



A Time Machine Tour

Fossil records of dinosaurs have not shown up in Ohio, but we *did* have bus-sized, fanged fish swimming in our prehistoric ocean. Not bad.

Change is the surest of all sure things. It comes countless times in the beat of a hummingbird's wing. Change is so constant that it's sometimes hard to keep track of where a thing was yesterday, so focused are we on where it's likely to be tomorrow. And that's where change can cost us - when it robs us of our ability to place today in the context of yesterday. Every now and again it's important to hop in the time machine and retrace our steps.

Gambier, recently

Looking outside today, you might be surprised to learn that Ohio is in better shape than it's been in a very long time. As early land claims often involved razing and incinerating anything taller than a blade of grass, European colonization and expansion didn't do much for our historic wild-life or habitat.

In 1800, three years before the first white settlers floated down the Kokosing to arrive in Knox County, modern estimates carpet Ohio with 95% forest cover. Within a hundred years, that figure would be closer to 10%. In 1803, Ohio became a state, the last known Ohio bison was killed and progress dug in its heels for the

betterment of all on two legs. Provided they were white and European.

Today over 30% of the state is covered by forest and many animal populations driven down or away have begun to recover. But what happened before all of that? Before us? During the untrammelled times that pre-date our ability to protect or destroy? How did Gambier get to be Gambier? Not in name but in *place* itself. Well, power up the flux capacitor and let's have a look.

Gambier by the sea

As Precambrian Gambier cools and igneous and metamorphic rock set up a foundation for things to come we get the sense that we've added too many zeros somewhere on the time machine.

Time-lapse forward: clouds drift above a vast coastal plain that

will someday become the Buckeye State. Seas flow over bedrock depositing sand, mud and other sediments. The waters recede and return, recede and return; the deposits harden and settle.

When the seas are present, different life forms float and scuttle about. Algae and trilobites give way to fish and creatures of increasing complexity. The cycle of ebb and flow continues. Millions of years pass as you watch Gambier become coastal... then submerged, coastal... then submerged...

Gambier of the abyss

Waking up in Gambier in the Late Devonian, you will want to hold your breath and swim for the light. Rather quickly if you please. Follow the bubbles and do your best to avoid provoking the errant dunkleosteus that some sleepy, BBC-indoctrinated synapse may remind you is "hyper-carnivorous".



Dunkleosteus are a group of prehistoric fish that dominated inshore areas in the Late Devonian period, about 380 million years ago. Known for their massive size (up to 33 feet and 8,000 pounds), armor plating, incredible bite force and the two pairs of sharp bony plates, these predators were common in 'Ohio' and some of the world's finest specimens have been recovered from the Cleveland Shale.

Photo: <http://dinosaurs.wikia.com/wiki/Dunkleosteus>

As you break the surface, drink in the fresh sea air and allow the dance of sunlight on water to put bone-fanged mega predators out of your mind. Welcome to the BFEC circa three hundred and seventy million years ago!

At this point in pre-history, Ohio has transitioned from lying beneath a clear, shallow sea to lying beneath a relatively deep and stagnant sea. The BFEC is probably amongst the mud you freed yourself from on your dash to the surface. That thick, black mud, comprised chiefly of organic matter drifting down from livelier waters above, is part of an anoxic zone that has changed the seafloor from a hopping invertebrate jamboree into something of a sludgy wasteland. While plankton flourishes and the 'age of the fish' is exploding near the surface, life cannot exist just now in the oxygen-free abyss in which Gambier is mired.

Treading water, two more periods (Carboniferous and Permian) pass Gambier before the sea gradually drains and the land uplifts 250 million years ago. While the Gambier Yacht Club's days are done until they build Apple Valley Lake, sandstone and shale (formed from sea floor deposits) and high levels of silicon and carbonate in the soil still whisper of

our maritime history to this day.

Gambier under ice

Let's take the time machine up to safer altitudes for a while... The groundwork for our major geologic features begins to take shape through the drainage action of the sprawling Teays River and its tributaries. Viewed from above, the Teays River System flows from the Appalachian Mountains north and west across Ohio, carving valleys throughout the Appalachian Plateau on which Gambier sits. The basic shape of some of these valleys might strike you as familiar.

In time, (around 2.5 to 3 million years ago) glaciers begin their advance from the north. As mighty as the mother-river of the Ohio and Kanawha is, it cannot withstand the steady encroachment of continent-wide ice sheets and their melt waters. The Teays' drainage patterns are splintered along with much of Ohio's surface topography.

As time continues to flow, we can see our corner of Ohio covered by two major glaciers. The Illinoian slides down about 250,000-300,000 years ago and the Wisconsin follows in the neighborhood of 15-20,000 years ago. Both will leave a mark.

Deposits left by the Illinoian glacier will have a major influence on the types of plant communities growing on the BFEC preserve. The thing about a sheet of ice the size of several states is that it can carry a rather large amount of rock along with it. Much of this rock is ground into small particles that will be deposited in valleys when the glacier retreats. Most of these deposits contain limestone and will give rise to the fertile soils we have today.

The various communities found at the BFEC reflect the relative fertility of the different soil types and their ability to hold moisture. In riparian (or river-side) areas the communities are dominated by sycamore, silver maple, willow, cottonwood and green ash, species that are capable of tolerating frequent disturbance and waterlogged soil with little oxygen. Pockets of undisturbed glacial till are more fertile and support beeches and maples. In areas with high levels of sand and gravel, such as along Wolf Run, ash and tulip poplar can be found. In dry upland areas oak and hickory are more common.

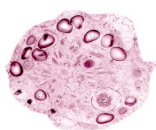
Gambier with megafauna

The topography left by the retreat of glaciers is by and large the topography we see outside our windows in

An (unofficial) timeline of Gambier through the pre-ages

Parents beware: this unofficial timeline is not recommended as a source of information for book reports.

Algae: pretty darn important to life on earth.



Dunkleosteus: We love this thing. (see page 1)



Dragonflies: grew to the size of present-day seagulls, perhaps because the atmosphere was much richer in oxygen.

Precambrian	Cambrian	Ordovician	Silurian	Devonian	Carboniferous	Permian
Since forever	545 million years ago	490	434	410	354	298
Earth rocks. Rocks cool. So long ago it hurts.	Ahoy, mate, bring your sea legs? Algae.	Seas rise and fall and rise and... Seas fickle.	Golden age of fish. You missed it man.	Seas ruled by dunkleosteus. Life heads for land.	Life continues to diversify, eat new forms.	Oceans ponder a new look.

21st century. Looking back at the area around Pleistocene Gambier, you can observe glacial melt waters eroding the local plateau and creating a valley along the Kokosing.

Nearby, piles of glacial till block other streams and lead to the development of lakes. North of Mount Vernon, a gravel ridge forms and creates a large body of water known as Green Valley Lake. Picturesque but fleeting. As gravel dams are want to do, ours inevitably fails and a wave slams through the Kokosing valley pushing gravel as far as Millwood. That gravel is still being trucked around to construction sites and township roads all over the region.

As the glaciers wind up their farewell tour of central Ohio, it's a great time to do some wildlife watching. Towards the end of the Pleistocene (around 10,000-13,000 years ago), Ohio features many of the mammals that you might still find today: skunks, otters, woodchucks, muskrats, mice, voles, bats, fox, weasels and minks to name more than a few.

There are also species that we don't see as much anymore... Herds of woolly mammoth roam the countryside, grazing a landscape not so different from our own. Here and there other ice-age behemoths: musk ox, elk and bison; even giant ground sloth and peccaries migrating up

from the south. Giant Beavers are a staple in Ohio's ancient waterways. From a safe distance keep your eyes peeled for the massive short-faced bear, a dire wolf or sabre-toothed cat.

Then in the distance another animal wanders into the picture. A group of them actually, having made their way from so far west they call it east. With the coming of the first paleo-Indians and the end of the ice age, surface-level change is about to get supercharged. But that's a story for another time, like the winter issue of *Field Notes*.

Rodents of unusual size

During the Pleistocene Ice Age, mammals took on proportions that would today seem monstrous.

Perhaps the largest terrestrial mammalian predator in North American history, the short faced bear weighed 1,800lbs and stood as tall as 13'.

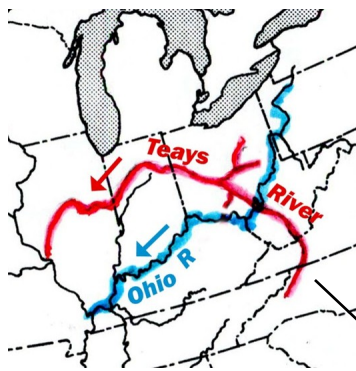
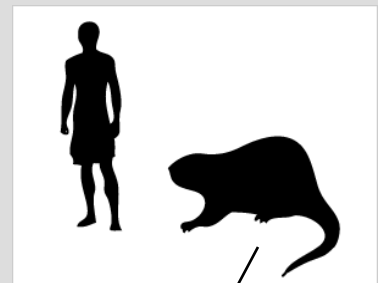
Dire wolves may have also roamed Ohio and were similarly beefed up versions of their contemporaries, maybe weighing as much as 175lbs.

Giant Beavers (right) appeared much like their modern predecessors and are relatively well-documented in Ohio. This rodent of unusual size likely fed on aquatic vegetation and weighed in at as much as 200 pounds.

It boggles the imagination to consider that the earliest inhabitants of North America (arriving over the Bering land bridge from Asia) encountered these megafauna, hunting them and being hunted by them, about 12,000 years ago.

But some theories about their disappearance assert that humans gained the upper hand, since the super-sized mammals disappeared rather quickly after human arrival. Evidence for this sequence of events (humans arrive, megafauna disappear) has been found at other times on other continents, bolstering theories that humans played a significant role.

Other theories suggest reasons like climate change and (let's not forget) extraterrestrial impact.



Teays River: this 5 million year-old river was erased by glaciers, but the gravel deposits that lined its path persist deep underground, now forming aquifers that yield drinking water.



Dinosaurs: Nope, this one's remains were not found in Ohio (dang it!). Though dinosaurs may have lived here, their absence in the fossil record could be due to erosion outpacing the accumulation of sediments that bore their bones.

Triassic	Jurassic	Cretaceous	Palaeogene	Neogene	Quaternary
251 million years ago	205	141	65	23.8	1.8
Gambier dries out (Ha!). No dinosaurs.	No dinosaurs. Ohio geologic gap.	Still no dinosaurs. Stop asking. Ohio geologic gap.	Dinosaurs die off without ever visiting BFEC.	Earth cools, Teays flows north from craggy Appalachians.	Mile-high Ice sheets and rodents of unusual size.

Pleistocene - 1.8 million to 12,000 years ago. Ice Age.
Holocene - 12,000 years ago to present. Man taketh over.

On the Ground

by Facility Manager David Heithaus

Upon hearing what I do, many people say something to the effect of “you have the greatest job in the world”. I am in no way ungrateful for the sentiment or the job itself but am also compelled to disagree with them.

There are a variety of jobs ‘better’ than mine and as a person who believes that money can buy so close an approximation of happiness that it doesn’t matter that it isn’t *real* happiness, I would much prefer to have a job wherein I was paid outrageous sums of money to simply be myself with a camera nearby. The first thing I’d buy is a lobotomy so it plays better in the mid-west and my soul hurts less.

That being said and shelved (my screen presence remains questionable) let’s investigate the many things about my job that are great. Partly because they are many, partly because this column can read like a work order and chiefly because my therapist moved to Tampa.

Let’s start with the closest thing: my office... or maybe my boss. Of the greatest things about my job- or any job- the boss needs to be up there at the top. Especially if you’re phoning in a column about great job things and wanting to keep your job.

No boss wants a pretty work site or an incredibly sharp pencil or plate compactor to rank above them and rightfully so. So my boss is the greatest thing and we’ll jump off to the other great things from there... starting with my office.

Anyway, my office: People think that I’m outside all of the time and that is simply not true. A lot of the time (like now) I am inside. Often at a computer. Writing things, answering emails, looking wistfully around my office at all of the junk I have laying everywhere. A lot of that stuff actu-

ally makes up parts of my job that are great when I’m outside.

In the corner is a clearing saw, which is a device that looks like the offspring of a weed-eater and a radial-arm saw mounted on a catcher’s chest-pad if the catcher was a robot and from the future. It’s orange and smells vaguely of grease and power. Oddly, a lot of the things that I like about my job are orange. Or coincidentally. I’m not sure which is correct because mostly I drive orange or green things through the woods for money (which is another great thing even if eight extra zeros at the end would make it greater).



Dave’s office: a man and his rocks.

Of the other orange things, three are in my office with me right now. Two are chainsaws but I prefer the one that is slightly more orange. Not because of the orange per se but because it has more torque which is another word that I don’t understand beyond knowing it’s fun to say and refers to the amount of damage an item is capable of inflicting per unit time. Torque. You can’t say it and

not sound kind of wise and tough. The third item is an orange hat. There’s an orange bottle of sunscreen too but it’s expired and has fallen out of favor.

Other things in my office that help make my job great are as follows: waders, a fire resistant suit, a thorn resistant suit, a web belt full of canteens, antlers, a maul, an axe, a hatchet, a net, Neosporin, a plastic lizard, a Charleton Heston doll from ‘Planet of the Apes’, a pirate hat and several hundred pounds of rocks.

Many of the rocks have been placed in boxes at the request of the fire marshal and my wife who thinks I’m turning into Howard Hughes with less money and more crazy. And more rocks I guess. Anyway, at one point my rocks covered most of the horizontal space not occupied by essential things and I was very happy. Now they kind of lurk around larger objects that can partially hide them from a visitor’s likely sightlines and I am basically okay.

Look- every rock is different and most are pretty special and more useful than some of the people I encounter. Almost no one I meet can cut, pound or skip over water without mechanical assistance. I guess they can weigh things down like rocks but really anything with mass can do that. Having mass isn’t really a skill set.

I digress...In all seriousness, the nonsense above points to two very real and very great things about being a member of the BFEC team. All of those items exist for use on the preserve and I am allowed to write about them once every six years.

Where else could a person have all of that awesome stuff, a beautiful place and excuse to use it and a forum that allows it to be discussed? I can walk

NEWS from the BROWN

LOST LADYBUGS

“Lost ladybugs” you ask? With masses of them congregating in any indoor crevice in the fall, this certainly doesn’t seem to be the case. The invaders, which are actually beetles, can bite and emit a foul smelling and staining liquid when disturbed. But these are not the ladybugs of our youth. They are Asian multi-colored ladybugs (*Harmonia axyridis*), which were likely introduced in the 1980’s as a biological control for aphids.

While they have been reported to help control aphids on soybeans crops, they also contaminate fruit crops. And they have likely caused the marked decline of native ladybug species (which are also aphid predators), outcompeting them with higher birth rates and tolerance of cold temperatures.

As its name implies, the Asian multi-colored ladybug varies in color and number of spots. Distinguishing them from the hundreds of native species is tricky, but look for a black “W” or “M” (depending on your view) just behind the head. See the Buckeye Lady Beetle Blitz online (ladybeetles.osu.edu) for an easy identification guide of native species.



Asian multi-colored ladybug with black “W” marking, left, and one of our native species, the convergent ladybug, right.

EXTRA APPLES? PRESS THEM HERE



If you’re lucky enough to have apple trees and a resulting apple surplus, we may have a solution. The BFEC is a proud owner of a hand-cranked cider press that makes an appearance every year at our Harvest Festival. Attendees wait in line to taste the fresh cider, which (we must say) is simply better than the pasteurized variety sold in most stores. But this single outing per year leaves the press a little bored and lonely, so we’re pleased to offer its use to members of the BFEC for making their own cider.

While we’re on the topic, we thought we’d share an interesting bit of Johnny Appleseed, aka John Chapman, lore, given that he purportedly passed through Knox County on his adventures. Seldom mentioned with his story is that apples grown from seed (as his were) are usually sour, rather than sweet, and were popular among the settlers for producing hard cider. To read more, look for Michael Pollen’s *Botany of Desire*.

BFEC WELCOMES PICNIC SHELTER

A new picnic shelter is underway at the BFEC thanks to help from volunteers and a Lowe’s/Keep America Beautiful Community Improvement Grant. The BFEC was 1 of 120 organizations across the nation to receive the \$5,000 grant, awarded for litter prevention, waste reduction or community greening. Pictured here (left to right) are Facility Manager Dave Heithaus and volunteers Barry Bowden, Doug McLarnan, and Don Smith. Thank you for your help!

The shelter will be used for public programs and elementary school field trips, as well as by casual visitors coming to picnic, take in the Wildlife Garden, or go for a hike. We hope it will also be used by visitors to other popular spots that are just a stone’s throw away: the Kokosing Gap Trail and a Knox County Park District Kokosing River public access.

Up next: educational signage along the river that will help make this confluence of resources more visible, and perhaps benefit all as destinations.



Calendar of Events

All events are free, open to the public, and start from the BFEC Resource Center at 9781 Laymon Road unless stated otherwise. For additional information, contact us at 740-427-5050, dohertyh@kenyon.edu, or visit <http://bfec.kenyon.edu>

Family Adventure Days - First Saturdays, 1-5pm.

Drop in for a different adventure every month! Check out an exhibit, chat with staff, go on a scavenger hunt, and try a craft, or simply explore our live animals, peruse our library, or borrow equipment like nets and binoculars.

- Oct. 6** **They All Fall Down** – as trees blaze with color on the hillsides, what better time to come for a walk? Try a scavenger hunt of leaf shapes and colors and make your own tree I.D. guide.
- Nov. 3** **Seeds of Change** – Fall seeds insure that life will continue in spring. Take a scavenger hunt to look for some that parachute, hitchhike, or helicopter to the ground. Guided walk at 2pm (see below).
- Dec. 1** **Feed the Birds** – Check out our collection of nests and mounted birds, and watch birds at our feeders from inside the center. Make pine cone bird feeders or string popcorn and cranberries to feed the birds or decorate a tree.

Knox County Nature Photography Contest - Deadline October 15.

All community members are invited to enter this contest celebrating the beauty of our local landscape. Prizes will be awarded in adult and children's (age 15 & under) divisions. A contest show and public-choice voting will take place during the Harvest Festival on October 20. Contest rules available at <http://bfec.kenyon.edu>.

Fall Sky Astronomy – Friday, October 19, 8pm.

Bring a blanket or chair and admire the season's constellations and mythology with Professor of Humanities Tim Shutt. Call the BFEC in the event of inclement weather for event status.

Fall Harvest Festival - Saturday, October 20, 2-5pm.

Celebrate the season with this FREE family event. Activities include wagon rides, live music, kids harvest races, farm animals and produce, bonfire, cider press, pumpkin decorating with OSU Extension Master Gardeners, and the Knox County Nature Photography Contest show.

THE MUDMAN TRIPLE



Saturday & Sunday, October 27-28. Ohio's most unusual trail racing series will challenge you with a nighttime time trial, a 5k super steeplechase featuring "The Gauntlet", and a 10k cross-country run. And if the mud doesn't get you, the hills will! Do one, two, or all three races to earn the coveted "Mudman Triple". Register at <http://www.premierraces.com/>

Seeds of Change – Saturday, November 3, 2pm.

Join us during a Family Adventure Day to admire plants in their delicate, seed-bearing beauty. Discover how they employ ingenious methods of spreading seeds to insure next year's growth. All ages welcomed.

Christmas Bird Count - Sunday, December 16.

For over 100 years the Audubon Society has organized the Christmas Bird Count to track long term trends in bird populations across the Americas. Help the BFEC monitor birds right here in Knox County. Our "count circle" covers Mt. Vernon, Gambier, Apple Valley, and Fredericktown. Participants count birds seen at their home feeders, or in the field along roads and trails. All participants will be invited to gather at the center for lunch. Please call to register.

Miller Observatory Open House – Last Fridays, 8pm.

Experience planetary views on last Fridays of the month with Kenyon Physics Professor Paula Turner. Open houses are cancelled during cloudy weather. The observatory is not heated – please dress warmly. Email questions to turnerp@kenyon.edu. From downtown Mt. Vernon, follow S.R. 229/Gambier St. east 4 miles. Turn left at observatory sign onto an access road (prior to S.R. 308 intersection).

Thank You to...

Our Members July - September 2012

PATRON
Geoffrey & Lori Brown

FAMILY
Laura Whalen

FRIEND
Frederick Neidhardt
Royal Rhodes
Donald & Sarah Rogan

INDIVIDUAL
Keith Blundell
Joanne Worley

DONOR
James Tornes

Our Donors

Bench donors:
Frederick Neidhardt, Nicole & Jessen Book

Grants:
Lowe's/Keep America Beautiful

Our Volunteers

In the office, classroom, gardens and on the trails: Pam & Steph Harman, Kay Hoppe, Brian Zimmerman, Kenyon Pre-Orientation volunteers, Kenyon Track & Field Team.

bring 400 elementary school students to the center for fall field trips.

Picnic Shelter Volunteers:
Barry Bowden, Tony Bull, Tim Ladwig, Doug McLarnan, and Don Smith.

Field Trip Leaders: Thank you to the 50 Kenyon student and community and volunteers who are in the midst of helping us

Ground, continued from page 4...

in to the office and before my coffee is cold, work with native wildlife, clear part of the river trail, help a student get a research project going and start a proposal for a project I'll only ever have time to complete in my dreams.

lot of juggling and responsibility, they also mean that you aren't getting bored anytime soon.

You know what... I *do* have the greatest job in the world. Ha! In your face Kardashians.

Here at the BFEC every day is a combination of diversity and freedom while doing a good thing. Just like America. It's basically like living a little version of America in America every hour of every day. We even have eagles nearby. And while diversity and freedom mean a

Stop by the BFEC this fall and see the product of the team's collective juggling act, take a load off at the new event shelter during our Fall Harvest Festival, enjoy a hayride through the prairie or a stroll through the wildlife garden as it drifts off for the fall. Every season is a new set of adventures at the BFEC.



Support the BFEC

There are many reasons to give, including the satisfaction of knowing you're a part of critical environmental education and conservation programs. Receive preferred access to popular workshops, a hard copy of our newsletters, and 10% discount on bird seed. Use the form below or payment envelope to send your contribution today, and thanks!

Membership level: Student ___ \$20 Individual ___ \$35
Family ___ \$50 Friend ___ \$100 Patron ___ \$250
Benefactor ___ \$1000 +

Amount enclosed: _____

My check, payable to Kenyon College, is enclosed

Please bill my ___ Visa or ___ MasterCard

Card number _____ Exp. date _____

Mail to: BFEC, P.O. Box 508, Gambier, Ohio 43022

Name _____

Address _____

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Your donation is tax deductible as allowed by law. The Brown Family Environmental Center at Kenyon College is a 501c(3) nonprofit organization.



Brown Family Environmental Center at Kenyon College

9781 Laymon Road, Gambier, Ohio 43022 ~ (740) 427-5050 ~ <http://bfec.kenyon.edu>



Our Mission

The BFEC at Kenyon College exists to engage Central Ohioans of all ages with nature, and to support the goals of Kenyon College by conserving the natural diversity of the Kokosing River valley and providing opportunities for education and research.

Facility Manager

David Heithaus

Program Manager

Heather Doherty

Facility & Program Assistant

Jill Kerkhoff

Upcoming Events

Saturday	Oct. 6	Family Adventure Day: They All Fall Down
Friday	Oct. 19	Fall Sky Astronomy
Saturday	Oct. 20	Fall Harvest Festival
Sat.- Sun.	Oct. 27-28	Mudman Triple
Saturday	Nov. 3	Family Adventure Day: Seeds of Change
Saturday	Dec. 1	Family Adventure Day: Feed the Birds
Sunday	Dec. 16	Christmas Bird Count

Details inside!

Knox County Nature Photography Contest

Deadline: Monday, October 15th

Prizes awarded ~ Novices welcomed
Adult & children's divisions
Contest rules at:
<http://bfec.kenyon.edu>



DATE MAILED: October, 2012
CONTAINS DATED MATERIAL

**Brown Family Environmental Center
at Kenyon College**
P.O. Box 508, Gambier, Ohio 43022



