

RICHARDSON WILDLIFE FOUNDATION
ANNUAL REPORT

2024



Northern lights seen from
the Jeanblanc Tract





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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 funded the Foundation as it has expanded to 1,976 acres through land donations from the Richardsons and the purchase of adjacent farms.

The "strawberry moon"
on June 21st



NEWS & NOTES

“The question is not what you look at, but what you see.” ~ Henry David Thoreau

This year marked Richardson Wildlife Foundation’s 35th anniversary. Prior to 1989 the Foundation—and its mission—was just an idea of what could be done here. Ideas are a critical step in any process, but many excellent visions are not acted upon and those that are rarely receive the levels of dedication, support, and means that Ed and the Richardson family have provided the Foundation over these decades. The need for conservation and restoration of natural habitats for wildlife has only grown since he decided to act on his vision of what RWF could be. For all of us, inspiration and commitment will forever be critical to sustaining wildlife as well as human well-being through the ecological services provided by properly functioning natural systems. Anniversaries are a time to take stock, reminisce, and celebrate, so let’s do a little of that here.

“The best time to plant a tree is thirty years ago. The second-best time is now.” ~ Proverb

Over the last three and a half decades Ed has expanded the scale of the property by more than 7 times. We’ve increased the amount of prairie habitat available on the local landscape by 830%. We’ve developed 40 new wetlands, planted over 240,000 tree seedlings and 2,300 potted trees. In each of those habitat types we have increased resilience and species diversity through collection and distribution of over 16,000 lbs. of native seed, building the number of plant species we have available for this work from a few dozen species in the early years of the project to a record 277 species this year. Along the way, as our footprint has grown and our habitat has improved and matured, we’ve documented and nurtured expansions of local wildlife populations and become an important seasonal refuge for migratory species. Numerous students and professionals have learned restoration techniques and principles, worked, studied, surveyed, researched, plied their trades, or otherwise cut their professional teeth at the Foundation. Most of these individuals have taken their inspiration and skills, including lessons learned here, and have gone on to build careers in research and conservation fields. The impact of a place and a project like this stretches beyond its borders.

*“The sky is a storyteller, sharing its tales through the clouds and stars.” ~ Antoine de Saint-Exupéry, *The Little Prince**

In prairie country, the sky is big—and frequently spectacular. This year seemed to offer exceedingly rare and beautiful views whenever we turned our eyes upward. We were treated to multiple evenings featuring the aurora borealis, supermoons that looked too big to be real, postcard rainbows, and the brightest comet in 27 years. Though we can’t take a shred of credit for any of it, it was another example of how inspiring nature can be and we’re including a few of our best efforts to capture these cosmic and natural scenes throughout this year’s report.





Combine harvesting
Little Bluestem seed

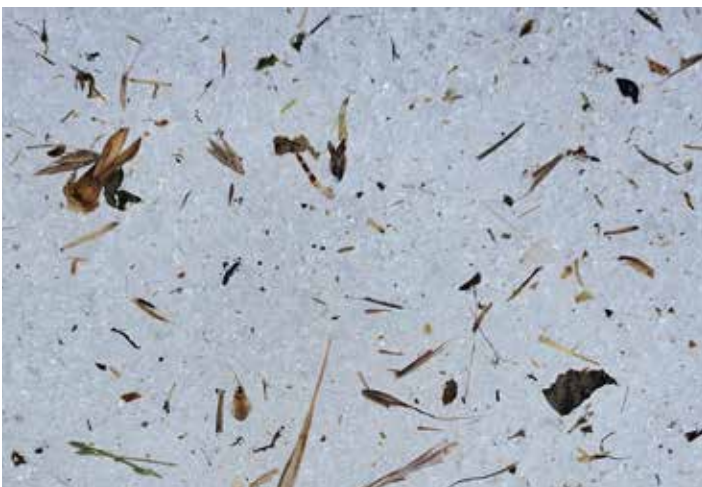
SEED COLLECTION

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 forb and grass seed for prairie, wetland, and woodland 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 quantities we target. Many species are difficult to collect due to the spotty distribution of plants or because seed production from individual plants is low. Collecting and processing forb seed by hand, although time-consuming, is considerably less expensive than purchasing an equivalent amount of seed from a commercial source.

By hand collection, we gathered 974 pounds of seed of **277 species** of native prairie, wetland, and woodland plants this year. **This is the fourth year running that we have set and broken our record for diversity of species.** It is gratifying to look back on the progress we've made over the many years that we've worked to expand species diversity on this site. As we have continued to introduce additional native species, we've been able to draw seed from those plants to drastically increase our annual harvest and, by extension, improve the quality of the habitat we're able to restore for wildlife. **The number of plant species in our seed collection list this year was 44% greater than just 10 years ago and 110% greater than 20 years back.** A few of the species we were especially excited to collect or trade for were Downy Yellow Painted Cup, Leafy Prairie Clover, and Great St. John's Wort. We have been particularly focused on woodland habitat development lately, and we have continued to expand our collection of woodland wildflower seed accordingly. This is in part due to willing landowners and agencies from whom we have gratefully obtained permission to collect and/or transplant desirable native woodland species on several nearby, off-site, wooded locations, as well as from the excellent oak savanna on the Richardson property in LaFox.

Using a modified combine, we harvested 67 pounds of Side-oats Grama and 300 pounds of Little Bluestem seed from collection patches we planted four years ago. To supplement our collection, we participated in a seed swap with the Northern Illinois Native Seed Network hosted by DeKalb County Forest Preserve District, and we will seek to trade seed of some of our hand-collected forb species with 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.



Native seed scattered over snow during frost seeding



Gathering Prairie Brome on an off-site collection event



Conducting a prescribed burn around Railroad Wetland

PRAIRIES

Illinois is known as “the prairie state” and RWF lies within the Grand Prairie natural division of Illinois. Prior to European settlement, and the subsequent conversion of the landscape to agriculture, tallgrass prairie was the primary habitat type in our region. Any wetland, woodland, or savanna habitat would have been surrounded by and dwarfed in scale by the seas of prairie grasses, sedges, and forbs that composed the backbone of the local ecosystem. Just as there are many kinds of woodland ranging from boreal coniferous forest to bottomland hardwood, oak savanna, or thickets, and wetlands ranging from bogs to marshes to swamps to ponds, there are many varieties of prairies as well. Types of prairies are primarily determined by soil structure, hydrology, and topography and bleed together into a matrix in which delineation might be less than straightforward and even vary over time depending on climate patterns. RWF grasslands, be they remnant or restored, are primarily black soil prairie and sand prairie. Both types might range from the dryer side to the wetter and might transition across an area from one to the other or into the marshy sedge meadows associated more with our wetland habitat.

Prairie habitat represents a higher proportion of the Foundation property than any other habitat type, most of it having been restored on former row crop ground. We conduct prescribed, controlled burns, generally on a three-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 cover for wildlife, and allowing for the greatest potential for species diversity. Our spring burn season this year started on February 20th and ran through March 24th. It was helpful that we had gotten a jump on things with a brief but successful fall burn season in December of last year, decreasing the acres left to target this spring. Between fall of 2023 and spring of 2024, we burned 62 units totaling about 410 acres. All units were burned safely using a 4-person crew equipped with water tankers, drip torches, Nomex clothing, and two-way radios. As a safety precaution for burning, and to allow for access to the property, about 48 miles of firebreaks and trails were maintained via mowing during the growing season.

This year we planted fewer acres of new prairie and interseeded less existing prairie than we have typically done as we turned our attention to seeding timbered areas that lost much of their canopy to tornado damage in spring of 2023. We planted a small new prairie restoration on the Original land tract and interseeded about 2 acres of existing sand prairie restoration on the Jeanblanc Tract to improve diversity. The restoration on the Original Tract was seeded on dry sandy soil, which we had treated twice with glyphosate in the prior growing season to eliminate non-native cool season grasses and weeds. We planted a seed mix of 58 species of flowering plants, grasses, and sedges at a hefty 130 pounds to the acre for this planting. We interseeded 48 species at 32.7 pounds per acre into existing prairie restoration on the Jeanblanc Tract. Prairie restorations and interseeding were conducted by frost seeding over light snow cover in January. For specific locations of this year’s new plantings and interseeding efforts, see our habitat map (Appendix 1) in the back of this report.



Cream Wild Indigo



Meadow Anemone



Purple Twayblade
Orchid



Marsh Marigold seed
ready for collection

WETLANDS

Wetlands are among the most biologically productive and diverse habitat types found in nature. They provide immense value to human well-being through their natural functions of water purification, flood control, and groundwater replenishment even before factoring in the direct and intrinsic values of wetland flora and fauna. They are also among the most imperiled habitat types. Approximately half the world's natural wetlands had been drained by the mid-1990s. On our site, any efforts to accomplish successful restoration of native habitat and provide for the needs of local populations of wildlife need to be informed by the wetland history of the property. RWF exists at the southern edge of the historic Inlet Swamp, drained over one hundred years ago, and many of our soils are “hydric,” or wetland formed. Soil types, coupled with hydrology and sunlight, are what determine which native species can thrive. Recreating the 30,000-acre wetland complex that once existed here is neither feasible nor culturally possible at this point, so our approach has been to restore what are known as prairie pothole wetlands dotting our landscape and providing similar ecological functions on a smaller scale.

We record monthly water level readings at each wetland to assess fluctuations occurring throughout the year as well as across multiple years. We have been in a dry weather pattern since the beginning of 2020 and as a result many of our wetlands have tended to enter the spring season below their full capacity. In normal or wet conditions, this should be a time of high water availability, as winter conditions would allow for water buildup in pools and soil. Recent winters have scarcely frozen the ground surface and provided well below average snowfall or other precipitation. What spring and early summer rains we have received, therefore, may bring our wetlands to full pool, but they don't bank as much water in the soils or groundwater as they could, leading to faster losses when we don't get regular precipitation. Dry spells in the spring and summer months, as have been common lately, result in much faster loss because higher temps lead to increased evaporation and transpiration from growing plants. During the growing season this year, our rain gauges showed nearly 20% less rain than the historical average for our locality. Wetlands dried down over the course of the summer, with fully half of them (23) going entirely dry by early October and many others reduced to small pools. It appears that our wetlands will overwinter again below their capacity. We hope to see winter precipitation and early spring rains bring water levels up to full prior to next summer, especially at those wetlands where we have released hatchling and head-started Blanding's Turtles. When water levels diminish, juvenile turtles and other vulnerable species are left more exposed to foraging Raccoons and other predators. This summer and fall unfortunately provided especially easy pickings for predators at our wetlands.

We regularly make repairs in the summer months to our wetlands as part of an ongoing maintenance program. Visual searches are made for Muskrat tunneling damage and repairs are made as needed. This year we repaired Muskrat damage at Bobcat, Harrier, Hidden, Muskrat, and Teal Wetlands. We also made repairs to several wetland control structures. Low water levels during the winter months can lead to ice damage on the Hickenbottom risers that serve as intakes in many of our wetlands. When wetlands are full, ice typically stays above the intake. When winter water levels are low, ice may form around the intake and exert pressure or force movement, causing damage or detachment of the intake. We repaired damage of this type to risers and debris guards at Bauer, Mink, Snake Central, and Arrowhead wetlands.

Decades ago, several portions of the Brooklyn Creek that run through RWF were channelized—rerouted and straightened—in attempts to increase tillable acreage for the farmers who owned the land at those times. For several years we have studied the possibilities of undoing portions of that action and returning flow back to sections of the original course. Our surveys suggest that would be an undertaking, but the option is something that is still worth consideration. This year we opted to construct a fairly simple wetland restoration in that area by damming a small portion of the former creek channel, creating a small length of oxbow



Carefully moving soil to cover an anti-seep diaphragm during construction of "Oxbow" wetland

WETLANDS (cont'd)

wetland. This project does not preclude eventual restoration of the creek to its original channel and in fact would be a good first step in that process as the new berm allows machine access to an otherwise inaccessible area between the current and former channels.

We began the process of building the new wetland, which we'll call "Oxbow," in February, removing dead and undesired trees blocking access to the drainage. In the driest portion of this especially dry summer, we used a bulldozer to smooth and scrape the steep, eroded banks of the drainage, just before it joins the channelized portion of the creek. We then used a combination of the bulldozer, the 8650 tractor with box scraper, trucks, and trailers to maneuver the tight spaces between the old and new channels, building up and packing clay and black soil to construct a short dam. Under the dam, we laid a 40' length of 4" PVC pipe run through a framed latex anti-seep diaphragm. We attached a blind-T junction and intake riser on the wetland side, and a 90° elbow and shorter section of pipe on the outside of the wetland. The elbow and short pipe will act as our "tilt-tube" water control structure. It can be angled higher or lower to alter the potential level inside the wetland or drain it if needed. Once the berm was in place we made several targeted herbicide applications to invasive plant species in the area and seeded the berm with wheat to prevent erosion in the short term. This winter, we will seed a diverse mix of native species on the berm, basin, shorelines, and surrounding areas.

Our wetland seed collections have improved dramatically in diversity and scale over the course of our project's history. When possible, we make a special effort to return to wetlands that were constructed years ago to introduce seed of species that we had little or no access to when they were originally built. In January and February, we seeded all around Railroad Wetland and a southern portion of Prairie Slough with diverse mixes of native wetland plants, grasses, sedges, shrubs, and forbs. The seed mix for Railroad Wetland included 87 pounds of 81 plant species. At Prairie Slough we used 32 pounds and 81 species.



A long day of burning coming to a close around Beaver Wetland



Mixed hardwoods on the
Jeanblanc Tract

WOODLANDS

Woodland habitat at RWF can be boiled down to 3 categories of timber stands: mixed timber which predate the inception of the Foundation (“Existing Timber” on our map), hardwoods planted by RWF (majority Black and Bur Oak), and oaks planted among 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 the Foundation has now been working on our woodland habitat for over 30 years. Our wooded habitat has come a long way over that time, showcasing the results of those many years of growth, bare-root and potted tree and shrub planting, selective cutting, invasive species control, protection of priority seedlings, and seeding of native understory plants. There remains plenty of work to do, but it is rewarding to see the returns on the investment of effort and resources when we evaluate our woods.

Most of our existing mixed timber stands are the result of natural succession following the abandonment of agricultural crop fields or pastures many decades ago. Some were planted with various pines 50+ 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 low-wildlife-value 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.

As our timber matures, more of our oak plantings are reaching a size at which they become tolerant of fire. Beyond tolerance, fire is an essential aspect of savanna and oak woodland ecology. Our experience with burning restored oak habitat has shown near 100% oak survival and observable benefits to the understory plant community. In the years following prescribed burns, we have seen increases in flowering plants in the understory and accelerated growth and acorn production from the oaks themselves.

We usually 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. This past winter we continued to clear fallen trees and debris from last year’s tornado on the Original, Erbes, and Bernardin Tracts, and interseeded appropriate sand-loving native seed mixes suitable for savanna, full-sun, and open woodland. For these seedings we used almost 400 pounds of seed and 152 species. In the spring, we planted 100 bare root Fragrant Sumac and 50 White Oak. We will continue to assess these areas and manage them in accordance with a plan to promote oak savanna habitat over the long term.

For the last several years we have been implementing in stages a plan to restore and improve the riparian zone along both sides of the Brooklyn Creek on the south end of the property. That process has included multiple prescribed burns; removal of invasive and undesirable trees, shrubs, and grasses; and planting of potted bottomland trees and shrubs. This year in January and February, we seeded the area with 203 pounds of seed of 160 species of native forbs, grasses, sedges, and shrubs. In March, we planted an additional 750 trees and shrubs using bare root stock of Hazelnut (200), American Plum (200), White Oak (50), Sycamore (100), Bitternut Hickory (100), and Fragrant Sumac (100). During drought conditions in June of this year, we repeatedly watered all recently planted potted and bare-root trees.



Garlic Mustard and Poison Hemlock



Morrow Honeysuckle



Herbicide-treated Reed Canarygrass



Oriental Bittersweet

INVASIVE SPECIES MANAGEMENT

Habitat degradation is second only to habitat loss among the factors that most threaten native wildlife. Aggressive nonnative species (invasives) are a primary driver of habitat degradation on the modern landscape. Unchecked expansion of invasive species can displace and cause decline or extirpation of their native counterparts, disrupting relationships within native communities that coevolved over thousands of years. The more habitat we restore for wildlife, the more effort is required for suppression of invasive species. Even as we continue to make great progress in reducing invasive plants, we find that it requires an immense amount of effort to hold ground against reinvasion, and that vigilance is required against invasions by additional exotic species, which become more frequent each year.

Recently we have encountered increasing invasions of Oriental Bittersweet, a plant somewhat similar to but far more aggressive than the native American Bittersweet. This vine is occasionally used in landscaping but frequently escapes to natural areas with the help of birds that eat its berries. This year we found and eliminated Oriental Bittersweet plants on the Bernardin, Jeanblanc, Wysneinski Central, Erbes, Dale, and Original Tracts with foliar and basal applications of the herbicide Triclopyr 4.

Reed Canarygrass poses a greater threat to the vegetative integrity of our wetlands than any other current factor. Many of our wetlands, moist prairies, and waterways require periodic management actions to circumvent Reed Canarygrass dominance. We continued the ongoing program of treating this invasive species at several wetlands as well as areas on more upland locations and mowed to prevent seeding in other areas. We increased our use of Clethodim, an herbicide that targets grasses but does not harm broadleaf plants or sedges. While this herbicide may not be as effective per treatment at harming perennial grasses as Glyphosate is, the selectivity of Clethodim allows us to use it in areas in which the collateral damage to native species would be too severe to justify a broad-spectrum treatment. Following treatments with Clethodim, the unharmed sedges and broadleaf plants can continue to thrive and compete with the weakened invasive grass. We hope to find that more frequent use of this tool and refinements to our approach with it can help us prevent Reed Canarygrass from taking over otherwise healthy plant communities and forming monocultures.

Another wetland plant capable of dominating wet habitat is Phragmites, or Giant Reed. We treated small-scale invasions of Phragmites on the Wysneinski North and South, Montavon, Original, Dale, and Bauer Tracts this year. Phragmites can be a very difficult plant to eliminate, but on our site we have had little trouble in controlling it to prevent complete takeover using periodic treatments with aquatic-safe forms of Glyphosate during its flowering stage.

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 control efforts this year included applications of 3% solutions of Glyphosate, hand-pulling of plants before they seeded, and controlled burning. We targeted Garlic Mustard in woodlots on the Erbes, Jeanblanc, Original, Wysneinski Central, and Mellot Tracts. To avoid damage to valuable native spring wildflowers on the Bauer Tract, we hand-pulled Garlic Mustard in the timber west of Meridian Road. Garlic Mustard seed's persistence in the soil seed bank; new invasions brought in on the hooves, feet, and fur of animals; the scale of our invaded woodlands; and the short window of the effective treatment season conspire to make complete eradication an unachievable goal. Our strategy is to reduce existing invasions of Garlic Mustard to limit its spread.

Invasions of prairie plantings, other grasslands, and tree plantings by Canada, Bull, and Musk Thistles and White and Yellow Sweetclover are a periodic problem. Canada Thistle is an aggressive perennial invasive which tends to thrive in disturbed habitat or the early stages of habitat restoration. In some cases we target invasions in our prairies with the herbicide Clopyralid 3 or mow



Targeting invasive shrubs with herbicide from a backpack sprayer

INVASIVE SPECIES MANAGEMENT (cont'd)

Canada Thistles during the growing season prior to the flowering stage to prevent seed development. We have found our best results have come from controlling seed production of Canada Thistles, chemically treating the most severe invasions in the spring, mitigating sources of disturbance, and interseeding native species to outcompete the thistle over time. Bull and Musk Thistles and White and Yellow Sweetclover are all biennial species (live two years, produce seed in year two, then die). For this reason, it is possible to limit seed production through repeated, well-timed mowing, allowing time and competition to diminish the population. This has been a focus of our strategy for years and has been effective in decreasing the density of the invasives and curtailing spread. We do, however, find that we mow many of the same acres every year, and while density of Sweetclover seems to be decreasing, its footprint remains largely the same. Last year we began a 2-acre trial of a spring herbicide treatment recommended by a close colleague using low rates of Clopyralid 3 herbicide. Prior to herbicide treatment, we conducted a plant transect survey, noting the density and diversity of native species and the invasive Sweetclover, of which there was quite a lot at the time. This year we were prepared to make another treatment and follow-up observations, however the treatment from 2023 seemed to have diminished the amount of Sweetclover this year to a degree that it was deemed unnecessary. For now, results indicate that the treatment had the desired result on the Sweetclover. However the jury is still out on the longer-term effectiveness and the impact on the native species in our test plot. We will continue with the trial and evaluations next year.

Bush Honeysuckle, Autumn Olive, and Common Buckthorn are invasive shrubs that can dominate in both woodland and open canopy habitat. By outcompeting seedlings of native species, which local herbivores often favor, they can entirely alter the character of a habitat over time. We have made excellent progress clearing our woodlands and prairies of the adult, seed-producing individuals of these species, even as they have increased in prevalence on less-managed properties in our area. During the growing season and into the fall, we treated adult plants and seedlings of invasive shrubs with Glyphosate or Triclopyr 4, or a combination of Triclopyr and 2,4-D using backpack sprayers or spot spraying from a UTV. We use foliar, cut stump, or basal bark treatments depending on the season, surrounding habitat, and severity of invasion. Keeping up with ongoing regrowth of seedlings and new invasions is time-consuming and will be required indefinitely as we work through the invasive seed banks, but it is critical to maintaining the progress we've made and will help prevent further spread of invasives.

Although it is a native species, Sandbar Willow is an aggressive invader of moist, sunny habitat, particularly capable of diminishing the diversity and quality of wet prairie and sedge meadow. Periodic mowing of the suckering stems of this clonally growing plant can stop or reverse its outward spread. Targeted herbicide treatments can be effective but often cause damage to the surrounding native species. We took advantage of the dry summer conditions this year to mow large areas of willows earlier in the summer than would normally be possible, allowing grasses and sedges to regrow before fall on the Bernardin, Wysneinski North, Montavon, and Original Tracts.

We continue to become more effective and efficient at combatting invasive species as we refine our techniques. We monitor the scientific literature and maintain dialogue with colleagues to learn new methods and treatment options. We research and maintain vigilance against invasions of known problem species that have not yet become established at RWF. We have made outstanding progress controlling or suppressing many of these invasive species, and our habitat on site is much the better for it.



Sunflower field in
early June

FOOD PLOTS / AGRICULTURE PLANTINGS

We maintain wildlife food plots of corn, sunflowers, soybeans, oats, White Clover, other perennial forages, and Brassica to complement our native habitat in meeting the food requirements of wildlife. We planted five new clover and mixed perennial patches (4.33 ac) in the spring and fall-planted seven patches (1.3 ac) with a mix of Brassicas, perennial clover, alfalfa, Sainfoin, and Chicory. We planted Glufosinate and Glyphosate herbicide-tolerant corn and Glufosinate, Glyphosate, and 2,4-D herbicide-tolerant soybeans to help combat Glyphosate-resistant Water Hemp weeds.

Final acreage figures for all wildlife food plots included twenty-one fields of corn totaling 55.16 acres, twenty-one fields of soybeans totaling 53.42 acres, two fields of sunflowers totaling 3.54 acres, thirty-three fields of clover and mixed perennials totaling 19.01 acres, and thirty-three fields of mixed perennial forages totaling ~4 acres. Acreages are measured using GPS and mapping software and reported to the Farm Service Agency for crop certification.

In the spring we applied 100 pounds per acre each of DAP and potash to all row crop, perennial forage, and clover fields. We applied 32% Nitrogen on the corn and sunflower fields in the growing season. For weed control on corn acres we used Verdict preemergence, and a single treatment of Glyphosate, Atrazine, AMS, and Sotrion postemergence. For weed control in soybeans we made a preemergence treatment of Panther Pro, then two postemergence treatments with Glufosinate, 2,4-D, Glyphosate, AMS, Outlook, and Crop Oil. We regularly mowed our perennial food plots for weed control and sprayed Clethodim for control of grasses. Weed control was excellent on corn acres, much better than average on sunflowers, and the best we've had in many years on soybeans. In spite of good weed control many of our soybean fields suffered from June drought and severe deer browse, preventing canopy and diminishing bean production. Four of these fields were browsed so low as to entirely prevent harvest with the combine, though they remained largely weed-free and produced bean pods at ankle height. We tried to make up the loss by combining a higher percent from larger, more productive fields and left the most heavily browsed fields entirely for wildlife use. In the fall we spread 3 tons of lime on all row crop, clover, and other food plot acres north of Shaw road (other than the Erbes tract) and applied next spring's DAP and potash fertilizer to half of our ag acres. We took soil samples in December for laboratory analyses to guide future fertilizer and lime input decisions. As with any program at RWF, we continue to research potential methods to determine if there is a more effective way to manage row crops for production and wildlife use. **After many adjustments to our weed control program in recent years, this year's treatment regime yielded the best solution we've found to the problem of herbicide-resistant weeds.**



Mowing a spring-planted perennial foodplot. Soybeans in foreground.



Juvenile Green Heron at
the lodge cove of Main Lake

MAIN LAKE

One of our primary management goals for Main Lake is to promote healthy populations of game fish for recreational fishing opportunities. To minimize encumbrances to fishing, we selectively treat the pond with several products to reduce algae and aquatic plant growth. We have been very satisfied with the improved control of filamentous algae since we replaced several of our summer treatments of Cutrine Ultra with Copper Sulfate crystals and increased our applications of Aquashade, a blue dye used to reduce the available light in the photo-spectrum used by algae and aquatic plants. Late-summer planktonic algae blooms had been a significant issue for many years. The current treatment regime has helped diminish the severity of blooms over the last 3+ years. The table below contains the pond management products we most often use, their purpose, timing of applications, and total annual amounts used.

Product	Type	Target	Treatments	Timing	Amount
Aquashade	Dye	Algae & Plants	6	April–Aug.	37.5 gal
Aquathol K	Herbicide	Aquatic plants	1	May	10 gal
Reward	Herbicide	Aquatic plants	0	June–Sept.	0 gal
Copper Sulfate	Algaecide	Algae	4	May–July	370 lb.
Citrine Ultra	Algaecide	Algae	5	May–Aug.	23 gal
Citrine Plus	Algaecide	Algae	2	May–Aug.	60 lb.
Phycomycin	Algaecide	Plankton Algae	1	June–Sept.	150 lb.
Aquaprep	Enzymes	Organic Muck	2	April–Sept.	5 gal

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 November following turnover of the water column and will restart it in early spring—or earlier if snowpack over ice becomes too severe during the winter.

In the absence of dense plant and algae cover, smaller fish can be left exposed to predation at an early life stage, thus reducing the number of prey species (Bluegill in this case) reaching a size that provides productive forage for the upper-size classes of Largemouth Bass. Over the last few years we have added several types of cover objects to address this need. Though it has only been 3 years since our first additions of cover objects, the results are apparent. The average size and girth of bass has notably increased, and the numbers of forage-size Bluegill has increased drastically.

We were able this year to achieve our management goals for aesthetics and the health of the fishery while maintaining a reduced number of algae treatments and total chemical use. The Bluegill and Largemouth Bass spawns were productive, though not at the level seen last year. We observed some recently spawned Channel Catfish, which is uncommon for Main Lake and indicates that the catfish nesting structures we built and installed may have the desired result. Fish and other aquatic organisms would benefit from more natural cover provided by emergent vegetation becoming established along a greater percentage of the lakeshore if we can find a way to bring that about. With that goal in mind, we will continue to try to spare the south shoreline from herbicide treatments next year.



Inspecting cedar box nesting structure

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. We have three types of nesting boxes available for Wood Ducks: Ducks Unlimited plastic boxes, cedar wood boxes, and galvanized round metal cone boxes.

Forty-one percent of available nest boxes produced a successful nest. We’ve seen lower but that rate is well below our historical average of 47%. The table below indicates Wood Duck usage and nesting success rates at each type of nest box as well as the total for this year and our historical averages. We observed a total of 834 eggs laid this year, of which 177 had hatched (21%). The number of “dump nests” (22) and the total number of eggs laid in “dump nests” (528) were among the highest we’ve recorded. “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.

Type of Nest Box	# of Boxes	Usage by Wood Ducks		Success Rate of Nests	
		#	%	#	%
Metal Cone	4	3	75%	0	0%
Ducks Unlimited	20	17	90%	11	65%
Cedar Vertical	57	45	79%	22	49%
Total	81	65	80%	33	51%
Historical Average	N/A	N/A	84%	N/A	59%

During this year’s nest box inspections, we found several boxes that were usable but in need of replacement or repairs. One box was damaged between the winter repairs and the nest survey and was unusable for nesting. We will carry out the necessary maintenance or replacement of these boxes prior to the upcoming nesting season.



Inspecting nest boxes for use

EASTERN BLUEBIRD NEST SURVEY

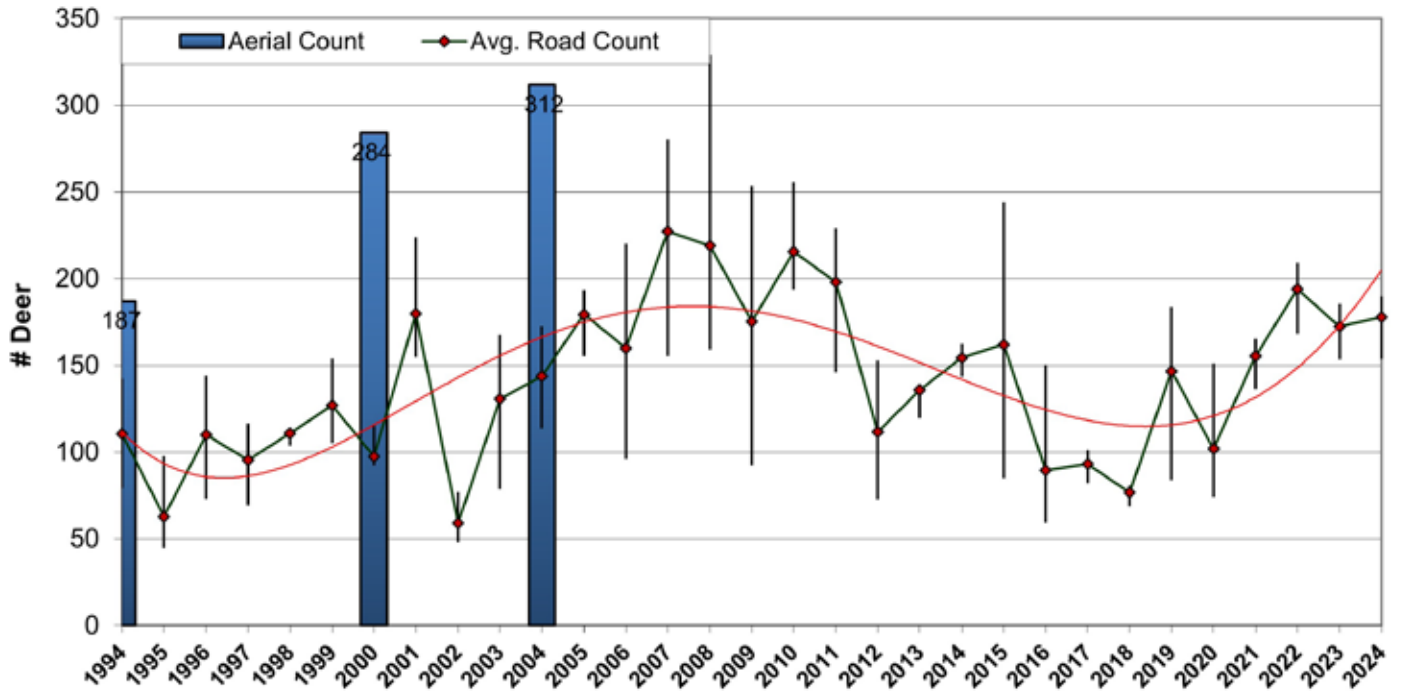
On July 9th and December 12th we inspected the 51 Eastern Bluebird nest boxes on site for use during the nesting season. Eastern Bluebird nests were observed in 33% of the boxes, 18% higher than last year. As in recent years, we observed multiple cases (6) in which House Wrens constructed nests over Bluebird nests. House Wrens ultimately nested in 30 of the 51 available nest boxes. We estimated that about 6 Eastern Bluebird chicks fledged from our boxes this year, which is far fewer than we typically observe. Our approximation of 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 habitat structure, or other factors. As the oak trees and savannas restored on the property mature, we expect conditions to become more favorable for Eastern Bluebirds.

Other species that used Eastern Bluebird nest boxes this year included mice (59%), House Wren (57%), European Starling (10%), ant nests (6%), Eastern Phoebe (2%), and Tree Swallow (0%). Nest boxes were found to be empty on 18% of inspections. In addition to replacing and repairing aging boxes, we continue to adjust nest box placement to try to favor Bluebirds, especially over their chief competitors, House Wrens. Even so, intense competition for nesting sites may be an unavoidable effect of our woodlands reaching a shrubby stage of succession preferred by House Wrens.



A single Bluebird egg in a nest box

RWF Deer Surveys 1994-2024



An adult doe, a yearling buck, a mature buck & a fawn's ears sticking up behind them

WHITETAIL DEER SURVEYS

Following a protocol we established years ago, we conducted three ground censuses for Whitetail Deer early in the evenings of January 31st, February 16th, and February 28th of 2024. 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 consistent from year to year. The total numbers of deer seen for each census were 154, 190, and 189, respectively, for an average of 178 deer sighted per survey. One of the reasons we monitor ongoing trends in deer numbers is that when deer populations become excessively high, the herd, individual deer, and the quality of local habitat will suffer. **This year's survey average was the second highest of the last 13 years and 27% above our 31-year average.** It is worth noting that these road survey numbers are a “noisy” dataset as they are simple observations of deer made over three days in the winter from a limited vantage point. There are a number of variables that can 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 metrics 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 18 cameras were strategically placed across the property to gather information on the movement patterns, reproductive parameters, concentrations, and general presence of deer and other wildlife. Information collected with these cameras can be 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. Among the observations gleaned from trail camera surveys in 2024 were several sets of triplet fawns, Badger sightings in multiple locations, robust deer fawn survival, and a drop in Wild Turkey recruitment.

On February 23rd we surveyed all corn and soybean food plots planted in 2023 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 2023–2024 and do not reference the crop we planted in 2024. Our surveys reflected that severe late spring / early summer drought conditions in 2023 reduced yields on well-drained fields, especially for soybeans, but corn production was adequate and even strong on darker soils. Browsing pressure on soybeans by deer during the growing season (another indicator of population size) continued to increase in scope and severity. All corn fields produced ears this year (which has not always been the case). Taken as a whole, in food plots property-wide, 79% of corn stalks still had cobs attached (a 12% increase over the previous survey) but only 0.13% of kernels remained on those cobs, indicating heavy wildlife use and high numbers of deer. In addition to corn, we left about 15% of our soybeans standing for wildlife use. In recent corn surveys, we've made it a point to record information on soybeans as well. Similar to what we found with corn, this year's survey showed near-total utilization by wildlife of the beans that we left standing. In spite of the heavy utilization of the row crops we left for wildlife use, there was no evidence this year of deer foraging on “hunger foods” such as Red Cedar, Arbor Vitae, or Yew shrubs in landscaping during the late-winter months. Winter weather was notably quite mild, other than a brief period in the latter half of January, and native browse appeared to provide more than adequate forage through the winter.

We monitor many aspects of the local deer population through cooperative efforts with hunters, who fill out a log sheet upon completion of each deer hunt on site. They record numerous factors and observations on deer and other wildlife, which are entered into a database by Foundation staff for analysis. This dataset helps us identify trends in population demographics that influence subsequent population numbers and give us invaluable information that strongly informs our deer management strategy. Our hunters also provide us access to sample material from harvested animals, which we collect and deliver to the Illinois Department of Natural Resources to be tested for Chronic Wasting Disease. RWF has provided the Department with the majority of samples



A fawn captured for our ear-tagging research project

WHITETAIL DEER SURVEYS (cont'd)

taken from Lee County over the years. Unfortunately, since 2020 we have had one or more deer test positive for CWD each year including 1 adult buck and 5 does this year. In response to the presence of CWD on site we have increased our efforts to harvest and test adult deer for this fatal disease. Moving forward, the presence and observed prevalence rates in our area will heavily influence our decisions as we develop our management goals for Whitetail Deer.

Foundation employees hand-captured two Whitetail Deer fawns on the property incidental to other work (both males). Fawns seemed to mature quite rapidly this spring, possibly owing to dry and mild weather in late May and early June. Though many fawns were seen at that time, most easily outran their would-be captors. 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 104 deer (54 male, 49 female, and one unknown). Of these, 23 have yielded valuable post-capture information regarding local population demographics, mortality factors, and movement patterns. We have recovered 11 females on site: 9 harvested by hunters and 2 killed by vehicle collision. We have recovered 5 males on site: 2 killed by vehicle collision (both < 1 year old), 1 evidently predated in its first month, and 2 harvested (both at 4.5 yrs. old). In addition 3 males (one 1.5 and two 2.5 yrs. old) and 4 females (1.5, 2.5, 3.5, and 8.5 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 incorporate when developing our deer management strategies.





Gray Tree Frog resting on
Spotted Joe-Pye Weed

HERPETOLOGICAL SURVEY

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

Whenever feasible, turtles that we capture 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. This year we caught 4 juvenile Blanding's Turtles. Three of these had been previously marked and their individual codes allowed us to determine that they had been released as part of our head-starting program. The fourth was unmarked. It is either a completely natural recruit to the population or one that we released unmarked after protecting its nest some years ago. Confirming survival of these juveniles is an important indicator that our efforts are having the desired result. We marked 48 newly hatched Blanding's Turtles from nests that we protected this summer. These hatchlings were directly released into wetlands after taking measurements and marking. Read more about our Blanding's Turtle study and conservation efforts in the "Research and Study Projects" section of this report.

All species of amphibians at RWF breed in wetland habitat, but each has its own specific requirements of hydrology, plant cover, etc. Different species also mate at different times of year to maximize the chances that their eggs and larvae have the conditions they need for success. Most, but not all, of our local amphibians thrive in ephemeral wetlands, which tend to dry down in the summer and recharge with cool-season precipitation. Periodic drying of breeding pools reduces populations of many upper-level aquatic predators of amphibian eggs and larvae such as fish and leeches. Drying also spurs plant growth on exposed mudflats in the late summer and fall, which expands the base of the food chain for larval amphibians. On the other hand, if wetland water levels drop quickly and early in the summer, amphibian larvae may not have time to complete their metamorphoses to an adult stage before being stranded by receding waters. Different species have different maturation rates. Chorus Frogs and American Toads, for example, mature quickly and can leave ponds as small versions of their adult stage in early summer. Tiger Salamanders require a much longer duration and may not mature until September or later.

Several successive dry years led many of our wetlands to enter spring below their full capacity, and water levels continued to drop over the course of the summer. Twenty-three of our wetlands dried completely, but the rest maintained a pool. Our observations suggested that this may not have been a particularly strong breeding year for any species of amphibian on site. We saw juvenile Tiger Salamanders in the fall, though not in great numbers; that species is typically the last to metamorphose of our local amphibians. American Bullfrogs and Green Frogs require more permanence to their wetlands, with larvae overwintering in the pond and emerging the following summer. Wet years favor these species and we have not had a wet year in some time. Dry conditions in the fall led to some worrisome observations for our aquatic turtles. As late as mid-November, many Painted and Snapping Turtles were seen moving over land, in an apparent search for wetland habitat with depth suitable for overwintering. Without enough water depth, aquatic turtles run the risk of freezing. On several occasions when we encountered turtles that were a significant distance from a wetland of sufficient depth, we moved them to the nearest, best option. Hopefully, populations won't suffer too great a loss of adult turtles but unfortunately, juveniles will likely be impacted significantly as they are less capable of long overland travels and at greater risk of predation when doing so.



Juvenile Great
Horned Owl

WILDLIFE OBSERVATIONS

The Foundation maintains records of wildlife observations and reproductive parameters of various species. The following are notes on selected observations.

Our spring waterfowl migration on site was relatively weak, possibly having been less pronounced due to the mild winter. With many of our wetlands dry or low, and similar conditions throughout our area, the fall migration of waterfowl was below what we would consider average and seemed to run later than normal with warm weather through fall and into early winter. It seemed to be an above-average breeding year for Ring-Necked Pheasants but not for Wild Turkeys. After consecutive bonanza breeding years in 2022 and 2023 adult turkeys were numerous, but July rains appeared to take a toll on poults, which are quite small and vulnerable at that time of year. While we found more active Turkey nests than ever in the spring, we observed few poults among the adults as summer progressed. Bobwhite Quail were heard calling in the spring and summer and small coveys of the birds were seen several times on the south portion of the property. Sandhill Cranes continue to nest on site in increasing numbers. Multiple breeding pairs and nests were observed, and several chicks were seen with parents this year. Several juveniles fledged and were seen flying with parents well into the fall.

American Beavers and Eastern Cottontails remained significantly more abundant than usual. Removing beaver dams from wetland control structures and culverts was again an ongoing and mucky chore in 2024.

Members of the Illinois Audubon Society surveyed RWF during the IAS's Spring and Christmas Bird Counts (CBC) and Global Big Days. In 2024, they added 6 new species to the eBird list for RWF, bringing it up to 143 total species currently. We have historical records of 229 bird species on site and hope to continue to add species to the eBird list as they are observed.

We were treated to visits in the spring and fall from a mated pair of Whooping Cranes that uses the wetland habitat and ag plantings at RWF during their migrations. The spring stopover was just a brief few days in late March, but as has been their habit for several years, the pair spent well over a month at the Foundation before winter weather persuaded them to continue their migration further south to Kentucky. For us, the seasonal returns of this pair feel like seeing old friends, though the cranes probably aren't as sentimental about it. There are only a few hundred Whooping Cranes in the world, though that is considerable progress from their low point of only about 20 individuals in the 1940s. The collaborative effort of private organizations like the International Crane Foundation and governmental agencies to bring this species back from the brink has been one of the great testaments to what can be achieved by coordinated conservation biology. See Nicki Gordon's description in the "Research and Study Projects" portion of this report on the International Crane Foundation's work and specifically a capture of the male in this pair for re-banding and health assessments at RWF.

Sightings of Endangered or Threatened species included Whooping Crane, Osprey, Northern Harrier, Starhead Topminnow, and Blanding's Turtle. Other species of interest included Northern Shrike, Red-Headed Woodpecker, Rough-Legged Hawk, Pied-Billed Grebe, Hooded Merganser, Trumpeter Swan, White-Fronted Goose, Whip-Poor-Will, Bald Eagle, Eastern Screech Owl, Blanchard's Cricket Frog, Tiger Salamander, Smooth Green Snake, Plains Garter Snake, and American Badger. Also see Morgan Brown and Dr. Chris Dietrich's description in the "Research and Study Projects" section of this report on several species of planthoppers that they identified for the first time on this site.



Using radio telemetry to locate a transmittered female Blanding's Turtle

RARE TURTLES RECOVERY PROJECT

Blanding's and Ornate Box Turtles are Endangered and Threatened, respectively, in Illinois and have drastically declined in number in the state 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 do not 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 restored many acres of prairie and wetlands, which has certainly benefitted the small remaining populations of these two turtle species. Even so, our population surveys over the years have not shown an age structure that would indicate a growing or even stable population. The most limiting factor for turtles in this region today other than habitat loss is nest and hatchling predation by mesopredators, primarily Raccoons. Raccoons are a species that benefits from and exists in larger numbers on today's agricultural landscape than they did in days before plowing and successional forest regeneration. The quality or quantity of 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, making conditions more appealing to Raccoons and other mesopredators. Relatively open sandy soils are preferred nesting sites for female turtles of both species.

For several years we have taken actions meant to foster a recovery of these populations on our site. In the initial phases we were able to identify some nesting areas for both species, allowing us to conduct informed habitat management practices. Later, through much trial and error, we learned to follow female Blanding's Turtles during their nesting forays to protect their nest and eggs from predation with wire baskets. We would then release resultant hatchlings directly to shallow, vegetated wetland habitat following their emergence, saving them from the risks of “running the gauntlet” to find suitable habitat on their own. For several years we were able to work with partner agencies to incubate eggs and give the hatchlings a year or more in a head-starting program, further increasing their odds of survival. An exotic fungal pathogen has put our access to head-starting programs on hold for the time being. We are hopeful that with increased biosecurity and testing protocol, more of those programs will resume and that we will find a partner agency willing to include RWF hatchlings.

We continue to refine our approach to Blanding's Turtle conservation measures into a fairly repeatable annual process. Our efforts begin in early spring, by locating any turtles that overwintered with radiotelemetry transmitters affixed to their shells. Knowing where these turtles are successfully overwintering gives us valuable information, applicable to habitat management practices and the next step in our process: trapping for additional females. Starting in April or May, prior to the turtle nesting season, we usually deploy and monitor aquatic hoop traps and conduct visual searches in and around wetlands, with the primary goal of finding gravid (pregnant with eggs) adult female turtles. Capture rates can be frustratingly low. With few adult Blanding's Turtles and many acres of wetland habitat, the needle in the haystack analogy applies. When we capture adult females, we palpate (feel for eggs) to determine if they are gravid, take size measurements and health observations, and affix a radio transmitter to their carapace, allowing us to monitor them by triangulating the signal from their transmitter picked up by a telemetry receiver. The turtles are then released at the site of their capture.

We began this year with four females “on-air” and hoped to capture more in our early summer trapping efforts. In May we trapped five wetlands, capturing 68 Painted Turtles, 28 Snapping Turtles, four juvenile Blanding's Turtles, but no adult Blanding's. Three of the juveniles were marked and had been released as head starts that hatched in 2020 and were released in 2022. Another was unmarked. This was either an entirely natural recruit or one whose nest we protected in the early years of our efforts, when



Setting dog-proof traps for mesopredator reduction

RARE TURTLES RECOVERY PROJECT (cont'd)

we released hatchlings without marking. Confirming survival of these juveniles is very reassuring and demonstrates that our goal of protecting this species from local extirpation is obtainable.

Typical nesting season is late May into late June. Beginning in mid-May we regularly locate the female turtles in evenings to determine if they remain in a wetland or are moving overland, potentially on a nesting foray. Sometimes overland movements are “false alarms” as it is common for Blanding’s Turtles to move from one pond to another. Regardless, we have learned to keep a close watch on a gravid turtle. We check her status approximately every 3 hours around the clock until she either nests or returns to a wetland. If we are able to follow a female through her nesting process, we either protect the nest with a welded wire basket or collect the eggs, carefully store them in sealed containers with some of the sand substrate from the nest and deliver them to our partners for incubation.

Even with the additional protection afforded to hatchlings by nest caging and direct release or head-starting, they remain at significant risk of predation by mesopredators such as Raccoons, Opossums, Mink, and Coyotes for several years. Additionally, we cannot expect to capture all female Blanding’s or Ornate Box Turtles every year nor protect all nests from predators. To address this threat to our imperiled turtle populations, we were granted a special permit from the Illinois Department of Natural Resources to trap mesopredators outside of the typical furbearer trapping season. Our goal has been to trap before and during the turtle nesting season, primarily targeting Raccoons. From April 29th to June 6th we deployed as many as 95 dog-proof style reach-in traps to help avoid non-target species. Traps were expertly placed and baited along Raccoon trails and checked 7 days a week. Over 2,755 total trap nights (1 trap night = 1 trap set for 1 night minus any false triggers), we removed 112 Raccoons, 29 Opossums, and 2 Striped Skunks. The local Raccoon population is impressive and apparently quite resilient. Despite our trapping over 800 over the last four years, following our trapping session this year we still observed adult and juvenile Raccoons occasionally in person and frequently in our trail camera surveys.

We were able this year to track 4 gravid female Blanding’s Turtles and protected all 4 nests (a record for our program). We used wire mesh baskets to keep predators out and eventual hatchlings in. Starting in late August we checked the nests daily, hoping to see emerged hatchlings. All 4 nests emerged from August 20th to 29th and had successful hatchlings. We released all 48 hatchlings from the 4 nests directly to the relative protection of a wetland. We have more reason to be concerned for their survival than usual as wetland levels fell quickly post-release. By fall, there was little aquatic protection from terrestrial predators. We currently have transmitters on the same 4 adult females we followed this year. We replaced 2 of their transmitters in October due to battery life expectancy. We hope to capture more adult females in our spring trapping season next year.

Year	Adult Females with Transmitters	Nests Protected	Hatchlings Direct Released	Head-Started Juveniles Released
2018	4	2	22	37
2019	3	3	-	—
2020	1	1	-	37
2021	2	-	-	-
2022	3	3	33	23
2023	4	3	24	-
2024	4	4	48	-



Wire baskets protect nests from predators. When the hatchlings emerge we weigh, measure, and individually mark them before releasing them in shallow wetland habitat.

RARE TURTLES RECOVERY PROJECT (cont'd)

Interventive nest protection is more difficult for Ornate Box Turtles than for Blanding's Turtles for a variety of reasons. Box Turtles rarely lay more than 2 eggs while Blanding's commonly lay more than 10. It is difficult to definitively conclude whether a Box Turtle is gravid or not because of the challenges of palpating them due to their small size and ability to close their plastron on probing fingers. Box Turtles are entirely terrestrial so there is no cue to look for as an indication that they are soon to nest as there is when Blanding's Turtles leave their wetland. We are currently only aware of 2 female Ornate Box Turtles on site and a male that has not been seen in several years. Currently, our best conservation approaches for this species are to create quality habitat and reduce nest predators in areas known to harbor Box Turtles.

The road to recovery for either of these turtle species will be long and difficult. The hard-earned successes and lessons we've learned to this point have been due primarily to collaboration and partnerships, as will be any future success. Discussions, planning sessions, cooperation, and mutual support from colleagues have been critical to scaling up our efforts efficiently. Across northern Illinois these turtles face many of the same threats and require the same types of interventions to remain part of the animal community on our local landscape. We are very fortunate and very grateful to have found the partnerships we have formed over the last few years, and we look forward to continuing to work together on this important effort.



Females returned to their wetland after replacing their transmitters



Assessing annual molt status of 4-14 during capture

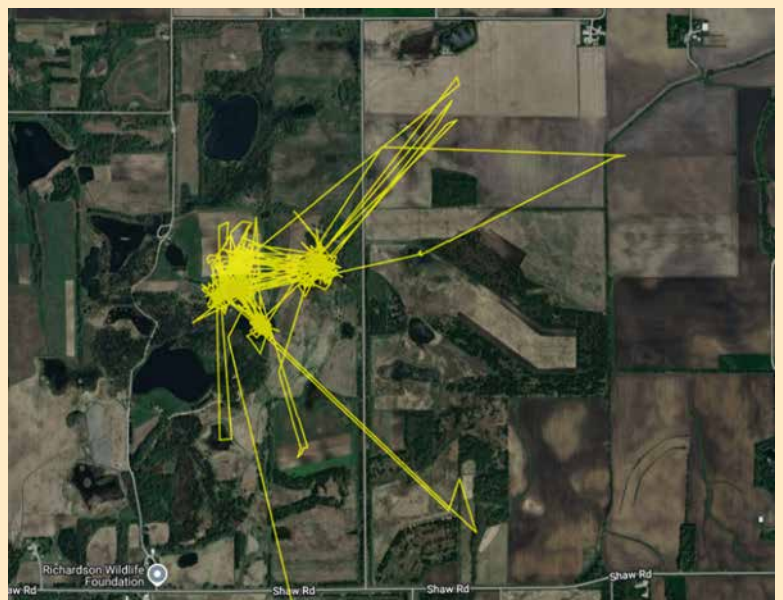
WHOOPING CRANE MONITORING

International Crane Foundation researchers Hillary Thompson and Nicki Gordon have coordinated with RWF staff for several years to monitor a pair of Whooping Cranes that uses the Foundation's habitat during migrations. Below is a report by Nicki Gordon on their work with this pair of cranes at RWF this year.

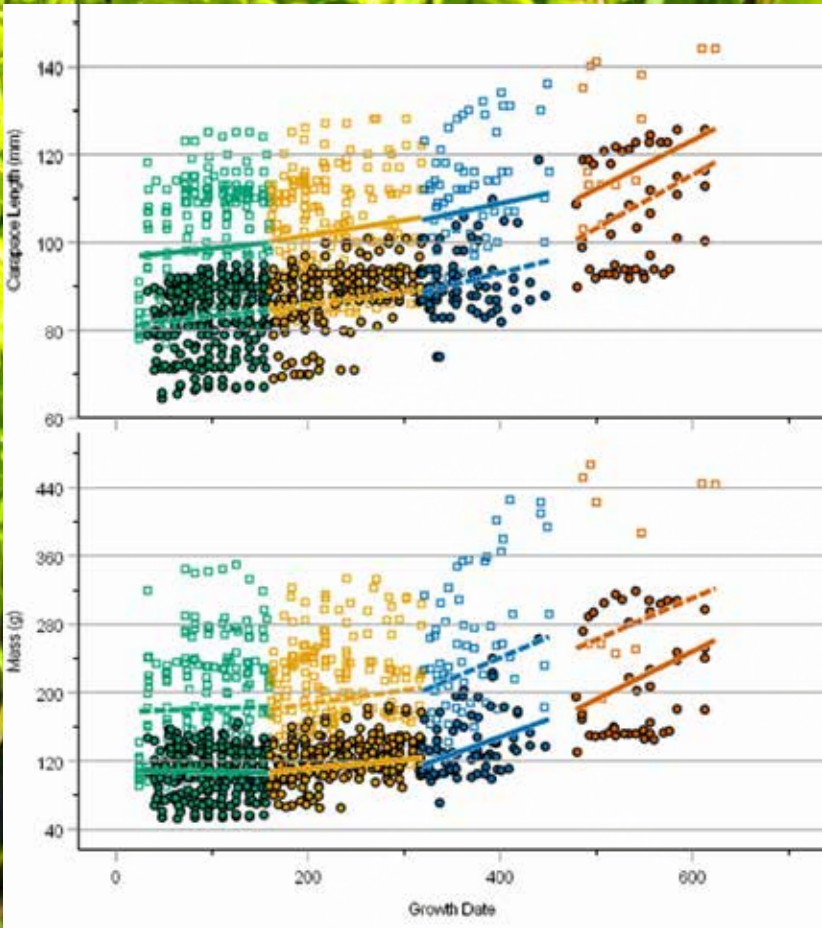
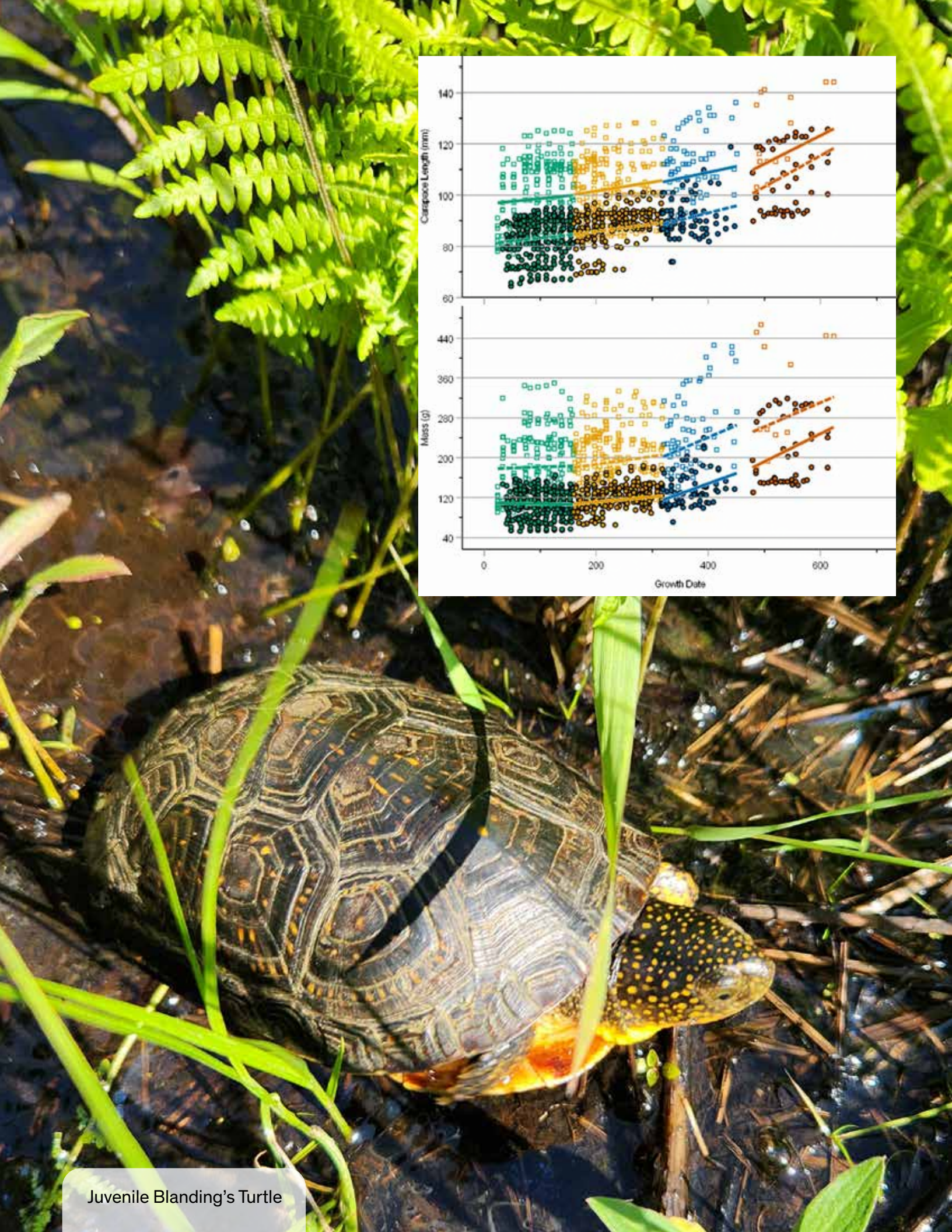
The International Crane Foundation (ICF) is dedicated to conserving cranes and the ecosystems, watersheds, and flyways on which they depend. One species we work closely to protect is the Whooping Crane. To support recovery efforts and downlist the species from Endangered status, supplemental populations have been reintroduced into historically occupied areas. One of the reintroduced populations, the Eastern Migratory Population (EMP), ranges from Wisconsin to Florida and contains approximately 70 individuals as of December 2024.

ICF closely monitors the EMP to ensure its success. This involves tracking survival rates, mortality events, nesting activity, chick survival, and behavioral and migration patterns. To identify individuals and monitor population trends, each bird is uniquely color-banded and fitted with either a GPS or radio transmitter. In recent years, we have deployed new GPS cellular transmitters to better understand breeding success, movement, and habitat use. These improved transmitters upload movement data directly to our database, enabling us to remotely monitor migration patterns, pinpoint nesting locations, detect mortality events, and track the movements and habitat use of adult cranes and their chicks throughout the annual cycle.

Breeding pair 4-14 and 7-17 are regular visitors to the Richardson Wildlife Foundation during their fall migration. However, both of their transmitters had stopped functioning, making it challenging to track their nesting behavior and migration routes. In October, with the help of Richardson Wildlife Foundation staff, ICF's Whooping Crane Project Manager, Hillary Thompson, and Biological Technician, Nicki Gordon, successfully captured male 4-14 to replace his nonfunctional transmitter with a new GPS transmitter. During the capture, the team also collected a blood sample, assessed his body condition, and determined he had likely not molted the previous summer. After being released, the pair remained at the Richardson Wildlife Foundation until November 26th before migrating to Hopkins County, Kentucky. They completed this journey in about three days. This is the first time we have been able to identify their wintering location, making the new data from 4-14's transmitter critical for improving our understanding of their movements and behaviors. We are grateful for the support and our partnership with the Richardson Wildlife Foundation and for the Foundation's work in maintaining habitat for Whooping Cranes and other species in this flyway.



4-14 GPS movement data during Oct–Nov 2024
on Richardson Wildlife Foundation property



Juvenile Blanding's Turtle

GROWTH OF HEAD-STARTED BLANDING'S TURTLES DURING FOUR YEARS FOLLOWING RELEASE

This project is a joint effort by Northern Illinois University researchers Callie Klatt Golba (now Curator of Turtle Conservation at the Peggy Notebaert Museum) and Rich King, along with collaborators Elizabeth Bach (Nachusa Grasslands), Gary Glowacki (Lake County Forest Preserve District), Bill Graser (Forest Preserve District of Kane County), Kathryn McCabe (Lake County Forest Preserve District), Daniel Thompson (Forest Preserve District of DuPage County), and Brian Towey (Richardson Wildlife Foundation). The following paragraphs and figures were provided by Dr. King.

Blanding's Turtle headstarting involves collecting eggs from the wild, hatching and rearing the turtles in captivity, and releasing them back into the wild. The goal is to protect vulnerable life stages (eggs, hatchlings), increase juvenile recruitment, and re-establish self-sustaining populations. To succeed, headstarts must survive, grow, and eventually reproduce but because Blanding's Turtles don't reproduce until they are in their teen years, our focus has been on survival (2023 Annual Report) and growth (below). Between 2020 and 2022, a total of 304 turtles (up to 35 turtles per site per year) were released at seven sites in northern Illinois, including Richardson Wildlife Foundation. Headstarts were tracked using radiotelemetry through 2023 and trapping in 2024. The carapace length and mass of these turtles were measured repeatedly. To account for headstart age at release (headstarts were released in the first or second year following hatching), individual differences in size and growth rate, and the possibility that growth differs among years following release, a statistical method called mixed model analysis of covariance was used. As seen below, carapace length and mass increased only slowly during the 1st and 2nd season following release but growth accelerated during the 3rd and 4th season. Despite differences in initial size, patterns of growth were similar between headstarts released in the first vs. second year following hatching. Patterns of growth were also similar in headstarts not equipped with transmitters (not shown), suggesting that the burden of a transmitter does not slow growth appreciably. The growth shown by headstarts over four years following release bodes well for their becoming reproductive adults in the future.

Growth of headstarted Blanding's turtles at multiple release sites in northern Illinois during 2020–2023. Shown is the carapace length (upper panel) and mass (including transmitter, lower panel) of first-year (filled circles) and second-year (open squares) headstarts during their first, second, third, and fourth active season (distinct colors from left to right). Lines indicate best fit growth trajectories. Analysis was restricted to those individuals measured at least three times during the first season following release and three times in all subsequent active seasons. Growth days refers to the day number since 1 May of the year a turtle was released exclusive of the non-growing season (7 Oct – 30 April).



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Camera trap images of Raccoons

EFFICACY OF PREDATOR CONTROL AND PREVALENCE OF ZONOTIC PATHOGENS IN NORTHERN ILLINOIS RACCOONS

Two graduate students at Southern Illinois University, Ashley McDonald (a doctoral student in Dr. Augustin Jiminez's Parasitology laboratory) and Jennifer Schultze (a master's student in Dr. Clay Nielsen's Wildlife Ecology laboratory) are studying various aspects of Raccoon Ecology at RWF in conjunction with our in-house efforts to reduce predation on Blanding's Turtle nests and juveniles. The following paragraphs are their summary of their ongoing projects.

Raccoons (*Procyon lotor*) are mesopredators that are highly adaptable to new environments, allowing them to flourish in both urban and rural landscapes. Raccoons are chronic nuisance animals that forage on anthropogenic food sources. Their growing abundance in developed landscapes has generated an interest in understanding how raccoons affect humans and the environment. Due to their opportunistic nature and adaptability, Raccoons can negatively impact several avian and reptilian species, including the endangered Blanding's Turtle (*Emydoidea blandingii*) found on Richardson Wildlife Foundation lands. For Raccoons, predator removal has commonly been investigated as a management strategy to increase survival of vulnerable populations, and the results suggest predator removal to be an effective approach, significantly reducing predation and increasing nest survival of Diamondback Terrapins (*Malaclemys terrapin*), American Oystercatchers (*Haematopus palliatus*), and Blanding's Turtles. While past studies have explored predator removal as a management method, not many have determined the efficacy and long-term feasibility of predator removal in an overabundant population.

Overabundance of Raccoons has also led to heightened concern regarding disease transfer between Raccoons, other wildlife, and humans. Zoonoses are attributed to approximately 60% of known human infectious diseases worldwide and 75% of emerging infectious diseases. Raccoons are known to carry many zoonotic pathogens such as *Babesia* spp., *Ehrlichia* spp., *Anaplasma* spp., *Rickettsia* spp., *Borrelia* spp., *Trypanosoma cruzi*, and *Baylisascaris procyonis*, but efforts to quantify the prevalence and distribution of zoonotic pathogens in Raccoons along a rural-urban gradient are scarce. Monitoring the prevalence and distribution of zoonotic pathogens in host species is important for the development of strategies to reduce occurrence of human infection and the prevention of future pandemics caused by emerging zoonotic diseases. Our study has two primary objectives: (1) to determine the intensity of trapping effort needed to reduce an overabundant Raccoon population and estimate abundance and density of Raccoons before and after removal, and (2) to assess the prevalence and distribution of zoonotic pathogens in Raccoons.

To reach objective 1, we conducted research at 6 northern Illinois study sites representing a rural-urban gradient during 2022–2024; Richardson Wildlife Foundation was one of those sites. Each February–August, 109 camera traps were placed at all 6 sites, 23 of which were at Richardson Wildlife Foundation. From 2022–2024, we recorded 167,227 wildlife photographs during 49,311 camera trap days; 40,175 of those were obtained at Richardson Wildlife Foundation during 10,535 camera trap days. Of these photographs, 11,886 were of Raccoons; 4,538 of these were from Richardson Wildlife Foundation. Our single-season occupancy models displayed a decrease in Raccoon occupancy after raccoon removal was performed. In 2023 and 2024, both detection and occupancy probabilities were higher before removal compared to the prior year following Raccoon removal.

Raccoon capture and removal efforts were conducted April–July by site collaborators or United States Department of Agriculture - Wildlife Services personnel. Trappers used wire cages and dog-proof foothold traps for capture. From 2022 to 2024, 771 Raccoons were removed from our study sites including 475 from Richardson Wildlife Foundation. From 2022 to 2024, Richardson removed 6.1, 5.1, and 4.2 Raccoons per 100 trap nights, respectively. We estimated the percentage of the Raccoon population removed



Conducting necropsy of Raccoon for identification of zoonotic pathogens

EFFICACY OF PREDATOR CONTROL AND PREVALENCE OF ZONOTIC PATHOGENS IN NORTHERN ILLINOIS RACCOONS (cont'd)

from Richardson using catch per unit effort data (Table 1). An estimated 86% and 93% of the raccoon population was removed from Richardson in 2022, while 69% was removed in both 2023 and 2024. These findings suggest consistent removal programs are needed to keep the raccoon occupancy rates low.

To reach objective 2, and to take advantage of Raccoons removed by trappers, Raccoon carcasses were collected from project collaborators and necropsied according to standard procedures. We collected approximately 20 Raccoons from each site per year (n = 280 total raccoons). Raccoon carcasses were necropsied, and tissue samples collected from the liver, diaphragm, spleen, and heart. Intestinal tracts were also collected for examination for intestinal parasites. The pathogens of interest in this study include *Borrelia burgdorferi*, *Babesia microti*, *Anaplasma phagocytophilum*, *Ehrlichia chaffeensis*, *Rickettsia rickettsii*, *Trypanosoma cruzi*, and *Baylisascaris procyonis*. Out of the 280 intestinal tracts examined for parasites, we detected the presence of Raccoon Roundworm in 106 individuals (38%). We also detected intestinal parasites in 266 individuals (95%) including hookworms, tapeworms, trematodes, and acanthocephalans. Out of the 60 Raccoons collected from Richardson, Raccoon Roundworm was detected in 27 individuals (45%) and intestinal parasites were detected in 57 individuals (95%). To quantify pathogen prevalence, DNA was extracted from tissue samples using a commercial kit per the manufacturer’s instructions (DNeasy Blood & Tissue Kit, Qiagen, Valencia, California). Resulting DNA will be quantified via qPCR using primers and probes described in previous studies. Prevalence of each pathogen will be determined as the proportion of infected individuals from each site and prevalence will be compared among sites to assess differences across the rural-urban gradient. Based on previous studies, we predict that overall pathogen prevalence will be high in Raccoons, warranting public health concern.

This study will help determine the intensity of trapping effort needed to reduce a predator population and to estimate abundance and density of Raccoons. It will assist in evaluating the long-term feasibility of conducting predator control methods in management. Monitoring (via camera traps) spatial distribution of Raccoons before, during, and after removal programs will provide insight into the duration of removal impacts. The use of camera traps alongside predator removal is a non-invasive and cost-efficient method for monitoring the efficacy of predator removal. Our findings will also advise public health officials of the presence of zoonotic pathogens in these study areas, contributing to precise diagnoses and improved patient care in local communities. Results will also allow an assessment of public health risk that Raccoons pose to humans and will help inform wildlife management decisions to integrate the health and wellbeing of wildlife and humans.

Year	Total raccoons removed	Pre-Removal Abundance Estimate (95% CI)	Estimated Percent of Raccoons Removed from Population
2022 (Phase 1) ^a	117	135 (102.7–167.3)	86
2022 (Phase 2)	76	81 (69.8–91.8)	93
2023	168	243 (126.9–359.4)	69
2024	114	166 (86–246.5)	69

Table 1. Raccoon population estimates at Richardson Wildlife Foundation, IL, during 12 April–4 July 2022, 4 April–22 June 2023, 3 April–6 June 2024.

^a 2022 was separated into two phases as almost all traps were pulled and moved from north of Shaw Road to south of Shaw Road, creating two different geographical trapping areas and catch per unit effort data.



Burr Oak leaves in autumn

EFFECTS OF PRESCRIBED FIRE ON PLANTED OAK GROWTH AND SURVIVAL IN RESTORED SAVANNAS

Allison Earle, as a student in Dr. Scott Meiners’s Plant Ecology laboratory at Eastern Illinois University, conducted the field research for her master’s thesis at RWF. She successfully defended her thesis and graduated with her Master of Biological Sciences degree in May of 2023. A manuscript based on this work was published in the *Journal Restoration Ecology* in August 2024. Allison now works for the Natural Resources Conservation Service in Iowa as part of the wetland easement team. The following is a summary of Allison’s research at RWF.

Most oak savannas in the Midwestern United States have been lost to agriculture and habitat degradation. Because of their rarity and high plant and animal diversity, savannas are often a target for restoration, which frequently relies on the direct planting of oak seedlings to establish the necessary canopy. Returning fire to the system is critical to the herbaceous component, but with planted seedlings, managers risk damaging or killing trees if burning is introduced too soon. We studied the growth and physiological responses of three oak species (*Quercus alba*, *Quercus macrocarpa*, and *Quercus velutina*) to prescribed fire to determine impacts on planted trees. This study utilized two restored oak savanna units at RWF that were planted in 1995 and 1998, each with burned and unburned areas. We tracked trees ranging from 0.9 to 29.8 cm in diameter at breast height (DBH) to determine the size threshold above which top kill is unlikely and documented differences in leaf structure and extension growth between the burned and unburned areas. There was no mortality observed. Moreover, no trees larger than 4 cm DBH were top killed by the fire. Fire responses in leaf mass per unit area and chlorophyll content were small and inconsistent across species. However, all oak species grew more in burned areas than trees in adjacent unburned areas. Therefore, the addition of low-intensity prescribed fire to an oak savanna planting may increase the growth rate of planted trees with minimal risk of mortality once trees have reached sufficient size.

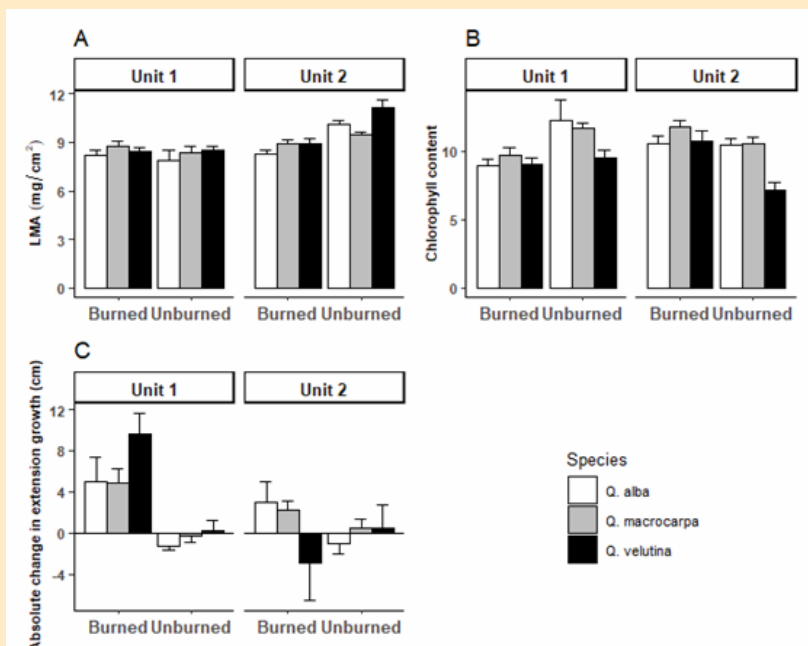


Figure 1. Influence of burn treatment, unit, and oak species on leaf mass per unit area (A), chlorophyll content (B), and absolute change in extension growth (2021 to 2022, C). Excludes top killed individuals. Negative bars in Figure C indicate less growth on average in 2022 compared to 2021.



Conducting Odonate
aerial survey

REDISCOVERING ILLINOIS DRAGONFLIES AND DAMSELFLIES

Amy Janik, Research Specialist at National Great Rivers, is a Co-Principal Investigator of an Illinois Department of Natural Resources grant-funded project to complete an in-depth status assessment of dragonflies and damselflies in the state. Their work will contribute to identifying the current distributions of odonates and how to best conserve and manage this order of insects. A stream and wetland at RWF were two of many field sites used for their study. The following is Amy's summary of their research to date.

Despite their importance to humans and substantial amount of biodiversity, invertebrates are a largely understudied taxon. Global declines in insects are primarily due to habitat loss and pollution, with aquatic insect groups being particularly threatened. Within the U.S., protections and conservation measures toward insects, aquatic insects specifically, vary across states. It can be difficult to allocate conservation resources to species without knowledge of their abundances and distributions throughout a region. Conducting an in-depth assessment of the conservation status of a diverse taxon group at the state level can be one way to mitigate this lack of conservation management for invertebrates.

Odonates (dragonflies and damselflies) are a charismatic order of insects that can be easily identifiable by their large eyes, tiny antennae, chewing mouthparts, and well-developed wing muscles. The odonate life cycle spans aquatic and terrestrial ecosystems where they play key functional roles in their environments. They are important predators and prey in both life cycle stages as well as vulnerable to the environmental threats impacting both freshwater and terrestrial ecosystems. This dynamic allows them to be important indicators of water quality and habitat change. Their life histories and biology make them valuable model organisms in ecological and evolutionary studies.

More research is needed to understand the patterns and processes of odonate distributions, rarity, and vulnerability. Odonates are vulnerable to the many threats faced by freshwater and terrestrial ecosystems. Yet, specific threats and their impacts can be difficult to discern, especially because species are not expected to be impacted uniformly. Odonates are both focal species and habitat indicators within the Wetlands and Streams Campaigns of the Illinois Wildlife Action Plan. Across the U.S., odonates are the best-represented insects (relative to the total number of species) on state Species of Greatest Conservation Need lists. However, the status of odonate populations in Illinois is poorly understood, especially in regions outside of the Chicago metropolitan area, due to data deficiency. National Great Rivers was awarded a State Wildlife Grant from the Illinois Department of Natural Resources to develop an in-depth state and regional status assessment of odonates. This status assessment will fill in knowledge gaps of many species and develop more targeted management plans.

The objectives of our status assessment are to 1) assemble historical and contemporary records of odonates in Illinois; 2) identify geography and habitats that are under-sampled; and 3) conduct odonate field sampling and surveys in underrepresented regions of Illinois. Preliminary results from objective 1 and 2 showed that the regions of northwest, central, and southern Illinois are under-sampled for odonates. Distribution maps of historical records were generated for 27 odonate species. At the end of the project, contemporary maps from our field surveys will be generated for comparison. To reach objective 3, 46 sites in the state of Illinois were sampled over 2 field seasons. In 2023, 23 sites were sampled, along with another 23 in the 2024 field season. These sites were sampled with repeated visits in order to approach our question with an occupancy-detection framework. Each site was sampled and surveyed 9 times total over a field season. During a site visit, we would conduct aquatic surveys with D-frame



Kingfisher Wetland

Inset Photo: Fawn Darner Nymph

REDISCOVERING ILLINOIS DRAGONFLIES AND DAMSELFLIES (cont'd)

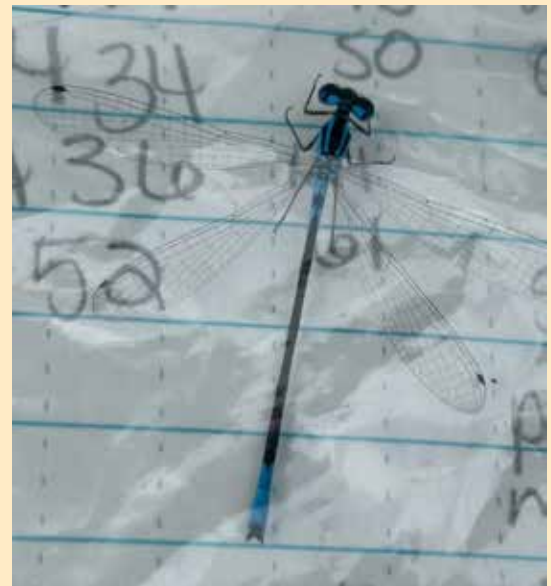
dipnets along a 50-meter transect to collect larval odonates within microhabitats of stream and wetland habitats. Along the same transect, an aerial survey was also completed using butterfly nets to catch, collect, and identify any adult odonates present at the site. In addition, each visit was finished with a visual survey using binoculars to account for the many species present at a site, but too skilled to be caught in a butterfly net. For each site sampled, we collected variables such as bottom substrate, invasive species presence, and fish presence. Environmental variables were also collected during each visit which include weather data, water quality data, and search effort. Two sites from 2024 were located at the Richardson Wildlife Foundation. A wetland and a stream site were both surveyed on the RWF property.

Our stream site from RWF was located at Brooklyn Creek where 13 unique species were observed over the 9 visits. A few examples include the Variable Dancer (*Argia fumipennis*), Familiar Bluet (*Enallagma civile*), Fawn Darner (*Boyeria vinosa*), and Eastern Pondhawk (*Erythemis simplicicollis*). The wetland site at RWF was Kingfisher Pond. We observed 15 unique species at Kingfisher Pond over the 9 visits. These include the Twelve-Spotted Skimmer (*Libellula pulchella*), Comet Darner (*Anax longipes*), Azure Bluet (*Coenagrion puella*), and Skimming Bluet (*Enallagma geminatum*).

The last of our field season wrapped up in October 2024 and we are currently processing and analyzing data from the field portion of our study. The long-term goal is to use an occupancy-detection framework to understand detection probabilities, imperfect detections, and what environmental and site variables may influence the occupancy of a species at our sites. This study will help to generate a standardized methodology that can be used when sampling specifically for odonates. Our analyses will help us understand what type of survey methods are most efficient and valuable for land managers and researchers. Our findings will contribute to an overall understanding of the ecology and conservation of odonates in streams and wetlands in Illinois.



Eastern Pondhawk dragonfly



Azure Bluet damselfly



Royal Fern growing in remnant wet prairie

PRAIRIE INSECT SAMPLING

Morgan Brown, a master's student at University of Illinois, is working with Illinois Natural History Survey State Entomologist Dr. Chris Dietrich to survey prairie insects at sites throughout the state. Their work will allow comparisons with surveys done in prior years to track changes in species presence and prevalence over time. The remnant prairie at RWF is one of several field sites they are using. The following paragraphs are Morgan's summary of her research to date.

Insect decline has become a pressing issue, with most publications agreeing that insect abundance is declining at a rate of 1–2% annually. Insects fill a wide variety of niches, making them a vital component of their ecosystems. We are interested in investigating insect decline by studying changes over time in a less-studied group of insects, the suborder Auchenorrhyncha which comprises leafhoppers, treehoppers, planthoppers, spittlebugs, and cicadas. Auchenorrhynchans are abundant in prairie ecosystems and serve as a good indicator of habitat quality. To better understand how Auchenorrhyncha communities have changed over time, we are returning to multiple areas of remnant tallgrass prairie throughout Illinois that were originally sampled in the 1990s and sampling them again to gain insight into the current community composition. Richardson Wildlife Foundation acts as one of our sites, having originally been sampled in 1997. We began recent sampling at RWF during the summer of 2022 and returned for our third and final year the summer of 2024. Over the course of each summer, we visited RWF three times to collect insects by sweep-netting and vacuuming prairie vegetation within the main remnant prairie in the northern portion of RWF and the sand prairie east of the entrance.

Over the course of three years, we have collected 166 samples and identified 117 unique species of Auchenorrhyncha. During historic sampling, a total of 96 unique species were collected and identified, indicating that over time the species richness of Auchenorrhyncha has increased at RWF. Some notable new findings from 2024 include the planthoppers *Muirodelphax parvulus*, which feeds on little bluestem, and *Phylloscelis pallescens*, which feeds on narrowleaf mountain mint. We also collected the corn leafhopper *Dalbulus maidis* for the first time in 2024. The corn leafhopper is a maize pest that was first detected in the southern US in the 1940s and has since slowly been expanding its range north.

Using our current data, we created species accumulation curves to determine the completeness of historic and recent sampling. This curve displays the number of total species collected per the number of samples collected for recent sampling (2022–2024) and historic sampling (1996–1997). The dashed portion of the curve represents the estimated number of species collected if more sampling was done using the same methods. As a species accumulation curve nears asymptote, or flattens out, it can be assumed that the samples collected are representative of the actual community present at the collection site. While neither the recent nor historic samples are near asymptote, the recent samples curve has gotten closer to asymptote with each summer of sampling. Still, the recent sample curve suggests that further sampling at RWF would likely reveal more Auchenorrhyncha species.

We have also made a non-metric multidimensional scaling (NMDS) plot using the current data to visualize the change in community composition overtime. The distance between community markers represents the similarity in species composition between the communities, with a short distance representing high similarity and a large distance representing low similarity. The plot shows a dissimilarity between the historic and recent samples suggesting that the community composition has changed over time in both the remnant prairie and sand prairie. The plot also shows that the communities in the remnant and sand prairies have become more similar over time.



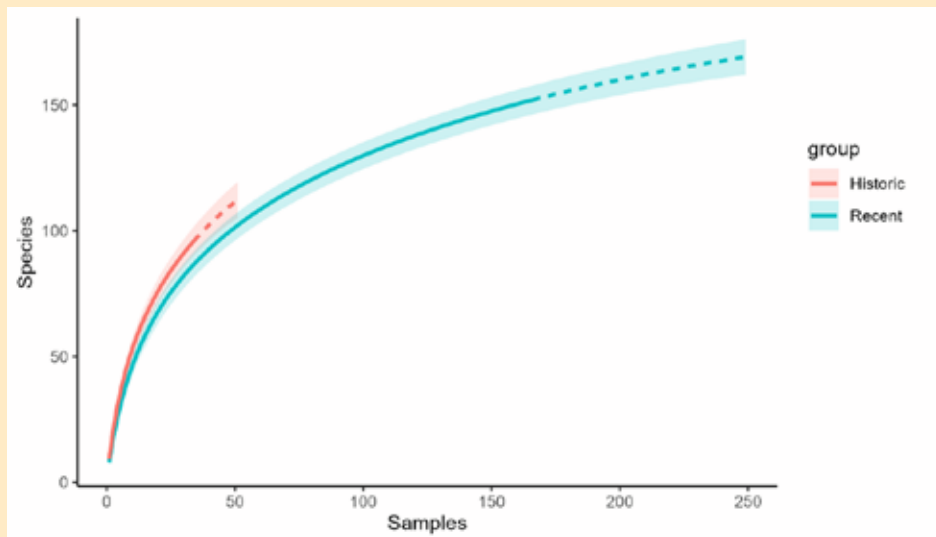
Morgan vacuuming vegetation using a modified leaf blower



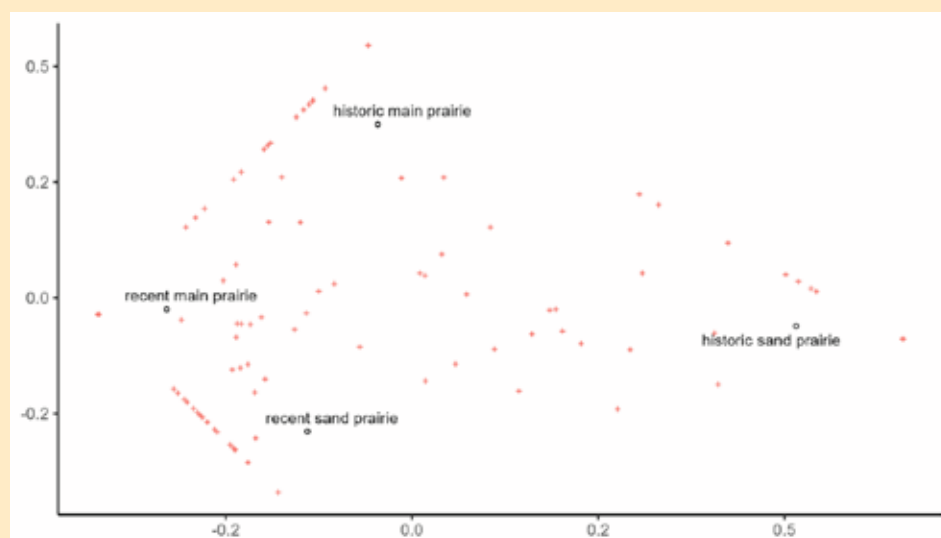
The leafhopper *Polyamia apicata*, which was collected from RWF during historic sampling but has not been collected in recent years

PRAIRIE INSECT SAMPLING (cont'd)

The changes in species composition shown by the NMDS plot are majorly accounted for by a decreased abundance and presence of species in the leafhopper tribe Deltocephalini, including a loss of more conservative species such as the *Pancium* specialist *Polyamia apicata*. On the other hand, there has been a noticeable increase in the abundance and presence of the leafhopper subfamily Typhlocybae, comprised of minute species such as the potato leafhopper *Empoasca fabae*, which is a highly dispersive generalist feeder. These changes in community composition may be explained by management practices, namely prescribed burning which impacts less dispersive conservative species much more than more dispersive generalist species that can evade disturbances more successfully. We have thoroughly enjoyed sampling at RWF and investigating how Auchenorrhyncha communities have changed over time at the Foundation over the past three years!



Species accumulation curves showing the number of species collected per number of samples collected for all historic and all recent samples. The solid lines represent actual samples collected and the dotted lines represent a prediction of how the curve will continue if more samples are collected using the same method.



NMDS plot showing the degree of similarity between samples. Each red cross represents a species collected. The distance between sample names represents the similarity between samples, with a short distance representing high similarity and a large distance representing low similarity.



Andy with his 1 meter
research quadrat

EFFECTS OF LANDSCAPE MATRIX AND CONSERVATION MANAGEMENT ON TALLGRASS PRAIRIE ECOSYSTEMS IN NORTHERN ILLINOIS

Andy Sima is a master's student in landscape ecology at Stockholm University, Sweden, studying the effects of landscape matrix and conservation management on tallgrass prairie ecosystems in northern Illinois. He hopes to complete this research project and earn his master's degree in 2025. The following is Andy's summary of his project.

North American tallgrass prairie is one of the world's most endangered ecosystems. In Illinois alone, less than 0.1% of the original twenty-two million acres of tallgrass prairie remain intact today. Tallgrass prairies are unique ecosystems, evolved across vast open spaces to withstand extreme heat and cold, wildfire, and drought. They provide cover and forage to migratory birds and are historically home to some of North America's most unique native animals, such as Bison (*Bison bison*) or the Greater Prairie Chicken (*Tympanuchus cupido*). Tallgrass prairies are also home to hundreds of unique plant species, which form complex floral communities with roots that penetrate the earth up to fifteen feet down and flowers that can soar almost ten feet into the air.

Ecologists and conservationists have become increasingly interested in the management and restoration of tallgrass prairies. Many remnant prairie ecosystems, ones that avoided being turned into farm fields, are now actively managed sites. Significant restoration attempts have been undertaken state- and nationwide within the last 50 years. However, because both restored and remnant ecosystems are so fragmented, they act as islands in seas of human development. Due to this, ecosystems cannot be reliably considered to be self-sustaining and require active management efforts to maintain prairie health.

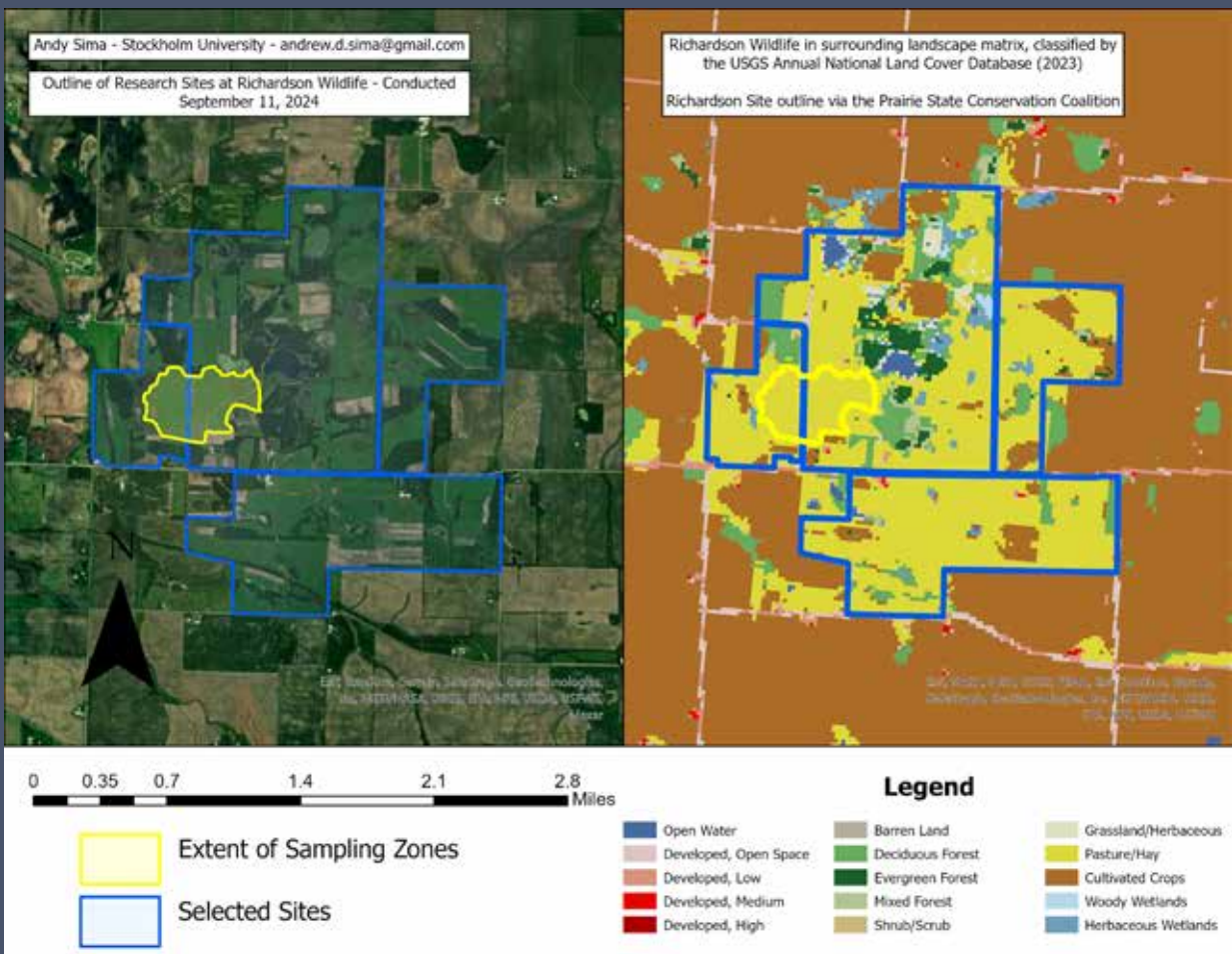
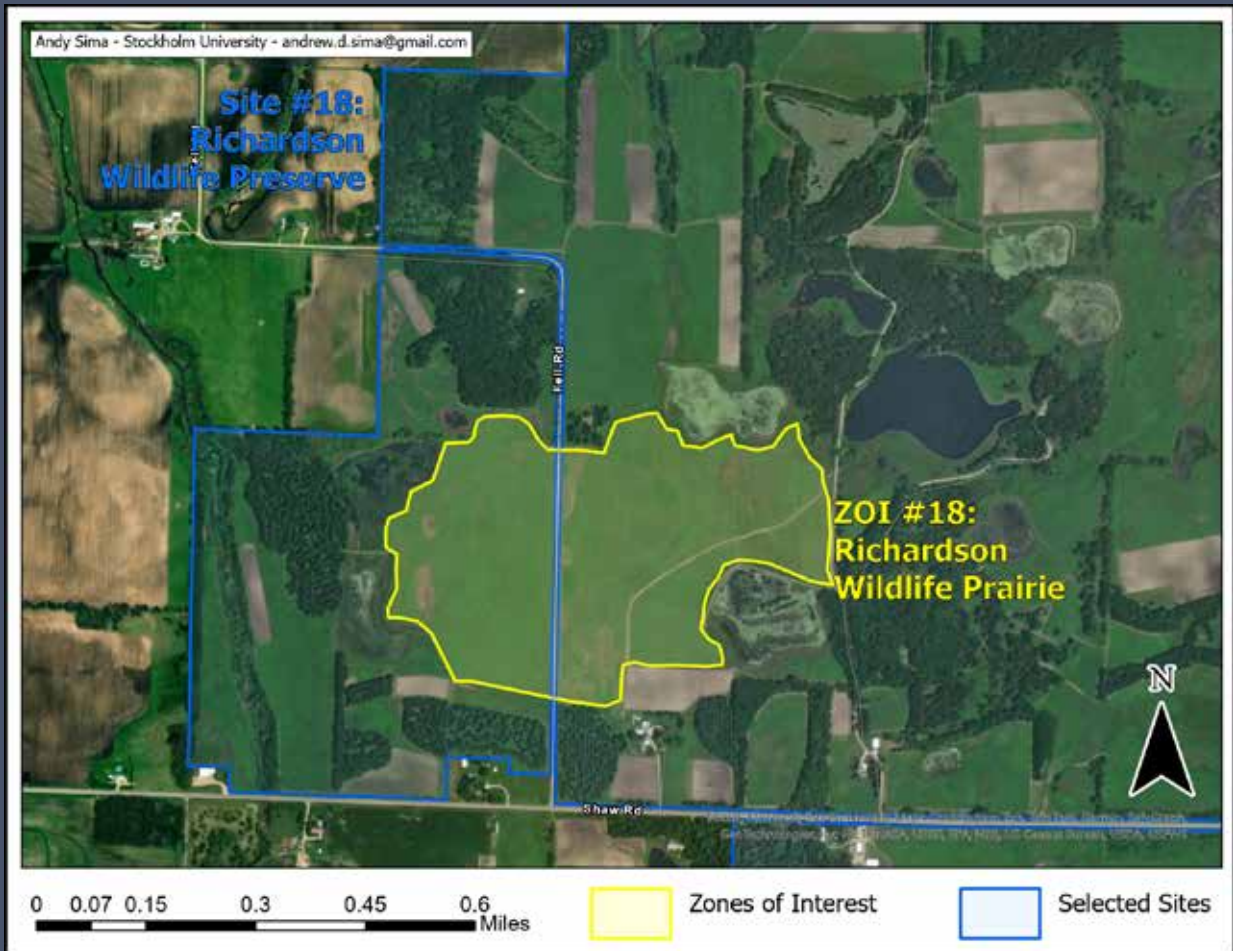
However, some questions remain. To the best of my knowledge, there are very few studies that compare plant diversity and prairie health across many separate sites. For example, how does plant biodiversity differ within tallgrass prairies when prairies are situated within suburban versus rural/agricultural landscapes? How do variations of management intensity, management technique, age of restoration, and resource expenditure affect prairie floral biodiversity? Do remnant and restored prairies respond differently?



Moist prairie restoration with False Aster, Sneezeweed, Great Blue Lobelia, etc.



New England Aster and Eared False Foxglove



EFFECTS OF LANDSCAPE MATRIX AND CONSERVATION MANAGEMENT ON TALLGRASS PRAIRIE ECOSYSTEMS IN NORTHERN ILLINOIS (cont'd)

Through my study, I hope to discover what factors affect prairie health at a landscape scale. I intend to compare prairie health and management techniques not just within one prairie, but across northern Illinois. In order to answer these questions, over August and September of 2024 I visited thirty separate prairie sites and sampled their local plant communities. Richardson Wildlife Foundation was one of these sites.

At each of the thirty sites I visited, I waded into the grass and sampled ten random locations within the prairies themselves. By using a one-meter square quadrat at each sample location, I identified and logged every unique plant species within each given space. I also compared coverage of each species within the research quadrat. In this way, I have collected a representative cross-section of the plant biodiversity, frequency, and abundance of thirty distinct prairies across northern Illinois.

While I finished data collection at Richardson Wildlife Foundation in September, along with the rest of my in-field data collection, at this time I am still gathering data on the management practices used at each of my thirty sites. I am sending digital surveys to prairie land managers in order to get a consistent picture of land management across all sites. I estimate that I will complete the analysis of these results by the end of the spring 2025.

By comparing plant community health and diversity indices to independent variables such as surrounding landscape and site management practices, I hope to discern new guidance for the best practice of prairie conservation and restoration. While it is unclear whether surrounding landscape has an effect on prairie diversity, I theorize that management and age of restoration will have far stronger impacts on plant diversity than other variables.



From our mammal collection:
skulls, taxidermied American
Badger and River Otter

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. As in any given year we oriented guests, students, and researchers to RWF, presented our museum specimens to interested groups, and provided some history and context to the Foundation: our mission and methods, successes and challenges, and how we fit into the regional conservation picture. We provided temporary housing to researchers working on site and in our area. Through our participation in the Illinois Recreational Access Program (IRAP), we provided state-administered spring access to turkey hunters to help young people and first-time turkey hunters learn safe, responsible hunting techniques and gain experience with and appreciation for wildlife and the natural world. Boy Scouts from the Sandwich, IL, troop visited the Foundation in late May for an annual overnight camping trip and fishing on Main Lake.

Additional continuing education for staff personnel was provided via participation in Pesticide Applicator Training Clinics, meetings with our partners in conservation projects, and meetings with Illinois Department of Natural Resources Wildlife Biologists on the status and management of Chronic Wasting Disease in Whitetail Deer.

MUSEUM COLLECTIONS AND STUDY SPECIMENS

The Foundation maintains museum collections of plants, insects, fish, herps, and mammals for educational and research purposes. Our herbarium consists of 979 plant specimens representing 78 families, 261 genera, and 455 species matted on acid-free paper. Our seed collection includes 82 native prairie and wetland species displayed in glass vials. The insect collection exhibits thousands of 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. This year we added a full taxidermied mount of a large male River Otter that was unfortunately killed on Shaw Road in 2023.

The majority of 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 brochures illustrating species lists for the Foundation property are available for educational and research purposes.



Pam Taylor and Aiden Towe after locating a gravid female Blanding's Turtle

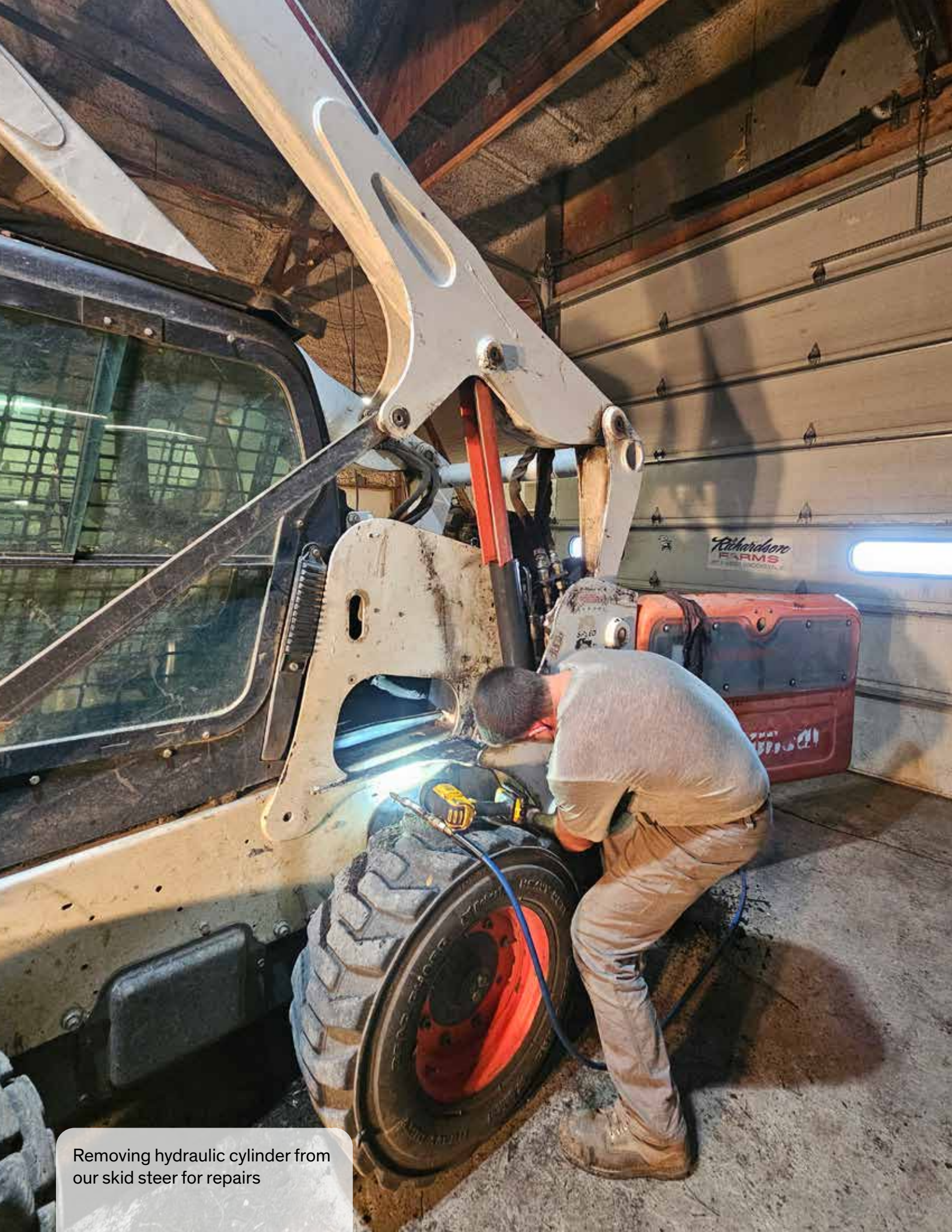
INTERNSHIP / SEASONAL EMPLOYEE PROGRAM

Most years we offer one or more internships during the summer and/or fall months. We challenge our interns with some taxing work, often in hot, wet, or buggy conditions, but we also give them a lot of opportunities to learn the whys behind the work and we hope that it is a rewarding experience. This year we offered one college-level summer internship to Pam Taylor, a recent graduate of Bradley University.

Pam joined our team from mid-May through early-September. Her responsibilities included invasive species control, collecting and processing native plant seed, shop maintenance, assisting with Wood Duck and Bluebird nest inspections, turtle surveys, and other wildlife surveys. We're grateful for her hard work and hope she enjoyed her experience at RWF. Pam recently accepted a position with the Missouri Department of Conservation's Stream Team as a volunteer coordinator. We're glad to see her moving on to a great opportunity in the conservation field and we wish her continued success and a bright future!

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 were fortunate to have help from Foundation family and friends, as well as a few new faces. Tess Wilson edited and proofread copy such as this report. Phil Nagorny joined in turtle nest-protection on several late nights in June. In July, Preston Hamm, Randy Rutledge, and Damien Considine joined our crew for a day of seed collecting. Kaleb Kleckner helped with our mesopredator trapping program. From May through July Aiden Towey worked about 3 days a week, assisting with seed collection, mowing, invasive species work, turtle surveys and nest protection, and mesopredator trap removal. 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, and experience levels, as there is no shortage of valuable habitat work to be done throughout the year.



Removing hydraulic cylinder from our skid steer for repairs

EQUIPMENT, PROPERTY, AND BUILDING IMPROVEMENTS

Equipment maintenance and repairs account 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:

S770 Bobcat

- Replaced battery
- Replaced hydraulic boom hoses
- Repaired 2 main lift cylinders
- Replaced reinforced forestry door

Bobcat Snowplow

- Replaced skid shoes

John Deere 4020

- Repaired tires

John Deere 4040

- Repaired tires

John Deere 8650

- Repaired fuel leak
- Replaced hydraulic filters
- Replaced air filters
- Replaced temp gauge
- Replaced belts
- Flushed all fluids
- Replaced compressor kit
- Replaced evaporator

John Deere 1435

- Replaced blades
- Replaced fuel filter

John Deere 4840

- Replaced inner dual tires
- Rotated outer dual tires
- Replaced one front tire
- Repaired leak in fuel line

John Deere 9500 Combine

- Replaced blown steering hydraulic hose

300 Gallon Sprayer

- Repl. 2 nozzles & bodies

IH 715 Combine

- Replaced shaft and pulley at feeder house
- Straightened & repaired ladder

John Deere 450H Dozer

- Wiring repairs in control module

John Deere 310D Backhoe

- Replaced batteries

John Deere 335 Disk

- Replaced extension hub
- Replaced 1 blade
- Replaced blown hyd. hose

J.D. 722 Soil Finisher

- Replaced worn sweeps

Gravity Wagons

- Replaced 2 tires
- Welded a patch where rusted out

John Deere Gators

- Flat tire repairs
- Spring tune-up (6x4)
- Brake adjustment (4x4)

Pickup Trucks

- Replaced electric coils '16 Ford
- Replaced 2 rotors, pads, calipers '16 Ford
- Replaced rear axle, '07 GMC
- Replaced 1 caliper, pad, rotor, '07 GMC

Western Snowplow

- Replaced skid shoes

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, leaf blower, pressure washer, and air compressor; and patched or otherwise repaired tires of implements, tractors, and trucks as needed.



Rebuilding sliding door header

EQUIPMENT, PROPERTY, AND BUILDING IMPROVEMENTS

This year at the Erbes research cabin we repaired damage from a fallen tree to the roof near the western eave and replaced 2 windows. We power washed the Erbes outbuilding, painted the roof, and replaced 2 clear roof panels. At our shop building we made repairs to the overhead door and infrared tube heater. We pressure washed the large barn south of the shop. We replaced a well pressure tank at our office building. We power washed the truck barn, painted its roof, replaced a few ground level boards on the south wall, and rebuilt the sliding door header. At the Montavon farm we contracted to have a wood burner and chimney professionally installed. We power washed and re-stained the southeast deck at the Baer house. At the Wysneinski farmhouse we stripped and re-shingled the north half of the roof, replaced aged cedar siding with vinyl, and replaced a cracked cast iron soil pipe in the basement with PVC.

At the lodge we re-graded the slope south of the pavers for better water shed using a rented mini-excavator; removed two dead or dying pine trees; cleaned gutters; power washed and painted the deck and upper west façade; power washed the building; cleaned windows; replaced ballast in fluorescent lighting; made plumbing repairs to dishwasher, sinks, and toilets; applied a crabgrass preventer; and rolled the lawn.

At the Sanctuary we power washed the entire building, stone walkways, and decks; replaced and painted a large number of deck boards; cleaned gutters; re-caulked windows; and replaced a sump pump in the well pit.

Other repair and maintenance jobs included winterizing buildings, pressure washing algae from barn roofs and walls, cleaning gutters, and splitting firewood.

As in any year we spent significant time removing trees that were brought down in storms or dying of diseases such as Tip Blight or infections of Emerald Ash Borer or Pinewood Nematode. We pruned trees near buildings and along lanes and trails to maintain accessibility on the property. 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. Pest control measures were generally effective and fruit production was fair. Several of our trees have become less productive with age and from being shaded out by growing pines.

Property maintenance included the jobs listed above as well as overseeing pest control contractors at the Lodge and Sanctuary; mowing and maintaining lawns; maintaining landscaping; grading, spreading gravel, and patching potholes on lanes; clearing snow; repairing and maintaining cable gates and posts; posting property boundary signs; clearing overhanging limbs from trails and firebreaks; repairing broken field tile lines and blowouts; and removing Beaver dams where necessary for proper drainage.



Altering the grade to allow better waterflow



Prescribed burn in the LaFox prairie

PRAIRIE AND SAVANNA MANAGEMENT

On March 7th and 13th we conducted successful controlled burns on approximately 52 acres of prairie, savanna, and creek banks. With a crew of 5 people, 2 drip torches, 2 John Deere Gators, and a John Deere tractor—each machine with 50-gallon pumper units—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.

POND MANAGEMENT

We controlled aquatic vegetation and algal blooms using various chemical applications over the course of the growing season. Following last year's challenges in controlling Sago and Horned Pondweed at the LaFox Pond, we tried a different product for our spring herbicide application and a mid-season phosphorus blocker. Results were much improved this year. For control of rooted aquatic vegetation, we applied Aquathol K once in May and Reward or Aquastrike in 3 different applications from June to August. We made 13 treatments with Cutrine Ultra and 1 treatment of Copper Sulfate to control algae from April through October. We treated twice with the enzymatic product Aquaprep in June and August to reduce organic muck and available nutrients. We applied EutroSORB, a new product which binds to phosphorus in the water table, limiting that nutrient's availability to plants and algae. We made EutroSORB treatments on two occasions in May and July. In all, we used a total of 5 gallons of Aquathol K, 5.4 gallons of Reward, 7.5 gallons of Cutrine Ultra, 50 lbs. of Copper Sulfate, 1.25 gallons of Aquaprep, and 2.5 gallons of EutroSORB. The continued use of Aquashade—an EPA-approved pond dye which limits the amount of light available in the water column—has helped us reduce the severity of blooms and therefore the amount of herbicide and algaecide needed to manage the pond. We applied a total of 12.5 gallons of Aquashade dye in 3 treatments across the growing season.

We performed regular maintenance on the aeration system to help balance the diffusers and keep them operating efficiently. In July 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.





Northern lights over
Goose Pond

ADMINISTRATION

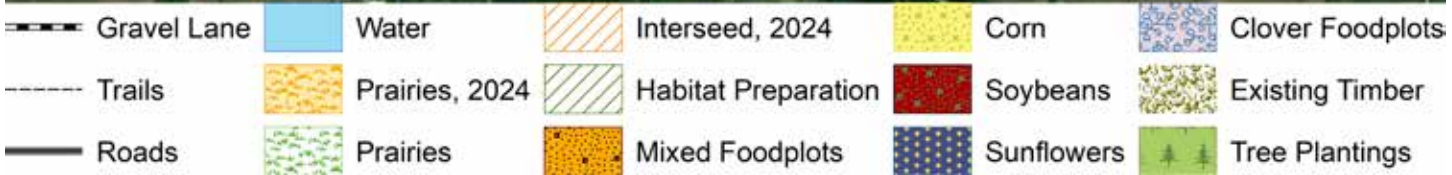
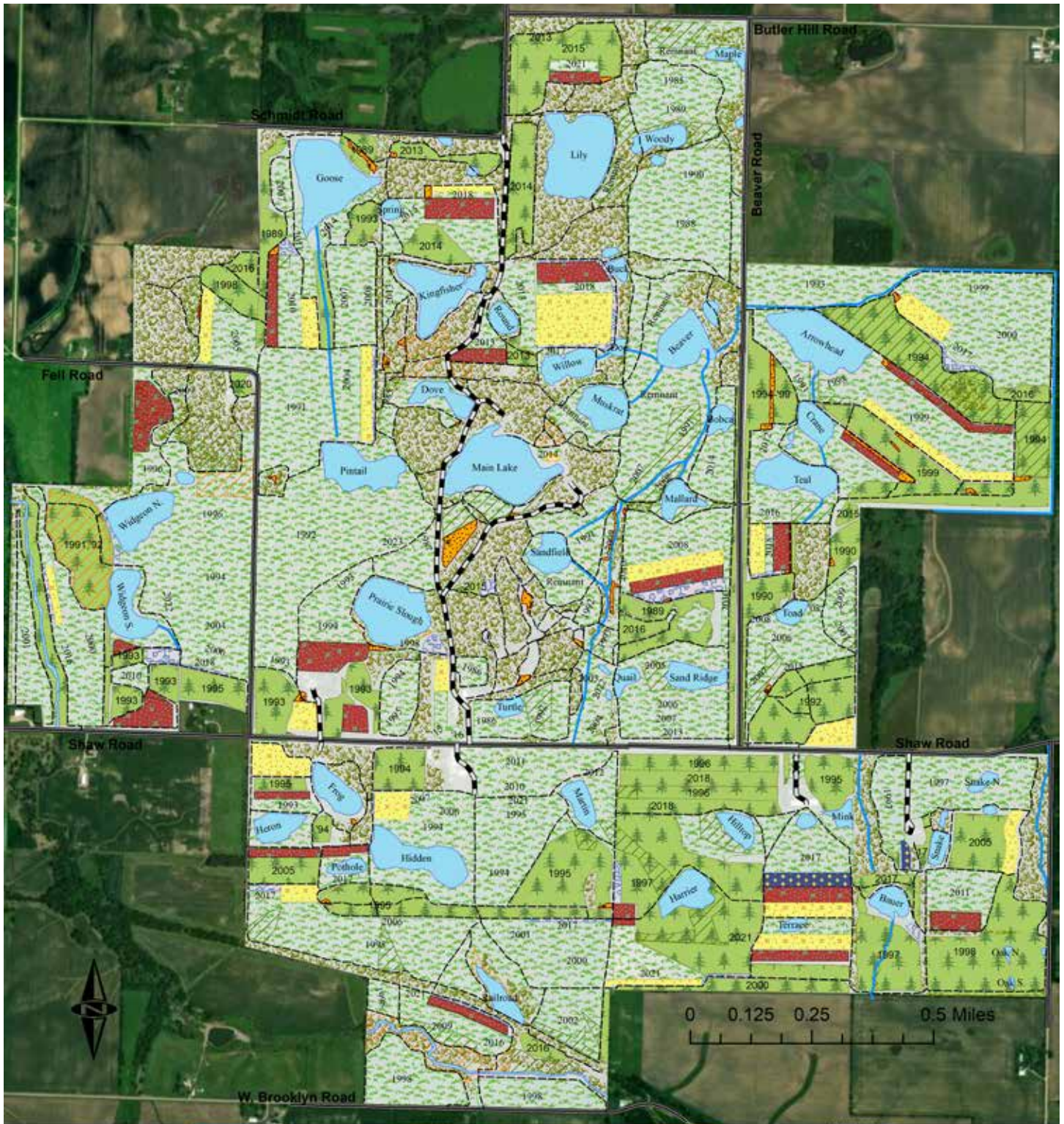
The following is a brief list of administrative support services involved with the daily operation of the Wildlife Foundation:

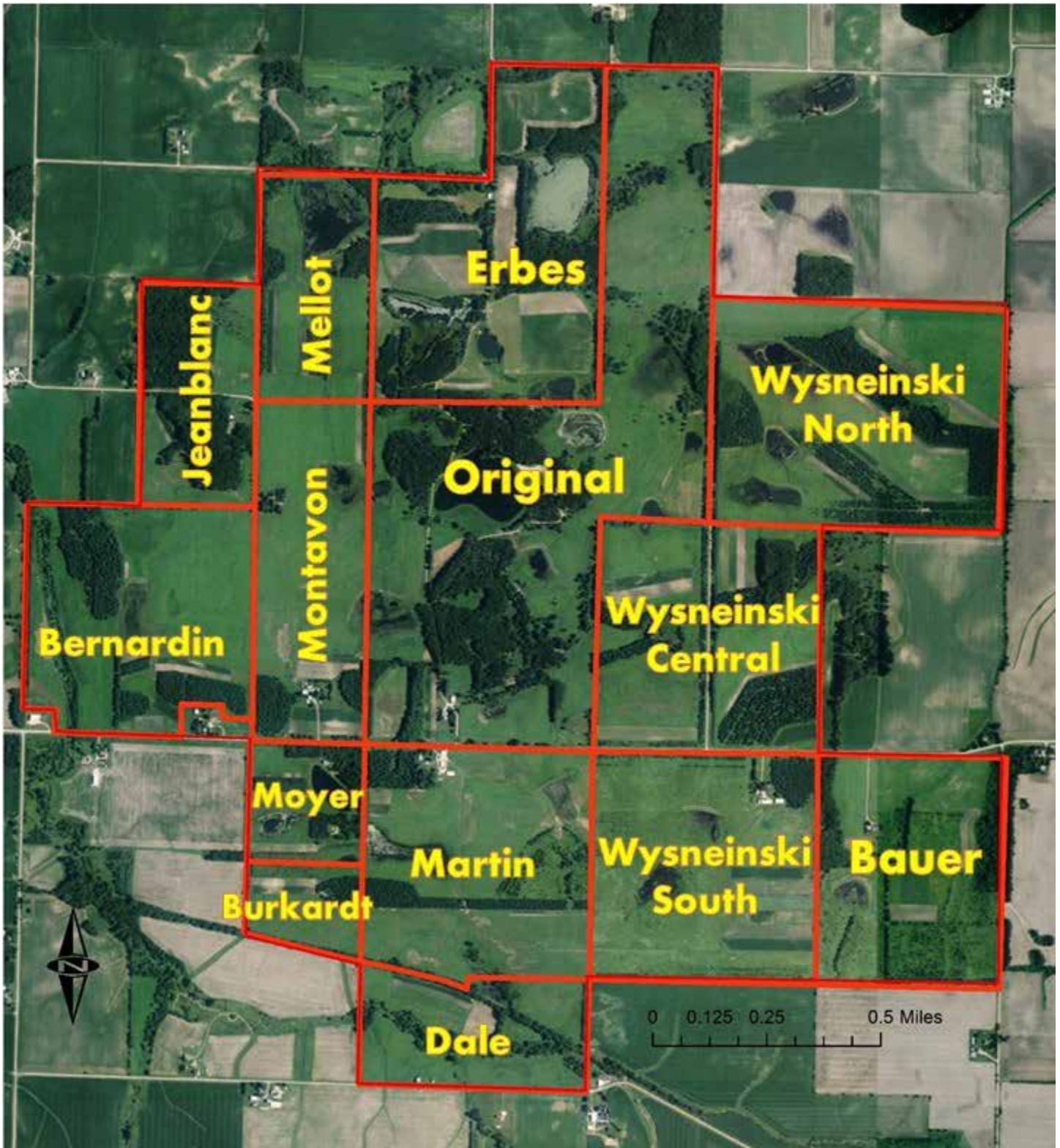
- Habitat planning, layout, mapping, and evaluation of annual land management practices
- Budgeting, payroll, task code, and programmatic accounting
- Preparation of an annual report of Wildlife Foundation accomplishments
- Maintenance of a website representing the Wildlife Foundation
- Representing RWF at meetings and conferences for the advancement of the Foundation
- Coordination of investigations, surveys, and research projects
- Literature review and research regarding management practices & 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 interviewing potential employees or internship applicants
- Maintaining professional and business contacts
- Legal searches and review of operations
- Program evaluation and review
- Correspondence and miscellaneous office duties

PHOTO CREDITS

The following individuals contributed photographs for this year's annual report: Brian Towey, Amanda Contreras, Brad Kleckner, Amy Janik, Morgan Brown, Chris Dietrich, Nicki Gordon, Andy Sima, Ashley McDonald, and Jennifer Schultze.

MAP OF HABITAT MANAGEMENT PRACTICES





2024 ACREAGE FIGURES

RICHARDSON WILDLIFE FOUNDATION

Prairie Restoration	Acres	% of Total
1985	21.2	
1986	13.3	
1987	8.2	
1988	19.3	
1989	6.9	
1990	15.5	
1991	38.8	
1992	39	
1993	45.9	
1994	38.5	
1995	52.2	
1996	25.2	
1997	24.6	
1998	33.1	
1999	36.73	
2000	51.2	
2001	25.2	
2002	10.9	
2003	3.6	
2004	15.3	
2005	17.1	
2006	26.5	
2007	27.93	
2008	20.2	
2009	12.6	
2010	18.52	
2011	23.65	
2012	16.1	
2013	30.5	
2014	19.2	
2015	9.2	
2016	12.13	
2017	19.08	
2018	2.05	
2019	0.25	
2021	13.85	
2022	6.3	
2023	9.05	
2024	0.19	
TOTAL ACRES-	809.0	40.9%
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	
2018- (81*)	12	
2019- (242*)		
2020- (241*)	1	
2021- (400)	9.2	
2022- (485)	9.23	
2023- (273*)	2.75	
TOTAL ACRES-	382.8	19.4%
<i>* Potted trees planted within existing woodland plantings.</i>		
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	5.2	
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	2.7	
Sand Ridge	2.1	
Toad	2	
Buck	1.65	
Doe	0.5	
Maple	2	
Oak	0.59	
Quail	1.5	
Mink West	1.2	
Oxbow	0.27	
Dugouts (6)	1	
TOTAL ACRES-	165.6	8.4%
Cool Season Grasses		
TOTAL ACRES-	8.6	0.4%
Food Plots	Acres	% Of Total
Corn	55.51	
Soybeans	61.48	
Oats	0.0	
Sunflowers	2.96	
Winter Wheat	0.0	
Clover / Chicory	14.75	
Brassica	6.5	
TOTAL ACRES-	141.20	7.1%
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 - 47.87 miles	70.3	3.6%
Road \ Ditch Easements	45.9	2.3%
Total Length - 6.6 miles		
Building and Home Sites -	18.9	1.0%
TOTAL ACREAGE -	1,976	

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	14	67
Waterfowl	9	15*
Pheasant	9	9
Deer (Archery)	205	45**
Deer (Firearm)	28	8**
Coyote	****	0
Turkey (Spring)	11	5***
Turkey (Fall Archery)	****	2***

* The waterfowl harvest included 5 Canada Geese, 3 Green-Winged Teal, 3 Wood Ducks, 2 Blue-Winged Teal, 1 Mallard, and 1 Ringneck.

** The deer harvest included 48 does and 5 bucks with the following breakdown: 33 adult females, 15 juvenile females, 4 adult males, and 1 juvenile male.

*** The turkey harvest included 3 Toms and 2 Jakes harvested in the spring season and 1 Jake and 1 Tom harvested in the fall archery season.

**** Hunter trips were incidental to deer or turkey hunting.

TRAPPING HARVEST

SPECIES	HARVEST
Raccoon	112
Muskrat	2
Opossum	29
Eastern Cottontail	0
Mink	0
Fox Squirrel	0
Striped Skunk	2
Beaver	0
Badger	0
Coyote	0



Wild Turkeys. A Jake (young male) in front and a mature Tom behind



Comet C/2023 A3
Tsuchinshan-ATLAS seen
from the Bernardin Tract
in October



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