2024 Secretary of Defense

Environmental Awards

Natural Resources Conservation, Small Installation
Minot Air Force Base

Introduction

Located 15 miles north of the City of Minot, North Dakota, and 40 miles south of the United States/Canada border, Minot Air Force Base (AFB) is home to two Air Force Global Strike Command units: the 5th Bomb Wing (BW) and the 91st Missile Wing. The 5th BW mission supports the Air Force's conventional and nuclear capable combat force and can deploy their fleet of B-52H Stratofortress bombers anywhere around the world. The 91st Missile Wing mission provides nuclear-capable deterrence by operating, maintaining, and supporting the Minuteman III missiles through its Launch and Missile Alert Facilities. Minot AFB supports 5,707 military personnel, 1,038 civilians, contractors, private businesses, and 5,644 family members and retirees. Minot AFB's economic impact to the area is $606M annually. Minot AFB resides on the ancestral lands of the Anishinaabe, Assiniboine, and Oceti Sakowin tribes. With an average of 45 inches of snow per year, low temperatures reaching -40°F (-72°F with windchill), and snow or freezing temperatures occurring October – April, Minot AFB's installation members take great pride in being able to accomplish both mission sets amidst some of the most challenging winter elements in the United States.

Minot AFB encompasses 5,304 total acres including a 4,965-acre main base and 339 remote Launch Facility and Missile Alert Facility acres, spread out over 8,500 square miles within the northern mixed-grass prairie. Minot AFB's main base is 60 percent developed, and undeveloped areas include 170 acres of wetlands. More than 400 acres

are open for outdoor recreation opportunities for base personnel, including 140 acres open to the public. These lands have been developed for outdoor opportunities and include walking trails, a campground, an outdoor archery range, and a golf course.

Minot AFB accomplishes its mission nestled within the prairie pothole region and the Central Flyway, a bird migratory corridor where upwards of 10 million ducks, geese, and grassland birds make their way north and south biannually. Minot shares its resources with 6 federally threatened, endangered, and candidate animals and insect species and another 24 North Dakota Species of Conservation Priority, species that are rare or declining within the state.

Background

Minot's Natural Resources Program comprises three primary sections – Natural Resources, Bird/wildlife Aircraft Strike Hazard (BASH), and Pest Management – balancing the tradeoff of reducing wildlife hazards to the mission while conserving wildlife and natural resources. Natural Resources and Pest Management are part of the 5th Civil Engineer Squadron while BASH is part of the 5th BW. The Natural Resources Manager is a civilian Wildlife Biologist, Pest Management is composed of one civilian and four military members, and BASH consists of one Airport Wildlife Biologist and two military personnel. An additional 12 enlisted personnel have been trained to participate in BASH activities, including determining bird watch conditions and pyrotechnic deterrence.

Valuing inter-agency cooperation, Minot AFB works closely with the United States Fish and Wildlife Service (USFWS) and North Dakota Game and Fish department (NDGF) to develop and annually review the Installation Natural Resources Management Plan (INRMP), a comprehensive guide for all activities related to natural resources on the installation. The INRMP is revised every five years (last major revision in 2020) and reviewed annually to incorporate new information and management goals, allowing for fluidity to adapt. An in-person joint review of the INRMP was completed in March 2023.

Beyond partnership with USFWS and NDGF, Minot collaborates with many agencies, professionals, and experts including the Ward County Soil and Water Conservation District, United States Department of Agriculture, Natural Resources Conservation Service, Minot State University, North Dakota State University, University of North Dakota, Colorado State University, Montana State University, Minot Pollinator Project, North Dakota State Wildlife Veterinarian, North Dakota State Disease Biologist, and 18 affiliated Native American Tribes. These connections provide opportunities for Minot to serve on many committees, including the Installation Mission Sustainment Team, Sentinel Cultural Resource Working Group, Military Drone Working Group, and to have an active membership in the North Dakota Chapter of the Wildlife Society.

Accomplishments

During the achievement period, Minot collaborated with the Air Force Civil Engineer Center and Colorado State University Center for Environmental Management of Military Lands to assess effects climate change could have on Minot AFB natural resources in the next decade. Minot has integrated these predicted changes into the annual INRMP goals by targeting invasive species that could exacerbate climate related events. An increase in precipitation amounts and storm intensities could overwhelm current stormwater infrastructure, especially when functional integrity is undermined by invasive cattails. The invasive Russian olive shrub, which contains a high amount of flammable resin, increases wildfire severity risk. In 2022, Minot collaborated with USFWS to develop a future land use assessment specific to the remote Launch and Missile Alert Facilities.

This assessment combined climate change predictions with proposed land use changes to assess which natural resource goals should be prioritized. Minot is committed to attaining these goals of restoring native species diversity, decreasing invasive species, increasing native pollinators, and working to restore function to prairie and wetland communities.

Raptor Translocation

Raptor Translocation
Raptors, such as this Northern Saw-whet Owl, pose a Bird to Aircraft Strike risk. Minot AFB has implemented a translocation program to capture, band, and relocate to reduce lethal take of raptors.

Minot is faced with serious safety risks to aircraft operations through wildlife-aircraft collisions. To minimize threats, Minot created a wildlife exclusion zone around aircraft runways and ground movement areas. Wildlife that enters this zone are removed through non-lethal harassment (pyrotechnics, bioacoustics, propane gas cannons) and lethal means. Raptors, a group of birds that includes hawks, falcons, and owls, often do not respond to non-lethal harassment. Minot has adopted a translocation program to decrease the lethal take of the 14 raptor species on base. During the accomplishment period, Minot captured 55 juveniles from 6 species including the boreal owl, the first ever recorded for the state of North Dakota. Raptors were marked with a Federal United States Geological Service metal band and translocated 50 miles to be released on Federal lands. These efforts reduced bird-aircraft strike risk, promoted natural raptor populations, and contributed to scientific knowledge on raptor ecology, including movement and longevity. Success of the translocation efforts was evident in the reduction of installation breeding populations and a zero percent return rate.

Bombers to Butterflies

Grassland Restoration
Minot AFB restored over 5 acres to native grassland. The seed mixture was designed to include native grasses and flowers, like this Prairie Rose, to increase resources for declining grassland bird species and provide habitat for federally endangered pollinators.

Minot is fully committed to the management goals outlined in North Dakota's Wildlife Action Plan. At least 30 North Dakota Species of Conservation Priority have been identified using base natural resources. Further, Minot hosts 211 species of pollinating butterflies and moths that are dependent on native grasslands. Minot partnered with the Minot Pollinator

Project, Minot Public Schools, USFWS, and Audubon National Wildlife Refuge to secure a $5,000 grant to restore five acres of school-leased installation land to native pollinator habitats, providing needed pollinator resources and outdoor educational space for school age students. More than 70 pounds of native pollinator seed mix, including 9 grass and 15 flower species, were sown using no-till methods. An additional three pounds of locally hand-collected milkweed seed was hand-seeded. This effort increased resources critical to declining grassland birds and providing habitat for the federally endangered Dakota skipper, Poweshiek skipperling, and candidate monarch butterfly species. Minot further worked beyond its borders, assisting USFWS to identify endangered pollinator species habitat and movement corridors within a 10-mile radius of the installation.

Wildlife Management

One of the more formidable tools Minot attained during this period was training its Facility Managers in pest deterrence and prevention. Birds, such as barn and cliff swallows, bats, and rodents are attracted to the more than 1,700 buildings on the installation. Facility managers were trained on how to identify swallow mud nests, when nests were candidates for removal, how to remove nests, how to set and bait mouse traps, and how to identify openings rodents might use to enter buildings. Successful training was evident during the Annual Environmental Inspection Process where less than one percent of inspected buildings were experiencing wildlife pest issues.

Cohesive cooperation and communication led to the extraction of an intruding moose in June 2023. Moose are uncommon and rarely infiltrate base fences, with an average occurrence of about once every three years. Minot's Natural Resources and Security Forces worked to contain the animal away from personnel and mission equipment. Unable to be escorted off installation, Minot worked with NDGF and their charitable Sportsmen Against Hunger program to have the moose processed and its more than 300 pounds of meat donated to the local City of Minot food pantry shelf.

Ground squirrels, a type of burrowing rodent, are the number one wildlife nuisance at Minot AFB. Within this period, ground squirrels caused over $100,000 in damage to ground sensors and attracted predators that could have caused wildlife-to-aircraft strikes. Ground squirrels are an additional risk to public health with five personnel reporting ground squirrel bites. Ground squirrels cost the installation's privatized housing an additional $95,000 during the achievement period, requiring two pest manager contractors dedicated to the removal of ground squirrels in base housing. Minot set over 22,500 traps during the two 5-month periods without snow cover, removing more than 2,000 ground squirrels.

Wildlife Management
This Franklin's ground squirrel is one of three ground squirrel species at Minot AFB that are causing damage to infrastructure through their burrowing activities. Well adapted to urban grassland ecosystems, these squirrels are attracted to manicured lawns where they burrow in disturbed soil along buildings, roadways, and utility posts.

Conservation Outreach

In May 2023, Minot set a target to complete an installation-wide tree inventory within five

years. Forming a Vegetation Management Group, Minot collaborated with Security Forces to identify trees too close to fences and other infrastructure; dead-standing, diseased, and at risk to high wind damage trees were also identified. Minot's Natural Resources staff trained 11 Civil Engineers on tree measuring metrics including diameter at breast height, height, species, and health. Attaining this goal allows Minot staff to plan for tree loss due to damage, climate change, or pests. Tree assessments led to members of the 5th Civil Engineer Squadron removing 60 trees and 461 feet of dense shrubs that were creating security obstructions and areas of adversarial concealment from a Protection Level-1 Nuclear Convoy Route. Elimination of these plants removed tactical blind spots and reduced ground purge/sanitation efforts by more than 30 minutes per mission.

Tree Inventory
5th Civil Engineer Squadron personnel use geospatial coordinates as part of an effort to complete a 100 percent inventory of all trees at Minot AFB. This undertaking evaluates an important natural resource to include species, health, gain size diameter and height metrics and allows Minot AFB to plan for future resource disease and pests impacts that target specific trees.

Minot AFB combined wildlife management with conservation outreach by joining the collaborative effort to track and conserve North America's bumble bees via Bumble Bee Watch, a non-profit organization dedicated to bumble bee conservation. Prior to the achievement period, no bumble bees had been documented for Minot AFB. Through this effort, nine new bumble bee species were identified on the installation, including the yellow-banded and Southern Plains bees which are two Bumble Bee Watch Species of Conservation Concern. Minot conservation outreach taught capture techniques, identification, scientific data collection, data entry, and safe release of bumble bees to elementary students and Airmen.

Minot Natural Resources staff have partnered with Minot AFB's Public Affairs and the Native American Heritage Council members to draft future natural and cultural resource goals with the 18 affiliated tribes for their review and input. Minot AFB specifically has looked for tribal input as the installation transitions from the Minuteman III to the Sentinel missile system. Outreach took place at two Pow Wows hosted by the Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation in July-August 2023, where Minot interacted with more than 20,000 tribal and community participants and gained natural resources exposure and research partners.

Invasive Species Removal – Chemical, Mechanical, and Fire

Minot proactively manages invasive, toxic, and nuisance plant and animal species through collaboration with multiple partners. During the accomplishment period, Minot cleared weeds around 12 acres of wetlands, 286 acres of airfield, and at least 80 miles of fence line. Constant vigilance led to the discovery of the invasive and highly toxic wild parsnip, which can cause third degree burns when its sap reacts with sunlight. The Minot and USFWS personnel hand pulled 50 plants of new growth and sprayed to prevent any future growth, completely eradicating the threat within 48 hours to native resources and removing risk to human health.

Wildfire threat at Minot is marginal with specific areas on base at high risk due to

increased fuel loads caused by invasive Russian olive trees and dense stands of cattails. Exceeding INRMP goals to reduce invasive Russian olives by 10 percent annually, Minot worked with the Air Force Civil Engineer Center Wildland Fire Branch and removed more than 200 trees, an astounding 800 tons!

B-52 Stratofortress Aircraft in Blizzard Conditions
Minot AFB's installation members take great pride in being able to accomplish its mission amidst some of the most challenging winter elements in the U.S. Low temperatures reaching -40°F (-60°F with windchill) and an average of 45 inches of snow October – April add challenges for Natural Resources Management.

Prescribed fire was approved for use for the first time in the installation's history. A tool to combat new invasive species growth, reduce woody encroachment, and awaken fire-dependent grasslands, Minot approved an ambitious prescribed burn plan with a little over 1,000 acres in 21 units scheduled to be burned every 5 years. Minot was pleased to receive its first open burning permit in June 2023 from the North Dakota Department of Environmental Quality, a needed approval to dispose of the 2,700 tons of trees stockpiled from winter snow and ice storms. On 22 July 2023, a supercell with winds that gusted over 75 mph severely damaged many of the trees on the installation adding an additional 53 mature trees weighing 212 tons in need of disposal.

Minot AFB has over 7.5 miles of drainage ditches and stormwater movement areas where cattails have become problematic. Decreasing waterflow, retaining sediment, and increasing wildfire hazards, Minot went beyond the standard practice of mowing and spraying with pesticide, to combat the plants. Minot gained approval, in July 2023, for a biochemical that is designed to break down the thick outer plant walls cattails have, allowing herbicides to penetrate further into the stalk. Minot has partnered with the University of North Dakota to come up with an experimental design that targets statistically testable results including measurement of biomass and stem density. The first test on military lands, Minot's use of the innovative biochemical could potentially aid other installations with cattail management challenges.

Mitigation of unnecessary nuisance measures are a priority for Minot AFB. Biannually, Minot applies pesticide to reduce local mosquito population. Minot AFB coordinates with the City of Minot and local beekeepers to reduce impact to non-target species. In August 2023, after completing routine population counts, Minot determined that counts were low enough to stop the scheduled mosquito control flight, saving Minot AFB $6,000, the USAF $176,000, and the City of Minot $42,000.

Biocontrols, or the use of using one organism to control another, can be an effective tool in reducing invasive species. Minot gained approval for several biocontrols, including spurge beetles and spurge-hawk moths to control invasive leafy spurge and bud weevils to control Canada thistle. Minot worked to identify significant patches of invasive plants where the biocontrols would be released. Minot collaborated with USFWS and Minnesota Department of Natural Resources to identify regional areas where biocontrols could be collected and released at Minot. In July 2023, Minot identified that spurge hawk-moth caterpillars were already guests of Minot. Rapid response of Minot stopped pesticide spraying of areas containing the

caterpillars, allowing the insect to breed and continue its job of reducing the invasive leafy spurge.

Wildlife Monitoring

With more than 373 known animals and 209 plants found on the installation, Minot challenges itself to employ a wide range of techniques to monitor movement, habitat use, and detection of new species. Monitoring for invasive plants and insects is challenged by the 150-day growing season where the pest is emergent and can be detected. To compensate for the short growing season, Minot has increased its efforts to detect invasive, tree-damaging insects, by placing spruce bud worm and emerald ash borer specific traps in over 20 locations, for a total effort of 12,000 traps during the achievement period.

Bobolink

Minot AFB's Natural Resource Management staff continuously monitors for plants and animals (including birds, mammals, and insects) to identify species which are using base resources. Species such as this Bobolink, a North Dakota Species of Conservation Priority, are only available for observation during the short 150 day growing season.

Minot used six trail cameras to monitor wildlife in shelterbelts and other key habitats throughout the installation. This passive monitoring identified two major movement corridors, one of which led to the airfield. Identification of this corridor allowed Minot to concentrate trapping efforts and reduce wildlife before they became an airstrike hazard. Trail cameras, and the follow-on trapping, resulted in the identification of six new mammal species previously not listed in the INRMP, one of which, the Arctic shrew, is a North Dakota Species of Conservation Priority.

Bird surveys with USFWS captured bird species richness during the spring migration, summer breeding interval, and fall migration. These surveys have identified which areas on the installation to target to reduce BASH risks and which water resources are important as breeding resources. Where prior bird surveys were dependent on visual identification, Minot employed new technology by using a mobile device connected to the Merlin bird sound identification software application that recorded and identified bird song in real time, increasing bird species detection. During the achievement period, 27 new bird species records were added to Minot's INRMP.

In 2016, Montana State University completed the first bat survey on Minot AFB during which eight species were detected, including the endangered Northern long-eared bat and endangered little brown bat. In June 2023, Minot AFB committed to the North American Bat (NABat) collaborative network to better understand installation habitat use by bats and better understand how habitat loss or construction could impact Minot's bats. Minot's contribution to NABat aids in the assessment of bat population trends in North America and identifies key habitats to manage for the sustainment of viable populations. Minot deployed 4 bioacoustics recorders for 4 nights, gaining 192 hours of bat sounds where 537 unique events could be identified. These sounds were analyzed by a computer program to match the sound with its specific bat species. Confirming the presence of the eight bat species, Minot has made plans to install bat houses, providing a needed resource while luring bats from buildings where they had been reported to roost.