

# Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Resolution 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed/updated: 03/26/02

2. Country: United States of America

3. Name of wetland: Cheyenne Bottoms

4. Geographical coordinates: 38° 31' N; 98° 43' W

5. Elevation: (average and/or max. & min.) 1,800 (540m)

6. Area: (in hectares) 2942

7. Overview: (general summary, in two or three sentences, of the wetland's principal characteristics)  
The Nature Conservancy manages 7,269 acres of a potential 12,000 acres of prairie wetland habitat that lies to the north and west of the Cheyenne Bottoms Wildlife Area. There exist a sizable number of remnant depressional wetlands with diverse hydrological regimes characteristic of wetlands classed as ephemeral, temporary, seasonal and semipermanent. Vegetation communities are diverse in wetlands and shifts in species composition occur as surface water fluctuates in response to precipitation and runoff within and among years. Additional acreage continues to be added to the site and the management plan is being revised to include these additional acres.

8. Wetland Type (please circle the applicable codes for wetland types; in the present document, the "Ramsar Classification System for Wetland Type" is found on page 9)

marine-coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

inland: L • M • N • O • P • Q • R • /Sp/ • /Ss/ • Tp  
/Ts/ • U • Va • Vt • W • Xf • Xp • Y • Zg • Zk(b)

human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

Please now rank these wetland types by listing them from the most to the least dominant:  
Ts, Ss, Sp

9. Ramsar Criteria: (please circle the applicable Criteria; the *Criteria for Identifying Wetlands of International Importance* are reprinted beginning on page 11 of this document.)

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

Please specify the most significant criterion applicable to the site: 2

10. Map of site included? Please tick **yes**

(Please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits).

11. Name and address of the compiler of this form: Robert Penner - The Nature Conservancy  
503 Camille Ave. Ellinwood, KS 67526

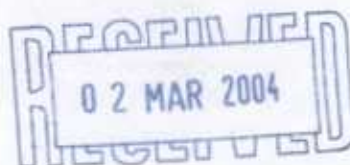
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Designation date

4 U S 0 0 7

Site Reference Number



### (Category 12)

The Cheyenne Bottoms wetland complex, which includes The Nature Conservancy's property, the Kansas Wildlife & Parks property and some private ownership; is one of the most important sites in the Western Hemisphere for migrating shorebirds. This was determined by the International Shorebird Surveys conducted by the Manomet Bird Observatory. It has been estimated that 45% of the North American shorebird population stops at Cheyenne Bottoms during migration. The survey also estimates that approximately 90% of the population of *Erolia fuscicollis* (White-rumped Sandpiper), *Erolia bairdii* (Baird's Sandpiper), *Limnodromus scolopaceus* (Long-billed Dowitcher) and *Steganopus tricolor* (Wilson's Phalarope) stop at Cheyenne Bottoms during migration.

Cheyenne Bottoms has been classified as critical habitat for the endangered *Grus americana* (Whooping Crane) by the U.S. Fish & Wildlife Service. Both the Nature Conservancy's preserve and the Kansas Wildlife & Parks area attracts the Whooping Crane and during most years the cranes may spend equal amounts of time on both properties. Cheyenne Bottoms also serves as a wintering area for the endangered *Haliaeetus leucocephalus* (Bald Eagle) and the endangered *Falco peregrinus* (Peregrine Falcon) is a regular migrant to the area. *Plegadis chihi* (White-faced Ibis) is listed as a threatened species within Kansas, and Cheyenne Bottoms has been classified as critical habitat for this species that has been documented as a nester on the area. Other state-threatened species that have been documented on the preserve include *Charadrius alexandrinus* (Snowy Plover), *Charadrius melodus* (Piping Plover) and the endangered *Sterna antillarum* (Least Tern).

The Cheyenne Bottoms Preserve and the Cheyenne Bottoms Wildlife Area are listed as a Hemispheric Reserve by the Western Hemispheric Shorebird Reserve Network. This is the highest reserve designation and indicates that an area has in excess of 100,000 individuals or more than 30% of the known flyway population of a species.

The preserve has been designated as a Globally Important Bird Areas by the American Bird Conservancy. This is in recognition of the Conservancy's efforts to conserve bird populations and their habitats.

### (Category 13)

The Cheyenne Bottoms Preserve is located near the center of Kansas in Barton County. The approximate center of the preserve is 9 miles north and 2 miles east of Great Bend, Kansas or 1 mile south and 2 miles east of Hoisington, Kansas.

(See Appendix A "MAPS")

### (Category 14)

Cheyenne Bottoms is a 165 sq. km (64 sq. mile) basin located in the mixed-grass region of the Great Plains within the Smoky Hills Physiographic Province. The naturally occurring basin is bounded on the north, south and west by steep-sided bluffs composed of sandstone and clay or limestone. The bluffs attain a height of 30m (100 ft) or more above the basin floor. The east and southeast sides of Cheyenne Bottoms are surrounded by low hills composed of dune sand and unconsolidated sand and silt. The soils are of the Drummond-Tabler associations, which consists of deep, nearly level, poorly drained soils. There are widespread areas in which salts accumulate on the soil surface. Salt deposits exist below Cheyenne Bottoms, which is responsible for soil salinity and surface deposits of salt. Subsurface salt deposits originate from the Hutchinson Salt member of the Wellington Formation formed during the Permian and lay between 30 and 140 feet below the surface. Data indicates that salt deposits are between 250 and 300 feet thick and contain 60-80% salt.

Sinking of the landscape between early Late Cretaceous and latest Pliocene resulting from the dissolution of underlying salt deposits is responsible for the formation of the Cheyenne Bottoms basin.

### **(Category 15)**

The Cheyenne Bottoms Preserve has three fairly large but intermittent streams that delta out onto the property. Deception Creek comes onto the property from the north and empties into one of the major semi-permanent basins known as Clear Lake.

Both Shop Creek and Blood Creek enter the property from the northwest and delta out onto the property into a seasonal marsh known as Hidden Marsh. There are numerous lesser creeks that drain onto the property from the north and west and play a major roll in filling numerous temporary and seasonal basins after a significant rain event. In general terms, the water that enters the preserve moves across the landscape as sheetflow and eventually enters the Cheyenne Bottoms Wildlife Area that lies to the south and east of the preserve. The majority of the semi-permanent basins have an average depth of 2 to 3 feet, whereas the seasonal basins range in depth from 12 inches down to 4 inches and the ephemeral basin are only a few inches in average depth. The average rainfall for the area is about 25 inches with the majority falling in the spring and early summer. The preserve is a dynamic wetland that can be 90 % covered by water after a significant rain, whereas, in the same year during the summer the only water remaining is found in the 5 or 6 semi-permanent basins.

**(See Appendix B "Aerial Photo")**

### **(Categories 16 & 17)**

Before the Nature Conservancy started purchasing the land within the Cheyenne Bottoms basin, those 7,269 acres that are now under Conservancy ownership were divided roughly into 3,200 acres of crop land, 3,500 acres of grassland and 500 acres of semi-permanent marsh. After 12 years of ownership by the Conservancy only 500 acres of crop land remains. What was once cropland has been allowed to go back to native vegetation. Through restoration efforts the acreage of semi-permanent marsh has nearly doubled and the majority of the grasslands contain seasonal, temporary and ephemeral wetlands. Many grass species composing the grassland community within Cheyenne Bottoms are well adapted to wetland conditions and can survive periodic inundation. Perennial species such as saltgrass (*Distichlis spicata*), alkali sacatoo (*Sporobolus airoides*) and buffalo grass (*Buchloe dactyloides*) are interspersed with spikerush (*Eleocharis xyridiformis*) communities at slightly lower elevations. Annual grasses such as barnyard grass (*Echinochloa muricata*), foxtail barley (*Hordeum jubatum*), little barley (*Hordeum pusillum*) and sprangletop (*Leptochloa fascicularis*) are abundant and appear in the abandon crop fields when conditions are favorable. Nearly 260 plant taxa have been identified within the basin. Eight general plant communities exist within the preserve. These include the open water/mud flat community associated with the semi-permanent basins. The Prairie Cordgrass (*Spartina pectinata*) community associated with the delta areas of Blood, Shop and Deception Creeks. The saltgrass (*Distichlis spicata*) / Western Wheatgrass (*Agropyron smithii*) community which comprises the majority of the grassland. The alfalfa crop fields located along the north and west boundaries of the preserve. The woody riparian community that is located along Blood and Deception Creeks. The Annual grass community that is associated with the abandon crop fields and is slowly turning into the saltgrass/western wheatgrass community. The spikerush communities found at the lower elevations interspersed within the saltgrass/western wheatgrass communities and surrounding the semi-permanent basins. And finally, the cattail (*Typha spp.*) / bulrush (*Scirpus acutus*) community located around some of the semi-permanent and seasonal basins.

**(See Appendix C "Vegetation Communities")**

### (Categories 18 & 19)

Cheyenne Bottoms is one of only three extensive natural salt marsh complexes in Kansas. Wetland loss in the United States is estimated to be over 50% and estimates of wetland loss in Kansas are similarly dramatic. This alone would mean that the plant communities associated with these types of wetlands are unique and rare to the region. However, it is the use of this wetland by birds that make it truly unique on a global scale. Cheyenne Bottoms has long been recognized as a very important stopover location in the central flyway for migratory waterfowl and shorebirds. Of the 453 species of birds that have been documented in Kansas, 328 have been observed using Cheyenne Bottoms. Some mention has already been made about some of the more rare species of birds that use the preserve. When considering all the shorebirds that use this area, it should be noted that many of these species travel long distances between their wintering grounds in the Southern Hemisphere and their high arctic breeding grounds. These long distance migrations demand large energy expenditures.

Many shorebirds arrive on the breeding grounds in early spring when food is scarce or absent, making it necessary for them to build up sufficient fat reserves during migration to survive until adequate food resources are available. Unfortunately the loss of wetland habitat in the last century has greatly reduced the size and quality to small, remnant patches that are often widely dispersed in a seas of agriculture. The special characteristic wetlands at Cheyenne Bottoms make them uniquely suited to support large numbers that concentrate on these important wetlands during migration. The area has historically also been of importance to migrating waterfowl. Duck numbers within the whole basin have been reported as high as 500,000, with goose numbers approaching 50,000. Driving surveys within the Nature Conservancy's property show that the preserve easily attracts 1/6 of these numbers. The wetland has been know to attracts 34 species of waterfowl of which 13 have been recorded as breeders; 39 species of shorebirds and approximately 40 species of waterbirds such as herons, rails and grebes. With the decline of large expanses of grassland throughout the nation, the uplands within the preserve continue to grow in importance. Nearly a dozen species of grassland dependent birds are regular nesters within the uplands of the preserve. Surveys conducted by the Nature Conservancy have also shown that the preserve is also a very important wintering area for birds of prey. During one winter survey period a documented 121 individuals representing 11 different species of birds of prey were recorded using the preserve. Finally, the preserve serves as a refuge for approximately 27 different species of amphibians and reptiles. Some of the highest concentrations of Massasauga (*Sistrurus catenatus*) in Kansas are found at Cheyenne Bottoms

(See Appendix D "Shorebird Survey & Appendix E "Preserve Checklist)

### (Category 20)

Historically, Cheyenne Bottoms was a 41,000-acre natural wetland basin. The state of Kansas owns 19,857 acres at lower elevations within the basin that are administered as intensively managed wetlands by the Kansas Wildlife & Parks Department. The Nature Conservancy owns 7,269 acres that are managed as a preserve for shorebirds and waterfowl. The remaining acreage is under private ownership and the current land use practices include row crop production at the higher elevations and grazing pasture within the lower elevations. It is estimated that approximately 5,000 acres of quality wetland habitat still remains. It is the hope of the Nature Conservancy to eventually purchase most of these remaining acres on a willing seller basis over the coming years. About 12,000 acres of prairie wetland habitat lie to the north and west of the state ownership. The potential for successful restoration is high within these 12,000 acres, and this is where the Nature Conservancy is currently working and plans to continue working for generations to come.

### (Category 21)

Unique land conditions, including a small degree of disruption, many remnant basins, and a diverse plant community, provide an opportunity to restore this prairie wetland habitat as a functional system with plant and animal aggregations characteristic of the Great Plains.

With careful planning and patience, plant communities can be restored that benefit populations of migrant, resident, and breeding wildlife. Furthermore, where trees are removed the broad open expanses provide a sense of the vastness characteristic of presettlement prairie conditions.

Hydrologic modifications have occurred within the watershed and within the basin. Within the watershed, changes in runoff are related to terraces that hold water on fields, water extraction for irrigation, type and intensity of tillage practices, and channel modifications that change the pattern and velocity of water entering the basin. Within the basin, hydrology has been modified by dug channels, roads, road ditches, levees, type and intensity of tillage practices, water control structures and livestock tanks. Within basins modifications change the pattern and velocity of flow as well as the extent, duration, and depth of flooding within each depressional wetland.

Biological changes in plant and animal populations are abundant and include introduction of exotics, extirpation of natives and modified distributions. Introduced exotics include Salt Cedar (*Tamarisk spp.*), Russian Olive (*Elaeagnus angustifolia*), Musk Thistle (*Carduus nutans*), Bull Thistle (*Cirsium vulgare*), and Smooth Brome (*Bromus inermis*). Dominant herbivores in the region were bison, elk, and pronghorn antelope. However, these species have been extirpated and little chance exists to reestablish free-living populations. These large herbivores and the much smaller prairie dog historically were important forces providing natural disturbance to native grasslands. Today, prairie dogs are present in four remnant colonies.

Grasses and sedges, have survived intense agricultural land use more successfully than most of the forbs. Likewise, wetland plants have survived in the seed bank and as remnant populations much better than the upland plants. Sites with the best example of remnant plant populations include areas that were grazed heavily but not converted to row crop production.

### (Categories 22 & 23)

Historically, the productivity of Cheyenne Bottoms was determined by complex interactions among natural disturbances including hydrology, fire, and herbivory. Of these three factors, emulation of hydrologic conditions has the greatest potential to recreate historic circumstances. Water movements into the basin will continue to be dynamic within and among years, because variation in precipitation and evapotranspiration drives the timing and amount of flow. Historic hydrologic conditions cannot be matched perfectly due to the numerous land modifications that has taken place within and outside the basin. However, the Nature Conservancy has taken many steps to restore the natural hydrological functions over the past few years and has plans for further restoration efforts. Hydrologic change in the surrounding watershed cannot be controlled, but many of the modifications with the 7,269 acres of the preserve and the additional 5,000 acres of remaining wetland prairie can be removed or altered to better emulate historic conditions. Filling dug channels, careful placement of water control structures, removal or redesigning roads, removal of levees and old fence rows and the excavation of shallow depressions in old crop fields are some of the actions that have been undertaken to restore the slow, dispersed movement of water through the system. The reestablishment of sheet flow is especially critical to restore moist conditions and associated wetland vegetation as well as other components of this important prairie wetland system.

Specific information on the historic timing and frequency of fire at Cheyenne Bottoms is unknown. However, fire is well known as a primary disturbance that altered plant community composition and structure as well as nutrient availability in North American prairies. The most obvious impact of fire was the elimination of woody growth. Accidental fires have occurred on the preserve numerous times during the postsettlement period. However, prescribed fires have been absent.

The Nature Conservancy has initiated a fire management program in order to provide the second factor of natural disturbance that the preserve needed to function naturally. The first prescribed fire on the Cheyenne Bottoms Preserve was conducted during the spring of 2001.

Although consumption of forage is normally the primary consideration associated with large ungulates in prairie systems, trampling of vegetation and soil disturbance are important components associated with grazing.

The formerly dominant elk, bison and pronghorn that impacted the native grasslands at Cheyenne Bottoms have seasonal patterns of use, so degree and timing of herbivory on a specific site were variable within and among years. Herds of free ranging bison or elk require extensive areas of foraging habitat far greater than 7,200 acres. Preventing their movements onto public roads and property requires high, well built fences that are expensive.

In contrast cattle are readily available and are an important component in the local economy. So for the immediate future cattle are being used in a random rotational system as the large herbivore for grazing at Cheyenne Bottoms.

#### **(Category 24)**

**(Please refer to Appendix F "Wetland Restoration & Management of the Nature Conservancy Properties at Cheyenne Bottoms Kansas. For a complete description of our restoration efforts and management plans. Note: Additional property has been purchase since the writing of this plan. Namely 3-quarter sections in Section 8 and 1/2 Section in Section 3 in the northwest corner of the preserve. Efforts are currently underway to add these additions to the management plan)**

#### **(Category 25)**

Currently there are a couple of research projects underway. One project is measuring the plant community dynamics at four different sites on the preserve. Each site has three permanent transects that will be monitored to document the plant community changes in old crop ground, native grass and a wetland basin while the Conservancy undertakes the numerous restoration projects. A second project is more site specific. This involves the monitoring of a group of excavated shallow depressions in old crop fields. The project will measure the success of restoration efforts by monitoring and evaluating changes in the plant communities and evaluate the effectiveness of "assisted re-vegetation" of selected wetlands compared to that of passively allowing vegetation to respond to restored hydrology. As a sidebar research project the Nature Conservancy is monitoring the use of these excavated depressions to determine what size and depths are most attractive to shorebirds. The vegetative monitoring research is being conducted by the Biological Survey Department from the University of Kansas and final reports will be written after the end of the research period. It should also be noted that the Nature Conservancy has in place various surveys that monitor bird use of the area and hopes to put in place a herpivore survey in the future.

#### **(Categories 26 & 27)**

The education program related to the Cheyenne Bottoms Preserve is small but continues to grow at a steady level. The preserve has two informational signs located at the main entrances to the property. Each sign also has available a brochure about the preserve, a driving tour map and a preserve bird checklist. Efforts are currently on the way to up date the driving tour map. In addition, as the opportunities present themselves, the Preserve Manager gives slide presentations and guided tours of the preserve. The Nature Conservancy along with the Kansas Wildlife & Parks, the U.S. Fish & Wildlife Service, and the City of Great Bend put together the first ever Bird Festival in Kansas during the spring of 2001. The festival was titled "Wings-N-Wetlands. It is planned that this will be a yearly event and through this event the value of wetlands will be conveyed to a larger group of people from around the country. There is also an effort on the way to develop a strategic plan to promote ecotourism within the entire area.

**(Categories 28 & 29)**

The Cheyenne Bottoms Preserve is managed out of the Stewardship Office located at 503 Camille Ave. Ellinwood, Kansas 67526 and owned by the Kansas Chapter of the Nature Conservancy located at 700 SW Jackson, Suite 804, Topeka, Kansas 66603.

**(Category 30)**

References:

*Aschenbach, T. A. 2000. Plant Community Dynamics at Cheyenne Bottoms, Kansas  
Master's Thesis*

*Collins, J.T. 1995. An Illustrated Guide to Endangered or Threatened Species in Kansas*

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Cheyenne Bottoms, Kansas*

*Harrington, B. A. 1984. Manomet Bird Observatory, Annual Report, 1984*

*Penner, R. L. 2001. Five Year Shorebird Survey*

*Stubbendiek, J. 1995. Weeds of Nebraska and the Great Plains*

*USDA-Soil Conservation Service 1987. Midwestern Wetland Flora*