2017 Annual Report

Richardson Wildlife Foundation

Richardson Wildlife Foundation (RWF), located in Lee County in north central Illinois, is a not-for-profit corporation dedicated to the long-term restoration of habitats and the judicious use of our natural resources. The Foundation was established in 1989 by Edward J. Richardson with an initial land donation of 250 acres and three primary goals of *Habitat Restoration, Conservation Education, and Research*. This area is recognized as part of the Grand Prairie Division of Illinois and was part of the historic, 30,000 acre Inlet Swamp and adjacent bluff lands. The Richardson family has been the sole source of funding as the Foundation has expanded to 1,976 acres through land donations from the Richardsons and the purchase of adjacent farms.

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OFFICERS

Edward J. Richardson....President
J. Brian Towey....Vice President
Scott Hodes....Secretary/Treasurer

STAFF

J. Brian Towey....General Manager
Justin Pitzer....Ecologist
Brad Kleckner....Site Maintenance
Matt Englehart....Equipment Operator/Mechanic
Amanda Contreras....Summer & Fall Intern

FRONT COVER PHOTOS

From left to right:
Spring planting bare root trees,
Prescribed prairie burn,
Protecting trees with wire basket,
Interseeding additional species into prairie habitat

Hand-harvesting Purple Prairie Clover

SEED COLLECTION

Achieving diverse restorations on a large scale in our habitat development projects is significantly more efficient and cost effective using seed than by other methods. For that reason, collection of prairie, wetland, and woodland forb and grass seed is critical to our ability to restore and improve the habitat offered on site. To maximize the diversity of our plantings for the benefit of wildlife and habitat functionality, we try to collect as many desirable native species as possible. Forb seed collection requires considerable time due to variation in seed maturation dates, the labor-intensive method of hand-harvesting, and the number of species and amounts we target. Many species are difficult to collect in quantity due to the spotty distribution of plants or because seed production from individual plants is low. Hand collecting and cleaning forb seed, although time-consuming, is considerably less expensive than purchasing an equivalent amount of seed from a commercial source. An additional benefit to collecting seed on site is that using seed of our local ecotype helps to maintain the genetic integrity in our plantings and increases the conservation value of our restorations.

By hand collection, we gathered 944 pounds of seed of 244 species of native prairie, wetland, and woodland plants this year. This represents the highest number of species we have collected to date. As we continue to focus on woodland habitat development, our collection of woodland wildflower seed continues to increase in amount and diversity. This is in part due to willing landowners from whom we have gratefully obtained permission to collect and/or transplant desirable, native, woodland species from several nearby, offsite, wooded locations, as well as from the excellent oak savanna on the Richardson property in LaFox. Additionally, we were granted permission to collect certain prairie and wetland species that we do not have on site at the Nature Conservancy's Nachusa Grasslands site. Using a modified combine, we harvested 264 lbs of Little Bluestem and 18 lbs of Sideoats-Grama. Harvest of both of these species was more limited than we would prefer due to a shortage of areas that were not dominated by tallgrass and unusually poor seed production in areas which had not been burned in the spring. Many of the areas that were once rich with Little Bluestem are shifting to a more tallgrass dominant prairie as a result of several wet growing seasons in a row. To supplement our collection, we will trade seed of some of our hand-collected forb species to native plant nurseries and other restoration agencies in exchange for species that are native to this area but are currently rare or absent from this site.

Combining native grasses

Shooting Star, *Dodecatheon meadia*

PRAIRIES

Prairie habitat represents a higher proportion of the Foundation property than any other habitat type, most of it having been restored on former agricultural ground. We conduct prescribed and controlled burns, generally on a 3-year rotation for established prairies and more frequently for new plantings and those with invading, undesirable woody species. This rotational approach leaves some areas unburned, protecting fire-sensitive species, providing additional, early nesting cover for wildlife, and allowing for the greatest potential for species diversity. We had a successful 2017 burn season during which we burned 37 units totaling 302 acres from March 6th through March 24th. We were also able to get a jump on next year's prescribed burn plan by conducting several fall burns in December totaling 18 acres. All units were burned safely using a 4-person crew equipped with water sprayers, drip torches, and two-way radios. As a safety precaution for burning, and to allow for access to the property, 47.3 miles of firebreaks and trails were maintained via mowing during the growing season.

This year, we restored ten areas to prairie (table below) and interseeded a diverse mix of native plants into other existing grasslands. Site preparation differed between plantings, depending upon previous land conditions. Most of the areas restored required no additional preparations, as they had been actively farmed with row crops in the previous year and were therefore a blank slate for winter seeding. The sedge meadows restored on 2.6 acres of the Burkardt tract and 0.7 acres of the Erbes tract were prepared for planting by treating with Glyphosate twice during the growing season, as these areas were in old-field condition dominated by Reed Canarygrass. We interseeded 96 species of forb, shrub, and grass seed into the 1.3 acre waterway east of the house on the Montavon tract and 49 species of forb and shrub seed, as well as cleanings leftover from processing harvested tallgrass, into a 10-acre patch of existing cool season grasses south of the barns on the Wysneinski South tract. We conducted all prairie restorations and interseeding by frost seeding over snow cover in January and February. A majority of the grasses were planted using the Truax prairie seed drill. Forbs and some grasses were spread by hand or by using a leaf blower from the bed of a pickup truck. For specific locations of 2017 prairie restorations and interseeding, see the habitat map in the back of this report (Appendix 1).

Land Tract	Acreage	Grass spp*	Grass Seed/Acre	Forb Seed/Acre
Montavon	1.6	LB, SG	8 lb/ac	81 spp; 35 lb/ac
Bernardin	0.25	LB, SG	5.5 lb/ac	67 spp; 44 lb/ac
Burkardt	1.0	LB, SG	7 lb/ac	74 spp; 38 lb/ac
Wysneinski N.	2.75	LB, SG	8 lb/ac	79 spp; 45 lb/ac
Original	1.1	LB, SG	8 lb/ac	118 spp; 47 lb/ac
Martin	0.63	LB, SG	7.5 lb/ac	121 spp; 48 lb/ac
Bauer	1.0	LB, SG	7.5 lb/ac	122 spp; 56 lb/ac
Bauer	0.5	LB, SG	5.5 lb/ac	123 spp; 57 lb/ac
Erbes	0.7	BB, I	4 lb/ac	126 spp; 75 lb/ac
Burkardt	2.6	BB, I	8 lb/ac	113 spp; 31 lb/ac
Montavon - Interseed	1.3	-	-	96 spp; 24 lb/ac
Wysneinski S. -Interseed	10	BB, I	10 lb/ac	49 spp; 9.7 lb/ac

** Abbreviations for grasses: LB = Little Bluestem, SG = Sideoats Grama, I = Indiangrass, BB = Big Bluestem. Grasses listed are dominant species planted in greater amounts. In most cases other grasses and sedges were planted in lesser amounts and are accounted in forb totals.*

Planting prairie plugs

PRAIRIES (CONT'D)

We were grateful this year to receive hundreds of pounds of a mechanically harvested prairie seed mix from The Nature Conservancy's nearby Nachusa Grasslands site. This mix contains a number of late-season-flowering plants including several that are either difficult to collect in quantity or were not previously represented on our site. We augmented our prairie restorations and interseedings with this mix. Our thanks to the crew at Nachusa for the assistance!

In addition to new plantings from seed, we planted over 5,000 plugs of native plants in areas that should meet their specific sun, soil, and moisture requirements in accessible locations in recent plantings and established open woodlands and wetlands. Some of these were sown and grown in-house by RWF staff, others we received in trade or were donated. Most were concentrated in new prairie restorations and tree plantings. We plan and hope to be able to draw on these plants for seed to further diversify future plantings.

To promote stand establishment and control weeds, we mowed our most recent prairie restorations one to three times as needed over the summer months. This practice has greatly benefited diversity and forb establishment by decreasing competition with adventive weeds in our recent prairie plantings.

In preparation for restorations planned for 2018 or beyond, we have been eliminating cool season grasses and invasive weeds by farming row crops in several areas on the Wysneinski South tract.

Prairie vista from the Bauer tract in May

Constructing a dike using an earth scraper

WETLANDS

We record water level readings at each wetland on a monthly basis to assess fluctuations occurring in our wetlands throughout the year as well as across multiple years. We've now had several wet years in a row, though a semi-dry and mild winter lacking a spring melt led to a number of the wetlands starting the growing season at less than full capacity. Spring rains brought levels right up to full nearly across the board. Rainfall was above average for the year, but there were dry spells in June and then again in late summer. In early October, which was the culmination of two dry months, only 5 of the 35 wetlands we monitored were completely dry, though several others were nearly there as well. Thereafter, frequent fall rains recharged the wetlands heading into winter.

The current streak of wet years has led to a proliferation of both fish and Muskrats. We would prefer to manage the majority of our wetlands as fish-free for the benefit of other species that thrive without fish as top predators. Muskrats in such high numbers can do significant damage to dikes and shorelines. In many cases, natural fluctuations of hydro-period can be counted on to keep these species in check, but we may find it necessary to artificially lower water levels in order to achieve our management goals in the near future. We mowed wetland dikes in June as part of an ongoing maintenance program. Visual searches were made for Muskrat damage, and repairs were made where needed. As expected we found more Muskrat damage than we typically would. We made the needed dike repairs at Hidden, Muskrat, Harrier, Bobcat, Bauer, and Terrace wetlands.

The brief late-summer dry spell was welcome and exactly what we had been waiting for. After wet summers thwarted our efforts the preceding two years we were finally able to access and repair several breaches in the dike of Beaver wetland. Better yet, we installed a tilt tube that will allow us to direct or stop a controlled flow into ephemeral pools in the Silver Maple woodland on the outside of the main wetland east of the dike. To accomplish the task, we bulldozed a small basin within the woodland. We used the soil that was removed to repair the degraded portions of the dike and fill the eroded ditch that had resulted from the unencumbered outflow from the breach. We seeded Timothy grass onto the dike repairs, and we will seed the dike and woodland pool with native plants in the winter months. We also made a structural repair to the water control system of the Widgeon South wetland. A plugged field tile line had prevented outflow from this wetland to Widgeon North in high water conditions. We dug to the tile line before the plug and vented the tile by adding a "T" joint and about 10 feet of new line, terminating in a metal guard at ground level, allowing the water to escape to the surface when flowing out of Widgeon South. This repair will prevent a future blowout hole as well as unwanted flooding of the upland areas adjacent to Widgeon South wetland.

Blue Flag Iris, *Iris versicolor*, on Muskrat wetland

WETLANDS (CONT'D)

The woodland pool previously described as part of the Beaver wetland dike repairs was one of seven wetlands we created this year, though most were small in scale. We constructed four "dugout" ponds, all less than a quarter acre, on the Erbes, Bauer, and Wysneinski North tracts. These small pools required no control structure, little or no dike, were constructed using only our bulldozer, and will contain water only seasonally in all but the wettest of years. They will benefit a number of species that thrive in ephemeral pools away from the greater numbers of predators found in more permanent bodies of water.

We also constructed a more sizeable pair of tiered wetlands on the Bauer tract that we will call the Snake wetlands. After conducting a stadia survey and analysis of the site, we dug a trench at the downslope end of each pool where the dike would be constructed to ensure or put in place a clay barrier and remove any tree roots or stones, and to search for and remove any drainage tile. We then repacked clay in the trench to form a core for water retention. We built, shaped, and packed the dike with the bulldozer, 8650 tractor, and earth scraper. Both tiers of the wetland were outfitted with 8" tilt-tube control structures. In the upper tier we left several small "islands" with large willow trees growing. Some of these will almost certainly be flooded for much of the year. Perhaps the willows will live, or perhaps some or all will not. If they die, they will provide excellent habitat for woodpeckers, wood ducks, and other birds for as long as they remain standing. If they fall they will provide places for turtles to bask. We seeded the dikes (where applicable) of all the wetlands we constructed this year with Timothy Grass to prevent immediate erosion. We will winter-seed all the new wetlands using native wetland plants, grasses, and forbs before spring 2018.

Constructing a "dugout" wetland with the bulldozer

Two months later.

Venting plugged field tile outflow from Widgeon South wetland

WETLANDS (CONT'D)

For two summers prior to this year we had been trying to decrease Reed Canarygrass monocultures at Pothole and the Willow wetlands with repeat spraying of Glyphosate. To increase diversity and wildlife value of these wetlands and to put in place native competition for the inevitable recolonization of Reed Canarygrass, we interseeded diverse wetland seed mixes. In January, we seeded the dikes, basins, emergent zones, and surrounding areas with native sedges, rushes, grasses, forbs, and shrubs typical of high quality natural wetlands and sedge meadows. The areas will have to be monitored and managed into the future to reduce Reed Canarygrass invasions.

Cattails can be highly aggressive displacers of more beneficial wetland plants. There are both native and nonnative species of cattails generally growing together on wetlands at RWF. Efforts to control the expansion of aggressive stands of cattails as well as the invasive Common Reed *Phragmites* in our wetlands and maintain the gains we have made in recent years continued. We treated *Phragmites* at Arrowhead, Teal, Crane, Bobcat, and Goose ponds in August and September using Touchdown, a Glyphosate product registered for use in and near water.

For water control purposes and to extend temporal access to our trail system we installed one 10" x 20' culvert on the Wysneinski Central tract and 2 on the Wysneinski North tract. One will allow outflow from a woodland pool that terminates the ditch running towards Teal wetland from the south. Another will allow the seasonal overflow from the Teal wetland to flow under the foot of the dike rather than around it. In association with installing this culvert, we raised the access trail for about 50 yards and installed the final culvert to allow drainage from the west. These culverts will expand vehicle access to these areas during wet seasons, direct water flow to wetlands where we want it to go, and prevent the erosion the flooding has been causing in recent years.

Prairie Crab Apple, *Malus ioensis*

WOODLANDS

In the habitat category of "woodlands," we refer to three types of timber stands: mixed timber stands which pre-date the inception of the Foundation, hardwoods planted by RWF (majority Black and Bur Oak), and oaks planted with Red and White Pines by RWF. For each type of timber stand, our intent is to develop healthy oak savanna and woodland communities with a diverse, native understory. This is by its nature a slow process, but one in which results are becoming more evident and rewarding each year as trees grow and interseeded, native, herbaceous plants become established.

Most of our existing mixed timber stands are the result of natural succession following the abandonment of agricultural crop fields or pastures decades ago. Some were planted with various pines 40+ years ago. Our management strategies for these woodlands are based upon individual assessments of the quality and species composition of each stand. Many contain a majority of non-native or undesired tree species. Our goal for most of the existing woodlands is to increase the proportion of oaks and other beneficial, native, deciduous trees to shift these areas into healthy, self-sustaining woodlands and savannas. Implementing this goal includes the removal of non-native and detrimental species; protecting existing, desirable saplings from deer damage; and improving understory communities of shrubs, small trees, woodland wildflowers, savanna forbs, sedges, and grasses.

Most years we concentrate the bulk of the mechanical aspect of our forestry management in the winter, when frozen ground can support heavy equipment without damaging roots or significantly disturbing the soil. A second consecutive mild, generally snowless winter led to fewer days with firmly frozen ground. Despite the paucity of ideal environmental conditions, we thinned dense pine plantings on the Wysneinski North, Bernardin, and Montavon tracts for oak release and to prepare for supplementation of more desirable tree and shrub species where required. Once each thinning was completed, we interseeded a diverse mix of woodland and savanna species. This seeding will help foster a healthy understory in areas that had been barren due to the dense, year-round shade cast by the pine canopy. The project continued with the planting of bare root trees and shrubs in the spring and potted tree and shrub species in the fall (both described below). Additional thinning as-needed on a smaller scale in future years will foster the continued development of these young, diverse savannas by allowing the oaks to grow more quickly and healthily, allowing for greater light penetration for forb growth and oak regeneration, providing better cover and browsing within the timber for wildlife. In addition to the projects just described, we strategically released individual oaks from competition with pines where needed in tree plantings across the property. The majority of these pines were girdled by chainsaw and treated with a 50% Glyphosate solution. A few were selectively dropped and left in place to provide immediate ground-level cover for wildlife.

In March and April, we used bare root trees and shrubs to supplement existing tree plantings and woodlands on the Wysneinski North, Bernardin, Montavon, Dale, and Original tracts. Species included Black Oak (400), Bur Oak (500), Shagbark Hickory (200), American Sycamore (25), Aromatic Sumac

Planting bare root trees in spring

WOODLANDS (CONT'D)

(250), Eastern Wahoo (75), False Indigo (175), Ninebark (50), and White Pine (100). Because we were planting into existing timber habitat, these plantings were done by hand and shovel, rather than using the pull-behind tree planter we would use on open ground. Although the process is rigorous, at this stage in the game supplemental planting is the most effective way to add diversity to our woodlands and value to wildlife.

In late October, we planted potted RPMTM trees and equipped them with Earthmats to reduce desiccation and competition, as well as wire baskets with rebar stakes to protect them from browse and rubbing by deer. Potted trees were planted in numbers indicated in the table below, and locations of new plantings are indicated on the habitat map in Appendix 1 of this report. A portion of the plantings done on the Bauer and Montavon tracts are newly converted from row crops this year. The plantings were seeded in January with diverse, native seed mixes of grasses, sedges, and forbs which were mowed periodically through the growing season to aid establishment prior to planting trees in the fall. The greater portion of these plantings were done into existing cool season grasses that we also seeded with a similar native seed mix. The plantings on the Wysneinski North and Bernardin tracts were supplementation plantings performed in areas in which we had thinned dense pine stands as described above. They totaled 14 acres and were interseeded with 212 pounds of 145 species of hand-collected forb seed and a forb-rich allotment of Little Bluestem and Indian Grass. We concentrated seeding in openings and near woodland edges where enough sunlight was available to sustain the majority of species used. Woodland plants that can thrive in shadier conditions were included, but comprised a lesser portion of the seed mix, as those species are still difficult to obtain in quantity on-site at this time. All areas interseeded are symbolized by orange cross-hatching on the habitat map in Appendix 1 of this report. We seeded the area of the Sandfield woodland on the Original tract (~3 acres), where we had removed dead pines and installed potted trees in 2015, with 47 pounds of 127 species of forbs and grasses. We concentrated seeding in openings and near woodland edges where enough sunlight was available to sustain the majority of species used. Woodland plants that can thrive in shadier conditions were included but comprised a minority of the seeding mixes, as those species are still difficult to obtain in quantity on-site at this time. All areas interseeded are

American Hazelnut, *Corylus americana*

WOODLANDS (CONT'D)

Potted Tree and Shrub allocations:

Location	Acres	Bur Oak	Black Oak	White Oak	Shagbark	Pecan	Serviceberry	Aromatic Sumac	Nannyberry
Bauer	5.2	49	46	19	12	3	10	3	8
Wysneinski North	10	22	18	6	-	-	8	10	4
Bernardin	4	12	12	5	3	-	-	5	3
Montavon	3	16	24	5	5	2	2	7	5

We took steps during the growing season this year to prepare several other tree plantings for the same thinning process. In order for the pines to begin the process of drying enough to be burned, we girdled select trees in plantings on the Wysneinski North, Wysneinski South, and Bernardin tracts. These areas were chosen because they are essentially pine-only plantings and do not as yet include desirable deciduous species. Following removal of the girdled pines these areas will be interseeded and supplemented with trees and shrubs in the same way as those described above.

Treating Glossy Buckthorn, *Frangula alnus*

INVASIVE SPECIES MANAGEMENT

Suppression of invasive species continues to be a major portion of our habitat work and is an ongoing challenge on this site, as it is on the regional, state, and worldwide landscape. The prevalence of invasive plants on the recently acquired Erbes property has required us to spend an even greater apportionment of our time fighting invasives in the last four years than we had in the past.

Reed Canarygrass poses a greater threat to the vegetative integrity of our wetlands than any other current factor. Many of our wetlands and waterways require vigilant care to prevent Reed Canarygrass takeover. We continued the ongoing program of treating this invasive species at several wetlands as well as several areas on more upland locations and mowed to prevent seeding in other areas. Although there is currently no known cost-effective method to completely eliminate this noxious grass from grassland habitat, our most successful approach has included a combination of mowing and burning followed by applications of the herbicides Sethoxydim and Glyphosate. This method is not always feasible, due to environmental factors, financial cost, or timing issues.

Garlic Mustard is an invasive, herbaceous, biennial plant that can dominate at ground level in woodlands, edging out native woodland wildflowers and the fauna which depend on them. Our efforts are focused on minimizing its spread and eliminating it from known areas over time. Control efforts this year included applications of 3% solutions of Glyphosate. As we target Garlic Mustard in woodlands, we also spray many invasive Bush Honeysuckle shrubs as we encounter them. We strategically targeted known patches of Garlic Mustard outside of the Erbes tract including woodlots on the Bauer, Bernardin, Dale, Jeanblanc, Original, Martin, Mellot, Wysneinski North, and Wysneinski Central tracts. Treatment of the original colonization sites seems to be depleting the seed bank, but it is a long, slow battle since plants produce copious amounts of seed, and research suggests that at least five years of complete suppression are required to significantly deplete the seed bank. Seed is also known to be dispersed long distances on the hooves, feet, and fur of animals. Despite our efforts to kill plants before seed production occurs, complete coverage and surveillance of the property is not possible, and we are subject to constant invasions from off-site seed sources. The only attainable goal for Garlic Mustard on this site is to control and limit the population rather than aim for complete eradication.

Mowing regrowth of White Sweet Clover, *Melilotus alba*

INVASIVE SPECIES MANAGEMENT (CONT'D)

Invasions of prairie plantings, other grasslands, and tree plantings by Canada, Bull, and Musk Thistles are a periodic problem. Canada Thistle is an aggressive perennial invasive and is the hardest to control. We target invasions in our prairies on foot with backpack sprayers as much as possible to prevent damage to non-target plants. In cool-season grasslands, we try to spray Milestone or Transline herbicides in the spring or mow Canada Thistles during the growing season prior to the flowering stage to prevent seed development. We then spray in late summer and early fall as plants are actively moving resources to the roots. Bull and Musk Thistles are biennial (live two years, produce seed in year two, then die). For this reason, it can be possible to prevent seed production through repeated mowing, allowing time and competition to diminish the population. This has been a focus of our strategy for several years and has been working well.

Recent research has shown that the invasive shrubs Bush Honeysuckle and Common Buckthorn introduce novel chemicals into the environment that can have deleterious effects on the survival of native vertebrates, from amphibians to birds and mammals. Over recent years we have made excellent progress clearing our woodlands of the adult, seed-producing individuals of these species as well as those of another invasive shrub, Autumn Olive. When we acquired the Erbes tract, all of its woodlands and large areas of its wetlands were dominated by invasive shrubs. To date we have cleared more than 90% of the invaded areas. Over the winter, we used a forestry cutter on our skid steer and many hours of chainsaw work to clear invasive shrubs south of Lily pond, the largest remaining block of invasive-shrub-dominated woodland on the tract. We conducted follow-up treatments in the summer months on this and all areas cleared in prior years with foliar spray mixes of Glyphosate or Triclopyr 4 using backpack sprayers. The follow-up treatments are time-consuming and will be required annually for a number of years - and periodically ever after - as we work through the invasive seed banks, but they are critical to maintaining the progress we've made and will help prevent spread of invasives to new areas.

Although the costs in time and resources required for combating invasive plants are high, we become more effective and efficient as we refine our techniques. We've made outstanding progress controlling or suppressing many of these invasive species and our habitat on-site is much the better for it. There is no viable alternative to dedicating resources to invasive species control if we are to maintain quality habitat for a wide variety of native wildlife species

Morning sun in September

DISEASE AND PEST CONTROL MANAGEMENT

Sphaeropsis or Tip Blight remains a problem affecting many Red Pines on this site. A number of trees needed to be removed this year, though fewer than in other recent years. In an attempt to control the spread of this blight in Red Pines, we treated trees of high aesthetic value with a foliar spray of the fungicide Topsin in May and June. We cut, removed, and burned Jack, Red, and Scotch Pines killed by Tip Blight, weather extremes, or Pinewood Nematode.

We maintained fruit trees with annual pruning and by following a recommended pest control program from Stark Brothers Nursery. We controlled insect pests, blight, and Cedar Apple Rust with one application of a dormant-oil spray and periodic applications of Home Orchard Spray and Ferbam. Both pear and apple trees were productive this year, though the apples ripened earlier than usual and were numerous enough that the average size of fruit was reduced. Pest control measures were effective.

The emerald ash borer, which has spread across this part of the state in recent years, reached RWF (to our knowledge) in 2015. While we do still have some Green Ash trees that are apparently unaffected as yet, many have died and most others will follow. Ash did not comprise a large portion of our woodland tree community but nonetheless it is a shame to watch a native species fade away due to an introduced insect pest. On a landscape level, there is essentially nothing we can do but watch the process and remove affected trees that threaten buildings.

Contrary to the rest of the notes in this section on disease and pest control, we made attempts this year to *introduce* a disease to help us control an invasive pest. Multiflora Rose is a well-known invasive species that has plagued the Midwest for many decades. Over the years we've had excellent success reducing the numbers of this thorny shrub on site, but it continues to maintain a presence and cost us time and effort to keep it under control. This summer, under the advice and guidance of botanist friend of the Foundation Bill Handel, we moved cuttings of Multiflora Rose displaying symptoms of Rose Rosette Disease from a nearby, off-site population and put the cuttings in contact with healthy Multiflora plants here. The disease is caused by a virus but is carried by mites in the family *Eryophidae* which are microscopic, host-specific feeders on Multiflora Rose. While Multiflora is highly susceptible to this disease, our native roses have been shown to be resistant. If our attempt was successful, some of the mites on the cuttings transferred onto the rose leaves and infected the plants with the virus. It will be interesting to look for the tell-tale symptom of the disease, reddish-colored witches broom growth at the ends of the growing rose branches. Perhaps this attempt at bio-control will even save us some time in the future that we would otherwise have spent chasing multiflora with backpack sprayers and herbicide.

Treating Soybeans for weed suppression

FOOD PLOTS / AGRICULTURE

Deer browsing on soybeans

We maintain wildlife food plots of corn, winter wheat, sunflowers, soybeans, oats, Imperial Whitetail Clover, and Brassica to complement our native habitat in meeting the food requirements of wildlife. We added about 7.5 acres of new row crops this year in areas that had been cool season grass habitat. Most of this acreage is earmarked to be planted to other, more permanent habitat in the future. Row cropping will effectively eliminate the weeds and grasses we would otherwise contend with before restoring habitat on this ground. We planted nine new Imperial Whitetail Clover patches (~6.8 ac) and rotated about 1.75 ac to soybeans as part of a rehabilitation program to eliminate noxious weeds. This plot will be replanted next year to deer clover or other habitat. Another plot where winter wheat, Arrowleaf, and Crimson Clover had been allowed to set seed prior to this year was treated with Glyphosate in the summer to trigger wheat and clover seed to germinate for fall growth.

Final acreage figures for all wildlife food plots included thirty-one fields of corn totaling 54.2 acres, thirty-seven fields of soybeans totaling 96.2 acres, one 2.96 acre field of sunflowers, fifteen fields of Imperial Whitetail Clover totaling 10.7 acres, one field of re-seeded winter wheat totaling 0.65 acres, and thirty-five fields of Brassica totaling ~5.5 acres. Acreages are measured using GPS and mapping software and reported to the Farm Service Agency for crop certification.

We spread three tons of lime per acre on all row crop, brassica, and clover fields north of Shaw Road other than on the Erbes tract, having limed those fields and those south of Shaw road in 2016. We applied 100 pounds per acre each of DAP and potash to all row crop fields. We applied 32% Nitrogen on the corn and sunflower fields in the growing season. We used Me-Too-Lachlor, Glyphosate, Sidekick, and Half-Pint for weed control on all corn and soybean acreage. We regularly mowed Imperial Whitetail Clover for weed control. Over the last several years agricultural fields across Northern Illinois (our site included) have been invaded by a Glyphosate-resistant Water Hemp plant which is extremely difficult to control. This year's use of Me-Too-Lachlor (a pre-emergent herbicide) in row crop fields was the most recommended method of control available. Even so, dry conditions following application failed to activate the chemical in time and Water Hemp was a severe problem in many of our soybean fields. We will continue to research potential control methods to determine if a change in herbicide regime, crop rotations, or planting methods can help alleviate the problem.

Mist on Main Lake

MAIN LAKE

Main Lake is the only pond on site which we currently manage for game fish. To minimize encumbrances to fishing we selectively treat the pond with a number of products to reduce algae and aquatic plant growth. For control of rooted aquatic vegetation, we treated the lake with 8.75 gallons of Aquastrike and 7.5 gallons of Reward in three treatments during the growing season. To control algae, we spread copper sulfate crystals across the bottom of the lake in three treatments totaling 390 pounds in April and August, made eight treatments of Cutrine Ultra and Clearigate between April and October, and made three treatments of Phycomycin in July. We used a total of 23.25 gallons of Cutrine Ultra, 9.4 gallons of Clearigate, and 300 pounds of Phycomycin. Planktonic algae bloomed consistently from mid-June to October but was more or less manageable. To suppress both plant and algal growth by reducing available light of the required photo-spectrum, we applied a total of 32.5 gallons of Aquashade blue pond dye in periodic treatments from March to September.

We performed annual maintenance on the aeration system to help balance the diffusers and keep them operating efficiently. We retrieved all diffusers from the lake bottom, cleaned them in a muriatic acid bath, reassembled them to the plastic tubing, and repositioned them on the lake bottom. We changed filters and graphite vanes on the compressors and adjusted control valves to balance the system. We shut the system down for winter in October following lake turn-over and will restart it in early spring or earlier in the event that snow pack over ice becomes too severe during the winter.

For a third consecutive year, we frequently had to open the control valve to release excess water, even during the summer and fall, which is historically unusual for this pond. The rock edging that we installed last year along the western lodge lawn shoreline to repair and prevent further erosion held up well to the frequent high water and is functioning as desired. Though the lake required frequent algae treatments, management goals were achieved or exceeded for aesthetics and the health of the fishery. Both Bluegill and Largemouth Bass spawns were productive, and fall observations suggested a good food base of this year's fry remained for larger fish.

Canada Geese and Tundra Swans

Surveying Wood Duck nest boxes on Lily pond

WOOD DUCK NEST SURVEY

We maintained a total of 81 nest box structures for Wood Ducks on or near wetlands and waterways across the property. Maintenance of duck boxes includes repairing structural damage, cleaning out any remains in the boxes, and putting in fresh wood shavings for nesting material. Five boxes were damaged (mostly by Raccoons) between the January repairs and July inspections and were unusable for nesting. We have three types of nesting boxes available for Wood Ducks: Ducks Unlimited plastic boxes, cedar wood boxes, and galvanized round metal cone boxes.

Wood Ducks nested in 21 of the 22 Ducks Unlimited boxes (95%). Eleven of these nests produced chicks (50%). The cedar boxes showed 94% Wood Duck use (48 of 51) of which 47% produced chicks. There were no successful nests this year in the metal cone boxes. Overall use of boxes by Wood Ducks was higher than last year. Wood Ducks nested in 94% of boxes and 46% of available boxes produced a successful nest (5% higher than last year). The numbers of eggs hatched was 68% greater than last year at 274 (163 last year) and the total number of eggs recorded was 30% greater at 1150 (886 last year). The proportion of eggs that hatched was 24% (18% last year). This year's increase in hatchling numbers ends a three-year decline in the proportion of eggs that hatched. The number of "dump nests" decreased this year, which differs from an increase in such nests observed over the last two years. In spite of the quantity of "dump nests" decreasing, the total number of eggs laid in them increased (potentially indicating a higher number of adult female Wood Ducks on site). "Dump nest" refers to nests in which female Wood Ducks (frequently more than one) will lay eggs but not incubate or care for them. This occurs both in artificial nest boxes and natural nesting cavities. The behavior is a form of nest parasitism in which females attempt to sneak their eggs into an active nest to have another female raise the resulting chicks with her own brood.

We will plan to install a box on the newly constructed Snake pond on the Bauer tract before the next Wood Duck breeding season. Annual repairs and replacements of boxes will be required in order to continue the Wood Duck program at the current level.

Surveying bluebird nest boxes

EASTERN BLUEBIRD NEST SURVEY

We inspected the fifty-two Eastern Bluebird nest boxes on-site for use during the nesting season twice, on June 23rd and August 1st. Three boxes were unusable for birds during breeding time due to weather or animal damage. Eastern Bluebird nests were observed in 18% of the remaining boxes, higher by 3% compared to last year but still well below the rates observed in recent prior surveys. House Wrens were again recorded in great numbers and built over the top of bluebird nests in at least 3 cases. None of the bluebird nests that had been usurped and built over by wrens contained any bluebird eggs. We estimated that there were about 31 fledglings this year, which is the highest estimate in seven years. Despite conducting two inspections this year, the number of fledglings remains a rough estimate based on egg fragments observed and other subjective factors. We are likely to continue to see significant fluctuation in Bluebird recruitment dependent upon local or regional habitat, weather patterns, competition for nesting sites (with species such as House Wrens), fluctuations in food supplies, or other factors. As the oak trees and savannas restored on the property mature, conditions will become more and more favorable for Eastern Bluebirds.

Other species that used Eastern Bluebird nest boxes in 2016 included House Wren (33%), Tree Swallow (8%), and European Starling (2%). Nest boxes were found to be empty on five box inspections (4%). Despite relocating many existing nest boxes and installing 7 new boxes on the Erbes Tract, significantly more wrens used our nest boxes this year. In addition to replacing and repairing aging boxes we continue to adjust nest box placement to try to favor Bluebirds. Even so, intense competition for nesting sites may be an unavoidable effect of our woodlands reaching a stage of maturity preferred by wrens.

Mature male Whitetail Deer, *Odocoileus virginianus*

WHITETAIL DEER SURVEYS

Following a protocol we established years ago, we conducted three ground censuses for Whitetail Deer early in the evenings of January 27th, February 9th, and February 27th of 2017. They were conducted from a vehicle traveling a predetermined route along gravel roads on-site. Two observers recorded deer seen from the vehicle. The census route and schedule of dates are kept similar from year to year. The total numbers of deer seen for each census were 96, 82, and 101 respectively, for an average of 93 deer sighted per survey. This year's surveys were 34% lower than the previous average though they were a tick above last year's surveys. Most recent indications suggest that the deer herd has finally become more in line with the available habitat (which we continue to expand annually) and potentially exists below a maximum carrying capacity. This would be a good outcome for the health of individual deer as well as the habitat itself. Among other reasons for the effort, we monitor ongoing trends in deer numbers because when deer populations become excessively high, the herd, individual deer, and the quality of local habitat will suffer. It will always be important to put survey numbers into context and not rely too heavily on a single metric. These road surveys are simply observations of deer made over three days in the winter from a limited vantage point. They are fraught with variables that could skew results one way or the other despite our efforts for consistency. They are only one index of the size of the deer herd and are one of many factors taken into consideration for devising our deer management strategy.

We use trail cameras to survey wildlife use of the property and they are especially effective when deployed to monitor deer. A total of nine cameras were strategically placed across the property to gather information on the movement patterns, concentrations, and general presence of deer and other wildlife. Information collected with these cameras is used to estimate deer recruitment rates, buck-to-doe ratios, numbers of mature bucks, and movements and patterns of deer and other wildlife with more nocturnal or secretive behavior.

On February 23rd we surveyed all corn food plots planted in 2016 to determine utilization by deer and other wildlife. It is important to note that these numbers refer to the food crop that was available over the winter of 2016-2017 and is not referencing the crop we planted in 2017. Our surveys reflected that in spite of overly wet growing conditions in 2016, corn production was very good, partially due to a decreased amount of early season browsing by deer. Soybean production, likewise, was very good overall. All corn fields produced ears this year. Taken as a whole, in food plots property-wide, 84% of corn stalks still had cobs attached (a 13% increase over the previous survey), and on those, ~56% of kernels remained on the cobs (with more visible on the ground). This was by far a record amount of corn remaining at the time of our survey and was far more than adequate corn standing available to wildlife into the spring. This is probably due as much to mild winter temperatures driving animals to eat less than they would have to in a more harsh winter as it is to a reduced winter deer herd. In addition to corn, we left about 15 acres of soybeans (15%) standing as a winter wildlife food source. Improved shatter-resistance of modern soybean varieties has made this crop an even more valuable food source in winter in recent years. We've found

A freshly ear-tagged male fawn, a few days old

WHITETAIL DEER SURVEYS (CONT'D)

that they continue to hold beans in pods deep into winter and even into spring, above any normal depth of snow cover and readily available for wildlife browse. In recent corn surveys, we've made it a point to record information on soybeans as well. This year's survey showed a large amount of beans left available in late February in addition to the record corn remaining. It has now been several years since we last observed evidence of deer foraging in the winter on "hunger foods" such as Red Cedar, Arbor Vitae, or Yew shrubs in landscaping during the late winter months.

Foundation employees captured four Whitetail Deer fawns on the property incidental to other work; all were males. We equipped the fawns with individual ear tags containing I.D. numbers, the acronym "RWF," and our office phone number. To date, we have tagged 80 deer (38 male, 41 female, and one unknown). Of these, 17 have yielded valuable information regarding local population demographics, mortality factors, and movement patterns. We have recovered eight females on site: six harvested by hunters, and two killed by vehicle collision. We have recovered five males on site: two killed by vehicle collision (both < 1 year old), one evidently predated in its first month, and two harvested (both at 4.5 yrs. old). Two males (1.5 yrs. and 2.5 yrs. old) and two females (1.5 yrs. and 4.5 yrs. old) have been phoned in after being harvested off-site by hunters. These deer were from < 1 mile to 25 miles from the Foundation when harvested. The data collected from this tagging program provides useful information that we use when developing our deer management strategies.

A pair of fawns drinking, ~5 months old

Amanda holding a Fox Snake, *Pantherophis vulpinus*

HERPETOLOGICAL SURVEY

Foundation staff surveyed reptiles and amphibians using cover boards, aquatic hoop traps, and visual and audio searches. Amphibians observed on site this year included Tiger Salamander, Western Chorus Frog, Blanchard's Cricket Frog, Grey Tree Frog, Northern Leopard Frog, Green Frog, American Bullfrog, and American Toad. Reptiles observed this year included Six-Lined Racerunner, Fox Snake, Eastern Garter Snake, Plains Garter Snake, Eastern Hognose Snake, Brown Snake, Painted Turtle, Common Snapping Turtle, Blanding's Turtle, and Ornate Box Turtle. No Spring Peepers, Green Snakes, or Spiny Softshell Turtles were recorded this year.

We put specific effort in April into trapping our wetlands for Blanding's Turtles with the goals of furthering our understanding of their use of the site and identifying nesting areas. Our efforts were rewarded as we were able to capture six Blanding's Turtles, four of which had been captured in previous years and two which were new captures. That total matches the highest number of Blanding's Turtles we had captured in a single year (2015). While trapping for Blanding's Turtles, we also caught 20 Painted Turtles from five different ponds. In addition, we captured two female Ornate Box Turtles, of which one was a new capture. All new turtle captures are assigned and marked with a code so that they can be identified if they are caught in the future. This provides us with valuable information on growth rates and population demography. To date, we have marked and released 252 adult turtles of four species. Read more about our efforts to study and assist Blanding's and Ornate Box Turtles in the "Research and Study Projects" section of this report.

Yet another wet growing season ensured that all ponds held water more than long enough for amphibian reproduction, but certain amphibian species may have seen a drop-off in recruitment this year related to pond duration. Ephemeral ponds – those that dry completely each summer or periodically – are ideal breeding sites for most of the amphibian species native to this site. Periodic drying prevents the buildup of populations of upper-level predators of amphibian larvae such as fish and egg predators such as leeches. Successive wet years have allowed for invasion and persistence of Green Sunfish and Bullhead Catfish in many of our wetlands. Additionally, ponds that don't dry down for very long do not get the nutrient boost provided by the summer growth of annual plants on exposed mudflats. Anecdotal observations would suggest that Tiger Salamanders in particular have seen a decline in recruitment the last two years, most likely due to these factors. We made attempts at Turtle and Teal wetlands to draw water levels down, but October rains prevented complete drying. If 2018 is another wet year, efforts will be made earlier in the summer to ensure that some of our wetlands dry in order to provide the necessary habitat to maintain species that benefit from such conditions.

Juvenile Cedar Waxwing, *Bombycilla cedrorum*

FLORA AND FAUNA SURVEYS

WILDLIFE OBSERVATIONS

Coyote, *Canis latrans*

The Foundation maintains annual records of on-site wildlife observations as well as reproductive parameters of several species. The following are notes of selected observations. Ring-Necked Pheasant recruitment rates appeared to be notably high yet again this year. Wild Turkey recruitment was subpar, probably due to another rainy spring during their hatchling phase. It has been several years since we've seen particularly strong brood numbers of turkeys in the spring and summer months. Bobwhite Quail were seen and heard frequently for a third year in a row. Coveys were recorded using several different areas on the Foundation, which is a positive sign. This species has seemed on the brink of a true population climb at various points in the last decade or so; here's hoping that this time the Bobwhites can gain some real traction. Sandhill Cranes continue to breed successfully on site. Pairs were observed throughout their breeding season and well beyond, and multiple juveniles were seen this year. Migratory waterfowl – ducks and geese – used the site in great numbers during the spring and fall migrations, and several species were observed through the breeding season. Observations suggest that Coyote and Raccoon populations have increased recently which will inevitably take a toll on their prey species. Additional sightings of Endangered or Threatened species include Starhead Topminnow, Northern Harrier, King Rail, Pied-Billed Grebe, Blanding's Turtle, and Ornate Box Turtle. Other species of interest include Blanchard's Cricket Frog, Six-Lined Racerunner, Greater White-Fronted Goose, Tundra Swan, Woodcock, Eastern Hognose Snake, American Badger, Bald Eagle, and Greater Scaup.

OTHER SURVEYS AND DATABASE RECORDS

Several projects are of an ongoing nature and require field investigations, monitoring, and updating of records annually. Some of these include Wild Turkey brood surveys, habitat type database records, wetland management regimes, native plant seed collection lists, seed cleaning techniques, native plant seed harvest chronologies, prairie burn schedules, and prairie and wetland restoration management notes, techniques, and reports.

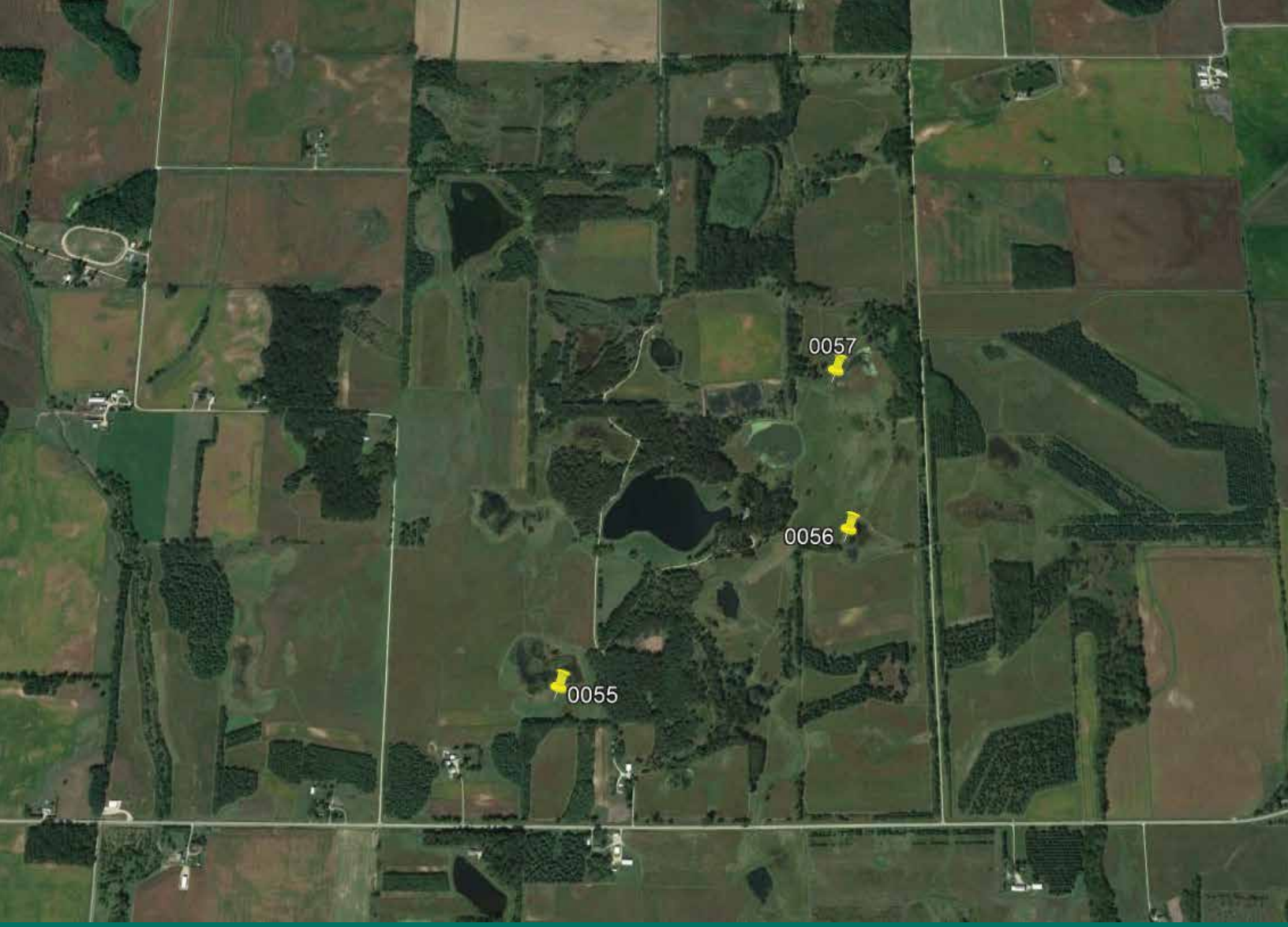
American Coot, *Fulica americana*

MARSH BIRD USE OF WETLANDS IN ILLINOIS

Therin Bradshaw, a graduate student at Western Illinois University, contacted RWF this spring seeking permission to conduct research on marsh birds in the wetlands on site. RWF is one of a number of survey locations in his project. The following paragraphs are Therin's summary of his study at the Foundation this past summer.

In conservation, population estimates and population distribution data can be used to develop management plans and inform regulations to assist in population growth or persistence. Population estimate surveys are very common in game species but less so for non-game species. One group of non-game species of interest are the secretive marsh birds. They are called secretive marsh birds due to their behavior and habitat preference, and are often underrepresented in other national count efforts such as the breeding bird survey. They are relatively small and prefer to nest and forage in dense emergent vegetation. Since they are so difficult to see, population estimates and distributions are difficult to construct. This paucity of information on secretive marsh birds inspired the development of a three year research project across the state of Illinois to develop estimates of how many secretive marsh birds can be found in the state, where they can be found, what habitat qualities they prefer, and what we can do to maintain or increase the secretive marsh bird populations.

This project which began in 2015 and was finished in 2017, was conducted by biologists and graduate students out of the Frank C. Bellrose Waterfowl Research Center/Stephen A. Forbes Biological Station in Havana Illinois. Each year, researchers randomly selected sites across the state that had very little or no management and compared them to sites that possessed some level of wetland management. After sites were selected, researchers visited the site to determine habitat qualities present (such as water depth, vegetation cover, and surrounding land use) and whether or not secretive marsh birds were using the habitat. Since secretive marsh birds are difficult to detect, researchers conduct call-back surveys, where the researcher would carry a small speaker into the wetland and play recordings of the different secretive marsh bird calls and listen for a response. By recording the number and different types of secretive marsh birds present along with habitat qualities present, the researchers can test to see if there is a relationship between habitat use and habitat qualities. Once qualities are identified that encourage or discourage secretive marsh bird use, land managers can then increase qualities that encourage secretive marsh bird use.



	Prairie Slough				Mallard				Beaver				Total
	Rnd 1	Rnd 2	Rnd 3	Total	Rnd 1	Rnd 2	Rnd 3	Total	Rnd 1	Rnd 2	Rnd 3	Total	
Black Rail	0	0	0	0	0	0	0	0	0	0	0	0	0
Least Bittern	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Rail	0	0	0	0	0	0	0	0	0	0	0	0	0
Sora Rail	4	3	2	9	4	4	1	9	5	0	0	5	23
Virginia Rail	0	0	0	0	0	0	0	0	0	2	0	2	2
King Rail	0	0	0	0	0	0	1	1	0	0	1	1	2
American Bittern	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Gallinule	0	2	0	2	0	0	0	0	0	0	0	0	2
American Coot	1	0	0	1	1	0	0	1	0	0	0	0	2
Pied-billed Grebe	3	2	2	7	0	0	0	0	0	0	0	0	7
Total	8	7	4	19	5	4	2	11	5	2	1	8	38

MARSH BIRD USE OF WETLANDS IN ILLINOIS

Working with the Richardson Wildlife Foundation has been a great experience. Not only was it helpful to have permission to conduct research on the property but the amount of information collected by the staff at RWF, such as management history and habitat maps are invaluable when it comes to research. The diversity of habitat and wildlife that is present at RWF is difficult to find in Illinois. This observation is supported by the data collected for my research project. Not many sites in Illinois had as high secretive marsh bird diversity present as RWF. I detected American Coots, Common Gallinules, Pied-billed Grebes, Sora Rails, Virginia Rails, and King Rails. Most sites that I visited in Illinois, did not have secretive marsh birds present and if they were present there would only be one species, maybe two present. Also, for the entire 2017 spring survey season I only detected three king rails across the state and two of them were heard at RWF.

It has been inspiring to visit and conduct research at the Richardson Wildlife Foundation. As a graduate student finishing research and graduating soon, it is nice to know there are places out there with hardworking, dedicated individuals who are making a difference in the field of natural resources and environmental management.

The view from a call-back survey location

Female Ornate Box Turtle (*Terrapene ornata*)

RADIO TELEMETRY OF RARE TURTLES

The state Endangered Blanding's and Ornate Box Turtles are both declining in Illinois and in many places across their native ranges. They are among the most imperiled full-time resident species on our site; both are primarily prairie species. Blanding's Turtles are a species evolved to exist in a prairie pothole wetland ecosystem. Ornate Box Turtles are a terrestrial species and don't have the same wetland requirements as Blanding's Turtles. The loss of historical prairie habitat – and especially of large, unbroken blocks of prairie – has been a leading factor in the decline of both species. At RWF we have been actively restoring prairie and wetlands, which has certainly benefitted the small remaining populations of these two turtle species. The most limiting factor for turtles in this region today other than habitat loss is nest and hatchling predation, primarily by Raccoons. Raccoons are a species that benefits from and exists in larger numbers on today's agricultural landscape than they did in days before the plow. The quality of historic nesting sites for Blanding's and Ornate Box Turtles at RWF may have diminished over the years as trees planted on sandy ground have matured and closed the canopy or briars and shrubs have increased underneath, both factors potentially making conditions more appealing to Raccoons and other mesopredators. Relatively open sandy soils are preferred nesting sites for female turtles to use for egg deposition. It has long been our goal to identify some of the nesting areas being used by these species so that we might be able to manage accordingly. This year we continued our collaboration with Dr. Carrie Milne-Zelman of Aurora University and Dr. Rich King of Northern Illinois University to that end.

In May and June, we ran aquatic hoop traps and conducted visual searches. We were able to trap 5 Blanding's turtles (3 females, 2 males) and captured one female Blanding's Turtle and 2 female Ornate Box Turtles by visual searches incidental to doing other work. Two of the Blanding's Turtles and one of the Box Turtles had not been previously captured or marked. We marked the new turtles with a pattern of unique identification notches in the margin of their shell. For all captures, we took various size measurements and recorded any abnormalities or injuries and estimates of their age based on the growth annuli on the scutes on their plastron (the plates on the underside of their shell). We also palpated to determine if they were gravid (pregnant with eggs).

We affixed radio transmitters on the carapace (top of shell) of four female Blanding's Turtles and one Ornate Box Turtle and released them at the site of their capture. The goals of telemetry work were to identify some of the places where these species are nesting and, if possible, to protect any nests from predation using welded wire cages following egg deposition. One of the challenges to this is that nesting generally occurs at night. On tracking nights our protocol began with a sunset triangulation that would indicate (for an aquatic Blanding's turtle) whether the individual was indeed on land, potentially on a nesting foray. If a turtle was out of the water, we would locate it periodically through the night, stopping when it either nested or tucked in under vegetation, indicating that it would not move again that night. Eventually the transmitter came off of the Ornate Box turtle so little nesting data was recorded on that species this year. One of the Blanding's Turtles that we tracked one was not gravid, one came out of its

Transmittered Blanding's Turtle (*Emydoidea blandingii*) and a flagged hoop trap

RADIO TELEMETRY OF RARE TURTLES

pond and nested during the night after having been located at sunset in the pond, and 2 nested on the same night. One of those had attempted a nest on the night prior but was attacked during the long digging period by a predator and found upside down with minor scratches on its carapace shortly after. After being righted it tucked into nearby vegetation to wait for another night. The following night it nested again. Around 3:00 a.m. it was finally nearing completion of the nest, having laid its eggs and was covering them with soil. While the staff member that had followed its progress all night stepped away for 10 minutes to retrieve welded wire to finally accomplish the mission of protecting a nest of eggs, a predator (species unknown) flipped the female onto her back again and proceeded to raid the nest and eat the eggs. This was a great disappointment both because of the effort involved and because of the loss of a potentially population-altering number of juvenile turtles. The other turtle to nest that night had been tucked under thick vegetation at midnight, apparently with no intent to initiate a nest. Perhaps because of a light rain shower that passed through shortly after that time it apparently did nest in the area it was last observed, as it was found back in its pond and no longer gravid early the following morning. The good news here is that while we have an approximate idea of the area where nesting must have occurred no raided nest was found when we searched. It can reasonably be hoped, therefore, that the eggs survived to hatch in the late summer and some number of juvenile turtles ran the gauntlet of predators to find suitable habitat and join the population, though it is very far from a certainty that even one would have succeeded.

The effort to help facilitate a recovery of these two species has proven to be quite the challenge, to say the least. We believe we're providing the prairie and wetland habitat required. If anything, the evidence we saw this year tells us that this kind of effort is exactly what it will take to bring our goals about. It seems that predation of nests and juveniles is indeed the limiting factor in the Blanding's Turtle population here. The telemetry work we did this year and in 2015 have yielded valuable information on nest sites, threats, and turtle behavior. We are more equipped to help these species succeed than we were before. A few successful nests could turn the tide of recruitment in these populations so we intend to take what we've learned and apply it in future efforts. We greatly appreciate the loan of equipment and send our thanks to Dr. Milne-Zelman and Dr. King. We're also grateful to our staff members who were willing to put in extra time and run on short rest during nesting time.

Learning to estimate turtle age

EDUCATION

Whenever possible, the Wildlife Foundation hosts educational and community groups of all ages and backgrounds, fosters interest with the public in our mission and methods, and supports local education and research efforts however we can.

In April, we accepted an invitation to present a program for the Rotary club of Peru, IL. We tailored a slide presentation to explain to a general audience what we do, how, and why. We addressed the need for privately funded conservation work, the general status of wildlife habitat in our area, what the work is like, and the many challenges and rewards involved in habitat restoration, and fielded questions from interested listeners. It was a good opportunity to foster interest in the natural history of our state and the current status of conservation efforts.

During the summer months we provided temporary living quarters for researchers surveying reptiles and amphibians in the Green River Basin area (of which we are a part). With these researchers and other local wildlife professionals, we formed a discussion group to work together to determine ways our various agencies and individuals can work together to take steps to bring the endangered Blanding's and Ornate Box Turtles back from the edge of extinction in our area. At a well-attended meeting in September it was determined that there is great interest in a cooperative effort of this type, and we will continue to meet to devise and implement a cooperative recovery strategy for these species.

Continuing education for staff personnel was also provided via participation in Pesticide Applicator Training Clinics and meetings with researchers from the Illinois Natural History Survey. In July an RWF staff member attended a 3-day grassland management conference held at the Konza Prairie, a large prairie research facility in Kansas jointly managed by Kansas State University and The Nature Conservancy. Field and indoor presentations on topics such as the benefit and effect of grazing of prairies by large herbivores (Bison/Cattle), effects of differing controlled burn frequency and timing, and the factors influencing the invasion of prairie habitat by woody plant species will certainly inform and benefit our management on this site.

Amanda holding a Blanding's Turtle, *Emydoidea blandingii*

SUMMER INTERN PROGRAM

This year the Wildlife Foundation employed an intern whose term lasted longer than has been typical for us: Amanda Contreras, a recent Biology graduate of Aurora University. As a graduate Amanda had no commitment to return to school in the fall so she agreed to continue her employment into October, essentially filling 2 internship positions consecutively. We were very glad to have her assistance over the intense fall seed collection period. Her responsibilities included assisting with prairie, wetland, and woodland plantings; collecting native plant seed; Wood Duck and Eastern Bluebird nest box inspections; invasive species control; equipment maintenance; removal of downed trees; landscape and ornamental planting maintenance; and wildlife surveys. The summer internship program has been of great value to the Foundation and, we hope, to the students who have interned with us as well.

VOLUNTEERS

The Foundation has benefitted over the years from the help of volunteers who donate their time in large or small amounts to assist with our conservation projects. At times, volunteers have come to us as individuals who introduce themselves simply to offer their help. Other times, they have come in group form as entire scouting troops, classes, or student groups. This year we received help from several volunteers: Randy Rutledge, Brian Anderson, Mark Donnelly, Veta Bonnewell, Jim Halbmaier, Tyler Kent, Megan Oropeza, Steve Hickman, Sarah Cortez, Emily Thomas, and Ady Rubio. Our volunteers assisted in ongoing projects over the spring, summer, and fall months. This year volunteers assisted in controlled burns, the collection of prairie forb seed, tree planting, and tree basket installation. All of our volunteers were interested in gaining hands-on knowledge of the efforts it takes to maintain and develop habitat on the landscape level and moreover they were interested in helping us accomplish our mission. We greatly appreciate the work that each put forth on the projects in which they were involved. We continue to seek and encourage other potential volunteers of various skill, knowledge, or experience levels, as there is no shortage of valuable habitat work to be done throughout the year.

ODONATA	*Family:*	Lestidae
(ZYGOPTERA)	*Genus & Species:*	Lestes eurinus
USA-Illinois	*Common Name:*	Amber-winged Spreadwing
Collector-Cynthia McKee	*Sex:*	Male
	Date & Location:	June 23, 2015; Lee County Richardson's W.A. (Kingfisher Lake) N. 41° 42.90' W. 89 ° 11.40'

ODONATA	*Family:*	Aeshnidae
(ANISOPTERA)	*Genus & Species:*	Anax junius
USA- Illinois	*Common Name:*	Common Green Darner
Collector-Cynthia McKee	*Sex:*	Female
	Date & Location:	July 21, 2015; Lee County Richardson's W. A. (Sandfield Pond) N. [illegible] 12.79' W. 89 ° 11.26'

Dragonfly & Damselfly Specimens

MUSEUM COLLECTIONS AND STUDY SPECIMENS

The Foundation maintains museum collections of plants, insects, fish, herps, and mammals for educational and research purposes. Our herbarium collection consists of 979 plant specimens representing 78 families, 261 genera, and 455 species matted on acid-free paper. Our seed collection includes seed of 82 native prairie and wetland species displayed in glass vials. The insect collection exhibits several thousand pinned and labeled specimens in glass-topped drawers. Our fish collection is comprised of 185 specimens of 13 genera and 21 species preserved in jars of alcohol. The herp collection includes 35 specimens representing 15 genera and 17 species in the form of preserved turtle shells and specimens preserved in jars with alcohol. The mammal collection represents 30 species in the forms of hides stretched on wire frames and skulls displayed in a glass-topped case.

The majority of the specimens in our museum cases were collected on-site by RWF personnel, researchers from the Illinois Natural History Survey, or educational institutions. Databases are maintained on each of these collections, and informational

Polyphemus Moth, *Antheraea polyphemus*

Sharpening mower blades

EQUIPMENT, PROPERTY, AND BUILDING IMPROVEMENTS

Equipment repairs and maintenance accounts for a significant percentage of total employee hours each year. The following list details repairs or improvements made to implements, tractors, and trucks this year:

John Deere 7720 Combine
- Repl. feeder house chain
- Replaced batteries
- Repl. sickle guards & cutting sections on bean head

Gravity Wagon
- Replaced 2 tires

S770 Bobcat
- Replaced window gasket
- Replaced wiring harness on forestry head
- **Repl. door handle sensor**

Cultimulcher
- Hydraulic cylinder remounted onto frame

Woods Batwing Mower
- Replaced blades

John Deere 4020
- Repaired battery cable

John Deere 4040
- Replaced Radiator

John Deere 4840
- Replaced batteries

John Deere 8650
- Repaired fuel line
- Replaced batteries
- Repaired throttle

John Deere 1435
- Replaced blades

John Deere Soil Finisher
- Replaced worn sweeps
- Repaired C-Shanks
- Repaired drag

John Deere 335 Disk
- Repl. frnt blades, bearings
- Replaced hydraulic hose

J.D. 7200 6-row Planter
- Rebuilt marker cylinders

John Deere Gator
- Repl. drive chain, sprockets & wheel bearings

Mercury 9.9 HP Boat Motor
- Rebuilt carburetor
- Cleaned flywheel
- Replaced fuel line

Johnboat
- Repl. & re-welded drain

Chevrolet Pickups
- Replaced tires (‘02)
- Manifold gaskets (‘07)
- Weld tailgate hinge (’02)
- Replaced starter (‘00)
- Repr. tail lights (’00)

In addition to the specific list above, we changed filters, fluids, and grease for all tractors and trucks; sharpened mower blades; made numerous repairs to small equipment including the chainsaws, backpack sprayers, snow blower, and leaf blower; and patched or otherwise repaired tires of implements, tractors, and trucks as needed.

Pressure washing outbuildings

EQUIPMENT, PROPERTY, AND BUILDING IMPROVEMENTS

In order to allow space for needed road gravel, we ground the hinges off of the main gate near the office and raised it six inches using the backhoe, re-welding the hinges and locking ring to the new height. We pressure washed and painted both the metal gate and the associated fencing along the roadside at both the south gate described here and the north gate on the Erbes tract.

At the lodge we treated the lawn with a crabgrass preventer; cleaned gutters; made electrical; sink, and toilet repairs; replaced bathroom towels; pressure washed the decks and siding; and removed a colonizing honeybee swarm from the chimney.

At the Sanctuary we cleaned, lubricated, and repaired the upper dormer windows; re-caulked windows and flagstones; made repairs to heating/cooling system; cleaned gutters; washed windows; pressure washed the building, decks and stone walkways; and had the carpets professionally cleaned.

At the Erbes cabin we replaced a belt and pressure switch on the well pump, made repairs to doors and locks, and installed some donated small appliances.

At the Bauer house we pressure washed and stained the decks. Prior to washing we removed decking from an upstairs porch to investigate causes of periodic leaking, examine the condition of weathered boards, and make minor repairs while we had access. Leaks were determined most likely to be related to a door, rather than the deck flashing. We leveled and re-planted lawn grass on the area of the yard that was excavated in the process of making last year's septic repairs.

At the brick house on the Wysneinski South tract, we re-caulked the east facing windows, installed debris guards on the gutter downspouts, painted one bedroom, replaced a kitchen faucet, and removed a colonizing honeybee swarm from the roof eave.

At the Montavon house we replaced a failed water heater as well as a small refrigerator, made bathroom plumbing repairs, and pressure washed siding.

At the Martin house we replaced the security light, pressure washed siding, and removed and re-plumbed a ruptured hydrant on the line to the shop building.

We pressure washed the Erbes barn and repeatedly pressure washed the shop building prior to contracting a painter to paint the shop and the Erbes barn roof.

Other repair and maintenance jobs included making electrical repairs to overhead light ballasts at our office building, winterizing buildings, and splitting firewood.

As in any year we spent significant time removing trees that were dead or dying from disease or brought down by storms and pruning trees near buildings and along lanes and trails to maintain accessibility on the property.

Property maintenance included many of the jobs listed above as well as mowing lawns; maintaining landscaping; grading, spreading gravel, and patching potholes on lanes; clearing snow; repairing and maintaining cable gates and posts; posting property boundary signs; repairing field tile; and removing Beaver dams for proper drainage.

PRAIRIE AND SAVANNA MANAGEMENT

Burning around trees in the oak savanna

On March 21st, we conducted successful controlled burns on approximately 46 acres of prairie, savanna, and creek banks in the bottomlands. With our crew of 4 people, 2 John Deere Gators with 50 gallon pumper units and 2 drip torches, we established a blackened safety zone around the perimeter of each unit prior to head firing. A total of seven units were safely and successfully burned. This year our crew spent a day and a half in the early spring removing tree baskets from young oaks which had outgrown the need for protection from deer browse. As many of these baskets were plastic and flammable, this allowed us to burn the savanna unit more safely and efficiently.

POND MANAGEMENT

Treating with algaecide

We controlled aquatic vegetation and algal blooms using various chemical applications over the course of the growing season. For control of rooted aquatic vegetation, we applied Reward in 4 different applications: once each in May, June, July, and September. We made nine treatments with Cutrine Ultra and Clearigate to control algae from May to the end of September. In all, we used a total of 6.5 gallons of Reward, 9.25 gallons of Cutrine Ultra, and 2.9 gallons of Clearigate. The continued use of Aquashade, a pond dye which helps limit the amount of light available in the water column, has helped us reduce the amount of herbicides and algaecides needed to manage the pond. We applied a total of 8.75 gallons of Aquashade dye in 2 treatments in March and June.

We performed regular maintenance on the aeration system to help balance the diffusers and keep them operating efficiently. We retrieved all diffusers from the pond bottom, cleaned them in a muriatic acid bath, reassembled them to the plastic tubing, lowered them to the pond bottom, and balanced the pressure to diffusers from the pump.

Dawn at Muskrat wetland

ADMINISTRATIVE SERVICES

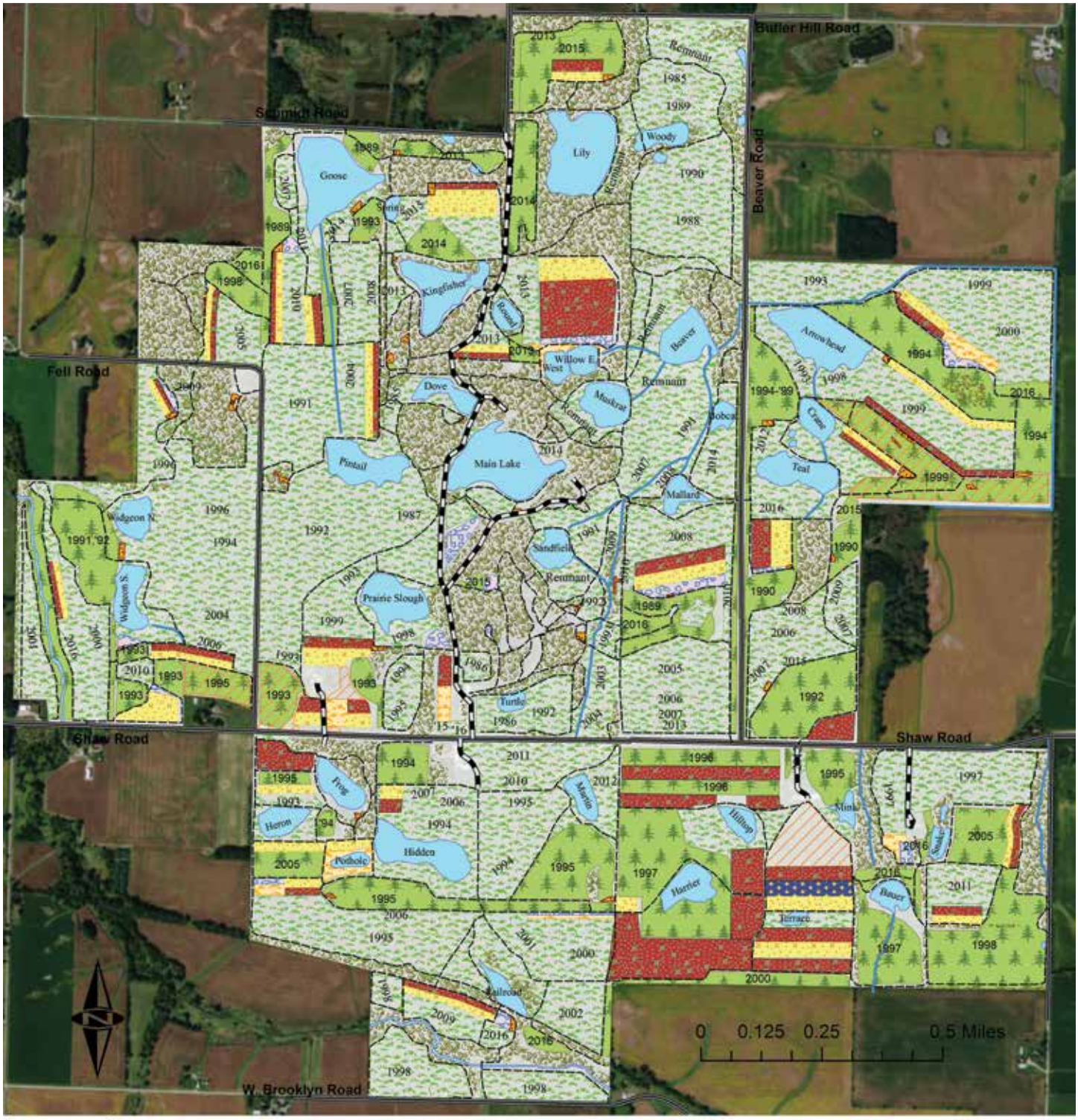
The following is a brief list of administrative support services involved with the daily operation of the Wildlife Foundation.

- Habitat planning, layout, mapping, and evaluation of annual land management practices
- Budgeting, payroll, task code, and programmatic accounting
- Preparation of an annual report of Wildlife Foundation accomplishments
- Maintenance of a website representing the Wildlife Foundation
- Representing RWF at meetings and conferences for the advancement of the Foundation
- Coordination of investigations, surveys, and research projects
- Literature review & research regarding management practices and conservation issues
- Completion of required state and federal reports for continued operation
- Applying for miscellaneous permits and licenses needed for continued operation
- Complying with reporting requirements for federal crop programs
- Ordering and purchasing supplies needed for operation and project implementation
- Conducting staff meetings and training sessions
- Devising work plans, project lists, and scheduling
- Conducting annual employee evaluations and reviews
- Technical support services
- Seeking and interview of potential employees or internship positions
- Maintaining professional and business contacts
- Legal searches and review of operations
- Program evaluation and review
- Correspondence and miscellaneous office duties

PHOTO CREDITS

The following is a list of people who contributed photographs for this year's annual report: Brian Towey, Therin Bradshaw. We thank them for the use of their photos.

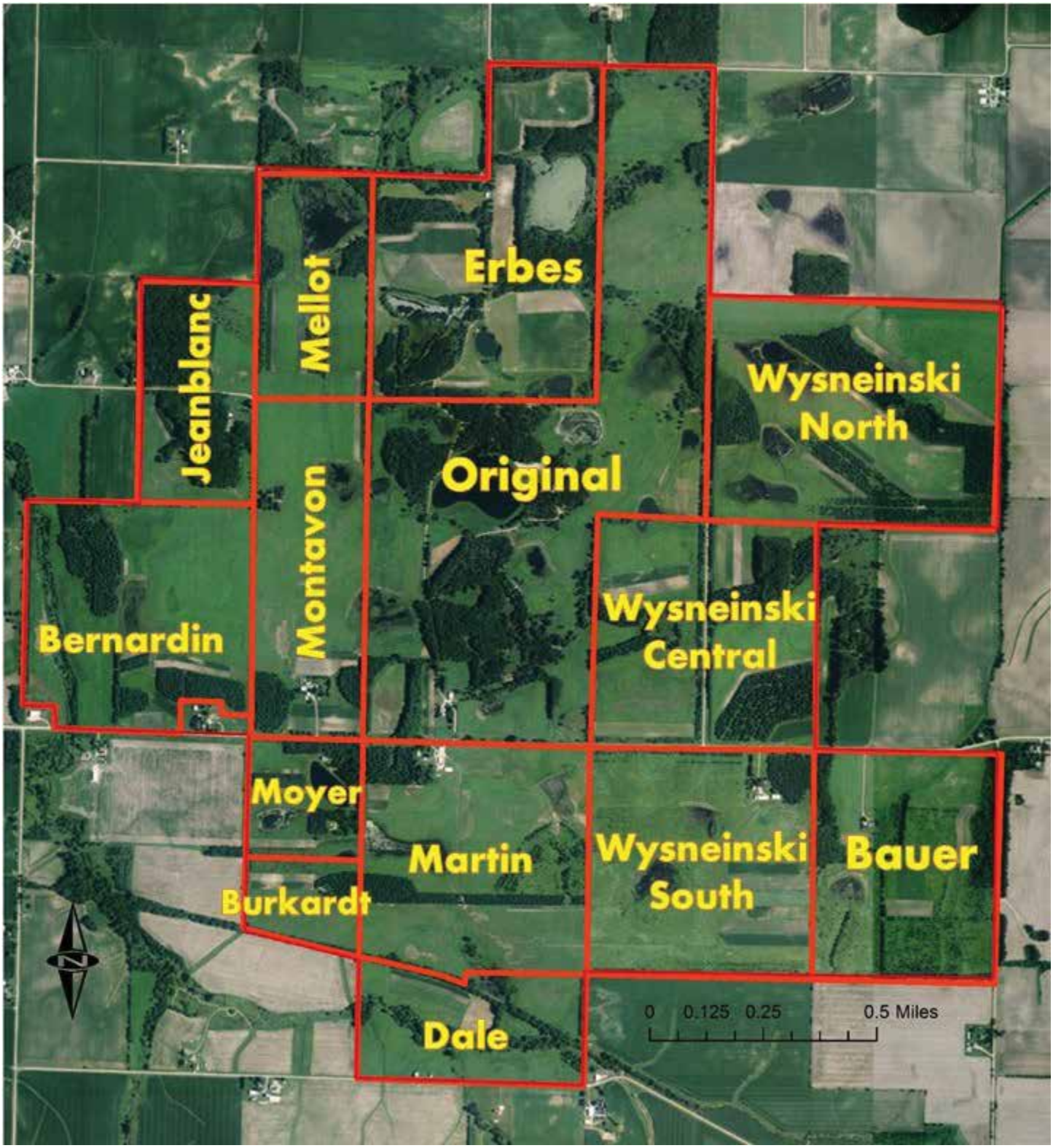
MAP OF HABITAT MANAGEMENT PRACTICES



Legend

- Gravel Lane
- Trails
- Water
- Existing Timber
- Tree Plantings
- Prairies
- Prairies, 2017
- Interseed, 2017
- Habitat Preparation
- Corn
- Soybeans
- Oats
- Sunflowers
- Clover Foodplots
- Mixed Foodplots

LAND TRACT MAP



2017 ACREAGE FIGURES

Prairie Restoration	Acres	% of Total
1985	21.2	
1986	13.3	
1987	12.3	
1988	19.3	
1989	6.9	
1990	15.5	
1991	38.8	
1992	39	
1993	45.9	
1994	41.3	
1995	52.2	
1996	28.1	
1997	25.4	
1998	33.1	
1999	38.2	
2000	51.2	
2001	25.2	
2002	10.9	
2003	7.1	
2004	15.3	
2005	18.6	
2006	26.5	
2007	28.68	
2008	21.2	
2009	12.6	
2010	18.52	
2011	23.85	
2012	16.1	
2013	30.5	
2014	19.2	
2015	9.2	
2016	12.13	
2017	20.28	
TOTAL ACRES -	**797.6**	**40.4%**
Remnant Prairie -	**40.4**	**2.0%**
Tree Plantings		
1989	13.8	
1990	7.4	
1991	16.7	
1992	23.8	
1993	16.2	
1994	51	
1995	39.7	
1996	15.1	
1997	46.4	
1998	23.7	
1999	23.8	
2000	2.2	
2001	1.7	
2002 - (625*)		
2003 - (300*)		
2004 - (452*)		
2005	15.2	
2013	9.2	
2014	11	
2015 - (28*)	14.2	
2016 - (37*)	8.9	
2017 - (108*)	8.65	
TOTAL ACRES -	**348.7**	**17.6%**

** Potted oaks planted within existing plantings.*

Pre-existing Timber	**291.2**	**14.7%**

Wetlands	Acres	% Of Total
Beaver	5.5	
Main Lake	14.2	
Woody	2.4	
Dove	3.2	
Muskrat	5.1	
Sandfield	3.8	
Goose	13	
Teal	6.5	
Mallard	2.6	
Pintail	7.1	
Wigeon North	2.4	
Wigeon South	5.4	
Prairie	8.2	
Hidden	7.6	
Pothole	1.3	
Hilltop	2.7	
Bauer	2.5	
Martin	3.5	
Railroad	2.2	
Terrace	0.75	
Harrier	5.2	
Turtle	1.5	
Crane	2.8	
Arrowhead	6.8	
Bobcat	1.5	
Lily	13.4	
Willow East	2.3	
Willow West	1.8	
Round	1.6	
Kingfisher	8	
Spring	1.3	
Mink	1.1	
Snake	1.9	
Dugouts (4)	0.75	
TOTAL ACRES -	**149.9**	**7.6%**
Cool Season Grasses	**38.1**	**1.9%**

Foodplots	Acres	% Of Total
Corn	54.2	
Soybeans	96.2	
Oats	0	
Sunflowers	2.96	
Winter Wheat	0.65	
Deer Clover	10.7	
Brassica	5.5	
TOTAL ACRES -	**170.2**	**8.6%**
Drainages		
Bauer	1.2	
Bernardin	1.1	
Dale	1.3	
Sandfield	0.5	
Wysneinski	1.6	
TOTAL ACRES -	**5.7**	**0.3%**
Trail \ Firebreaks -		
Total Length - 47.3 miles	**69.5**	**3.5%**
Road \ Ditch Easements	**45.9**	**2.3%**
Total Length - 6.6 miles		
Building and Home Sites -	**18.9**	**1.0%**
TOTAL ACREAGE -	**1976**	

WILDLIFE HARVEST REPORT

Canada Geese, *Branta canadensis*

HUNTER HARVEST

The following table represents hunting activity for the past calendar year. One hunter trip is defined as a hunter going afield for one specific hunting activity. For example, a hunter may have hunted deer in the morning and hunted pheasants in the afternoon, or hunted deer in the morning and again in the afternoon. Both of these examples would count as two hunter trips for the same day.

SPECIES	HUNTER TRIPS	HARVEST
Dove	4	12
Waterfowl	27	44*
Deer (Archery)	308	20
Deer (Firearm)	23	5*
Turkey (Spring)	10	4
Turkey (Fall Archery)	***	1

** The waterfowl harvest included 6 Mallards, 16 Wood Ducks, 6 Green Wing Teal, and 16 Canada Geese.*
*** The deer harvest included 18 does and 7 bucks with the following breakdown: 17 adult females, 1 juvenile female, 6 adult males, and 1 juvenile male. The turkey harvest included 2 adult males, 1 juvenile male, and one bearded hen harvested in the spring season and 1 bearded hen harvested in the fall season.*
**** Hunter trips were incidental to archery deer hunting.*

TRAPPING HARVEST

SPECIES	HARVEST
Raccoon	6
Muskrat	61
Opossum	2
Mink	1
Striped Skunk	0
Badger	0
Coyote	0

NOTES

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