



FY 2016 Secretary of Defense

# Environmental Awards

Natural Resource Conservation , Small Installation, Malmstrom Air Force Base

## Background

Malmstrom Air Force Base (MAFB) in central Montana is home to the 341st Missile Wing (341 MW), serving 3,579 personnel. As part of Air Force Global Strike Command, the mission of the 341 MW is to defend America with safe, secure, and effective nuclear forces and combat-ready Airmen. MAFB supports the operation of intercontinental ballistic missiles, a critical component of America's on-alert strategic forces. A small main installation (3,278 acres), MAFB also has 165 missile facilities, each covering 2-3 acres and geographically separated over seven Montana counties. MAFB's security forces are in continual deployment throughout this 23,500 square mile missile complex. MAFB also has a large amount of land (nearly 25,000 acres in total) under real estate agreements around the base and missile facilities. Uniquely, MAFB houses only helicopter aircraft; the 40th Helicopter Squadron (40 HS) provides aerial surveillance of the missile complex, rapid airlifts, and security forces responses.

MAFB lies at 3,500 feet above sea level, near the Missouri River. The habitat is wind-swept, shortgrass prairie, the most arid of the mid-continental grasslands. The main base is east of Great Falls, and is otherwise surrounded by farm fields. Over half of MAFB's property has been developed in support of the military mission, while remaining open areas are security buffers for sensitive areas or reserves for future development. Open spaces include horse

pastures leased for grazing (422 acres) and land previously used for hay-cutting (1,350 acres). Management and protection of natural resources on these lands are essential to the long-term sustainability of the land and to support mission requirements. While no threatened or endangered species occur on the main base, 10 listed and sensitive species have ranges that overlap with numerous missile sites.

## Accomplishments

### Natural Resources Conservation Management

#### *Increased Timeliness*

The installation Integrated Natural Resources Management Plan (INRMP) provides a blueprint for integrating ecosystem management with military operations while meeting stewardship and legal requirements. MAFB has kept its INRMP current and legally compliant every year. All annual updates are briefed and coordinated with the 341 MW and Air Force Civil Engineering Center (AFCEC).

Natural Resources Conservation (NRC) Program staff have conducted meetings between MAFB the US Fish & Wildlife Service (FWS) and Montana Fish, Wildlife, and Parks (FWP) ahead of the upcoming five-year INRMP review schedule and updated and created 30+ INRMP maps in collaboration with the MAFB Geobase office.



### **National Public Lands Day**

During the 2015 National Public Lands Day, volunteers helped to shovel pounds of topsoil, and to plant pollinator-friendly, native plants grown by a local, family-run nursery. Cold fall temperatures and high winds did not deter the enthusiasm of Airmen volunteers.

### ***Natural Resources Conservation Program - Increased Scope and Efficiency***

The NRC staff consists of a Natural Resources Manager (NRM) and a National Environmental Policy Act (NEPA) manager at the 341 CES. Despite its small size, the NRC staff has enhanced the natural environment and improved mission capability each year by executing over 80 successful, time-lined conservation projects, and securing funds for 10 or more new projects each year.

The NRC Program uses an adaptive management approach, in which management strategies are adapted to increasingly improve outcomes. For example, MAFB weed management results were dramatically improved by forming a working group to effectively coordinate weed management activities among six base entities whose individual efforts had often been counter-productive.

Each year, hundreds of construction and operations projects occur on MAFB lands. The NEPA specialist implements and manages all contracts for environmental assessments (EA), environmental baseline surveys (EBS), and leads staff reviews of all proposed construction project designs. NRC staff ensured that all operations were conducted in accordance with state and federal environmental regulations, with minimal environmental impacts, while enabling mission success. During the accomplishment period, NRC staff managed multiple major contracts in-house (saving costs), and reviewed 34

construction project designs, 43 EBS reports, and 9 EAs to ensure INRMP and mission consistency. Further, NRC staff design reviews helped avoid pest management costs and bird loss by incorporating swallow nest barriers into new building designs. Bird-Aircraft Strike Hazard (BASH) risks were also reduced by avoiding landscape designs that included possible bird perches near the flight line.

### ***Improved Communication and Collaboration***

INRMP goals and projects are now briefed to 341 MW command twice a year. All updates are reviewed annually by key stakeholders including AFCEC, FWS, and FWP.

The NRC Program significantly improved its partnership with the FWS, which provided a full-time onsite FWS employee to serve as base NRM, improving a staffing shortage. Using a proactive approach, the NRM sought to ensure compatibility of the Air Force mission with federal environmental regulations, decreasing time needed to consult with other agencies. The NRM now manages the NRC Program in close collaboration with base leadership, FWS, and AFCEC. Close partnerships have improved NRC project coordination, budget programming, results review, and ensured timely updates and more effective INRMP implementation. FWS assisted MAFB to develop and implement a three-year invasive weed management plan, and to manage base aquatic habitat, including annually stocking the base pond with trout at no cost. The FWS also provided volunteers for base



### **Fish and Wildlife**

Part of the daily work of the natural resources conservation program is collaboration with pest management. Here, an injured Swainson's hawk found by base personnel is assisted by Entomology Shop personnel. In an effort to save its life, they relocated the hawk to a local rehabilitation center.

projects such as Greater sage-grouse (GSG) surveys and annual public outreach events.

MAFB significantly strengthened ties with its state partner, FWP. As a result, FWP now also provides MAFB free fish stocking, annually coordinates on the INRMP, and is actively involved in Kids' Fishing Day and MAFB public outreach events.

MAFB forged new partnerships with the Montana Natural Resource Conservation Service (NRCS), Department of Natural Resources and Conservation, and Montana Natural Heritage Program, and non-profits including the Montana Native Plant Society and Audubon Society. By tapping into local expertise, MAFB programs such as urban forestry and habitat management were significantly improved. Implementing new tree maintenance measures increased survivorship of MAFB's valuable urban trees. Updated and improved base re-seeding techniques now include more native species to better help prevent weed growth.

The NRC Program formed new working groups and conducted regular meetings with the Pest Shop, Grounds Maintenance, 40 HS, Contracting Office, Base Housing, Fire Department, Outdoor Recreation, the 341 MW, and the 341 Civil Engineering Squadron on urban forestry and pest management issues, BASH reduction for helicopters, weed management coordination, annual fish stocking,

and education, outreach, and volunteer projects for the base community. These working groups serve to significantly increase NRC program effectiveness, which in turn enables MAFB to better achieve its mission.

The lessons learned by the NRC Program are regularly transferred to other installations through monthly newsletters and by meetings with MAFB working groups, AFCEC, and regional Air Force bases.

### **Mission Enhancement**

#### ***New BASH Plan Increases Helicopter Safety***

MAFB's former BASH plan pertained only to fixed-wing aircraft due to a former fixed wing flying mission and lack of BASH data for helicopter-only operations. The former plan included recommended measures that were both costly and often unnecessary for rotorcraft. Helicopters differ greatly from planes in flight patterns, especially during takeoff and landing. Thus, the NRM undertook a project to analyze strike data obtained from MAFB, the local airport, and several Department of Defense (DoD) Legacy studies on helicopter-wildlife strikes occurring nationwide over the past 20 years. Based on the findings, the NRM assessed strike hazards to MAFB helicopters not only for installation flights, but also for flights throughout the missile complex. With the findings and expert input from 40 HS and 341 MW flight

safety officers, the NRC Program completed a new 112-page Wildlife Hazard Assessment Plan in early 2015.

The Plan, the first of its kind in the DoD, initiates proactive, innovative measures to manage BASH risk specifically for helicopters, and achieves DoD directives. Hazards to pilots and aircraft were characterized for geographical location, landforms, and by season, time of day, and altitudinal range. BASH avoidance measures are given for all current flight paths, including recommended flying altitudes with season and time of day. Developing this Plan in-house saved over \$30K in contracting costs. As a result, BASH wildlife management techniques were revised, with significant man-power savings and less expense on bird and prey-based control. Most importantly, the Plan reduced



### **Greater Sage-Grouse Surveys**

Malmstrom AFB successfully completed grouse surveys within its missile complex, an effort that helped produce conservation measures and saved mission costs. Here, USFWS employee Jon Barnhill, searches for grouse within the sagebrush habitat that they rely on in east-central Montana.

the risk of property damage, injury, and loss of lives, and enhanced the 40 HS flying mission.

With the Center for Management of Military Lands, MAFB produced new maps with locations of unmarked, unreported towers in the missile field that pose hazards particularly for night-time helicopter missions. Pilots can plan safer flying routes with the new maps. The NRM regularly attends BASH working group meetings, holds BASH briefings during 40 HS flight safety days, and collaborates with Flight Safety to monitor field grass mow height within the helicopter movement area. By educating the grounds contractor, the Program decreased helicopter strike risks. In 2015, the 40 HS reduced its already low BASH rates to zero strikes.

In FY14-15, the Montana Air National Guard (ANG), in partnership with 341 MW, proposed to use the MAFB closed runway for air-drop training missions to deploy simulated air-drop bundles onto drop zone targets. The new MAFB drop zone expedites ANG flight crew combat capability, and saves costs associated with using other, more distant, drop zones. The NRC Program initiated, managed, reviewed and provided expertise on a contracted EA. Program coordination helped pave the way for ANG training to commence. In FY15, the first exercise on MAFB successfully took place.

### ***Candidate Species Surveys in Missile Complex***

The Greater Sage Grouse (GSG) was a candidate species for listing as endangered under the Endangered Species Act. While GSG do not occur on MAFB, many missile sites are located on or near their known range. If the species were listed, some mission-related activities at 60 to 100 missile sites may have been impacted. Critical habitat designation would necessitate consultations with FWS, and analyses would have to be conducted at missile sites possibly containing GSG within the region of mission impact.

Qualified NRC staff conducted extensive field surveys to locate GSG individuals, record signs of activity, and examine GSG habitat and range data relative to 165 missile sites. Based on survey findings, 142 missile sites were eliminated from possible GSG occurrence due either to absence of GSG or their habitat. The project findings allowed MAFB to save consultation costs to determine management needs, and potential costs of contracting EAs

or environmental impact assessments. The proactive approach allowed mission critical activities to proceed, saving over \$300K. Further, due to efficiency of FY15 surveys, fewer surveys are needed in FY16, saving an additional \$10K. The INRMP was updated to include management measures for GSG; this precludes critical habitat designation on MAFB lands and reduces the need to consult with the FWS should the species be listed in the future. Hence, MAFB can demonstrate good environmental stewardship without impacting the 341 MW mission.

### Land Use Management

A previously contracted watershed analysis of MAFB found increased erosion and sedimentation into the Missouri River, with a key contributor being constant water flow from MAFB into a tributary ravine. To amend this situation, the NRC Program successfully established a project to plant fast-growing cottonwood trees at MAFB outflow areas. The trees will help reduce erosion processes by slowing the rate and volume of water transport, while enhancing wildlife habitat and creating windbreaks.

In FY15, the NRC Program initiated a project to improve the ecological integrity of MAFB prairie grassland habitat, increase the number of pollinator-friendly plants, and decrease herbicide usage. The goals support DoD conservation directives and increase the area of healthy native landscape available to support the mission. Funding was secured to convert a 75 acre invasive weed-infested area into native prairie grassland. In the initial phase, potential sites were evaluated. Together with a NRCS plant materials specialist and a Montana Native Plant Society expert, the NRM examined and selected suitable areas, and planned optimum methods for conversion to native grassland. This trial, if successful, will pave the way for prairie grassland conversions in FY17-19.

The NRC Program won \$13K in DoD Legacy Program funding during the accomplishment period to hold multiple National Public Lands Day events that improve base habitat each year. Projects involved over 70 Air Force, civilian, and dependent volunteers who planted trees and created pollinator gardens at the Airman's Center and along the Distinguished Visitor Route. With \$1,500 in Arbor Day grants, the Program planted 36 large trees and 28 shrubs,



### Deer Population Monitoring

A project to conduct surveillance of base large mammal wildlife was initiated in 2015 to help monitor the base deer population. With the help of Airmen volunteers to deploy and manage game cameras throughout the installation's open spaces, the project aims to gather information on population size and movement patterns.

and installed 25-gallon irrigation tubes and trunk protectors for nearly 100 trees. Three new pollinator gardens will be installed this spring using designs, materials, and funds garnered in FY15.

### Forest Management

Tree growth is difficult given MAFB's arid climate and clay soil. Despite its challenges, MAFB initiated a forestation project, recognizing the contribution of trees to air quality, erosion control, habitat improvement, and quality of life. More importantly, increasing trees in strategic base locations served to mitigate future impacts of climate change, such as wind storms and temperature extremes. To provide expert management, the Program founded a 15-member Tree Board composed of base personnel, federal and state partners, and local arborists. MAFB collaborated with tree-disease experts from the US Department of Agriculture-Forest



### **Arbor Day**

After successfully completing a tree-planting event during 2015 Arbor Day on Malmstrom AFB, members of the base community take time to celebrate. The event was a collaborative effort between Montana DNRC, USFWS, and volunteers from the 341 CES, 341 FSS, 341 MW/JA, and in particular, the 561 NOS.

Service to conduct annual urban tree health assessments. The cooperative, no-cost effort supported the investment in existing trees. In FY15, MAFB was awarded its 23rd consecutive Tree City USA for its excellent forestry efforts.

### **Fish and Wildlife**

Within MAFB's 23,500 square mile missile complex, numerous sensitive species occur. Taking on the challenge of managing these species, NRC staff analyzed all existing databases to determine general ranges and occurrences of over 170 sensitive species throughout Montana and compared those to MAFB land and easement areas. Based on the results, the NRM created a database of 11 listed species, two special status species, and 90 state species of concern. This provided mission planners with valuable information for avoiding species impact and project delays. Most listed species within the missile complex are elusive mammals. In FY15, a proactive project was initiated to monitor missile site areas using game cameras. The data collected allows the Program to include or exclude sites from species management consideration, and proactively enhance the accuracy of mission-related recommendations. The NRC Program also partners with the FWS to protect and manage its pond ecosystem every month by monitoring its water chemistry, fish populations,

and ensuring proper aerator functioning.

### **Invasive Species Control and Pest Management**

Proliferation of noxious weeds can significantly impact Wing training and base grazing activities. In summer, open spaces on MAFB are used to conduct mission essential exercises (i.e. field combat, readiness, bivouac, and Fire Safety trainings). In recent years, thorny invasive species like thistle and kochia have rapidly spread in these areas, degrading habitat quality and creating difficult conditions for any physical training on the ground. In FY14, the NRC staff, in collaboration with the FWS, conducted a base-wide plant survey, resulting in detailed distribution maps and a comprehensive Weed Management Plan for 11 invasive weeds. A MAFB working group was formed to implement the Plan, and to coordinate and maximize all base weed control efforts. The group's base-wide coordination eliminated duplicative and counteractive actions, reducing costs and greatly improving each entity's invasive plant control efforts.

Following Plan recommendations, NRC staff set in motion an interagency program to completely eradicate four invasive weed species spread over 1,300 acres on MAFB. Success of



### **Fisheries Management**

Malmstrom AFB has an ongoing collaboration with the USFWS in managing the base pond and its fishery resources. Here, the Environmental Element chief assists USFWS biologists to remove invasive goldfish using a special boat outfitted with electro-shocking equipment used to stun the fish, enabling their capture.

systematic herbicide applications will be measured with biennial weed population surveys. To address the spread of non-targeted weed species threatening mission-combat readiness by rendering training areas unusable for terrain exercises, the NRC Program designed a project and secured FY15 funding to bring a professional team with 1,500 goats to graze more than eight weed species over 1,300 acres. By controlling the spread of thorny invasive species, the three-year project will promote MAFB combat readiness and training continuity, reduce expensive herbicide costs, and help achieve Executive Order and DoD directives to reduce herbicide usage.

During the accomplishment period, the Program undertook efforts to research buildings and structures where migratory cliff swallows annually build mud nests. After nesting, barriers

were constructed on previously used nest sites to prevent new swallow nests. Each year, several Northern flickers were depredated because they drilled holes into walls of older buildings to build cavity nests. In an experimental program, MAFB installed heavy-duty Northern Flicker nest boxes onto previously drilled walls. This proactive approach to bird pest problems has proven successful. Compared to 100 birds depredated in 2014, no birds were depredated in 2015. An anticipated \$30K savings will be realized by the MAFB Pest Shop for future bird depredation activities.

### **Conservation Education and Community Outreach**

The NRC Program made significant strides in developing an active and innovative outreach program involving the base community in a variety of natural resource-related educational activities. Classes taught by specialists and attended by base Airmen and residents included: Proper Tree and Shrub Care; Tree Pruning Techniques; Wildlife Surveillance Techniques; Water Chemistry Measurement Techniques; Invasive Fish Removal Techniques; Ecology of Montana's Bats; and Mapping Sensitive Species.

The NRC Program hosts several annual events open to the base community, such as National Public Lands Day, Kids' Fishing Day, and Arbor Day. Annual MAFB Earth Day displays are presented at local high schools, and educational information is provided for all new base residents.

At the base pond, the NRC staff manages an information kiosk, and now arranges for wildlife education displays and live aquaria during Kids' Fishing Day. The Program helped form a new Airman's Bow-fishing Club to target the pond's invasive goldfish. The NRC Program has also provided support for the MAFB Archery and Riding clubs by maintaining the 800 acres of pastures that both clubs rely on.

The NRC Program strives to involve Airmen and base residents in as many creative and innovative educational and hands-on opportunities as possible. Equally as important as taking long-term conservation measures is instilling a spark of interest in conservation and wildlife in other people, especially ones who may be managing natural areas in the future.