Ensuring a future for North America's Cranes

Trustees: Van Korell, Tom Dougherty and Doug Curry
6611 W Whooping Crane Drive
Wood River, NE 68883
p. 308.384.4633
f. 308.384.7209
cranetrust.org

December 7

Species Detection, Collection, and Monitoring Report

2018

Prepared by
Andrew J. Caven, Lead Biologist, Crane Trust (Edited by J. Malzahn)
In fulfillment of:
Nebraska Game and Parks Commission, Scientific and Education Permit, Master Permit No. 1059 (A. J. Caven)
ATTN: Rick Schneider, Program Manager, Nebraska Natural Heritage Program, Wildlife Division, NGPC, Lincoln, NE

Project Funding:
U.S. Fish and Wildlife Service, Ecological Services Field Office, Wood River, NE
U.S. Fish and Wildlife Service, Partners for Fish and Wildlife Program, Wood River, NE
Raiwater Basin Join Venture, Grand Island, NE

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

Table of Contents

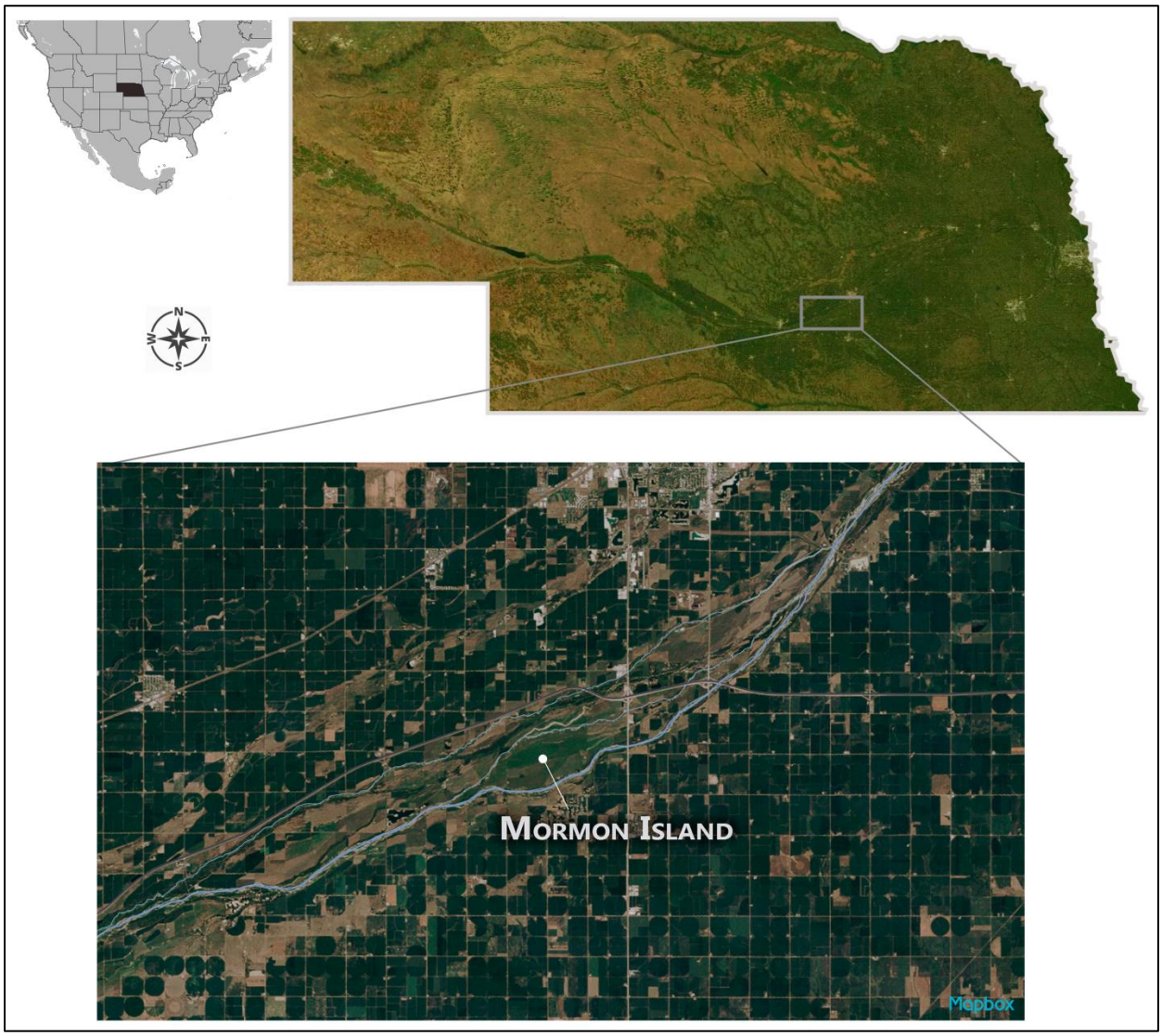
Introduction

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 (main complex 2,025 ha; 40.798306°N, -98.416298°W, NAD 1983; 597 m elev., Hall County; Figure 1). These plots consist of two parallel transects: the vegetation line, totaling 100m and the bird, small mammal, and butterfly species of concern line, totaling 200m. Due to the complex mosaic of soil types and management histories on the property the total number of monitoring sites totaled 62 as of 2018; new sites are added as additional

conservation properties are acquired. We have 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 also added anuran vocalization surveys in 2018. We added three new monitoring sites on our recently acquired Martin's Meadows property in 2017. We conducted additional long-term grassland songbird monitoring through the IBS's (Institute for Bird Populations) MAPS program (Monitoring Avian Productivity and Survivorship), which involved banding at four different sites throughout the breeding season (June-July), and conducted migration banding at two locations during the spring of 2018 (Federal Bird Banding Permit No. 23224, Station Permit: Platte River Whooping Crane Trust, Wood River, NE). Finally, we conducted aerial Sandhill Crane counts from mid-February to mid-April, continuing a study which began in 2002. In this report we summarize all species detections from research conducted in 2018. Aside from aerial Crane Surveys, which span the Central Platte River Valley, all detections are from a 13.5 km reach of the Platte River beginning 3 km west of Alda Rd. and continuing east to HWY 281 in Hall County, Nebraska. Previous reports included data from Buffalo County, at Dippel Island, which we have since sold to the Platte River Recover Implementation Program.

As of December 6th 2018 the Crane Trust field team performed 69 avian surveys across 62 monitoring sites, 36 small mammal surveys totaling 1800 trap nights (trap number x nights set), 31 vegetation surveys, 4 days of fish seining, 51 butterfly species of concern surveys, 1824 net hours of bird banding effort, nine aerial Sandhill Crane surveys, and a total of 72 anuran call surveys. Below is a summary of the species detections from and general methods for surveys.

Figure 1. Map of Mormon Island, Hall County Nebraska, the largest site owned and managed by the Crane Trust since 1978. Also depicting the Big 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.

Small Mammal Monitoring

We used Sherman Box Traps baited with a seed mixture of sterilized (autoclaved) oats, sunflower seeds, and cracked corn. For general methods see Newsome (2015). 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 were also recorded when possible. Measurements such as weight and length were not recorded unless necessary for identification. Our trapping began in early August and ended in late September. Total survey trap effort concluded at 1800 trap nights (trap number per site (50)*sites trapped (12)*trap nights per site (3)).

No individual was killed for collection; however, individuals that died in trap were taken as samples to be submitted to teaching or scientific collections (UNL). This year trap death was 2.9% of animals trapped, representing a slight decrease from 2016 (3.3%) and 2017 (3.5%). Trap mortality totaled 5 individuals of 170 caught (Table 1). The majority of deaths were Soricomorpha, which are prone to trap death from starvation due to high metabolism. Of all Soricomorpha captured roughly one-fifth (18.8%) died in the trap, which is significantly lower than found in the literature (Do et al. 2013). This number is lower than in 2015 (24%), 2016 (28%), or 2017 (33%). Perhaps late growing season moisture contributed to the slightly reduced in-trap mortality rate for shrew species as they were in good physical condition. The number of Meadow Voles nearly doubled from 2017 (61 vs 31), whereas Meadow Jumping Mouse numbers declined markedly (2 vs. 40) given all the same trap locations, trapping effort, and similar survey periods.

Methods:

Do, R., Shonfield, J., and 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.

Newsome, S. 2015. Small Mammal Mark-Recapture Population Dynamics at Core Research Sites at the Sevilleta National Wildlife Refuge, New Mexico (1989-present). Sevilleta LTER: Long Term Ecological Research, University of New Mexico, Albuquerque, NM, USA.

Table 1. Small Mammals Detected at the Crane Trust 2018

Scientific Name	Common Name	Number	Mortality
Blarina brevicauda	Northern Short-tailed Shrew	16	3
Microtus ochrogaster	Prairie Vole	29	0
Microtus pennsylvannicus	Meadow Vole	61	2
Peromyscus leucophagus	White-footed Mouse	29	0
Peromyscus maniculatus	Deer Mouse	14	0
Reithrodontomys megalotis	Western Harvest Mouse	3	0
Reithrodonotmys monatnus	Plains Harvest Mouse	14	0
Sorex spp. (*cinereus* or *haydeni*)	Masked Shrew or Prairie Shrew	0	0
Zapus hudsonius	Meadow Jumping Mouse	2	0
Total		**170**	**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 detection 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. Common names are consistent with AOU standards. We also participate in the MAPS program, 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.

Surveys were conducted at 62 sites across Crane Trust properties in 2018 thus far totaling (as of 12/06/2018) 69 surveys and 159 species detected (including incidental sightings during this time). Total counts of each species, added across both mist netting and long-term monitoring survey efforts, are presented in Table 2. Bird species that were banded in 2018 are marked with an asterisk (Federal Bird Banding Permit No. 23224). No accidental mortalities occurred during banding efforts in 2018 and no individuals were intentionally collected for research efforts. We banded 263 individual birds of 32 species.

We detected several priority species for the US FWS Mountain-Prairie Region (6). Bald Eagles were common and detected throughout the year, including 2 nesting locations on Crane Trust properties. A Golden Eagle was detected in early April. The largest Sandhill Crane roost observed this year was 58,000 individuals just west of Alda road between the Crane Trust's Alda Farms property and the Platte River Recovery Implementation Program's Binfield property. We detected 2 Sprague's Pipits, 23 Henslow's Sparrows, 62 Upland Sandpipers, and 174 Grasshopper Sparrows during 2018. It is important to note these are indices of abundance and not bird censuses.

Methods:
Gregory R.D., D.W. Gibbons, and P.F. Donald. 2004. Bird census and survey techniques. Pages 17-55 in W. J. Sutherland, I. Newton, and R. E. Green, editors. Bird Ecology and Conservation: A Handbook of Techniques. Oxford University Press, Oxford, United Kingdom.

Table 2. Avian Detections and Abundance at the Crane Trust 2018:

Common names, scientific names, alpha codes, and total counts for each species detected on Crane Trust long-term monitoring surveys. Data from transect, point count, and mist netting surveys (indicated by *) in the calendar year 2018 are included. Aerial Sandhill Crane survey data is presented separately.

Common Name	***Species Name***	**Alpha Code**	**Count**
American Avocet	*Recurvirostra americana*	AMAV	10
American Bittern	*Botaurus lentiginosus*	AMBI	1
American Coot	*Fulica americana*	AMCO	152
American Crow	*Corvus brachyrhynchos*	AMCR	42
American Goldfinch	*Spinus tristis*	AMGO	451*
American Kestrel	*Falco sparverius*	AMKE	14
American Robin	*Turdus migratorius*	AMRO	218

American Wigeon	*Mareca americana*	AMWI	709
American Tree Sparrow	*Spizelloides arborea*	ATSP	17
American White Pelican	*Pelecanus erythrorhynchos*	AWPE	429
Bald Eagle	*Haliaeetus leucocephalus*	BAEA	57
Bank Swallow	*Riparia riparia*	BANS	21
Baltimore Oriole	*Icterus galbula*	BAOR	32*
Barn Swallow	*Hirundo rustica*	BARS	82*
Baird's Sandpiper	*Calidris bairdii*	BASA	9
Black-capped Chickadee	*Poecile atricapillus*	BCCH	10*
Black-crowned Night-Heron	*Nycticorax nycticorax*	BCNH	1
Belted Kingfisher	*Megaceryle alcyon*	BEKI	6
Bell's Vireo	*Vireo bellii*	BEVI	40
Brown-headed Cowbird	*Molothrus ater*	BHCO	819
Blue Jay	*Cyanocitta cristata*	BLJA	110
Blackpoll Warbler	*Setophaga striata*	BLPW	6
Black Tern	*Chlidonias niger*	BLTE	15
Black-necked Stilt	*Himantopus mexicanus*	BNST	1
Bobolink	*Dolichonyx oryzivorus*	BOBO	387*
Brown Thrasher	*Toxostoma rufum*	BRTH	19*
Bufflehead	*Bucephala albeola*	BUFF	19
Blue-winged Teal	*Spatula discors*	BWTE	141
Cackling Goose	*Branta hutchinsii*	CACG	22
Canada Goose	*Branta canadensis*	CANG	2278
Clay-colored Sparrow	*Spizella pallida*	CCSP	66
Chipping Sparrow	*Spizella passerina*	CHSP	15
Cliff Swallow	*Petrochelidon pyrrhonota*	CLSW	206*
Common Goldeneye	*Bucephala clangula*	COGO	7
Common Grackle	*Quiscalus quiscula*	COGR	6
Cooper's Hawk	*Accipiter cooperii*	COHA	3
Common Merganser	*Mergus merganser*	COME	28
Common Yellowthroat	*Geothlypis trichas*	COYE	192
Double-crested Cormorant	*Phalacrocorax auritus*	DCCO	75
Dark-eyed Junco	*Junco hyemalis*	DEJU	2
Dickcissel	*Spiza americana*	DICK	712*
Downy Woodpecker	*Picoides pubescens*	DOWO	25*
Eastern Bluebird	*Sialia sialis*	EABL	20
Eared Grebe	*Podiceps nigricollis*	EAGR	1
Eastern Kingbird	*Tyrannus tyrannus*	EAKI	99*
Eastern Meadowlark	*Sturnella magna*	EAME	54*
Eastern Phoebe	*Sayornis phoebe*	EAPH	5
Eastern Towhee	*Pipilo erythrophthalmus*	EATO	1

Eastern Wood-Pewee	*Contopus virens*	EAWP	3
Eurasian Collared-Dove	*Streptopelia decaocto*	EUCD	5
European Starling	*Sturnus vulgaris*	EUST	7753
Field Sparrow	*Spizella pusilla*	FISP	65*
Forster's Tern	*Sterna forsteri*	FOTE	24
Franklin's Gull	*Leucophaeus pipixcan*	FRGU	227
Gadwall	*Mareca strepera*	GADW	9
Great Blue Heron	*Ardea herodias*	GBHE	31
Great Crested Flycatcher	*Myiarchus crinitus*	GCFL	4
Gray-cheeked Thrush	*Catharus minimus*	GCTH	2*
Great Horned Owl	*Bubo virginianus*	GHOW	5
Golden Eagle	*Aquila chrysaetos*	GOEA	1
Gray Catbird	*Dumetella carolinensis*	GRCA	42*
Great Egret	*Ardea alba*	GREG	17
Green Heron	*Butorides virescens*	GRHE	4
Greater Prairie-chicken	*Tympanuchus cupido*	GRPC	132
Greater Scaup	*Aythya marila*	GRSC	50
Grasshopper Sparrow	*Ammodramus savannarum*	GRSP	228*
Greater Yellowlegs	*Tringa melanoleuca*	GRYE	49
Great-tailed Grackle	*Quiscalus mexicanus*	GTGR	16
Greater White-fronted Goose	*Anser albifrons*	GWFG	100
Green-winged Teal	*Spatula crecca*	GWTE	543
Harris's Sparrow	*Zonotrichia querula*	HASP	15
Hairy Woodpecker	*Picoides villosus*	HAWO	3
Henslow's Sparrow	*Ammodramus henslowii*	HESP	46
Hermit Thrush	*Catharus guttatus*	HETH	1
House Finch	*Haemorhous mexicanus*	HOFI	2
Horned Lark	*Eremophila alpestris*	HOLA	158
House Wren	*Troglodytes aedon*	HOWR	164*
Killdeer	*Charadrius vociferus*	KILL	187
Lapland Longspur	*Calcarius lapponicus*	LALO	1
Lark Sparrow	*Chondestes grammacus*	LASP	2
Long-billed Dowitcher	*Limnodromus scolopaceus*	LBDO	5
LeConte's Sparrow	*Ammodramus leconteii*	LCSP	7
Least Flycatcher	*Empidonax minimus*	LEFL	2*
Lesser Scaup	*Aythya affinis*	LESC	8
Lesser Yellowlegs	*Tringa flavipes*	LEYE	8
Lincoln's Sparrow	*Melospiza lincolnii*	LISP	17*
Mallard	*Anas platyrhynchos*	MALL	897
Marsh Wren	*Cistothorus palustris*	MAWR	1
Mourning Dove	*Zenaida macroura*	MODO	118

Nashville Warbler	*Oreothlypis ruficapilla*	NAWA	1
Northern Bobwhite	*Colinus virginianus*	NOBO	157
Northern Cardinal	*Cardinalis cardinalis*	NOCA	50*
Northern Flicker	*Colaptes auratus*	NOFL	69
Northern Harrier	*Circus hudsonius*	NOHA	61
Northern Pintail	*Anas acuta*	NOPI	1819
Northern Waterthrush	*Parkesia noveboracensis*	NOWA	1*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	NRWS	27
Northern Shoveler	*Spatula clypeata*	NSHO	12
Northern Shrike	*Lanius borealis*	NSHR	1
Orange-crowned Warbler	*Oreothlypis celata*	OCWA	4
Orchard Oriole	*Icterus spurius*	OROR	60*
Osprey	*Pandion haliaetus*	OSPR	1
Ovenbird	*Seiurus aurocapilla*	OVEN	5
Pied-billed Grebe	*Podilymbus podiceps*	PBGR	9
Pectoral Sandpiper	*Calidris melanotos*	PESA	1
Piping Plover	*Charadrius melodus*	PIPL	15
Prairie Falcon	*Falco mexicanus*	PRFA	1
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	RBGR	14*
Ring-billed Gull	*Larus delawarensis*	RBGU	25
Red-bellied woodpecker	*Melanerpes carolinus*	RBWO	8
Ruby-crowned Kinglet	*Regulus calendula*	RCKI	12
Redhead	*Aythya americana*	REDH	32
Redish Egret	*Egretta rufescens*	REEG	1
Red-eyed Vireo	*Vireo olivaceus*	REVI	1
Red-headed Woodpecker	*Melanerpes erythrocephalus*	RHWO	41
Rough-legged Hawk	*Buteo lagopus*	RLHA	24
Ring-necked Duck	*Aythya collaris*	RNDU	96
Ring-necked Pheasant	*Phasianus colchicus*	RNEP	96
Rock Pigeon	*Columba livia*	ROPI	5
Red-tailed Hawk	*Buteo jamaicensis*	RTHA	35
Ruddy Duck	*Oxyura jamaicensis*	RUDU	44
Red-winged Blackbird	*Agelaius phoeniceus*	RWBL	10607
Sandhill Crane	*Antigone canadensis*	SACR	124091
Sanderling	*Calidris alba*	SAND	6
Savannah Sparrow	*Passerculus sandwichensis*	SAVS	31
Short-billed Dowitcher	*Limnodromus griseus*	SBDO	7
Semipalmated Plover	*Charadrius semipalmatus*	SEPL	6
Semipalmated Sandpiper	*Calidris pusilla*	SESA	9
Sedge Wren	*Cistothorus platensis*	SEWR	60
Snow Goose	*Anser caerulescens*	SNGO	10143

Sora	*Porzana carolina*	SORA	2
Song Sparrow	*Melospiza melodia*	SOSP	141*
Sprague's Pipit	*Anthus spragueii*	SPPI	2
Spotted Sandpiper	*Actitis macularius*	SPSA	9
Spotted Towhee	*Pipilo maculatus*	SPTO	29
Swainson's Hawk	*Buteo swainsoni*	SWHA	1
Swamp Sparrow	*Melospiza georgiana*	SWSP	5
Swainson's Thrush	*Catharus ustulatus*	SWTH	9*
Tree Swallow	*Tachycineta bicolor*	TRES	32
Turkey Vulture	*Cathartes aura*	TUVU	10
Upland Sandpiper	*Bartramia longicauda*	UPSA	62
Vesper Sparrow	*Pooecetes gramineus*	VESP	8
Warbling Vireo	*Vireo gilvus*	WAVI	22*
White-breasted Nuthatch	*Sitta carolinensis*	WBNU	35
Western Meadowlark	*Sturnella neglecta*	WEME	611*
Western Sandpiper	*Calidris mauri*	WESA	6
White-faced Ibis	*Plegadis chihi*	WFIB	107
Whooping Crane	*Grus americana*	WHCR	2
Willow Flycatcher	*Empidonax traillii*	WIFL	6
Willet	*Tringa semipalmata*	WILL	1
Wilson's Phalarope	*Phalaropus tricolor*	WIPH	14
Wilson's Snipe	*Gallinago delicata*	WISN	15
Wild Turkey	*Meleagris gallopavo*	WITU	90
Wood Duck	*Aix sponsa*	WODU	4
White-rumped Sandpiper	*Calidris fuscicollis*	WRSA	15
White-throated Sparrow	*Zonotrichia albicollis*	WTSP	1
Yellow Warbler	*Setophaga petechia*	YEWA	155*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	YHBL	114
Yellow-rumped Warbler	*Setophaga coronata*	YRWA	30*
Total			167,813

Slough Fish Monitoring

Each survey consisted of seven to eight runs totaling ~150m of the slough. Using a seine 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 on two occasions each. The invasive Western Mosquitofish accounted for approximately 46% of all individuals captured, a significant decline from 2017 (84%). By contrast, the Plains Topminnow, a species of concern in Nebraska, accounted for only 1.9% of captures, a very similar figure to 2017 (1.8%). These numbers signal a cause for concern as the sloughs at the Crane Trust are considered prime Plains Topminnow habitat. We did catch a record

number of both Black Bullheads and Brassy Minnows (Table 3), which accounted for 19% and 17% of our sample respectively.

Methods:
Onorato, D.P., R.A. Angus, and K.R. Marion. 1998. Comparison of a small-mesh seine and a backpack electroshocker for evaluating fish populations in a North-Central Alabama stream. North American Journal of Fisheries Management 18: 361-373.

Table 3. Fish Detected at the Crane Trust 2018

Species Name	Common Name	Number Detected
Notropis dorsalis	Bigmouth Shiner	30
Ameiurus melas	Black Bullhead	477
Hybognathus hankinsoni	Brassy Minnow	433
Culaea inconstans	Brook Stickleback	352
Semotilus atromaculatus	Creek Chub	14
Etheostoma nigrum	Johnny Darter	5
Lepomis cyanellus	Green Sunfish	21
Gambusia affinis	Western Mosquitofish	1157
Fundulus sciadicus	Plains Topminnow	48
Lepomis macrochirus	Bluegill	1
Total		2538

Vegetation Monitoring

We targeted plants in excellent condition, in fruit or flower (ideally both), to fill in 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 64 plant specimens from across Crane Trust properties in 2018 (Table 4). Collections were made across the properties of the Crane Trust by J. Wiese, A. Caven, and H. English. Identification was done by A. Caven and J. Wiese. County records were verified by Dr. Robert Kaul of the University of Nebraska-Lincoln Herbarium.

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. A notable find in 2018 was Sensitive Fern (*Onoclea sensibilis*), which represents a new record for Mormon Island as well as Hall County, Nebraska. It has been extirpated throughout most of the state with the exception of low meadows in the Loup or Elkhorn River systems. This represents a rare detection along the Platte River in recent years.

Methods:
Symstad, A.J., C.L. Wienk, and A.D. Thorstenson. 2008. Precision, Repeatability, and Efficiency of Two Canopy-Cover Estimate Methods in Northern Great Plains Vegetation. Rangeland Ecology and Management 61: 419-429.

Table 4. Plant Specimens Collected for the Crane Trust Herbarium 2018

Family	Species	Common Name	No. Collected
Alismataceae	*Sagittaria calycina*	Hooded arrowhead	1
Apiaceae	*Daucus carota* L.	Queen Anne's Lace	1
Apiaceae	*Sanicula canadensis*	Canadian blacksnakeroot	1
Apiaceae	*Sium suave*	Water parsnip	1
Asclepiadaceae	*Asclepias viridiflora*	Green comet milkweed	1
Asteraceae	*Antennaria neglecta*	Field pussytoes	1
Asteraceae	*Aster nova-angliae*	New England aster	1
Asteraceae	*Brickellia eupatorioides*	False boneset	1
Asteraceae	*Brickellia eupatorioides* (L.) Shinners	False boneset	1
Asteraceae	*Cirsium flodmanii* (Rydb.) Arthur	Flodman's thistle	1
Asteraceae	*Erigeron strigosis* Muhl. ex Willd.	Prairie fleabane	1
Asteraceae	*Eupatorium perfoliatum* L.	Common boneset	1
Asteraceae	*Heterotheca latifolia* Buckley	Camphorweed	1
Asteraceae	*Liatris lancifolia* (Greene) Kittell	Lanceleaf blazing star	1
Brassicaceae	*Capsella bursa-pastoris*	Shepherd's purse	1
Brassicaceae	*Chorispora tenella*	Blue lettuce/crossflower	1
Brassicaceae	*Rorippa curvipes var. truncata*	Bluntleaf yellowcress	1
Campanulaceae	*Campanula arapinoides* Pursh	Marsh bellfower	1
Campanulaceae	*Lobelia siphilitica* L.	Great blue lobelia	1
Campanulaceae	*Triodanis perfoliata*	Venus looking-glass	1
Caryophyllaceae	*Cerastium brachypodum*	Shortstalk chickweed	1
Cucurbitaceae	*Echinocystis lobata* (Michx.) Torr. & A. Gray	Wild cucumber	1
Cyperaceae	*Carex emoryi*	Emory's sedge	1
Cyperaceae	*Carex scoparia*	Broom sedge	1
Cyperaceae	*Carex tetanica*	Rigid sedge	1
Cyperaceae	*Carex vulpinoidea* Michx.	Fox sedge	1
Cyperaceae	*Cyperus esculentus* L.	Yellow nutsedge	1
Cyperaceae	*Fimbristylis puberula* (Michx.) Vahl	Hairy fimbry	1
Cyperaceae	*Fimbristylis puberula* (Michx.) Vahl	Hairy fimbry	1
Cyperaceae	*Fuirena simplex*	Western umbrella sedge	1
Dryopteridaceae	*Onoclea sensibilis* L.	Sensitive fern	2
Euphorbiaceae	*Euphorbia davidii* Subils	David's spurge	1
Fabaceae	*Astragalus canadensis* L.	Canadian milkvetch	1
Fabaceae	*Desmodium canadense* (L.) DC.	Showy ticktrefoil	1
Fabaceae	*Oxytropis lambertii*	Purple locoweed	1
Fabaceae	*Pediomelum argophyllum* (Pursh) J. *Grimes*	Silverleaf scurfpea/Indian breadroot	1
Fabaceae	*Trifolium hybridum*	Alsike clover	1
Fumariaceae	*Corydalis micrantha*	Smallflower fumewort	1

Grossulariaceae	*Ribes missouriense Nutt.*	Missouri gooseberry	1
Juncaceae	*Juncus dudleyi Wiegand*	Dudley's rush	1
Lamiaceae	*Lamium amplexicaule*	Henbit deadnettle	2
Lamiaceae	*Scutellaria lateriflora* L.	Blue skullcap	1
Lythraceae	*Rotala ramosior*	Lowland rotala	1
Lythraceae	*Rotala ramosior* (L.) Koehne	Lowland rotala/toothcup	1
Moraceae	*Morus alba*	White mulberry	1
Onagraceae	*Oenothera speciosa*	Pinkladies	1
Orchidaceae	*Spiranthes magnicamporum*	Great Plains Ladies' Tresses Orchid	1
Poaceae	*Aristida oligantha*	Prairie threeawn	1
Poaceae	*Calamagrostis stricta* (Timm) Koeler	Slimstem reedgrass	1
Poaceae	*Eragrostis pectinacea*	Tufted/Carolina lovegrass	1
Poaceae	*Eragrostis trichodes*	Sand lovegrass	1
Poaceae	*Phleum pratense*	Timothy	1
Ranunculaceae	*Anemone canadensis*	Canada windflower	1
Ranunculaceae	*Anemone caroliniana*	Carolina anemone	2
Ranunculaceae	*Ranunculus cymbalaria*	Shore/alkali buttercup	1
Rosaceae	*Prunus americana*	Wild plum	1
Rosaceae	*Prunus virginiana*	Chokecherry	1
Rubiaceae	*Galium tinctorium* (L.) Scop.	Stiff marsh bedstraw	1
Rutaceae	*Zanthoxylum americanum*	Common pricklyash	1
Scrophulariaceae	*Agalinis tenuifolia* (Vahl) Raf.	Slenderleaf false foxglove	1
Scrophulariaceae	*Penstemon digitalis*	Foxglove beardtongue	1
Solanaceae	*Physalis longifolia* Nutt.	Longleaf groundcherry	1
Ulmaceae	*Ulmus americana*	American elm	1
Verbenaceae	*Phyla cuneifolia* (Torr.) Greene	Wedgeleaf	3

Butterfly Species of Concern Monitoring

We counted butterflies using linear walking transects. Surveys were conducted by two research personnel; the observer spots butterfly species of concern, while the recorder utilizes a GPS and a compass to navigate the monitoring transect, record data, and aid in the detection of butterflies. We count "butterflies observed ahead and to the sides to the limit at which a species can be identified with binoculars" (Swengel 1996). Detections are recorded as within 10 meters of the transect or outside of this area. Only Regal Fritillaries within 10 m of the transect line were sexed. The male has a lower line of orange spots on the hind wing, while females have two lines of white spots. Monarchs were not sexed since male and female morphological differences are slight, and accuracy may be compromised. Monarchs and Regals were incidentally recorded on the walk to and from biological monitoring plots utilizing GPS as well. All sightings within 200 meters of the start of a monitoring transect and their corresponding GPS locations were included as incidental detections. Surveys lasted 15 minutes and were

only conducted during favorable weather conditions (sunny, wind under 10mph) between the late morning (10:00am) and the midafternoon (4:00pm). All plots were visited at least three times during the Regals' active time period, from June 15th to September 15th, and at least once during peak Regal activity, from June 15th to August 1st, based on the timing of Regal activity demonstrated from previous work conducted in the region.

Methods:

Caven, A. J., King, K. C., Wiese, J. D., and Buckley, E. M. B. 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.

Swengel, A.B. 1996. Effects of fire and hay management on abundance of prairie butterflies. Biological Conservation 76(1): 73-85.

Table 5. Butterfly Detections 2018

Common Name	Abundance
Monarch	100
Regal Fritillary	88

Herpetofauna Research

In 2018 we began an anuran monitoring program estimating general abundance and species presence or absence based on vocalization activity following the methods of USGS (2012). Abundance is broken up into 3 differentiable categories (Weir and Mossman 2005; USGS 2012):

Table 6. Amphibian Calling Index

1	Individuals can be counted; there is space between calls
2	Calls of individuals can be distinguished but there is some overlapping of calls
3	Full chorus, calls are constant, continuous and overlapping

Surveys were conducted as early as 30 minutes after official sunset in humid and low wind (<15 mph) conditions, with early spring temperatures above 42° F (March-15 to May-15) and late spring-summer temperatures above 50° F (May-15 forward) (Weir and Mossman 2005; USGS 2012). Surveys lasted 5 minutes per site and were conducted at least 2-4 times per survey season at each site, with 1-2 surveys conducted in the early spring period and 1-2 surveys conducted in the late spring-summer period at each site (USGS 2012). A recording device was brought to each site to record novel calls and to provide evidence for species not previously detected on the Crane Trust properties. Novel calls were investigated physically following timed survey periods at a set location. Playback was also used to look for rare species following the official survey, but not during.

We detected six species of anurans including two rare ones to this area: the Plains Spadefoot Toad and the Cope's Grey Treefrog. Several recent public reports and range extensions (pers. comm. K. Geluso) suggest that Cope's Grey Treefrogs have significantly expanded their range along the Platte River in recent years. Boreal Chorus Frogs had both the highest mean calling index and were present at the highest number of monitoring sites.

Table 7. Mean anuran species abundance index and percent of plots present during surveys conducted in 2018.

Common Name	Scientific Name	Call Index	% Plots
Plains Leopard Frog	Lithobates blairi	1.30	58
Boreal Chorus Frog	Pseudacris maculata	2.69	100
Woodhouse's Toad	Anaxyrus woodhousii	1.48	83
Bullfrog	Lithobates catesbeianus	1.04	67
Cope's Gray Treefrog	Hyla chrysoscelis	1.00	25
Plains Spadefoot Toad	Spea bombifrons	1.00	8

Methods:
US Geological Survey, Patuxent Wildlife Research Center. 2012. North American Amphibian Monitoring Program: Protocol Description. US Department of Interior. Retrieved @ https://www.pwrc.usgs.gov/naamp/index.cfm?fuseaction=app.protocol

Weir, L. A. and M. J. Mossman. 2005. North American amphibian monitoring program (NAAMP). United States Geological Survey. Retrieved @ https://pubs.er.usgs.gov/publication/5211291

Sandhill Crane Aerial Surveys

We counted a total of 2,086,313 Sandhill Cranes in the Central Platte River Valley (Chapman to Overton, NE) across 9 weeks of surveys in 2018. Relative error estimates per survey ranged from -33.3 to +10.7% comparing ocular to photo counts (mean= -9.0). Our counts accurately capture 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 not counted or were counted at a reduced rate. Therefore, our numbers represent a systematic underestimation. Our highest uncorrected counts were of roughly 504,000 and 464,000 on March 22nd and March 28th respectively. Corrected, both counts exceeded 500,000 Sandhill Cranes. The peak bias-correct index was 598,000 on March 22nd. The high total count for the year suggests that cranes stayed for an extended duration in the Platte River Valley in 2018 and were counted multiple times across survey weeks.

Methods:
Buckley, T. J. 2011. Habitat Use and Abundance Patterns of Sandhill Cranes in the Central Platte River Valley, Nebraska, 2003–2010. Dissertations and Theses in Natural Resources, University of Nebraska-Lincoln, Lincoln, NE. 135 pp.

Table 7. Sandhill Crane Count by Survey Week 2018

Survey Date	SACR Count	Bias Corrected
2/14/2018	2000	2666
2/21/2018	8790	9080
2/26/2018	31578	28209
3/7/2018	278540	284111

3/12/2018	326036	318429
3/22/2018	503945	5981835
3/28/2018	463868	500050
4/5/2018	245786	302317
4/9/2018	225770	238187

Conclusion

Continued implementation of a long-term biological monitoring program will help us more critically assess the impacts of our management actions to better understand their impacts upon Whooping Cranes, Sandhill Cranes, and the other bird species that pass through and breed in the Big Bend region of the Platte River in Nebraska. In 2018 we conducted 69 avian surveys across 62 monitoring sites and 1824 net hours of bird banding to detect 167,813 individuals of 159 avian species. We conduct 1800 trap nights to detect 170 individuals and eight species of small mammals. We conducted 31 vegetation surveys and collected and pressed 64 vascular plant specimens for our herbarium. We conducted 51 butterfly species of concern surveys and detected 100 Monarchs and 88 Regal Fritillaries. We conducted 72 anuran vocalization surveys and documented 6 species of anurans and their relative abundances at 12 sites. Finally, we conducted 32 fish seine pulls (~12 hours, 600 m of slough) and detected 2,538 individuals of 10 species of fish. 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. It is also of note that the US Fish and Wildlife Service and the Crane Trust's joint wildlife laboratory transferred a number of historic and recent specimens to the University of Nebraska-Lincoln's research collections, including 76 prepared bird skins (historic collection from across the country), 9 unprepared small mammals and 1 fish specimen (valuable salvage from our research efforts from 2016-2017), and 4 unprepared frozen birds (road kill collected by wildlife biologists affiliated with the Crane Trust or USFWS). A full list is presented in Appendix 2. 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.

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

1. **Sutton, M.O.,** and **N. Arcilla**. *In Press*. **New Breeding Record and Location for Wilson's Phalarope (*Phalaropus tricolor*) in the Nebraska Great Plains, USA.** The Prairie Naturalist.

2. Baasch, D.M., P.D. Farrell, **A.J. Caven, K.C. King,** J.M. Farnsworth, C.B. Smith. *In Press*. **Sandhill crane use of riverine roost sites along the central Platte River in Nebraska, USA.** Western North American Naturalist.

3. **Wiese, J. D., A. J. Caven**. 2018. **Dataset of the physical conditions of Green Ash (*Fraxinus pennsylvanica*) in riparian woodlands along the central Platte River**. Data in Brief, https://doi.org/10.1016/j.dib.2018.10.063

4. Brinley Buckley, E.M., **A.J. Caven**, B.L. Gottesman, M.J. Harner, B.C. Pijanowski and M.L. Forsberg. 2018. **Biological and Environmental Datasets from August 21, 2017 Total Solar Eclipse**. Data in Brief, https://doi.org/10.1016/j.dib.2018.10.008

5. **Caven, A.J., K.C. King, G.D. Wright, R.P. McLean**, and **N. Arcilla**. 2018. **Sustained early Interior Greater Prairie-chicken (*Tympanuchus cupido pinnatus*) lekking behavior following above average winter temperatures at lek in central Nebraska**. Kansas Ornithological Society Bulletin 69(3):36-47.

6. **King, K. C., A.J. Caven**, and K. Geluso. 2018. **Lekking Behavior of a Sharp-tailed Grouse in south-central Nebraska.** The Prairie Naturalist 50(1):39-41.

7. Brinley Buckley, E.M., **A.J. Caven**, B.L. Gottesman, M.J. Harner, B.C. Pijanowski, M.L. Forsberg. 2018. **Assessing biological and environmental effects of a total solar eclipse with passive multimodal technologies.** Ecological Indicators 95(1): 353-369.

8. **Caven, A.J., J.D. Wiese**, W.R. Wallauer, and K.J. Mosher. 2018. **First description of a Bald Eagle (*Haliaeetus leucocephalus*) actively depredating an adult Sandhill Crane (*Antigone canadensis*).** Western North American Naturalist 78(2): 216-220.

9. 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.

10. **Caven, A.J., J.D. Wiese**, and W.R. Wallauer. 2017. **Prairie Falcon depredation attempts on a Greater Prairie-chicken lek in south-central Nebraska**. The Prairie Naturalist 49(2):76-78

11. **Caven, A.J.,** and E.M. Brinley Buckley. 2017. **Greater Sandhill Crane (*Antigone canadensis tabida*) copulation detected along the Big Bend of the Platte River, South-central Nebraska**. The Nebraska Bird Review 85(2):83-84.

12. **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

13. **Caven, A.J., J. Salter,** and K. Geluso. 2017. ***Opheodrys vernalis* (*Liochlorophis vernalis*) (Smooth Greensnake). Fire mortality and phenology**. Herpetological Review 48(4):864-865.

14. Pearse, 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.

15. **Wiese, J.D. and A.J. Caven**. 2017. *Tropidoclonion lineatum* (Lined Snake), *Thamnophis sirtalis* (Common Gartersnake). Refugia and mortality. Herpetological Review 48(4):868-869.

16. **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(2-3):15-16.

17. **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.

18. **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.

19. **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.

20. **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.

21. **Harner, M.J., G.D. Wright**, and K. Geluso. 2015. **Overwintering Sandhill Cranes (*Grus canadensis*) in Nebraska, USA.** The Wilson Journal of Ornithology 127(3):457-466.

22. **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.

Appendix 2. Recent and Historic Collections Held at the Crane Trust-US FWS shared laboratory transferred to the University of Nebraska State Museum, Systematics Research Collections, W436 Nebraska Hall, Lincoln, NE 68588-0514, on 25 July 2018.

*Notes: Curator Thomas Labedz: tlabedz1@unl.edu. *Indicates collected as salvage under Master Permit No. 1059 (A. Caven). All bird names listed as 4-letter common name "alpha codes" https://www.birdpop.org/docs/misc/Alpha_codes_eng.pdf. Other species listed under scientific name.*

Date	Species	Specimen	Location	Contact
9/30/2016	Sorrex cinereus	Carcass	NWM5 meter 5	Kelsey King*
9/27/2016	Sorrex sp.	Carcass	NWM5 meter 135	Kelsey King*
10/13/2016	Sorrex sp.	Carcass	NWM4	Andy Caven*
8/30/2016	Sorrex sp.	Carcass	Middle Pasture meter 90	Kelsey King*
8/24/2017	Blarina sp.	Carcass	SEM3 meter 85	Kelsey King*
9/12/2017	Blarina sp.	Carcass	NWM5 meter 165	Kelsey King*
9/12/2017	Sorrex sp.	Carcass	NWM5 meter 75	Kelsey King*
8/17/2017	Zapus sp.	Carcass	R5 meter 170	Kelsey King*
11/7/2017	NOCA	Carcass-female	Hastings, NE @ Pleasant st. @ Hastings College	Nicole Arcilla
8/11/2017	Gambusia affinis	Carcass with back deformity	Cabin Pasture Slough	Andy Caven*
9/30/2016	Sorrex cinereus	Carcass	NWM5 meter100	Kelsey King*
Unknown	SORA	Carcass	No info	Unknown
10/5/2017	SORA	Carcass	Next to Bison pen	Tim Smith
1/11/2017	GHOW	Carcass	Hastings, NE @ Alda rd. and 92nd st.	Nicole Arcilla and Kelsey King
Unknown	NOCA-Female	Prepared (stuffed) specimen	Unknown	JT Climpson
Unknown	GRCA	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
Unknown	BHCO-Female	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	EAKI	Prepared (stuffed) specimen	Unknown	CS Wood
Unknown	RBGR-Female	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
Unknown	NOWA	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	BHCO-Male	Prepared (stuffed) specimen	Unknown	JT Climpson
Unknown	YBCH	Prepared (stuffed) specimen	Unknown	Unknown
17-Jul-80	GCFL	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
1-Oct-80	BTBW-Male	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
Unknown	DEJU	Prepared (stuffed) specimen	Unknown	JT Climpson

Unknown	TRSP	Prepared (stuffed) specimen	Unknown	JT Climpson
Unknown	VEER	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	DOWO-Female	Prepared (stuffed) specimen	Unknown	Unknown
16-Oct-76	COGR	Prepared (stuffed) specimen	Warren County, NJ, Hackettstown	F. Decker
15 Jan Year Unknown	WTSP	Prepared (stuffed) specimen	Unknown	JA Molnar
11/18/1974	GCKI	Prepared (stuffed) specimen	Unknown	Philip Conbell
Unknown	RBGR-Female	Prepared (stuffed) specimen	Unknown	JOMO
13-Oct-80	DEJU	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
Unknown	WTSP	Prepared (stuffed) specimen	Unknown	Unknown
19-Jun-81	GRCA	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
19-Sep-80	CEDW	Prepared (stuffed) specimen	Michigan	CS Wood
Unknown	BAOR	Prepared (stuffed) specimen	Unknown	JT Climpson
Unknown	PISI	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	BBCU	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	NOCA-Female	Prepared (stuffed) specimen	Unknown	CS Wood
25-May-81	RBGR-Female	Prepared (stuffed) specimen	Ocean County, NJ	D. Foy
2-Dec-80	EVGR	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	JT Climpson
Unknown	AMKE	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	NOMO	Prepared (stuffed) specimen	Sussex County, NJ, Wantage	CS Wood
Unknown	EUST	Prepared (stuffed) specimen	Unknown	Unknown
29-Jun-80	EUST	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	JA Molnar
Unknown	RWBL-Female	Prepared (stuffed) specimen	Unknown	Unknown
28-Sep-76	CHSP	Prepared (stuffed) specimen	Sussex County, NJ, Walpak	CS Wood
7-May-81	RWBL-Male	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
5-Nov-80	MYWA	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
Unknown	BHCO-Female	Prepared (stuffed) specimen	Unknown	Unknown
15-May-76	BAWW	Prepared (stuffed) specimen	Sussex County, NJ, Hainesville	D. Hughes

Unknown	BWWA	Prepared (stuffed) specimen	Unknown	Unknown
Jan-77	PUFI-Female	Prepared (stuffed) specimen	Sussex County, NJ	CS Wood
23-Oct-80	WTSP	Prepared (stuffed) specimen	Union County, NJ, Murray Hill	CS Wood
Unknown	CSWA	Prepared (stuffed) specimen	Unknown	Unknown
6/7/1974	GRCA	Prepared (stuffed) specimen	NJ	JA Molnar
Unknown	AMRO	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	DOWO-Male	Prepared (stuffed) specimen	Unknown	JT Climpson
Unknown	BLJA	Prepared (stuffed) specimen	Unknown	Unknown
25-Sep-80	AMRE-Female	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
28-Jul-80	EAPH	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
Unknown	BRTH	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	GCFL	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	PUFI-Male	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	PUFI-Female	Prepared (stuffed) specimen	Unknown	JT Climpson
2-May-80	COGR	Prepared (stuffed) specimen	Michigan, Washtenaw County	J Azerad
Unknown	VEER	Prepared (stuffed) specimen		Unknown
Unknown	BHCO-Male	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	OVEN	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	DEJU	Prepared (stuffed) specimen	Unknown	JA Molnar
17-Jul	WEWA	Prepared (stuffed) specimen	Sussex County, NJ	CS Wood
Unknown	OVEN	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	DOWO	Prepared (stuffed) specimen	Unknown	Unknown
Sep-75	LEFL	Prepared (stuffed) specimen	Morris County, NJ, Chatham	Joe Hubrance
Unknown	RBGU	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	BAOR	Prepared (stuffed) specimen	Unknown	Unknown
30-Oct-80	WODU-Female	Prepared (stuffed) specimen	Sussex County, NJ, Sandystorm TWP	CS Wood
18-Aug-76	PBGR	Prepared (stuffed) specimen	Ocean County, NJ	CS Wood

Unknown	AMCR	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	YBFL	Prepared (stuffed) specimen	Unknown	Unknown
30-Sep-80	BEVI	Prepared (stuffed) specimen	Sussex County, NJ	CS Wood
Unknown	EUST	Prepared (stuffed) specimen	Unknown	Unknown
10-15-unknown year	HOSP-Male	Prepared (stuffed) specimen	Unknown	CMK
Unknown	WOTH	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	NOFL-Male	Prepared (stuffed) specimen	Unknown	Unknown
14-Jul-80	NOFL-Male	Prepared (stuffed) specimen	Michigan, Washtenaw County, Ann Arbor	CS Wood
Unknown	BHCO-Female	Prepared (stuffed) specimen	Unknown	Unknown
Unknown	RNPH-Female	Prepared (stuffed) specimen		Unknown
Unknown	NOBO	Prepared (stuffed) specimen		Unknown
Mar-18	HOLA	frozen	Hastings, NE	Nicole Arcilla
Apr-18	HOLA	frozen	Hastings, NE	Nicole Arcilla