

# Vanishing Landscapes and Endangered Species



Joseph Emmanuel Ingoldsby

VANISHING LANDSCAPES AND ENDANGERED SPECIES  
JOSEPH EMMANUEL INGOLDSBY

We live in a time of vanishing landscapes and endangered species. E.O. Wilson states that “Over the next half century, up to one third of the world’s plant and animal species may be lost forever. Conservation biologists regard this as the first mass extinction since the age of the dinosaurs.”<sup>1</sup> In the United States alone, 30% of the nation’s plant and animal species are at risk of disappearing, and over 500 species are missing or may already be extinct.<sup>2</sup> We have lost over half of our nation’s original wetlands, 98% of our tall-grass prairies, and virtually all virgin forests east of the Rockies. Since the colonization of America, four American bird species have gone extinct, including the Passenger Pigeon, once the world’s most abundant bird.<sup>3</sup> Today, there is recognition that change is progressing with such speed that shifts and loss of plants and species can be documented within our lifetime.

Recent projections on the velocity of climate change by scientists at the Carnegie Institution, Stanford University, the California Academy of Sciences and the University of California, Berkeley calculated the temperature velocity for different parts of the world based on current and projected future climate models.<sup>4</sup> The findings pinpoint those ecosystems of critical environmental concern where biodiversity is most threatened by the speed of climate change. The study found that global warming would impact flatter areas as mangrove swamps, flooded grasslands, coastal marshes and savannas with a velocity of 1 km a year. At higher elevations of the montane grasslands and shrublands, the projected velocity is charted at 110 meters per year. Within the tropical and subtropical coniferous forests, the movement of landscape boundaries would average 80 meters a year. This will lead to a cataclysmic relocation of plant and animal species to shifting landscapes or mass extinctions within a lifetime.

Scientists speak of climate change, fragmentation of the landscape, broken trophic cascades, species shifts and extinction, and the loss of the natural and cultural landscape. However, science is often written using a technical terminology and style, which makes it indecipherable to the general public. There is a need to translate, visualize, and popularize the science at this critical juncture in time. Further, field studies and findings of dire importance are published in academic and scientific journals, or presented as papers to peers at scientific conferences, without any publicity or educational outreach to the general public. There has been a glaring lack of scientific coordination across the disciplines to examine the data using a systems approach to show the interconnection of events and findings, and a visual language to communicate their concerns to the public.

Artist’s can play an integral role in the raising of the public consciousness through advocacy. Art can be used to communicate complex ecological and scientific principles to an audience outside of the confines of the academy or science museum. In my own series, Vanishing Landscapes and Endangered Species blends art, science and technology to advocate for vanishing landscapes and endangered species. The collaborative works examine, explain and illustrate issues such as climate change, fragmentation of the landscape, broken trophic cascades, species shifts and extinction, and the loss of the natural and cultural landscape.

The progression of my artistic environmental explorations is described within scholarly journals and magazines: Vanishing Landscapes: The Atlantic Salt Marsh, Leonardo 42-2-2009 published by MIT Press, 5. and illustrated within ORION Magazine for Nature, Culture and Place, Requiem for a Drowning Landscape, March-April, 2009. 6. Field installations are often set within the threatened landscapes: Requiem for a Drowning Landscape-Memorial. Documentation of the work has been exhibited in university galleries, refuge and sanctuary galleries, art galleries and within the New York Hall of Science, opening the eyes of many to the beauty, utility and the fragility of vanishing landscapes and endangered species.

The public events and installations required scientific research and community, corporate, environmental agency collaboration, reviews and permitting. This educational outreach has translated into legislation, protective status of land and species, land acquisition, zoning change and public appreciation for the science of land and sea.

Vanishing Landscapes and Endangered Species is a retrospective of environmental advocacy works, which use art and science to communicate concern for the vanishing landscapes and endangered species of the American landscape from the Great Plains, to the Prairies of the Midwest, to the Eastern forests, to the Atlantic coast of New England. Works include Icons of the Vanishing Prairies, Silent Shadows, Crane Effigy Mounds, Spirits of Whooping Cranes, Shrouds for an Endangered Species, Landscape Mosaics, Leaves in Grass, Requiem for a Drowning Landscape and Anadromous Awakening. 7. Works are site specific to the American habitat regions and their species.

The pre-Columbian landscape of North America can be delineated into a series physiographic regions, which include the Pacific Mountain System, the Intermontane Plateaus, the Rocky Mountain System, the Interior Highlands, the Interior Plains- including the interior Low Plateaus, the Central Lowland and the Great Plains Province, the Appalachian Highlands, including the New England Province, the Atlantic Plain and the Laurentian Upland. These Physiographic regions include Habitat regions and Regional habitats, which are based on the geology, hydrology and topography of the regions. Habitat regions include the Pacific Coast, the Western Forest, Aridlands, Grasslands, Boreal Forest, Eastern Forest and the Atlantic Coast. 8.

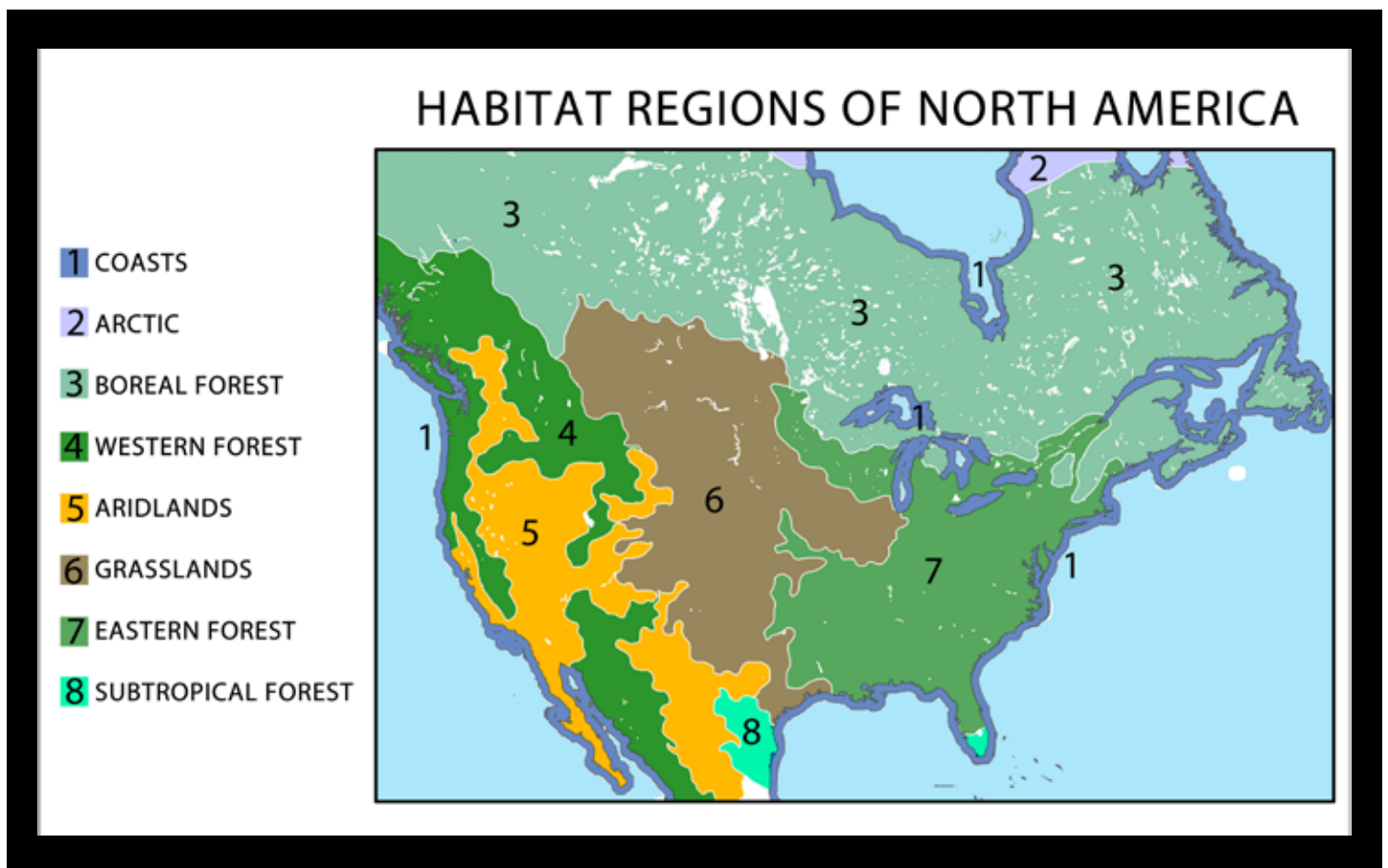


Figure 1: North American Habitat Regions 8. (Joseph Emmanuel Ingoldsby)

The colonization of America radically altered the natural and cultural landscapes, their habitats, their species, and the indigenous cultures of the regions. Colonization brought invasive species, disease and overlays of governance, religious dogma, legal writs, technical advancements, and the privatization and commodification of land, which have reduced the landscapes, species and cultures to a fraction of their former whole.

## The Grasslands



*Figure 2: The Great Plains 9. (Joseph Emmanuel Ingoldsby)*

Shortgrass prairie ecosystem of the North American Great Plains originally extended from the eastern foothills of the Rocky Mountains east to Nebraska and included rangelands in Colorado and Kansas and the high plains of Oklahoma, Texas and New Mexico to the south. 9. These rangelands were maintained by grazing pressure of American Bison, the grassland's keystone species. The dominant grasses of the Shortgrass prairie are blue grama, (*Bouteloua gracilis*) and buffalograss (*Bouteloua dactyloides*), which have adapted to the semi-arid continental climate of sporadic annual rainfall, extended droughts and high winds. The adventitious rooted, natural grasses of the Great Plains kept the soil in place and trapped moisture, even during periods of prolonged drought

and high winds. Here the Plains Indians trailed the vast herds of bison that followed a seasonal migration across the grasslands. These included the nomadic Arapaho, Assiniboine, Blackfoot, Cheyenne, Comanche, Crow, Gros Ventre, Kiowa, Lakota, Lipan, Plains Apache, Plains Cree, Sarsi, Sioux, Shoshone, and Tonkawa. The second group of Prairie Indians, were semi-sedentary tribes who, in addition to seasonally hunting bison, lived in villages and raised crops as corn, beans, squash and tobacco. These included the Arikara, Hidatsa, Iowa, Kaw, Mandan, Omaha, Osage, Otoe, Pawnee, Ponca, and Wichita. The tribes followed the migratory herds of the American Bison, which were estimated by frontiersmen at 60 to 100 million animals in the early-19th century. By the close of the 19th century, in the span of a person's lifetime, the bison herds were exterminated by profiteer hunters, political decrees, military action, and manifest destiny.

The land was usurped and the natives suppressed through a series of laws, inventions, and technological advances. These included the development of the land survey system of 1775, the Land Ordinance Act of 1785, the invention of the plow that broke the plains in 1837, the tractor, which replaced the team of horses, the Homestead Act in 1862, the Hatch Act of 1887, the Enlarged Homestead Act of 1909, which populated Shortgrass prairie lands without a reliable water source, and the Stock-Raising Homestead Act of 1916. These laws, combined with the nationwide expansion of the railroads, which established mechanized transcontinental transportation and telegraph networks, and the development of a highway system in the 1920's, revolutionized the population and economy of the American West to which homesteaders, ranchers, settlers and speculators laid claim to lands forcibly abandoned by the indigenous people. The massive influx of new farmers eventually led to catastrophic land erosion on former shortgrass prairie land and the Dust Bowl of the 1930s.

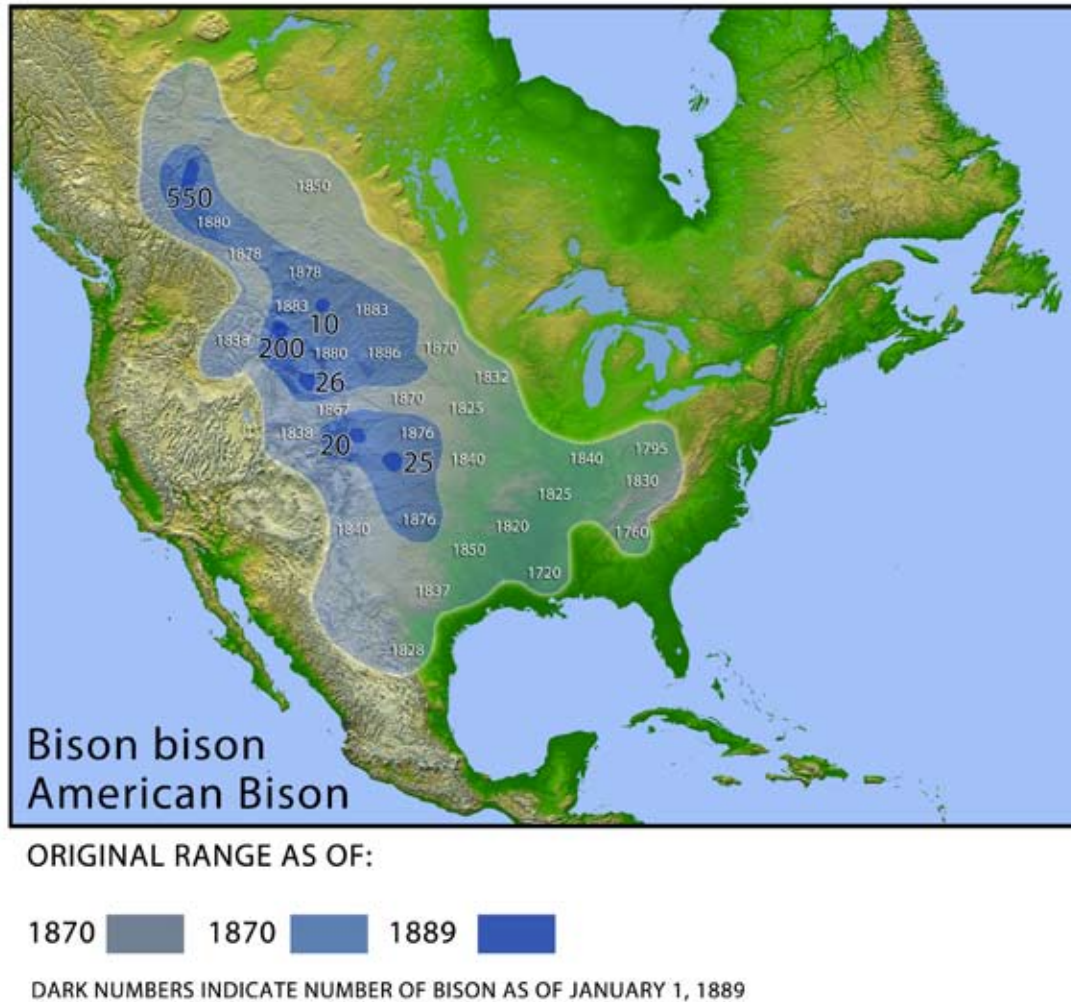
The Dust Bowl area lies principally west of the 100th meridian on the High Plains. The area is semi-arid and receives less than 20 inches (510 mm) of rain annually. The rainfall supports the Shortgrass prairie biome originally present in the area. 10. An unusually wet period, which encouraged increased settlement and cultivation in the Great Plains, ended in 1930. This was the year in which an extended and severe drought began which caused crops to fail, leaving the plowed fields exposed to wind erosion. The fine soil of the Great Plains was easily eroded and was carried east by strong continental winds. "Black Blizzards" occurred throughout the Dust Bowl. On April 14, 1935, Black Sunday, an eerie calm descended on the landscape, before the silence was broken by a cacophony of chattering calls and the sound of millions of birds in frantic flight ahead of the howling winds and approaching black clouds of fine dust, which turned day into night, blinding and choking all in its path. Many of the farmers thought that God was punishing them for their murderous acts. The dust clouds blew all the way to Chicago where dirt fell like snow. Two days later, the same storm reached cities in the east, such as Buffalo, Boston, New York City, and Washington D.C. That winter, red snow fell on New England.

Dust Bowl conditions, coupled with the economics of the Great Depression in 1929, fomented an exodus of 2.5 million people from the Great Plains states. By the end of the decade long drought in the 1940s, the demographics and political economy of the Plains had fundamentally changed. 11.

## **American Bison**

Bison were hunted almost to extinction in the 19th century and were reduced to a few hundred by the mid-1880s from estimates of 60-100 million animals. 12. They were hunted for their hides, choice cuts of meat and tongues, with the rest of the animal left behind to decay on the ground. After the animals rotted, their bones were collected and shipped back east in large quantities on the new Transcontinental railroads. The bison bones were ground down for use as fertilizer, for bone china, and glue in the east. The US Army sanctioned and actively endorsed the wholesale slaughter of bison herds. Bison meat was a daily ration for the soldiers at frontier outposts and stateside garrisons. The US Federal government promoted bison hunting for various reasons: to allow ranchers to range their cattle without competition from other bovines, to accommodate the railroad industry, to weaken the North American Indian population by removing their main food source and to pressure them onto the reservations. Without the bison, native people of the plains were forced to leave the land or starve to death. 13.

## THE EXTERMINATION OF THE AMERICAN BISON TO 1889



*Figure 3: The Extermination of the American Bison 12. (Joseph Emmanuel Ingoldsby)*

The current American Bison population has been growing rapidly and is estimated at 500,000. However, most of the American bison herds are genetically polluted or partly crossbred with cattle. Today there are only four genetically unmixed herds of the American plains bison and only one that is also free of brucellosis: it roams Wind Cave National Park. A founder population of 16 animals from the Wind Cave herd was established in Montana in 2005 by the American Prairie Foundation. The herd now numbers 76 and roams a 121,000-acre grassland expanse on the American Prairie Reserve. According to scientists, “small herd size, artificial selection, cattle-gene introgression, and other factors threaten the diversity and integrity of the bison genome. The bison is for all practical purposes ecologically extinct across its former range, with multiple consequences for grassland biodiversity. Urgent measures are needed to conserve the wild bison genome and to restore the ecological role of bison in grassland ecosystems.” 14.

The Wood Bison of the Boreal Forest can be readily discerned from the Plains Bison by body shape and larger size. In 1957, a disease-free, wood bison herd of 200 was discovered near Nyarling River in Wood Buffalo National Park, Canada. In 1965, 23 of these wood bison were relocated to the south side of Elk Island National Park and remain there today as the most genetically phenotypical wood bison. In 2008, the wood bison population in Elk Island National Park, Canada was estimated at 295. Wood bison are federally listed as threatened species in Canada and endangered species in America. Today, bison occupy less than 1% of their former historic range.

## **Gray Wolf**

Though once abundant over much of North America, the iconic gray wolf inhabits a very small portion of its former range because of widespread destruction of its territory, human encroachment of its habitat, loss of native prey animals and the resulting human-wolf encounters that sparked broad persecution by ranchers, who would kill wolves that might threaten livestock. Gray wolves were extinct in all of the lower 48 states by the 1970s except for Superior National Forest in northeastern Minnesota. The federal government stepped in to protect wolves in the mid-1970s. Since then, wolf numbers have grown exponentially in Minnesota, Wisconsin, Michigan's Upper Peninsula and eventually in the northern Rockies. Wolves have also recovered within Yellowstone National Park, where they were reintroduced in the 1990s. In 2003, the Fish and Wildlife Service divided the gray wolf's range into three areas and reclassified the Eastern and Western populations as threatened instead of endangered. The Eastern segment covered the area from the Dakotas east to Maine, while the Western segment extended west from the Dakotas. Wolves in the Southwest remained classified as endangered. After litigation, in 2004 the Eastern segment was divided to create a fourth segment for the Western Great Lakes region, including Minnesota, Michigan and Wisconsin, as well as in parts of North Dakota, South Dakota, Iowa, Illinois, Indiana and Ohio. In 2006, gray wolves in the Western Great Lakes region, were removed from the threatened species list. The wolf population was estimated at 3,865 within the Western Great Lakes region. With deregulation, gray wolf management policies would be set by the states and tribes and could include the killing of problem wolves, which harass livestock or wolves, which stray into unregulated territory. Legal action, returned the wolves to the endangered species list by the U.S. Fish and Wildlife Service in 2009. 15.

## **Bald Eagle**

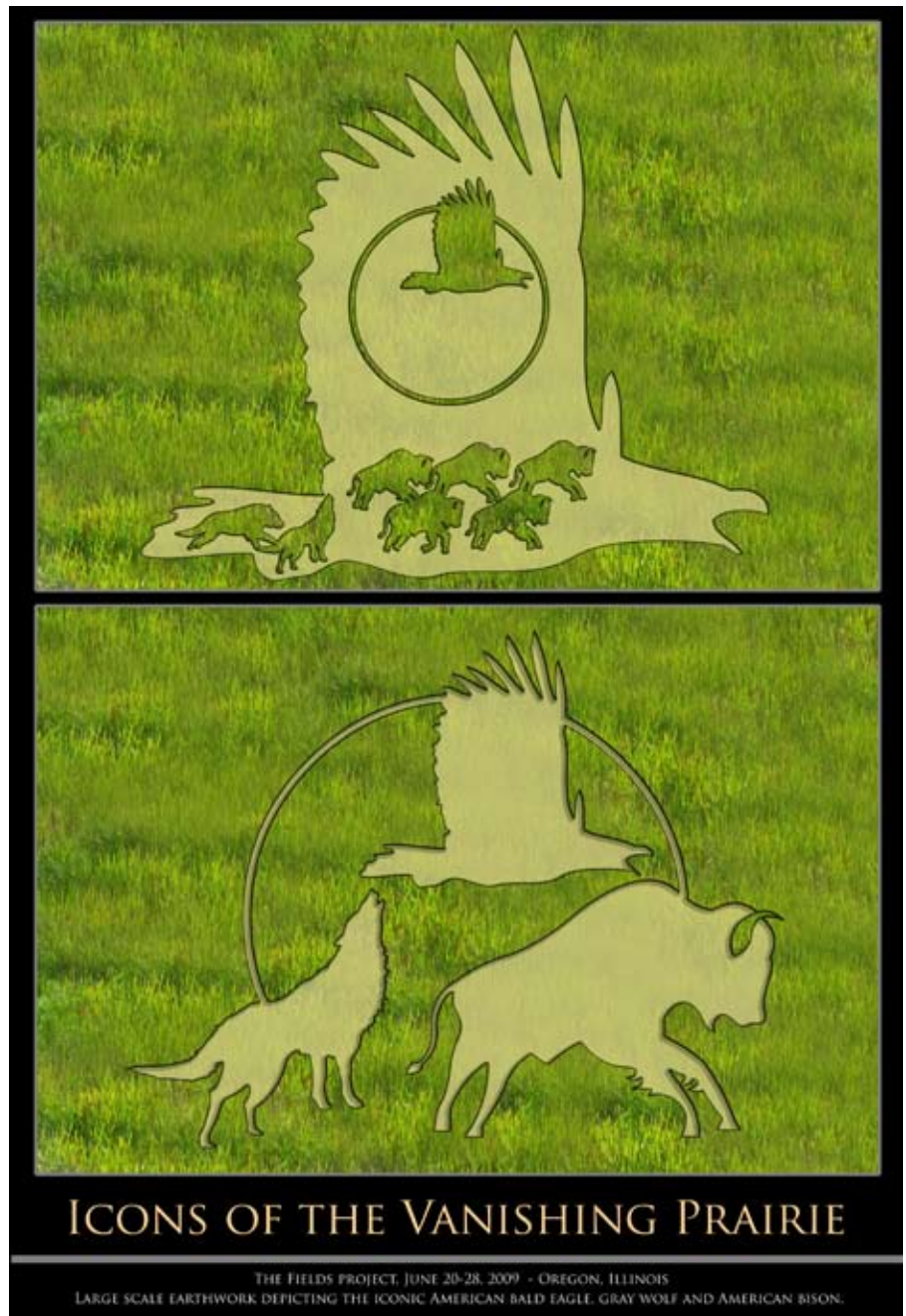
It is estimated that in the early 1700s, the bald eagle population was 300,000–500,000, but by the 1967, when the bald eagle was listed as an endangered species, there were only 417 nesting pairs in the United States. The widespread loss of suitable habitat, illegal shooting and the use of DDT brought the bald eagle to the brink of extinction. With regulations in place and DDT banned, the eagle population rebounded. 16. The Bald Eagle can be found in growing concentrations throughout the United States and Canada, particularly near large bodies of water, as the Mississippi River and her tributaries. The bald eagle was officially removed from the U.S. federal government's list of endangered species in 1995 by the U.S. Fish & Wildlife Service and was reclassified as a threatened species. In 2007, with close to 10,000 nesting pairs of eagles in America, the bald eagle was removed from the threatened species list.

## **The Fields Project - Icons of the Vanishing Prairies**

Recognizing the near total collapse of the natural and cultural landscapes of the American grasslands to agriculture and developmental sprawl, when asked by community organizers of the Rock River Valley, Illinois to participate in an installation on fallow land to commemorate the art, agriculture and the grasslands, I decided to design a monumental earthwork visible from passing aircraft that would communicate concern for the vanishing landscapes and endangered species of the American grasslands.

A site was chosen on a ridge-line of fallow fields. The fields were gridded in 10 feet intervals on each axis. Global positioning was used to position the design, where it was flagged on the grasses for cutting, using the corresponding gridded drawing and field grid to maintain accuracy. Farm families assisted with the tractor work and layout in 100 degree heat. We soaked our feet in buckets of iced water at lunch before we returned to the fields. It took two days of field layout and a full day of cutting to complete Icons of the Vanishing Prairies.

The Fields Project- Icons of the Vanishing Prairies is a monumental earthwork set in the Rock River Valley, Illinois on the historic easternmost edge of the former tall grass prairies. Here the iconic bald eagle, gray wolf and American bison, bound by a setting sun, are cut into fallow farm fields east of the Mississippi River. Since European settlement and westward expansion, there has been a 98% loss of the prairies east of the Rocky Mountains, with a subsequent loss of species. This work highlights the fragmentation and loss of the prairies and the near extinction of iconic species of the west, as the American bison, the gray wolf and the bald eagle. The work can be viewed from passing aircraft between Chicago, Illinois and Madison, Wisconsin. The cutting is gold within the green fields of summer, is green surrounded by the flaxen fields of autumn, and becomes an intaglio in the snow over the winter months. The work is ephemeral as the grasslands and the species, which inhabited them.



*Figure 4: Icons of the Vanishing Prairies  
(Joseph Emmanuel Ingoldsby)*

### **The Tallgrass Prairie**

The tallgrass prairie is an ecosystem native to central North America. Prior to the Euro-American settlement in the 1820's, one of the major features of North America was 240 million acres of tallgrass prairie, which covered a large portion of the American Midwest, just east of the Great Plains, and portions of the Canadian Prairies. They flourished in areas with rich loess soils and moderate rainfall of around 30 to 35 inches (760 to 890 mm) per year. To the east were the fire-maintained eastern savannas. The tallgrass prairie biome depends upon prairie fires for its survival and renewal. Tree seedlings and intrusive alien species without fire-tolerance are eliminated by periodic fires, caused by lightning and man. Native Americans used fires to renew the prairie for grazing, to

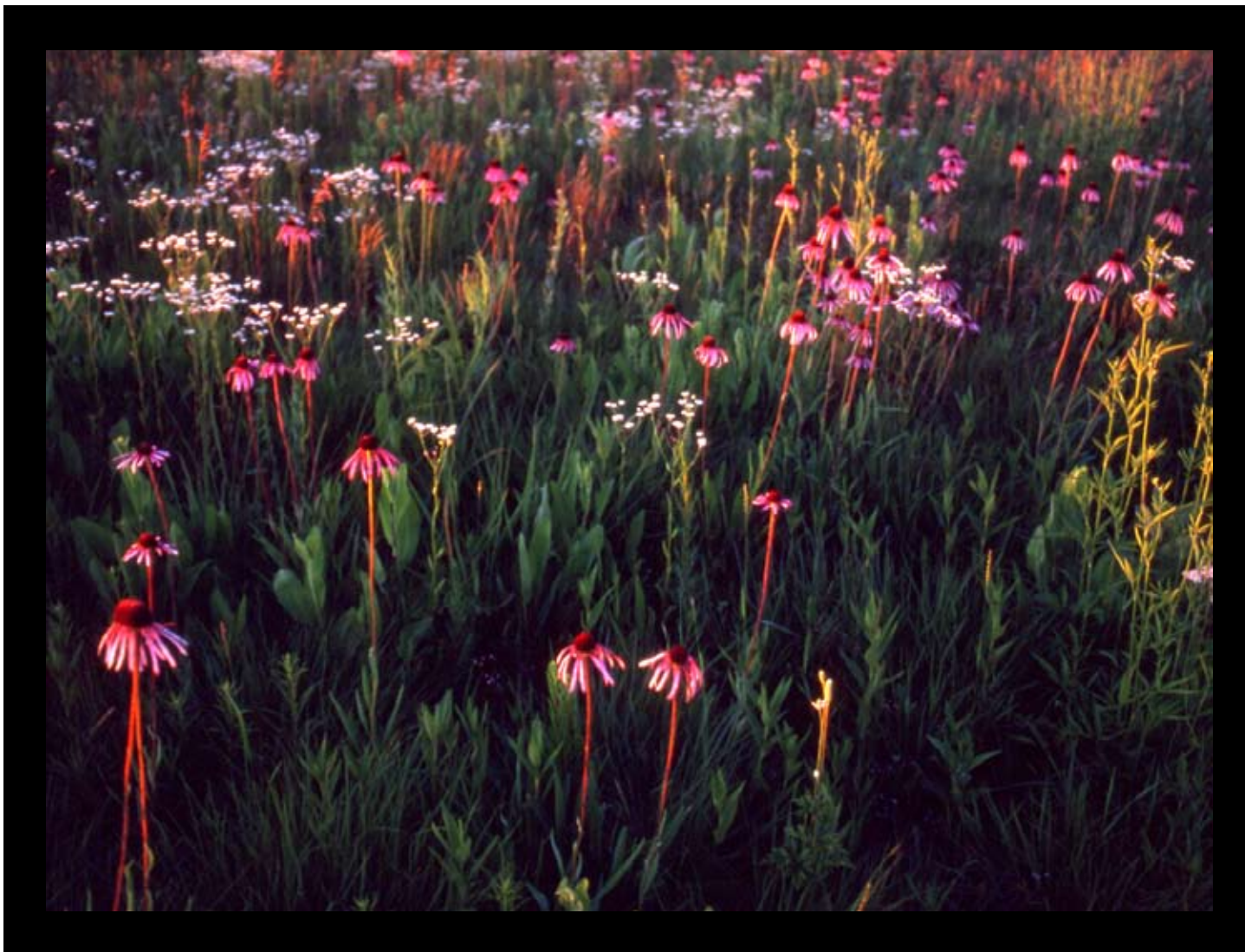


**Figure 5: Icons of the Vanishing Prairies Installation (Joseph Emmanuel Ingoldsby)**

drive buffalo and improve hunting, travel, and visibility or started naturally by lightning. In the northeast, where fire was infrequent, storms and hurricanes represented the main source of disturbance in the climax beech-maple forests.

As its name suggests, the most obvious features of the tallgrass prairie are tall grasses such as Indiangrass (*Sorghastrum nutans*), Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Schizachyrium scoparium*), and Switchgrass (*Panicum virgatum*), which average between 5 and 6 feet (1.5 and 2 m) tall, with occasional stalks as high as 8 or 9 feet (2.5 or 3 m). Prairies also include a large percentage of forbs, such as lead plant, Prairie Rosinweed (*Silphium terebinthinaceum*), and coneflowers (*Echinacea pallida*). The prairie communities can be divided into wet prairie, wet mesic, mesic prairie, dry mesic and dry prairie. 17. Functionally, the prairie is composed of warm season grasses, cool season grasses, legumes, and members of the sunflower family. Technically, prairies have less than 5-11% tree cover. A grass-dominated plant community with 10-49% tree cover is a savanna.

In the space of a single lifetime, between 1830 and 1900, the biodiverse, tallgrass prairie was steadily transformed to farmland. Centuries of accumulated loess and organic matter created a thick mantle of topsoil, which was opened for farming with the 1837 invention of the steel plow by John Deere in Grand Detour on the Rock River in Illinois. Today, 98% of the original tall grass prairie has been converted to agriculture. The tall-grass prairie has become the breadbasket of America. Over time the family farm has been replaced by corporate



*Figure 6: Tallgrass Prairie (Joseph Emmanuel Ingoldsby)*

family farm and corporate agribusiness, where seed is patented and crops are commodified. Concern has been raised about the impact of agribusiness on the family farm and the impact of genetically engineered crops on the surrounding landscape and species.<sup>18</sup>

### **Silent Shadows of Whooping Cranes**

In the past years, I have been working on developing communication projects, which highlight endangered species and threatened landscapes. This work brought me to the Mid-west in 2004 when I was asked to create a work that celebrated the Mid-western landscape. When I researched the area, I found that the Rock River Valley is within the migratory path used by millions of water birds flying across the heartland. I met with botanists who directed me to visit the prairies and meet those scientists, whose life work is the preservation of habitat and the nurturing of the migratory birds.

In 2004, I created *Silent Shadows of Whooping Cranes*, a monumental earthwork set in the Rock River Valley, Illinois. It depicted a family of whooping cranes in migration flight. The work was cut into the fallow fields with the help of the local farmers. It highlighted the memory of the migration flight of the endangered cranes, the loss of critical habitat, and the current efforts to bring the species back from the grave. It was broadcast on television, radio and was in the papers.



# SILENT SHADOWS

MUSEUM EXHIBITION SERIES

JOSEPH EMMANUEL INGOLDSBY

*Figure7: Whooping Cranes- Museum Series (Joseph Emmanuel Ingoldsby)*



**Figure 8: *Silent Shadows of Whooping Cranes Installation (Joseph Emmanuel Ingoldsby)***

The Fields Project - Silent Shadows of Whooping Cranes is a large-scale installation within the fallow, agricultural fields of the Rock River Valley. Here, the shadows of whooping cranes in migration flight will be cut into the farm field grasses, evoking the historic migration route of these magnificent and nearly extinct birds across the heartland of America. Each shadow will span close to two acres. A recording of the whooping crane flight call will be sounded at noon of each day. Their one-minute, eulogistic call will break the silence of their shadows. In nature, their call could be heard over a distance of two miles. The work will be visible along the flight paths of passing jets and small planes. Historically, the nearly extinct whooping crane migrated across the heartland of America. It is estimated that 1,400 whooping cranes existed in 1860. Their population declined because of hunting and habitat loss until 1941 when the last migrating flock dwindled to an all-time low of 15 birds. Now, the migration is all but a memory. The wetlands and prairies were ideal stopover points for the whooping cranes as they migrated south to their coastal winter range. The species was nearly wiped out in the last century with habitat loss, agriculture, development pressures, and indiscriminate hunting. Today, a remnant population is being hand raised and nurtured to fly their way across the heartland of America once again. 19. Silent Shadows is based on research and discussions with the International Crane Foundation, the Whooping Crane Eastern Partnership, Operation Migration, the Nature Conservancy and residents of Oregon, Illinois. I will look at species loss, the prairie landscape and the issues of land use conflict using art to communicate a concern to all who fly, like the cranes once did, across the heartland of America.

## Effigy Mounds

I returned to Wisconsin in 2005 and 2006 to continue my research on the prairie landscapes, the migration of the cranes and began to focus on the monumental earthworks called Effigy Mounds, which date from the Woodland period of 70 to 1200 AD. They take the shape of animal forms as water spirits, bears, man, shaman, winged man and eagles, representing the cosmology of the Woodland cultures. They were constructed at sacred sites across the Mississippi River Valley and the trading tributaries. The Mississippians built pyramids, temples and plazas, representing a sophisticated culture of language and architecture, similar to classical Aztec.

I began my pilgrimage following the notations of Indian Mounds of Wisconsin 20. with the blessing of the Ho-Chunk Nation and with a guide from Southern Wisconsin Watershed, stood upon a ridgeline dotted with a series of solstice mounds that were built by the Woodland people during their golden period from 700 to 1200 AD. The mounds are conical with some exceptions. The spring solstice mound is in the shape of a pregnant woman, the corn mother, whose knees are the distant hills on the horizon. She gives birth to the sun in the spring. Between her knees the sun rises, casting off the darkness of the long winter in Wisconsin. Below, upon the Southern Wisconsin River valley are hundreds of mounds in the shapes of animals built willow basket of



*Figure 9: Corn Mother, Calendar and Animal Effigy Mounds*

earth by willow basket of earth by the Woodland people a thousand years ago. Today, many of the mounds are a memory or have become part of the scenery as farmers' plows reduce the mounds to flat cornfields or as forest reclaims the floodplain of the broad southern Wisconsin River, where sand bars form islands in the broad expanse of river. This was fertile ground and a sacred place for the Woodland people.

Here, a thousand years ago was a thriving community whose cosmology spoke of the Underworld, Earth, the Upperworld and Afterlife. Each had a vocabulary of forms. The Underworld used a progression of conical mounds, long barrows and water spirit forms. The Earth spoke of bear, deer, fox, man and shaman. Winged men form a transition to the Upperworld where birds of prey predominate. These birds were the vehicles to the afterlife. Many of the mounds contained the remains of Woodland chiefs and people. At Eagle Township, there is an eagle one quarter of a mile long, which is slowly disappearing with each season of plowing. This is a tragedy for us all, for with each season we lose a part of the rich tapestry of the cultural history of the land. We are running out of time.

### **Crane Effigy Mounds**

The Crane Effigy Mounds is a public art earthwork proposal by the environmental artist, Joseph Emmanuel Ingoldsby, in collaboration with a broad spectrum of participants. The work is based upon traditional effigy mound construction and symbols of the Woodland golden period from 700 to 1200 A.D within the Mississippi River Valley and uses the endangered whooping crane and massasauga swamp rattlesnake of Necedah, WI as earth effigy forms on land restored as prairie and savanna habitat for the endangered Karner Blue Butterfly.

As part of the research for the large scale earthwork, I visited the Wisconsin Historical Society archives to see the original plates of the early explorers to the sacred mound and pyramid sites before they were destroyed by farming, settlement, vandalism and neglect. I spoke with the authors of Indian Mounds of Wisconsin. I made pilgrimages to the mound sites in 2004 and 2006. In 2006, I spoke with the Ho-Chunk Nation archeologist and was invited to speak to the traditional court of the Ho-Chunk Nation. I was interested in the meaning of the symbols and their relationship to site. I also wanted to confirm that the Crane Effigy Mounds was appropriate, reverential and respectful to the traditional culture and religion of the Ho-Chunk people. I was able to see the original sacred mounds on private and public lands. The scale of the works is inspiring. Indeed, I viewed traditional eagles the size of football fields and saw a ghost eagle with ¼ mile long wings on a rise above the Southern Wisconsin River. The traditional effigy forms inspired and gave meaning to the Crane Effigy Mounds construction proposal.

The Crane Effigy Mounds blends the traditional with the modern in an environmental advocacy piece representing cranes in flight on a 7.37 acre parcel adjacent to the Necedah regional airport. As part of the creative process, I approached the Village of Necedah, who has agreed to donate the village land for the permanent installation of this important work. We feel that art that bridges history, cultures and the environment and which encourages participation and reflection will benefit the greater community of 26,656 Juneau County residents and the 150,000 eco-tourists who tour the whooping crane habitat at Necedah National Wildlife Refuge each year. The Crane Effigy Mounds tie in with the long-term open space and recreation goals of the Village of Necedah and dovetail with planning and fundraising efforts – Senate Bill HR 5386 for a new visitor center and interpretive trail system at the Necedah National Wildlife Refuge. The trail system will begin adjacent to the Crane Effigy Mounds and tie in to the bike trail through the Village of Necedah. Support was also gathered from the U.S. Fish and Wildlife Necedah Wildlife Refuge, where whooping cranes are raised from eggs, nurtured and prepared to make a migration toward ancestral wintering grounds in Chassahowitzka, Florida- behind Operation Migration ultra-light planes, serving as surrogate parents to teach them the route. As part of the creative process, I worked with Operation Migration to gather photographs of the birds in flight. I visited Necedah



*Figure 10: Crane Effigy Mounds (Joseph Emmanuel Ingolsby)*

to see the endangered cranes and traveled to Florida to see the cranes after their 64-day journey from Necedah to Chassahowitzka.

To date contact has been made with the Village of Necedah, the Juneau County Economic Development Board, Operation Migration, International Crane Foundation, the Ho-Chunk Nation Archaeology Department and the Tribal Council, the Wisconsin Historical Society, University of Wisconsin at Madison, and with experts in prairie restoration and effigy mound construction. Presentations have been made to community boards and to the Traditional Court of the Ho-Chunk Nation, Wisconsin. Support has been given by the community and by environmental organizations.

We want this to be a celebratory community work with donations of land, earth materials, machinery and some labor to help hold down costs on this two year project. The Village is donating survey and engineering work, volunteers are cutting the locust trees, and the DNR is offering earthmoving equipment to prepare the site. We will solicit further commitments as construction approaches. The artist has researched the project over a three-year period with pilgrimages to the summer prairies of Wisconsin and Illinois and met with botanists and academics at the University of Illinois-Urbana and the University of Wisconsin- Madison and the U.S. Fish and Wildlife Service regarding the pattern of the prairie landscape. Pilgrimages were made to the winter habitat of the whooping crane and to effigy mound sites of the Mississippi River Valley.

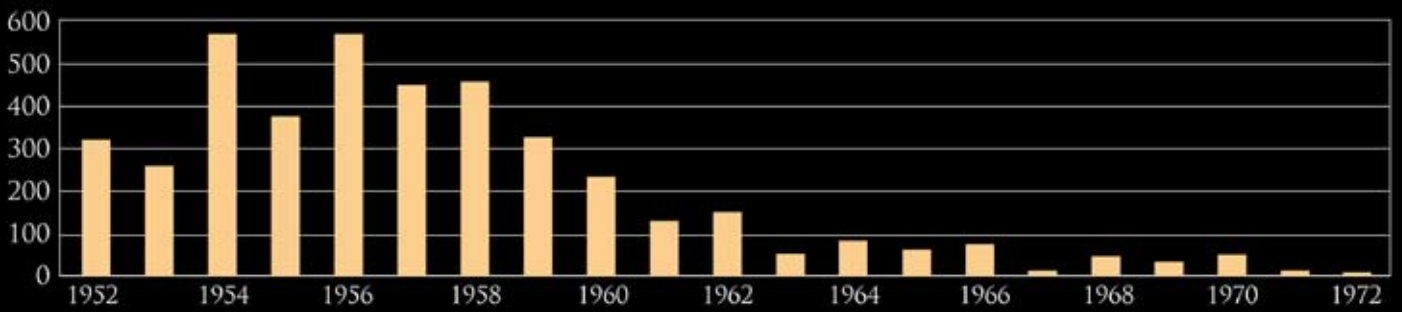
Large-scale site models of hand made cast prairie paper were made prior to the earthwork construction and will be permanently displayed at the Necedah National Wildlife Refuge in future. The prairie plants will be gathered from Necedah and other locations along the route of the migrating whooping cranes to Chassahowitzka, FLA on the Gulf coast. Mapping will pinpoint critical nodes along the migration route. As part of the work, lectures were given about the whooping cranes, the massasauga, and the Woodland culture's effigy mounds within the Mississippi River valley- Fragmentation of the Natural and Cultural Landscape. Also, school groups participated in the making of the large scaled moulds and the actual paper making for the large scaled site models. In the process, art will become an educational avenue to learn about the prairies of the Midwest, the overlay of migration patterns of man and bird, endangered species and the culture of the ancient Woodland peoples and their legacy for all Wisconsin residents and visitors to Necedah.

I spoke about the effigy mounds of the Woodland people and of current efforts to bridge the cultural divide using art to reference to the rich cultural legacy of the effigy mounds of the Mississippi River valley and the loss of habitat and species. Crane Effigy Mounds pays homage to mound builders of Wisconsin and serves as a clarion call to protect the endangered whooping crane and endangered massasauga rattlesnake, killed off by bounty hunters and by the loss of wetland habitat. Prior to the European settlement of Wisconsin and the legislated killing of the Massasauga rattlesnake, the snakes hibernated in crawfish and animal burrows in wet but not flooded soils below the waterline and emerged from their winter hibernation in such numbers that members of the Snake Clan, gathered on the banks of the Yellow River to watch the swamp rattlesnakes emerge by the hundreds and swim across the Yellow River of Necedah to higher ground. The river became a sea of snakes.

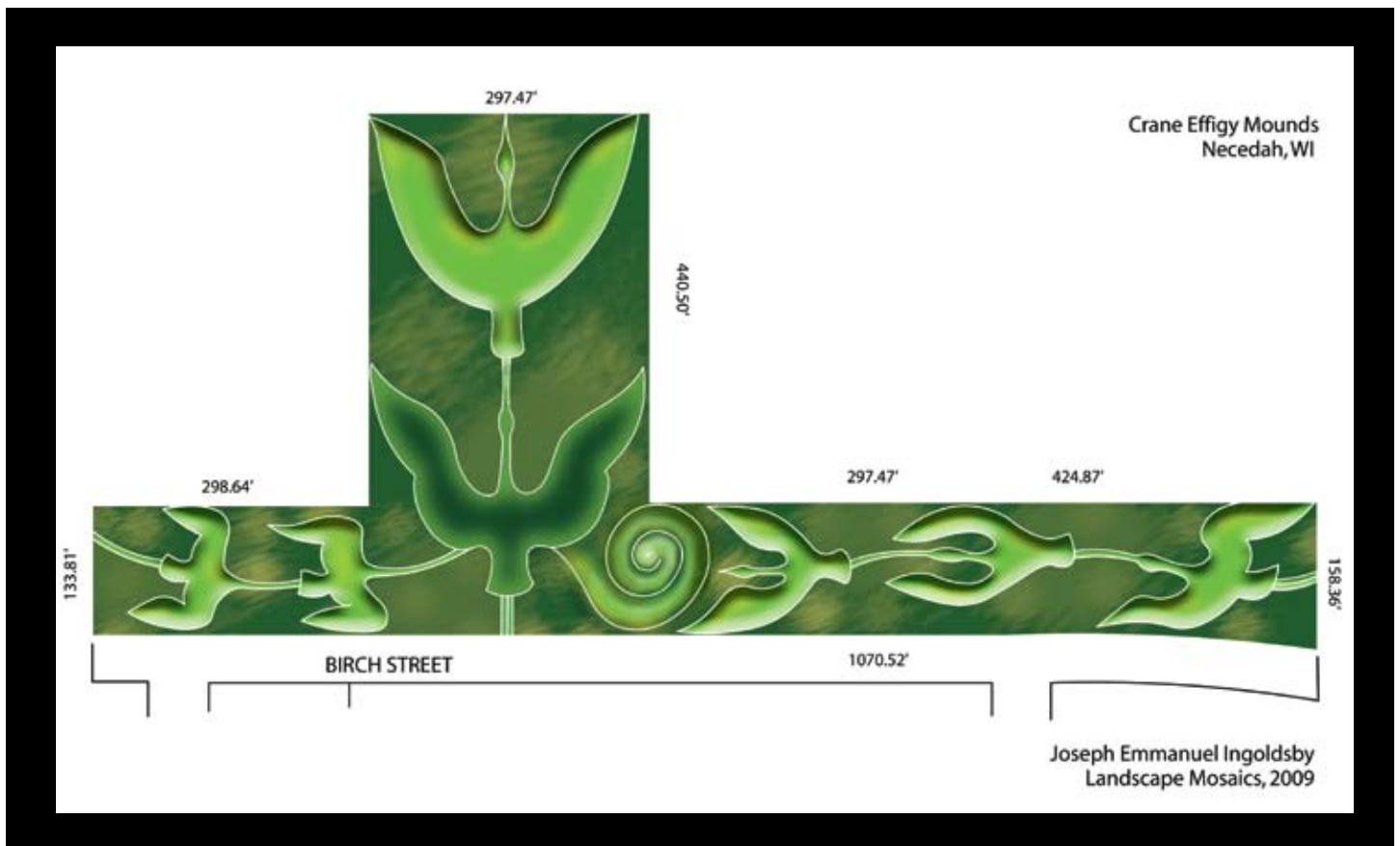
The Massasauga "swamp" rattlesnake is a venomous endangered species that has all but disappeared from 52 of the 62 townships in which it was found before 1952 in Wisconsin. A bounty was placed on their heads by the Wisconsin legislature between 1952 and 1972 with a devastating effect to their sustainable survival. The graph shows the population decline in Wisconsin from 1952 to 1972 as a result of the extirpation. 21.



# MASSASAUGA RATTLESNAKE EFFIGY MOUND



*Figure 11: Massasauga Rattlesnake (Joseph Emmanuel Ingoldsby)*



*Figure 12: Crane Effigy Mounds Plan (Joseph Emmanuel Ingoldsby)*

Work on the actual construction of the mounds is dependent on many factors, including funding. When I came before the Council of Elders, I sought help to place the work in context. The Elders correctly, in retrospect, called the project modern. I thought of it as being educational and reverential art. But it is very true that the work is not a sacred effigy mound. The Crane Effigy Mounds use mounded earth depictions of whooping cranes and a massasauga rattlesnake coiled around the observation hill. The whooping cranes along the road are mounds depicting the flight of the whooping cranes and show the wing movement of the birds in flight. These forms are not traditional.

The Council of Elders within the Traditional Court spoke of preserving the meaning and memory of the ancient effigy mounds and that the physical form is secondary. The official policy of the Ho-Chunk Nation is that the historic effigy mound sites are sacred and they can be neither restored nor replicated. The effigy mounds on native lands will be reabsorbed by Mother Earth and remembered by song and story in future.

I asked in turn if preserving the actual physical monuments for all time will teach future generations of the cultural legacy of the Woodland people and in turn the Ho-Chunk nation.

The question was never answered.



*Figure 13: Savanna (Photograph by Joseph Emmanuel Ingoldsby)*

## **Restoration of the Prairie / Savanna Landscape for the Endangered Karner Blue Butterfly**

### **Savanna**

The ancient glacial sand deposits of Necedah evolved into savanna, pine barrens and southern upland forest. Savannas are partially forested upland communities, maintained by fire with a strong prairie or barrens component in the understory. Oaks as bur oak, black oak are the most common trees of canopy with jack and red pine of the pine barrens. Beneath the canopy, herbaceous bluestem and grama grasses are dominant with a mix of bracken fern, forbs and scrub oak in the understory and is critical habitat for the endangered Karner Blue Butterfly, who is dependent upon the blue lupine and nectar plants for survival. The oak savannas of the Midwestern United States form a transition zone between the western Great Plains and the eastern broadleaf and mixed forests. Midwest oak savannas are among the world's most threatened communities). Prior to European settlement, oak savanna covered approximately 27–32 million acres of the Midwest. In 1985, only 113 sites (2,607 acres) of high-quality oak savanna remained. Nationwide, over 99 percent of the original savanna has been lost to agriculture, fire suppression, and over grazing 22. and Midwest oak savannas are among the rarest and most endangered ecosystems in the Nation. 23. Development has destroyed, fragmented, and disrupted natural processes needed to maintain quality savanna ecosystems.

The Village of Necedah land donated for the Crane Effigy Mounds installation is degraded with invasive locust trees and invasive spotted knapweed. The 7 acre site will require remedial action as cutting the locust and grubbing out the roots and stripping the contaminated soil for mound construction. Once the contaminated soil is stripped, fresh uncontaminated sandy soil can top dress the site in preparation for seeding. Andropogon is to be used on the mound with savanna grasses interspersed with blue lupine as a food source for the endangered Karner Blue Butterfly. The hope is that this site would be a satellite breeding area for the dispersal of the Karner Blue Butterfly along the Reservation prairie verge. If the prairie/savanna Karner Blue Butterfly habitat restoration is successful, the adjacent airport land, also degraded with spotted knapweed, would be restored, coordinating with the Private Lands Program, adding 100 acres of habitat for the Karner Blue Butterfly. 24.



*Figure 14: Endangered Karner Blue Butterfly*

## **Wetland**

The landscape of Necedah, Ho Chunk for “land of yellow waters”, was formed by retreating glaciers ten thousand years ago creating the vast peat bogs and sand-ridges of Necedah. Peat bogs evolved into wetlands, prairie communities and Shrub Carr dominated by tall shrubs. Sedge meadows are open wetlands dominated by sedges and grasses. There are several common subtypes: tussock meadows, dominated by tussock sedge, and the grass bluejoint, broad-leaved sedge meadows, dominated by the robust sedges *Carex* species, wire-leaved sedge and few-seeded sedge. Also frequent are marsh bluegrass, manna grasses, panicked aster, joe-pye-weed, and the bulrushes.



*Figure 15: Prairie Wetlands (Photograph by Joseph Emmanuel Ingoldsby)*



*Figure 15: Shrouds for an Endangered Species (Joseph Emmanuel Ingoldsby)*



# SPIRITS OF WHOOPING CRANES

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HANDMADE PAPER CASTING OF WHOOPING CRANES

*Figure 16: Spirits of Whooping Cranes, (Joseph Emmanuel Ingoldsby)*

With a permit from the U.S. Fish and Wildlife Service, I gathered these wetland plants at Necedah to use in the creation of paper to cast works within my Environmental Advocacy for an Endangered Species series including: Shrouds for an Endangered Species and Spirits of Whooping Cranes. The panels were displayed at the University of Wisconsin Arboretum Steinhauer Gallery and the Necedah National Wildlife Refuge in 2009.

Environmental advocacy works include Shrouds for an Endangered Species and Spirits of Whooping Cranes. Casts are prepared from a likeness of the whooping crane. Half and full body 3D paper castings are made using plants gathered from the wetland habitat of the whooping cranes. The Spirits of Whooping Cranes are 3D life-sized casts of the cranes, imbedded with wetland plants. As Artist in Residence at the Necedah National Wildlife Refuge in Necedah, WI, I installed handmade, wetland fiber paper casts of whooping cranes at critical points within the whooping cranes habitat, which will be allowed to return to the earth to illustrate the tenuous thread between an endangered species and extinction. Continued degradation and destruction of the Nation's wetlands impact the long-term survival of the whooping crane and other wetland dependent species.



*Figure 17: Spirits of Whooping Cranes Wetland Installation (Joseph Emmanuel Ingoldsby)*

We stand at a crossroad at a critical point in time. There is an urgent need for comprehensive habitat protection strategies and planning for green infrastructure to avert or slow the process of landscape loss and species extinction. Science can be communicated to the people using art to help educate government officials and fellow citizens about native species and habitats and the benefits they provide. I have found it necessary to build diverse coalitions to promote a better understanding of science and by exhibiting work within the threatened landscapes to engage the local population. This translates into local initiatives to protect and expand critical natural habitats, to restore native landscapes, and to provide habitat for threatened species. The fieldwork is supplemented with gallery and museum exhibitions, lectures and writings to connect with a national audience on critical issues as climate change, vanishing landscapes and endangered species.

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