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Award Number: DAMD17-98-2-8016

TITLE: Providing the Air Force with Data on Species Sensitive to
Noise from Low Flying Aircraft

PRINCIPAL INVESTIGATOR: Shara Howie
Carrie Brugger

CONTRACTING ORGANIZATION: The Nature Conservancy
Arlington, Virginia 22209

REPORT DATE: February 2000

TYPE OF REPORT: Annual Summary

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

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13. ABSTRACT (Maximum 200 Words) In order to comply with the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the ACC must evaluate its air operations for impacts to noise-sensitive wildlife. The areas used for training flights change, the list of species believed sensitive to noise changes, the species and the species information are dynamic. Accordingly, in order to continuously evaluate impacts of training flights on sensitive wildlife species and to comply with the ESA and NEPA, ACC has developed a Geographic Information System that is geographically complete and easy to update. The major objectives of this project were to provide the Air Force with access to a GIS-compatible data layer identifying the locations of noise sensitive species in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states while also building a portion of the Multi-Jurisdictional Dataset (MJD), an aggregation of data on the location and condition of species of conservation interest on a national scale. The objective of the MJD is to facilitate access to data and information products based on a national data set which is refreshed yearly. Through the MJD, ABI in conjunction with the Natural Heritage Programs can provide the Air Force with access to a GIS-compatible data layer identifying the locations of species at a national distribution. Natural Heritage Programs in Arizona, Navajo Nation and New Mexico improved the quality and completeness of locational data on animal species of conservation concern to meet the benchmark standards established by the ABI Data Standards Committee. The Nature Conservancy provided ACC with data and information on the status and exact locations of noise sensitive wildlife species (See Appendix 2A & 2B) in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states while adding this data to the broader effort to create the MJD. A model data use license was completed for ACC to acquire future access, through the MJD, to data and information products about noise sensitive species for the rest of the United States. The successful completion of this project demonstrates the viability and effectiveness of the MJD concept, which is beneficial for future projects to easily obtain all needed multi jurisdictional data from one source.				
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FOREWORD

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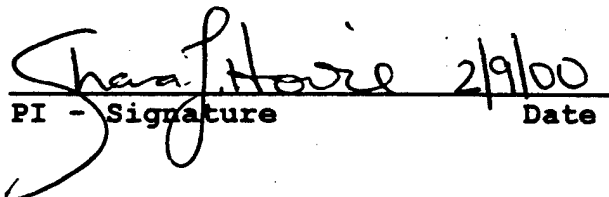
N/A In conducting research using animals, the investigator(s) adhered to the "Guide for the Care and Use of Laboratory Animals," prepared by the Committee on Care and use of Laboratory Animals of the Institute of Laboratory Resources, national Research Council (NIH Publication No. 86-23, Revised 1985).

N/A For the protection of human subjects, the investigator(s) adhered to policies of applicable Federal Law 45 CFR 46.

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N/A In the conduct of research utilizing recombinant DNA, the investigator(s) adhered to the NIH Guidelines for Research Involving Recombinant DNA Molecules.

N/A In the conduct of research involving hazardous organisms, the investigator(s) adhered to the CDC-NIH Guide for Biosafety in Microbiological and Biomedical Laboratories.


PI - Signature 2/9/00 Date

Final & Annual Report

Noise Sensitive Species Project

Table of Contents

Table of Contents	Page Number
<i>Introduction</i>	5
<i>Body</i>	6
<i>Conclusions</i>	11
<i>Bibliography</i>	13
<i>List of Personnel Receiving Pay</i>	14
 <i>Appendices (Attached to Final/Annual Report as hardcopies)</i>	
Cooperative Agreement No. DAMD17-98-2-8016.....	Appendix 1
USAF Noise Sensitive Species List – Final Version.....	Appendix 2A
USAF Noise Sensitive Species List – Historical Version.....	Appendix 2B
Statement of Work.....	Appendix 3
Short term Benchmark Data Standards.....	Appendix 4
Status Report (March 1999-July 1999).....	Appendix 5
Metadata for GIS compatible dataset.....	Appendix 6
Data Use License.....	Appendix 7
Model Data Use License.....	Appendix 8
Status Report (October 14, 1998-January 22, 1999).....	Appendix 9
Minutes from Phoenix Kickoff Meeting (December 16, 1998).....	Appendix 10

Introduction

The United States Air Force (USAF) strives to protect and manage significant biological resources while at the same time accomplish its primary mission of national defense. The Air Force faces the challenge of ensuring military readiness by providing realistic training scenarios, while protecting the complex and diverse ecosystems potentially affected by training.

The Environmental Analysis Branch, Environmental Programs Division, Civil Engineering Directorate, Air Combat Command (ACC) is responsible for a significant proportion of Air Force training flights. Training takes place over extensive, but well-defined areas throughout the country. These training flights often take place at low altitudes and have the potential for environmental impacts, including noise-related impacts to endangered species. In order to comply with the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the ACC must evaluate its air operations for impacts to noise-sensitive wildlife. The areas used for training flights change, the list of species believed sensitive to noise changes, the species and the species information are dynamic. Accordingly, in order to continuously evaluate impacts of training flights on sensitive wildlife species and to comply with the ESA and NEPA, ACC is developing a Geographic Information System that is geographically complete and easy to update.

The Association for Biodiversity Information (ABI) is a non-profit organization that works in partnership with the Network of Natural Heritage Programs and Conservation Data Centers to develop, manage and distribute authoritative information critical to the conservation of the world's biological diversity. Natural Heritage programs are present in all 50 states and Puerto Rico. On July 1, 1999, ABI and The Nature Conservancy (TNC) formed a new organization through a merger of the existing natural heritage membership organization (ABI) and The Nature Conservancy's heritage-related functions, primarily in their Conservation Science Division. The new organization retains the ABI name. Although this project was technically between TNC and the AF, ABI will be listed throughout this report as ABI is the organization carrying out all heritage-related functions.

One key aspect of the work of ABI with DoD and the Air Force is ABI's ability to work effectively with state Natural Heritage Programs (NHPs) and to ensure certifiable standardized data sets from the NHPs. ABI plays a key role in technical and information management support for the network. The NHPs have provided the Air Force with reliable and accurate data on the locations and conditions of species and natural communities on Air Force lands. The network of NHPs is recognized as the nation's principal source of scientifically reliable inventory data on biological diversity which is needed by the Air Force to determine locations of noise-sensitive wildlife species that may be sensitive to impacts from air operations.

One key objective of ABI is to distribute national scale data and data products for biodiversity data through the creation of the Multi-Jurisdictional Dataset (MJD), an

aggregation of data on the location and condition of species of conservation interest on a national scale. Through the MJD, ABI in coordination with the NHPs can facilitate access for the Air Force to a standardized nation wide GIS-compatible data layer identifying the locations of noise sensitive species.

The three major objectives of Cooperative Agreement No. DAMD17-98-2-8016 (see Appendix 1) are as follows:

- 1) To provide ACC with access to data and information products on the status and location of noise sensitive wildlife species (See Appendix 2A & 2B) in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states.
- 2) To develop a model data use license that is acceptable to the ACC and most of the State Natural Heritage Programs and could be used by the ACC to acquire access, through the MJD, to data and information products about noise sensitive species for the rest of the United States.
- 3) To provide Internet access to quality information about the counties-of-distribution of additional animal species of conservation concern for Arizona, New Mexico and the Tribal lands of the Navajo Nation in those two states.

Body

In accordance with the three major objectives of this project which are listed above, seven major tasks were identified and listed under Project Tasks in the "Statement of Work" (See Appendix 3, 3 pp). Each task is listed below under the appropriate Objective. The progress and completion of each of the following tasks will be discussed in detail.

Objective 1: To provide ACC with access to data and information products on the status and location of noise sensitive wildlife species (See Appendix 2A & 2B) in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states.

Task 1) Natural Heritage Programs in Arizona, Navajo Nation and New Mexico will improve the quality and completeness of locational data on animal species of conservation concern to meet the benchmark standards established by the ABI Data Standards Committee and required for participation in the MJD.

Task 2) ABI, in collaboration with TNC, will monitor compliance with the ABI Data Standards.

Task 3) Once the data standards are met, the Natural Heritage Programs will send the data to TNC, where the data will be added to the MJD.

The discussion listed below encompasses the first three major tasks under the first objective.

The participating NHPs met the Short Term Benchmark Data Standards (see Appendix 4), as defined by the ABI Data Standards Committee, for species of conservation concern occurring in Arizona, New Mexico and the tribal lands of Navajo Nation within those two states. Compliance to these data standards ensures a standard level of quality and completeness of locational data, taxonomy and general information on each particular

species in regard to field usage and content. ABI developed standard selection criteria to help the NHPs quality check their data and to select the applicable data of interest for the project from their systems. ABI also served a support role to answer any data standard questions that arose as the quality control process occurred. A large portion of the data development time for the NHPs was allotted to quality control of records to comply with the data standards.

In addition to reviewing existing data for data standard compliance, New Mexico Natural Heritage Program persistently worked toward acquiring data for the noise sensitive species (see Appendix 5, 3-4) where data gaps were known to exist. In particular, New Mexico Natural Heritage Program visited numerous National Forests and other agencies to negotiate and obtain additional data on the peregrine falcon, southwestern willow flycatcher, and Mexican spotted owl.

In order to release precise locations for species on federal lands, the Arizona Heritage Data Management System (AZHDMS) requires the federal agencies to grant permission to release this data. To ensure that the proper data release protocol was followed for AZHDMS, TNC sent letters to the US Forest Service, US Fish and Wildlife Service, Bureau of Land Management, National Park Service and Marine Corp in Arizona to obtain permission for the AZHDMS to release data on species occurring on federal lands. Data use permission was successfully obtained from all federal agencies and Arizona sent the requested data.

Upon receipt of data from the Heritage programs, ABI also reviewed and quality control checked the data to confirm compliance to the data standards. Any problems or data differences found were corrected or additional data was requested from the Heritage Programs. Where exceptions to the data standards were made for certain fields for a particular state, the metadata (see Appendix 6 under 'Important Notes on Data Differences for Arizona' 7 pp) indicates and explains these differences. Once all data were reconciled and proven consistent to the data standards, the datasets were converted into the correct format to be compatible with ABI's central database system and then uploaded into the database where the multi-jurisdictional dataset is in the process of being aggregated.

Objective 2: To develop a model data use license that is acceptable to the ACC and most of the State Natural Heritage Programs and could be used by the ACC to acquire access, through the MJD, to data and information products about noise sensitive species for the rest of the United States.

Task 4) ABI, in collaboration with TNC and the NHPs, will develop a model data use license that would provide ACC with access to the locations and names of the noise sensitive species from the MJD. The ABI Data Sharing Committee will advocate the model agreement to NHPs throughout the U.S., thereby building a foundation for ACC to access similar data sets on a national scale.

Annual Data Use License

The annual data use license agreement (see Appendix 7) outlining the restricted use of this project's deliverable dataset was developed by ABI and used as a base template for the larger encompassing model data use license for future access to data through the MJD. The annual data use license agreement for this project was developed by ABI and reviewed by ABI, ACC, US Army Medical Research Acquisition Activity (USAMRAA), Arizona Heritage Data Management System, New Mexico Natural Heritage Program, and Navajo Natural Heritage Program. Comments and suggestions were taken from all parties and the license was ultimately signed by USAMRAA, ACC, ABI and TNC. Obtaining USAMRAA's signature on the data use license was an unexpected required step, which involved additional time for finalization of the license. The annual data use license was signed and finalized on December 3, 1999.

Model Data Use License

The model data use license serves as a template to define data use guidelines and restrictions for the USAF on future access through the MJD to data on species defined as noise sensitive. The data that will likely be provided to the USAF includes general taxonomy information, state and global ranking status, state protection status, federal status information, county of occurrence, watershed of occurrence, and precise locations (lat/long) for a set of defined noise sensitive species.

The model license agreement serves four major purposes that are listed as follows:

- 1) To ensure secure and proper use of locational data by limiting and defining data use, defining data ownership, and defining rights to repossess data if any guidelines are breached
- 2) To serve as a feasible template and framework to work from to expedite the creation of future data use licenses for the USAF and other customers
- 3) To encourage data currency by limiting use of the delivered dataset to a one year term by requiring refreshment of the dataset and license after one year
- 4) To require the USAF to direct inquiries from other interested funding providers to ABI directly for the data or similar data provided to the USAF

The model data use license (see Appendix 8) was initially developed by ABI and reviewed by ABI and ACC. Once the model license was agreed upon, ABI took the lead in advocating the model to the NHPs through the ABI Data Committee, a deciding body on data issues involving multiple Heritage programs. The ABI Data Committee provided comments and approved the model license as feasible for future use. The completed license indicates that the actual refund percentages for the subscription rate structure are subject to change upon implementation of the subscription rate structure of ABI as the structure is in the process of development.

After the ABI Data Committee approved the model license, the model was sent out to the NHPs for review. A few questions which reflected concern for data use rights were received from the Heritage Programs and answered with an assuring level of secure use of the data as specified in the model license. The last review of the license was done by

the ABI Leadership Team, the deciding management body of ABI. All parties found the license as a complete and usable model upon completion of the subscription fee structure. The model license was completed on February 2, 2000.

The completed model license focuses on the needs of the USAF but the format and data restrictions of this model can be applied to future licenses with other partners as well. The two components that will vary on licenses with other partners will be a) the desired level of locational information for the data set and b) the category or scope of species that comprise the data set.

Objective 1: To provide ACC with access to data and information products on the status and location of noise sensitive wildlife species (See Appendix 2A & 2B) in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states.

Task 5) Data use-license agreements will be developed with the NHPs in Arizona, Navajo Nation and New Mexico to provide ACC with access, through the MJD, to data about noise sensitive species in those states.

Various forms of contractual agreements were developed between ABI and the participating Heritage Programs in order to effectively work with each Heritage Program's state and/or program policies. Although the contractual tasks are time consuming, the tasks are important pieces to build the proper framework for the best data contribution from each Heritage Program for current and/or future multi jurisdictional data sets. Two major types of subcontractual agreements listed below were required for this cooperative agreement.

Subawards

Subawards outline the data development, data delivery requirements, and requirements of compliance to data standards and other project management related activities needed for an awarded amount of funding.

Subawards for New Mexico Natural Heritage Program (NMHP), Arizona Heritage Data Management System (AZHDMS), and Navajo Natural Heritage Program (NNHP) were completed in order to obtain data for this project and provide funding for the NHPs to meet data standards.

The subaward finalization process with AZHDMS was time consuming as methods for the best approach of AZHDMS changed to try and ensure that funds would be channeled to the appropriate department within Arizona. The AZHDMS subaward was finalized in November 1999 and future subawards should be less time intensive as the proper procedure to quickly finalize subawards/contracts has been learned by AZHDMS and TNC for the special requirements of AZHDMS. In the future, a Memorandum of Understanding between ABI and AZHDMS will need to be completed to form the proper framework for future subawards.

Data Use Agreements

Obtaining signed Data Use Agreements from all Heritage Programs sets the framework for creating a national data set of species locations. These agreements require NHPs to send all their locational and general data on a yearly basis for all species occurring in their state. Once all data is centralized for several jurisdictions, access to a national data set for various projects will be easily accessible, complete and up-to-date from the yearly refreshment.

Since a central role in facilitating the development of a national dataset of species locations is the acquisition of signed Data Use Agreements, the importance of working with data issues and concerns of individual Heritage Programs in order to obtain signature of the Data Use Agreement is of great importance and value. If a program chooses not to sign the Data Use Agreement and therefore not send their locational data to ABI, the existence of a data gap for that particular state could occur. To date, ABI has successfully acquired signed data use agreements with 34 programs! ABI is currently working through issues with the unsigned programs in order to create a full national coverage.

NMHP, and NNHP have both signed the Data Use Agreement between ABI and this ensures ABI with receipt of a yearly refreshment of locational data for each program. AZHDMS is still in the process of considering and reviewing the Data Use Agreement.

Objective 1: To provide ACC with access to data and information products on the status and location of noise sensitive wildlife species (See Appendix 2A & 2B) in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states.

Task 6) Upon receipt of data from the Heritage programs in Arizona, New Mexico, and the Navajo Nation, TNC will provide ACC with a GIS compatible data set including the distribution by quad, and latitude and longitude of the point centrum for locations of the selected species (see Appendix 2A & 2B) in Arizona, New Mexico and the Navajo Nation.

Once all data was acquired from the NHPs, data was reformatted and transferred into the Central system at ABI to allow linking between the NHP subsets and the preexisting data in the Central system. Once the data was in the Central system, ABI quality checked all data for compliance to the Short-term Benchmark Data Standards (see Appendix 4) and any taxonomy discrepancies were reconciled. After the appropriate links were formed in the Central system and data review was completed, the data was exported out into text and dbase format. Locational data at the level of county, watershed, quad, latitude and longitude was successfully delivered for all noise sensitive species.

Objective 3: To provide Internet access to quality information about the counties-of-distribution of additional animal species of conservation concern for Arizona, New Mexico and the Tribal lands of the Navajo Nation in those two states.

Task 7) ABI will incorporate the county-of-distribution records for the animal species of conservation interest in Arizona, New Mexico and the tribal lands of the Navajo Nation in a database to be made accessible over the Internet.

Per mutual agreement of TNC and Langley Air Force Base Natural Resources Branch, deliverable 5.4 was deleted from the cooperative agreement. A copy of the modification to the statement of work is attached as Appendix 1.

The county level data for the animal species of conservation interest in Arizona, New Mexico and the tribal lands of the Navajo Nation were delivered as part of the original dataset. Precise species site data provided to ACC already meets ACC's requirements for county-level data. Both parties understand that ABI's broader effort to provide county level data over a public web site will continue.

Additional information reporting on the progress of work during the project period can be found in Status Reports previously submitted (See Appendix 5 & 9).

Conclusions

The successful completion of this pilot project demonstrates ABI's ability to successfully deliver useful multi jurisdictional data products for ACC. The challenges overcome during this project illustrate the enormous capability of ABI to work collaboratively with Natural Heritage Programs to provide multi jurisdictional datasets. All political, institutional, data access and data format variation issues were successfully resolved before delivering the desired data set to the AF. After overcoming the challenges, ABI successfully delivered a standardized data set to meet the direct biodiversity information needs of the ACC program for Arizona, New Mexico and Navajo Nation.

One area of challenge that ABI had to compromise on due to institutional restrictions was the release of species locations on private lands in Arizona. As a result of the data release security issues for Arizona Heritage Data Management System, the exact lat/longs for species that fall on private lands in Arizona could only be provided to the AF without identifying names and unique identification codes. This technique was carried out to allow the AF to receive all available locational information while at the same time abiding to the restrictions of the Arizona Heritage Data Management System. During the process of completing this project, ABI has learned several useful considerations and procedures that have made this project successful and will be helpful to improve future projects.

The following considerations were found to be very important for the success of the current and/or future projects:

1) Future inclusion of negative survey data

The AF has expressed interest in the future inclusion of negative survey data to be tracked by the Heritage Network. The negative survey data would be a very useful addition of data for the information needs of the AF to closely track the yearly currency of survey data to be used for consultation purposes.

2) Importance of ABI's liaison role

ABI has played an extremely important role as a liaison between Heritage Programs and the AF to provide support to the AF on dataset related questions. ABI has provided the necessary clarification on species locations and other data related questions. Since ABI already has a well established relationship with the Heritage Programs, ABI is strategically placed to effectively work to communicate between both the AF and the Heritage Programs while representing the interests of both parties. The ability of ABI in performing this liaison role will continue to be of importance in the future especially as the multi-jurisdictional datasets increase in size.

3) Importance for ABI to certify the data

ABI's capability of certifying multi-jurisdictional datasets to meet certain established standards is a very meaningful and useful warranty for the AF to receive in order to use the data as intended, and feel assured as to the accuracy and completeness of the data. The ability of ABI to represent, support and certify multi-jurisdictional datasets will continue to be a major benefit for the AF to acquire datasets from ABI.

4) Importance for ABI to provide clarification on field definitions and usage

The clarification of field definitions and usage is a key factor to avoid any misinterpretations of the ABI dataset. For example, the usage of the LASTOBS field (Last observed date field) was clarified that the date listed in this field is not the last date the species was found at the site based on continuous site visits on a yearly basis. This type of data interpretation by ABI is a crucially important role to perform for the proper use of the data and the success of the current and future projects. The success of this pilot project clearly demonstrates ABI's ability to deliver larger scale multi-jurisdictional data sets to ACC.

By the end of February 2000, the AF will receive ABI's new proposal on a National MJD Demonstration Project. To complete the proposal, ABI is currently negotiating with Heritage Programs and federal agencies to finalize a plan to deliver an electronic dataset to partners for species locational data at a national level within an estimated period of 12-18 months.

The successful completion of this pilot MJD project demonstrates the viability and effectiveness of ABI and the MJD concept, which is beneficial for future data requests and projects involving multi jurisdictions. The benefits of the MJD effort allow customers to 1) easily access data from a single source 2) obtain a certified dataset 3) obtain a refreshed dataset on a yearly basis, and 4) receive a dataset in one standardized format for multi-jurisdictional data products. The benefits of the MJD project will continue to meet ACCs needs for the direct use of locational data for crucial avoidance planning of potential environmental impacts.

Bibliography of Presentations & Meeting Abstracts

- Brugger, C. Meeting with NM Natural Heritage Program – November 19, 1998. Quarterly Report, October 14, 1998 - January 22, 1999. 2 pp. (Appendix 9 to the Final Report)
- Brugger, C. ABI/TNC Project Planning meeting – December 10, 1998. Quarterly Report, October 14, 1998 - January 22, 1999. 2 pp. (Appendix 9 to the Final Report)
- Bourns, J. Kick-off meeting in Phoenix, Arizona – December 16, 1998. Minutes from Phoenix Kickoff Meeting USAF/Noise Sensitive Species and DoD/Legacy Projects December 16, 1996. (Appendix 10 to the Final Report)
- Brugger, C. File upload/Data format planning meeting – January 8, 1999. Quarterly Report, October 14, 1998 - January 22, 1999. 3 pp. (Appendix 9 to the Final Report)
- Brugger, C. Presentation of NSS project to Central Botany & Zoology – January 22, 1999. Quarterly Report, October 14, 1998 - January 22, 1999. 4 pp. (Appendix 9 to the Final Report)
- Howie, S. L. 1998. Kick-off Meeting with Roy Barker – October 14, 1998. Quarterly Report, October 14, 1998 - January 22, 1999. 1-2. (Appendix 9 to the Final Report)
- Howie, S. L. Meeting with Luke AFB/Goldwater Range – December 16, 1998. Quarterly Report, October 14, 1998 - January 22, 1999. 3 pp. (Appendix 9 to the Final Report)
- Howie, S. L. Presentation to Peter Boice – March 26, 1999. Quarterly Report, October 14, 1998 - January 22, 1999. 2 pp. (Appendix 5 to the Final Report)
- Howie, S. L. Status Report Meeting - March 18, 1999. Quarterly Report, October 14, 1998 - January 22, 1999. 2 pp. (Appendix 5 to the Final Report)

***List of Personnel Receiving Pay related to Project activities for
Cooperative Agreement No. DAMD17-98-2-8016***

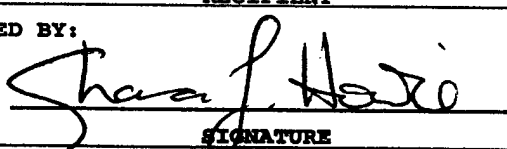
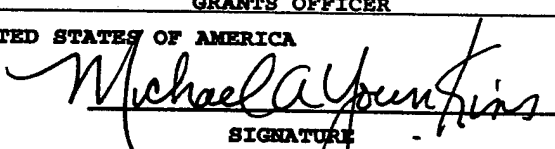
Carrie L. Brugger
Shara L. Howie
Jean E. Jancaitis
Rebecca A. Keeshen
Patricia Mehlhop
Christopher B. Reynolds

Subcontracted Personnel Receiving Pay
Arizona Heritage Data Management System
Association for Biodiversity Information
Navajo Natural Heritage Program
New Mexico Natural Heritage Program

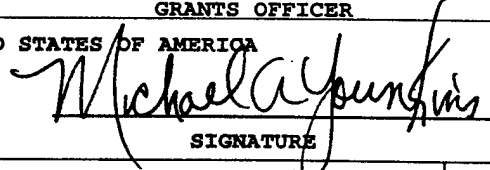
Appendices are attached to Final/Annual Report as hardcopies

ASSISTANCE AGREEMENT

Appendix 1

AWARD TYPE: ☐ GRANT (31 USC 6304) ☒ OPERATIVE AGREEMENT (31 USC 6305) ☐ ER TRANSACTION (10 USC 2371)			
AWARD NO: DAMD17-98-2-8016 Modification P00003	EFFECTIVE DATE See Grants Officer Signature Date Below	AWARD AMOUNT \$152,027.00	Page 1 of 1 Shannyn M. Scassero Phone: 301-619-2640 Fax: 301-619-2505
PROJECT TITLE: Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft			
CFDA 12.420			
PERFORMANCE PERIOD: 15 AUG 98 - 14 FEB 00		PRINCIPAL INVESTIGATOR: Shara Howie	
AWARDED AND ADMINISTERED BY: U.S. Army Medical Research Acquisition Activity ATTN: MCMR-AAA-v 820 Chandler St. Fort Detrick Maryland 21702-5014		PAYMENTS WILL BE MADE BY: EFT:T Army Vendor Pay DFAS-SA/FPA 500 McCullough Avenue San Antonio, TX 78215-2100	
DUNS NO: 07-265-6630		REMIT PAYMENT TO:	
AWARDED TO: The Nature Conservancy 1815 North Lynn Street Arlington, VA 22209		SAME	
ACCOUNTING AND APPROPRIATION DATA: NO CHANGE			
SCOPE OF WORK: A. The purpose of this modification is to delete a portion of the incorporated technical proposal and statement of work dated 6 MAY 98. Per mutual agreement of The Nature Conservancy and Langley Air Force Base Natural Resources Branch, Deliverable 5.4, Internet access to county level information for noise sensitive species in Arizona, New Mexico and the tribal lands of the Navajo Nation in those two states, is herein deleted from the above referenced cooperative agreement. This is in accordance with a memorandum from The Nature Conservancy and Langley Air Force Base Natural Resource Manager, Roy Barker dated 17 DEC 99. B. This deletion does not effect the agreement cost. C. All other terms and conditions remain unchanged.			
TOTAL AMOUNT OF AWARD: \$152,027.00 TOTAL FUNDS OBLIGATED: \$152,027.00			
RECIPIENT		GRANTS OFFICER	
ACCEPTED BY:  SIGNATURE		UNITED STATES OF AMERICA  SIGNATURE	
NAME AND TITLE Shara L. Howie Director, Conservation Info. Services	DATE 12/28/99	NAME AND TITLE MICHAEL A. YOUNKINS GRANTS OFFICER	DATE 12/17/99

ASSISTANCE AGREEMENT

AWARD TYPE: ☐ GRANT (31 USC 6304) ☒ OPERATIVE AGREEMENT (31 USC 6305) ☐ OTHER TRANSACTION (10 USC 2371)			
AWARD NO: DAMD17-98-2-8016 Modification P90001		EFFECTIVE DATE See Grants Officer Signature Date Below	
		AWARD AMOUNT \$152,027.00	
		Page 1 of 1 Shannyn M. Scassero Phone 301-619-2640 Fax 301-619-2505	
PROJECT TITLE: Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft			
CFDA 12.420			
PERFORMANCE PERIOD: 15 AUG 98 - 14 FEB 00		PRINCIPAL INVESTIGATOR: Shara Howie	
AWARDED AND ADMINISTERED BY: U.S. Army Medical Research Acquisition Activity ATTN: MCMR-AAA-V 820 Chandler St. Fort Detrick Maryland 21702-5014		PAYMENTS WILL BE MADE BY: EFT:T Army Vendor Pay DFAS-SA/FPA 500 McCullough Avenue San Antonio, TX 78215-2100	
AWARDED TO: The Nature Conservancy 1815 North Lynn Street Arlington, VA 22209		REMIT PAYMENT TO: SAME	
ACCOUNTING AND APPROPRIATION DATA: NO CHANGE			
SCOPE OF WORK: A. The purpose of this modification is to extend the period of performance from 15 AUG 98 thru 14 AUG 99 to 15 AUG 98 thru 14 FEB 00. This request is in accordance with Paragraph 6c., Approvals and Other Authorizations, of the USAMRAA General Terms and Conditions for Cooperative Agreements, a letter from The Nature Conservancy dated 8 JUL 99 and the concurrence of the GOR. ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED			
TOTAL FUNDS TO DATE: \$152,027.00 TOTAL AMOUNT OF THE COOPERATIVE AGREEMENT: \$152,027.00			
RECIPIENT		GRANTS OFFICER	
ACCEPTED BY: 		UNITED STATES OF AMERICA  	
SIGNATURE		SIGNATURE	
NAME AND TITLE	DATE	NAME AND TITLE	DATE
		MICHAEL A. YOUNKINS GRANTS OFFICER	7/13/99

COOPERATIVE AGREEMENT

Appendix 1

AGREEMENT NO: DAMD17-98-2-8016	EFFECTIVE DATE See Contracting Officer signature Date Below	AWARD AMOUNT \$152,027.00	Page 1 of 14 Shannyn M. Scassero
PROJECT TITLE: Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft			
PERFORMANCE PERIOD: 15 AUG 98 - 14 AUG 99		PRINCIPAL INVESTIGATOR: Shara Howie	
AWARDED AND ADMINISTERED BY: U.S. Army Medical Research Acquisition Activity ATTN: MCMR-AAA-V 820 Chandler St. Fort Detrick Maryland 21702-5014		PAYMENTS WILL BE MADE BY: EFT:T Army Vendor Pay DFAS-SA/PPA 500 McCullough Avenue San Antonio, TX 78215-2100	
AWARDED TO: The Nature Conservancy 1815 North Lynn Street Arlington, VA 22209		REMIT PAYMENT TO: SAME	
ACCOUNTING AND APPROPRIATION DATA: 218204074-8112665801.M02ZX25GZH4ZXP1S18064 \$152,027.00			

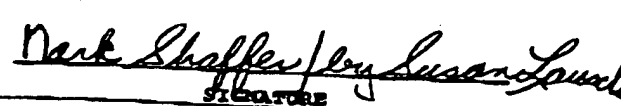
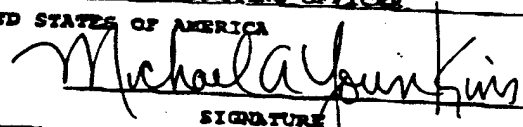
SCOPE OF WORK:

A. The amount of One Hundred Fifty-two Thousand, Twenty-seven Dollars (\$152,027.00) is hereby awarded by the United States Army Medical Research Acquisition Activity (USAMRAA) on behalf of the United States of America to the aforementioned organization. The Nature Conservancy will provide Langley Air Force Base with access to data and information products on the status and location of noise sensitive wildlife species in Arizona, New Mexico, and the Tribal lands of the Navajo Nation in those two states; develop a model data use-license; and provide internet access to quality information about the county of distribution of additional animal species of conservation concern. The Air Force will assist in the development of the model data use-license; participate in periodic project evaluations; and to accomplish the statement will provide guidance and input, monitor work, and set priorities. The recipient's technical proposal and budget dated 6 May 1998 are incorporated herein by reference. This award is made under the authority of 31 U.S.C. 6305 and 16 U.S.C. 670c-1.

B. Additionally, this cooperative agreement is subject to the attached USAMRAA terms and conditions for cooperative agreement requirements.

TOTAL FUNDS TO DATE: \$152,027.00

TOTAL AMOUNT OF THE COOPERATIVE AGREEMENT: \$152,027.00

ACCEPTED BY:		CONTRACTING OFFICER	
 NAME AND TITLE Mark Shaffer, Director of Biodiversity Conservation Information Department		 UNITED STATES OF AMERICA SIGNATURE NAME AND TITLE B. C. Baker, III CONTRACTING OFFICER	
DATE 9/28/98		DATE 9/29/98	

USAMRAA FORM 45-R-E, MAR 87 (PREVIOUS EDITIONS ARE OBSOLETE)

U. S. ARMY MEDICAL RESEARCH ACQUISITION ACTIVITY
GENERAL TERMS AND CONDITIONS FOR COOPERATIVE AGREEMENTS

TABLE OF CONTENTS

1.	GOVERNMENT INTERACTION.....	3
2.	RECIPIENT RESPONSIBILITY.....	3
3.	CLEAN AIR AND WATER.....	3
4.	ADMINISTRATION AND COST PRINCIPLES.....	3
5.	COOPERATIVE AGREEMENT MODIFICATION.....	4
6.	APPROVALS AND OTHER AUTHORIZATIONS.....	4
7.	RESERVED.....	5
8.	MANDATORY INFORMATION FOR ELECTRONIC FUNDS TRANSFER PAYMENT (APR 1997).....	5
9.	PUBLICATION AND ACKNOWLEDGMENT.....	7
10.	PUBLIC RELEASES.....	7
11.	PROGRESS REPORTING REQUIREMENTS.....	7
11.	TECHNICAL REPORTING REQUIREMENTS.....	8
12.	FINANCIAL REPORTING REQUIREMENTS.....	10
13.	PAYMENT SCHEDULE.....	10
14.	TITLE TO EXPENDABLE AND NONEXPENDABLE ACQUIRED PROPERTY.....	10
15.	USE OF U.S. FLAG AIR CARRIERS.....	10
16.	SUSPENSION AND TERMINATION (NOV 1996).....	11
17.	COOPERATIVE AGREEMENT CLOSE OUT.....	12
18.	NONDISCRIMINATION.....	12
19.	SITE VISITS.....	12
20.	RIGHTS IN TECHNICAL DATA AND COMPUTER SOFTWARE.....	13
21.	PATENTS AND INVENTIONS.....	13
22.	DISPUTES (MAY 1997).....	13
23.	RESERVED.....	13
24.	RESERVED.....	13
25.	PROHIBITION OF USE OF HUMAN SUBJECTS (JAN 1992).....	13
26.	PROHIBITION OF USE OF HUMAN ANATOMICAL SUBSTANCES (APR 1997).....	13
27.	RESERVED.....	14
28.	PROHIBITION OF USE OF LABORATORY ANIMALS (JAN 1992).....	14
29.	RESERVED.....	14
30.	MILITARY RECRUITING ON CAMPUS.....	14
31.	ATTACHMENTS.....	14

1. GOVERNMENT INTERACTION

The active participants in this cooperative agreement is the U.S. Air Force at Langley Air Force Base and The Nature Conservancy, the U.S. Army Medical Research Acquisition Activity (USAMRAA). Langley Air Force Base will assist in the development of the Model Data Use-License and participate in periodic project evaluation. The Air Force will work with The Nature Conservancy to accomplish the statement of work by providing guidance, monitoring work, providing input and setting or adjusting priorities.

2. RECIPIENT RESPONSIBILITY

a. The recipient will bear primary responsibility for the conduct of the research and will exercise judgment towards attaining the stated research objectives within the limits of the cooperative agreement's terms and conditions.

b. The Principal Investigator(s) specified in the cooperative agreement document will be continuously responsible for the conduct of the research project and will be closely involved with the research effort. The Principal Investigator, operating within the policies of the recipient, is in the best position to determine the means by which the research may be conducted most effectively.

c. The recipient will obtain the Grants Officer's prior approval to change the Principal Investigator, or to continue the research work during a continuous period of absence in excess of three (3) months, or a 25% reduction in time devoted to the project by the approved Principal Investigator.

d. The recipient will obtain the Grants Officer's prior approval to change:

(1) the methodology or experiment when such is stated in the cooperative agreement as a specific objective;

(2) the stated objective of the research effort; or

(3) the phenomenon or phenomena under study.

3. CLEAN AIR AND WATER

If the amount of this cooperative agreement exceeds \$100,000 the recipient shall comply with the Clean Air Act (42 U.S.C. 1857), as amended; the Federal Water Pollution Control Act (33 U.S.C. 1251), as amended; Executive Order No. 11738; and the related regulations of the Environmental Protection Agency (40 CFR, Part 15).

4. ADMINISTRATION AND COST PRINCIPLES

The following Administrative and Cost Principles, as applicable, effective the earlier of (i) the start date of this cooperative agreement or (ii) the date on which the recipient incurs costs to be assessed the cooperative agreement, are incorporated as part of this cooperative agreement by reference:

a. OMB Circular A-110, "Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-profit Organizations."

b. OMB Circular A-21, "Cost Principles for Educational Institutions."

c. OMB Circular A-122, "Cost Principles for Nonprofit Organizations." (For those nonprofit organizations specifically exempted from the provisions of OMB Circular A-122, Subpart 31.2 of the Federal Acquisition Regulations (FAR 48 CFR Subpart 31.2) shall apply).

d. OMB Circular A-87, "Cost Principles for State, Local and Indian Tribe Governments."

e. OMB Circular A-133, "Audits of Institutions of Higher Learning."

f. FAR 31.2 for Commercial Organizations.

These publications may be obtained from:

Office of Management and Budget
EOB Publications Office
New Executive Office Building
725 17th Street, N.W., Room 2200
Washington, DC 20503

Telephone: (202) 395-7332

5. COOPERATIVE AGREEMENT MODIFICATION

The only method by which this cooperative agreement may be modified is by a formal, written modification signed by the Grants Officer. No other communications, whether oral or in writing, are valid.

6. APPROVALS AND OTHER AUTHORIZATIONS

a. Prior approvals. All prior approvals required by OMB Circulars A-21, A-110, and A-122 are waived except the following:

(1) Change in the scope or objectives of the research project as required by paragraph 1 of these terms and conditions entitled "Research Responsibility."

(2) Any request for additional funding.

(3) Change in key personnel as required by paragraph 1 of these terms and conditions entitled "Research Responsibility."

(4) Exclusive of supplies, material, equipment, or general support services, the award of a subcontract or subaward to accomplish substantial programmatic work required in the agreement to be performed by the prime recipient.

(5) Unless identified in the budget incorporated as a part of the cooperative agreement, expenditures for individual items of general purpose equipment and specific purpose equipment costing \$5,000 or more.

(6) Unless identified in the proposal, incorporated as part of the cooperative agreement, expenditure for foreign travel.

b. Pre-Award Costs. The recipient may incur pre-award costs of up to ninety (90) days prior to the start date of the cooperative agreement. Pre-award costs as incurred by the recipient must be necessary for the effective and economical conduct of the project, and the costs must be otherwise allowable in accordance with the appropriate cost principles. Pre-award costs are made at the recipient's risk. The incurring of pre-award costs by the recipient does not impose any obligation on the Government in the absence of appropriations, if an award is not subsequently made, or if an award is made for a lesser amount than the recipient expected.

c. Change in Performance Period. The recipient may make a one-time extension to the expiration date of the cooperative agreement for a period up to 12 months. The recipient shall notify the Grants Officer, in writing, at least thirty (30) days prior to the expiration date of the cooperative agreement.

d. Unobligated Balances. In the absence of any specific notice to the contrary, the recipient is authorized to carry forward unexpended balances to subsequent funding periods of the cooperative agreement.

7. RESERVED

8. MANDATORY INFORMATION FOR ELECTRONIC FUNDS TRANSFER PAYMENT (APR 1997) (USAMRAA)

NOTE: This provision addresses the EFT: T located in the "Payments Will Be Made By" block on the first page of the COOPERATIVE AGREEMENT. The point of contact for questions and submission of information is the Army Vendor Pay, DFAS-SA/FPA, 500 McCullough Avenue, San Antonio, Texas 78215-2100. The phone number is (210) 527-8289. The facsimile phone number is (210) 527-8141.

(a) Method of payment.

Payments by the Government under this award, may be made by check or electronic funds transfer (EFT) at the option of the Government. If payment is made by EFT, the Government may, at its option, also forward the associated payment information by electronic transfer. As used in this provision, the term "EFT" refers to the funds transfer and may also include the information transfer.

(b) Mandatory submission of Recipient's EFT information.

(1) The Recipient is required, as a condition to any payment under this award, to provide the Government with the information required to make payment by EFT as described in paragraph (d) of this clause, unless the payment office determines that submission of the information is not required. However, until January 1, 1999, in the event the Recipient certifies in writing to the payment office that the Recipient does not have an account with a financial institution or an authorized payment agent, payment shall be made by other than EFT. For any payments to be made after January 1, 1999, the Recipient shall provide EFT information as described in paragraph (d) of this provision.

(2) If the Recipient provides EFT information applicable to multiple awards or cooperative agreements, the Recipient shall specifically state the applicability of this EFT information in terms acceptable to the payment office.

(c) Recipient's EFT information.

Prior to submission of the first request for payment under this award, the Recipient shall provide the information required to make contract payment by EFT, as described in paragraph (d) of this clause, directly to the Government payment office named in this award. If more than one payment office is named for this award, the Recipient shall provide a separate notice to each office. In the event that the EFT information changes, the Recipient shall be responsible for providing the changed information to the designated payment office(s).

(d) Required EFT information.

The Government may make payment by EFT through either an Automated Clearing House (ACH) subject to the banking laws of the United States or the Federal Reserve Wire Transfer System at the Government's option. The Recipient shall provide the following information for both methods in a form acceptable to the designated payment office. (See Attachment 5, Vendor Registration Form, (Sample)) The Recipient may supply this data for this or multiple awards or cooperative agreements (see paragraph (b) of this provision).

(1) The award number to which this notice applies.

(2) The Recipient's name and remittance address, as stated in the award, and account number at the Recipient's financial agent.

(3) The signature (manual or electronic, as appropriate), title, and telephone number of the Recipient's official authorized to provide this information.

(4) For ACH payments only:

(i) Name, address, and 9-digit Routing Transit Number of the Recipient's financial agent.

(ii) Recipient's account number and the type of account (checking, saving, or lockbox).

(5) For Federal Reserve Wire Transfer System payments only:

(i) Name, address, telegraphic abbreviation, and the 9-digit Routing Transit Number for the Recipient's financial agent.

(ii) If the Recipient's financial agent is not directly on-line to the Federal Reserve Wire Transfer System, and, therefore, not the receiver of the wire transfer payment, the Recipient shall also provide the name, address, and 9-digit Routing Transit Number of the correspondent financial institution receiving the wire transfer payment.

(e) Suspension of payment.

(1) Notwithstanding any other provisions of this award, the Government is not required to make any payment under this award until after receipt, by the designated payment office, of the correct EFT payment information from the Recipient or a certificate submitted in accordance with paragraph (b) of this clause.

(2) If the EFT information changes after submission of correct EFT information, the Government shall begin using the changed EFT information no later than the 30th day after its receipt to the extent payment is made by EFT. However, the Recipient may request that no further payments be made until the changed EFT information is implemented by the payment office.

(f) Recipient EFT arrangements.

The Recipient shall designate a single financial agent capable of receiving and processing the electronic funds transfer using the EFT methods described in paragraph (d) of this provision. The Recipient shall pay all fees and charges for receipt and processing of transfers.

(g) Liability for uncompleted or erroneous transfers.

(1) If an uncompleted or erroneous transfer occurs because the Government failed to use the Recipient-provided EFT information in the correct manner, the Government remains responsible for (i) making a correct payment, and (ii) recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because Recipient-provided EFT information was incorrect at the time of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Recipient is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government retains the right to either make payment by mail or suspend the payment in accordance with paragraph (e) of this provision.

(h) Payment office discretion.

If the Recipient does not wish to receive payment by EFT methods for one or more payments, the Recipient may submit a request to the designated payment office to refrain from requiring EFT information or using the EFT payment method. The decision to grant the request is solely that of the Government.

(i) Change of EFT information by financial agent.

The Recipient agrees that the Recipient's financial agent may notify the Government of a change to the routing transit number, Recipient account number, or account type. The Government shall use the changed data in accordance with paragraph (e)(2) of this provision. The Recipient agrees that the agent's notice of changed EFT data is deemed to be a request by the Recipient in accordance with paragraph (e)(2) that no further payments be made until the changed EFT information is implemented by the payment office.

9. PUBLICATION AND ACKNOWLEDGMENT

a. Publication. The recipient is encouraged to publish results of the research, unless classified, in appropriate journals. One copy of each paper planned for publication will be submitted to the technical representative simultaneously with its submission for publication. Copies of all publications resulting from the research shall be forwarded to the Grants Officer as they become available, even though publication may in fact occur subsequent to the termination date of this cooperative agreement.

b. Acknowledgment. The recipient agrees that in the release of information relating to this cooperative agreement such release shall include statements to the effect that the project or effort depicted was sponsored by the Department of the Army, citing the Cooperative Agreement number, and that the content of the information does not necessarily reflect the position or the policy of the government, and no official endorsement should be inferred. For purposes of this article, information includes news releases, articles, manuscripts, brochures, advertisements, still and motion pictures, speeches, trade association proceedings, etc.

10. PUBLIC RELEASES

Prior to release to the public, the recipient shall notify the Grants Officer and the Grants Officer's Representative (GOR) of the following: planned news releases, planned publicity, advertising material concerning grant/cooperative agreement work, and planned presentations to scientific meetings. This provision is not intended to restrict dissemination of research information; the purpose is to inform the U.S. Army Medical Research and Materiel Command (USAMRMC) of planned public release of information on USAMRMC-funded research, in order to adequately respond to inquiries and to be alert to the possibility of inadvertent release of information which could be taken out of context.

11. PROGRESS REPORTING REQUIREMENTS

a. Annual Summary

An Annual 2 - 5 page summary presenting a description of the training and research accomplishments shall be submitted each year. No specific format is required. An original and two copies of the report shall be sent within 30 calendar days of the anniversary date of the grant to:

Commander
U.S. Army Medical Research and Materiel Command
ATTN: MCMR-RMI-S
504 Scott Street
Fort Detrick MD 21702-5012

12. TECHNICAL REPORTING REQUIREMENTS

Format Requirements for Annual and Final Reports

a. Annual reports must provide a complete summary of the research for each year of the intramural/extramural award effort. The importance of the annual report to decisions relating to continued support of the work effort cannot be overemphasized. Journal articles cannot be substituted for any part of the report, but articles may be attached to the report as an appendix if referenced in the text. An annual report shall be sent within 30 calendar days of the calendar anniversary date (only final report required for last performance period or year) of the Cooperative Agreement.

b. ~~A~~ final report, summarizing the entire intramural/extramural award effort, citing data in the annual reports, and providing a complete reporting of the research findings must be submitted. However, the final report will not be a mere duplication of the annual reports, and shall replace the annual report in the final year's annual report requirement. The final report must be accompanied by a document showing a bibliography of all publications, presentations, and meeting abstracts supported by the intramural/extramural award, a list of personnel receiving pay (without disclosure of the salaries), and the graduate degrees resulting from the intramural/extramural award support. Again, journal publications cannot be substituted for any part of the final report, but may be attached as an appendix if referenced in the text. The final report shall be sent at the end of the Cooperative Agreement performance period

c. Although there is no page limitation for either the annual or final reports, each report shall be of sufficient length to be comprehensive and thorough. Submission of an original, two copies, and a 3 1/2" floppy diskette with report saved in a flat ASCII text format are required. Most popular word processors are capable of saving this format directly or through a utility program. Reports shall be forwarded to:

Commander
U.S. Army Medical Research and Materiel Command
ATTN: MCMR-RMI-S
504 Scott Street
Fort Detrick, MD 21702-5012

d. All annual and final reports shall have the following elements in this order: Front Cover, SF 298, Foreword, Table of Contents, Introduction, Body, Conclusions, References, and Appendices. Pages will be consecutively numbered throughout the report, including appendices. Mark all pages of the report which contain proprietary or unpublished data which should be protected. Indicate in your letter accompanying the report that the report contains proprietary or unpublished data, and that the distribution statement should indicate the limitations of the report.

FRONT COVER: Make a photocopy of the blank Front Cover (Attachment 1) and complete as accurately as possible. AD Number should be left blank. USAMRMC will forward to you instructions for completion of this page 60 days prior to the report due date.

SF 298, REPORT DOCUMENTATION PAGE: Using the partially completed SF 298 provided to you by this Command or using a photocopied SF 298, type in the appropriate entries for Items 2 (use intramural/extramural award anniversary date), 3, 4, 5, 6, 7, 9, 12a, 13, 14, 15, 17, 18, 19, and 20. Number of pages

includes all pages that have printed data to include the front cover, SF 298, Foreword, and Table of Contents. The Abstract in item 13 must report progress in terms of results and significance. An original partially completed SF 298 and instructions for completing the form will be forwarded to you 60 days prior to the report due date.

FOREWORD: Using the Foreword provided (Attachment 2), initial the statements which apply to the report. **NOTE:** Animals/humans should not be used in the research until all approvals have been received by your institute, and the animal/human statements should not be initialed if the use of animals/humans has not been approved by this Command. Sign and date the Foreword page, and insert this page after the SF 298. Specific instructions for this page will be forwarded to you 60 days prior to the report due date.

TABLE OF CONTENTS: Type on a separate page.

INTRODUCTION: Narrative which describes the subject, purpose, and scope of this research and the background of previous work.

BODY: This section must include the experimental methods, results and discussion in relation to the statement of work outlined in the award proposal. Experimental methods should be referenced to formal publications if applicable, and presented in sufficient detail to allow replication of the experiments. Data presentation shall be comprehensive in providing a complete record of the research findings for the period of the annual/final report. The report shall include negative as well as positive findings, and also shall include any problems in accomplishing any of the tasks. Statistical tests of significance shall be applied to all data whenever possible. Both figures and graphs shall be included in this section, and shall be constructed and labeled to stand alone. Figures shall include figure legends. The discussion shall include the relevance to the original hypothesis.

CONCLUSIONS: Summarizes the results to include the importance and/or implications of the completed research. A "so what section" which evaluates the knowledge as a scientific or medical product shall also be included in the conclusion of the annual and final reports.

Recommended changes or future work to better address the research topic may also be included, although changes to the statement of work must be approved by the Grants Officer.

REFERENCES: List all references pertinent to the report using standard journal format procedures such as in *Science* or *Military Medicine*. References shall be numbered consecutively with Arabic numbers in the order of their first appearance in the text, and keyed to appropriate places in the text.

APPENDICES: The appendices shall contain information that supplements, clarifies or supports the text. Examples of appendices include journal articles, reprints of manuscripts and abstracts, a curriculum vitae, patent applications, study questionnaires, and surveys, etc.

BINDING: Because all reports are entered into the Department of Defense Technical Reports Database collection and are microfiched, it is recommended that all reports be bound by stapling the pages together in the upper left-hand corner. All reports should be prepared in camera-ready copy (legible print, clear photos/illustrations) for microfiching. Figures should include figure legends and all figures and tables should be clearly marked.

Manuscript/Reprints, Abstracts

A copy of the manuscript or subsequent reprints of any publication resulting from the research must be submitted to the USAMRMC. An extended abstract suitable for publication in a Proceedings of the Breast Cancer Research Program is required in relation to a DoD BCRP meeting tentatively planned for November 1999. The extended abstract shall (1) identify the accomplishments since award and (2)

follow instructions to be prepared by the USAMRMC and promulgated at a later date. The extended abstract style will be dependent on the discipline.

13. FINANCIAL REPORTING REQUIREMENTS

The recipient shall submit on a quarterly basis a Standard Form 272, Federal Cash Transactions Report (Attachment 3). Each report shall be due at the U.S. Army Medical Research Acquisition Activity (USAMRAA), ATTN: MCMR-AAA-V, 820 Chandler Street, Fort Detrick, MD 21702-5014 in accordance with the following schedule:

<u>Period Covered</u>	<u>Due Date</u>
Jan - Mar	15 Apr
Apr - Jun	15 Jul
Jul - Sep	15 Oct
Oct - Dec	15 Jan

14. PAYMENT SCHEDULE

a. All payments to the recipient shall be paid by U.S. Treasury check or electronic funds transfer. All advance payments shall be deposited in interest bearing accounts and interest shall be remitted annually to the Department of Health and Human Services, Payment Management System, Rockville, MD 20852. A copy of the transmittal letter stating the amount of interest remitted shall be sent to U.S. Army Medical Research Acquisition Activity, ATTN: MCMR-AAA-V, 820 Chandler Street, Fort Detrick, MD 21702-5014.

b. Payments under this award shall be made to the recipient on a quarterly basis initiated by the U.S. Army Medical Research Acquisition Activity and forwarded to the cognizant Defense Financial Accounting Service for payment. No quarterly payments will be made if the recipient fails to submit the required Standard Form 272 (see paragraph entitled "Financial Reporting Requirements").

c. The schedule of payments is as follows:

Year One \$152,027

<u>Amount</u>	<u>On or About</u>
\$38,007	Upon execution of this agreement
\$38,007	1 November 1998
\$38,007	1 February 1999
\$38,006	1 May 1999

15. TITLE TO EXPENDABLE AND NONEXPENDABLE ACQUIRED PROPERTY

Unless specified otherwise in the Cooperative Agreement Schedule, title to all nonexpendable and expendable tangible personal property purchased with cooperative agreement funds shall vest in the Government upon acquisition.

16. USE OF U.S. FLAG AIR CARRIERS

a. The Comptroller General of the United States, by Decision B-138942 of June 17, 1975, as amended March 31, 1981, provided guidelines for implementation of Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974.

b. Any air transportation to, from, between, or within a country other than the U.S., of persons or property, the expense of which will be assisted by this award, must be performed on a U.S. flag air carrier if service provided by such carrier is "available."

c. The following rules apply unless the result would be use of a foreign air carrier ("foreign carrier") for the first or last leg of travel from or to the U.S.:

(1) A U.S. flag air carrier ("U.S. carrier") shall be used to destination or, in the absence of through service, to farthest interchange point.

(2) If a U.S. carrier does not serve an origin or interchange point, a foreign carrier shall be used to the nearest interchange point to connect with a U.S. carrier.

(3) If a U.S. carrier involuntarily reroutes the traveler via a foreign carrier, the foreign carrier may be used.

d. Exceptions - In the following situations, use of a foreign carrier is permissible:

(1) Travel to and from the U.S. - Use of a foreign carrier is permissible if:

(a) The airport abroad is the origin or destination airport, and use of a U.S. carrier would extend the total travel time 24 hours or more than would travel by foreign carrier; or

(b) The airport abroad is an interchange point, and use of U.S. carrier would require the traveler to wait six (6) hours or more than would travel by foreign carrier.

(2) Travel Between Points Outside the U.S. - Use of a foreign carrier is permissible if:

(a) Travel by foreign carrier would eliminate two (2) or more aircraft changes en route; or

(b) Travel by U.S. carrier would extend the total travel time six (6) hours or more than would travel by foreign carrier.

(3) Short Distance Travel - For all short distance travel, regardless of origin and destination, use of a foreign carrier is permissible if the elapsed travel time on a scheduled flight from origin to destination airport by foreign carrier is three (3) hours or less and service by U.S. carrier would double the travel time.

17. SUSPENSION AND TERMINATION (NOV 1996) (USAMRAA)

a. The Grants Officer may terminate or suspend in whole or in part, this agreement by written notice to the recipient upon a finding that the recipient has failed to comply with the material provisions of this agreement, if the recipient materially changes the objective of the agreement, or if appropriated funds are not available to support the program. However, the Grants Officer may immediately suspend or terminate the award without prior notice when such action is necessary to protect the interests of the government.

b. Additionally, this agreement may be terminated by either party upon written notice to the other party, based upon a reasonable determination that the project will not produce beneficial results commensurate with the expenditure of resources. Such written notice shall be preceded by consultation between the parties. In the event of a termination, the Government shall have a paid-up license in any subject invention, copyright work, data or technical data made or developed under this agreement.

c. No costs incurred during a suspension period or after the effective date of a termination will be allowable, except those costs which, in the opinion of the Grants Officer, the recipient could not reasonably avoid or eliminate, or

which were otherwise authorized by the suspension or termination notice, provided such costs would otherwise be allowable under the terms of the award and the applicable Federal cost principles. In no event will the total of payments under a terminated award exceed the amount obligated in this award.

18. COOPERATIVE AGREEMENT CLOSE OUT

a. The recipient shall provide the following:

(1) Final Scientific report, as listed in Paragraph 11.b, within 30 days following the research ending date.

(2) Federal Cash Transactions Report SF 272 (Attachment 3); due within fifteen (15) calendar days following the end of each quarter, including the final quarter; submit original.

The following documents are due within 30 days following the research ending date.

(3) Patent Report (DD Form 882 Report of Inventions and Subcontracts) (Attachment): submit original.

(4) Cumulative listing of only the nonexpendable personal property acquired with Cooperative Agreement funds **for which title has not been vested to your institution.** (This may be submitted on your institution's letterhead.)

(5) Volunteer Registry Data Sheet, USAMRDC Form 60-R (Attachment Not Applicable). The principal investigator shall be directed to complete a form for each subject enrolled in this study and forwarded in accordance with the clause entitled "Use of Human Subjects."

b. In the event a final audit has not been performed prior to the closeout of the Cooperative Agreement, the sponsoring agency will retain the right to recover an appropriate amount after fully considering the recommendations on disallowed costs resulting from the final audit.

19. NONDISCRIMINATION

a. To the extent provided by law and any applicable agency regulations this award and any program assisted thereby are subject to the provisions of Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Title IX of Education Amendments of 1972 (P.L. 92-318, 20 USC 1681 et seq,), Section 504 of the Rehabilitation Act of 1973 (29 USC 794), the Age Discrimination Act of 1975 (P.L. 94-135), and the assurance of compliance which the recipient has filed with the Army.

b. The recipient shall obtain from each organization that applies to be, or serves as a subrecipient, contractor or subcontractor under this award (for other than the provision of commercially available supplies, materials, equipment, or general support services) an assurance of compliance.

20. SITE VISITS

The Grants Officer, through authorized representatives, has the right, at all reasonable times to make site visits to review project accomplishments and to provide such technical assistance as may be required. If any site visit is made by the Government representative on the premises of the recipient, a subrecipient, or subcontractor, the recipient shall provide, and shall require its subrecipients and subcontractors to provide, all reasonable facilities and assistance for the safety and convenience of the Government representatives in the performance of their duties. All site visits and evaluation shall be performed in such a manner as will not unduly interfere with or delay the work.

21. RIGHTS IN TECHNICAL DATA AND COMPUTER SOFTWARE The Government shall have Gov't Purpos rights in technical data and computer software under this cooperative agreement as specified in the DOD FAR Supplement (DFARS) 252.227-7013, "Rights in Technical Data and Computer Software," which is incorporated by reference.

22. PATENTS AND INVENTIONS

a. Patent Rights and inventions shall be as specified in the Federal Acquisition Regulation (FAR) at 52.227-11 Patent Rights--Retention by the Contractor (Short Form) which is incorporated by reference.

b. Patent Report (DD Form 882 Report of Inventions and Subcontracts) (Attachment 2); submit original and one (1) copy. This report is due annually and within thirty (30) days of the research ending date.

23. DISPUTES (MAY 1997) (USAMRAA)

Disagreements regarding issues concerning grants and cooperative agreements between the recipient and the Grants Officer shall to the maximum extent possible be resolved by negotiation and mutual agreement at the Grants Officer level. If agreement cannot be reached, it is our policy to use alternative dispute resolution (ADR) procedures that may either be agreed upon by the Government and the recipient in advance of the award or may be agreed upon at the time the parties determine to use ADR procedures. If the parties cannot agree on the use of ADR procedures, the recipient can submit, in writing, a disputed claim or issue to the Grants Officer. The Grants Officer shall consider the claim or disputed issue and prepare a written decision within 60 days of receipt. The Grants Officer's decision shall be final. The recipient may appeal the decision within 90 days after receipt of such notification. Appeals will be resolved by the Head of the Contracting Activity. The decision by the Head of the Contracting Activity will be final and not subject to further administrative appeal. However, the recipient does not waive any legal remedy, such as formal claims, under Title 28 United State Code 1492, by agreeing to this provision.

24. RESERVED

25. RESERVED

26. PROHIBITION OF USE OF HUMAN SUBJECTS (JAN 1992) (USAMRAA)

Notwithstanding any other provisions contained in this cooperative agreement or incorporated by reference herein, the recipient is expressly forbidden to use or subcontract for the use of human subjects in any manner whatsoever. In the performance of this cooperative agreement, the recipient agrees not to come into contact with, use or employ, or subcontract for the use or employ of any human subjects for research, experimentation, tests or other treatment under the scope of work as set out in the cooperative agreement without express written approval from the Grants Officer.

27. PROHIBITION OF USE OF HUMAN ANATOMICAL SUBSTANCES (APR 1997) (USAMRAA)

Notwithstanding any other provisions contained in this cooperative agreement or incorporated by reference herein, the recipient is expressly forbidden to use or subcontract for the use of human anatomical substances in any manner whatsoever. In the performance of this cooperative agreement, the recipient agrees not to come into contact with, use or employ, or subcontract for the use or employ of any human anatomical substances for research, experimentation, tests or other treatment under the scope of work as set out in the award without express written approval from the Grants Officer.

28. RESERVED

29. PROHIBITION OF USE OF LABORATORY ANIMALS (JAN 1992) (USAMRAA)

Notwithstanding any other provisions contained in this cooperative agreement or incorporated by reference herein, the recipient is expressly forbidden to use or subcontract for the use of laboratory animals in any manner whatsoever without the express written approval of the Grants Officer.

30. RESERVED

31. MILITARY RECRUITING ON CAMPUS

Military recruiting on campus under this cooperative agreement shall be as specified in the DOD FAR Supplement (DFARS) 252.209-7005, "Military Recruiting on Campus," which is incorporated by reference.

32. ATTACHMENTS

ATTACHMENT 1 - Front Cover
ATTACHMENT 2 - Foreword
ATTACHMENT 3 - SF 272, Federal Cash Transactions Report
ATTACHMENT 4 - DD Form 882, Report of Inventions and Subcontracts
ATTACHMENT 5 - Vendor EFT Registration Form (Sample)

Appendix 2A

USAF Noise Sensitive Species List Final Version

•American peregrine falcon	<i>Falco peregrinus anatum</i>
•bald eagle	<i>Haliaeetus leucocephalus</i>
•black-footed ferret	<i>Mustela nigripes</i>
•CA condor	<i>Gymnogyps californianus</i>
•cactus ferruginous pygmy owl	<i>Glaucidium brasilianum cactorum</i>
•interior least tern	<i>Sterna antillarum athalassos</i>
•jaguar	<i>Panthera onca</i>
•lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>
•masked bobwhite	<i>Colinus virginianus ridgwayi</i>
•Mexican spotted owl	<i>Strix occidentalis lucida</i>
•mountain plover	<i>Charadrius montanus</i>
•Sonoran pronghorn antelope	<i>Antilocapra americana sonoriensis</i>
•southwestern willow flycatcher	<i>Empidonax traillii extimus</i>
•swift fox	<i>Vulpes velox</i>

Appendix 2B

USAF Noise Sensitive Species List Historical Version

Current List

Reviewed & Approved by Roy Barker and Participating NHPs

- Mexican spotted owl
- bald eagle
- American peregrine falcon
- ~~Goshawk~~ (on original list – removed because it is not listed or candidate species)
- southwestern willow flycatcher
- interior least tern
- ~~pipit~~ (on original list – removed because only one vagrant sighting in NM & AZ)
- swift fox
- Sonoran pronghorn antelope
- black-footed ferret

Species Below Were Added to the Original List

- lesser long-nosed bat

(Added because it may be a noise sensitive species)

- CA condor

(Added because it was recently re-introduced into Arizona)

- Jaguar

(Added because it is expected to be Listed)

- cactus ferruginous pygmy owl

(Added because it was recently Listed)

- masked bobwhite

(Added because it is found on the Buenos Aires Wildlife Refuge, along the border with Mexico. The Border Patrol and DEA fly helicopters in the area and this subspecies may be subject to harassment.)

- Mountain Plover

(Added because recently added to USESA Proposed List)

COOPERATIVE AGREEMENT BETWEEN THE AIR FORCE AND THE NATURE CONSERVANCY

Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft

Statement of Work

1. Background

1.1 The United States Air Force (USAF) strives to protect and manage significant biological resources while at the same time accomplish its primary mission of national defense. The Air Force faces the challenge of ensuring military readiness by providing realistic training scenarios, while protecting the complex and diverse ecosystems potentially affected by training.

1.2 Air Combat Command (ACC) is responsible for a significant proportion of Air Force training flights. Training takes place over extensive, but well defined areas throughout the country. These training flights often take place at low altitudes and have the potential for environmental impacts, including noise related impacts to endangered species. In order to comply with the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the ACC must evaluate its air operations for impacts to noise-sensitive wildlife. The areas used for training flights change, the list of species believed sensitive to noise changes, the species and the species information are dynamic. Accordingly, in order to continuously evaluate impacts of training flights on sensitive wildlife species and to comply with the ESA and NEPA, ACC is developing a Geographic Information System that is geographically complete and easy to update.

1.3 The Air Force and The Nature Conservancy (TNC) have a successful history in carrying out a broad range of projects relating to natural resources stewardship. In 1988 the Department of Defense (DoD) and The Nature Conservancy entered into a cooperative agreement to identify, protect and maintain natural resources including threatened and endangered species, natural communities and ecosystems. The two parties signed a revised DoD-wide cooperative agreement in April 1995, which expands this partnership to include activities related to ecosystem-based management of biodiversity.

1.4 One key aspect of The Nature Conservancy's work with DoD and the Air Force is TNC's ability to work effectively with state Natural Heritage Programs (NHPs), which are the nation's principal source of scientifically reliable inventory data on biological diversity. TNC helped establish the network of NHPs and plays a key role in technical and information management support for the network. The NHPs have provided the Air Force with reliable and accurate data on the locations and conditions of species and natural communities on Air Force lands. The network of NHP is recognized as the best source for information and expertise needed by the Air Force to determine locations of noise-sensitive wildlife species that may be

sensitive to impacts from air operations. Natural Heritage programs are present in all 50 states and Puerto Rico.

1.5 The Nature Conservancy (TNC) and the Association for Biodiversity Information (ABI), an organization that represents the interests of constituent NHPs, are collaborating with the NHPs to develop and manage the Multi-Jurisdictional Dataset (MJD) - an aggregation of data on the location and condition of species of conservation interest. The objective of the MJD is to facilitate access to data and information products based on the national data set. Through the MJD, the NHPs can provide the Air Force with access to a GIS-compatible data layer identifying the locations of noise sensitive species.

2. Objectives

2.1 Provide the Environmental Analysis Branch, Environmental Programs Division, Civil Engineering Directorate, Air Combat Command with access to data and information products on the status and location of noise sensitive wildlife species in Arizona, New Mexico and the Tribal lands of the Navajo Nation in those two states;

2.2 Develop a model data use license that is acceptable to the ACC and most of the State Natural Heritage Programs and could be used by the ACC to acquire access, through the MJD, to data and information products about noise sensitive species for the rest of the United States; and

2.3 Provide Internet access to quality information about the counties-of-distribution of additional animal species of conservation concern for Arizona, New Mexico and the Tribal lands of the Navajo Nation in those two states.

3. Scope

3.1 The primary geographic scope of this project includes Arizona and New Mexico, including the Tribal lands of the Navajo Nation in those two states. Secondary project activities, specifically regarding development of a model data use-license, extends to the rest of the United States.

3.2 This project will provide access to specific location information for the following species: Mexican spotted owl, bald eagle, American peregrine falcon, goshawk, southwestern willow flycatcher, interior least tern, piping plover, swift fox, Sonoran pronghorn antelope and black-footed ferret. Other animal species may be added to this list as agreed to by the NHPs, TNC, ABI and the Air Force.

3.3 Only available, existing information is addressed through this agreement; the project does not include new field surveys.

3.4 The project will be complete in not more than one year from the time of award.

4. Project Tasks

4.1 Natural Heritage Programs in Arizona, Navajo Nation and New Mexico will improve the quality and completeness of locational data on animal species of conservation concern to meet the benchmark standards established by the ABI Data Standards Committee and required for participation in the MJD.

4.2 The Association for Biodiversity Information, in collaboration with The Nature Conservancy, will monitor compliance with the ABI Data Standards.

4.3 Once the data standards are met, the Natural Heritage Programs will send the data to The Nature Conservancy, where the data will be added to the MJD.

4.4 The Association for Biodiversity Information, in collaboration with The Nature Conservancy and the NHPs, will develop a model data use license that would provide the Environmental Analysis Branch, Environmental Programs Division, Civil Engineering Directorate, Air Combat Command with access to the locations and names of the noise sensitive species from the MJD. The ABI Data Sharing Committee will advocate the model agreement to Natural Heritage Programs throughout the U.S., thereby building a foundation for ACC to access similar data sets on a national scale.

4.5 Data use-license agreements will be developed with the NHPs in Arizona, Navajo Nation and New Mexico to provide the Environmental Analysis Branch, Environmental Programs Division, Civil Engineering Directorate, Air Combat Command with access, through the MJD, to data about noise sensitive species in those states.

4.6 Upon receipt of data from the Heritage programs in Arizona, New Mexico, and the Navajo Nation, The Nature Conservancy will provide ACC with a GIS compatible data set including the distribution by USGS 7.5 minute quadrangle maps, and latitude and longitude of the point centrum for locations of the selected species (including Mexican spotted owl, bald eagle, american peregrine falcon, goshawk, southwestern willow flycatcher, interior least tern, piping plover, swift fox, Sonoran pronghorn antelope, and black-footed ferret) in Arizona, New Mexico and the Navajo Nation.

4.7 The Association for Biodiversity Information will incorporate the county-of-distribution records for the animal species of conservation interest in Arizona and New Mexico in a database to be made accessible over the Internet.

5. Deliverables

5.1 Three quarterly progress reports (anticipated size: 1-2 pages) and one final report shall be provided to ACC.

5.2 The Model Data Use-License shall be provided to ACC not more than six months following award of this agreement.

5.3 The GIS dataset shall be provided to ACC not more than one year following award of this agreement.

5.4 The county-of-distribution data set will be accessible on the Internet not more than one year following award of this agreement.

6. Special Considerations

6.1 It is not anticipated that this effort will involve visiting any Air Force installation. However, in the event that this becomes necessary, The Nature Conservancy or its representatives must inform the Air Force point of contact of dates, times and purpose of each trip in writing at least one week in advance of the intended trip.

6.2 The Air Force agrees that its point of contact or representative will assist in development of the Model Data Use-License and may participate in periodic project evaluations.

6.3 The Air Force and The Nature Conservancy (or its designated representative) will work together on a regular basis to accomplish this Statement of Work, with regular contacts for the purpose of providing guidance, monitoring work, providing input, and setting or adjusting priorities.

7. Points of Contact

7.1 Air Force: Mr. Roy Barker, HQ ACC/CEVPN, 129 Andrews St Ste 102, Langley AFB VA 23665-2769 (phone: 757-764-9338, DSN 574-9338, Telefax 757-764-9199) E-mail: roy.barker@langley.af.mil

7.2 The Nature Conservancy: Ms. Shara Howie, 1815 North Lynn Street, Arlington, VA 22209 (phone: 703-841-4886; Telefax: 703-525-8024)

**PROVIDING THE U.S. AIR FORCE WITH DATA ON SPECIES
SENSITIVE TO NOISE FROM LOW FLYING AIRCRAFT**

Proposed Budget

	Hours	Actual Rate/Hour ¹	Rate w/Benefits ²	Total
LABOR				
Project Manager	114	28.57	39.28	\$4,478
Data Manager	216	18.79	25.84	5,581
SUBTOTAL FOR LABOR				\$10,059
OTHER COSTS				
CONTRACTUAL				
Association for Biodiversity Information				27,000
Arizona Natural Heritage Program				17,000
Navajo Natural Heritage Program				17,000
New Mexico Natural Heritage Program				50,000
TRAVEL				
4 trips Wash DC to AZ/NM @ \$1,000/trip				3,630
2 trips Window Rock to Phoenix @ \$500/trip				1,000
2 trips Albuquerque/Phoenix @\$500/trip				1,000
SUBTOTAL FOR OTHER DIRECT COSTS				\$116,630
TOTAL DIRECT COSTS				\$126,689
TOTAL INDIRECT COSTS (@20%)				\$25,338
TOTAL COSTS FOR PROJECT				\$152,027

¹ Note that The Nature Conservancy employs a 35 hour work week; thus all hourly rates represent annual salary's divided by 1,820 working hours in a year.

² FICA and benefits are calculated at a rate of 37.5%

Appendix 4

Short-Term Benchmark Data Standards for the Canadian and U.S. Natural Heritage Programs and Conservation Data Centres

**Prepared by the Association for Biodiversity Information
Data Standards Committee
10 December 1998**

Table of Contents

1. Introduction
2. Elements that should meet Benchmark Standards
 - 2.1 Core Elements-Short Term
3. Records that should meet Short Term Benchmark Standards
4. Fields that should meet Short Term Benchmark Standards
 - 4.1 Core Fields-Short Term
 - 4.3 Additional Fields
5. GIS Standards
6. Benchmark Standards for Data Quality and Accuracy
 - 5.1 Benchmark Accuracy Standards
 - 5.2 Benchmark Standards for Completeness and Currentness of Data
 - 5.3 Reconciliation of Data Between Data Centers

1. Introduction

One of the needs of the Association for Biodiversity Information (ABI) and its membership, as identified at the 1994 ABI Annual Meeting in Birmingham, AL, is the production of range-wide, regional and global data products and services. We believe these can be achieved most efficiently if data from member data centers is standardized in certain areas. The following benchmark data standards are intended to facilitate production of such products and services and are recommended to all member data centers.

These standards establish criteria for :

1. **what elements and element occurrences should meet the benchmark data standards**
2. **what database fields should be completed**
3. **what the benchmark data standard is for each of the fields to be completed**
4. **what errors are acceptable for the benchmark data standards described in 3 above**

ABI will encourage and assist the NHP/CDCs to implement these recommended benchmark data standards.

ELEMENTS THAT SHOULD MEET BENCHMARK STANDARDS

This section defines recommended priorities for elements that should be tracked by NHP/CDCs and considered for inclusion in multi-jurisdictional data products and services.

2.1 Core Elements-Short Term¹ (highest priority for filling data gaps):

The following criteria define which elements should be tracked by all NHP/CDCs. For these elements the specified data files should contain information in all of the core fields (defined below) for which data are available.

All taxa that are included or officially proposed on federal threatened and endangered species lists (in the US, this includes candidates for listing).*	ET data, plus all available EORs
All taxa included on state, provincial, or tribal threatened or endangered lists, except for those taxa ranked S4 or S5 in the jurisdiction.	ET data, plus all available EORs
G1, T1, G2 and T2 vertebrate animals and vascular plants selected by ROUNDED.GRANK.	ET data, plus all available EORs
GX and GH vascular plants and vertebrate animals	ET data only

* Marine mammal and sea turtle terrestrial breeding areas are included in the standards. Other types of marine occurrences are excluded at this time. Comments and recommendations are welcome on what data standards should be established for marine animals.

3. RECORDS THAT SHOULD MEET MINIMUM STANDARDS

Not all Element Occurrence Records (EOR) need to meet the benchmark data standards by having all available data entered into the Core Fields. The ABI Data Standards Committee recommends that EORs of the Core Elements and with the following characteristics meet benchmark data standards for Core Fields:

- 1) IDENT = "Y" "?" or is blank (in other words does not = "N" or an unknown value)
- 2) PRECISION = "S" "M" "G"

EORs that are known to be incorrectly identified, are unmappable, or have the "precision field" blank should not be included in multi-jurisdictional data products and services.

Over the long-term, we would like to include only those EORs where the field for quality control (QC) = "Y"

4. HP/CDC DATABASE FIELDS THAT SHOULD MEET BENCHMARK STANDARDS

This section defines the recommended priorities for NHP/CDC database fields that should meet the benchmark standards in all NHP/CDCs. Definitions in the BCD help screens serve to define acceptable values for each of the fields.

4.1 Core Fields-Short Term (highest priority for filling data gaps):

These are fields which should be completed and maintained by all NHP/CDCs for the Core Elements, and for which the data are available. Fields marked with an asterisk have been identified by the ABI Data Sharing Committee as containing sensitive data that will not be included in multi-jurisdictional products without NHP/CDC permission.

Data Field	Data File
GNAME, GCOMNAME, NNAME, NCOMNAME, SNAME, SCOMNAME GRANK, GRANKDATE, NRANK, NRANKDATE, SRANK, SRANKDATE SPROT USESA or NPROT (Canadian listed status included in this field)	ET
GREVDATE NREVDATE	EGR/ENR
EOCODE SURVEYSITE* PRECISION NATION COUNTY (CODE & NAME) includes Regional Districts or other sub-province boundaries in Canada; "chapter, district, or other administrative sub-unit for Indian Nations. QUAD (CODE & NAME), includes NTS map sheet information in Canada WATERSHED (for U.S. Programs only, until a North American Coverage exists) LAT* LONG* TOWNRANGE* (where rectangular land surveys apply) SECTION* (where rectangular land surveys apply) MERIDIAN (where rectangular land surveys apply)	EOR
LASTOBS EODATA* GENDESC* IDENT DATASENS UPDATE (symbolic field based on CHANGE.DATE)	EOR
CITATION* SOURCECODE*	SA/EOR
MANAME MACODE	MABR/EOR

* May contain sensitive data that will not be included in multi-jurisdictional products without NHP/CDC permission.

GIS STANDARDS

GIS data is not to be included as part of the initial multi-jurisdictional dataset. Interim GIS standards have been recommended for the network, and will be included as soon as they are finalized.

6. BENCHMARK STANDARDS FOR DATA QUALITY AND ACCURACY

This section describes the recommended benchmark standards for data accuracy, completeness and currentness. Objectives are also recommended for reconciliation of data between NHP/CDCs.

6.1 Benchmark Accuracy Standards

The following fields have recommended benchmark accuracy standards/error rates:

LAT, LONG	99% on the correct topographic quad based on calculated Latitude and Longitude; 95% to the correct location of EO (within 5 seconds for an AS@ precision record.)
PRECISION	95% with the precision supported by the available data.
LASTOBS	95% with the correct date from the most recent source.
Other locator fields (e.g., COUNTY, LOCALJURIS, TOWNRANGE, SECTION, WATERSED, PHYSPROV, etc.)	95% that the EO is mapped in the indicated polygon.
NATION	100% mapped in the correct nation.
USESA	99% with the most recent, correct status.
N/S/PROT	99% with the most recent, correct status.
G/N/S/rank	100% reviewed at least every five years.

6.2 Benchmark Standards for Completeness and Currentness of Data

For the elements, records and fields described above all data from readily available secondary sources should be processed. This includes museum specimens (at least those available from institutions within the jurisdiction of the NHP/CDC), published and unpublished reports.

For legally protected taxa that are of concern to the NHP/CDC and G1 taxa all available data (including field surveys) should be processed into the databases and other files within six months. Where this timeline cannot be met the NHP/CDC should qualify their data accordingly;

this is sometimes the case when numerous species (or numerous EOs of a single species) in a jurisdiction are simultaneously given legal protection.

Data about other elements (listed under 2.1 Core Elements - Short term) should be processed within one year.

6.3 Reconciliation of Data Between Data Centers

Where elements occur on or near borders between jurisdictions it may be necessary for two (or more) data centers to reconcile their information. For EOs held by both data centers, the centers must agree that only one of the data centers will provide a given shared EO for use in multi-jurisdictional products.

There are technical, administrative and financial issues to be resolved in order to reconcile data between NHP/CDCs. Thus, ABI has adopted a five-year goal for accomplishing this task with Canada and the U.S. Note that this is consistent with the timeline for reconciling between center use of Managed Areas and Physiographic Provinces (ecoregions).

¹ Short-term goal is to achieve the benchmark standard within 12 months of when funds are available.

Appendix 5

Status Report March 1999 - July 1999 USAF Noise Sensitive Species Project Cooperative Agreement No. DAMD17-98-2-8016

Summary of Accomplishments

- Status Report Meeting – March 18, 1999
- Presentation to Peter Boise – April 13, 1999
- Data Request/Demo Dataset delivered– March 26, 1999
- Data Use Licence status
- Wintering bald eagle information clarified
- Subaward status - Heritage Programs/The Nature Conservancy (TNC)
- Data reconciliation and upload status for NM, NN & AZ/Review of Element Occurrence records (EORs)
- Public web site on county-of-distribution data
- Arizona Game and Fish Department/Heritage Data Management System (HDMS) Progress Report
- Navajo Natural Heritage Program Progress Report
- New Mexico Natural Heritage Program Progress Report

Attachment

- Attachment 1 – Revised species list

Status Report Meeting – March 18, 1999

Participants: Roy Barker, US Air Force
Shara Howie, The Nature Conservancy
Richard Warner, Association for Biodiversity Information
Julie Bourns, Association for Biodiversity Information

The Nature Conservancy and the Association for Biodiversity Information provided the US Air Force with an update on the TNC/ABI joint venture and a summary of the status and progress of the Noise Sensitive Species project. The quarterly report submitted in January 1999 was reviewed and the presentation to Peter Boise on April 13, 1999 was discussed. Roy Barker also provided input on specific project requirements that were incorporated into the project plan/timeline.

Presentation to Peter Boise – March 26, 1999

Participants: Shara Howie, The Nature Conservancy
Richard Warner, Association for Biodiversity Information
Julie Bourns, Association for Biodiversity Information

Richard Warner, Julie Bourns and Shara Howie attended part of a DoD Legacy Natural Resources gathering to present a status report on the Multi-Jurisdictional Dataset (MJD) project and to provide a glimpse into the future of the project. Richard Warner presented

the MJD status report. Shara Howie also provided an overview of the organizational changes occurring in the Conservancy and on the creation of a new Association for Biodiversity Information. Please contact Shara Howie at (703) 841-4886 if you are interested in getting a copy of the presentation.

Data Request/Demo Dataset delivered- March 26, 1999

A Demo Dataset from the New Mexico Natural Heritage Program was delivered on March 26, 1999 to the US Air Force. Records included all occurrences of Mexican Spotted Owl, Peregrine Falcon, Southwest Willow Flycatcher, and Bald Eagle in New Mexico.

The Demo Dataset was provided in DBase format and included wintering areas for the Bald Eagle, nesting and roosting areas for the Peregrine Falcon, breeding and nesting areas for the Southwest Willow Flycatcher, and nesting, roosting, and sighting areas for the Mexican Spotted Owl.

Data Use Licence (DUL) Status

The DUL is in the process of being developed by The Nature Conservancy's legal counsel. We expect the DUL to be completed and finalized by the end of July.

Wintering bald eagle information clarified

It was agreed upon that a general report on sites of wintering bald eagles will be provided to the US Air Force where information exists.

Subaward status - Heritage Programs/ TNC

The New Mexico Natural Heritage Program (NMNHP) signed the NMNHP/TNC subaward that outlines the project requirements and deadlines. Navajo Natural Heritage Program (NNHP) and AZ Game and Fish Department/HDMS have not signed the subawards yet but NNHP has delivered their data for the project and AZ Game and Fish Department/HDMS plans to do so by the end of July.

Data reconciliation and upload status for NM, NN & AZ/Review of Element Occurrence records (EORs)

The NN data reconciliation has almost been completed and the EORs (species location data) will be uploaded and reviewed shortly after the reconciliation is complete. The NM data reconciliation has been completed and the EORs are currently being reviewed and formatted. The AZ data reconciliation will begin soon and the EORs are expected to be delivered by the end of July for upload and review.

Public web site on county-of-distribution data

The public web site containing county-of-distribution data for animal species of conservation interest, will be released in October 1999. The public web site, NatureServe, will be released and operating in September 1999 but the county and watershed data will not be displayed until October 1999.

AZ Game and Fish Department/HDMS (AZHDMS) Progress Report

The AZHDMS has been busy ensuring that current data for the noise sensitive species has been acquired and processed. They have also been doing checks to meet the data standards set forth in the project. This has been accomplished, in part, in performing quality control checks on data already housed in the AZHDMS. AZHDMS has been using ArcView to quality control check several fields within their database, including, but not limited to, township and range, county, watershed, and latitude and longitudes (when needed). AZHDMS has also done a fair amount of coordination with ABI, TNC, and the local Air Force base on this project to ensure that the appropriate data will be delivered without breaching our current data release protocol.

Upon request from the AZHDMS, The Nature Conservancy has sent letters to the US Forest Service, US Fish and Wildlife Service, Bureau of Land Management, National Park Service and Marine Corp in Arizona to obtain permission to release data on species occurring on federal lands. To ensure that the proper protocol is followed for the AZHDMS to obtain the award money from the project, a formal data request for data was sent to AZ and the AZHDMS subaward is currently being redrafted to only include language of a donation of money for data development. Due to unexpected work requirements to ensure proper payment to AZHDMS and to follow proper security protocol, we hope to carry out and complete all necessary work specific to AZHDMS by February 1999.

Navajo Natural Heritage Program Progress Report

Performed data review and quality control of records for project requirements. Sent all data to meet project requirements on June 3, 1999.

New Mexico Natural Heritage Program Progress Report

Ongoing work throughout the reporting period involved:

- Quality control (QC) of records existing in database.
- S. Gottlieb and M. Altenbach enter and QC new data on species under contract.
- Updating existing Mexican Spotted Owl records and combining EOs to comply with U.S. Forest Service Protected Activity Center (PAC) methodology.

March, 1999

- 3/3 - 3/5 - S. Gottlieb traveled to Gila National Forest's Quemado, Reserve, and Silver City Ranger Districts to obtain MSO data. Data from other Ranger Districts were obtained in these offices, including Glenwood, Luna (now combined with Quemado), Black Range, Mimbres, and Wilderness.
- 3/9 - S. Gottlieb spoke with Santa Fe National Forest's Jemez Ranger District Wildlife Biologist about obtaining MSO data. He will be assigning the task of copying data sheets and maps to Forest employee. He expressed concern that data he provides not be given out without prior notification directly to his office.
- 3/10 - 3/12 - S. Gottlieb traveled to Lincoln National Forest's Sacramento and Smokey Bear Ranger Districts to obtain MSO and Northern Goshawk data. Data from Guadalupe Ranger District were obtained as well.
- 3/22: Provided interim data set per U.S.A.F. request.

April, 1999

- 4/20: S. Gottlieb visited Sandia Ranger District of Cibola National Forest to obtain data on Mexican Spotted Owl, Northern Goshawk, and Peregrine Falcon. Data from the Mountainair Ranger District were obtained as well.

May, 1999

- 5/5: S. Gottlieb visited Pecos Ranger District of Santa Fe National forest to obtain data on Mexican Spotted Owl, Northern Goshawk, and Peregrine Falcon. Data from the Las Vegas Ranger District were obtained as well.
- 5/12: S. Gottlieb visited Magdalena Ranger District of Cibola National forest to obtain data on Mexican Spotted Owl.
- 5/24: S. Gottlieb made arrangements with District Biologist from Jemez Ranger District of Santa Fe National Forest to have his office provide copies of survey forms for Mexican Spotted Owl. He will not allow a member of NMNHP staff to visit his office to obtain the data.
- 5/25: Agreed to provide locational data on Mountain Plover, and general information about wintering bald eagle sites.

June, 1999

- 6/10-6/14: S. Gottlieb and K. Elliott are preparing preliminary data set for upload into TNC system as a test for EOR data.

Attachment 1

USAF/ACC Noise Sensitive Species List

Current List

Reviewed & Approved by Roy Barker and Participating NHPs

- Mexican spotted owl
- bald eagle
- American peregrine falcon
- ~~Goshawk~~ (on original list – removed because it is not listed or candidate species)
- southwestern willow flycatcher
- interior least tern
- ~~pipin~~ plover (on original list – removed because only one vagrant siting in NM & AZ)
- swift fox
- Sonoran pronghorn antelope
- black-footed ferret

Species Below Were Added to the Original List

- lesser long-nosed bat (Added because it may be a noise sensitive species)
- CA condor (Added because it was recently re-introduced into Arizona)
- Jaguar (Added because it is expected to be Listed)
- cactus ferruginous pygmy owl (Added because it was recently Listed)
- masked bobwhite (Added because it is found on the Buenos Aires Wildlife Refuge, along the border with Mexico. The Border Patrol and DEA fly helicopters in the area and this subspecies may be subject to harassment).
- Mountain Plover – Recently added to USESA Proposed List (added 3/99)

Appendix 6

Noise Sensitive Species Project

Introduction

In order to comply with the Endangered Species Act and the National Environmental Policy Act, the Air Combat Command must evaluate its air operations for impacts to noise sensitive wildlife while accomplishing its primary mission of national defense. The information provided for the defined 'Noise Sensitive Species' (see Attachments 1A & 1B) will be useful to protect biological diversity from training flights and other air operations that often take place at low altitudes and have the potential for environmental impacts, including noise related impacts to endangered species.

The following is an overview on the records and fields of information for noise sensitive species (see Attachments 1A & 1B) that are included in the enclosed dataset for species occurring in Arizona, New Mexico and the tribal lands of Navajo Nation in Arizona and New Mexico.

Note that the Natural Heritage Network refers to species and natural communities as 'elements' and refer to an element location as an Element Occurrence, or EO. An EO is defined as an area of land and/or water on which a species, species population or natural community is, or was, present. An EO should have practical conservation value for the species or natural community.

For a copy of the Data Use License outlining the restricted use of the enclosed dataset, please refer to Appendix 1 enclosed in the back of this binder.

Notes on Dataset Data Quality for New Mexico

- *American peregrine falcon** – Includes points in the database that currently include nests, roosts, sightings or breeding areas
- *bald eagle** – Includes points in the database that currently include sightings, breeding areas, feeding areas or wintering areas
- *black-footed ferret** – Includes points in the database that currently include sightings
- *interior least tern** – Includes points in the database that currently include sightings, nesting areas, breeding areas or migratory stopover areas
- *jaguar** – Includes points in the database that currently include sightings
- *Mexican spotted owl** – Includes points in the database that currently include sightings, breeding areas, roosting areas or nesting areas
- *mountain plover** – Includes points in the database that currently include sightings, nesting areas or breeding areas
- *southwestern willow flycatcher** – Includes points in the database that currently include sightings, nesting areas or breeding areas
- *swift fox** – Includes points in the database that currently include permanent residence areas or sightings

New Mexico Natural Heritage program does not track the following species:

- *California condor** – Not expected to occur in New Mexico, reintroduction in Southern California began in 1992, New Mexico and northern Arizona have been discussed as possible future reintroduction sites
- *cactus ferruginous pygmy owl** – Not expected to occur in New Mexico, range covers south-central Arizona and southern Texas south through lowlands of Mexico, Central America, and South America to northern Chile, Eastern Peru, Bolivia, Central Argentina and Uruguay
- *lesser long-nosed bat** – New Mexico Natural Heritage program does not track the species in their database
- *masked bobwhite** – Not expected to occur in New Mexico, range covers Sonora, Mexico, and south-central Arizona, reintroduced at the Buenos Aires National Wildlife Refuge in southern Arizona
- *Sonoran pronghorn antelope** – Not expected to occur in New Mexico, found exclusively in the Sonoran Desert of Arizona and Mexico

Notes on Dataset Data Quality for Navajo Nation

***American peregrine falcon** – Navajo Nation Natural Heritage program tracks EOs for the American peregrine falcon, *Falco peregrinus anatum* (ABNKD06071) under a the full species code for peregrine falcon, *Falco peregrinus* (ABNKD06070) instead of the code ABNKD06071 which New Mexico and Arizona use for tracking. For Navajo Nation EO records, the American peregrine falcon will be listed as peregrine falcon, *Falco peregrinus*. Includes points in the database that currently include sightings, breeding areas or nesting areas.

***bald eagle** – Includes points in the database that currently include migratory stopover areas or wintering areas

***black-footed ferret** – Includes points in the database that currently include sightings or permanent residence areas

***Mexican spotted owl** – Includes points in the database that currently include breeding areas or roosting areas

***mountain plover** – Includes points in the database that currently include nesting or breeding areas

***southwestern willow flycatcher** – Includes points in the database that currently include nesting, breeding or migratory stopover areas

Navajo Natural Heritage program does not track the following species:

***California condor** – Not expected to occur in lands of Navajo Nation, recent reintroduction to Bureau of Land Management/Park Service lands adjacent to Navajo Nation but very little use of Navajo Nation by condors

***cactus ferruginous pygmy owl** – Not expected to occur in lands of Navajo Nation

***interior least tern** – Not expected to occur in lands of Navajo Nation

***jaguar** – Not expected to occur in lands of Navajo Nation

***lesser long-nosed bat** – Not expected to occur in lands of Navajo Nation

***masked bobwhite** – Not expected to occur in lands of Navajo Nation

***Sonoran pronghorn antelope** – Not expected to occur in lands of Navajo Nation

***swift fox** – Not expected to occur in lands of Navajo Nation

Notes on Dataset Data Quality for Arizona

- *American peregrine falcon** – Includes points in the database that currently include successful breeding areas, evidence of breeding areas, or sightings
- *bald eagle** – Includes points in the database that currently include successful breeding areas, evidence of breeding areas, or sightings
- *black-footed ferret** – Includes a point in the database that is currently a questionable sighting. Arizona Heritage Data Management System is not tracking experimental nonessential populations for black-footed ferret. See Appendix 7 for information on the 1996 Black-Footed Ferret Release Protocol for Aubrey Valley, Arizona and see Appendix 8 for the Results of the 1997 Black-Footed Ferret Release Effort in Aubrey Valley, Arizona.
- *cactus ferruginous pygmy owl** – Includes points in the database that currently include sightings or nesting areas
- *jaguar** – Includes points in the database that currently include observations
- *lesser long-nosed bat** – Includes points in the database that currently include sightings, observations or colonies
- *masked bobwhite** – Includes points in the database that currently include sightings
- *Mexican spotted owl** – Includes points in the database that currently include evidence of breeding areas, sightings or observations
- *mountain plover** – Includes points in the database that currently include wintering sightings or nesting areas
- *Sonoran pronghorn antelope** – Includes points in the database that currently include sightings. See Appendix 9 for a 1995 Sonoran Pronghorn Population Monitoring Progress Report, Appendix 10 for a 1997 Sonoran Pronghorn Population Monitoring Progress Report and see Appendix 11 for a Sonoran Pronghorn 1996 Aerial Survey Summary
- *southwestern willow flycatcher** – Includes points in the database that currently include evidence of breeding areas or sightings

Arizona Heritage Data Management System does not track the following species:

- *California condor** – Arizona Heritage Data Management System is not tracking experimental nonessential populations for California condor. See Appendix 6 for information on the California condor Reintroduction Proposal for the Vermilion Cliffs, Northern Arizona.
- *interior least tern** – Not expected to occur in Arizona
- *swift fox** – Not expected to occur in Arizona

Wintering Bald Eagle Reports

General reports on wintering bald eagle sites are provided under the following Attachments/Appendices:

Attachment 2A - New Mexico Natural Heritage Program Wintering Bald Eagle Report

Attachment 2B - Navajo Natural Heritage Program Wintering Bald Eagle Report

Appendix 2 – Arizona Bald Eagle Nestwatch Program: 1994-1995 Management Recommendations

Appendix 3 – Arizona Bald Eagle Winter Count: 1995

Appendix 4 – Arizona Bald Eagle Winter Count: 1996

Appendix 5 – Arizona Bald Eagle Winter Count: 1997-1998

Data Included in Dataset

For all 'noise sensitive' animal species (see Attachments 1A & 1B) that occur in Arizona, New Mexico and the tribal lands of Navajo Nation in Arizona and New Mexico, the following data as outlined below will be provided.

Records Included

Records where the taxonomic identity of the species has been confirmed, and the Element Occurrence (EO) has been mapped to a precision of seconds (accuracy within a three-second radius), minutes (accuracy within a one-minute radius) or general (precision within 8 km, 5mi, or to quad or place name). This information is stored in the IDENT and PRECISION fields of the EO file.

Files and Fields Included

All files are contained on the enclosed disk in a self-executable file named NSSAF.exe. To extract the files, copy NSSAF.exe to an empty subdirectory and double click on the file name.

The original tables for New Mexico and Navajo Nation records contained multiple values of information in one or more fields known as multi-valued fields. To allow you to store and utilize each value of data more efficiently, the multi-valued data was normalized or split into related tables. This means that each value that was formerly stored in one field within one record will now be listed individually within its own separate record. The example below illustrates the method of normalizing a table.

Original File with multi-valued fields in one record

Field	Value
EOCODE	ABNKD06071*158*AZ
COUNTYCODE (multi-valued field)	AZMARI AZMOHA
COUNTYNAME (multi-valued field)	MARICOPA MOHAVE

Normalized File

Field	Value
Record # 1	
EOCODE	ABNKD06071*158*AZ
COUNTYCODE	AZMARI
COUNTYNAME	MARICOPA
Record # 2	
EOCODE	ABNKD06071*158*AZ
COUNTYCODE	AZMOHA
COUNTYNAME	MOHAVE

Nine Dbase tables and nine text files are included on the enclosed disk. The text files contain the same fields of information as the Dbase files and have been included for your convenience. In order to normalize the data for New Mexico and Navajo Nation Element Occurrence (EO) records, eight associated dbase tables/text files containing normalized data accompany the main EOR dbase table/text file (MAINEOR.DBF/MAINEOR.TXT). The main EOR dbase table/text file only contains single valued fields so each EOCODE field and the record attached will be unique.

The eight normalized dbase tables/text files may contain numerous records for one particular EO in New Mexico or Navajo Nation. For New Mexico and Navajo Nation EO records, the following listed dbase tables/text files may have numerous records with the same EOCODE field but each record contains unique content in all other fields:

County.dbf/County.txt
Wshed.dbf/Wshed.txt
Quad.dbf/Quad.txt
Trs.dbf/Trs.txt
Nnsource.dbf/Nnsource.txt
Nmsource.dbf/Nmsource.txt
Navajoma.dbf/Navajoma.txt
Nmma.dbf/Nmma.txt

A description of the fields contained within each dbase table/text file is listed on pages 10-16. The EOCODE field relates all dbase tables/text files together and should be used as the "key field".

Important Notes on Data Differences for Arizona

Arizona Data Exclusions

Due to security protocol issues in Arizona for species occurring on private lands, the Arizona Heritage Data Management System can not distribute any field that may disclose the named identity of a particular species. For the 121 EO records for species occurring on private lands in Arizona, the following fields of information are not provided:

EOCODE
EGTGNAME
EGTGCNAME
ESTSNAME
SCOMNAME
EGTGRANK
EGTGDATE
SRANK
SRANKDATE
ESADATE

**GENDESCSV
EODATASV
AZCITATION**

A description of each field is listed on pages 10-16.

For species occurring on public lands in Arizona, the entire set of fields has been provided. Due to unavailability of data, the SECTION field has been excluded for all AZ records. Due to legal political security disputes between the AZ Heritage Data Management System and the Indian reservations, information can not be provided for species occurring on reservations in Arizona. The information not released for Indian reservations encompasses roughly 10% of Arizona. Future work will hopefully be able to include this information once legal issues are cleared in the state.

Arizona Data Differences

Unlike New Mexico and Navajo Nation, Arizona maps EOs with point locations opposed to polygons, so only one county, watershed, quad, etc. is given to each record based on the centrum of the point. As a result, Arizona does not use multi-valued fields as New Mexico and Navajo Nation do so Arizona's data did not need to be normalized. This means that no records for Arizona are contained in any of the eight associated dbase tables/text files to the main EOR dbase table/text file (MAINEOR.dbf/MAINEOR.txt). All fields for Arizona have been sent in the main EOR dbase table/text file. The following 16 fields are specific to Arizona and are contained in the main EOR file (MAINEOR.dbf/MAINEOR.txt):

**AZCOUNTYNA
AZCOUNTYCO
AZWATERSHE
AZQUADCODE
AZQUADNAME
AZMERIDIAN
AZTOWNRANG
AZMACODE1
AZMACODE2
AZMACODE3
AZMACODE4
AZMANAME1
AZMANAME2
AZMANAME3
AZMANAME4
AZCITATION**

A description of each field is listed on pages 10-16.

Non-standard Fields for Arizona

The following fields have been provided from Arizona but do not follow the same standard format as the equivalent fields for New Mexico and Navajo Nation records:

AZMACODE1
AZMACODE2
AZMACODE3
AZMACODE4
AZMANAME1
AZMANAME2
AZMANAME3
AZMANAME4
AZCITATION

A description of each field is listed on pages 10-16.

These non-standard fields have been included because they still provide the same type of valuable information as New Mexico and Navajo Nation records but the exact format is not the same.

*Denotes field as a memo field

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

EGTCNAME (Global Name) - The standard global (i.e., rangewide) scientific name (genus and species) adopted for use by the Natural Heritage Central Databases based on selected standard taxonomic references.

EGTGCNAME (Global Common Name) - The standard global (i.e., rangewide) common name of species adopted for use in the Natural Heritage Central Databases (e.g. the common name for *Haliaeetus leucocephalus* is bald eagle).

ESTSNAME (State/Subnation Name) - The standard state scientific name (genus and species) adopted for use by the state/subnation program based on selected standard taxonomic reference(s) for the state/subnation.

SCOMNAME (State/Subnation Common Name) - The standard state common name of species adopted for use by the state/subnation program based on selected standard taxonomic reference(s) for the state/subnation.

EGTGRANK (Global Rank) - The conservation status of a species from a global (i.e., rangewide) perspective, characterizing the relative rarity or imperilment of the species. See more detail on global ranks (see attachment 3).

EGTGDATE (Global Rank Date) - The date the GRANK was originally entered or last changed by the lead responsible office.

SRANK (State/Subnational Rank) - The conservation status of a species from the state/subnation perspective, characterizing the relative rarity or imperilment of the species. Together these values provide national distribution data. See more detail on State/Subnational ranks (see attachment 3).

SRANKDATE (State/Subnational Rank Date) - The date when the SRANK was last entered or changed for the element.

SPROT (State/Subnational Protection Status) - Abbreviation used by state/subnation for the level of legal protection afforded to the element by that entity. Abbreviations and definitions will vary by state or subnation (see attachment 4).

EGTUSESA (U.S. Endangered Species Act Status) - Official federal status assigned under the U.S. Endangered Species Act. (see attachment 5 for a detailed definition).

ESADATE (U.S. Endangered Species Act Status Date) - Date when the US Federal species category was published in the Federal Register.

PRECISION (Precision) - Code for EO mapping precision. Values include: S = seconds: accuracy within a three-second radius, M = minutes: accuracy within a one-minute radius, G = general: precision within 8 km, 5mi, or to quad or place name, and U = unmappable.

NATION (Nation) - Name of nation where EO occurs (US).

STATE (State) - Name of state where EO occurs.

LATI (Latitude) - The x coordinate (latitude) of the Element Occurrence centrum expressed in degrees, minutes and seconds.

LONGI (Longitude) - The y coordinate (longitude) of the Element Occurrence centrum expressed in degrees, minutes and seconds.

LATDECI (Decimal degrees Latitude) - The x coordinate (latitude) of the Element occurrence centrum expressed in decimal degrees.

LONGDECI (Decimal degrees Longitude) - The y coordinate (longitude) of the Element Occurrence centrum expressed in decimal degrees.

LASTOBS (Last Observation) - The date that the Element Occurrence was last observed to be extant at the site.

IDENT (Identification) - Checkoff indicating whether taxonomic identity of an element has been confirmed, determined to be wrong, or is in question. 'Y' = identification of EO is confirmed. 'N' = identification of EO has been determined to be wrong. '?' = identification is in question.

DATASENS (Data Sensitivity) - Checkoff indicating whether locational information on this EO is sensitive and should be restricted from unsecured use. 'Y' = yes, data is sensitive and should not be made available for general use. 'N' = no, data is not sensitive and may be provided for general use. [] = uncertain whether the data is sensitive.

UPDATE (Update Date) - The date the EO record was last updated.

***EODATASV (EO Data)** - Data collected on the biology of the EO, including the number of individuals, vigor, habitat, soils, associated species, particular characteristics, etc.

***GENDESCSV (General Description)** - A description of the general area where the EO is located.

AZCOUNTYNA (Arizona County name) – Name of County where EO occurs in Arizona.

AZCOUNTYCO (Arizona County code) – Code for corresponding AZCOUNTYNA in Arizona. The first 2 letters of the code contain the state abbreviation of the county location and the last 4 letters contain the first 4 letters of the AZCOUNTYNA.

AZWATERSHE (Arizona Watershed) – The appropriate 8-digit code from the U.S. Geological Survey Hydrologic Unit Map for each watershed where the EO is located in Arizona.

AZQUADCODE (Arizona Quad code) – The code for each USGS 7.5' (or 15') topographic quadrangle map on which the Element Occurrence (EO) is located in Arizona. If the EO spans more than one map, the code for the map with the centrum of the EO first is entered.

AZQUADNAME (Arizona Quad name) – Name of U.S. Geological Survey topographic quadrangle map(s) on which the EO is located in Arizona. If the EO spans more than one map, the map that includes the centrum of the EO first is listed.

AZMERIDIAN (Arizona Meridian) - Where rectangular land surveys apply, legal meridian(s) from which rectangular survey location of EO was based for Arizona records (see attachment 6 'List of Meridian Value Options').

AZTOWNRANG (Arizona Town Range) – For those EOs that lie within the U.S. rectangular land survey (an area including 30 states principally west and south of Ohio) enter the legal and township range descriptions that best define the location of the EO in Arizona. If the EO spans more than one township, list the township/range description that includes the EOs centrum first.

AZMACODE1 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. First field to use to define an EO in a Managed Area in Arizona.

AZMACODE2 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. Second field to use to define an EO in a Managed Area in Arizona different from AZMACODE1.

AZMACODE3 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. Third field to use to define an EO in a Managed Area in Arizona different from AZMACODE1 or AZMACODE2.

AZMACODE4 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. Fourth field to use to define an EO in a Managed Area in Arizona different from AZMACODE1, AZMACODE2 or AZMACODE3.

AZMANAME1 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE1.

AZMANAME2 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE2.

AZMANAME3 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE3.

AZMANAME4 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE4.

***AZCITATION (Arizona Citation)** – Formal citations for the reference for Arizona records.

**Associated Dbase Tables/Text Files
to Maineor.dbf/Maineor.txt
for Navajo Nation and New Mexico Records**

COUNTY.dbf / COUNTY.txt **n=781**
Contains multi-valued fields for Navajo Nation and New Mexico

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

COUNTYCODE (County code) – Code for corresponding COUNTYNAME. The first 2 letters of the code contain the state abbreviation of the county location and the last 4 letters contain the first 4 letters of the COUNTYNAME.

COUNTYNAME (County name) – Name of County where EO occurs.

WSHED.dbf / WSHED.txt **n=776**
Contains multi-valued fields for Navajo Nation and New Mexico

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

WATERSHED (Watershed) – The appropriate 8-digit code from the U.S. Geological Survey Hydrologic Unit Map for each watershed where the EO is located.

QUAD.dbf / QUAD.txt **n=817**
Contains multi-valued fields for Navajo Nation and New Mexico

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

QUADCODE (Quad code) – The code for each USGS 7.5' (or 15') topographic quadrangle map on which the Element Occurrence (EO) is located. If the EO spans more than one map, the code for the map with the centrum of the EO first is entered.

QUADNAME (Quad name) – Name of U.S. Geological Survey topographic quadrangle map(s) on which the EO is located. If the EO spans more than one map, the map that includes the centrum of the EO first is listed.

TRS.dbf / TRS.txt

n=974

Contains multi-valued fields for Navajo Nation and New Mexico

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

TOWNRANGE (Town Range) - For those EOs that lie within the U.S. rectangular land survey (an area including 30 states principally west and south of Ohio) enter the legal and township range descriptions that best define the location of the EO. If the EO spans more than one township, list the township/range description that includes the EOs centrum first.

SECTION (Section) - Where rectangular land surveys apply, legal section number(s) (2 digits) from which rectangular survey location of EO was based. Centrum section is listed first.

MERIDIAN (Meridian) - Where rectangular land surveys apply, legal meridian(s) from which rectangular survey location of EO was based (see attachment 6 'List of Meridian Value Options').

NNSOURCE.dbf / NNSOURCE.txt

n=330

Contains multi-valued fields for Navajo Nation

*Denotes field as a memo field

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

NNSCODE (Source Code) - Identifier for a reference for Navajo Nation records.

*NNCITATION (Citation) - Formal citations for the reference for Navajo Nation records.

NMSOURCE.dbf / NMSOURCE.txt

n=1163

Contains multi-valued fields for New Mexico

*Denotes field as a memo field

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

NMSCODE (Source Code) - Identifier for a reference for New Mexico records.

*NMCITATION (Citation) - Formal citations for the reference for New Mexico records.

NAVAJOMA.dbf / NAVAJOMA.txt

n=173

Contains multi-valued fields for Navajo Nation

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

NNMACODE (Managed Area Code) – Identifier for a Managed Area derived from a feature for Navajo Nation records.

NNMANAME (Managed Area Name) – Name of Managed Area for Navajo Nation records.

NMMA.dbf / NMMA.txt

n=1051

Contains multi-valued fields for New Mexico

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

NMMACODE (Managed Area Code) – Identifier for a Managed Area derived from a feature for New Mexico records.

NMMANAME (Managed Area Name) – Name of Managed Area for New Mexico records.

Attachment 1A

USAF Noise Sensitive Species List Final Version

•American peregrine falcon	<i>Falco peregrinus anatum</i>
•bald eagle	<i>Haliaeetus leucocephalus</i>
•black-footed ferret	<i>Mustela nigripes</i>
•CA condor	<i>Gymnogyps californianus</i>
•cactus ferruginous pygmy owl	<i>Glaucidium brasilianum cactorum</i>
•interior least tern	<i>Sterna antillarum athalassos</i>
•jaguar	<i>Panthera onca</i>
•lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>
•masked bobwhite	<i>Colinus virginianus ridgwayi</i>
•Mexican spotted owl	<i>Strix occidentalis lucida</i>
•mountain plover	<i>Charadrius montanus</i>
•Sonoran pronghorn antelope	<i>Antilocapra americana sonoriensis</i>
•southwestern willow flycatcher	<i>Empidonax traillii extimus</i>
•swift fox	<i>Vulpes velox</i>

Attachment 1B

USAF Noise Sensitive Species List Historical Version

Current List

Reviewed & Approved by Roy Barker and Participating NHPs

- Mexican spotted owl
- bald eagle
- American peregrine falcon
- ~~Goshawk~~ (on original list – removed because it is not listed or candidate species)
- southwestern willow flycatcher
- interior least tern
- ~~pipit plover~~ (on original list – removed because only one vagrant sitting in NM & AZ)
- swift fox
- Sonoran pronghorn antelope
- black-footed ferret

Species Below Were Added to the Original List

- lesser long-nosed bat
(Added because it may be a noise sensitive species)
- CA condor
(Added because it was recently re-introduced into Arizona)
- Jaguar
(Added because it is expected to be Listed)
- cactus ferruginous pygmy owl
(Added because it was recently Listed)
- masked bobwhite
(Added because it is found on the Buenos Aires Wildlife Refuge, along the border with Mexico. The Border Patrol and DEA fly helicopters in the area and this subspecies may be subject to harassment.)
- Mountain Plover
(Added because recently added to USESA Proposed List)

Attachment 2A
Wintering Bald Eagle Report
from New Mexico Natural Heritage Program

Date: 16 February, 1999
To: Patricia Mehlhop and Sara Gottlieb
From: Kris Johnson
Subject: Wintering Bald Eagle data

This morning, I had a conversation with Sandy Williams, of the New Mexico Department of Game and Fish, in which I asked Sandy to provide data from his aerial surveys of wintering Bald Eagles. Sandy described his surveys as an attempt to get a general idea of where the birds were wintering. He said that he does not have point data for individual eagles, but he offered to tell me the locations of historically good wintering areas; that is, sites where he has observed wintering eagles on these surveys. The surveys are no longer being conducted.

Sandy estimates that about 500 Bald Eagles winter in New Mexico in a typical year. Numbers vary according to weather. When temperatures are colder than average in Colorado, birds move south into New Mexico, increasing our wintering population. If New Mexico also has a very cold winter, birds may move further south, and fewer will be detected here. Wintering sites are very fluid, changing appreciably between years. Birds will also move within years. Based on his knowledge of potential flight paths, Sandy did not express concern about the impact of a limited number of Air Force training flights on wintering eagles. There is ample wintering habitat and disturbed eagles can move to nearby undisturbed areas.

Primary wintering areas are lakes, including Navajo Lake, Heron Lake, El Vado Lake, Cochiti Lake, Elephant Butte, Jemez, and Caballo reservoirs, Santa Rosa Lake, the lakes at Maxwell, and Sumner Lake. He noted that lakes from the Las Vegas National Wildlife Refuge north to Maxwell typically have good concentrations of Bald Eagles.

Eagles are usually scattered thinly along the length of the Rio Grande, although there tend to be few north of Espanola, where the gorge deepens. They are found in good numbers along the Chama River. The San Juan River is also a commonly-used site. The Gila River is surveyed infrequently, because few eagles winter there. They occur on the Pecos, but they are scarce below the lower Pecos.

Bald Eagles are occasionally detected in small numbers away from water; for example, in the side canyons at Bandelier National Monument and at MacGregor Range in southern New Mexico. There is a small concentration near the south end of Albuquerque, associated with the Rio Grande.

In summary, Bald Eagles will winter in just about any large water body in the state. Sites actually in use vary within and between years. Given that he does not possess point data on individual sightings, Sandy's recommendation was to map the above most-frequently-used areas as wintering habitat.

Attachment 2B
Wintering Bald Eagle Report
from Navajo Natural Heritage Program

These comments are an attempt to summarize Navajo Natural Heritage Program's data on migratory and wintering Bald Eagles on the Navajo Nation. This report is confidential and should not be used for purposes other than protecting the species.

The Navajo Nation occupies approximately 25,000 square miles in NE Arizona, NW New Mexico, and SE Utah, is bordered by two major rivers (the San Juan and Colorado Rivers), and has numerous large lakes. Despite our size and apparently suitable habitats, the Navajo Nation has no current or historic nesting records of Bald Eagles (hereafter, eagles). Thus, we have no nest monitoring data to provide as requested in the letter, nor will we likely have any in the future.

Parts of the Navajo Nation are used, however, by migrating and wintering eagles. Our Fish and Wildlife Department's Natural Heritage Program, which maintains a database for all federally and tribally sensitive species has been tracking sightings of eagles since 1981. Unfortunately these data do not allow for population trend analysis since they only represent incidental sightings. No intensive long-term monitoring of migrating or wintering eagles has been done on Navajo lands, except for several years of aerial survey of wintering eagles along the San Juan River in 1988, 1989, and 1994.

Migrating eagles have been found to use at least six interior lakes on Navajo Nation. These lakes typically become frozen-over by early winter and remain frozen until March, therefore they do not offer proper wintering habitat. Of the six lakes, only one has a large accumulation of sightings (40 records of 92 eagles from 1981 to 1999). A brief summary of these data are as follows: number of eagles seen per year- 1981-2, 1982-12, 1983-4, 1984-8, 1985-9, 1986-1, 1987-2, 1988-18, 1989-14, 1990-3, 1997-3, 1998-22, 1999-4. Some data within each year are of sightings separated only by 1 to 5 days, thus likely represent recounting of individuals. Fifteen records are of one eagle, 11 are of two eagles, and nine are of 3 eagles; the two highest counts for a single day were 12 eagles on 24 March 1988 and 14 eagles on 23 March 1998.

Of the five other lakes with eagle sightings, three lakes had only one eagle in one year; one lake had two eagles in 1981 and 1982; and the fifth lake a total of 13 eagles from 1981 to 1989.

The San Juan and Colorado Rivers are known wintering sites for eagles; we unfortunately have performed few surveys though. The New Mexico portion of the San Juan downstream of Shiprock was surveyed by helicopter 14 January 1988 with 12 eagles counted. The entire Navajo portion of the river was surveyed by air on 14 January 1989 with 13 eagles found; 34 eagles were seen on the same route on 7 January 1994; and New Mexico Game & Fish Dept. reported 35 eagles on 10 January 1994.

While the Marble Canyon reach of the Colorado River also has known wintering sites, monitoring to date has been performed by Grand Canyon National Park. Those data have been summarized in the following, as well as other, reports:

Sogge, M.K. and T.J. Tibbitts. 1994. Wintering bald eagles in the Grand Canyon: 1993-1994. Summary Report. Natinal Biol. Surv. Colorado Plateau Res. Stat./Northern Arizona Univ. and U.S. Fish & Wildlife Serv., Phoenix, 31pp.

Sogge, M.K., C. Van Riper III, T.J. Tibbitts, and T. May. 1995. Monitoring winter bald eagle concentrations in the Grand Canyon: 1993-1995. National Biol. Serv. Colorado Plateau Res. Stat./Northern Arizona Univ. report. 33pp.

Additional information from aerial surveys of the Glen Canyon National Recreation Area, including Lake Powell and upstream along the San Juan River, is summarized in the following:

Kline, N.C. 1990. 1990 Glen Canyon Natinal Recreation Area eagle survey. GCNRA.

Hetzler, B.C. 1992. 1992 eagle survey report Glen Canyon National Recreation Area. GCNRA.

Pinnock, C. 1993. 1993 Eagle Survey Report Glen Canyon National Recreation Area. GCNRA.

Mark Sogge's phone number is 520-523-9080; unfortunately I have no contact at GCNRA, however, M.Sogge may be able to provide one. I have no idea at this time how receptive M.Sogge and others will be to providing these reports. I think that they are public documents though, and should be available.

Please contact David Mikesic, Zoologist of Navajo Natural Heritage Program at 520-871-7638 if you have any questions.

Attachment 3

NATURAL HERITAGE ELEMENT CONSERVATION PRIORITY RANKING DEFINITIONS

(6 August 1996 version)

Each element (species or community) in the Biological and Conservation Data (BCD) system is assigned Global, National, and, if pertinent, Subnational (e.g., state, province) ranks based on data compiled by Natural Heritage Programs and Conservation Data Centers, and The Nature Conservancy. A numeric rank of 1 through 5 of relative imperilment is assigned to each element based upon its status globally (EGTGRANK), nationally (NRANK), and in each state (or province) of occurrence (SRANK). These element ranks are based on the following factors:

1. The estimated number of occurrences believed extant. An Element Occurrence (EO) is A unit of land and/or water with practical conservation value for the element, on which the element is, or was, present. The EO represents occupied habitat (or previously occupied habitat) that contributes, or potentially contributes, to the survival of individuals at that location, and is separated from other occupied habitats by an absolute barrier, or by specific distances (related to dispersal, home range size, etc.) defined for each element across either unsuitable, or suitable but apparently unoccupied, habitat. Only occurrences believed extant are considered. Data on historical occurrences provides perspective on the trends factor. [draft definition for species EOs]
2. The viability, condition, and quality of extant occurrences. This is an important consideration if there are relatively few excellent/good (A- or B-ranked) occurrences. Occurrences are given a letter rank (A, B, C, D) to roughly indicate excellent, good, fair, or poor occurrences. "D" occurrences are not considered to be viable. Occurrence ranks based on the above factors are made consistent through the application of documented element-specific EO rank specifications.
3. The total overall abundance of the element (rangewide number of individuals, acreage occupied, etc.).
4. The overall size of the geographic range (narrow endemic, transcontinental distribution, etc.).
5. Trends in occurrences, population, or range. A significant noncyclic negative or positive trend will often affect a rank.
6. Threats to the element, typically from human activities such as habitat destruction or degradation, introduction of exotic species, or elimination of natural disturbance regimes such as fire or flooding.
7. Fragility or sensitivity to human disturbance.
8. Other considerations pertinent to a particular element may also be considered.

The global rank represents the rangewide conservation status of the element. If it is vulnerable or imperiled everywhere it occurs, it has a global rank of G1, G2, or G3. Species rare in a local area, but common elsewhere, have G4 or G5 global ranks but local ranks of N1, N2, or N3 (or S1, S2, or S3). These latter elements are rare components of local biological diversity, but common and unthreatened in at least some other portions of their ranges. The three levels in the

Conservancy's element ranking system allow independent distinction of global, national, and more local (subnational) conservation status.

GLOBAL RANKS (EGTGRANK field)

Listed below are definitions for interpreting the global (i.e., rangewide) conservation status ranks. Global ranks are assigned at the Conservancy's Headquarters or by a designated lead office in the Heritage/Conservation Data Center network.

BASIC GLOBAL RANK DEFINITIONS

RANK	DEFINITION
GX	<u>Presumed Extinct</u> - Believed to be extinct throughout its range. Not located despite intensive searches of historic sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
GH	<u>Possibly Extinct</u> - Known from only historical occurrences. Still some hope of rediscovery.
G1	<u>Critically Imperiled</u> - Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction. Typically 5 or fewer occurrences or very few remaining individuals (<1,000) or acres (<2,000) or stream miles (<10).
G2	<u>Imperiled</u> - Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or acres (2,000 to 10,000) or stream miles (10 to 50).
G3	<u>Vulnerable</u> - Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
G4	<u>Apparently Secure</u> - Uncommon but not rare, and usually widespread. Possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5	<u>Secure</u> - Common, typically widespread and abundant. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

VARIANT GLOBAL RANKS

G#G#	<u>Range Rank</u> - A numeric range rank (e.g., G2G3) is used to indicate uncertainty about the exact status of a taxon.
GU	<u>Unrankable</u> - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
G?	<u>Unranked</u> - Global rank not yet assessed.

HYB	<u>Hybrid</u> - Element represents an interspecific hybrid.
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RANK QUALIFIERS

?	<u>Inexact Numeric Rank</u> - Denotes inexact numeric rank
Q	<u>Questionable Taxonomy</u> - Taxonomic status is questionable; numeric rank may change with taxonomy.
C	<u>Captive or Cultivated Only</u> - Taxon at present is extant only in captivity or cultivation, or as a reintroduced population not yet established.

INFRASPECIFIC TAXON RANKS

T	<u>Intraspecific Taxon (trinomial)</u> - The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species' basic rank (e.g., a G1T2 subrank should not occur). A population (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T rank to denote the taxon's questionable taxonomic status.
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NATIONAL AND SUBNATIONAL (e.g., STATE) RANKS

Elements are assigned a numeric rank of relative imperilment based on the rank factors presented previously but applied at a subnational/state (SRANK) or national (NRANK) level. A subnational rank cannot imply the element is more abundant in a state than it is nationally or globally (i.e., a G1/S2 rank should not occur). Subnational ranks may occasionally be subdivided by using decimal extensions .1, .2, and .3 (e.g., S1.3) to permit a state or province to further prioritize its vulnerable elements. Subnational ranks are usually assigned by an individual State Natural Heritage Program or Conservation Data Center, if any, otherwise by The Nature Conservancy. Listed below are definitions for interpreting the **subnational** conservation status ranks.

The same basic ranks and qualifiers used for subnational ranks are used for national ranks. Therefore, the definitions below may be used interchangeably for subnational and national ranks (e.g., N1, NH). National ranks are usually assigned by an individual National Conservation Data Center, if any, otherwise by The Nature Conservancy.

SUBNATIONAL (e.g., STATE) RANK DEFINITIONS (SRANK field)

RANK	DEFINITION
SX	<u>Extirpated</u> - Element is believed to be extirpated from the "state" (or province or other subnational unit).
SH	<u>Historical</u> - Element occurred historically in the state (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 years, and suspected to be still extant. Naturally, an Element would become SH without such a 20-year delay if the only known occurrences in a state were destroyed or if it had been extensively and unsuccessfully looked for. Upon verification of an extant occurrence, SH-ranked Elements would typically receive an S1 rank. The SH rank should be reserved for Elements for which some effort has been made to relocate occurrences, rather than simply ranking all Elements not known from verified extant occurrences with this rank.
S1	<u>Critically Imperiled</u> - Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or very few remaining individuals or acres.
S2	<u>Imperiled</u> - Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few remaining individuals or acres.
S3	<u>Vulnerable</u> - Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences.
S4	<u>Apparently Secure</u> - Uncommon but not rare, and usually widespread in the state. Usually more than 100 occurrences.
S5	<u>Secure</u> - Demonstrably widespread, abundant, and secure in the state, and essentially ineradicable under present conditions.
S?	<u>Unranked</u> - State rank is not yet assessed.
SU	<u>Unrankable</u> - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible, the most likely rank is assigned and a question mark added (e.g., S2?) to express uncertainty, or a range rank (e.g., S2S3) is used to delineate the limits (range) of uncertainty.
S#S#	<u>Range Rank</u> - A numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the Element. Ranges cannot skip more than one rank (e.g., SU should be used rather than S1S4).
HYB	<u>Hybrid</u> - Element represents an interspecific hybrid.

SE	<u>Exotic</u> - An exotic established in the state; may be native in nearby regions (e.g., house finch or catalpa in eastern U.S.).
SE#	<u>Exotic Numeric</u> - An exotic established in the state that has been assigned a numeric rank to indicate its status, as with S1 through S5.
SA	<u>Accidental</u> - Accidental or casual in the state (i.e., infrequent and outside usual range). Includes species (usually birds or butterflies) recorded once or only a few times. A few of these species may have bred on the one or two occasions they were recorded. Examples include European strays or western birds on the East Coast and vice-versa.
SZ	<u>Zero Occurrences</u> - Not of practical conservation concern in the state because there are no definable occurrences, although the taxon is native and appears regularly in the state. An SZ rank will generally be used for long distance migrants whose occurrences during their migrations have little or no conservation value for the migrant as they are typically too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped, and protected. In other words, the migrant regularly passes through the subnation, but enduring, mappable Element Occurrences cannot be defined. Typically, the SZ rank applies to a non-breeding population in the subnation -- for example, birds on migration. An SZ rank may in a few instances also apply to a breeding population, for example certain Lepidoptera which regularly die out every year with no significant return migration. Although the SZ rank typically applies to migrants, it should not be used indiscriminately. Just because a species is on migration does not mean it receives an SZ rank. SZ only applies when the migrants occur in an irregular, transitory, and dispersed manner.
SP	<u>Potential</u> - Potential that Element occurs in the state but no extant or historic occurrences reported.
SR	<u>Reported</u> - Element reported in the state but without a basis for either accepting or rejecting the report. Some of these are very recent discoveries for which the program hasn't yet received first-hand information; others are old, obscure reports.
SRF	<u>Reported Falsely</u> - Element erroneously reported in the state (e.g., misidentified specimen) and the error has persisted in the literature.
SSYN	<u>Synonym</u> - Element reported as occurring in the state, but state does not recognize the taxon; therefore the Element is not ranked by the state.

BREEDING STATUS QUALIFIERS

B	<u>Breeding</u> - Basic rank refers to the breeding population of the Element in the state.
N	<u>Non-breeding</u> - Basic rank refers to the non-breeding population of the Element in the state.
Note	A breeding status subrank is only used for species that have distinct breeding and/or non-breeding populations in the state. A breeding-status SRANK can be coupled

	with its complementary non-breeding-status SRANK. The two are separated by a comma, with the higher-priority rank listed first in their pair (e.g., AS2B,S3N@ or ASHN,S4S5B@).
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OTHER QUALIFIERS

?	<u>Inexact or Uncertain</u> – Denotes inexact or uncertain numeric rank. For SE denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK.)
C	<u>Captive or Cultivated</u> – Element is presently extant in the state only in captivity or cultivation, or as a reintroduced population not yet established.

Attachment 4

SPROT Field Values

FIELD DEFINITIONS:

STATE *State abbreviation*
SPROT CODE *State protection code*

DEFINITION *Definitions of State protection codes, supplied directly by each Natural Heritage Program*

LEGAL STATUS / COMMENTS *Further explanation of State Protection codes – whether or not the code has official legal status or is only administrative; differences in legal status for plants & animals; other relevant information; etc.*

STATE	SPROT CODE	DEFINITION	LEGAL STATUS / COMMENTS
NM	D	Delisted or considered but not listed (plants)	NM: animal status (E, T & Res) determined by NM Dept. of Game and Fish; plant status (E, S, R, and D) determined by Energy, Minerals and Natural Resources Dept.
NM	E	Endangered (plants and animals) – survival in NM in jeopardy or likely to become so in the foreseeable future	NM: plants: E, S, R, and D correspond to the legal designations 1, 2, 3, 4 respectively under the NM Endangered Plant Species Act, but only E or 1 status provides protection under the law (M. Altenbach, pers. comm., 7/7/97).
NM	R	Review List (plants) - more information is needed	
NM	S	Sensitive (plants) - rare because of restricted distribution of low numerical density	
NM	T	Threatened (animals) - likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico	
NM	Res	Restricted species - Any listed large exotic cat species or subspecies	

STATE	SPROT CODE	DEFINITION	LEGAL STATUS / COMMENTS
NN	1	Group 1: taxa that no longer occur on the Navajo Nation (plants and animals)	NN: Group 1, Group 2, Group 3, Group 4 are all legal designations under the Endangered Species List for the Navajo Nation. Title 17 section 507 of the Navajo Tribal Code regulates take and trade in taxa designated as group 2 or 3 (NNHP web site).
NN	2	Group 2: taxa which is in danger of being eliminated from all or a significant portion of its range on the NN (plants and animals)	NN: Definitions from A. Nystedt, pers. comm., 7/2/97.
NN	3	Group 3: taxa which is likely to become an endangered species, in the foreseeable future, throughout all or a significant portion of its range on the NN (plants and animals)	
NN	4	Group 4: taxa for which the Navajo Fish & Wildlife Dept does not currently have sufficient information to support their being in 2 or 3 but has reason to consider them (plants and animals)	
AZ	HS	Highly safeguarded: no collection allowed (plants)	AZ: plant codes have legal status under AZ Native Plant Law (1993), under the jurisdiction of AZ Dept. of Agriculture
AZ	SR	Salvage restricted: collection only with permit (plants)	
AZ	ER	Export restricted: transport out of State prohibited (plants)	
AZ	SA	Salvage assessed: permits required to remove live trees (plants)	
AZ	HR	Harvest restricted: permits required to remove plant by-products (plants)	

STATE	SPROT CODE	DEFINITION	LEGAL STATUS / COMMENTS
AZ	WC	Wildlife of Special Concern in AZ (animals)	no legal status, listed by AZ Game and Fish Dept.
AZ	SX	State Extinct (animals)	no legal status, code no longer used
AZ	SE	State Endangered (animals)	no legal status, code no longer used
AZ	ST	State Threatened (animals)	no legal status, code no longer used
AZ	SC	State candidate (animals)	no legal status, code no longer used

U.S. Endangered Species Act Status Values (EGTUSESA & ESADATE field values)

United States Federal Status Listing Process and Definitions

The U.S. Fish and Wildlife Service (U.S. FWS) and the U.S. National Marine Fisheries Service designate and/or propose federal status in accordance with the U.S. Endangered Species Act of 1973, as amended (U.S. ESA). Plant and animal species, subspecies (including plant varieties), and vertebrate populations are considered for Endangered or Threatened status according to the criteria established under the U.S. ESA.

Proposals and determinations to add taxa or populations to the Lists of Endangered and Threatened Wildlife and Plants are published in the Federal Register. Additionally, the U.S. Fish and Wildlife Service periodically publishes a Notice of Review in the Federal Register that presents an updated list of plant and animal taxa which are regarded as candidates or proposed for possible addition to the Lists of Endangered and Threatened Wildlife and Plants.

The U.S. Federal Status Date represents the date of publication in the Federal Register of notification of an official status for a taxon or population. Dates appear only for taxa and populations which are specifically named in a Federal Register Notice of Review Table or in the section of a Federal Register Proposed or Final Rule that proposes or declares an amendment to 50 CFR Part 17 Section 11 or 12 (i.e., changes to the Lists of Endangered and Threatened Wildlife and Plants).

Dates represent:

For listed endangered and threatened taxa and populations: the date of publication of the Federal Register "Final Rule" for the taxon or population.

For proposed taxa and populations: the date of publication of the most recent Federal Register "Proposed Rule" for the taxon or population.

For candidate taxa and populations: the date of publication of the most recent "Notice of Reclassification" or "Notice of Review" in which the candidate appears.

Changes in status due to proposals and determinations to add taxa to the Lists of Endangered and Threatened Wildlife and Plants are updated within two weeks of publication in the Federal Register. Addition and removal of candidates in Notices of Review are entered within four weeks of their publication.

Status Due to Taxonomic Relationship (Values in Parentheses)

The taxonomic relationships between species and their infraspecific taxa may determine whether a taxon has federal protection. Section 17.11(g) of the Endangered Species Act states, "the listing of a particular taxon includes all lower taxonomic units." Also, if an infraspecific taxon or population has federal status, then by default, some part of the full species has federal protection. Data for some taxa show values indicating U.S. Federal Status even though the element may not

be specifically named in the Federal Register. Where status is implied due to a taxonomic relationship alone, the status abbreviation appears in parentheses and no date of listing is given.

Nomenclature for Taxa and Populations with U.S. Federal Status

For most species which have U.S. Federal Status, any available distribution, conservation, and management information is maintained in records under the same scientific name as the one used by the U.S. Fish and Wildlife Service (and printed in the Federal Register). For animal subspecies and populations which have U.S. Federal Status, most of this information is maintained in the species record associated with the subspecies or population.

U.S. Federal Status Designations and Definitions

(EGTUSESA field)

Abbreviation	U.S. Federal Status
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LE	Listed endangered
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LT	Listed threatened
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PE	Proposed endangered
----	---------------------

PT	Proposed threatened
----	---------------------

C	Candidate
---	-----------

PDL	Proposed for delisting
-----	------------------------

E(S/A) or T(S/A)	Listed endangered or threatened because of similarity of appearance
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XE	Essential experimental population
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XN	Experimental nonessential population
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**Combination
values**

The taxon has one status currently, but a more recent proposal has been made to change that status with no final action yet published. For example, LE-PDL indicates that the species is currently listed as endangered, but has been proposed for delisting.

**Values in
parentheses**

The taxon itself is not named in the Federal Register as having federal status; however, it does have federal status as a result of its taxonomic relationship to a named entity. For example, if a species is federally listed with endangered status, then by default, all of its recognized subspecies also have endangered status. The subspecies in this example would have the value "(LE)" under U.S. Federal

Status. Likewise, if all of a species' infraspecific taxa (worldwide) have the same federal status, then that status appears in the record for the "full" species as well. In this case, if the taxon at the species level is not mentioned in the Federal Register, the status appears in parentheses in that record.

Combination
values in
parentheses

The taxon itself is not named in the Federal Register as having official federal status; however, all of its infraspecific taxa (worldwide) do have official status. The statuses shown in parentheses indicate the statuses that apply to infraspecific taxa or populations within this taxon.

(PS)

Indicates "partial status" - status in only a portion of the species' range. Typically indicated in a "full" species record where an infraspecific taxon or population has federal status, but the entire species does not.

Null value

Usually indicates that the taxon does not have any federal status. However, because of potential lag time between publication in the Federal Register and entry in the Central Databases and refresh of this website, some taxa may have a status which does not yet appear.

Attachment 6

Meridian Field Values

36 value options:

1P = first principal

2P = second principal

3P = third principal

4P = fourth principal

5P = fifth principal

6P = sixth principal

BH = Black Hills

BO = Boise

CH = Choctaw

CM = Cimarron

CR = Copper River

CS = Chickasaw

EL = Ellicott's Line

FB = Fairbanks

HU = Humboldt

HU = Huntsville

KR = Kateel River

LA = Louisiana

MD = Mount Diablo

MI = Michigan

NM = New Mexico

OK = Oklahoma

PR = Principal

SA = Seward

SB = San Bernadino

SH = St. Helena

SL = Salt Lake

SR = Gila and Salt Rivers

SS = St. Stephens

TA = Tallahassee

UE = Ute

UI = Uintah

UM = Umiat

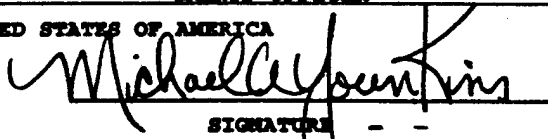
WL = Willamette

WN = Washington

WR = Wind River

ASSISTANCE AGREEMENT

Appendix 7

AWARD TYPE: ☐ GRANT (31 USC 6304) ☒ OPERATIVE AGREEMENT (31 USC 6305) ☐ OTHER TRANSACTION (10 USC 2371)			
AWARD NO: DAMD17-98-2-8016 Modification P00002	EFFECTIVE DATE See Grants Officer Signature Date Below	AWARD AMOUNT \$152,027.00	Page 1 of 1 Shannyn M. Scassero Phone: 301-619-2640 Fax: 301-619-2505
PROJECT TITLE: Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft CFDA 12.420			
PERFORMANCE PERIOD: 15 AUG 98 - 14 FEB 00		PRINCIPAL INVESTIGATOR: Shara Howie	
AWARDED AND ADMINISTERED BY: U.S. Army Medical Research Acquisition Activity ATTN: MCMR-AAA-v 820 Chandler St. Fort Detrick Maryland 21702-5014		PAYMENTS WILL BE MADE BY: EFT:T Army Vendor Pay DFAS-SA/FPA 500 McCullough Avenue San Antonio, TX 78215-2100	
DUNS NO: 07-265-6630		REMIT PAYMENT TO:	
AWARDED TO: The Nature Conservancy 1815 North Lynn Street Arlington, VA 22209		SAME	
ACCOUNTING AND APPROPRIATION DATA: NO CHANGE			
SCOPE OF WORK: A. The purpose of this modification is to incorporate the attached Appendix 6, License Agreement Between The Nature Conservancy, The Association for Biodiversity Information, and Headquarters Air Combat Command of the United States Air Force. This is in accordance with a letter from The Nature Conservancy dated 23 September 1999 and the approval of the U.S. Army Medical Research and Materiel Command's Judge Advocate Office. B. All other terms and conditions remain unchanged.			
TOTAL AMOUNT OF AWARD: \$152,027.00 TOTAL AMOUNT OF OBLIGATED FUNDS: \$152,027.00			
RECIPIENT		GRANTS OFFICER	
ACCEPTED BY: 		UNITED STATES OF AMERICA  	
SIGNATURE		SIGNATURE	
NAME AND TITLE	DATE	NAME AND TITLE MICHAEL A. YOUNKINS GRANTS OFFICER	DATE 12/3/99

**LICENSE AGREEMENT
BETWEEN
THE NATURE CONSERVANCY,
THE ASSOCIATION FOR BIODIVERSITY INFORMATION, AND
HEADQUARTERS AIR COMBAT COMMAND OF THE UNITED STATES AIR FORCE**

This license is provided by The Nature Conservancy ("TNC"), a private non-profit corporation organized under the laws of the District of Columbia, with offices at 4245 N. Fairfax Drive, Arlington, VA 22203-1606, and the Association for Biodiversity Information ("ABI"), a private non-profit corporation organized under the laws of the District of Columbia, with its offices at 1727 King Street #305, Alexandria, VA 22314, (the two parties known hereafter as "the Licensed Dataset Providers"), to The United States Air Force through its Environmental Analysis Branch, Environmental Programs Division, Civil Engineering Directorate, Air Combat Command ("ACC").

I. TERM OF LICENSE AGREEMENT

This agreement shall start on November 10, 1999 and shall expire on November 10, 2000.

II. DATA COVERED BY THIS LICENSE AGREEMENT

TNC, ABI, and the International Network of Natural Heritage Programs and Conservation Data Centres have developed a "Multi-Jurisdictional Dataset" ("MJD"), managed jointly by TNC and ABI. The MJD project vision is to impact conservation efforts by establishing a centralized comprehensive resource of U.S. and Canadian species and ecological community data. The portion of the MJD that is governed by this License Agreement is all locational data and supporting data ("metadata") relating to the following wildlife species in Arizona, New Mexico and the tribal lands of Navajo Nation within those two states that may be sensitive to impacts from air operations: Mexican spotted owl, bald eagle, American peregrine falcon, southwestern willow flycatcher, interior least tern, swift fox, Sonoran pronghorn antelope, California condor, cactus ferruginous pygmy owl, jaguar, lesser long-nosed bat, masked bobwhite, mountain plover and black-footed ferret ("the Licensed Dataset"). Other animal species may be added to this as agreed on by all parties to this License Agreement. The data provided for the Licensed Dataset is described in Attachment 1.

III. ACCESS TO THE DATA

- A. The Licensed Dataset Providers will provide ACC with an electronic copy of the Licensed Dataset.

- B. The Licensed Dataset Providers will provide ACC all necessary data, metadata and support necessary to ensure incorporation of the Licensed Dataset into ACC's Airspace Analysis Tool Database.

IV. DATA USE RESTRICTIONS

Use of the Licensed Dataset by ACC shall be governed by the following provisions.

- A. The Licensed Dataset Providers grant to ACC during the term of this agreement a limited, nonexclusive, nontransferable, right of access to the Licensed Dataset and to use the data and information provided therein solely for internal use by ACC; provided that those with access to the data and information shall in all respects treat them as the proprietary information of the Licensed Dataset Providers in accordance with all procedures reasonably necessary to protect the Licensed Dataset Providers' proprietary rights in the data and information. ACC shall include the terms, conditions and procedures for protecting proprietary information on any products derived from these data.
- B. ACC may access, house, and use the Licensed Dataset on one server at Headquarters Air Combat Command.
- C. The only products that may be generated from the Licensed Dataset are project-specific maps, risk assessments, and data analyses. These products shall not display or contain specific locational data for a named species, but shall at most indicate that there is a natural resource at a specific location. The only allowable exception to displaying specific locational data for a named species would occur when data included in the Licensed Dataset is otherwise obtained from a source independent from the Arizona Heritage Data Management System, New Mexico Natural Heritage Program or Navajo Natural Heritage Program for the Licensed Dataset. ACC may distribute the products as defined above to Air Combat Command installations, satellite sections of Air Combat Command installations, and to any providers of the original Licensed Dataset.
- D. No interest whatsoever is conveyed to ACC in right, title and interest in the Licensed Dataset, the data, the information and all copyrights (and renewals thereof) secured therein. All publication, dissemination and other rights in the Licensed Dataset are reserved to the Licensed Dataset Providers in all languages, formats and throughout the world for the sole and exclusive use or any other disposition by the Licensed Dataset Providers or their assignees or grantees at any time and from time to time without any obligation or liability to any User.
- E. The Licensed Dataset provided by the Licensed Dataset Providers is not to be redistributed in any form to other agencies, organizations, companies, or individuals without prior written consent of the Licensed Dataset Providers.

Requests received by ACC from other groups, organizations, or individuals for electronic or paper copies of lists, or other reports, or portions of the data thereof, should be directed to The Association for Biodiversity Information at 4245 N. Fairfax Drive, Arlington, VA 22203-1606 at (703) 841-4886.

- F. The data disclosure restrictions set forth above shall remain in effect after the expiration of this Agreement.
- G. The ACC shall not use or generate project-specific maps, risk assessments, or data analyses from the Licensed Dataset after November 10, 2000. ACC has the option to extend use of the Licensed Dataset after November 10, 2000 by amending this license and receiving an updated version of the Licensed Dataset from the Licensed Dataset Providers.

V. WARRANTIES

- A. As agreed upon by the cooperating Heritage Programs, ABI and TNC have received the required consent to license to ACC access and use of the Licensed Dataset.
- B. The Licensed Dataset Providers shall have no liability for any claim of infringement or rights by third parties based on any use of the Licensed Dataset in combination with programs, software, hardware, or equipment not designated by the Licensed Dataset Providers, without prior written approval by the Licensed Dataset Providers, if such infringement could have been avoided had the Licensed Dataset not been so used.
- C. The Licensed Dataset Providers shall have no liability or responsibility to ACC or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the Licensed Dataset, including but not limited to any interruption of service, loss of business, anticipatory profits or indirect, special, or consequential damages resulting from the use or operation of the Licensed Dataset.
- D. The Licensed Dataset Providers warrant that the data in the Licensed Dataset has been accurately compiled, and is certified by the original sources as meeting the Short Term Benchmark Data Standards (see Attachment 2) established by the Licensed Dataset Providers.

VI. TERMINATION

- A. In the event that ACC breaches any one or more of its obligations under this License Agreement, the Licensed Dataset Providers may, upon their election and in addition to any other remedies that they may have, at anytime terminate the License Agreement upon not less than fifteen (15) days prior written notice to

ACC specifying any such breach, unless within the period of such notice all breaches specified therein shall have been remedied to the Licensed Dataset Providers' satisfaction.

- B. Upon termination of this license prior to its expiration, ACC must delete the Licensed Dataset from its Airspace Analysis Tool Database, and the Licensed Dataset Providers may take whatever steps they deem appropriate to terminate all access to and use of the Licensed Dataset. Upon termination of this license before the project end date of February 14, 2000, ACC may request funds provided to the Licensed Dataset Providers that have not been obligated as of the termination date of the project.

VII. PROTECTION OF RIGHTS

- A. ACC agrees that it shall not use the Licensed Dataset except as authorized herein.
- B. ACC agrees to protect the rights of the Licensed Dataset Providers to the Licensed Dataset.
- C. The obligations of ACC and its respective employees and agents shall survive and continue after the expiration of the License Agreement or termination of rights. Such obligations shall not extend to any data, information or technical data relating to the Licensed Dataset which is available to the general public or which later becomes available to the general public by acts not attributable to ACC, its employees, or agents.

VIII. FEES

- A. ACC is providing financial assistance in accordance to Cooperative Agreement No. DAMD17-98-2-8016.

IX. OTHER PROVISIONS

- A. This License Agreement may not be assigned by ACC without the prior written consent of the Licensed Dataset Providers.
- B. The construction and performance of this license shall be governed by the laws of the Commonwealth of Virginia, U.S.A. and applicable U.S. federal law.
- C. This License Agreement may be modified or amended by written agreement of the Licensed Dataset Providers and the ACC.

X. SUPERCESSION OF COOPERATIVE AGREEMENT PROVISION

A. This License Agreement supercedes section 21 in Cooperative Agreement # DAMD17-98-2-8016, "Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft." The superceded provision incorporated the DFARS provision entitled "Rights in Technical Data and Computer Software," 48 C.F.R. 252.227-7013, into the Cooperative Agreement.

For The Nature Conservancy

Shan J. Hartz
Signature

Director Central Cons Dbs
Title

11/6/99
Date

For The Association for Biodiversity
Information

Van Kickle
Signature

DIRECTOR
Title

9 Nov 99
Date

Legal Review by Susan L. Puch Date 11/18/99

For The United States Air Force

By 1 B2
Signature

CHIEF NATURAL RESOURCES MANAGER
Title

29 Nov 99
Date

For The United States Army Medical Research
Acquisition Activity

Michael A. Jenkins
Signature

Contracting Officer
Contracting Officer

3 Dec 99
Date

Attachment 1

Fields of information provided for the Noise Sensitive Species Project

*Not provided by Arizona Natural Heritage Program for species occurring on private lands.

**Not provided by Arizona Natural Heritage Program for all species.

*EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

*EGTGNAME (Global Name) - The standard global (i.e., rangewide) scientific name (genus and species) adopted for use by the Natural Heritage Central Databases based on selected standard taxonomic references.

*EGTGCNAME (Global Common Name) - The standard global (i.e., rangewide) common name of species adopted for use in the Natural Heritage Central Databases (e.g. the common name for *Haliaeetus leucocephalus* is bald eagle).

*ESTSNAME (State/Subnation Name) - The standard state scientific name (genus and species) adopted for use by the state/subnation program based on selected standard taxonomic reference(s) for the state/subnation.

*SCOMNAME (State/Subnation Common Name) - The standard state common name of species adopted for use by the state/subnation program based on selected standard taxonomic reference(s) for the state/subnation.

*EGTGRANK (Global Rank) - The conservation status of a species from a global (i.e., rangewide) perspective, characterizing the relative rarity or imperilment of the species. See more detail on global ranks (see attachment 3).

*EGTGDATE (Global Rank Date) - The date the GRANK was originally entered or last changed by the lead responsible office.

*SRANK (State/Subnational Rank) - The conservation status of a species from the state/subnation perspective, characterizing the relative rarity or imperilment of the species. Together these values provide national distribution data. See more detail on State/Subnational ranks (see attachment 3).

*SRANKDATE (State/Subnational Rank Date) - The date when the SRANK was last entered or changed for the element.

SPROT (State/Subnational Protection Status) - Abbreviation used by state/subnation for the level of legal protection afforded to the element by that entity. Abbreviations and definitions will vary by state or subnation (see attachment 4).

*EGT_USESA (U.S. Endangered Species Act Status) - Official federal status assigned under the U.S. Endangered Species Act. (see attachment 5 for a detailed definition).

*ESADATE (U.S. Endangered Species Act Status Date) - Date when the US Federal species category was published in the Federal Register.

PRECISION (Precision) - Code for EO mapping precision. Values include: S = seconds: accuracy within a three-second radius, M = minutes: accuracy within a one-minute radius, G = general: precision within 8 km, 5mi, or to quad or place name, and U = unmapable.

NATION (Nation) - Name of nation where EO occurs (US).

STATE (State) - Name of state where EO occurs.

LATI (Latitude) – The x coordinate (latitude) of the Element Occurrence centrum expressed in degrees, minutes and seconds.

LONGI (Longitude) – The y coordinate (longitude) of the Element Occurrence centrum expressed in degrees, minutes and seconds.

LATDECI (Decimal degrees Latitude) – The x coordinate (latitude) of the Element occurrence centrum expressed in decimal degrees.

LONGDECI (Decimal degrees Longitude) – The y coordinate (longitude) of the Element Occurrence centrum expressed in decimal degrees.

LASTOBS (Last Observation) – The date that the Element Occurrence was last observed to be extant at the site.

IDENT (Identification) – Checkoff indicating whether taxonomic identity of an element has been confirmed, determined to be wrong, or is in question. 'Y' = identification of EO is confirmed. 'N' = identification of EO has been determined to be wrong. '?' = identification is in question.

DATASENS (Data Sensitivity) – Checkoff indicating whether locational information on this EO is sensitive and should be restricted from unsecured use. 'Y' = yes, data is sensitive and should not be made available for general use. 'N' = no, data is not sensitive and may be provided for general use. [] = uncertain whether the data is sensitive.

UPDATE (Update Date) – The date the EO record was last updated.

***EODATASV (EO Data)** – Data collected on the biology of the EO, including the number of individuals, vigor, habitat, soils, associated species, particular characteristics, etc.

***GENDESCSV (General Description)** – A description of the general area where the EO is located.

COUNTYCODE (County code) – Code for corresponding COUNTYNAME. The first 2 letters of the code contain the state abbreviation of the county location and the last 4 letters contain the first 4 letters of the COUNTYNAME.

COUNTYNAME (County name) – Name of County where EO occurs.

WATERSHED (Watershed) – The appropriate 8-digit code from the U.S. Geological Survey Hydrologic Unit Map for each watershed where the EO is located.

QUADCODE (Quad code) – The code for each USGS 7.5' (or 15') topographic quadrangle map on which the Element Occurrence (EO) is located. If the EO spans more than one map, the code for the map with the centrum of the EO first is entered.

QUADNAME (Quad name) – Name of U.S. Geological Survey topographic quadrangle map(s) on which the EO is located. If the EO spans more than one map, the map that includes the centrum of the EO first is listed.

TOWNRANGE (Town Range) – For those EOs that lie within the U.S. rectangular land survey (and area including 30 states principally west and south of Ohio) enter the legal and township range descriptions that best define the location of the EO. If the EO spans more than one township, list the township/range description that includes the EOs centrum first.

****SECTION (Section)** - Where rectangular land surveys apply, legal section number(s) (2 digits) from which rectangular survey location of EO was based. Centrum section is listed first.

MERIDIAN (Meridian) - Where rectangular land surveys apply, legal meridian(s) from which rectangular survey location of EO was based (see attachment 6 'List of Meridian Value Options').

NNSCODE (Source Code) - Identifier for a reference for Navajo Nation records.

NNCITATION (Citation) - Formal citations for the reference for Navajo Nation records.

NMSCODE (Source Code) - Identifier for a reference for New Mexico records.

NMCITATION (Citation) - Formal citations for the reference for New Mexico records.

***AZCITATION (Citation)** - Formal citations for the reference for Arizona records.

NNMACODE (Managed Area Code) - Identifier for a Managed Area derived from a feature for Navajo Nation records.

NNMANAME (Managed Area Name) - Name of Managed Area for Navajo Nation records.

NMMACODE (Managed Area Code) - Identifier for a Managed Area derived from a feature for New Mexico records.

NMNAME (Managed Area Name) - Name of Managed Area for New Mexico records.

AZCOUNTYNA (Arizona County name) - Name of County where EO occurs in Arizona.

AZCOUNTYCO (Arizona County code) - Code for corresponding AZCOUNTYNA in Arizona. The first 2 letters of the code contain the state abbreviation of the county location and the last 4 letters contain the first 4 letters of the AZCOUNTYNA.

AZWATERSHE (Arizona Watershed) - The appropriate 8-digit code from the U.S. Geological Survey Hydrologic Unit Map for each watershed where the EO is located in Arizona.

AZQUADCODE (Arizona Quad code) - The code for each USGS 7.5' (or 15') topographic quadrangle map on which the Element Occurrence (EO) is located in Arizona. If the EO spans more than one map, the code for the map with the centrum of the EO first is entered.

AZQUADNAME (Arizona Quad name) - Name of U.S. Geological Survey topographic quadrangle map(s) on which the EO is located in Arizona. If the EO spans more than one map, the map that includes the centrum of the EO first is listed.

AZMERIDIAN (Arizona Meridian) - Where rectangular land surveys apply, legal meridian(s) from which rectangular survey location of EO was based for Arizona records (see attachment 6 'List of Meridian Value Options').

AZTOWNRANG (Arizona Town Range) - For those EOs that lie within the U.S. rectangular land survey (and area including 30 states principally west and south of Ohio) enter the legal and township range descriptions that best define the location of the EO in Arizona. If the EO spans more than one township, list the township/range description that includes the EOs centrum first.

AZMACODE1 (Arizona Managed Area Code) - Identifier for a Managed Area derived from a feature for Arizona records. First field to use to define an EO in a Managed Area in Arizona.

AZMACODE2 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. Second field to use to define an EO in a Managed Area in Arizona different from AZMACODE1.

AZMACODE3 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. Third field to use to define an EO in a Managed Area in Arizona different from AZMACODE1 or AZMACODE2.

AZMACODE4 (Arizona Managed Area Code) – Identifier for a Managed Area derived from a feature for Arizona records. Fourth field to use to define an EO in a Managed Area in Arizona different from AZMACODE1, AZMACODE2 or AZMACODE3.

AZMANAME1 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE1.

AZMANAME2 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE2.

AZMANAME3 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE3.

AZMANAME4 (Arizona Managed Area Name) – Name of Managed Area in Arizona that corresponds to AZMACODE4.

Attachment 2

Short-Term Benchmark Data Standards for the Canadian and U.S. Natural Heritage Programs and Conservation Data Centres

**Prepared by the Association for Biodiversity Information
Data Standards Committee
10 December 1998**

Table of Contents

- 1. Introduction**
- 2. Elements that should meet Benchmark Standards**
 - 2.1 Core Elements-Short Term**
- 3. Records that should meet Short Term Benchmark Standards**
- 4. Fields that should meet Short Term Benchmark Standards**
 - 4.1 Core Fields-Short Term**
 - 4.3 Additional Fields**
- 5. GIS Standards**
- 6. Benchmark Standards for Data Quality and Accuracy**
 - 5.1 Benchmark Accuracy Standards**
 - 5.2 Benchmark Standards for Completeness and Currentness of Data**
 - 5.3 Reconciliation of Data Between Data Centers**

1. Introduction

One of the needs of the Association for Biodiversity Information (ABI) and its membership, as identified at the 1994 ABI Annual Meeting in Birmingham, AL, is the production of range-wide, regional and global data products and services. We believe these can be achieved most efficiently if data from member data centers is standardized in certain areas. The following benchmark data standards are intended to facilitate production of such products and services and are recommended to all member data centers.

These standards establish criteria for :

- 1. what elements and element occurrences should meet the benchmark data standards**
- 2. what database fields should be completed**
- 3. what the benchmark data standard is for each of the fields to be completed**
- 4. what errors are acceptable for the benchmark data standards described in 3 above**

ABI will encourage and assist the NHP/CDCs to implement these recommended benchmark data standards.

ELEMENTS THAT SHOULD MEET BENCHMARK STANDARDS

This section defines recommended priorities for elements that should be tracked by NHP/CDCs and considered for inclusion in multi-jurisdictional data products and services.

2.1 Core Elements-Short Term¹ (highest priority for filling data gaps):

The following criteria define which elements should be tracked by all NHP/CDCs. For these elements the specified data files should contain information in all of the core fields (defined below) for which data are available.

All taxa that are included or officially proposed on federal threatened and endangered species lists (in the US, this includes candidates for listing).*	ET data, plus all available EORs
All taxa included on state, provincial, or tribal threatened or endangered lists, except for those taxa ranked S4 or S5 in the jurisdiction.	ET data, plus all available EORs
G1, T1, G2 and T2 vertebrate animals and vascular plants selected by ROUNDED.GRANK.	ET data, plus all available EORs
GX and GH vascular plants and vertebrate animals	ET data only

* Marine mammal and sea turtle terrestrial breeding areas are included in the standards. Other types of marine occurrences are excluded at this time. Comments and recommendations are welcome on what data standards should be established for marine animals.

3. RECORDS THAT SHOULD MEET MINIMUM STANDARDS

Not all Element Occurrence Records (EOR) need to meet the benchmark data standards by having all available data entered into the Core Fields. The ABI Data Standards Committee recommends that EORs of the Core Elements and with the following characteristics meet benchmark data standards for Core Fields:

- 1) IDENT = "Y" "7" or is blank (in other words does not = "N" or an unknown value)
- 2) PRECISION = "S" "M" "G"

EORs that are known to be incorrectly identified, are unmappable, or have the "precision field" blank should not be included in multi-jurisdictional data products and services. Over the long-term, we would like to include only those EORs where the field for quality control (QC) = "Y"

4. HP/CDC DATABASE FIELDS THAT SHOULD MEET BENCHMARK STANDARDS

This section defines the recommended priorities for NHP/CDC database fields that should meet the benchmark standards in all NHP/CDCs. Definitions in the BCD help screens serve to define acceptable values for each of the fields.

4.1 Core Fields-Short Term (highest priority for filling data gaps):

These are fields which should be completed and maintained by all NHP/CDCs for the Core Elements, and for which the data are available. Fields marked with an asterisk have been identified by the ABI Data Sharing Committee as containing sensitive data that will not be included in multi-jurisdictional products without NHP/CDC permission.

Data Field	Data File
GNAME, GCOMNAME, NNAME, NCOMNAME, SNAME, SCOMNAME GRANK, GRANKDATE, NRANK, NRANKDATE, SRANK, SRANKDATE SPROT USESA or NPROT (Canadian listed status included in this field)	ET
GREVDATE NREVDATE	EGR/ENR
EOCODE SURVEYSITE* PRECISION NATION COUNTY (CODE & NAME) includes Regional Districts or other sub-province boundaries in Canada; "chapter, district, or other administrative sub-unit for Indian Nations. QUAD (CODE & NAME), includes NTS map sheet information in Canada WATERSHED (for U.S. Programs only, until a North American Coverage exists) LAT* LONG* TOWNRANGE* (where rectangular land surveys apply) SECTION* (where rectangular land surveys apply) MERIDIAN (where rectangular land surveys apply)	EOR
LASTOBS EODATA* GENDESC* IDENT DATASENS UPDATE (symbolic field based on CHANGE.DATE)	EOR
CITATION* SOURCECODE*	SA/EOR
MANAME MACODE	MABR/EOR

- May contain sensitive data that will not be included in multi-jurisdictional products without NHP/CDC permission.

GIS STANDARDS

GIS data is not to be included as part of the initial multi-jurisdictional dataset. Interim GIS standards have been recommended for the network, and will be included as soon as they are finalized.

6. BENCHMARK STANDARDS FOR DATA QUALITY AND ACCURACY

This section describes the recommended benchmark standards for data accuracy, completeness and currentness. Objectives are also recommended for reconciliation of data between NHP/CDCs.

6.1 Benchmark Accuracy Standards

The following fields have recommended benchmark accuracy standards/error rates:

LAT, LONG	99% on the correct topographic quad based on calculated Latitude and Longitude; 95% to the correct location of EO (within 5 seconds for an AS@ precision record.)
PRECISION	95% with the precision supported by the available data.
LASTOBS	95% with the correct date from the most recent source.
Other locator fields (e.g., COUNTY, LOCALJURIS, TOWNRANGE, SECTION, WATERSED, PHYSPROV, etc.)	95% that the EO is mapped in the indicated polygon.
NATION	100% mapped in the correct nation.
USESA	99% with the most recent, correct status.
N/S/PROT	99% with the most recent, correct status.
G/N/S/rank	100% reviewed at least every five years.

6.2 Benchmark Standards for Completeness and Currentness of Data

For the elements, records and fields described above all data from readily available secondary sources should be processed. This includes museum specimens (at least those available from institutions within the jurisdiction of the NHP/CDC), published and unpublished reports.

For legally protected taxa that are of concern to the NHP/CDC and G1 taxa all available data (including field surveys) should be processed into the databases and other files within six months. Where this timeline cannot be met the NHP/CDC should qualify their data accordingly;

this is sometimes the case when numerous species (or numerous EOs of a single species) in a jurisdiction are simultaneously given legal protection.

Data about other elements (listed under 2.1 Core Elements - Short term) should be processed within one year.

6.3 Reconciliation of Data Between Data Centers

Where elements occur on or near borders between jurisdictions it may be necessary for two (or more) data centers to reconcile their information. For EOs held by both data centers, the centers must agree that only one of the data centers will provide a given shared EO for use in multi-jurisdictional products.

There are technical, administrative and financial issues to be resolved in order to reconcile data between NHP/CDCs. Thus, ABI has adopted a five-year goal for accomplishing this task with Canada and the U.S. Note that this is consistent with the timeline for reconciling between center use of Managed Areas and Physiographic Provinces (ecoregions).

1. Short-term goal is to achieve the benchmark standard within 12 months of when funds are available.

February 2, 2000

HQ ACC/CEVP
Roy Barker
129 Andrews Street, Suite 102
Langley, AFB, VA 23665-2769

Dear Roy Barker:

The attached model license has been reviewed and found complete for Cooperative Agreement No. DAMD17-98-2-8016 (Providing the Air Force with Data on Species Sensitive to Noise from Low Flying Aircraft). The model license has been reviewed and approved as a feasible model by the Air Combat Command, ABI's legal department, the Heritage Network, the ABI Data Committee and the ABI Leadership team.

This model license will serve as a template to define data use guidelines and restrictions for the USAF on future access through the MJD to data on species defined as noise sensitive. The data that will likely be provided to the USAF includes general taxonomy information, state and global ranking status, state protection status, federal status information, county of occurrence, watershed of occurrence, and precise locations (lat/long) for a set of defined noise sensitive species.

The model license agreement serves four major purposes that are listed as follows:

- 1) To ensure secure and proper use of locational data by limiting and defining data use, defining data ownership, and defining rights to repossess data if any guidelines are breached
- 2) To serve as a feasible template and framework to work from to expedite the creation of future data use licenses for the USAF and other customers.
- 3) To encourage data currency by limiting use of the delivered dataset to a one year term by requiring refreshment of the dataset and license after one year
- 4) To require the USAF to direct inquiries from other interested funding providers to ABI directly for the data or similar data provided to the USAF

This model license focuses on the needs of the USAF but the format and data restrictions of this model can be applied to future licenses with other partners as well. The two components that will vary on licenses with other partners will be a) the desired level of locational information for the data set and b) the category or scope of species that comprise the data set. If you have any questions on the attached license, please call 703-841-5997.

Sincerely,


Carrie Brugger

**MODEL LICENSE AGREEMENT
BETWEEN
THE ASSOCIATION FOR BIODIVERSITY INFORMATION, AND
HEADQUARTERS AIR COMBAT COMMAND OF THE UNITED STATES AIR FORCE**

This license defines data use guidelines and restrictions for access through the Multi-Jurisdictional Dataset ("MJD") to data on animal species (see Attachment 1 for an example list of animals. Future list will be agreed upon by all parties) that may be sensitive to impacts from air operations. This license is provided by the Association for Biodiversity Information ("ABI"), a private non-profit corporation organized under the laws of the District of Columbia, with its offices at 4245 N. Fairfax Drive, Arlington, VA 22203-1606, to The United States Air Force through its Environmental Analysis Branch, Environmental Programs Division, Civil Engineering Directorate, Air Combat Command ("ACC").

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This agreement shall start on *<start date of license term>* and shall expire on *<one year after start date of license term>*.

II. DATA COVERED BY THIS LICENSE AGREEMENT

ABI, and the International Network of Natural Heritage Programs and Conservation Data Centres have developed a "Multi-Jurisdictional Dataset" ("MJD"), managed by ABI. The MJD project vision is to impact conservation efforts by establishing a centralized comprehensive resource of U.S. and Canadian species and ecological community data. The portion of the MJD that is governed by this License Agreement is all general and locational data as listed in Attachment 2 (list of data fields that will likely be provided) and supporting data ("metadata") relating to animal species listed in Attachment 1 that may be sensitive to impacts from air operations that occur in *<states>* ("the Licensed Dataset"). Other animal species may be added as agreed on by all parties to this License Agreement.

III. ACCESS TO THE DATA

- A. ABI will provide ACC with an electronic copy of the Licensed Dataset.
- B. ABI will provide ACC all necessary data, metadata and support necessary to ensure incorporation of the Licensed Dataset into ACC's Airspace Analysis Tool Database.

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- B. ACC may access, house, and use the Licensed Dataset on one server at Headquarters Air Combat Command.
- C. The only products that may be generated from the Licensed Dataset are project-specific maps, risk assessments, and data analyses. These products shall not display or contain specific locational data for a named species, but shall at most indicate that there is a natural resource at a specific location. The only allowable exception to displaying specific locational data for a named species would occur when data included in the Licensed Dataset is otherwise obtained from a source independent from the *<Heritage Programs contributing as original data providers>* for the Licensed Dataset. ACC may distribute the products as defined above to Air Combat Command installations, satellite sections of Air Combat Command installations, ABI and *<Heritage Programs contributing as original data providers>*.
- D. No interest whatsoever is conveyed to ACC in right, title and interest in the Licensed Dataset, the data, the information and all copyrights (and renewals thereof) secured therein. All publication, dissemination and other rights in the Licensed Dataset are reserved to ABI in all languages, formats and throughout the world for the sole and exclusive use or any other disposition by ABI or their assignees or grantees at any time and from time to time without any obligation or liability to any User.
- E. The Licensed Dataset provided by ABI is not to be redistributed in any form to other agencies, organizations, companies, or individuals without prior written consent of ABI. Requests received by ACC from other groups, organizations, or individuals for electronic or paper copies of lists, or other reports, or portions of the data thereof, should be directed to The Association for Biodiversity Information at 4245 N. Fairfax Drive, Arlington, VA 22203-1606 at (703) 841-4886.
- F. The data disclosure restrictions set forth above shall remain in effect after the expiration of this Agreement.

- G. ACC shall not use or generate project-specific maps, risk assessments, or data analyses from the Licensed Dataset after *<one year after start date of license term>*. ACC has the option to extend use of the Licensed Dataset after *<one year after start date of license term>* by amending this license and receiving an updated version of the Licensed Dataset from ABI.

V. WARRANTIES

- A. As agreed upon by *<Heritage Programs contributing as original data providers>*, ABI has received the required consent to license to ACC access and use of the Licensed Dataset.
- B. ABI shall have no liability for any claim of infringement or rights by third parties based on any use of the Licensed Dataset in combination with programs, software, hardware, or equipment not designated by ABI, without prior written approval by ABI, if such infringement could have been avoided had the Licensed Dataset not been so used.
- C. ABI shall have no liability or responsibility to ACC or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the Licensed Dataset, including but not limited to any interruption of service, loss of business, anticipatory profits or indirect, special, or consequential damages resulting from the use or operation of the Licensed Dataset.
- D. ABI warrants that the data in the Licensed Dataset has been accurately compiled, and is certified by *<Heritage Programs contributing as original data providers>*, as meeting Data Standards (see Attachment 3) as defined and established by ABI.

VI. TERMINATION

- A. In the event that ACC breaches any one or more of its obligations under this License Agreement, **ABI may, upon their election and in addition to any other remedies that they may have, at anytime terminate the License Agreement upon not less than fifteen (15) days prior written notice to ACC specifying any such breach, unless within the period of such notice all breaches specified therein shall have been remedied to the ABI's satisfaction.**
- B. Upon termination of this license prior to its expiration, ACC must delete the Licensed Dataset from its Airspace Analysis Tool Database, and ABI may take whatever steps they deem appropriate to terminate all access to and use of the Licensed Dataset. ****Upon termination of this license before the license end date of *<license end date>*, ACC will be entitled to return of funds on the following pro rata basis:**

Termination in 1st thru 3rd month:	60% refund
Termination in 4th thru 6th month:	40% refund
Termination in 7th thru 9th month:	20% refund
Termination in 10th thru 12th month:	0% refund

**The actual refund percentages are subject to change upon implementation of the subscription rate structure of TNC/ABI as the structure is in the process of development.

VII. PROTECTION OF RIGHTS

- A. ACC agrees that it shall not use the Licensed Dataset except as authorized herein.
- B. ACC agrees to protect the rights of ABI to the Licensed Dataset.
- C. The obligations of ACC and its respective employees and agents shall survive and continue after the expiration of the License Agreement or termination of rights. Such obligations shall not extend to any data, information or technical data relating to the Licensed Dataset which is available to the general public or which later becomes available to the general public by acts not attributable to ACC, its employees, or agents.

VIII. FEES

- A. ACC is providing financial assistance in accordance to Cooperative Agreement No. *<Cooperative Agreement number>*.

IX. OTHER PROVISIONS

- A. This License Agreement may not be assigned by ACC without the prior written consent of ABI.
- B. The construction and performance of this license shall be governed by the laws of the Commonwealth of Virginia, U.S.A. and applicable U.S. federal law.
- C. This License Agreement may be modified or amended by written agreement of ABI and ACC.

For The Association for Biodiversity Information

Signature

Title

Date

Legal review by _____ Date _____

For The United States Air Force

Signature

Title

Date

For U.S. Army Medical Research
Acquisition Activity

Signature

Contracting Officer
Title

Date

Attachment 1

USAF Noise Sensitive Species List

The list of animal species for this model license has not been defined but may be similar to this list. This list only reflects the species for a current noise sensitive species project with the U.S. Air Force.

•American peregrine falcon	Falco peregrinus anatum (ABNKD06071)
•bald eagle	Haliaeetus leucocephalus (ABNKC10010)
•black-footed ferret	Mustela nigripes (AMAJF02040)
•CA condor	Gymnogyps californianus (ABNKA03010)
•cactus ferruginous pygmy owl	Glaucidium brasilianum cactorum (ABNSB08041)
•interior least tern	Sterna antillarum athalassos (ABNNM08102)
•jaguar	Panthera onca (AMAJH02010)
•lesser long-nosed bat	Leptonycteris curasoae yerbabuenae (AMACB03021)
•masked bobwhite	Colinus virginianus ridgwayi (ABNLC21022)
•Mexican spotted owl	Strix occidentalis lucida (ABNSB12012)
•mountain plover	Charadrius montanus (ABNNB03100)
•Sonoran pronghorn antelope	Antilocapra americana sonoriensis (AMALD01012)
•southwestern willow flycatcher	Empidonax traillii extimus (ABPAE33043)
•swift fox	Vulpes velox (AMAJA03030)

Attachment 2

Fields of information provided for Model License Agreement

This list displays fields that will likely be provided for use of the model license.

EOCODE (Element Occurrence Code) - A unique record identifier derived from a feature.

GNAME (Global Name) - The standard global (i.e., rangewide) scientific name (genus and species) adopted for use by the Natural Heritage Central Databases based on selected standard taxonomic references.

GCOMNAME (Global Common Name) - The standard global (i.e., rangewide) common name of species adopted for use in the Natural Heritage Central Databases (e.g. the common name for *Haliaeetus leucocephalus* is bald eagle).

SNAME (State/Subnation Name) - The standard state scientific name (genus and species) adopted for use by the state/subnation program based on selected standard taxonomic reference(s) for the state/subnation.

SCOMNAME (State/Subnation Common Name) - The standard state common name of species adopted for use by the state/subnation program based on selected standard taxonomic reference(s) for the state/subnation.

GRANK (Global Rank) - The conservation status of a species from a global (i.e., rangewide) perspective, characterizing the relative rarity or imperilment of the species.

GRANKDATE (Global Rank Date) - The date the GRANK was originally entered or last changed by the lead responsible office.

SRANK (State/Subnational Rank) - The conservation status of a species from the state/subnation perspective, characterizing the relative rarity or imperilment of the species. Together these values provide national distribution data.

SRANKDATE (State/Subnational Rank Date) - The date when the SRANK was last entered or changed for the element.

SPROT (State/Subnational Protection Status) - Abbreviation used by state/subnation for the level of legal protection afforded to the element by that entity. Abbreviations and definitions will vary by state or subnation.

USES A (U.S. Endangered Species Act Status) - Official federal status assigned under the U.S. Endangered Species Act.

USES ADATE (U.S. Endangered Species Act Status Date) - Date when the US Federal species category was published in the Federal Register.

PRECISION (Precision) - Code for EO mapping precision. Values include: S = seconds: accuracy within a three-second radius, M = minutes: accuracy within a one-minute radius, G = general: precision within 8 km, 5mi, or to quad or place name, and U = unmappable.

NATION (Nation) - Name of nation where EO occurs (US).

STATE (State) - Name of state where EO occurs.

LAT (Latitude) – The x coordinate (latitude) of the Element Occurrence centrum expressed in degrees, minutes and seconds.

LONG (Longitude) – The y coordinate (longitude) of the Element Occurrence centrum expressed in degrees, minutes and seconds.

LATDECI (Decimal degrees Latitude) – The x coordinate (latitude) of the Element occurrence centrum expressed in decimal degrees.

LONGDECI (Decimal degrees Longitude) - The y coordinate (longitude) of the Element Occurrence centrum expressed in decimal degrees.

LASTOBS (Last Observation) – The date that the Element Occurrence was last observed to be extant at the site.

IDENT (Identification) – Checkoff indicating whether taxonomic identity of an element has been confirmed, determined to be wrong, or is in question. 'Y' = identification of EO is confirmed. 'N' = identification of EO has been determined to be wrong. '?' = identification is in question.

DATASENS (Data Sensitivity) – Checkoff indicating whether locational information on this EO is sensitive and should be restricted from unsecured use. 'Y' = yes, data is sensitive and should not be made available for general use. 'N' = no, data is not sensitive and may be provided for general use. [] = uncertain whether the data is sensitive.

UPDATE (Update Date) – The date the EO record was last updated.

EODATA (EO Data) – Data collected on the biology of the EO, including the number of individuals, vigor, habitat, soils, associated species, particular characteristics, etc.

GENDESC (General Description) – A description of the general area where the EO is located.

COUNTYCODE (County code) – Code for corresponding COUNTYNAME. The first 2 letters of the code contain the state abbreviation of the county location and the last 4 letters contain the first 4 letters of the COUNTYNAME.

COUNTYNAME (County name) – Name of County where EO occurs.

WATERSHED (Watershed) – The appropriate 8-digit code from the U.S. Geological Survey Hydrologic Unit Map for each watershed where the EO is located.

QUADCODE (Quad code) – The code for each USGS 7.5' (or 15') topographic quadrangle map on which the Element Occurrence (EO) is located. If the EO spans more than one map, the code for the map with the centrum of the EO first is entered.

QUADNAME (Quad name) – Name of U.S. Geological Survey topographic quadrangle map(s) on which the EO is located. If the EO spans more than one map, the map that includes the centrum of the EO first is listed.

TOWNRANGE (Town Range) – For those EOs that lie within the U.S. rectangular land survey (and area including 30 states principally west and south of Ohio) enter the legal and township range descriptions that best define the location of the EO. If the EO spans more than one township, list the township/range description that includes the EOs centrum first.

SECTION (Section) - Where rectangular land surveys apply, legal section number(s) (2 digits) from which rectangular survey location of EO was based. Centrum section is listed first.

MERIDIAN (Meridian) - Where rectangular land surveys apply, legal meridian(s) from which rectangular survey location of EO was based.

SOURCECODE (Source Code) – Identifier for a reference for a source record in a particular state.

CITATION (Citation) – Formal citations for the reference of a source record in a particular state.

MACODE (Managed Area Code) – Identifier for a Managed Area derived from a feature in a particular state.

MANAME (Managed Area Name) – Name of Managed Area for a particular corresponding feature in a particular state.

Attachment 3

Short-Term Benchmark Data Standards for the Canadian and U.S. Natural Heritage Programs and Conservation Data Centres

**Prepared by the Association for Biodiversity Information
Data Standards Committee
10 December 1998**

Table of Contents

1. Introduction
2. Elements that should meet Benchmark Standards
 - 2.1 Core Elements-Short Term
3. Records that should meet Short Term Benchmark Standards
4. Fields that should meet Short Term Benchmark Standards
 - 4.1 Core Fields-Short Term
 - 4.3 Additional Fields
5. GIS Standards
6. Benchmark Standards for Data Quality and Accuracy
 - 5.1 Benchmark Accuracy Standards
 - 5.2 Benchmark Standards for Completeness and Currentness of Data
 - 5.3 Reconciliation of Data Between Data Centers

1. Introduction

One of the needs of the Association for Biodiversity Information (ABI) and its membership, as identified at the 1994 ABI Annual Meeting in Birmingham, AL, is the production of range-wide, regional and global data products and services. We believe these can be achieved most efficiently if data from member data centers is standardized in certain areas. The following benchmark data standards are intended to facilitate production of such products and services and are recommended to all member data centers.

These standards establish criteria for :

1. what elements and element occurrences should meet the benchmark data standards
2. what database fields should be completed
3. what the benchmark data standard is for each of the fields to be completed
4. what errors are acceptable for the benchmark data standards described in 3 above

ABI will encourage and assist the NHP/CDCs to implement these recommended benchmark data standards.

ELEMENTS THAT SHOULD MEET BENCHMARK STANDARDS

This section defines recommended priorities for elements that should be tracked by NHP/CDCs and considered for inclusion in multi-jurisdictional data products and services.

2.1 Core Elements-Short Term¹ (highest priority for filling data gaps):

The following criteria define which elements should be tracked by all NHP/CDCs. For these elements the specified data files should contain information in all of the core fields (defined below) for which data are available.

All taxa that are included or officially proposed on federal threatened and endangered species lists (in the US, this includes candidates for listing).*	ET data, plus all available EORs
All taxa included on state, provincial, or tribal threatened or endangered lists, except for those taxa ranked S4 or S5 in the jurisdiction.	ET data, plus all available EORs
G1, T1, G2 and T2 vertebrate animals and vascular plants selected by ROUNDED.GRANK.	ET data, plus all available EORs
GX and GH vascular plants and vertebrate animals	ET data only

* Marine mammal and sea turtle terrestrial breeding areas are included in the standards. Other types of marine occurrences are excluded at this time. Comments and recommendations are welcome on what data standards should be established for marine animals.

3. RECORDS THAT SHOULD MEET MINIMUM STANDARDS

Not all Element Occurrence Records (EOR) need to meet the benchmark data standards by having all available data entered into the Core Fields. The ABI Data Standards Committee recommends that EORs of the Core Elements and with the following characteristics meet benchmark data standards for Core Fields:

- 1) IDENT = "Y" "?" or is blank (in other words does not = "N" or an unknown value)
- 2) PRECISION = "S" "M" "G"

EORs that are known to be incorrectly identified, are unmappable, or have the "precision field" blank should not be included in multi-jurisdictional data products and services.

Over the long-term, we would like to include only those EORs where the field for quality control (QC) = "Y"

4. HP/CDC DATABASE FIELDS THAT SHOULD MEET BENCHMARK STANDARDS

This section defines the recommended priorities for NHP/CDC database fields that should meet the benchmark standards in all NHP/CDCs. Definitions in the BCD help screens serve to define acceptable values for each of the fields.

4.1 Core Fields-Short Term (highest priority for filling data gaps):

These are fields which should be completed and maintained by all NHP/CDCs for the Core Elements, and for which the data are available. Fields marked with an asterisk have been identified by the ABI Data Sharing Committee as containing sensitive data that will not be included in multi-jurisdictional products without NHP/CDC permission.

Data Field	Data File
GNAME, GCOMNAME, NNAME, NCOMNAME, SNAME, SCOMNAME GRANK, GRANKDATE, NRANK, NRANKDATE, SRANK, SRANKDATE SPROT USESA or NPROT (Canadian listed status included in this field)	ET
GREVDATE NREVDATE	EGR/ENR
EOCODE SURVEYSITE* PRECISION NATION COUNTY (CODE & NAME) includes Regional Districts or other sub-province boundaries in Canada; "chapter, district, or other administrative sub-unit for Indian Nations. QUAD (CODE & NAME), includes NTS map sheet information in Canada WATERSHED (for U.S. Programs only, until a North American Coverage exists) LAT* LONG* TOWNRANGE* (where rectangular land surveys apply) SECTION* (where rectangular land surveys apply) MERIDIAN (where rectangular land surveys apply)	EOR
LASTOBS EODATA* GENDESC* IDENT DATASENS UPDATE (symbolic field based on CHANGE.DATE)	EOR
CITATION* SOURCECODE*	SA/EOR
MANAME MACODE	MABR/EOR

* May contain sensitive data that will not be included in multi-jurisdictional products without NHP/CDC permission.

GIS STANDARDS

GIS data is not to be included as part of the initial multi-jurisdictional dataset. Interim GIS standards have been recommended for the network, and will be included as soon as they are finalized.

6. BENCHMARK STANDARDS FOR DATA QUALITY AND ACCURACY

This section describes the recommended benchmark standards for data accuracy, completeness and currentness. Objectives are also recommended for reconciliation of data between NHP/CDCs.

6.1 Benchmark Accuracy Standards

The following fields have recommended benchmark accuracy standards/error rates:

LAT, LONG	99% on the correct topographic quad based on calculated Latitude and Longitude; 95% to the correct location of EO (within 5 seconds for an AS@ precision record.)
PRECISION	95% with the precision supported by the available data.
LASTOBS	95% with the correct date from the most recent source.
Other locator fields (e.g., COUNTY, LOCALJURIS, TOWNRANGE, SECTION, WATERSED, PHYSPROV, etc.)	95% that the EO is mapped in the indicated polygon.
NATION	100% mapped in the correct nation.
USESA	99% with the most recent, correct status.
N/S/PROT	99% with the most recent, correct status.
G/N/S/rank	100% reviewed at least every five years.

6.2 Benchmark Standards for Completeness and Currentness of Data

For the elements, records and fields described above all data from readily available secondary sources should be processed. This includes museum specimens (at least those available from institutions within the jurisdiction of the NHP/CDC), published and unpublished reports.

For legally protected taxa that are of concern to the NHP/CDC and G1 taxa all available data (including field surveys) should be processed into the databases and other files within six months. Where this timeline cannot be met the NHP/CDC should qualify their data accordingly; this is sometimes the case when numerous species (or numerous EOs of a single species) in a jurisdiction are simultaneously given legal protection.

Data about other elements (listed under 2.1 Core Elements - Short term) should be processed within one year.

6.3 Reconciliation of Data Between Data Centers

Where elements occur on or near borders between jurisdictions it may be necessary for two (or more) data centers to reconcile their information. For EOs held by both data centers, the centers must agree that only one of the data centers will provide a given shared EO for use in multi-jurisdictional products.

There are technical, administrative and financial issues to be resolved in order to reconcile data between NHP/CDCs. Thus, ABI has adopted a five-year goal for accomplishing this task with Canada and the U.S. Note that this is consistent with the timeline for reconciling between center use of Managed Areas and Physiographic Provinces (ecoregions).

¹ Short-term goal is to achieve the benchmark standard within 12 months of when funds are available.

Appendix 9

Quarterly Report October 14, 1998 - January 22, 1999 USAF Noise Sensitive Species Project Cooperative Agreement No. DAMD17-98-2-8016

Summary of Accomplishments

- Kick off meeting with Roy Barker – Air Combat Command
- Meeting with NM Natural Heritage Program
- ABI/TNC project planning meeting
- Meeting with Luke AFB/Goldwater Range
- Kick off meeting in Phoenix with ABI and the participating Heritage Program staff (Arizona, New Mexico, Navajo Nation)
- File upload/data format planning meeting
- Presentation of NSS project to Central Botany & Zoology
- Subagreements Developed
- Data Development Requirements Developed

Attachment

- Project Timeline - Attachment 1

(This timeline is an integrated timeline with another closely related project with the Department of Defense. Activities related to the NSS project are clearly marked with "ACC")

Kick-off Meeting with Roy Barker– October 14, 1998

On October 14, 1998, Richard Warner and Shara Howie met with Roy Barker to discuss goals and implementation of the Noise Sensitive Species Project (NSS Project). We reviewed and discussed a draft timeline, list of project issues, and draft language of the Data License between ABI and USAF-ACC that would give ACC access to heritage data on noise sensitive species at a national scale.

It was identified in this meeting that in order for this pilot project to be successful, ABI & TNC would have to coordinate with other DoD projects underway in Arizona and New Mexico. We agreed that it would be useful to meet with select USAF staff to make them aware of our project and identify areas of common interest and benefit. Specifically, it would be of great conservation benefit if ABI could work with DoD and other agencies to ensure that all projects that generate locational and other species data include provisions in the project agreements that would ensure that this data is provided to the appropriate state/subnational Natural Heritage Program. Thus, species and natural community data would be comprehensively built up over time and, therefore, be made available to all conservation activities in the future.

Follow up:

- TNC & ABI to meet with Luke AFB/Goldwater Range (see comments below).

- Talk to Roy Barker and Doug Ripley about participating in future multi-agency project meetings in SW and other regions in order to coordinate efforts.

The expansion of the NSS project was also discussed. We determined that initially we would just want to expand the geographic scope of the project, but eventually we might want to provide data to the USAF-ACC for species that have the potential for being listed in the future. Alternately, support could be provided to the U.S. heritage programs for development of polygon data (instead of points i.e. Lat/Long) that indicate a species location; there would be a polygon that would represent the 'occupied' area of each location.

Follow up:

- To discuss project expansion later in the pilot project but before end of the government FY 2000 project proposal cycle.

Roy indicated that he was interested in getting an estimate of what the annual costs (subscription fee) would be for his program to have continual access to the most comprehensive, current information on available species locations (via the MJD project). Follow up:

- TNC & ABI will estimate, before the end of the pilot project, the annual costs associated with giving ACC ongoing access to the MJD.

Meeting with NM Natural Heritage Program - November 19, 1998

Participants: Sara Gottlieb, NM Heritage Program
Richard Warner & Julie Bourns, Association for Biodiversity Information (ABI)
Carrie Brugger & Shara Howie, The Nature Conservancy (TNC)

TNC and ABI staff met with Sara Gottlieb from the NM Heritage Program to provide her with an overview of the project. The work requirements under the project were reviewed and included reviewing the data fields required and the species list. Administrative duties such as project management activities and budget needs for travel to the kick-off meeting in Phoenix were discussed.

ABI/TNC Project Planning meeting - December 10, 1998

Participants: Richard Warner & Julie Bourns, ABI
Carrie Brugger & Shara Howie, TNC
Pat Melhop, NM Heritage Program - Conferenced in for brief discussion
Roy Barker, USAF - Conferenced in for brief discussion

Pat Melhop briefly conferenced in to discuss the possible overlap of data gathering which SAIC has done for the USAF. The possible ways in which this project may differ from the one with SAIC were discussed. Roy Barker was then conferenced in to the meeting and he assured us that our data was going to feed into his other project and that a duplication of efforts is not being made.

Prepared for the kick-off meeting by reviewing the kick-off meeting agenda, several project overview materials, budget considerations, a project timeline, and a list of issues to resolve before project completion.

Meeting with Luke AFB/Goldwater Range – December 16, 1998

Richard Warner and Shara Howie met with Colonel David White from Luke AFB, Commander of Range Management Office for the Barry M. Goldwater Range (BMGR). We provided Col. White with an overview of the Noise Sensitive Species Project and how it relates to the effort to develop a National Locational Dataset.

Col. White was impressed with the project and felt that it would ultimately benefit his efforts to avoid impacting natural resources on the BMGR. Col. White also informed us that he had been in contact with the Arizona Fish & Game Commissioner regarding the acquisition of species locations on the BMGR and that this data had not been provided to him and his staff at Luke AFB. Consequently, Richard and Shara discussed this issue with Sabra Schwartz, Coordinator of the Arizona Natural Heritage Program. Sabra stated that species locational data had indeed been delivered to Luke AFB. We have not completely confirmed where the breakdown in communication happened but we suspect that AZNHP provided data to someone on the Luke AFB natural resource staff but that this was never communicated to Col. White. In addition, this misunderstanding could have been compounded by the fact that not all the data that Col. White needs is available through the AZNHP data set.

Richard Warner followed up with Col. White and made it clear that we could not directly provide him with species occurrence data under this project since it was not part of the project scope. Soon thereafter, Sabra Schwartz met with Bruce Eilerts the lead biologist at Luke AFB and they agreed that he should work directly with Sabra at AZ Fish and Game to acquire species occurrence data needed to evaluate their training activities. In summary, Sabra and Bruce will pursue the development of an MOU and contract to facilitate the provision of species data from the AZ Heritage Data Management System, AZ Department of Fish & Game, to Luke AFB.

Kick-off meeting in Phoenix, Arizona – December 16, 1998

A kick-off meeting with the Arizona, New Mexico, and Navajo Nation Natural Heritage Programs was held in Phoenix, Arizona on December 16, 1998 to ensure that all participants involved in the project understand their roles and requirements. The kick-off meeting was very productive in discussing issues such as Data Use Agreements, the draft Model Data Use License, benchmark data standards and contract requirements. The project timeline (See Attachment 1) was reviewed and several questions to resolve and actions to follow up on were generated from the discussion.

File upload/Data format planning meeting – January 8, 1999

Participants: Shara Howie, Carrie Brugger, Chris Reynolds, Lynn Kutner & Maggie Woo, TNC

Discussed the options of upload conversion programs which exist in the Biological Conservation Database to upload EOR records, and the best format to have the programs send the data files to us based upon past experience and current knowledge.

Presentation of NSS project to Central Botany & Zoology – January 22, 1999

Participants: Shara Howie, Carrie Brugger, Chris Reynolds, Jeff Lerner, Jean Jancaitis, Martha Martinez, Miriam Steiner & Lara Minium, TNC

Provided the Central Botany and Zoology programs with an overview of the NSS project. An estimate of the projected work load additions for the data review to be done for the NSS project was discussed. The processes of the data review to be completed for the NSS project was also discussed.

Subagreements Developed

The subagreements for the Arizona, New Mexico and Navajo Nation Natural Heritage Programs have been developed and are currently being finalized by TNC's legal department.

Data Development Requirements Developed

The data development requirements for Arizona, New Mexico and Navajo Nation Natural Heritage Programs have been developed and will be sent out with the subagreements. The data development requirements outline which data files and fields need to be sent to fulfill the project, and the data standards for each program to meet.

Appendix 10

Minutes from Phoenix Kickoff Meeting USAF/Noise Sensitive Species (NSS) and DOD/Legacy Projects December 16, 1998

Attending: Sabra Schwartz, Arizona NHP (host)
Pat Mehlhop & Sara Gottlieb, New Mexico NHP
Jack Meyer & David Mikesic, Navajo Nation NHP
Shara Howie & Carrie Brugger, The Nature Conservancy
Richard Warner & Julie Bourns, ABI

1. Introduction & Overview

Shara and Richard began the meeting by providing a brief overview of the USAF and DOD agreements, the ways in which they feed into the Multi-Jurisdictional Dataset (MJD) project, and the central role of the Data Use Agreements (DUAs) in all these activities. This led to a discussion of the need to provide specific location information, both for Noise Sensitive Species (NSS) under the USAF project and more generally for inclusion in the MJD.

2. Discussion of Data Use Agreements (DUAs) and Requirement for Precise Location Information

Sabra and Pat each stated that the requirement in both the DUA and the USAF agreements for precise location information is problematic. Sabra stated that the Arizona NHP cannot release precise location information (at LAT/LONG) for species on private lands without the landowners' specific authorization or for species on tribal lands (which comprise approximately 25-30% of Arizona) without specific tribal authorization. She said that she needs concurrence from federal agencies to release precise data for species in their jurisdictions but thinks this will be doable because the Arizona Game & Fish Department has blanket Memoranda of Understanding (MOUs) with most of them (including DOD and USFS).

Pat said that she too will have a problem releasing LAT/LONG data. In her case it is not so much a legal issue as a "trust" issue with the groups that have provided data to the New Mexico NHP. She said she will want to get their authorization in order to release precise location information.

The discussion then turned to the relationship between the USAF and DOD agreements and the DUAs. Sabra said the Arizona NHP will need the approval of the Arizona Attorney General's office, and possibly also of the state Game and Fish Commission, in order to sign the DUA. To sign an MOU, the NHP will need the approval of the Arizona Game and Fish Commission. She expects that obtaining these approvals will be difficult due to legal issues surrounding the release of precise location data. She also thinks it will be easier for the Arizona NHP to sign the DUA and MOU with ABI than with TNC.

Jack and David said the Navajo tribal council will have to review the DUA before the NHP can sign it (Jack said he had not yet seen the DUA so ABI will send it to him immediately following this meeting). However, they do not expect any objection to its signature because the NHP can release whatever information it chooses (with the possible exception of data related to the golden eagle, which involves some issue with the Hopi, and with data the Navajo have for species on BLM and USFS lands). After some discussion, it was agreed that ABI will sign an MOU with the Navajo Nation NHP to cover current and future agreements. The MOU and the DUA will be signed concurrently, and then the Navajo Nation will sign the sub-agreements under the USAF and Legacy agreements.

Pat said that ABI will probably not need an MOU with the New Mexico NHP. She will charge the USAF agreement directly for salaries (since TNC is the prime recipient on that agreement) but

will need a different arrangement under the Legacy agreement. Regarding the DUA, she said she will review it and send a markup to ABI.

Both Sabra and Pat said they think a way can be found to provide the data required under the USAF agreement even if the Arizona and New Mexico NHPs cannot sign the DUAs in the required timeframe. Sabra indicated that the Arizona NHP might be able to provide precise data directly to the USAF without going through ABI or TNC, as it has done with some previous contracts. However, she noted that this approach may prevent the NHP from obtaining funds under some future agreements.

Richard pointed out that such an approach would prevent ABI from reconciling the Arizona data with that from the other NHPs to ensure consistency and completeness. He also emphasized that the broader objective of the USAF and DOD/Legacy agreements (and the other agreements recently obtained by ABI) is to demonstrate the viability and effectiveness of the MJD concept, of which the DUAs are an integral part. ABI needs to show that it can provide regional and national data sets that, in order to be useful to its clients, include information which has been aggregated and reconciled through the MJD. Precise location data will be needed in some cases, such as the current USAF project. The contractual mechanism for providing data sets through the MJD will be licenses to the clients and sub-agreements between ABI and the NHPs that reference the DUAs.

Richard also mentioned that each NHP that signs the DUA gains certain access rights to the aggregated data from the other NHPs. Therefore, all NHPs should contribute the same data at the same level of precision so they are all able to access the same data from the other NHPs.

Given the uncertainty surrounding the signing by the Arizona NHP of the DUA, Sabra suggested that Arizona provide the USAF with data fuzzed to a scale of one minute (approximately 1.2 miles) for private lands. She said that the Arizona NHP provides data to the Sonoran ecoregional project at this scale. This approach may not meet our contractual obligations with the USAF, and additional approaches must be explored for providing precise location data to the USAF for tribal and private lands.

3. Data Requirements for Agreements with USAF and DOD

At this point the meeting participants decided to review the specific data requirements of the individual agreements. The following points were made concerning the agreements with USAF and DOD.

- Although it is not required under our agreement, the USAF would be interested in "phenology" or seasonality data on NSS, including wintering populations. Sabra noted that the Arizona NHP has some phenology abstracts but they are weak on birds. The New Mexico NHP doesn't have any phenology data. This might be an area for future funding by the USAF;
- Sabra said Arizona only tracks nesting sites for birds and doesn't maintain records for other types of EO's. For example, it doesn't maintain data on wintering populations of bald eagles, although it does have some data in non-digital format;
- TNC will provide data for the global and national fields;
- Benchmark data standards will be met for all vertebrates (USAF agreement) and interim standards will be met for all vascular plants (DOD agreement).
- The Arizona NHP doesn't use the BCD and doesn't have the "surveysite" or "sitename" field. It was agreed those who use these fields should submit them to the MJD while those that don't shouldn't worry about them;
- The Navajo NHP doesn't use MA ("managed area") fields;
- Sabra said the Arizona NHP will delete any data from areas which are not in Arizona;
- Sabra said the Arizona NHP cannot provide data on private in-holdings in public lands;

- It was clarified that "interim" standards refer to county and watershed level data, which should be easy for the NHPs to provide;
- Pat noted that, in New Mexico, the Bureau of Reclamation (BOR) has data on the willow flycatcher but won't give it to the NHP. Richard pointed out that, with the money from the USAF agreement, the NHP should be able to devote someone to overcoming this obstacle. Pat agreed that they can probably do so, and said that the only species for which the NHP may not be able to obtain sufficient data is the peregrin falcon.
- Sabra said the Mexican spotted owl should be a G4 instead of a G3T3 (it is an S4);
- The goshawk, which is included in our agreement, is neither listed nor a candidate for listing. It has a rank of S4 and was apparently proposed for listing at one time but no longer is proposed. The FWS doesn't track it any more, so we might propose to exclude it from the list in the USAF agreement;
- An Arizona population of the cactus feruginous pygmy owl (CFPO) (T2) was recently listed (probably after our USAF agreement was prepared) so the FWS will probably want the USAF to track it. Accordingly, we will recommend that it be added to the species list in our agreement;
- The aplamado falcon (G5) is found primarily in New Mexico but there has also been a siting in Arizona and there is a Chihuahuan population.
- The Arizona NHP is frequently asked about the lesser long-nosed bat. The FWS decided that it is not a NSS, but there is apparently some disagreement on this point and Sabra suggested that we might raise the issue with the USAF;
- It was suggested that the piping plover be deleted from the list because there is only one vagrant siting;
- It was noted that the jaguar may be added to the federal listing and suggested that we might recommend adding this to our list;
- Sabra noted that the Arizona NHP does not include black-footed ferrets, condors, or wolves in their database because all three are designated as experimental non-essential populations. However, it was generally agreed that we would want to provide data on these species to the USAF so they will avoid them;
- Sabra mentioned that Arizona has data on the masked bobwhite (subspecies) (T1) and recommended that this species be added to the USAF list. It is only found on the Buenos Aires Wildlife Refuge, along the border with Mexico. Since the Border Patrol and DEA fly helicopters in the area this subspecies is probably subject to harassment and so she recommends that it be tracked.

It was noted that the USAF apparently developed the list of species in our agreement in consultation with the FWS; we agreed to provide the USAF our recommendations for additions to the list and let them decide if they would like the data for them. (The proposed changes to the list are attached to these minutes.)

4. Review of DUA Language

Richard and Shara led the meeting in a review of the Data Use Agreement. Richard again emphasized that all NHPs need to contribute the same data to the MJD.

5. Discussion of Draft Model Data Use License and Related Issues

During discussion of the language to be included in the model data use license for the USAF agreement it was suggested that, as a way around the problem of providing exact location information, we provide precise location data without giving the species name. However, Richard affirmed that the USAF needs to be given the species with the location information so it can determine the distance by which it must avoid the site.

Sabra stated that the Arizona NHP can provide data at a scale of 1 minute for all federal, state, and private lands without any further authorization. She mentioned again that the Arizona NHP has a

blanket MOU with the USAF and suggested that perhaps we can just reference this MOU in the sub-agreement with the Arizona NHP. Then the NHP could either provide precise location data directly to the USAF or provide data at the scale of 1 minute to the USAF through the MJD. Concerning the Arizona NHP's sub-agreement under the USAF agreement, if it turns out to be a problem for the Arizona NHP to sign an agreement with TNC, another option discussed is for the NHP to sign it with ABI based on a supporting agreement between ABI and TNC. Funding could then be channeled from TNC through ABI to the Arizona NHP.

Concerning data from tribal lands in Arizona, Sabra emphasized that the NHP cannot provide any data on species on tribal lands without specific authorization from the tribes. The Hualapai tribe has given written permission for some projects in the past, but the NHP has no formal agreement with them. She specifically mentioned the Tohono-o'-Odham and indicated that they are currently suing the USAF over land in the southwestern part of the state. Therefore, she feels it will be difficult for the MJD to include data from any tribal lands in Arizona.

Jack and David mentioned that the Navajo Nation will host a southwest regional meeting of the Native American Fish and Wildlife Service on August 2-6, 1999 (meetings will take place on August 3rd and 5th in Window Rock). They suggested that ABI make a presentation at that meeting. They also suggested that we then invite tribal representatives to ABI's next annual meeting in October 1999, which will be hosted by the Arizona and Navajo Nation NHPs. It was agreed that the Navajo Nation NHP serves as a good example which might help encourage other tribes to participate in the NHP Network.

Pat mentioned that a TNC western regional conservation and stewardship meeting will take place in February. It should be attended by the TNC regional offices and NHPs from this region and will doubtless include discussion of the MJD. Shara agreed to arrange for a presentation to be given on the MJD at that meeting.

We then discussed the issue of the work being carried out by SAIC for the USAF. There was still confusion as to exactly what data SAIC is collecting and how it differs from or might overlap with the data the NHPs are supposed to provide under our USAF agreement. Pat would like to urge the USAF to require that SAIC provide whatever data they are able to acquire to the NHPs. It was agreed that we should arrange a direct discussion between Pat and Roy Barker. Sabra said she will also check to find out what information the Arizona Game & Fish Department provided to the SAIC effort.

This led to a more general discussion of how well the USAF and other agencies and organizations understand the work of the NHPs, both generally and with relation to specific agreements. It was agreed that it would be useful to develop project summary sheets and a presentation package for use in educating our clients and other organizations working in similar areas (such as SAIC in the current instance). We would use such materials to engender a wider awareness of the capabilities and current activities of the NHPs with a view to promoting better coordination and reducing duplication of efforts by ABI and other organizations. We would also encourage our clients to ensure that data they obtain through contracts with other organizations be fed into the NHP inventories whenever appropriate. This will improve the quality and completeness of data sets which the NHPs will be able to provide to federal agencies in the future.

6. Review of project timelines

We reviewed the joint timeline for the USAF and DOD/Legacy agreements. Both Pat and Sabra agreed that their respective NHPs can have the county and watershed level data ready by March or April 1999.

Sabra said the Arizona NHP can provide the NSS data to the MJD (at a 1 minute scale) for federal, state, and private lands before the MOU and DUA are signed so that we can stay on schedule for the USAF agreement.

David indicated that the Navajo Nation will need until May to meet the benchmark standards.

7. Next steps:

For the Navajo Nation NHP: ABI will send the DUA to Jack for review, approval by the Tribal Council, and signature. ABI will also prepare an MOU and the sub-agreement under the Legacy agreement and email them to Jack Meyer to review and edit.

For Arizona, ABI will prepare an MOU and send it to Sabra as soon as possible, and she agreed to try to have the Game and Fish Commission review and sign it at the same time as the DUA. ABI will also send Sabra a copy of the FAQs in hopes that this will help secure the Commission's approval. Sabra volunteered to email ABI a copy of the Arizona NHP's draft data security protocol and ABI will cite this in our MOU with Arizona. The Arizona Attorney General's Office will need to review and approve the sub-agreements under the USAF and Legacy agreements, and then the Arizona Game and Fish Commission will need to approve them, before the NHP can sign them.

For New Mexico, Pat agreed to make some revisions to the DUA and send it to ABI to review before it is submitted to the NHP for signature. ABI and TNC will send her the subagreements for signature when they are ready. There is no need for an MOU with the New Mexico NHP.

List of Follow-up actions:

- ABI to send the DUA to Jack Meyer;
- ABI to prepare MOUs for the Arizona and Navajo NHPs and email them to Sabra and Jack, respectively; the draft data security protocol will be cited in the Arizona MOU;
- ABI to send Sabra a copy of the FAQs;
- Sabra to email a copy of Arizona NHP's draft data security protocol to ABI;
- TNC to send sub-agreements under USAF agreement to NHPs and ABI;
- ABI to send sub-agreements under Legacy agreement to NHPs (including California) and TNC;
- Pat will send marked-up DUA to ABI for review before submitting it to the NHP for signature;
- ABI to send additional details on interim standards to NHPs;
- TNC to arrange meeting with Roy Barker and Pat Mehlhop to discuss SAIC work;
- TNC to prepare recommendations for changes to list of species in USAF agreement;
- ABI to follow up with further discussion concerning provision of precise location data to USAF for NSS on tribal and private lands in Arizona and New Mexico;
- ABI & TNC to prepare project summary sheets and presentation package to educate clients and other organizations about NHP activities and capabilities;
- ABI to prepare presentation for August 1999 meeting of Native American F&WS in New Mexico;
- TNC to prepare presentation for TNC western regional conservation & stewardship meeting in February 1999;
- AZ to find out what information the Arizona Game & Fish Department provided to the SAIC effort;
- AZ will develop data for wintering sites of bald eagles;
- AZ to develop SOURCECODES based on help screen guidelines;
- AZ to crosswalk codes with Audrey Godell for the MABR file;
- AZ to provide data for SPHENCOM, SJANA, SJANB, SFEBA, SFEBB, etc. from abstracts in WordPerfect;
- NN will develop MA data and fill out the necessary fields for the SA file;
- TNC (& ABI) to update and distribute data requirements and assistance for QC'ing data standards for each program;
- TNC to research GRANK/SRANK discrepancy for the Mexican spotted owl;
- NM to summarize EODATA information stored in Ecomonitoring fields in Access into EODATA field.

USAF/ACC Noise Sensitive Species List

Original List

Mexican spotted owl
bald eagle
American peregrine falcon
goshawk
southwestern willow flycatcher
interior least tern
piping plover
swift fox
Sonoran pronghorn antelope
black-footed ferret

Proposed removals from the list

goshawk Not listed or a candidate for listing.
Piping plover Only one vagrant siting.

Proposed additions to the list

aplamado falcon	Found in NM, siting in AZ and a Chihuahuan population
lesser long-nosed bat	May be a noise sensitive species
CA condor	
jaguar	May be added to the federal listing
cactus ferruginous pygmy owl	Recently listed
masked bobwhite	Found on the Buenos Aires Wildlife Refuge, along the border with Mexico. The Border Patrol and DEA fly helicopters in the area and this subspecies may be subject to harassment.

