

Neal Smith National Wildlife Refuge

Prairie City, Iowa
Fiscal Year 1998

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INTRODUCTION

The Neal Smith National Wildlife Refuge and Prairie Learning Center is among the most unique and valued initiatives in restorative landscape ecology in the United States. The Refuge is located in Jasper County, Iowa, approximately 20 miles east of Des Moines. Prior to Euro-American settlement, the rolling landscape of this portion of Iowa was dominated by tallgrass prairie with islands of oak savanna.

Establishment of the Refuge by the U. S. Fish and Wildlife Service was authorized by Congress on May 25, 1990 for the purposes of restoring native tallgrass prairie, wetland, and woodland habitats; serving as a major environmental education center providing opportunities for study; providing wildlife dependent outdoor recreation benefits to the public; and providing assistance to local landowners to improve their lands for wildlife habitat.

The 8,654 acre project is unlike any existing refuge in that it has been established by Congress to restore a major expanse of tallgrass prairie. The Refuge is the largest prairie reconstruction effort in the country and is symbolic of a growing national and international interest in healing the environment.



HIGHLIGHTS FOR 1998

- Over 600 acres planted to prairie on 21 sites
- Over 19,000 pounds of seed machine harvested
- One 80 acre parcel of land acquired for inclusion in the Refuge
- Refuge recorded 176,000 use days
- Approximately 10,000 students participated in Refuge EE programs
- Volunteers contributed almost 6,000 hours to the Refuge

1

Monitoring and Studies

1.a. Surveys and Censuses

Neal Smith National Wildlife Refuge (WNT) Research Advisory Committee

Our research program includes monitoring, surveys, and research related to ecological restoration. The Research Advisory Committee contributes valuable assistance to the Refuge by providing professional review of research proposals, recommending needed research and promoting the Research Program. Members include: Dennis Keeney, Director of the Leopold Center for Sustainable Agriculture; Erv Klaas, Unit Leader of the Iowa State University Research Cooperative Unit; Jim Mattsson, Region 3 FWS Regional Biologist; Keith Schilling, Iowa Geological Survey Research Geologist; Jerry Selby, Director of Science and Stewardship, The Nature Conservancy Iowa Field Office; and Dr. Daryl Smith, Prairie Ecology Professor at the University of Northern Iowa, as well as Nancy Gilbertson, Project Leader, Neal Smith NWR, and Pauline Drobney, Refuge Biologist. Formal research advisory board meeting was held on May 6, 1998.

New Hydrology Leader and Research Advisory Committee Board Member.

The Walnut Creek Water Quality Project had a change of leadership, as Carol Thompson has taken a position at Tarleton State University, in Stephenville, Texas. The new Project Leader is Keith Schilling of the Iowa DNR. Dr. Schilling has also agreed to fill Dr. Thompson's position on the Research Advisory Committee.

Breeding birds of a large-scale tallgrass prairie restoration in Iowa: Monitoring abundance and frequency of occurrence. Liessa Thomas, MS Thesis; Iowa State University, Ames, Iowa. Advisor: Dr. Erwin Klaas.

Abstract: "Little is known about avian response to habitat restoration, particularly for tallgrass prairies. Neal Smith National Wildlife Refuge, established in 1990, is one of the largest tallgrass prairie restorations of its kind, with land acquisition approved at 8,600 acres. Point count surveys were conducted at Neal Smith NWR from mid-May through mid-July, 1994-1998. Randomly selected points from four vegetation classes: crop land, herbaceous, riparian, and woodland, were surveyed over the five year study period. A total of 91 summer resident bird species were detected, including 8 grassland-specific species and 2 species from the Iowa threatened species list. We report results based upon trends in frequency of occurrence and relative abundance for 26 avian species considered

characteristic of Iowa grassland and savanna communities. We detected significant increases in frequency for 16 species and corresponding significant increases in abundance for 6 of these species. Several rare species and species of management concern were also observed. Riparian sites contained the highest species richness each year, while crop land sites contained lowest species richness and diversity each year. As Neal Smith NWR continues efforts to plant and restore prairie and savanna, we expect to see a future increase in several grassland and savanna species that would not otherwise inhabit Iowa's agricultural landscape. Correlation analysis of our data indicates that, to maximize efficiency in monitoring populations over a large area, repeated sampling of points is unnecessary within a season. For continued long-term avian monitoring, we have also revised the point count methodology and included details pertaining to recommended changes and ideas for future avian research."

**Floristic Quality and Soil Characteristics on selected plantings on Neal Smith NWR
Pauline Drobney, Refuge Biologist.**

Vegetation survey transects following the Floristic Quality Assessment Technique (Swink and Wilhelm in Plants of Chicago Region; 1994) were established on 8 newly planted sites in late summer, 1998. Included in the project is soil data collection and analysis for soil nutrients, pH, minerals and a limited number of pesticides. This data will be useful in adaptive management of the Refuge with repeat monitoring events.

Plant community mapping of Triangle Seep in Polk County, Iowa. Laurie and Dan Fenimore, Refuge Volunteers.

Triangle Seep is a privately owned sedge meadow and fen in Polk County in central Iowa. Several highly conservative plant species occur here. The Fenimores mapped the plant communities and catalogued plant species on this rare moist grassland in order to facilitate seed collection, and to add to the scientific data base that may one day help provide long-term preservation for the site.

1.b. Studies and Investigations

Regal Fritillary movements in prairies: Do butterflies cross the edge? Dr. Diane Debinski, In 1997, a project relating conservatism (fidelity to high quality natural area) in butterflies began. Butterflies are used as a model organism to examine the effects of habitat fragmentation on prairie insects (movement of regal fritillaries were compared with monarchs). The movement patterns of several butterfly species were examined within prairies and in the intervening habitats of various vegetation types (e.g., native vegetation, brome grass, crop fields, and weedy vegetation). Results indicate that though monarchs are not limited by prairie habitat, regal fritillaries are highly conservative, and will return immediately to prairie habitat if they encounter a non-prairie edge.

Breeding birds of a large-scale tallgrass prairie restoration in Iowa: Monitoring abundance and frequency of occurrence. Liessa Thomas, MS Thesis; Iowa State University, Ames, Iowa. Advisor: Dr. Erwin Klaas.

In Fall, 1997, Liessa Thomas began her study with matched funding provided by the Department of Animal Ecology at Iowa State University. Ms. Thomas began the first of three seasons of breeding bird surveys in summer of 1998, and will statistically analyze data from all breeding bird surveys from 1994 to present. To fulfill her agreement to the Refuge, a portion of her time will be spent performing Refuge ecological restoration work to provide a broader perspective of the context of breeding birds on the Refuge and to further Refuge goals.

The role of small-scale disturbances in structuring the plant community of native and reconstructed prairies. Kelly Wolfe-Bellin, PhD Research. Advisor: Dr. Kirk Moloney.

Small-scale disturbances in prairie plantings influence establishment of seedlings and thus, diversity. Emulation of gopher mounds could provide opportunity for introduction of diversity into prairie plantings that are heavily grass dominated. Specific spatial and temporal patterns of disturbance could influence seedling recruitment differently.

In this study, spatial and demographic relationships are being investigated between gopher mound production and four plant species in a remnant prairie. Similar relationships are being investigated in pseudo-gopher mounds being constructed on two sites on the Refuge. Success of prairie seeds planted on hand built mounds will be compared to controls. Mounds will be arranged in various patterns.

The effects of seeding methods and early management on vegetative diversity of prairie reconstruction. Scott Moeller, MS thesis; Iowa State University. Advisor: Dr. Thomas Jurik.

The success of establishment of diversity of prairie species in four planting treatments (drilling all species, broadcasting all species, drilling grass and broadcasting forbs) and 3 mowing heights (10, 20, and 30cm) treatments in a grid is investigated. Planting was accomplished using Refuge planting equipment in order to better understand the effects of planting depth using standard Refuge techniques. Planting area is 20' x 30' to accommodate Refuge planting equipment. Plots are 2 x 2m with a minimum 2m buffer area. Sampling occurs in a randomly located 25 x 25cm quadrant. Data includes presence/absence of species, and a quantitative estimate of abundance of species. Sampling occurs in late July and August in the first year, and in late June and July in subsequent years, with spot sampling at other times of year. A data logger is used to track the amount of light entering the canopy. Soil moisture is recorded in buffer areas of plots.

A second investigation is similar except that vegetation is allowed to grow to 30cm and then mowed to 5, 10, and 15cm in different treatments. An initial plot is located in a lowland area on a current year's planting. The project began in June, 1997. Initial results indicate that forb seed needs a shallower planting depth than grass seed.

The role of soil arthropods in prairie reconstruction. Lisa Busch, MS Thesis; University of Northern Iowa. Advisor: Dr. James Dunn.

Changes in arthropod populations in reconstructed prairies are being investigated in areas selected based on soil types, topography, and aspect. Arthropod abundance and diversity on Coneflower Prairie, a prairie remnant, is being compared to the current and the previous year's plantings. Straw taken from WNT seeding mixes and hand collected seed was placed in bags 10 cm. x 10 cm. Nine of three of these 10g litter bags are placed in each site. One bag is collected every 4 weeks until November and arthropods removed. Soil cores were taken and arthropods extracted using a Berlese-Tulgren funnel at each site.

Hydrology and water quality at WNT. Dr. Keith Schilling, Iowa Geological Survey, Iowa Department of Natural Resources, Iowa City, Iowa.

Bank erosion on Walnut Creek is characterized as ranging from slight to severe. Approximately 40-60% of sedimentation for the total year is due to bank collapse. A total of 40 tiles, 75 dams, and 43 creek discharges (where water enters the stream) were located and mapped on the mainstem of Walnut Creek. Of the 40 tiles, 11 occur in a single land ownership in the southern one half of the Refuge. This same property has 9 dams, and 12 major cow accesses, some 30 yards long. These accesses are contributing large slump blocks, and one has the potential to eventually remove an entire hill. Exposed bedrock is present in the eroded grazed area. Major issues in this land ownership include close cropped grass and bank collapse.

Output from tiles in the northern mile of the Refuge range from 0-20 gallons per minute (gpm). Twenty to twenty five have fairly measurable flow of 1-20 gpm. Morphology was recorded as cross-sections surveyed at 39 locations along the mainstem.

Data collected this year will provide the groundwork for development of sediment and water quality budgets.

2

Habitat Restoration

2.a. Wetland Restoration

On-Refuge

Nothing to Report

Off-Refuge

Nothing to Report

2.b. Upland Restoration

On-Refuge

Planting

1998		
Site #	Acres	Bulk lbs. seed
69	43.8	1,452.3
70	94.4	3,130.2
71	9.5	315.0
72	72.1	2,390.7
73	16.7	553.7
74	24.5	600.2
75	34.5	845.2
76	3.5	85.7
77	33.6	823.2
78	61.1	1,496.9
79	62.3	1,526.3
80	6.0	252.0
81	38.1	933.4
Bison brush piles	3.0	73.5
Subtotal	503.1	14,478.3
Winter Overseedings		
1	22.0	286.0
6	13.0	130.0
PLC	15.0	225.0
41 & 42	45.0	900.0
61	15.0	75.0
45	10.0	150.0
33	15.0	225.0
9	17.0	255.0
Subtotal	152.0	2246.0
Total	655.1	16,724.3

Rate of application varies depending on such factors as site hydrology, the species being applied, seasonality, and whether the site is being overseeded or if it's an initial reconstruction.

Hand collected seed

Volunteers are critical in introduction of plant species diversity to the Refuge, because machine harvests only result in the species that are mature at the time of harvest, usually in fall. In addition, many species are missed because of limitations of the machines. We are deeply grateful to the many volunteers who assisted us in seed collection from remnant

prairies. Forty-three volunteer seed harvesters visited 37 sites during harvest season in 1998 to collect nearly 78 pounds of seed of 121 native species! Scores more volunteers assisted with the off-site seed collection efforts, and hundreds of school children harvested prairie seeds from sites on the Refuge.

Machine Harvest during Fall, 1997

Note: weights include seed and inert weight.

1997 Machine Harvest		
Site	Pounds	Dominant species
14	1,782	Big bluestem (<i>Andropogon gerardii</i>)
39 and 13	664	Big bluestem (<i>Andropogon gerardii</i>)
39, 13, 6 and 8	1,212	Big bluestem (<i>Andropogon gerardii</i>)
8	1,778	Big bluestem (<i>Andropogon gerardii</i>)
6	902	Big bluestem (<i>Andropogon gerardii</i>)
35	4,295	Canada wild rye (<i>Elymus canadensis</i>)
36	2,306	Canada wild rye (<i>Elymus canadensis</i>)
Production plots	18	Rattlesnake master (<i>Eryngium yuccifolium</i>)
3	254	Forb mix
18W	254	Grass/Forb Mix
19	580	Grass/Forb Mix
29	212	Grass/Forb Mix
42	392	Grass/Forb Mix
32 and 33	548	Grass/Forb Mix
27	986	Grass/Forb Mix
31	842	Grass/Forb Mix
9, 10 along trail	25	Grass/Forb Mix
10 including trail	52	Mixed Forbs
Production plots	44	Drooping coneflower (<i>Ratibida pinnata</i>)
17	1,828	Little bluestem (<i>Schizachyrium scoparium</i>)
West of PLC	36	Bullrush (<i>Scirpus</i> sp.)
32	458	Indian grass (<i>Sorghastrum nutans</i>) et al
Total	19,468	

(Fiscal year 1998 harvest occurred during October, 1997. Hand harvest occurs from spring through late fall, unable to break it up.)

Volunteer Assistance

A special volunteer, Rebecca Hecht provided several months work which totaled nearly 40 hours a week while she worked in the evening to support her habit of ecological restoration at the Refuge. Rebecca is a talented biologist gaining experience at the Refuge and aspiring to eventually become a wolf biologist. Staff all wish Rebecca the best!



Examining seed harvested by combine

WNT Seed Analysis

In winter of 1997-1998, the Iowa State University Seed Analysis Laboratory was unable to complete the necessary seed analysis for seed harvested by machine on the Refuge. However, staff at the laboratory were enthusiastically willing to teach seed analysis skills to Refuge staff and volunteers. Refuge Biologist Drobney and Erma Selser, WNT volunteer, worked in the seed lab for a day learning purity and viability analysis skills. The seed analyst most skilled in work with native seeds later spent a day in the WNT research labs teaching Ms. Drobney how to prepare seeds in actual WNT seed samples for viability testing.

A cooperative agreement was arranged with Central College Chemistry Department to use fume hoods in the Biology/Chemistry lab during their spring break so that tetrazolium testing could be performed. Presence of a pink color indicates the products of respiration. Damaged seeds can also stain pink, sometimes making analysis difficult.

Several volunteers collaborated on purity and viability analysis. Ms. Selser contributed numerous hours in these analyses and tabulated results in a computer database. The total volunteer contribution of hours was equal to having a staff person full time for 6 weeks.

Management of Remnants

In 1998, we cleared approximately 3 acres of trees in natural community remnants including Thorn Valley Savanna, Coneflower Prairie, Buzzard Head, and Don's II.

Off-Refuge

Nothing to Report

2.c. Deepwater/Riverine Restoration

On-Refuge

Nothing to Report

Off-Refuge

Nothing to Report

3

Habitat Management

3.a. Water Level Management

Nothing to Report

3.b. Moist Soil Management

Nothing to Report

3.c. Graze/Mow/Hay

Thirty head of cattle were permitted to graze on approximately 20 acres of row crop stubble. There was no haying permitted on the Refuge.

Mowing is an integral management tool within a successful prairie restoration. We mow for noxious weed control and weedy vegetation to promote native growth. In 1998, approximately 2,500 acres were mowed.

3.d. Farming

Nothing to Report

3.e. Forest Management

Nothing to Report

3.f. Fire Management

The Refuge was able to conduct prescribed fires on two days in the spring of 1998. Thursday, April 23, we completed four prescribed fires and the following day, we completed three for a total of 355.7 acres burned.

Also, the Refuge was able to conduct its first fall burn on December 16. We attempted to burn one of our savanna units with very little success. The fuel load was very low and the ground moisture too high. However, we did burn two native prairie plantings the same day and these two sites burned very well. The two sites totaled approximately 50 acres burned.

Prescribed fires and fire monitoring continue to be important tools of the Refuge goals. Despite some difficulty, data continues to be collected to better understand the nature of fuels in reconstructed prairies.

3.g. Pest Plant Control

Pest control took a great deal of the Operation Staff's time during the summer and fall of 1998. Mowing occurred on 2,500 acres to assist in controlling undesired weeds, thistle, and invading brush. These acres were, for the most part, planted to native species or edges of remnant tracts, and former CRP acres. On the land planted to native species, we mowed to accomplish two things—to control undesirable weed species so the light would penetrate to the young native plants, and secondly to control thistles. All other mowing was performed as a control measure to prevent thistle, sweet clover, and mares tail from going to seed. Herbicides also played a role in pest control. Approximately 690 acres were sprayed with Round-up and 2,4-D or Transline, all used as either a pre-plant burn down and as a control measure for thistle and other undesirable weed species. Also, Garlon 4 was used on stumps to prevent woody re-growth (18 gallons at approximately 2.5 acres).

There were no major weed or insect problems relating to the farming program. Very wet spring weather delayed planting but otherwise crop production on the Refuge was as good or slightly higher than in neighboring areas.

4

Fish and Wildlife Management

4.a. Bird Banding

Nothing to Report

4.b. Disease Monitoring and Treatment

Nothing to Report

4.c. Reintroductions

Regal Fritillary Butterfly Habitat Development

A total of 800 prairie violets were planted in 10 experimental plots at the Refuge during May, 1998. These plots will provide habitat for regal fritillary butterflies being introduced as a part of a research project at WNT (see Section 1.b.) and will serve as the basis of a new experiment on Regal Fritillary reintroduction.

A total of 1,000 nectaring plants were planted around prairie violet plots to augment existing nectaring sources.

4. d. Nest Structures

Nothing to Report

4.e. Pest, Predator and Exotic Animal Control

Nothing to Report

5

Coordination Activities

5.a. Interagency Coordination

Nothing to Report

5.b. Tribal Coordination

Nothing to Report

5.c. Private Land Activities

Approximately 80 landowners were visited in the field and provided technical assistance. These landowners provided roughly 10,500 acres for review within our Partners for Fish and Wildlife Program and the Wetland Reserve Program (WRP) of the United States Department of Agriculture (USDA). Approximately 3,000 dollars were spent for habitat restoration.

6

Resource Protection

6.a. Law Enforcement

Law enforcement issues at this Refuge have never been a large problem. The majority of incidences occur during the hunting seasons and even then there are relatively few major problems. This past hunting season, Operations Specialist Petersen was the only Law Enforcement person on staff. He spent a considerable amount of time patrolling, especially on weekends. Only three citations were issued, all for "Failure to Abide by Refuge Special Regulation, No Blaze Orange While Gun Hunting". We are looking into having another staff person attend FLETC to help with this effort.

6.b. Permits and Economic Use Management

Six special use permits were issued in fiscal year 1998. All of them were issued for our cooperative farm program. The farm program consisted of 313 acres of corn, 490 acres of soybeans, and 20 acres of alfalfa.

Cash rent continued as the method used for Refuge farming. The system is designed to allow the Cooperator a reasonable rent on the ground while giving the government a good return on the operation. Rent ranges from \$60 to \$75.00 per acre which is comparable to rents collected in the area for low quality ground. Rent was collected in two installments, 30% due in May, with the balance due in December. Final rent figures are based on a Report of Planted Acres report each Cooperator turns in to the NRCS. Deductions from rent figures include the cost of crop scouting, \$5/acre, mowing costs for buffer strips at \$12/acre, and any chemical application for ground being planted back to native plants.

Crop scouting was utilized for the sixth year as a part of the Integrated Pest Management (IPM) program on the Refuge. The same company, Farmers Co-Op Exchange of Prairie City, was used. The cost of this service was \$5/acre, paid by each Cooperator, through deduction of the cash rent. Success of this program has been very good, giving both the Refuge and the cooperating farms sound information and recommendations of the condition of the crops.

Spring weather conditions were quite wet, resulting in late planting. The Midwest saw a great growing season which produced extraordinary yields; unfortunately the grain prices were very low.

6.c. Contaminant Investigation

Nothing to Report

6.d. Contaminant Cleanup

Nothing to Report

6.e. Water Rights Management

Nothing to Report

6.f. Cultural Resource Management

Nothing to Report

6.g. Land Acquisition Support

Several parcels of land were looked at this past year, only one parcel was acquired. This parcel is 80 acres that borders the bison/elk enclosure. It will be farmed for the next two years and then we hope to include it into the bison/elk enclosure.

Attempts were made to purchase two other parcels of ground. One was an 80 acre piece that borders the bison/elk enclosure to the north which was being sold by sealed bid. Our friends from the Iowa Natural Heritage Foundation assisted with the attempt to purchase. The landowner rejected all bids and the land has not sold.

The other parcel was on the eastern edge of the Refuge and was also 80 acres. While a valiant effort was made to acquire this parcel by Don Kleven, FWS Realty Specialist, the appraisal did not get completed on time and the parcel sold to a local individual for less than we would have been willing to pay. This parcel contained a section of Walnut Creek and would have been a good section to acquire. Negotiations are underway with the new landowner as of this writing.

6.h. Threats and Conflicts

The largest threat to the Refuge related to watershed concerns and the increasing number of large hog confinement operations being built. There was at least one such operation

planned within the watershed but it met with so much opposition that the prospective building/owner opted to not proceed with the construction. These operations have become very common within the state and many have caused major damage to waterways from spillage of manure. The recent plummeting hog prices has eased this concern for the time being.

7

Public Education and Recreation

7.a. Provide Visitor Services

The Refuge recorded over 176,000 use days in FY 1998. The majority of 46,000 Prairie Learning Center visitors participated in scheduled educational programs, events or tours. Refuge staff provided 221 environmental education programs for 10,668 students during the period.

Public use staff conducted 82 guided tours of the Prairie Learning Center and Refuge for 2,532 visitors including 18 tour bus groups. Seventy-nine scheduled groups learned about the Neal Smith NWR and Prairie Learning Center during meetings and events held in the Center's conference rooms and auditorium during the period. The Center received over 19,000 PLC "walk-in visitors" during FY 98. In-road traffic counters recorded over 150,000 visits to Refuge trails and the auto tour route.



Prairie Learning Center and Entrance Road

Completion of the paved entrance road on October, 1998 has dramatically improved visitor access to the Prairie Learning Center, Refuge trails, and auto tour route.

Exhibits and Facilities

The Prairie Learning Center's 13,000 square foot exhibit hall was put to the test in FY 1998. During the year, nearly 50,000 visitors, including 11,000 students, explored the 3.1 million dollar gallery, completed in April 1997. The exhibit hall's "signature" experience is the 15 minute long orientation film "Return to Wildness" in the 100 seat orientation theater. Visitors also enjoy 13 audio-visual vignettes presented in Fire and People of the Prairie mini-theaters.



Mini Theater

The gallery also includes a variety of static and interactive exhibits. The exhibit hall has been designed as a central element of the Refuge's environmental education program.

A Congressional action in FY97 significantly affected Refuge exhibits and facilities. During that session, Congress officially renamed the Refuge the Neal Smith National Wildlife Refuge - Prairie Learning Center. No additional funds were authorized by Congress to alter interior and exterior signs, publications, and public relation materials. The cost of this transformation was estimated to exceed \$250,000. These costs have been "absorbed" by the Refuge and the region. Refuge staff began this process in FY98. The renaming of the Refuge should be completed in FY99.

In October, the PLC temporary gallery was dedicated as the J.N. Ding Darling Gallery in an event celebrating Darling's connections to Iowa and the Fish and Wildlife Service. The dedication featured twelve framed Darling works, including cartoons, duck stamps, and etchings on permanent loan to the Center from the J.N. Ding Darling Foundation.

Other artists featured in the gallery included:

Susan Gardels, *Prairie Quilts*, large painted and quilted paper pieces.

Larry Zach, *Prairie Wildlife*, large acrylic paintings.

Carl Kurtz, *Iowa's Wild Places*, a photo exhibit sponsored by the Iowa Natural Heritage Foundation.

Harlan Radcliff, *Prairie Close-ups*, a photo exhibit featuring prairie insects and other micro-fauna.

Scott Patton, *Prairie Paintings*, wildlife art featuring the American Bison.

Iowa Junior Duck Stamp contest winners.

Susan Gardels, *To Reconstruct a Prairie*. Ten illustrated poems.

Gardels, Kurtz, Patton and Zach presented gallery talks in conjunction with the opening of their individual shows.

Facilities

Many Refuge trails were impacted in 1997 and 1998 by heavy rains. The trails were constructed with a fabric and limestone base. As seen here, much of the Two Mile Trail was washed out. Paving in 1999 alleviated the problem.



Damage to Two Mile Trail



Damage to Two Mile Trail



Repairs done in 1999 (Picture taken in 1999)

Environmental Education Activities

Curriculum/Teacher Training - Iowa Corps

The third annual Iowa Corp teacher training program brought 22 educators to the Refuge for 6 busy days in June. The workshop, co-sponsored by the Iowa Resource Enhancement and Protection Program, offered an intensive week of hands-on learning to teachers interested in tallgrass prairie and prairie restoration. Coordinators Janie Schwarz and Bob Winkelbock recruited participants from across Iowa and Illinois. Swartz and Winkelbock facilitated the care and feeding of the Iowa Corp members from their base camp at the Refuge parcel known as "William's Farm". Refuge staff provided instruction and directed stewardship activities. The site provided Corp Members with a place to camp, water, an enclosed communal "camp kitchen" and protection from bad weather. Portable toilets were brought onto the site.



Iowa Corp Participants

Corps members learned prairie restoration first hand through their contribution of 4 to 6 hours of "stewardship" work each day. Projects included seed planting, weeding, prairie seedling transplanting, brush removal, and seed processing. The schedule also included guest speakers, a Project Bluestem workshop, and special opportunities for reflection, writing, and art projects. Participants received college credits through the University of Northern Iowa. The program requires each Iowa Corp member to undertake a prairie related project once he or she returns home at the program's conclusion. Program evaluations conducted at the completion of the week established that Iowa Corps participants left the Refuge with renewed intellectual and emotional commitments to prairie and prairie restoration. A planning team for Iowa Corp '99 is already addressing logistical questions relative to quality of life issues at the William's Farm site.

Project Bluestem

Project Bluestem (PBS) was developed in 1993 and 1994 by a team of educators and naturalists to provide classroom teachers, naturalists, and youth leaders with high quality prairie based activities. Four Project Bluestem workshops were held on the Refuge or at other locations within the tallgrass prairie region. To date, over 170 teachers have attended

day-long introductions to the 375 page curriculum. Workshops introduced participants to the curriculum and the Refuge. In addition to presenting activities from the guide, each workshop includes a stewardship activity, allowing teachers to physically participate in restoration at NSNWR.

Project Elk

In February, thirty-two educators and naturalists from around the state attended a day-long Project Elk Workshop co-sponsored by the Rocky Mountain Elk Foundation (RMEF) and the Friends of the Prairie Learning Center. RMEF education coordinator, Jody Bishop, traveled to Iowa from Missoula, Montana to conduct activities specifically addressing elk.

School Programs



School Children at the Prairie Learning Center

Children in excess of 10,660 in 221 school groups visited the Refuge in FY 98. Over 90% of school groups attending the Refuge participated in day-long programs that utilized the PLC, trails, and public use staff. Classroom teachers are required to visit the Refuge for a planning meeting in advance of their class visit. Following is a breakdown of EE customers by age grouping.

Level	Groups	Students
Elementary	73	4,314
Middle	45	3,221
High School	15	546
College	32	950
Day Care	28	950
Home School	10	411
Teachers	13	114
All grades	5	162

Twenty-six groups were turned away or put on waiting lists as the demand for environmental education programs exceeded the Refuge's capacity throughout the period. The addition of Ranger Molly Mehl and John Below in the spring of 1998 allowed some expansion of the EE program. Intern Tracy Moore and volunteer naturalist Jolie Prentice contributed over 200 hours of time to school programs during the period. Operations staff, especially Jack Heisler, also assisted with school programming.



Students in Outdoor Environmental Education Activities

Prairie Connections

In September, 3,410 students at 80 elementary, middle and high schools across Iowa participated in "virtual field trips" to the Neal Smith Refuge via the Iowa Communication Network. Students viewed live images of the Refuge from their schools ICN classroom. Two-way communication allowed students to ask questions directly to Refuge staff in the field. The program was made possible through satellite, microwave and fiber optic technology.



Virtual Field Trip

Iowa Prairie Connections was a collaborative effort between the Refuge, Iowa Public TV and the Dallas County Conservation Board. Additional assistance was provided by the U.S. Army Corps of Engineers. IPTV Project Director, Jenny Townsend, provided resources valued in excess of \$100,000, including technical support, production facilities, and marketing and registration services. Townsend hired the E Resources group (with U.S. Department of Education Star School funds) to develop and produce a teacher resource guide that included pre- and post visit activities, a bibliography, and reference material. A project web page was developed to help students and teachers maximize the virtual field trip experience. The successful 3 day program has become the benchmark for quality interactive programming in Iowa.

Traveling Trunks

Region 3 Prairie Trunks were shipped to 16 schools during FY98. The Rocky Mountain Elk Foundation trunk was shipped to 9 schools during the same period. Many teachers used trunks to prepare their students for visits to the Refuge.

Scouting

One-hundred forty six scouts participated in on-site activities in FY98. In September, Refuge Ranger John Below was designated Scouting Coordinator. John is currently working with Boy and Girl Scout leaders to develop day-long activities that help scouts meet their various nature related badge requirements. Two Eagle Scouts completed projects on the Refuge in FY 1998.



Scout Stewardship Activity

7.b. Outreach

Special Events

Festivals

Annual public festivals continue to be an important program element at the Neal Smith National Wildlife Refuge. When well marketed, the events draw large crowds of people who might not otherwise visit the Refuge. Five new events debuted in 1998, joining the A.C. Morris Feed and Seed Harvest and the fifth annual Sow Your Wild Oats Festival, in the pantheon of public celebrations.



Sow Your Wild Oats

Date	Visitors	Event
10/11/97	102	A.C Morris Feed and Seed
10/18/97	258	National Wildlife Refuge Week Open House
4/25/98	116	Wildlife Art Seminar
5/16/98	460	Sow Your Wild Oats
6/13/98	323	Buffalo Days
7/25/98	296	Ding Darling Day
8/22/98	155	Going Batty Festival



Sow Your Wild Oats Celebration

Restoration/Monitoring Seminars

The Refuge relies on volunteers to assist with a variety of biological monitoring and restoration activities. Volunteer training seminars and programs are often offered to the general public to recruit new volunteers to specific Refuge restoration and bio-monitoring tasks. In FY 98, special training was offered as follows:

Date	Participants	Event
1/17/98	32	Seed processing/inventory seminar
3/28/98	20	Refuge frog survey
5/2/98	31	Butterfly Seminar
5/30/98	25	Early seed harvest seminar
8/15/98	26	Late seed harvest seminar



Netting Insects

Sixth National Nonpoint-Source Monitoring Workshop (September 21-24, 1998; Cedar Rapids, IA).

The state steering committee meeting was held on December 17, 1997 at WNT to develop logistics for the conference.

During the national conference held in September, 1998, Neal Smith NWR staff hosted one stop on a multi-stop field trip. In addition to visits and interpretation at the Prairie Learning Center, participants were introduced to progress reports on ecological restoration and stops to remnant and planted grassland communities. Hydrology researchers Carol Thompson and Keith Schilling with graduate student Matt Goolsby, provided information on hydrological research at monitoring sites. An excellent guide book providing scientific background to the field stops, with a 39 page description of on-going work at WNT was provided to each participant. Response to the trip was strongly positive, with several participants expressing the desire to have had more time at the Refuge.

Off-Site Programming

Refuge staff presented 32 programs to off Refuge groups during FY98. These groups included conservation agencies and natural resources professional groups; service organizations, including Kiwanis, Rotary, Lions, and senior citizens groups.

Biological Outreach Efforts

Refuge Biologist, Pauline Drobney made the following outreach efforts:

In September, reviewed a proposal to develop an interdisciplinary Center for Prairie Studies at Grinnell College during a meeting with several faculty members.

Presented an invited paper at the Plain Pictures Conference at the University of Iowa in Iowa City, Iowa. This conference presented an interdisciplinary view of prairie including art, literature, cultural perspectives, sustainable agriculture, and ecological restoration.

Provided a Fall Seed Collection Seminar on August 15, 1998.

8

Planning and Administration

8.a. Comprehensive Conservation Planning

Nothing to Report

8.b. General Administration

<u>Refuge Funding - FY98 as compared to FY 97</u>		FY 98	FY97
Refuge Operations	1261	\$710,595	\$557,788
Volunteer Program	1261	8,900	2,500
Maintenance Management	1262	17,200	18,750
Private Lands	1121	10,000	14,000
Nongame Bird Funding	1230		3,300
Fire Management	9251	5,400	3,587
Hazardous Fuel Reduction	9263	<u>44,375</u>	<u>0</u>
Total		\$796,470	\$599,925

Refuge Staffing

An increase in staff numbers during FY 98 provided much needed assistance. Mary (Molly) Mehl transferred from the U.S. Army COE office on March 16 to fill a Refuge Ranger position. In April, another Refuge Ranger joined our staff, John Below who is a former Peace Corp volunteer.

Richard Birger, Refuge Manager since 1991, transferred to Desert National Wildlife Refuge Complex in Las Vegas, NV in May to become their Refuge Manager. During the vacancy period, Dave Aplin and Bernie Petersen served as acting managers. In September, Refuge staff welcomed Nancy Gilbertson as Refuge Manager. Nancy previously worked as Refuge Manager at the Bill Williams River NWR. On August 30, Gregg Pattison, a Bio Science Tech, transferred to the Iowa Private Lands Office.

The STEP (Student Trainee Experience Program) was a welcome utility and we were fortunate to recruit and hire three Iowa State University students through this program. Kristen Goldsmith joined the staff in May as a Park Ranger. Christian Quijano also began work in May as a Bio Science Aid, and Jason O'Brien entered on duty in June as a Park Ranger.



*Back Row: Richard Birger, Gregg Pattison, John (Jack) Heisler
Middle Row: Doreen Van Ryswyk, Craig Olawsky, Brian Boot, Carla Dykstra and Dave Aplin
Front Row: Bernie Petersen, Michelle Buitenwerf (terminated in 1997) and Pauline Drobney
Not Available for photo: Nancy Gilbertson, Mary (Molly) Mehl, John Below, Christian Quijano, Kristen Goldsmith and Jason O'Brien*

Below is a list of employees who were members of the staff at Neal Smith NWR during FY98.

<u>Permanent Full Time</u>	<u>Grade</u>	<u>OD Date</u>
1. Birger, Richard M. Refuge Manager	GS-13	02/91 Transferred 05/98
2. Gilbertson, Nancy M. Refuge Manager	GS-13	09/98
3. Aplin, David A. Outdoor Rec. Planner	GS-12	01/92
4. Petersen, Bernard J. Refuge Ops. Specialist	GS-11	11/92
5. Drobney, Pauline M. Wildlife Biologist	GS-11	03/92
6. Boot, Brian A. Maintenance Worker	WG-8	10/92
7. Heisler, John E. Refuge Ops. Specialist	GS-9	04/95
8. Dykstra, Carla J. Administrative Tech.	GS-7	05/91
9. Mehl, Mary C. Park Ranger	GS-5	03/98
10. Below, John J. Park Ranger	GS-5	04/98
11. Van Ryswyk, Doreen Secretary (OA)	GS-5	08/97
<u>Temporary/Term Appointments</u>		
12. Olawsky, Craig D. Refuge Ops. Specialist	GS-9	12/93
13. Pattison, Gregg A. Bio Science Tech (W/L)	GS-7	11/96 Transferred 8/98
<u>Student Temporary Experience Program</u>		
14. Goldsmith, Kristen M. Park Ranger	GS-4	05/98
15. Quijano, Christian F. Bio Science Aid	GS-3	05/98
16. O'Brien, Jason P. Park Ranger	GS-4	06/98

Volunteer Program

Volunteers contributed 5,898 hours to the Refuge this past year. A total of 99 volunteers participated in the program. Several volunteers assisted at our information desk—answering questions, directing the public and helping with other general information.