



Ensuring a future for North America's Cranes

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Species Detection,
Collection, and
Monitoring Report

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Attention: Mike Fritz, Zoologist, Natural Heritage Program, Wildlife Division, NGPC, 2200 N 33rd St., Lincoln, NE 68503

AND

Funding for Waterbird, Songbird, and Habitat Monitoring Programs:

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A summary of species detected during long-term monitoring at the Crane Trust and permitted collection activities in the calendar year.

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Introduction

During the summer of 2015 we implemented a long-term biological monitoring plot layout system through set transects establishing survey lines in all parts of the Crane Trust properties with differing soils, vegetation, management practices, and land use histories. These plots consist of two parallel transects; the vegetation line, totaling 100m and the bird and small mammal line, totaling 200m. Due to the complex mosaic of soil types and management histories on the property the total number of monitoring sites totaled 61 as of 2017; new sites are added along with newly acquired conservation properties. In 2016 we continued our efforts to survey the vegetation, avian community, small mammals, and butterfly species at these sites utilizing standardized methodologies on a set rotation to monitor the effectiveness of our management techniques in promoting native biodiversity. Additionally, we conducted surveys of native and exotic slough dwelling fish and monitored ground water levels. We continued these efforts through 2017, adding three new monitoring sites on our newly acquired

Martin’s Meadows property this year. We conducted additional long-term grassland songbird monitoring through the IBS’s (Institute for Bird Populations) MAPS program (Monitoring Avian Productivity and Survivorship) at seven different sites throughout the breeding season (June-July).

As of October 5th, 2017 the Crane Trust field team performed 71 avian surveys across 61 monitoring sites, 36 small mammal surveys totaling 1800 trap nights (trap number x nights set), 35 vegetation surveys, 4 days of fish seining, 51 butterfly species of concern surveys, and 8 butterfly species inventory surveys in the field season of 2017. Additionally, 283 individual birds of 27 species were banded. Below is a summary of the detections and methods for avian, vegetation, and small mammal surveys. In addition, incidental detections (seen/collected outside of actual surveys) of vegetation, butterflies, and other animals are listed.

Small Mammal Monitoring

We used Sherman Box Traps baited with a seed mixture of sterilized (autoclaved) oats, sunflower seeds, and cracked corn. Mealworms were also added in areas suspected or known to contain high proportions of Soricomorpha. Traps were placed every 5m along a 200m set transect with an additional 10 traps placed within 10m of the transect for incidental detections. Small mammals were identified to species when possible; age, sex, and reproductive status of each individual was also recorded when possible. Measurements such as weight and length were not recorded unless necessary for identification. Our trapping began in August and ended in September. Total survey trap effort concluded at 1800 trap nights (trap number*sites trapped).

No individual was killed for collection; however, individuals that died in trap were collected. This year trap death was 3.5% of animals trapped, representing an increase from 2015 (2.9%) and 2016 (3.3%). Total trap death equaled 5 individuals of 143 caught (Table 1). The majority of the deaths were Soricomorpha, which are prone to trap death from starvation due to high metabolism. Out of all Soricomorpha captured, roughly one third (33%) died in traps (which is significantly lower than found in the literature)¹. This number is higher than in 2015 (24%) and 2016 (28%). The colder temperatures in combination with our switch to freeze-dried mealworms, which appeared to be less appetizing for shrews, may have resulted in a slightly elevated trap mortality rate for *Sorex* spp. in particular. However, note that our capture of shrews is a smaller percentage (8.4%) than caught in 2015 (14.2%) and 2016 (10.5%). So it is possible that live mealworms actually attract the shrews (though their numbers could simply be down relative to Rodentia).

Table 1. Small Mammals Detected at the Crane Trust 2017

Scientific Name	Common Name	Number	Mortality
<i>Blarina brevicauda</i>	Northern Short-tailed Shrew	3	0
<i>Blarina</i> spp.	Elliot’s or N. Short-tailed Shrew	6	2
<i>Delphinus virginianus</i>	Opossum	1	0
<i>Ictidomys tridecimlineatus</i>	Thirteen-lined Ground Squirrel	1	0
<i>Microtus ochrogaster</i>	Prairie Vole	5	0

¹ Do, R., Shonfield, J., & McAdam, A. G. (2013). Reducing accidental shrew mortality associated with small-mammal livetrapping II: a field experiment with bait supplementation. *Journal of Mammalogy*, 94(4), 754-760.

<i>Microtus pennsylvanicus</i>	Meadow Vole	33	0
<i>Peromyscus leucophagus</i>	White-footed Mouse	19	0
<i>Peromyscus maniculatus</i>	Deer Mouse	13	0
<i>Reithrodontomys megalotis</i>	Western Harvest Mouse	6	0
<i>Reithrodontomys monatus</i>	Plains Harvest Mouse	6	0
<i>Sorex</i> spp. (<i>cinereus</i> or <i>haydeni</i>)	Masked Shrew or Prairie Shrew	3	2
<i>Zapus hudsonius</i>	Meadow Jumping Mouse	40	1
Total		143	5

Avian Monitoring

We conducted 1/8 mile-long (200m) moving surveys along set transects to be completed in 15 minutes, and stationary focal point surveys to also be completed in 15 minutes, with both methods starting from the same location. During these surveys all species detected by sight and/or vocalization were recorded. The total number of individual birds detected of each species was recorded, taking efforts not to double count individuals. Each bird detected was recorded as within 50m or outside 50m of the point or transect. We did not try to estimate the real population based off the number of birds detected, but treated that as an index for discerning the relative abundance of particular species (Abundant: daily, Common: two to three times per week, Uncommon: two to three times per month, Rare: two to three times per year, Occasional: not every year, Accidental: outside of normal range. For non-resident species the index applies only to migration periods for that species). Common names are consistent with AOU standards.

Surveys were conducted at 61 sites across Crane Trust properties beginning in March (and will continue throughout the winter) thus far equaling (as of 10/05/17) 71 surveys and 181 species (including incidental sightings during this time). No individual was taken for collection, however as part of the Monitoring Avian Productivity and Survivorship protocol for bird banding one Brown-headed Cowbird female died. This activity was permitted under USGS site permit 23224 with head bander Nicole Arcilla. The fatality was reported to USGS as well. MAPS represents a cooperative North America-wide effort to gather demographic data on land bird species at multiple spatial scales utilizing standardized constant-effort mist netting, a mark-recapture technique, over multiple year periods. A total count of the number of individuals of each species banded when applicable is presented in brackets following the species' standardized common names (e.g. - Baltimore Oriole (2)).

We detected several priority species for the US FWS Mountain-Prairie Region (6), in which the Rainwater Basin is located. Bald Eagles were common and detected throughout the year, including 2 nesting locations. Ferruginous Hawks were occasionally detected in the fall and winter. Golden Eagles were detected particularly in the spring. Roosts off of Mormon Island contained over 80,000 Sandhill Cranes during 1 aerial survey in 2017. Mormon Island held between 15 and 20 breeding pairs of Upland Sandpipers. Marbled Godwits were detected in small flocks stoping over for a few days during the spring. A few Buff-breasted Sandpipers were recorded from late July to mid-August. A Peregrine Falcon

was recorded in the spring (April) and a Burrowing Owl in the late summer (end of August). We estimate 175+ breeding pairs of Grasshopper Sparrows and a minimum of 8 breeding pair of Henslow's Sparrows.

Table 2. Avian Detections and Abundance at the Crane Trust 2017

Abundance Key: Abundant: daily, Common: two to three times per week, Uncommon: two to three times per month, Rare: two to three times per year, Occasional: not every year, Accidental: outside of normal range.

Common Name	Abundance
American Avocet	Rare
American Bittern	Uncommon
American Coot	Common
American Crow	Common
American Goldfinch (26)	Abundant
American Kestrel	Common
American Pipit	Occasional
American Redstart	Rare
American Robin	Abundant
American Tree Sparrow	Common
American White Pelican	Common
American Wigeon	Uncommon
Baird's Sandpiper	Occasional
Bald Eagle	Common
Baltimore Oriole (2)	Uncommon
Bank Swallow	Common
Barn Swallow	Abundant
Bell's Vireo (2)	Uncommon
Belted Kingfisher	Uncommon
Black Tern	Rare
Black-and-white Warbler	Uncommon
Black-capped Chickadee	Common
Blackpoll Warbler	Rare
Blue Jay	Common
Blue-gray Gnatcatcher	Uncommon
Blue-winged Teal	Abundant
Bobolink (25)	Common
Bonaparte's Gull	Rare
Brewer's Blackbird	Rare
Brown Thrasher (1)	Uncommon
Brown-headed Cowbird (25)	Abundant
Buff-breasted Sandpiper	Occasional

Common Name	Abundance
Bufflehead	Common
Burrowing Owl	Occasional
Cackling Goose	Uncommon
Canada Goose	Abundant
Canvasback	Rare
Caspian Tern	Rare
Cattle Egret	Rare
Cedar Waxwing	Common
Chestnut-collared Longspur	Occasional
Chimney Swift	Rare
Chipping Sparrow (1)	Rare
Clay-colored Sparrow	Common
Cliff Swallow (2)	Abundant
Common Grackle	Common
Common Loon	Occasional
Common Merganser	Common
Common Nighthawk	Rare
Common Tern	Rare
Common Yellowthroat (6)	Abundant
Cooper's Hawk	Uncommon
Dark-eyed Junco	Common
Dickcissel (62)	Abundant
Double-crested Cormorant	Common
Downy Woodpecker	Uncommon
Dunlin	Rare
Eared Grebe	Rare
Eastern Bluebird	Uncommon
Eastern Kingbird (1)	Common
Eastern Meadowlark (2)	Uncommon
Eastern Phoebe	Rare
Eastern Towhee	Uncommon
Eastern Wood-Pewee	Rare

Common Name	Abundance
Eurasian Collared-Dove	Uncommon
European Starling (1)	Common
Field Sparrow (5)	Uncommon
Forster's Tern	Common
Fox Sparrow	Rare
Franklin's Gull	Common
Gadwall	Rare
Golden Eagle	Rare
Grasshopper Sparrow (64)	Abundant
Gray Catbird (2)	Uncommon
Gray-cheeked Thrush	Rare
Great Blue Heron	Common
Great Crested Flycatcher	Uncommon
Great Egret	Uncommon
Great Horned Owl	Uncommon
Greater Prairie-chicken	Uncommon
Greater Scaup	Rare
Greater Yellowlegs	Uncommon
Great-tailed Grackle	Uncommon
Green Heron	Uncommon
Green-winged Teal	Common
Hairy Woodpecker	Rare
Harris's Sparrow	Rare
Henslow's Sparrow	Rare
Herring Gull	Rare
House Finch	Uncommon
House Sparrow	Rare
House Wren (3)	Common
Killdeer	Abundant
LeConte's Sparrow	Uncommon
Least Bittern	Occasional
Least Flycatcher	Rare
Least Sandpiper	Uncommon
Least Tern	Rare
Lesser Scaup	Rare
Lesser Yellowlegs	Common
Lincoln's Sparrow	Uncommon
Little Blue Heron	Occasional
Loggerhead Shrike	Rare
Mallard	Common

Common Name	Abundance
Marbled Godwit	Rare
Marsh Wren (1)	Rare
Merlin	Rare
Mourning Dove	Abundant
Mourning Warbler	Rare
Nashville Warbler	Uncommon
Northern Bobwhite (1)	Abundant
Northern Cardinal	Uncommon
Northern Flicker (1)	Common
Northern Harrier	Common
Northern Pintail	Uncommon
Northern Rough-winged Swallow	Rare
Northern Shoveler	Common
Northern Shrike	Rare
Orange-crowned Warbler	Rare
Orchard Oriole (15)	Common
Osprey	Rare
Pectoral Sandpiper	Rare
Pied-billed Grebe	Uncommon
Pine Siskin	Rare
Piping Plover	Rare
Prairie Falcon	Rare
Red-bellied woodpecker	Common
Red-eyed Vireo	Rare
Redhead	Uncommon
Red-headed Woodpecker	Uncommon
Red-tailed Hawk	Common
Red-winged Blackbird (20)	Abundant
Ring-billed Gull	Common
Ring-necked Pheasant	Common
Rock Pigeon	Uncommon
Rose-breasted Grosbeak	Uncommon
Rough-legged Hawk	Uncommon
Ruby-crowned Kinglet	Uncommon
Ruby-throated Hummingbird	Uncommon
Ruddy Duck	Uncommon
Ruddy Turnstone	Occasional
Rusty Blackbird	Rare
Sanderling	Rare

Common Name	Abundance
Sandhill Crane	Abundant
Savannah Sparrow	Common
Sedge Wren (2)	Common
Semipalmated Sandpiper	Common
Sharp-shinned hawk	Rare
Sharp-tailed Grouse	Rare
Snowy Egret	Rare
Solitary Sandpiper	Rare
Song Sparrow (1)	Abundant
Sora	Uncommon
Spotted Sandpiper	Abundant
Spotted Towhee	Abundant
Stilt Sandpiper	Rare
Swainson's Hawk	Uncommon
Swainson's Thrush	Uncommon
Swamp Sparrow	Rare
Tree Swallow	Uncommon
Turkey Vulture	Uncommon
Upland Sandpiper	Common

Common Name	Abundance
Vesper Sparrow	Rare
Virginia Rail	Rare
Warbling Vireo	Uncommon
Western Kingbird	Uncommon
Western Meadowlark (6)	Abundant
Western Sandpiper	Uncommon
White-breasted Nuthatch	Uncommon
White-crowned Sparrow	Rare
White-throated Sparrow	Uncommon
Whooping Crane	Rare
Wild Turkey	Uncommon
Willet	Rare
Willow Flycatcher (4)	Uncommon
Wilson's Phalarope	Common
Wilson's Snipe	Uncommon
Wood Duck	Uncommon
Yellow Warbler (2)	Abundant
Yellow-headed Blackbird	Uncommon
Yellow-rumped Warbler	Uncommon

Slough Fish Monitoring

Each survey consisted of six to eight runs totaling ~150m of the slough. Using a net sized to the general width of the slough channel we ran the net at the slough bottom capturing as many fish as possible. We then dumped those fish into a 5 gallon bucket for identification and counting purposes. No individuals were collected. Two sloughs were sampled across four site visits which included 25 net pulls covering about 600m of slough length.

Table 3. Fish Detected at the Crane Trust

Species Name	Common Name	Number Detected
<i>Notropis dorsalis</i>	Bigmouth Shiner	5
<i>Ameiurus melas</i>	Black Bullhead	3
<i>Hybognathus hankinsoni</i>	Brassy Minnow	52
<i>Culaea inconstans</i>	Brook Stickleback	586
<i>Cyprinus carpio</i>	Common Carp	5
<i>Semotilus atromaculatus</i>	Creek Chub	45
<i>Etheostoma exile</i>	Iowa Darter	3
<i>Etheostoma nigrum</i>	Johnny Darter	1
<i>Lepomis cyanellus</i>	Green Sunfish	1
<i>Gambusia affinis</i>	Western Mosquitofish	4198

<i>Hybognathus placitus</i> or <i>argrytis</i>	Plains or Western Silvery Minnow	6
<i>Fundulus sciadicus</i>	Plains Topminnow	91
<i>Notropis blennius</i> & <i>Notropis stramineus</i>	River or Sand Shiner	6
Total		5508

Vegetation Monitoring

We targeted plants in excellent condition, in fruit or flower (ideally both), to fill record gaps and verify species for collection to the Crane Trust herbarium. We recorded the area where the plant was found to the nearest transect, the date it was collected, and its relative abundance in the area. We collected 79 plants from across the Crane Trust properties (Table 4). Collections were made by J. Wiese, A. Caven, H. English, and K. King. Identification was done by A. Caven and J. Wiese.

Additionally, vegetation surveys using both point-line intercept (every two meters) and quadrat (0.5m x 1.0m every 10m) methods along a 100m permanently marked transect were conducted. Surveys began in July and ended in early October with the first frost. The recent county records of exotic invasive species recorded at the Trust's properties and verified by the University of Nebraska-Lincoln Herbarium are presented in red. These represent recent invasions and should be a target for management efforts and controlled in prairies in the Big Bend region of the Platte River.

Table 4. Plant Specimens Collected for the Crane Trust Herbarium 2017

Family	Species	Common Name	No. Collected
Amaranthaceae	<i>Amaranthus retroflexus</i> L.	Redroot amaranth	1
Asclepiadaceae	<i>Asclepias arenaria</i> Torr.	Sand milkweed	1
Asclepiadaceae	<i>Asclepias stenophylla</i> A. Gray	Slimleaf milkweed	1
Asclepiadaceae	<i>Asclepias syriaca</i> L.	Common milkweed	1
Asteraceae	<i>Aster ericoides</i> L.	Heath aster	1
Asteraceae	<i>Aster lanceolatus</i> Willd.	White panicle aster	3
Asteraceae	<i>Aster lanceolatus</i> Willd. ssp. <i>hesperius</i> (A. Gray) Semple & Chmielewski	White panicle aster	1
Asteraceae	<i>Aster praealtus</i> Poir. var. <i>nebraskensis</i> (Britton) Wiegand	Willowleaf aster	2
Asteraceae	<i>Bidens comosa</i> (A. Gray) Wiegand/ <i>Bidens tripartita</i> L.	Threelobe beggarsticks	1
Asteraceae	<i>Bidens frondosa</i> L.	Devil's beggartick	1
Asteraceae	<i>Cirsium vulgare</i> (Savi) Ten.	Bull thistle	1
Asteraceae	<i>Helianthus grosseserratus</i> M. Martens	Sawtooth sunflower	1

Asteraceae	<i>Liatris lancifolia</i> (Greene) Kittell	Lanceleaf blazing star	1
Asteraceae	<i>Ratibida pinnata</i> (Vent.) Barnhart	Gray-headed coneflower	1
Asteraceae	<i>Silphium laciniatum</i> L.	Compassplant	1
Asteraceae	<i>Solidago gigantea</i> Aiton	Giant goldenrod	1
Boraginaceae	<i>Cynoglossum officinale</i> L.	Gypsyflower/houndstongue	2
Boraginaceae	<i>Lithospermum incisum</i> Lehm.	Fringed paeon	1
Cactaceae	<i>Opuntia fragilis</i> (Nutt.) Haw.	Brittle pricklypear	1
Cactaceae	<i>Opuntia humifusa</i> (Raf.) Raf	Devil's tongue prickly-pear	1
Capparaceae	<i>Cleome serrulata</i> Pursh	Rocky Mountain beeplant	1
Caprifoliaceae	<i>Symphoricarpos orbiculatus</i> Moench	Coralberry	1
Chenopodiaceae	<i>Chenopodium simplex</i> (Torr.) Raf.	Mapleleaf goosefoot	2
Chenopodiaceae	<i>Chenopodium standleyanum</i> Aellen	Standley's goosefoot	1
Crassulaceae	<i>Penthorum sedoides</i> L.	Ditch stonecrop	1
Cyperaceae	<i>Carex aurea</i> Nutt.	Golden Sedge	1
Cyperaceae	<i>Carex crawei</i> Dewey	Crawe's sedge	1
Cyperaceae	<i>Carex eleocharis</i> L.H. Bailey	Needleleaf sedge	1
Cyperaceae	<i>Carex emoryi</i> C. Dewey	Emory's sedge	3
Equisetaceae	<i>Equisetum hyemale</i> L.	Scouringrush horsetail	1
Fabaceae	<i>Astragalus plattensis</i> Nutt.	Platte River milkvetch	1
Fabaceae	<i>Desmodium illinoense</i> A. Gray	Illinois tickclover	1
Fabaceae	<i>Oxytropis lambertii</i> Pursh	Purple locoweed	1
Fabaceae	<i>Robinia pseudoacacia</i> L.	Black locust	1
Fabaceae	<i>Vicia villosa</i> Roth	Hairy vetch	1
Iridaceae	<i>Belacanda chinensis</i> (L.) DC.	Blackberry lilly/Leopard lily	1
Iridaceae	<i>Iris pseudacorus</i> L.	Yellowflag iris	2
Lamiaceae	<i>Glechoma hederacea</i> L.	Ground Ivy	1
Lamiaceae	<i>Lycopus asper</i> Greene	Rough bugleweed	2
Lamiaceae	<i>Physostegia virginiana</i> (L.) Benth. ssp. <i>virginiana</i>	Obedient plant	1
Lamiaceae	<i>Scutellaria galericulata</i> L.	Marsh skullcap	1
Lamiaceae	<i>Scutellaria lateriflora</i> L.	Blue skullcap	2
Lilliaceae	<i>Maianthemum stellatum</i> (L.) Link	Starry false lily of the valley	1
Linaceae	<i>Linum sulcatum</i> Riddell	Grooved flax	1

Malvaceae	<i>Abutilon theophrasti</i> Medik.	Velvetleaf	1
Onagraceae	<i>Oenothera biennis</i> L. var. <i>strigosa</i> (Rydb.) Piper/ <i>Oenothera villosa</i> Thunb. ssp. <i>strigosa</i> (Rydb.) W. Dietr. & P.H. Raven	Hairy evening primrose	1
Poaceae	<i>Bouteloua dactyloides</i> (Nutt.) J.T. Columbus	Buffalograss	1
Poaceae	<i>Elymus villosus</i> Muhl. ex Willd.	Hairy wildrye	1
Poaceae	<i>Elymus virginicus</i> L.	Virginia wildrye	1
Poaceae	<i>Leersia virginica</i> Willd.	Whitegrass	1
Poaceae	<i>Leptochloa fusca</i> (L.) Kunth	Malabar sprangletop	1
Poaceae	<i>Muhlenbergia racemosa</i> (Michx.) Britton, Sterns & Poggenb.	Marsh muhly	1
Poaceae	<i>Muhlenbergia schreberi</i> J.F. Gmel.	Nimblewill	1
Poaceae	<i>Muhlenberia mexicana</i> (L.) Trin.	Mexican muhly	1
Poaceae	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Common Reed	1
Poaceae	<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Yellow foxtail	1
Poaceae	<i>Setaria verticillata</i> (L.) P. Beauv.	Hooked bristlegrass	1
Poaceae	<i>Sporobolus cryptandrus</i> (Torr.) A. Gray	Sand dropseed	1
Poaceae	<i>Tridens flavus</i> (L.) Hitchc.	Purpletop tridens	1
Polygonaceae	<i>Polygonum coccineum</i> Muhl. ex Willd./ <i>Polygonum amphibium</i> L. var. <i>stipulaceum</i> Coleman	Water smartweed	2
Polygonaceae	<i>Polygonum pensylvanicum</i> L.	Pennsylvania smartweed	1
Polygonaceae	<i>Polygonum persicaria</i> L.	Spotted ladythumb	1
Primulaceae	<i>Androsace occidentalis</i> Pursh	Western rockjasmine	1
Primulaceae	<i>Lysimachia ciliata</i> L.	Fringed loosestrife	1
Ranunculaceae	<i>Clematis virginiana</i> L.	Devil's darning needles	1
Rosaceae	<i>Rubus occidentalis</i> L.	Black raspberry	1
Scrophulariaceae	<i>Agalinis tenuifolia</i> (Vahl) Raf.	Slenderleaf false foxglove	1

Butterfly Inventory and Monitoring

Our butterfly monitoring protocol consists of a walking and netting survey. All species are recorded inside or outside of 10m with each survey lasting 15 minutes. The walking survey is a 200m transect that coincides with our avian monitoring transects. The netting survey occurs 50 meters into the 200 meter transect and is conducted after the walking survey. All species in the vicinity are caught and netted for 15 minutes. Then each butterfly is carefully examined for identification and released. No mortality occurred during these surveys and no wing injuries occurred. Occasionally a butterfly would lose part of a leg during the identification process. Skippers were more prone to this due to longer handling times for identification. It was sometimes necessary to identify a butterfly to a taxa level above species and that is reflected in the data (Table 5). Incidental sightings of species were also recorded.

We conducted 8 butterfly inventory surveys across various parts of the Crane Trust properties. This resulted in the detection of 18 butterfly species and 334 individuals noted. We also performed surveys looking for butterfly species of concern, where we documented 120 sightings of Regal Fritillary and 26 Monarchs. Finally, we tagged 20 Monarchs as part of the tagging program through Monarch Watch. This data represents an inverse of past years in which we detected several more individual

Herpetofauna Research

We do not currently have a formal herpetofauna program, but we do record species detections as well as document mortalities. A number of species found deceased were collected as salvage under our permit and utilized in natural history publications detailing mortality events. This includes a paper published in 2016 regarding a *Coluber constrictor* (Green Racer) winter emergence mortality and similar

Monarchs than Regal Fritillaries. This suggests that at least regionally it may have been a bad year for Monarch butterflies.

Table 5. Butterfly Detections

Common Name	Abundance
Cabbage White	Rare
Checkered White	Uncommon
Clouded Sulphur	Uncommon
Cloudless Sulphur	Rare
Common Checkered Skipper	Uncommon
<i>Colias</i> spp.	Common
Eastern-tailed Blue	Rare
Great Spangled Fritillary	Occasional
Monarch	Uncommon
Orange Sulphur	Abundant
Painted Lady	Abundant
Pearly Crescent	Rare
<i>Polites</i> spp.	Rare
Reakirt's Blue	Rare
Red Admiral	Rare
Regal Fritillary	Common
Sachem	Uncommon
Variegated Fritillary	Uncommon
Zabulon Skipper	Uncommon

occurrences over the last two warm winters regarding four additional species. These observations are detailed in the following table.

Table 6. Herpetofauna Collected as Salvage under Permit

Species	Date Collected	Mortality	Journal Submitted
<i>Tropidoclonion lineatum</i>	22 Jan 2017	Cold Exposure/Early Emergence	Herpetological Review
<i>Thamnophis sirtalis</i>	22 Jan 2017	Cold Exposure/Winter Emergence	Herpetological Review
<i>Opheodrys (Liochlorophis) vernalis</i>	11 April 2017	Controlled Burn	Herpetological Review
<i>Thamnophis sirtalis</i>	10 March 2017	Cold Exposure/Early Emergence	Collinsorum: Journal of the Kansas Herpetological Society

Sandhill Crane Aerial Surveys

We counted a total of 1,410,778 Sandhill Cranes in the Central Platte River Valley (Chapman to Overton, NE) across 8 weeks of surveys in 2017. Error estimates per survey ranged from -14 to +13.5% comparing ocular to photo counts (mean= -3.3). Our counts accurately captured cranes on the river as well as those in post roost aggregations within 1 km of the river. However, cranes departing the river early and leaving this narrow band were likely counted a reduced rate if at all and therefore our numbers likely represent an underestimate. Our highest uncorrected counts were of roughly 406,000 and 404,000 on March 8th and March 15th respectively and they were statistically indistinguishable. Corrected, the peak count was on March 15th and totaled 429,916. This represents an early peak count, a trend we have documented in recent years. The high total count for the year suggests that cranes stayed for an extended duration in the Platte River Valley in 2017 and were counted multiple times across survey weeks.

Table 7. Sandhill Crane Count by Survey Week 2017

Survey Date	Uncorrected SACR Count
2/13/2017	8,146
2/21/2017	66,017
2/27/2017	194,825
3/8/2017	405,857
3/15/2017	404,170
3/20/2017	208,603
4/4/2017	117,110
4/11/2017	6050

Conclusion

Implementing a long-term monitoring program will help us more critically assess the impacts of our management actions upon Whooping Cranes, Sandhill Cranes, and the other migratory and breeding bird species in the Big Bend region of the Platte River in Nebraska. This field season our efforts totaled 71 avian surveys, 36 small mammal surveys (1800 trap nights), 35 vegetation surveys, 8 butterfly inventory surveys plus 51 butterfly species of concern surveys, and 4 days of fish seining. This led to 181 avian species detected, 143 individual small mammals trapped, 79 individual plants collected, 18 species of butterfly detected, and 5,508 fish caught and released. These data are all integrated into our long-term research and monitoring plan and will be used to develop models to improve management actions. This report represents preliminary findings and thus should be interpreted as such; our intention with this data is to produce peer-reviewed research that addresses issues of conservation concern in the Central Platte River Valley. As we publish results from our studies they will be posted on our website and available to the public (<https://cranetrust.org/what-we-do/conservation/research/>). We have also included a list of recent publication activity in Appendix 1 of this report. We thank the Rainwater Bison Joint Venture, the US Fish and Wildlife Service, and the Nebraska Game and Parks Commission for their continued support of our research program.

Figure 1. Crane Trust Property Map across Big Bend Region of the Platte River, Nebraska 2017

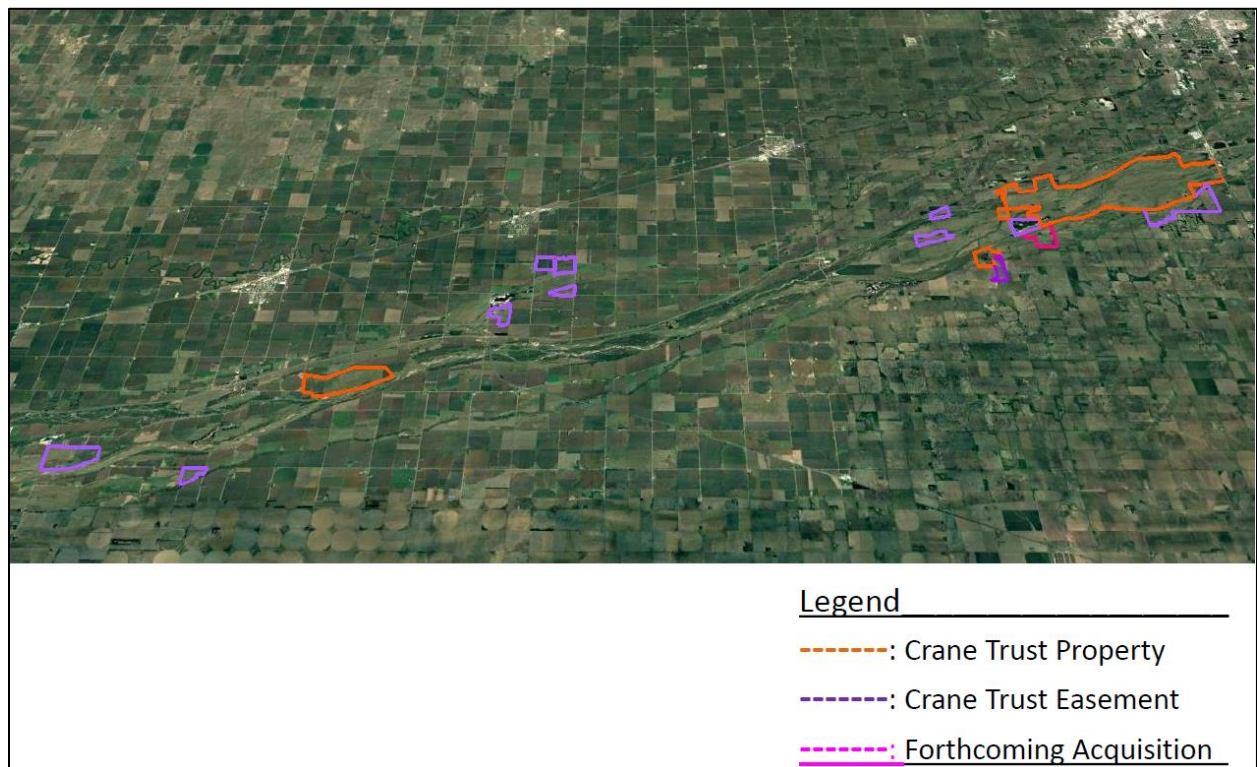
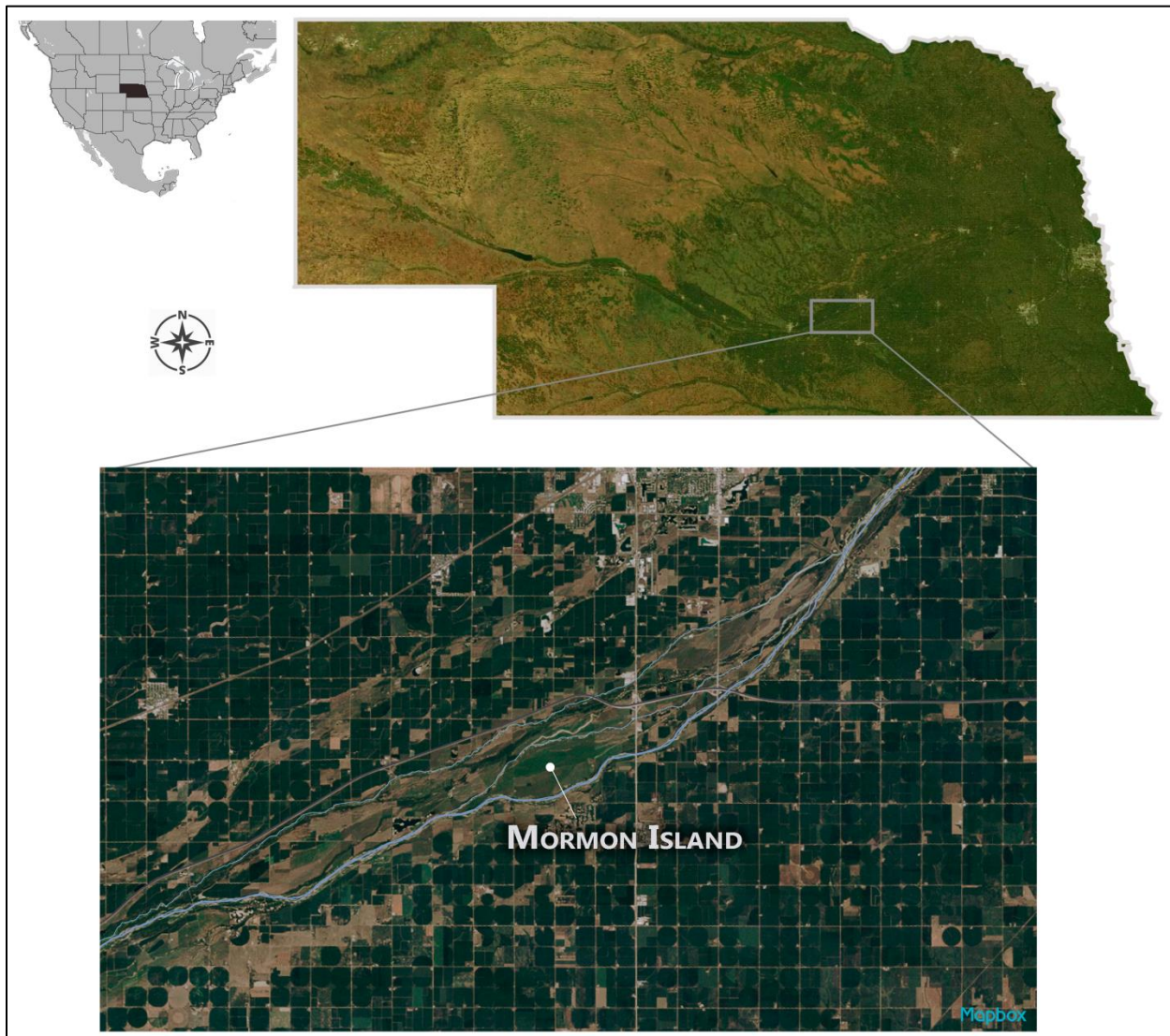


Figure 2. Map of Mormon Island, Hall County Nebraska, the largest site owned and managed by the Crane Trust since 1978. Also depicting the Bib Bend Region of the Platte River and Nebraska's position within the United States.



Footnote: Aerial imagery clearly depicts the prairie habitat of Mormon Island within a largely agricultural landscape.

Appendix 1. Recent Publication Activity by Crane Trust Research Staff, 2015 to Present

Caven, A.J., J. Salter, and K. Geluso. *In Press*. *Liochlorophis vernalis* (Smooth Green Snake). Fire Mortality and Phenology. *Herpetological Review*.

Caven, A.J., J.D. Wiese, and W. R. Wallauer. *In Press*. Prairie Falcon Depredation Attempts on a Greater Prairie-chicken Lek in south-central Nebraska. *The Prairie Naturalist*.

Wiese, J.D., and A. J. Caven. *In Review*. *Tropidoclonion lineatum* (Lined Snake), *Thamnophis sirtalis* (Common Gartersnake). *In Press*. Refugia and Mortality. *Herpetological Review*.

Caven, A.J., and E.M. Brinley Buckley. *In Review*. Greater Sandhill Crane (*Antigone canadensis tabida*) Copulation detected along the Big Bend of the Platte River, South-Central Nebraska, USA. *Nebraska Bird Review*.

King, K. C., A.J. Caven, and K. Geluso. *In Review*. Lekking Behavior of a Sharp-tailed Grouse in south-central Nebraska. *The Prairie Naturalist*.

Caven, A.J., K.C. King, G.D. Wright, R.P. McLean, and N. Arcilla. *In Review*. Early and Continuous Interior Greater Prairie-chicken (*Tympanuchus cupido pinnatus*) Lekking Behavior During Above Average Winter Temperatures at Lek in central Nebraska. *Kansas Ornithological Society Bulletin*.

King, K. C. N. Arcilla, and A. J. Caven. *In Review*. Wintering Red-winged Blackbirds in Central Nebraska. *Nebraska Bird Review*.

Caven, A. J., J. D. Wiese, K. C. King, and B. Krohn. *In Review*. The Attraction of Migrating Swainson's Hawks to Spring Controlled Burns in the Great Plains. *Wilson Journal of Ornithology*.

Wiese, J.D., B. Krohn, and A. J. Caven. 2017. Common Gartersnake (*Thamnophis sirtalis*) Mortality likely Resulting from Cold Exposure Following Late Winter Hibernaculum Emergence. *Collinsorum* 6: 15-16.

Brinley Buckley, E. M., C. R. Allen, M. Forsberg, M. Farrell, and A. J. Caven. 2017. Capturing change: the duality of time-lapse imagery to acquire data and depict ecological dynamics. *Ecology and Society* 22 (3):30.

Caven, A.J., K.C. King, J.D. Wiese, and E.M. Brinley Buckley. 2017. A Descriptive Analysis of Regal Fritillary (*Speyeria idalia*) habitat utilizing biological monitoring data along the Big Bend of the Platte River, NE. *Journal of Insect Conservation* 21:183-205.

Pearce, A.T., M.J. Harner, D.M. Baasch, G.D. Wright, A.J. Caven, and K.L. Metzger. 2017. Evaluation of nocturnal roost and diurnal sites used by Whooping Cranes in the Great Plains, USA. U.S. Geological Survey Open-File Report 2016–1209, 29 p.

Wiese, J.D., K.C. King, A.J. Caven, and N. Arcilla. 2017. Winter predation of an adult Spiny Softshell (*Apalone spinifera*) likely committed by a Bald Eagle (*Haliaeetus leucocephalus*) in central Nebraska. *Collinsorum* 6(1):14-19.

Wiese, J.D., A.J. Caven, and E.M. Brinley Buckley. 2016. Eastern Racer (*Coluber constrictor*) mortality as a result of early emergence from a man-made structure hibernaculum in South-central Nebraska. *Collinsorum* 5(1):3-5.

Wiese, J.D., K.C. King, and A.J. Caven. 2016. The utilization of senesced wetland plant material by *Thamnophis sirtalis* as a thermoregulation microsite in a flooded system. *Collinsorum* 5(4):12-14.

Wiese, J.D., E.D. Plock, and K. Geluso. 2016. Common Gartersnake (*Thamnophis sirtalis*) mortality due to haying practices in South-central Nebraska. *Collinsorum* 5(4):15-16.

McLean, R.P., G.D. Wright, and K. Geluso. 2015. Cope's Gray Treefrog (*Hyla chrysoscelis*) along the Platte River, Hall County, Nebraska. *Collinsorum* 4(1):2-4.