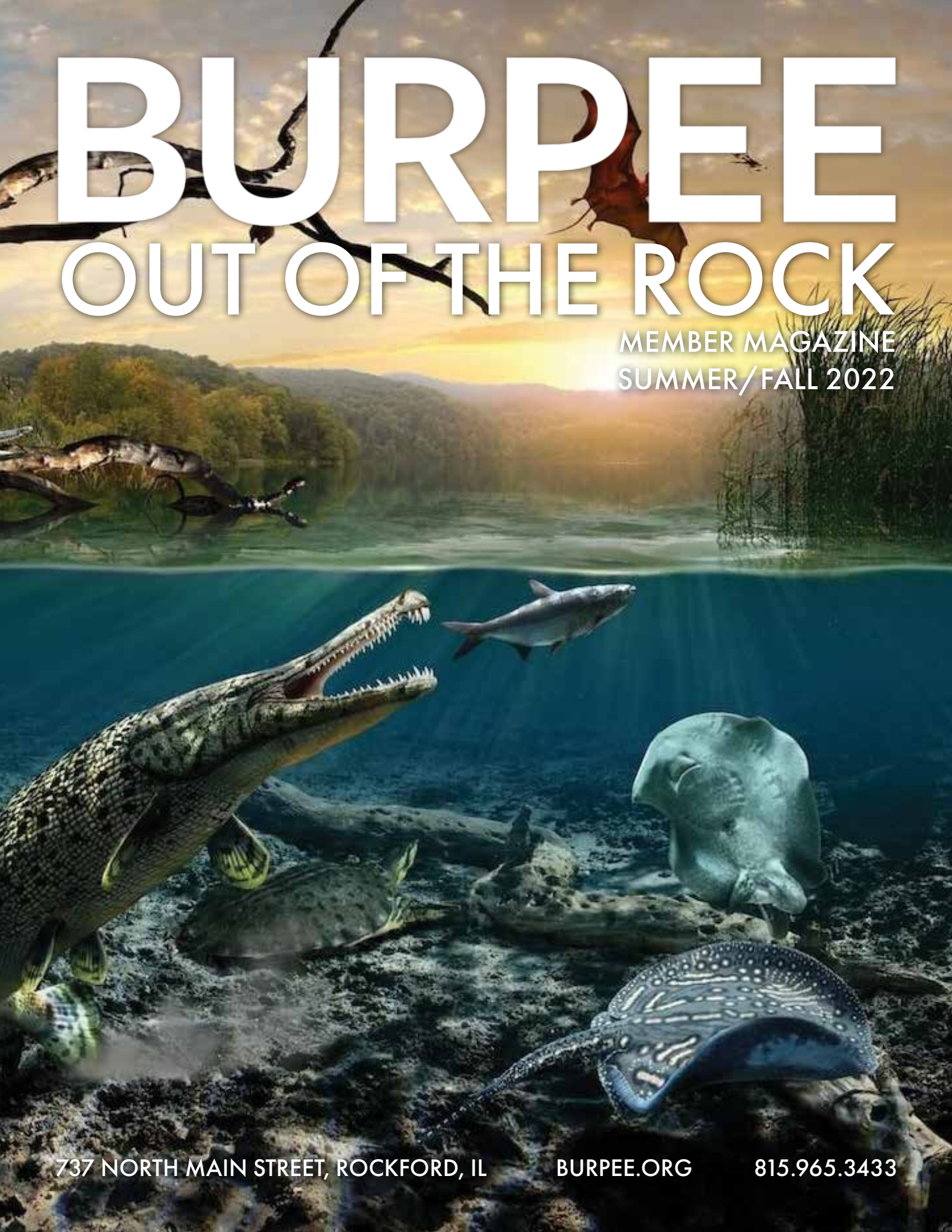
BURPEE

OUT OF THE ROCK

MEMBER MAGAZINE
SUMMER/FALL 2022



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BURPEE
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Cover art by: Julius Csotonyi

Planning for the Future
EXECUTIVE DIRECTOR ADDRESS

Dear Treasured Burpee Museum Members and Guests,

Since I became Executive Director in 2017, Burpee Museum has grown by leaps and bounds! I am proud to work with an amazing Board of Trustees, the Rockford Park District, Burpee Staff, Burpee Volunteers, Burpee Museum Members, and our community donors. Each of you are critical to our successes!

Museum Growth
Since 2017, we have opened 6 new exhibits, each funded by grants and the local community! From the *SPROUTS Children's Learning Lab*, to the LIVE *Reptiles: Senses of Survival* and *East Africa* temporary exhibits, to new permanent exhibits including *A River of Dinosaurs: The Jurassic*, *Rocks and Minerals; Earth Below Our Feet*, and *Ice Age Illinois*, Burpee boasts an updated series of learning experiences for all ages.

Building on beautiful exhibits from the 1990s, Burpee has renovated 3 exhibits in the past 2 years. New signs, sounds, and lights in the *Coal Forest* make the two-story exhibit more interactive and exploratory. Larger viewing windows, new signage, and 15 touchable samples in the *Ordovician Sea* updates both the look and interactivity. A turtle nook with live animals brings the waterways literally to life in *Windows to the Wilderness*. Additionally, I am sure you have seen the renovated lobby, visitor services area, and gift shop, which give our museum entrance a refreshed and modern appearance!

What's next? The NEW Nature Nook and a NEW Native American exhibit.

Financial Stability
Yearly losses through the mid 2000s set Burpee on a difficult path that came to a head in 2016's financial collapse. By December 2017, we had to make a decision between making payroll or paying the gas bill. Thankfully, the right team full of passion and perseverance, with a huge serving of creativity, took on the project. Failure was not an option for our community. The museum's journey to financial recovery allowed Burpee to keep the doors open to the public while maintaining the necessary research paleontologists and collections to keep Burpee rockstars like Jane the *T. rex* and Homer the *Triceratops*.

Over the past five years, we have gone from financial distress to financial stability - and even growth! From 2013 to 2016 the museum lost over $1.1 million dollars. Thankfully, 2017 was the last year with a net deficit for Burpee Museum! The bleeding was stopped and it was time to heal. From 2017 to today, we see a 38% increase in programming revenue, a 62% increase in donor support & grant funding, and membership numbers have doubled in the last few years.

Planning Strategically
Taking a business from financial uncertainty to stability is an important task, but judging the size of our wings and how high we can fly safely is also critical. Having completed all major goals of the 2017 plan, today we are ready for a new Strategic Plan and analysis of the next phases of Burpee.

Burpee Museum's Board of Trustees invested their time in a retreat, in partnership with Northern Illinois Center for NonProfit Excellence (NICNE), to conduct a critical Strategic Planning Process. From guiding a vision statement to tangible key objectives, the Board and Staff have put together an incredible plan that will take Burpee Museum into our next phase. I am thrilled to get to work implementing this plan.

A Strong Network
As usual, my heart swells with pride. The Burpee Staff, Board of Trustees, Volunteers, Community Supporters, and Donors continue to support the work of the museum, and it is my honor to work with the community and the #BurpeeFamily as they continue to support Burpee's mission!

Respectfully and Enthusiastically Yours,

Anne Weerda
Executive Director

Museum Mission:
It is the mission of Burpee Museum of Natural History to inspire all people to engage in a lifetime of discovery and learning about the natural world, through preservation and interpretation.

A successful field season in 2022 included several new finds in both Utah and Montana

Staff worked day and night to make the grand opening of the temporary "Of This Place" exhibit a success

Ice the Tegu enjoys "Wednesday Night Music on the Rock", with time in the grass and attention from adults and children alike

Bodéwadmi

Exploring the Potawatomi through the exhibit: *Of This Place*

Starla Thompson

We, the Potawatomi nation, are a woodland tribe from the Great Lakes region. Our customs, language, heritage, traditions, culture, and society have similarities to the rest of the Neshnabek people; however, we are separate and distinct nations. Our similarities may connect us, but our different geographical locations, internal and external roles and relationships, conflicts, political alliances, and histories separate our nations.

Tintype Photograph of Curator Starla Thompson ~ Waben Gizhek Kwe

We pronounce and write our nation, "Potawatomi". In our language we say: "Bodéwadmi." Potawatomi is a French spelling.

According to one of our origin stories, the Neshnabek People lived as one people. European invaders - first the French, then the British and American expansion westward from the east coast - caused the Neshnabek people to separate to the Three Fires Confederacy. Fire, Shkode' in Bodéwadmi, and its linguistic etymology stems from Dé' [heart] in Potawatomi. The word for our tribe, Bodéwadmi, translates to "Keeper of the Fire;" however, its literal translation means "Keeper of the Heart." The sacred fire represents the heart of our nation. Thus, "Keeper of the (sacred) Fire" literally means the keeper of the heart [Dé'] of our nation - the (sacred) fire [Shkode'].

Being Potawatomi
Being Potawatomi is a continuous practice of combining traditional heritage, such as our language, with modern methodologies of our culture. When Nanabozho was "Marked by Fire," this became a part of the Potawatomi people's identity and values to hold steadfast to our commitment and role while adapting to circumstances and environment. We maintain the sacred fire of our nation: spiritually, politically, and socially. It is our duty to continue the law of reciprocity of our values, not only to our nation from the generations before us to those after us, but also to maintain those values in all forms through any obstacle that arises. We have done so for centuries.

We, the Potawatomi, "Keepers of the Fire," are members of the Three Fires Confederacy or Neshnabek people, which translates to the "True People."

The Neshnabek consists of three nations:
The Odawa [Keepers of Trade]
The Ojibwe [Keepers of the Faith]
Potawatomi [Keepers of the (Sacred) Fire]

Marked By Fire
Fire reflects the origins of the earth and its molten core as its central element - the Dé' [heart]. Fire has multiple meanings sociologically, politically, and spiritually: ceremonial practices to pray and offer food, a conduit to the spirit realm, treaty-making, the nation(s) of the Neshnabek, council, and confederacy. - The Three Fires Confederacy represents the three different nations (Ojibwe, Odawa, and Potawatomi) with their three different fires but one collective alliance.

Bandolier Bag and Jingle Dress

This map has been recreated to include known Indian villages, white settlements, and modern day references such as Burpee Museum's location.

In a Neshnabek legend, the Shkode' [fire] was taken by our hero, Nanabozho, which resulted in him being "Marked by Fire." Thus, fire becomes the heart of the nation, specifically our nation.

Although each tribe may have linguistic and cultural similarities, all are entirely different from each other. Over time we have maintained our traditional identity and corresponding responsibilities by honoring our nation's alliances while negotiating treaty-making with outside entities, either tribal nations or Europeans. Also, we carry the sacred fire that makes our nation distinct from other Neshnabek people.

Our Illinois Home
Illinois has always been home to the Potawatomi. We maintained a formidable presence here until the end of the 19th century. In 1830 there were over 7,300 Indian people of multiple nations, 3,600 Potawatomi Indians, and over 40 Potawatomi villages.

The Rock River
Rock River received its name from the English translations of the Algonquin word, Sinsepe, with the same meaning. The area was named after the topography of high ground and not the Rock River valley. The Rock River served as the division between Potawatomi and Winnebago (Ho-Chunk) hunting grounds, with the Potawatomi primarily east of the river and Winnebago west of the river. The Rockford area was a travel route and the halfway point from Chicago to Galena, Illinois. Travelers noted the numerous mounds in the area on both sides of the Rock and Kishwaukee Rivers.

Due to forced removal over the next 40 years, by 1870 there were no Indian villages in Illinois. What follows are some important historical villages of the Potawatomi.

Big Thunder
Big Thunder was an influential Chief of the Potawatomi. After the forced removal of his people west, Big Thunder fell ill and died. Upon Chief Big Thunder's passing, a burial house was erected on a mound at the highest point of land, later the site of the courthouse. The Chief was wrapped in a blanket and seated on a bench facing west. Visitors stopping at the stage route desecrated the Chief's burial site taking bones until nothing was left of the once great leader.

Wakesa
This was the village of influential Potawatomi Chief Big Thunder. Burial and Planting Grounds were located East of Rockford and South of the Kishwaukee River in Boone County near Belvidere.

Wakesa Burial and Planting Ground
Located East of Rockford and South of the Kishwaukee River in Boone County near Belvidere.

Kish-Ka-Waka
South of Rockford in Winnebago County, on the Northside of the Kishwaukee River at the confluence of the Rock River. The village was near present-day Chicago-Rockford International Airport.

Additional villages were in modern day Boone County (at Poplar Grove), North of Rockford in Winnebago County on the East side of the Rock River in Roscoe, North of Rockford in Winnebago County at Rockton, and throughout modern day Rockford.

Clothing on loan from Joseph Daniels, Sr.

RPS Students

Volunteer Spotlight:

Alex Merry

Six students that have love for science, and helping their community have been volunteering at Burpee Museum in an incredible way! The Rockford Public School Students are part of a skill training program and have been arriving with smiling faces daily since 2021 after their volunteer shift at Discovery Center.

Their hard work on all their tasks, which include interacting with the reptiles, cleaning fingerprints off the glass, and dusting and vacuuming, brings Burpee benefits daily. The students agree their favorite task is taking Tortilla, Burpee's African Sulcata Tortoise, outside for a walk and to bask in the sunshine, eat grass, and snack on her favorite treat: dandelions!

About the students
Brian, explains how much he loves talking with guests and saying "Hello" to all the field trips and staff members. He waves at everyone he sees, and welcomes them into the museum with a bright smile
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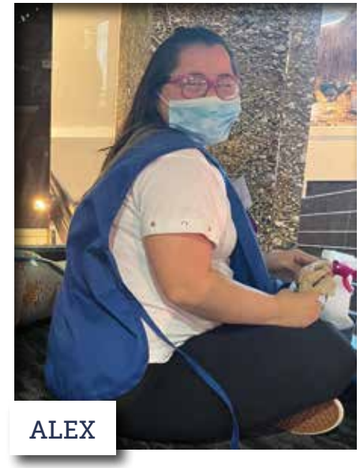


ALEX

Nga tells us that when she is not at the museum she's with her family and hanging out by the pool!

"We appreciate all of their help," said Maddie Hicks, Visitor Service Lead. "Everyday they come in and say hello, and ask how our day is going. They are extremely respectful and always willing to help."

This program at Burpee helps the students gain experience in a workplace environment with tasks that they can complete on their own or with help from others. We anticipate that some of these students will come back in the upcoming school year!

AJ

Armis, and AJ tell us how they are interested in the fossils in the Fossil Lake exhibit and the Geology exhibit. Armis loves how the rocks and minerals shine under the light and show their crystals, and AJ is fascinated and cannot get enough of the fish and plant fossils!

Alex and Jose like to get time to explore the Dinosaur exhibits, and they love to figure out which bones are real fossils and which bones are casts or replicas.

Rockford Public Schools and Burpee Museum
Burpee Museum has been working with the RPS Special Education program for over 5 years. Students enrolled have the opportunity to get involved in a local organization, learn critical and transferable life skills, and grow their love for science and their community. Students have a chance to get training in a real work environment under the guidance and supervision of the RPS staff. These work simulations and life experience helps them become more comfortable with themselves, their current skillset, and needs for improvement. They are always willing to try new things at Burpee Museum, like holding a snake!

Burpee Museum staff in collaboration with RPS staff create a work environment on par with the students' ability and comfort levels, making sure that tasks and goals are attainable. Burpee could not be happier with this partnership and we are all so grateful for the contributions of each of our RPS team! Thank you for all you do teachers, and students!

Nymphs

Damselfly Nymph

Examining Incomplete Metamorphosis

Anne Weerda

Drogonfly Nymph

Warmer temperatures and an abundance of plant life in the Rock River Valley means time for cold blooded creatures to thrive. As we spend time outdoors examining the beautiful diversity of our area, we see a variety of insects from crawling ants to hopping grasshoppers to flying mosquitoes and moths! Arthropods (insects, spiders and crustaceans) make up about 80% of all known Illinois animals!

Today, there are one million described species of arthropods on the planet, and many scientists believe there are millions more yet to be discovered and described...as many as 5-10 million more! If you compare the millions of insect species to Earth's only 5,000 species of mammals, the insect diversity is unmatched: Insects are the most diverse group of organisms on the Earth!

Turning our observations to the insect life cycle and how they grow into adults, you may notice that while the majority of insects hatch from eggs, not all of these hatchlings look like their parents.

Metamorphosis

The journey to adulthood in the insect world involves some amazing changes! In fact, over 75% of insects go through something called Complete Metamorphosis, which includes all the form changes occurring as an insect approaches adulthood. Think of the butterfly as a great example. A mother lays an egg and a larva emerges. It eats the leaves of the host plant and grows through multiple size stages (called instars) until it is ready to form a pupa or chrysalis. It then waits and develops for a period of many days or weeks, only to emerge as a very different looking, and flying insect: The Butterfly!

But what about the animals that emerge from the eggs looking a bit more like the parents? They actually undergo something called hemimetabolous metamorphosis commonly known as Incomplete Metamorphosis. Have you ever spotted a tiny grasshopper or little cockroach? While these youngsters look much like the adults you will notice they never have adult wings. We call this stage the Nymphs! A nymph is an immature form of the insect that does not change form as it grows. From dragonflies to damselflies to cockroaches, and more...you will spot many different types of nymphs outside.

A more primitive growth pattern found in wingless insects is Ametabolous Metamorphosis. In this case, the insect gradually increases in size with age, but does not undergo major changes. The insect molts multiple times before becoming sexually mature, but does not physically change much, such as we see in springtails.

Odonata: The Dragonfly & Damselfly

One group of insects undergoing incomplete metamorphosis is from the order Odonata. The beautiful dragonfly and damselfly belong to a diverse order called Odonata, found around the world. There are currently over 470 different living species described in the United States,15 of which are considered common dragonflies in Illinois, and easily discovered on nature walks, especially near water.

Adults are accomplished fliers traveling many miles from their aquatic habitat and are predators of other insects they catch while in flight thanks to their amazing compound eyes! The nymphs (immature dragonflies) feed on small insects, small fish, and other invertebrates.

Dragonflies of the Past

The modern order of Odonata includes Dragonflies and Damselflies. They evolved in the early Mesozoic era. At Burpee Museum, sitting on the branch of a 2 story fern in the Coal Forest exhibit is a Meganeura! This prehistoric insect flew about the Carboniferous Period, 325 MYA, of the superorder Odonatoptera. The Palaeozoic Era's Odonatoptera, a super order of prehistoric winged insects, showed many morphological features that are associated with modern Odonata including large compound eyes, critical for long-distance vision while in flight, and sturdy mandibles with acute teeth nearly identical to modern dragonflies that capture prey while in flight. Can you imagine a dragonfly with a 2 foot wingspan and great vision, capturing its prey while in flight? It would have been an amazing, and terrifying, sight to see!

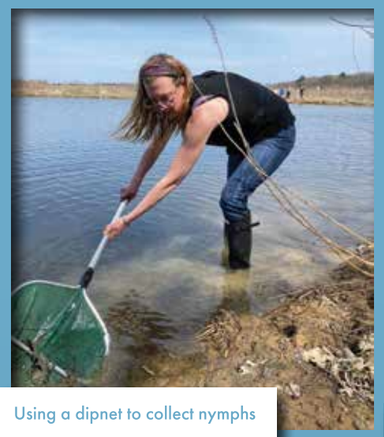
Observing Incomplete Metamorphosis

The incomplete Metamorphosis of aquatic dwelling nymphs to flying insects may be some of the most awe inspiring changes in breathing through gills. Many naturalists and hobbyists find observing, and even rearing nymphs to dragonfly adulthood, to be an incredibly rewarding learning experience. A quick adventure walk to a local lake or pond can provide a great opportunity to catch, observe, release, or rear nymphs. The nymph feeds and grows shedding its skin several times. Each stage between a shed is called an instar. Depending on the species, the nymph will grow through about 8-15 instars that can take from weeks to years to complete. The easiest nymphs to observe incomplete metamorphosis into adult dragonflies are the fully grown nymphs in the final instars.

Take a Closer Look

Using a small dip net, scoop at the bottom of the water. If you get mud and leaves in your scoop, it is likely a great sample. Let the water drain through the net a bit and place it on the ground. You can use your hands to gently move the leaves around and look for movement. The colorful & beautiful dragonfly adults, when nymphs, are surprisingly drab: brown body colors that provide great camouflage with the dirt and leaves in the pond.

Dragonfly Swamp darner (*Epiaschna heros*) during mating.



Using a dipnet to collect nymphs

Identifying Nymphs

There is a great variety of habitats where we find Odonata nymphs from lakes, to ponds, to swamps, and even moving water streams. This diversity in habitat is reflected in the great diversity of structure and behavior of the Nymphs. While the adult forms are rather easily distinguished, the larva look amazingly similar from even the genus level. Clear identification, often needing magnification, will require examination of the labium (the main prey catching organ), the antennae, abdominal shape, spine, and setal arrangement. For example the prey catching organ and largest of the mouthparts, the labium, can be either flat or scoop-shaped. It can come up to the ventral margin of the labrum, or it can partly or completely cover the labrum. The beginner nymph identifier may want to start with this organ as many characteristics for separating family, genus, and species are found on the labium. However, the easiest way to confirm your nymph ID is to let it progress to adulthood when the characteristics of dragonflies are much easier to identify to the species level.

Common Whitetail Dragonfly

Raising Nymphs

The easiest way to rear a nymph at home is in a garden pond, however they can also be reared in fish bowls or buckets. When released into a small fish bowl or bucket, remember to add an aeration stone to provide water movement and oxygen exchange. As they are ready to emerge, they will want to crawl out onto a stick or plant, so be sure to have objects both submerged and above water to give the developing nymph the opportunity to climb out of the water when it is time.

Nymphs can be sensitive to water quality. Therefore, regular water changes with non chlorinated water will keep your nymph much healthier. Because they are cannibalistic, it is not a good idea to house multiple nymphs together, especially of multiple sizes.

Nymphs and Food

When the nymph spots its prey, it will extrude a mouthpart called a labium to attack, engulf, grab or even impale the next meal and bring it back into their mouth. The amazing built-in speargun fires so quickly, you will want to watch it in slow motion if you are lucky enough to catch it on camera. An amazing adaptation sometimes referred to among biologists as the "killer lip" is very helpful for underwater predation where the water visibility is typically poor and it is difficult to trap your prey. Interestingly this mouthpart is only found in dragonfly and damselfly nymphs.

To our 2022 Donors: Thank You!

We would like to thank the following special supporters for their contributions to Burpee Museum from January 2022 through July 2022.

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BURPEE
museum of natural history

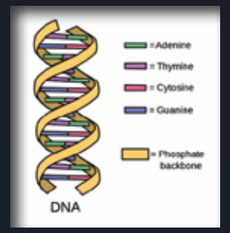
DNA Through Time

DNA is the basic blueprint for ALL life! All living things from plants, to dogs, to bacteria, to humans have DNA in every single cell.

Did you know?

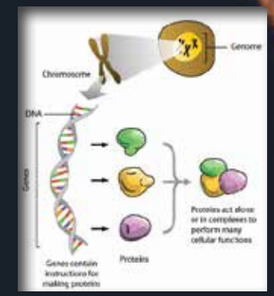
All DNA in every living thing is made up of the same components!

All DNA is made up of: Adenine (A) Guanine (G) Cytosine (C) Thymine (T)



Good Analogy:

DNA is made of four different types of Base Pairs (like letters). These DNA letters go together to create complex words and sentences that the proteins in your body can read like a blueprint to create EVERYTHING in your body from your feet to your eyes!



1859

Charles Darwin: **Natural Selection**

The theory of natural selection brought to light how traits are inherited from parents.

1866

Gregor Mendel: **Heredity Discovered**

Also known as the "father of genetics," he discovered heredity (passing traits to offspring) through experiments with pea plants, long before the discovery of DNA or genes.

1869

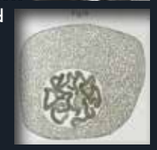
Friedrich Miescher: **Nucleus Identified**

Swiss chemist identifies a central component of cells and calls it the nuclein, later to be known as the nucleus. This is the part of the cell where most of our DNA resides (there is also DNA in mitochondria, but that's a fun story for another time).

1888

Walther Flemming: **Cell Division & DNA**

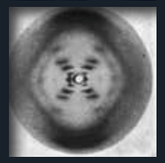
Flemming is the first to describe cell division in detail , a process in which chromatin is divided between two daughter cells. Following Flemming's work, his compatriot Wilhelm von Waldeyer-Hartz coined the term "chromosome", the coloured body.



1952

Roslin Franklin: **First Photographed DNA**

Her lab with Raymond Gosling produced the first photograph of crystalized DNA fibers that was KEY to understanding DNA, but she received no credit for her role until after her death.



1953

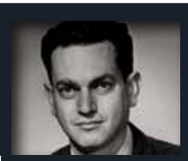
Watson and Crick: EUREKA!

DNA is a "Double Helix"

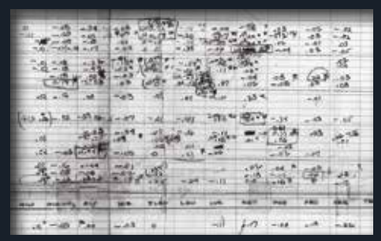
Their lab determined the double-helix structure of DNA using the photograph of DNA from Franklin's lab.

1965

Marshall Nirenberg: **Base Pair Sequencing!**

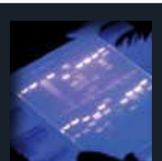


His lab was the first to sequence base pairs in a codon sequence of DNA (A, T, G, and C).



1965

Gel Electrophoresis: **DNA Separated by Size**

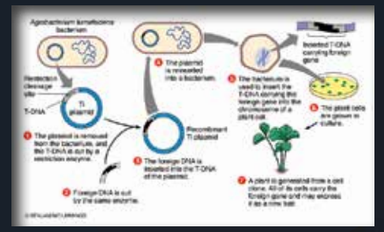


While the separation method has been used since the 1930s scientists now use the method with DNA fragments. They apply an electrical field to the gel. Because DNA has phosphate groups that are negatively charged at a neutral to basic pH, they are pulled toward the positive electrode. The distance they move in a given time is based on their size. Shorter fragments move faster allowing scientists to see bands of DNA and their particular size. This was a huge breakthrough allowing many more experiments, DNA sequencing, and the generation of transgenics (mutants).

1973

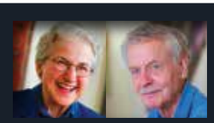
Bacteria Cell: **First Mutants?**

First transgenic or mutant was created: a bacteria intentionally mutated to be resistant to the antibiotic kanamycin.This opened the doors wide for antibiotic resistance markers in future research.

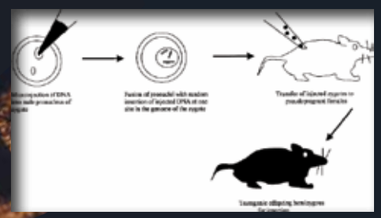


1974

Beatrice Mintz
Rudolf Jaenisch
Mice as Mutants



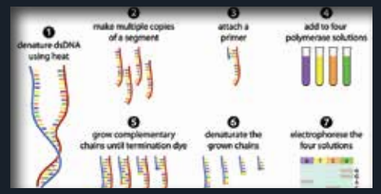
Created first genetically modified mammal through inserting a DNA virus into early stage mouse embryo development. The resulting adult mouse had the genes present in every cell! This cleared the way for studying gene development and disease.



1977

Frederick Sanger
Sanger DNA Sequencing

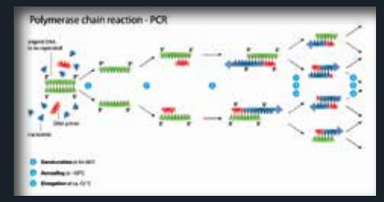
Discovered a much faster way to sequence DNA using electrophoresis: the main way to sequence genes for the next 40 years. Taking double stranded DNA (dsDNA), it is denatured (broken up) into two single-strand DNA (ssDNA). A primer is attached to one end. Four types of dNTPs are added, and grown. Electrophoresis uses electrodes to pull DNA strands through a gel with different sized "pores" thus separating DNA strands by size.



1983

Kary Mullis: **PCR Method Invented Increase Amount of DNA**

Polymerase Chain Reaction (PCR) is a technique for amplifying (making more of) a DNA sequence by making multiple copies quickly. PCR has been an essential tool in the development of DNA technologies and the advances they have brought about, as well as being applied to other fields such as diagnostics. Did you ever have a **PCR COVID-19 test**?



1990

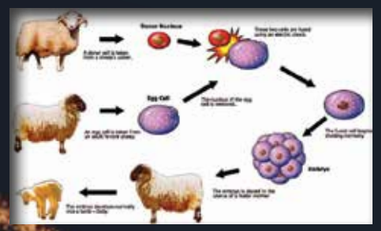
Sequencing Genomes

The Human Genome Project Begins work to sequence the entire human genome. The sanger method was used in this process!

1996

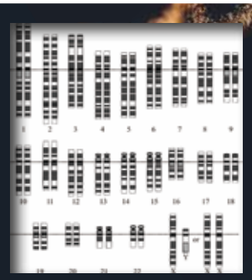
Ian Wilmut and Dolly
The First Clone

Cloning technology emerges as Dolly the sheep becomes the first cloned animal.



1999

Human Decoding



The first human chromosome is decoded! One down... 45 to go! Humans have 46 (23 pairs) of chromosomes. A fruit fly has 4 pairs.

2000

Fly Decoding

The genetic code of the fruit fly is decoded!

2002

Mouse Decoding

The genetic code of the mouse is decoded by a team of over 200 scientists collaborating on the project.

2003

Human Decoding

The Human Genome is decoded as part of an international, multi-scientist effort.

2012

Emmanuelle Charpentier & Jennifer Doudna
Gene Editing

CRISPR (Clustered Regularly Interspaced Short Palindromic Repeat) sequences are first used as gene-editing tools that can alter DNA very precisely like easy-to-use scissors. This technology is changing the way researchers can approach mutations like those in cancer and is a game changer in research.

Freddy the Reticulated Python

Malayopython reticulatus

Anne Weerda

Come face to face with the largest animal at Burpee Museum, the Reticulated Python, and you will notice Freddy Is watching your every move!

Named after our local Rockford NBA Basketball hero Fred VanVleet, he is the strongest and most powerful of all our snakes measuring about 17 feet long and weighing over 80 pounds.

A Giant Snake
The Reticulated Python (*Malayopython reticulatus*) is the longest snake in the world ranging from about 10-20 feet long. Females grow larger than their male counterparts but both remain a slender snake, often weighing less than the famed Green Anaconda, which is shorter and stockier.

A member of the python genus, Freddy has several distant relatives at Burpee including the Ball Pythons (Patches and Freckles) and the Blood Python. His species is named for the "reticulate" or network pattern of triangles on his back, but his color is not normal. Wild reticulated pythons have a pattern of browns, whereas selective breeding has caused Freddy to have a yellow and purple sunfire morph coloration. This coloration was intentionally created by snake breeders for pets.

Habitat and Diet
Found in south and southeast Asia, the wild reticulated python will attempt to eat whatever animal it can overpower. Typically this includes small to medium sized mammals and birds, though they have been known to eat other reptiles. The non-venomous constrictor will grab its prey with a mouthful of dagger sharp teeth, each angled back toward the animal's throat. The snake then wraps its body around its prey and begins to squeeze tighter and tighter until the animal can no longer breathe.

As he curls up to rest, we affectionately call him the *sweet cinnamon bun.*

For the health and safety of our snakes, Burpee Museum feeds our constrictors prey that we keep frozen until feeding day. We slowly warm the meal before we serve it. Amazingly, even though the prey is not living or moving, the snake still grabs and the constrictor reflex causes them to wrap around the prey for several minutes before releasing and beginning to swallow the meal whole.

In Captivity
As a pet, the reticulated python species is easily obtained by any enthusiast with a moderate budget. Because these constrictors get so big, many people struggle to care for the snake as an adult. It is very important to research your pets before you commit to caring for the animal. A cute little reticulated python can quickly hit 20 feet and will live over 30 years.

Burpee Museum adopted Freddy in 2016 because he had some health issues and needed a new home that was able to take care of his massive size. We were lucky to nurse him back to good health, and he remains a favorite of the community and staff.

Reticulated Python skeleton on display at the San Diego Zoo. You can see where this particular animal had several broken ribs that healed.

Respecting the Power
Freddy, like all animals, has a mind of his own. He has days that he is happy and days that he is grumpy! When Freddy does not want to interact with people, we respect his space and leave him alone. Adult Reticulated Pythons are strong enough to accidently (or intentionally) kill a human, and bites often lead to nerve damage and stitches. While Freddy is an amazing animal, this species should be managed by expert handlers only.

Meet Kris!

Staff Spotlight

Anne Weerda

A familiar face at the front desk of Burpee's Visitor Services is Kris Zuzga. Kris has been greeting visitors as they arrive and helping guests on the phone or email for only about one year, but has become a critical component of our Burpee team!

Joining Burpee
While taking a break from university studies, Kris was ready to work! "I had volunteered and worked previously next door at the Discovery Center, so when I saw the position open I figured I'd give it a go... and see what Burpee was like! I also really like snakes, so I figured I would get to hold them if I was hired!" And Kris was right. We all love to hold the amazing snakes at Burpee!

"I've only been here a year, but I've noticed that we seem to be working more as a team than when I started, which has been beneficial for everyone on staff as well as the museum itself, especially after the second flood. Everyone came in to help out that night and despite me being completely overwhelmed and scared, it was nice to know that I wasn't alone in feeling that way during a very scary event."

A Burpee Family
"My favorite part about Burpee is that my coworkers have been very supportive of my endeavors, especially my returning to school, and have been very understanding during hard times. I've befriended quite a few of them, and I enjoy coming to work because it's such a positive environment for me." Kris said with happiness. "I hope that by returning to school I'll be able to set up a future for myself where I'll be able to thrive and have time to do all of my side hobbies, like gardening and crocheting. I will be studying biochemistry when I return to school this fall. I also hope that I continue to improve in how I feel about and treat myself."

"My greatest challenge working at Burpee has been learning to admit when I need help, and accepting help when it is offered instead of taking all the responsibility onto my shoulders," Kris said. This statement reflects a common challenge for staff in many careers. We are glad that Burpee is bringing in all types of employees and can be a training ground for individuals learning to grow their own skills and gain confidence!

Burpee of the Future
"I hope that the museum will continue to do well and have more community events like Music on the Rock or our special event days," stated Kris. "My favorite exhibit is the Coal Forest, and I have numerous pictures over the years of me there, including my senior year homecoming." We can only hope that a student and then graduated Biochemist Kris returns to Burpee frequently and continues to be part of our critical, community serving family! Congratulations to Kris, and best of luck in school!

Of This Place

Anne Weerda

Over 40 years ago, Burpee Museum of Natural History opened "*The First People*" exhibit. The exhibit remained largely unchanged with imagined dioramas of life 100s of years ago, replicas of historical items, and a multitude of artifacts from many different nations.

Analysis and Discussion
About 5 years ago, we started meeting with local Native Americans and the Native American Awareness Committee to discuss the outdated exhibit and hopes of revision. While the exhibit had some good components, it also contained many inaccuracies such as items attributed to the wrong tribes, pieces displayed improperly, items that should not be displayed at all, misrepresentative displays, and labels and descriptions that needed drastic improvements.

In 2021, Burpee Museum began to work with artists and curators from multiple Native American nations. Thanks to generous funding and support from the Chicago Blackhawks Foundation, BMO Harris, and local private donations, Burpee was able to bring the descendants of the Indigenous people of this land to our collections and exhibits for proper analysis and deep discussions. Our plan was set in motion.

A Rethinking Process
Of This Place is born out of a rethinking process. A process of rethinking how Native American exhibits should be created, a process of rethinking how we house and care for our Native American collections, and a rethinking of a museum's place in collecting or displaying Native American items. It was time to reevaluate and correct.

Today, this exhibit brings Rockford's Native history forward, providing space and place for the descendants of the Indigenous people of this land. In this exhibition, you will learn each Nation's narratives, experiences, and historical understandings.

As you view the Burpee Museum's historic collections alongside the modern works of our collaborative artists, you will experience the journey that disconnected these Nations from the Rockford region and discover the resilience of Native culture to continue to thrive.

Collaboration
Natural history museums have a big responsibility to share accurate information with our community through research and collaboration. Our exhibits need to be primary sources of information. For cultural exhibitions, we must do better than we have in the past. As we collaboratively created *Of This Place*, the stories, art, videos, selected artifacts, and text in this exhibit are through the voices and choices of people of the Sac and Fox, Potawatomi, and Ojibwe Nations.

Participating individuals had private time with the Burpee collections to choose historical items they wanted to include in the exhibit, time to make sure items in our collection were cared for properly, as well as time to teach Burpee Collections staff.

A Space to Share
The new exhibit proudly brings collaborative members of the Potawatomi, Ojibwe, and Sac and Fox home to their ancestral land as they share their history, culture, and life with the greater Rockford community.

You will be inspired by contemporary and traditional artworks and learn about the histories of the represented Nations from their own cultural educators and artists. Visitors can experience the living cultures, languages, and history of the Native American people who are of this place.

Dear Visitor
Bosho - Boozhoo - Greetings, Thank you for visiting us today, my friend. What you will find in this exhibition is part of our history, American history. Not all of it is good news. You will learn things here that are not included in history books, news, or movies. In fact, much of what we have learned about Native American people in popular culture and the public education system is incomplete or simply inaccurate.

We compiled a team of Native American and non-Native American people to create a museum experience that provides our visitor friends with a simple yet critical foundation for understanding the lives and histories of contemporary Native American people.

We hope you leave this exhibition inspired, aware, and motivated to learn more about the Native people you live amongst and whose lands you walk upon and share. There is much to learn and work to do together. We walk alongside you on this journey.

Migwet - Aho - Thank You

EXHIBIT CONTRIBUTORS
Starla Thompson
Katie Thompson
Tony Tiger
Chris Boyd
Juaquin Hamilton
AnungoKwe Alexandria Sulainis
Biskakone Greg Johnson
Jason Wesaw
Nina Sanders

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Drs. Robert and Marianne Firlit
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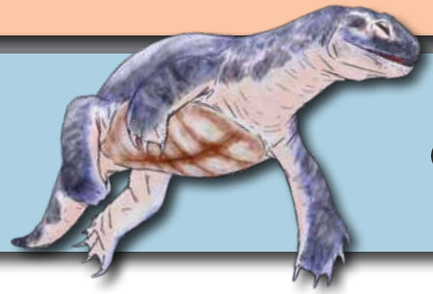
ProGraphics
Signs Now

Proganochelys & *Odontochelys*



The Dawn Turtle vs the Tooth Turtle

Ryan Dewey

Turtle of the Late Triassic
While not technically considered a "true turtle," *Proganochelys* is the earliest fossil species (circa 210 mya) known to date with all of the characteristics we associate with modern turtles and tortoises together: a beak instead of a toothy jaw, a complete shell, and shoulders and hips set inside the body cavity. Similar to modern snapping turtles, *Proganochelys* lacked the ability to retract its head into its shell, but compensated by having bony spikes along its neck and a tail like a spiked club.

What's in a Name?
The name *Proganochelys* comes from Greek meaning "Pre-Brightness Turtle," presumed to mean the "Dawn Turtle." Having been found in Germany, Greenland, and Thailand, Proganochelys was likely widely distributed across the Northern half of Pangea. Due to its short hands, it is currently believed to have been mainly terrestrial; though unlike living tortoises of the same size, *Proganochelys* had a wide, flat shell reminiscent of water turtles. However, like most tortoises of today, it was believed to have been at least mostly vegetarian.

Turtle of the Middle Triassic
While dinosaurs, whose ancestors had first appeared alongside *Pappochelys*, were just beginning to dominate terrestrial ecosystems, *Odontochelys* was swimming the coastal waters of what is now the Guanling Formation of Southwestern China (circa 220 mya). In form, *Odontochelys* strongly resembled modern aquatic turtles...but with a difference!

Toothy Turtle
As its full species name implies when translated, *Ondontochelys semitestacea* was a "Toothed Turtle" with only a "Half-Shell." Most puzzlingly, the half of the shell it had was the plastron with only un-fused ribs above that are reminiscent of *Eunotosaurus* and *Pappochelys* instead of a carapace.

Paleontologists are uncertain as to why this is, but it may have something to do with its environment and the predators it lived with. Unlike on land predators, aquatic predators have the option to attack from any direction, and most often ambush prey from below. With this in mind, it may have been more advantageous for *Odontochelys* to have a belly shield as opposed to back armor, though turtles with full body armor would start to appear sooner rather than later.

Bio:
Ryan Dewey has been a volunteer Educator since 2017 and employed at Burpee since 2021 at Burpee Museum. He enjoys illustration, sculpting, painting, and puppetry. He teaches Art of the Earth classes at the museum, which focuses on paleoart and using techniques to draw skeletons, plants, and animals.

"Art of the Earth aims to show people less how to draw dinosaurs well and more how paleo-artists use science and reasoned speculation to make decisions when drawing extinct life," Ryan explains. "There isn't really any form of art that encourages the artist to research the natural world in quite the same way that paleoart does. Other genres and styles may draw inspiration from it, but they don't require the same kind of understanding and that's why I think paleoart is so special."

SUMMER DINO EXPEDITIONS

What's happening at the Hanksville-Burpee Dinosaur Quarry?

Josh Mathews

Summer of 2022 was another successful season digging for Jurassic dinosaurs in Hanksville, Utah. Our Burpee team arrived a week early to uncover our finds from years past and prepare the space for our volunteers to continue excavation.

The quarry's bonebed is so rich in dinosaur remains that it is impossible to remove every bone we find each summer. At the end of each field season, we put "winter jackets" over the bones to protect them until our return and then bury everything to make sure there is no damage done while we are away.

A light plaster cap covers the bones to protect them from weather until next summer.

While working on some of our previous finds, we continued to uncover more bones! One of the highlights of the expedition was working in what we refer to as Heller's Pit, named for long time veteran bone digger, John Heller.

Burpee crew jackets bones for safe transportation back to the museum.

John began working this area, which is about 12 feet by 10 feet, many years ago and it has become not only abundant in bones, but the number of species as well. To date this little spot has produced bones from *Diplodocus, Apatosaurus, Camarasaurus, Allosaurus, Stegosaurus, Dryosaurus* and *Nanosaurus.*

This summer we continued working around a pair of fused sauropod pubes which are bones of the hip. While working around them, we ran into multiple vertebrae and other leg bones. Unfortunately, because the bones were touching one another, we were not able to remove any individual bones from the pit. In the picture, you can see the various bones as they are being worked around. This will be a tricky jackstraw of bones to work on next summer, but we can't wait to return in 2023 to continue the excavation!

Dig participant, Chuck Jennison excavates around a "logjam" of dinosaur bones in Utah.

To Hell and Back!

This summer we returned to the famous Hell Creek Formation of Carter County, Montana to continue searching for more bones of some of the most well known and coolest dinosaurs! We are talking about nothing other than *Tyrannosaurus rex*, *Triceratops, Pachycephalosaurus* and *Edmontosaurus*!

Since 2001, we have been prospecting this dinosaur rich formation for fossils to help us better understand what the end of the Cretaceous looked like in North America. We continued that search this summer, prospecting miles of badlands for new fossil finds.

We were fortunate enough to find some really cool and exciting new dinosaur sites as well as some new microsites.

Microsites, which are deposits that are full of tiny vertebrate fossils such as lizards, salamanders, frogs, fish, crocodiles, birds, sharks, stingrays, mammals as well as dinosaur teeth. They can be some of the most therapeutic sites to work. It doesn't take hours of back breaking digging or lifting work to remove rock. You simply lie down and search the ground until you find something that doesn't seem to be natural, like a vertebrae, a fish scale, a tooth, anything! Microsites provide us with a glimpse of what this past ecosystem looked like, besides just the dinosaurs. Like today, there were many smaller critters scurrying around beneath the dinosaurs' lumbering bodies. We had luck within the first minute of arriving at our first site when a participant found a beautiful *T. rex* tooth laying on the surface. Several other microsites were worked where we found hundreds of new tiny fossils to add to the Burpee collection.

Prospecting proved to be very successful for the expedition as well. A new partial Triceratops skull was discovered, which will hopefully lead to more next summer. A near complete squamosal, a bone making up part of the *Triceratops* head shield, was found eroding out of a butte. This bone was jacketed and winterized and will be excavated next summer with hopes of finding more. One of the coolest finds of the expedition came on the very last day in the field. Rockford University Biology Professor and Burpee Board of Trustee member, Dr. James Marshall, found a large and beautifully preserved *Pachycepahlosaurus* dome eroding out of the surface. This is the most common bone found from "Pachys" because it is a solid mass of bone. The specimen was laying in weathered surface rock and was easily removed and brought back to the museum for further study. This dome is now the 4th one found by Burpee expedition teams!

All in all, although hot and dry, the summer of 2022 was another successful season and we can't wait to prepare the new finds in the lab so that visitors to the museum can see them on exhibit or in the paleontology viewing lab. We are already looking forward to the summer of 2023!

A Victorian HERBARIUM

Digging into the history of Burpee's botany collections

Kris Strey

At the end of the nineteenth century, two young Rockford women hunted through the wild areas of Winnebago County in search of treasure. Ada Strachan and Della Countryman traveled the Rockford area in the spring of their sophomore years at Rockford High School and brought back samples of phlox, ginger, violet, and clover that would eventually become the oldest specimens in the Burpee Museum's herbarium. Ada, who built her collection in 1888, and Della, who went collecting in 1891, mounted their finds to large sheets of paper, identified what plants they had collected, and labeled the samples by hand with the plants' scientific name, when, and where they were collected.

The Fell Memorial Herbarium at Burpee is a collection of plant specimens that have been dried, pressed, and stored in flat files. The plant specimens in an herbarium can remain well-preserved for a very long time, and the oldest specimens in the Fell Herbarium are still in good condition after more than 130 years. During the Gilded Age at the turn of the twentieth century, plant collection was a popular activity for young women like Ada Strachan and Della Countryman (Della Shaw after her marriage), who likely compiled their collections of plants as part of their coursework at Rockford High School.

Neither young woman continued collecting after their graduation. Instead, Ada was a skilled embroiderer whose work was put on public display, and Della was a well-regarded socialite who used her college training in oratory, the art of speech, to deliver live readings of written works. Both women led lives full of charitable work and were upstanding members of the Rockford community through the first half of the twentieth century.

Although it is unlikely that either Ada or Della returned to botany after they collected the plants that are now in the Fell Herbarium, the work they did in high school lives on more than a century later. Their plants are a snapshot of history, giving modern researchers a fuller understanding of the condition and geographical distribution of different plants at the end of the nineteenth century. For Ada and Della, a small contribution to science made early in life has lasted for generations.

You can read more about Ada, Della, and early Rockford by using your Rockford Public Library login to search historic Rockford newspapers online through the Newsbank database. Access the database by selecting "newspapers" from the "Research It" menu on the RPL website.

Image: Two samples of wild blue phlox (Phlox divaricata) collected by Ada Strachan (left) and Della Countryman (right). These plants were collected in Rockford in 1888 and 1891, while their collectors were students at Rockford High School.

Exhibit Features

Josh Mathews and Anne Weerda

Tiktaalik roseae
Late Devonian, 375 million years ago

One of our newer specimens on the 1st floor, across from the Coal Forest is *Tiktaalik roseae*, a Late Devonian fish that was discovered on Ellesmere Island in the Canadian Arctic in 2004. In the Inuit language, *Tiktaalik* means "shallow water fish". *Tiktaalik* is important because it is the first fossil found to be transitioning from an aquatic environment to a terrestrial environment.

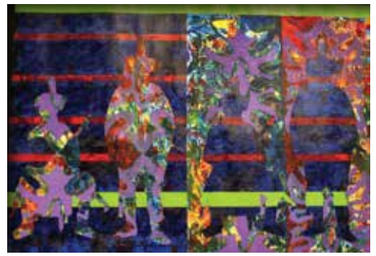
While it is technically a fish, *Tiktaalik* has features that show the beginnings of front legs, such as a shoulder blade (scapula-coracoid), arm bones, and simple wrist bones. Until this time, all vertebrate animals lived exclusively in the water. These forelimbs could possibly have allowed *Tiktaalik* to wander out of the water for a short period of time.

Megalonyx jeffersonii
(Ground Sloth)
Pleistocene, Most Recent Ice Age

Impressively climbing from the lobby area to the 2nd floor is a giant skeleton. This huge mammal is the Ground Sloth of the ice age. The huge, heavily built skeleton is the Jefferson's Ground Sloth, *Megalonyx jeffersonii*. It stood as tall as 10 feet, had a large, blunt snout, long claws, and teeth with an outer layer of dentine rather than enamel. Their teeth were softer than human teeth and would wear out faster. Because of this, ground sloth teeth would continue to grow throughout their lifetime. Can you think of other animals that have teeth that keep growing? In life, this sloth was likely covered in thick hair and lived in woodlands and forests.

The Jefferson's Ground Sloth was named after US President Thomas Jefferson in the late 1700s. Jefferson, the Vice President at the time, was sent some fossil bones that were found in a cave in West Virginia. It was the first of its kind found, and after examining the bones, Jefferson believed they belonged to a large cat. He named the discovery "*Megalonyx*" which means "giant claw." Two years later, the remains were further examined by Dr. Caspar Wistar who determined that the animal was, in fact, not a cat, but that of the giant ground sloth, a close relative of the South American tree sloths! In 1797 Jefferson presented a scientific paper describing *Megalonyx* to the American Philosophical Society. This is often credited as the beginning of vertebrate paleontology in North America!

I am Who I Am Created Us: Do We Stay Or Go by Tony A. Tiger
Art Featured in "Of This Place" - Modern Day



Tony Tiger (Sac and Fox-Seminole) is an award winning painter, printmaker, and mixed media artist. His art focuses on a contemporary view of American Indian Art, and he describes his art as the expression of "the human experience through symbols and metaphors; mankind is more than mere reflections in the mirror; we are soul and spirit". His art features colors that were influenced by his boyhood observations in nature and traditional ribbon-work applique designs of Sac and Fox regalia and Seminole patchwork.
In the Artist's Words: "The mix media piece *I Am Who Am Created Us* is a piece with a long creative history. Some parts of the mix media were printed 7 years prior to completion. I found the final vision for the piece on my recent visit to the Rock River early in 2022."

Miskwaabik Mitchibizhew by AnungoKwe Alexandria Sulainis
Art Featured in "Of This Place" - Modern Day

AnungoKwe Alexandria Sulainis is a proud member of the Nottawaseppi Huron Band of Potawatomi. Alexandria is a multi-disciplinary artist, most notable for acrylic painting and digital textile design.

In the Artist's Words: "This painting depicts Mitchibizhew, the Underwater Panther, one of the water spirits that Neshnabé people hold in most high regard. Copper, from the Great Lakes Region, is a required offering to this spirit. Miskwaabik means copper in Anishinaabemowin (Anishinaabe language)."

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