



# YOUR LAKE, YOUR STORY

*Lake Wawasee*



LILLY CENTER FOR  
**LAKES  
& STREAMS**

**GRACE**  
COLLEGE

# Everything at Wawasee seems full of potential.

As Indiana's largest natural inland lake, Wawasee has always presented an expansive canvas for lake recreation and relaxation. Everything at Wawasee seems full of potential, from the homes to the fish. (Even northern pike, if you have enough bait and patience!) The Town of Syracuse was established in 1837 by Samuel Crosson and Henry Ward. The first few cottages, companies and clubs were

built a little before 1900, and due to the railroad and out-of-town visitors, the growth never stopped. One 1928 ad claimed this lengthy list of attractions: "bathing, rowing, sailing, motor boating, canoeing, toboggan sliding, horseback riding, tennis, a sporty, eighteen-hole golf course, dancing every night at Waco, hunting, fishing and speed boat races." Wawasee remains a vacationer's paradise.



*Postcard from  
Wawasee's Early Days*



# Your Lake, Your Story

Your Lake, Your Story is an original Lilly Center for Lakes & Streams publication. (Learn more about us, starting on page 27!) The Lilly Center conducts research on 14 lakes throughout Kosciusko County, including Lake Wawasee. While ongoing research is invaluable to the health of the lake, Wawasee is truly about the people who live around it. You might know the families in this book; you might be about to make new friends. Either way, our hope is that you identify with their stories and learn something new about Lake Wawasee (both its past and present) along the way.

*Historical and current data (specifically taken during open water sampling, above the deepest point in your lake) was gathered by the Lilly Center's research team. Additional historical data was collected from government and university sources such as the Indiana University Indiana Clean Lakes Program.*

## THEIR STORY

# The Lilly Family

*Throughout his influential career, Eli Lilly and his family refreshed their minds and hearts at Lake Wawasee. Their four-bedroom cottage faced the sunset. It was a personal library (holding over 200 volumes), a literal breath of fresh air (far from the busy city) and a place to reconnect with family and friends. For many years, the Lillys brought only their closest friends to the lake cottage, slowly introducing their circle to the hidden gem that is Lake Wawasee.*

For seven generations, the Lilly family has enjoyed the beauty and serenity of Lake Wawasee. From the time they bought their first piece of Lake Wawasee shoreline in 1886, the lake has served as a haven, far from the bustle of Indianapolis where Colonel Eli Lilly founded Eli Lilly and Company. Their family business originally gained notoriety for developing a reliable form of insulin and

became a highly respected research-based pharmaceutical manufacturer. Eli Lilly, named for his grandfather, became president of Eli Lilly and Company in early 1932. In 1937, alongside his father and brothers, Lilly established the Lilly Endowment with initial gifts of 17,500 shares, or \$280,000.

The original cottage has been kept intact for

historical purposes even as a modern home has been built beside it to house the Lilly family and their guests. Ted Lilly, Eli Lilly's great-

*The Lilly Cottage*





**The original Lilly Cottage**  
is still used by the family.

nephew, lives on the property part of the year, and his two sisters live on adjacent properties.

“The family came up to Wawasee in 1886,” Ted explained. “I knew my great-uncle, Eli, and his wife Ruth. When I was about 10 years old, they invited me to come up to the lake. It was the first time I’d ever seen it.” Eli Lilly gave Ted a tour of the lake in their little runabout boat. That night, he and Ruth took Ted to Goshen to see The Lone Ranger. “I loved it,” said Ted. “But it was after Debbie and I got married that I started going up to Wawasee on a regular basis,” he added.

He remembers Eli Lilly encouraging him to visit and be a part of the lake for the rest of his life.

Ted and Debbie stay in the original Lilly cottage. For them, as it was for the previous generations of Lillys, Wawasee is a safe haven from the busyness of the world. “We all look forward to being at the lake,” Ted explained. “Enjoyment of the lake is ingrained in the DNA of our kids and grandkids. They’ve visited ever since they were born,” he added.

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*Eli Lilly gave Ted a tour of the lake in their little runabout boat.*

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Every year, the Lillys host a family reunion, totaling close to 40 people. They enjoy the lake much the same as other lake families: boating, fishing, sailing, and more. “We have 18 grandchildren, between all of us,” Debbie added. “They are between the ages of two and twenty-two. They love being at the lake!” Ted and Debbie expect their family to continue visiting Wawasee well into the future.



## 125 Years of Research on Lake Wawasee

As the Lilly family has practiced in their own company, dedication to a science-based approach is foundational to the Lilly Center for Lakes & Streams. Ted and Debbie believe that a great deal can be achieved if the center continues to address current issues that are better understood scientifically, and measures changes over time. Those are key reasons two foundations connected to the family,

Lilly Endowment Inc. and the Ruth Lilly Philanthropic Foundation,

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*As the Lilly family has practiced in their own company, dedication to a science-based approach is foundational to the Lilly Center for Lakes & Streams.*

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chose to give substantial leadership gifts to the center's endowment.

Interestingly, Col. Eli Lilly helped establish a local research station on Lake Wawasee in 1895 that

benefited several lakes in Kosciusko County. Later on, Eli Lilly was personally involved in several research efforts on Lake Wawasee. Today, several of Col. Lilly's descendants (including Ted and his wife Debbie) continue to own summer homes on Lake Wawasee.

Looking forward, Ted and Debbie have a clear vision for the Lillys' home on Wawasee. "I hope the house is still standing, such that we can pass it down," Ted said. "It's a multi-generational home." They hope to pass down traditions



**A Poem from the Heart**  
**As a tribute to his delight**  
**in the lake, Eli Lilly penned**  
**this and several other**  
**poems about Wawasee**  
**(and his beloved wife, Ruth)**

Eli Lilly

*I must go to Wawasee again to give my  
heart delight  
In the ancestral cot in the woodsy lot  
beside a garden bright  
And what I ask are kin and friends, and  
vital to all of this  
Is Ruthie, more fair than the crystal  
air, to fill my cup with bliss.*





**Ted Lilly** holds up a northern pike he caught in 2020.

to their kids and grandkids, too, so Wawasee has an enduring place in the family. “And we’d like to see the lake continue to stay clean and healthy,” Debbie said. She and Ted support the Lilly Center for Lakes & Streams for several reasons, including keeping the lake healthy. “The only way to truly do that is to have an organization like [the Lilly Center] conducting water testing and offering recommendations and education,” Debbie said. “People don’t normally understand the science of lakes. That’s where the Lilly

Center comes in.” You have to respect the lake, she added.

The Lilly Center is proud to bear the name of the Lilly family. “The Lilly family has a legacy of local lake research and a strong commitment to excellence,” Dr. Nate Bosch, director of the Lilly Center said. “We are grateful for support the Lilly Endowment and family have offered. Their support, along with many other invaluable supporters around Wawasee, allows us to expand the Lilly Center’s work on the lake for years to come!”

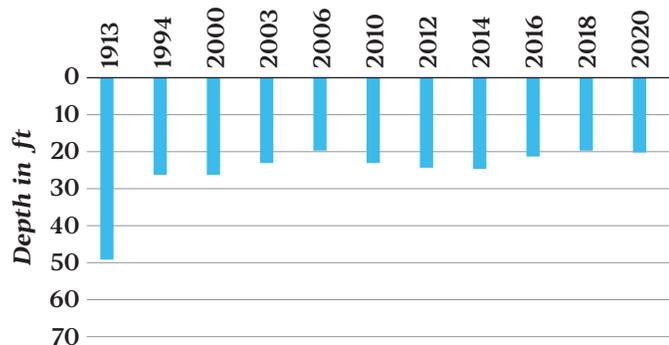
## **Fish Stories**

In the past few years Ted has become an avid fisherman, but until last summer the northern pike remained elusive. “It was on my bucket list,” Ted laughed. One summer afternoon in 2020, during a guided fishing trip with Voirol Charters, joined by Dr. Nate Bosch, Ted checked that item off his list. Aaron Voirol, the captain and guide, is a former student of Nate’s who currently works for the DNR and operates his own fishing charter. “Aaron knew just where to go,” Ted said. “I can now say I’ve caught a northern pike!”

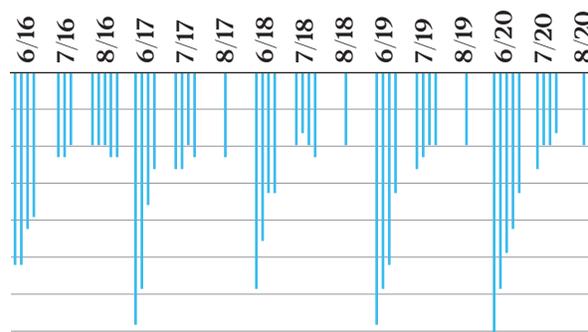
## Dissolved Oxygen Layer

Aquatic organisms, like fish, rely on dissolved oxygen to breathe underwater.

Historic Data (1913–2020)



Current Data (2016–2020)



Note: Lake Wawasee has a total water depth of 81 ft

The oxygen layer depth in Lake Wawasee has been decreasing over the last 100 years during July and August. This increasingly limits the space in which fish can live and forces them to move to the warmer surface waters. Some fish cannot survive in warmer water which is why they are no longer able to survive in Lake Wawasee as they did in the past.

Recently, Lake Wawasee’s oxygen layer was often thinnest toward the end of the summer, squeezing fish into a smaller space and forcing them into warmer water.

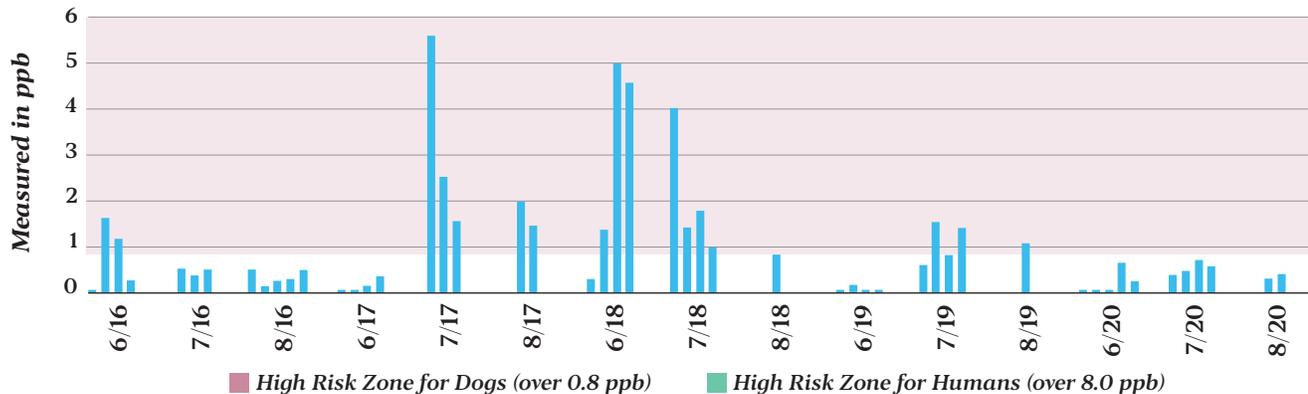
### How You Can Help:

Dissolved oxygen is essential for underwater life. By limiting the amount of material decomposing at the bottom of your lake, you can slow the use of dissolved oxygen and help make a better habitat for fish and other aquatic critters! Make sure to properly dispose of lawn waste, and reach out to the aquatic weed experts before applying chemicals to your lake.

# Microcystin Toxins

Microcystin is a toxin produced by blue-green algae. It is particularly harmful to pets, but can cause skin, eye and throat irritation (and even liver damage) in humans, as well.

Current Data (2016–2020)



While Lake Wawasee microcystin toxin levels were highly variable over the last five years, levels were often above the dog exposure threshold but never above the human exposure threshold. Despite this good news, there is still potential risk for high microcystin levels under the right conditions in the future. The Lilly Center will continue to monitor the toxin to help keep you and your family safe.

## How You Can Help:

Spot a blue-green algae bloom? It could contain microcystin, a toxin that is harmful to people and pets, so keep people and animals away from the water. We encourage you to let the Lilly Center know about the bloom by sending a picture, and the date, time and location to [lakes@grace.edu](mailto:lakes@grace.edu).

## THEIR STORY

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# John & Margy Feighner

*From Snug Harbor Cottage on the north shore of Wawasee, John and Margy Feighner and their children have spent countless days enjoying the lake with their family and friends. The home John and Margy own has been in their family for five generations.*

In fact, Snug Harbor has belonged to the Feighner family since 1915, and John has visited the lake every year for most of his life, along with many other family members. As with most lake families, traditions that are important to parents and grandparents are passed down to the kids and grandkids. For the Feighners, that includes sailing.



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*John grew up sailing and racing alongside his mother; she taught him how to control the boat and think through sailing tactics.*

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10 / Your Lake, Your Story / Wawasee / John & Margy Feighner





A watercolor painting by Marilyn Osborn Feighner

## ***Sailboat Racing on Wawasee***

Marilyn Osborn Feighner, John's mother, was an accomplished painter. She used watercolor to create beautiful scenes, many of which now hang in Snug Harbor and in friends' homes around Lake Wawasee. At the opposite end of the hobby spectrum, or so it seems,

Marilyn and her husband Jack enjoyed sailboat racing. Marilyn was the first female commodore

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***Marilyn was the first female commodore in the Wawasee Boating Association.***

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in the Wawasee Boating Association, and raced for many years with

their E-Scow sailboat. John grew up sailing and racing alongside his mother; she taught him how to control the boat and think through sailing tactics. Although he sails primarily for pleasure now, John continued racing E-Scows throughout his young adult life.

"Racing is different than sailing," John explained. Sailing can be a casual experience, he continued, typically enjoyed on a stable boat. Racing boats, on the other hand, take a crew of as many as three or four. Although racing is exciting, even thrilling, it comes with inherent dangers. "On a windy day, you have to be knowledgeable. You can tip over," John added. When that happens, sailors work together to right the boat and let the water drain out so they can continue to race.



## **North Shore March**

A special tradition started by the Feighner family involves many of the neighboring children. In the 1960-80s, a group of 20-25 neighbors—mostly children from the North Shore, dressed in their best Fourth of July garb—celebrated Independence Day by walking part of the northern shoreline of Lake Wawasee. They were led by John's father, Jack Feighner, and family friend Bill Beamer. Both men always dressed in their military uniforms, hats and medals included. Bill even carried a snare drum to keep the marching rhythm alive. The kids brought horns, pots and pans. "My sister and I participated when we were little. It was a great tradition," John said. The experience was unique

# **The Science of Boating:**

## **Archimedes' Principle**

Boats allow their riders to glide around on a lake – as long as the boat is watertight, you probably are not afraid of sinking.

But what characteristics of water make buoyancy possible?

A boat is buoyant because it weighs less than the water it displaces. Think about placing a rubber duck in a bathtub full of water. When the duck is placed in water, it pushes away the water that is around it. At the same time, the water is still exerting force on the duck. That is what makes the duck (or on a larger scale, the boat) float.

This might lead you to wonder what happens when you jump off a boat into a lake. Have you displaced enough water to cause the lake's overall water level to change? The short answer is no, not really. While you are on a boat floating in the water, your weight pushes the boat down into the water just a bit. But you displace the same amount when you fully enter the water from the boat!



**Lake Wawasee shoreline**

Margy hosted their own wedding rehearsal dinner on the same strip of shoreline. “It was a spectacular evening, and it was one of the first times we had a wedding event at Wawasee,” John said. Over 40 years later, they set up a large tent and hosted their daughter’s

to their shoreline, and neighbors would step out of their homes to watch and wave.

The tradition fell by the wayside after Jack passed away, but Rick Winter, Bob Fanning and John and Margy revived the celebratory march in 2019. Several North Shore families participated and it was an immediate success. “Nobody else has quite this same tradi-

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*The experience was unique to their shoreline, and neighbors would step out of their homes to watch and wave.*

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tion, that I’m aware of,” he added. “I think it will go on for many years.”

Snug Harbor has made a lasting impact on the Feighners’ children. Their daughter, Betsy, even chose their property as her wedding venue. Years before, in 1979, John and

ceremony and reception. To add to the day’s beauty, their son Spencer officiated the wedding. Betsy and Spencer and their spouses have spent many happy hours on Wawasee over the years, and will continue to do so well into the future.



## **Envisioning the Future of Lake Wawasee**

John and Margy first heard about the Lilly Center through friends who are involved in and support the center's mission. "There are two

great organizations in this area that are trying to protect and save the lake, and the Lilly Center is one of those," John said, noting that Wawasee Area Conservancy Foundation is the other. "The work both organizations do is so compatible." The Feighners' ideal future for their lake is simple:

For it to remain a hub for recreation and relaxation, and for the lake's ecosystem to remain healthy. "We hope that our children and grandchildren will be able to carry on the tradition of spending summers here," Margy added. "I hope that Snug Harbor will be here for a long time."

### ***In the early 1900s, an ad ran with this list of fish, available for the catching in Lake Wawasee:***

*Black Bass (Min length: 11 inches)*

*Silver Bass (Min length: 10 inches)*

*Bluegill (Min length: 5 inches)*

*Crappie (Min length: 6 inches)*

*Rock Bass (Min length: 5 inches)*

*Red-eared Sunfish (Min length: 5 inches)*

*Redfin Pickerel or Northern Pike  
(Min length: 15 inches)*

*Walleye (Min length: 15 inches)*

*Yellow Perch (Min length: 7 inches)*

*Trout (Min length: 7 inches)*

The oxygen layer depth in Lake Wawasee has decreased over the last 100 years. This increasingly limits the space in which fish can live and forces fish to a warmer surface water layer. Some fish cannot survive in warmer water which is why they are no longer able to survive in Lake Wawasee as recorded historically. That being said, Wawasee has a greater depth of fish habitat (averaging 34.4 feet in 2020) than any of the other 13 lakes the Lilly Center studies each summer.

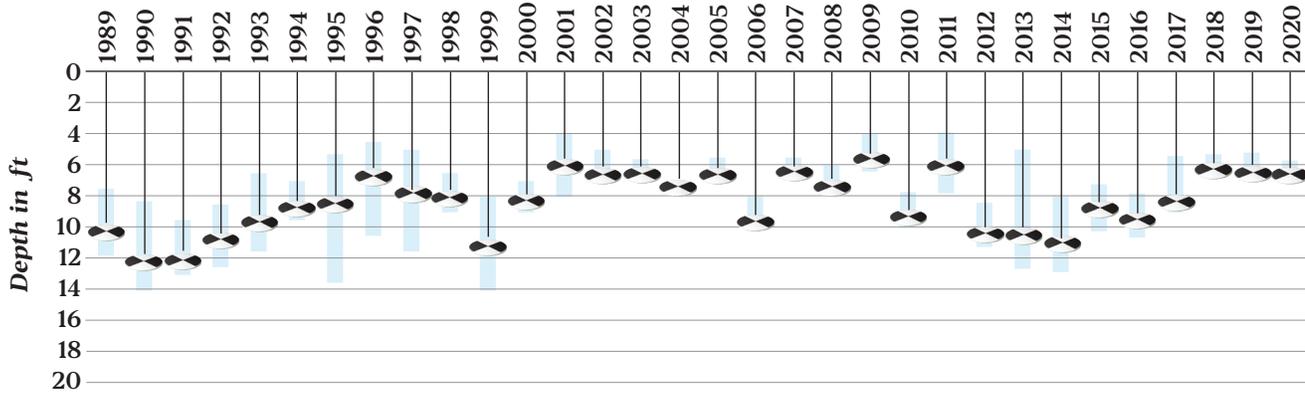
*Bluegill*



# Water Clarity

These data show how far down light reaches through the water in your lake.

Historic Data (1989–2020)

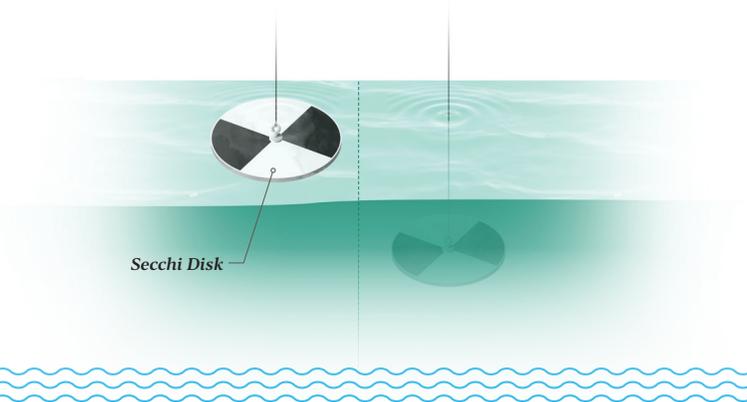


Water clarity for July and August in Lake Wawasee shows much variability over the last 30 years but appears to be decreasing overall. Lower water clarity

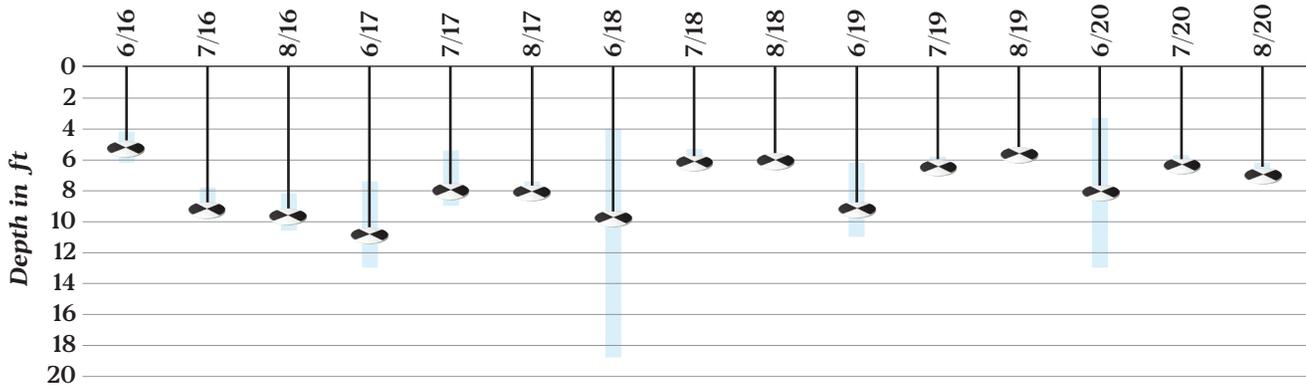
during certain years is likely due to more algae growth as a result of higher nutrient (phosphorus and nitrogen) levels.

*How water clarity is measured:*

Water clarity is measured with a tool called a Secchi disk. A Secchi disk is a frisbee-sized metal disk that is painted with a black and white pattern. The disk is attached to a string and lowered into the lake water until the black and white pattern is no longer visually distinct. The depth of the disk is recorded as a measure of the water's clarity.



### Current Data (2016–2020)



Lake Wawasee’s water clarity measurements varied most during June across these five summers (3.3 ft to 18.8 ft). Decreased clarity is likely due to generally higher nutrient (nitrogen and phosphorus) levels causing more algae to grow.

#### How You Can Help:

From past research, we know that boating can have an impact on the health of local lakes. When boating, use parts of the lake that are at least 10 feet deep for any boating activities that create a wake and stir up nutrient-rich sediment. That helps limit nutrients which would otherwise become available for algae and weeds!

# Mark & Betsy Phillips

*Every summer, Mark and Betsy Phillips relocate from Cincinnati, Ohio, to savor the slow pace and welcoming atmosphere of their family home on the south side of Lake Wawasee. The Campbell Cottage is a gathering place, frequently visited by friends and family, including their daughters' families and their young grandson. "Gregory's first steps were a week or two before they visited the lake at their home in South Carolina," said Mark. But, Mark added, his walking definitely accelerated during his family's stay on Wawasee!*

The Phillips' family first experienced Wawasee in the 1960s, when they rented a stately Victorian mansion on the south shore. (A couple years later, the Campbells rented the same house. This delightful overlap was discovered after Mark and Betsy were married.) Now, a couple generations later, they continue to return

to the lake each summer, sharing their property with family and friends, enjoying water activities, decorating boats and watching fireworks for the Fourth of July.

"The lake is a focal point for our family," Betsy said. "It brings us together." She added that there is so much joy in watching others enjoy the lake.

"It's a neutral place – never uncomfortable. No one feels the pressure of having to do all the serving, and everyone shares in the effort," Betsy said.

The lake is not only for family. Years ago, Al Campbell, Betsy's father, would host coworkers at their house on Wawasee. "Wawasee brings people together not just from





18 / Your Lake, Your Story / Wawasee / Mark & Betsy Phillips





**Four generations** of Phillips and Campbells enjoy Lake Wawasee.

the region,” Mark said, “but from across the nation and even across the world. Al and his wife Dottie found this personal touch built camaraderie worldwide as Al led Procter & Gamble’s international human resources division for more than two decades.” The lake, Mark said, allowed all of Al’s visitors to drink in

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*Now, a couple of generations later, they continue to return to the lake each summer.*

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the beauty and serenity of God’s creation in an informal setting. It left an impression on everyone who stayed.

The Phillips and Campbell families have become secondary parents and grandparents for many of the Phillips’ daughters’ friends, too. The lake, Betsy says, is a place to heal and find love, regardless of generation or family background. “We’ve really enjoyed developing friendships here,” Mark added, noting that the relationships they have cultivated might not have happened except for the lake.





*Al Campbell's 90th birthday was celebrated in an extra-special way.*

## **Honk for 90 Years**

In 2010, when Al and Dottie both turned 80, the family hosted what was affectionately called the “160th Party.” The couple celebrated their birthdays in style: they set up a white tent in the yard and enjoyed good food with friends and family.

That delightful evening was perhaps only topped by the celebration they

had for Al’s 90th birthday during the summer of 2020. Mark printed a large

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*All throughout the day, boats floated by, saw the sign, and honked and waved to Al. (Some even paused long enough to sing.*

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sign that said, “Honk... it’s Al Campbell’s 90th Birthday!” and placed it along

their shoreline. Al set up a chair in the yard and waited. All throughout the day, boats floated by, saw the sign, and honked and waved to Al. (Some even paused long enough to sing.) At the end of special day, Al asked if he could have his birthday tomorrow, too. “We extended the birthday celebration for several days and plan to add Velcro numbers for future years,” Mark said. “A new tradition has begun!”

## **From Suburbia to Open Water**

Wawasee serves a slightly different purpose for each family, because no two families are the same.

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*Educating students, community members, and visitors about water quality is so important if we want to create a legacy for the future.*

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But one thing is certain: Wawasee is always worth the trip. “It’s so good to get out of suburbia,” Betsy described. “To leave the busyness of the city behind. In town, you look out the window and see houses. Here, you look

out the window and see open water.”

“It’s tranquil,” Mark agreed. “It’s a comfortable, welcoming environment to be in.” For the Phillips, the lake is a place of rest.

Mark and Betsy first heard of the Lilly Center through their involvement with the Wawasee Area Conservancy Foundation, and through Al’s long-time support of the center’s mission. They firmly believe the future

of Lake Wawasee is worth protecting, and see the Lilly Center’s ongoing research as an avenue to deeper appreciation for and understanding of the water.

“We believe that the educational aspects of what the Lilly Center does are key. Educating students, community members and visitors about water quality is so important if we want to create a legacy for the future,” Mark said. He also noted that clean water is not just valuable for Wawasee. “All our lakes need to be viable,” he added.

## **Lake Wawasee Health**

The lakes in Kosciusko County are connected to one another, either by stream, river or watershed. Wawasee’s health is part of a much broader scope. You can compare the health of the 14 lakes studied by the Lilly Center by reading *Beneath the Surface*, an annual lake report designed to simplify and apply data:

[lakes.grace.edu/bts](http://lakes.grace.edu/bts)



# Spink Wawasee Hotel

The Wawasee Spink condos, formally called the Spink Wawasee Hotel, are located on the north shore of Wawasee. The hotel first opened for business in 1926. It quickly became known for its lake-facing rooms, high-end cuisine, and a big band ballroom for live music and dances.

But it was known for other things, too. The hotel catered to “wealthy and famous clientele, with a majority of guests visiting from the Chicago area. It was so popular a special railway station was constructed nearby for convenience,” wrote Deb Patterson, local journalist with Ink Free News. Well-known visitors included Bud Abbott, Lou Costello and Al Capone. The Chicago crime boss was infamous not only for illicit dealings and violence, but for gambling and drinking, both of which he enjoyed during his stays at the Spink.

In the 1940s, the Spink changed hands. It went through multiple owners and renovations. The site is now a high-end condominium.



Noles1984 at the English Language Wikipedia

*Spink Wawasee Hotel*



*Abbott & Costello*

From the kitchen of Mark Phillips

# Tomato Pie

**This recipe is a favorite of the Phillips family.**

Mark highly recommends a mix of half gruyere cheese and half sharp cheddar! He adds, "My daughter's mother in law opines that, 'It's all about the quality of tomatoes!' We get some really good ones in Indiana!"

## INGREDIENTS

- 1 9-inch pie shell  
(see pie crust recipe for  
homemade version)
- 1/2 cup chopped yellow  
or red onion  
(about 1/3 onion, diced)
- 3-4 tomatoes, cut in half  
horizontally, squeezed  
to remove excess juice,  
roughly chopped, to yield  
approximately 3 cups  
(700 ml) chopped tomatoes
- 1/2 teaspoon kosher salt
- 1/4 cup sliced basil  
(about 8 large leaves)\*
- 2 cups (8 oz, 225 g) grated  
cheese (combination of sharp  
cheddar and Monterey Jack,  
or Gruyere or Mozzarella)
- 1/2 cup (120 ml) mayonnaise
- 1 teaspoon (or more to taste)  
of Frank's Hot Sauce  
(or Tabasco)
- Freshly ground black pepper

## DIRECTIONS

**Pre-bake the crust:** Preheat your oven to 350°F (175°C).

If you are using a store-bought pie shell, follow the directions on the package for pre-baking, or pre-bake it in the oven for about 8 to 10 minutes (a little longer for a frozen pie shell), until lightly browned.

If you are using a homemade crust, freeze the crust first, then press a sheet of aluminum foil into the crust to keep the sides of the pie crust from falling down as it cooks. Fill the pie with pie weights such as dry beans or rice to help hold the foil in place.

Pre-bake the homemade crust for 15 minutes, then remove the foil, use the tines of a fork to poke a few small holes in the bottom of the crust (for venting), and bake for 10 more minutes.

**Salt and drain the tomatoes:** Lightly salt the chopped tomatoes and set them in a colander over a bowl to drain while you are pre-baking the crust.

Squeeze as much moisture as you can out of the chopped tomatoes, using either paper towels, a clean dish towel, or a potato ricer.

**Layer pre-baked pie shell with onions, tomatoes, basil:**

Sprinkle a layer of chopped onion over the bottom of your pre-baked pie crust shell. Spread the drained chopped tomatoes over the onions. Sprinkle the sliced basil over the tomatoes.

**Make cheese mixture, spread over tomatoes:** In a medium bowl, mix together the grated cheese, mayonnaise, Tabasco, a sprinkling of freshly ground black pepper.

The mixture should be the consistency of a gooey snowball. Spread the cheese mixture over the tomatoes.

**Bake:** Place in oven and bake at 350°F (175°C) until browned and bubbly, anywhere from 25 to 45 minutes.





**Mark and Betsy Phillips** pose outside the Campbell Cottage on Lake Wawasee.

## ***Best Summer Dishes***

The Phillips often gather around good food. A current favorite dish, crafted by Mark and

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***The Phillips often gather around good food.***

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based on a Southern recipe, is tomato pie. “But that takes a long time to make,” Mark laughed. “Our go-to ‘lake meal’ is burgers, corn on the cob

and sliced fresh tomatoes.” But, he added, anything you can cook on a grill will do. They get their favorite selections from Bale’s Butcher Shop, and their preferred sweet corn comes from Sweet Corn Charlies, both of which are located in Syracuse. “We don’t go to a butcher shop in Cincinnati,” Mark said, “but we do when we’re here!”

In their own words, Mark and Betsy are not only blessed to live on Wawasee; they are thank-

ful for the opportunity to share their lake and home with family and friends. They foresee many more summers at the Campbell Cottage, both for themselves, their kids, grandkids, and generations to come.

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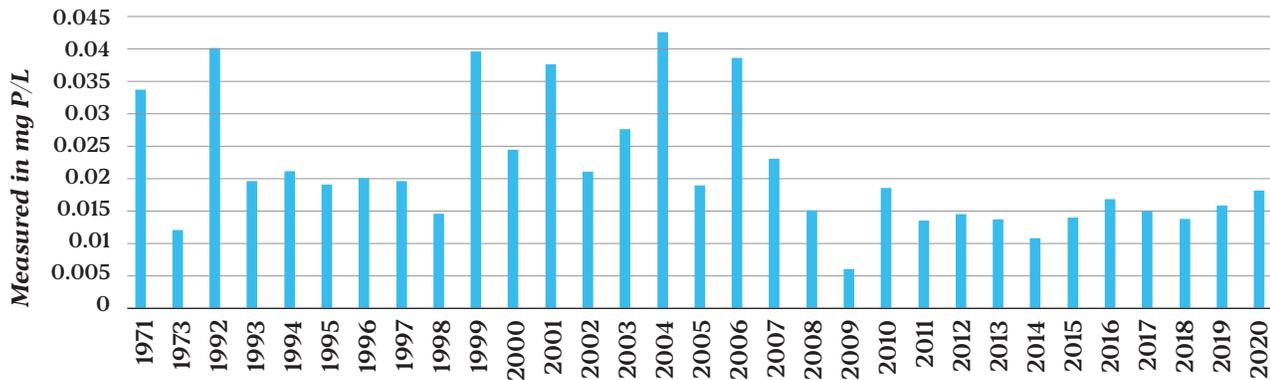
***“Our go-to ‘lake meal’ is burgers, corn on the cob and sliced fresh tomatoes.”***

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# Nutrients

Aquatic plants, like weeds and algae, rely on these essential minerals to grow.

**Historical Total Phosphorus (1971–2020)**

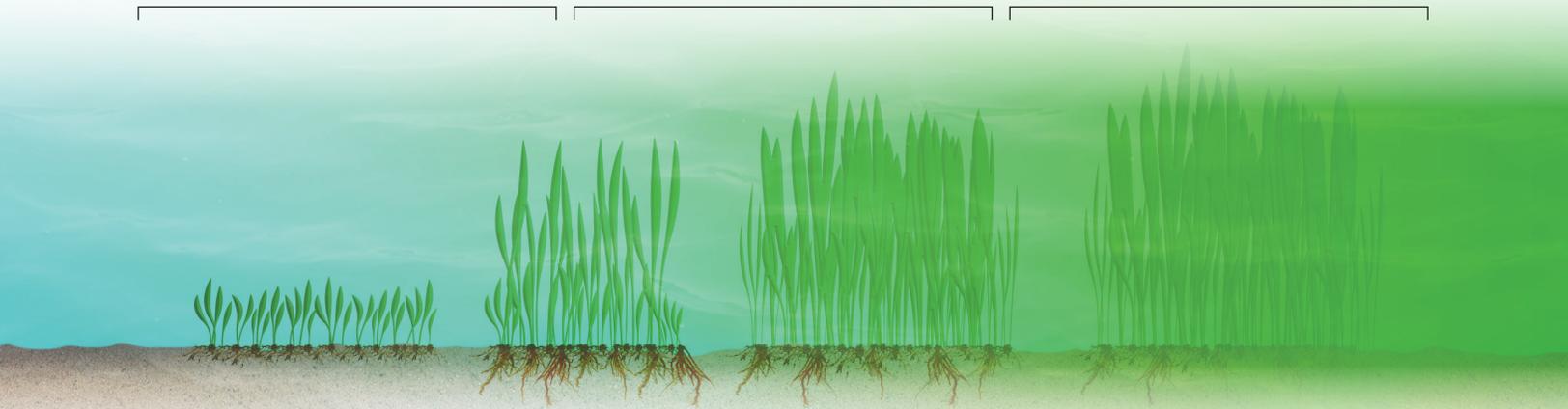


**Nutrients, Plants & Algae:** This figure below illustrates how nutrients affect a lake’s plant life.

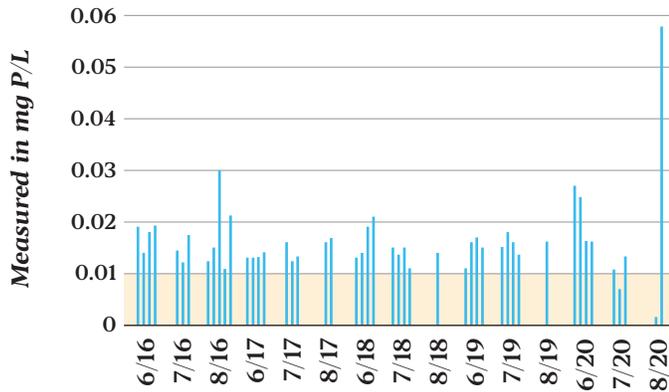
Few Nutrients

Optimum Nutrient Levels

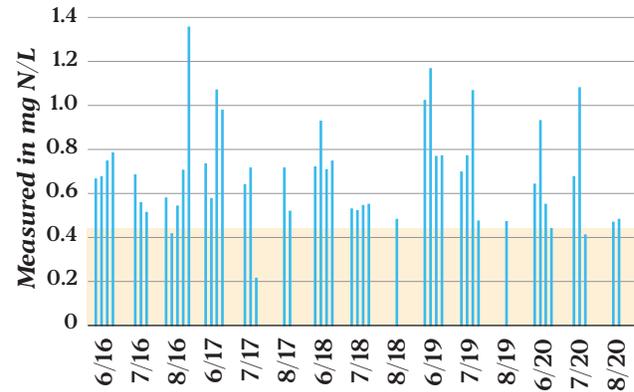
Nutrient Overload



### Current Total Phosphorus (2016–2020)



### Current Total Nitrogen (2016–2020)



■ Within recommended EPA guidelines

Lake Wawasee total phosphorus levels in July and August were highly variable over the last 40 years but were typically lower over the last 10 years compared to the previous 20 years. This finding does not appear to fit the water clarity decreases over the same time, indicating more research is needed. Levels are almost all above the Environmental Protection Agency recommended guidelines.

Both phosphorus and nitrogen levels in Lake Wawasee Lake also varied widely in the past five years. Overall, 2020 showed more variability in TP and TN levels compared to the other four years.

#### How You Can Help:

Manage your property with your lake in mind. This can include using native plants in your landscaping, applying minimal amounts of fertilizer to your lawn, and avoiding feeding geese and other waterfowl. These actions help keep nutrients like phosphorus and nitrogen at the right levels!

# Meet the Lilly Center

*The Lilly Center for Lakes & Streams conducts research, provides resources, engages and educates residents, and collaborates with local organizations to make the freshwater lakes and streams of Kosciusko County clean, healthy, safe and beautiful.*

We are a team of lake-science and outdoor-education enthusiasts, and we consistently craft standard-exceeding, data-rooted scientific studies and community experiences.

Due to the Lilly Center's diligent, strategic work, the lakes and streams in Kosciusko County are some of the best-studied in the state of Indiana. We have over a decade of valuable data that shows patterns and trends in the health of our lakes, which, in turn, reveal specific action steps. The center also contributes science-based curricula to many local schools. Planned activities and in-house field trips give students and teachers a memorable, tangible way to positively impact the amazing waterways around us. Through community-wide events, we also connect with families and individuals from every corner of the county.

The Lilly Center serves, inspires and educates, and creates generational pathways to leadership and environmental stewardship.

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Relentlessly on mission to protect local lakes and streams, we collaborate with many businesses, lake associations and individuals to develop timeless resources. Our partners allow us to connect with a broader audience and unleash innovative solutions throughout the county.





## 3 Take-Aways

1

The **fundamental problem** behind less water clarity, more microcystin and poor fish habitats is too many nutrients. Nutrients ultimately lead to a negative impact on your family's future lake story.

2

But, we know that **variability gives hope**. Water quality measurements change repeatedly for the better and for the worse. We are confident that better water quality is possible for your lake!

3

That means we are looking for **increased quality over time**. The water quality of your lake is critical to your family's story. The good news is that your actions can directly influence the health of the lake long into the future.

# What We'll Be Doing



## Quality Brings Value

Improved water quality brings better lake property values. We are applying new research to your lake to predict how much your property value could change based on improvements in your lake's water clarity.



## Safe & Healthy

At all times, we are working to keep your family safe and healthy: ongoing research; weekly algae toxin updates during the summer; monthly e-newsletters that curate the most

up-to-date lake news; and a series of community and K-12 programs and events. You can join our volunteer list or attend an event, too! Start today: [lakes.grace.edu/ylys](http://lakes.grace.edu/ylys).



## Counting Calories

We know your lake has too many nutrients, so we are quantifying the sources (like counting calories when dieting) of the nutrients to learn how to limit them!

Continuous stream sampling is essential to this goal. We sample 12 inflowing and outflowing streams bi-weekly year-round. We also use stream sensors, which allow us to monitor the highly variable

flow rates of water in the streams every hour.

In partnership with Grace College's new Center for Sustainable Agriculture and others, the Lilly Center is helping develop an agriculture certification program. The certification encourages best-practices that support farmers' hard work and prevent nutrients from entering the lakes.



## Fishy History

Aided by the Indiana Department of Natural Resources, our team is exploring past trends in fish populations as indicators of lake health to develop an even better plan for the future of our lakes.





*Lilly Center Research*

# What You Can Do

## Immediate Actions:

Scan this **QR code** or visit **[lakes.grace.edu/ylys](https://lakes.grace.edu/ylys)** to take a simple survey that will help us determine how nutrients (which help algae and weeds grow) are entering your lake.



*Scan code  
for survey*



**Financially support** a specific Lilly Center project that aligns with your vision for the lake, like research, K-12 education or community events.

Sign up for Lilly Center communications to stay informed: **[lakes.grace.edu/ylys](https://lakes.grace.edu/ylys)**







LILLY CENTER FOR  
**LAKES**  
& **STREAMS**

GRACE  
COLLEGE

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