment descriptions, staffing expectations, ANABAT station design and development, and an ANABAT call analysis key.

The final part of Step Two will be the writing of a Utah Bat Conservation Plan. The writing of this plan, in fulfillment of the Utah WAP and DoD INRMPs, will be funded with Legacy and State (\$5,000) monies. It will include the previously mentioned SBR, Gap Analysis, and conservation objectives with the developed Utah Protocol as an appendix. Key pieces of the plan will be integrated into the major DoD INRMPs in the state to ensure cooperative and consistent management between state and federal lands to the major benefit of the species. Finally, this Plan will provide state-wide, long-term guidance for bat research and monitoring and conservation measures for the state while identifying threats, risk, and solutions.

Step three, Outreach, will allow the information and knowledge gained from this project to reach all land management agencies, universities, conservation organizations, and the private sector in Utah. Utah Bat Conservation Plan implementation will be undertaken by the UDWR and DoD. Other management agencies, due to their ongoing involvement with the data collection process for the UBD and their input into state conservation objectives and protocol development, will support the Plan and its measurable objectives. The Plan and everything that goes into it will be presented at several meetings/conferences to include the National Military Fish and Wildlife Association, The Wildlife Society (local and national chapter), and working groups throughout the state. Members of the Bonneville Basin Conservation Cooperative (B2C2), representing the USFWS, HAFB, DPG, UDWR, and BLM will spread the use of the Plan through outreach and coordination. Finally, the Plan will be available to anyone on the 2007 funded DoD Legacy bat website for use by all land managers and bat researchers in the state.

Primary personnel for this project have coordinated with Pat Ormsbee of the Pacific Northwest U.S. Forest Service in Oregon. Through several phone conferences, constructive dialog and open communication between parties has guaranteed the free exchange of information and technologies. All participants mutually decided that the state of Utah and DoD land managers need to assess the newly acquired data acquisitions (from the Legacy FY07 funded effort), assess vulnerabilities, and design measurable objectives with its partners that are unique to Utah and state-specific data vulnerabilities to, ultimately, fulfill the state WAP and DoD INRMPs. Our current initiative will include extensive efforts to communicate and coordinate with national bat experts and the research community to insure consistency with other bat programs if they address Utah specific conservation objectives (including Pat Ormsbee's Bat Grid). Future efforts, however, could include a full collaboration between the Pacific Northwest bat group and our Utah efforts. This year's funded effort and last years successful award, positions Utah to be a fully active partner in regional and national conservation initiatives. We will have defined our own priorities and be able to participate fully and extensively with larger efforts like Pat Ormsbee's.

Accomplishment of what we have proposed will provide the State of Utah with a cooperatively created Utah Bat Conservation Plan sufficient to manage all 18 species of bat in the state. Land management agencies will use the Plan to manage land-owner-specific populations because it will be an effective state-wide plan created and developed by local biologist and national experts. Utah and bats could serve as one of the first examples of how entire taxa can be managed consistently over multiple ecosystems, not just within boundary lines and ownership signs. The Department of Defense will benefit from increased understanding of population trends and management and will be able to continue to support testing and training in areas where sensitive bat species may exist. Joint management will aid in the prevention of any ESA listing of bat species thereby producing an overall cost savings for the Defense Department as well as other state and federal agencies.

## **Military Benefits:**

The DoD is a major user of west desert test and evaluation lands within the state of Utah. DoD requires continued access to those lands to maintain mission readiness. These lands support biological and chemical test and evaluation operations, munitions testing, deployment of weapon systems, and combat training exercises. The Utah Test and Training Range supports the evaluation of missile weapon systems and utilizes the largest joint contiguous CONUS airspace block to train pilots on air-based weapons systems. National Guard units conduct live fire exercises on Camp Williams and DPG ranges. In addition, these desert climates are utilized by large, mechanized, mobile training units to simulate real-time battle conditions. Throughout these lands specific landscape characteristics and intrinsic natural features are crucial to military readiness as many parts of Dugway Proving Ground and Hill Air Force Base look very much like countries in the Middle East. As Utah DoD land managers strive to deal with the challenges of balancing land and air resources within a very high operational tempo, an understanding of the biological status on 18 species of bat is critical. Further, the overall collaborative efforts we have facilitated with 14 key stakeholders (with over 50 separate state, private, and government offices) will enhance military readiness and overall training needs to prepare the finest war fighters anywhere to meet mission needs and objectives.

Conservation efforts ensure that training environments are not degraded over time and that DoD has continued access to west desert testing ranges, impact areas, and testing grids. This legacy proposal directly supports this end through a sound set of biologically based initiatives designed to enhance the sustainability and usability of training and testing lands within the state of Utah. The

effectiveness of this proposal is highlighted by the inclusion of every single military command in Utah with over 1.8 million acres of test and training lands (98% of DoD land holdings in Utah). Extensive efforts have occurred to secure this support. We believe this regional approach to managing bats within the State of Utah and specifically understanding regional trends and patterns on DoD land 100% supports stewardship objectives and goals fundamental to sound land management policies within the Defense Department. More importantly, this proposal has a tangible benefit. It will benefit the military through the identification and description of needed data for Utah bats. Through the analysis of data gaps of the Legacy funded 2007 UBD, extensive knowledge will be gained about what is unknown and what needs to be known in order to manage and prevent the listing of any of the 18 species of Utah bats. This information will yield invaluable information and will allow the continued use of DoD training ranges through the pro-active, early detection of any decline in populations of Utah bats. Most importantly, management of declining bat populations on surrounding lands will help improve Mission usability of bat habitat on DoD lands. If known existing bat habitat adjacent to military lands is known to house state sensitive species then mission essential tasks will not be limited by existing habitat on DoD lands. By collaboratively managing bats, DoD land managers can be assured that the BLM, USFS, UDWR, and other land holders surrounding military lands are doing their part to manage for species that could effect mission and essential testing and training activities on DoD lands. If all agencies manage for species that could effect mission readiness then military land managers can be assured that at some point in the future, DoD property will NOT be the sole location and oasis for Endangered Species Act threatened and endangered species that so many DoD installations throughout the United States have become.