Protecting Indiana's Wetlands: A Framework for Policy Improvement and Conservation

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Save the Dunes
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Introduction

The Student Policy Network (SPN) is a student-run initiative at the University of Notre Dame that empowers undergraduate students to engage in policy research and advocacy on real-world issues. This semester, the SPN Indiana Environmental Policy team, in collaboration with Save the Dunes, has conducted an in-depth examination of wetland regulations in Indiana. Our team explored the ecological, economic, and regulatory significance of wetlands, focusing on three main areas: Indiana's current regulatory framework, opposition to wetland conservation, and the broader ecological and economic importance of wetlands. To contextualize Indiana's challenges, we conducted a comparative analysis of wetland policies in neighboring states, identifying successful strategies that Indiana could adopt. Furthermore, we examined existing gaps in state regulations, including the need for clearer laws and definitions and the ongoing erosion of wetland protections. Through this research, we engaged with diverse constituencies advocating for conservation and proposed evidence-based recommendations that balance environmental sustainability with economic development. Our white paper aims to illuminate the complexities of wetland regulation in Indiana, advocate for meaningful reform, and contribute to the preservation of these critical ecosystems.

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Executive Summary

Wetlands are vital to the biosphere, providing a myriad of invaluable ecological services, including water filtration, flood control, carbon storage, and habitat space for a diverse array of species. Indiana's wetlands, however, are overstressed as a result of recent legislation eroding protection frameworks, urban development, agricultural expansion, and climate change. This paper establishes the rationale for enhancing wetland conservation mechanisms in Indiana by outlining the interconnected environmental and economic benefits of preserving these crucial ecosystems. The paper also highlights both effective and ineffective wetland preservation initiatives from other Midwestern states with similar geographic profiles – Kentucky, Iowa, Ohio, Michigan, and Wisconsin – to serve as potential models for Indiana. Furthermore, by examining gaps in the current regulatory framework, this paper identifies key areas where policy reforms could significantly bolster wetland protections. Comprehensive conservation efforts will not only protect vital water resources and facilitate agricultural productivity but also advance Indiana's pursuit toward economic prosperity by promoting tourism at the Indiana Dunes National Park, reducing public health risks from hazardous drinking water supplies, mitigating expenditures of flood damage, and creating a healthier and more sustainable future for Indiana communities.

Contextualization

Indiana's Current Regulatory Framework

Indiana's current legislative framework for wetland protection is shaped by both federal regulations and state specific laws. Wetlands under Federal protection are covered by section 404 of the Clean Water Act, passed in 1972. The act requires projects taking place on federally protected wetlands, such as dredging and filling, to be approved via the permit process outlined in section 404.[1] This process ensures that minimal damage is incurred by the protected wetlands, and when damage does occur, a compensatory mitigation process is in place through which new wetlands can be created.

Although the federal protections outlined in the act formerly included wetlands with groundwater connections to major bodies of water, the recent Supreme Court decision in Sackett

[1] Indiana Department of Environmental Management. "State Regulated Wetlands Program." IN.gov. Accessed November 25, 2024. https://www.in.gov/idem/wetlands/information-about/state-regulated-wetlands-program/#:~:text=Indiana%27s%20State%20Regulated%20Wetland%20Law,wetlands%20regulated%20by%20the%20state

v. EPA has officially changed this federal protection of wetlands to now encompass only those which have a surface connection to a major body of water.[2] However, only the United States Army Corps of Engineers (USACE) can make an official jurisdictional determination about whether or not a particular wetland is a Water of the United States (WOTUS). If a wetland is federally jurisdictional and determined to be regulated by the USACE, the project proponent must obtain both a section 404 permit from the federal government and a section 401 Water Quality Certification permit from the Indiana Department of Environmental Management.[3]

Wetlands that do not meet this definition, or "isolated wetlands," are instead regulated by the state, primarily via the State Regulated Wetlands Law, which divides state-regulated wetlands into three classes. Class I describes wetlands which have been at least 50% disturbed by human activity or provide minimal wildlife or habitat support, and are not designated as critical habitats under the Endangered Species Act.[4] These wetlands do not have any permit protections on them, meaning that projects such as dredging and filling may be undertaken without approval from Indiana's Department of Environmental Protection. Class II wetlands are those which do not fit into the Class I or Class III categories, or would be class I if they weren't considered rare or ecologically significant. Class II wetlands experience fewer protections than Class III wetlands. Additionally, if they are considered to be too small, meaning they encompass only three-eighths of an acre or less than three-quarters of an acre and located within a municipality, they are exempt from any kind of permit restriction. Class III categorizes wetlands that are largely undisturbed, support a substantial amount of wildlife, or are considered rare and ecologically important.[5] These wetlands experience the greatest protection and are most likely to be subject to a permit-process if someone intends to alter their land-use.

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[2] Lin, Albert C. "The Supreme Court just narrowed protections for wetlands, leaving many valuable ecosystems at risk." PBS News. May 27, 2023. https://www.pbs.org/newshour/science/the-supreme-court-just-narrowed-protection-for-wetlands-leaving-many-valuable-ecosystems-at-risk#:~:text=The%20U.S.%20Supreme%20Court%20has,rock%2C%20in%20a%20protected%20wetland

[3] Indiana Department of Environmental Management. "State Regulated Wetlands Program." IN.gov. Accessed November 25, 2024. https://www.in.gov/idem/wetlands/information-about/state-regulated-wetlands-program/#:~:text=Indiana%27s%20State%20Regulated%20Wetland%20Law,wetlands%20regulated%20by%20the%20state

[4] Ibid.

[5] Ibid.

The passing of SEA 389, or Public Law 160, in July of 2021 removed protection from many of Indiana's wetlands that had previously been under state protection.[6] This law reduced the amount of Class II wetlands which require permits for dredging and filling and made it so that no Class I wetlands are protected by permit requirements. Because of this law, the only non-federally protected wetlands in Indiana are those which are adjacent to federally-protected wetlands. In February of 2024, House Enrolled Act 1383 was passed.[7] This act redefined Class II wetlands, as ones that either support moderate habitat or hydrological function or are located in a setting more than minimally disturbed by human activity or that support less than minimal wildlife or aquatic activity. This act also downgraded some Class III wetlands to the lesser-protected Class II category, exempted smaller Class II wetlands from regulation, and removed the need for general field permits for field tile maintenance in Class III wetlands.

Before a person can engage in projects such as dredging or filling in state-regulated, they must still obtain a permit through Indiana's Department of Environmental Protection, so long as the wetland is not exempt from the permit process.[8] This process requires the permit seeker to demonstrate that their project will cause minimal harm to the wetlands in question and that whatever harmful effects cannot be avoided will be mitigated via the creation of new, protected wetlands. However, since these permit protection only applies to Class III and now a redacted subset of Class II wetlands, there is a major discrepancy between the protections afforded to wetlands under federal jurisdiction and those of wetlands under state jurisdiction.

Opposition to Wetland Conservation

Proponents of House Enrolled Act 1383 (and SEA 389) argue that previous statewide protections for wetlands unduly restricted development and economic growth. According to Zillow, the average home price in Indiana in September 2024 was approximately $243,000 and $139,000 in September 2017.[9] This accounts for a compound annual growth rate (CAGR) of

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[6] Rollins, Brigit. "New Law Changes Wetland Regulation in the State of Indiana." The National Agricultural Law Center. July 15, 2021. https://nationalaglawcenter.org/new-law-changes-wetland-regulation-in-the-state-of-indiana/

[7] Baldwin, Laura. "Indiana Wetlands Bill 1383 Becomes Law." Indianapolis Bar Association. March 4, 2024. https://www.indybar.org/?pg=EnvironmentalLawNews&blAction=showEntry&blogEntry=104278

[8] Indiana Department of Environmental Management. "State Regulated Wetlands Program." IN.gov. Accessed November 25, 2024. https://www.in.gov/idem/wetlands/information-about/state-regulated-wetlands-program/#:~:text=Indiana%27s%20State%20Regulated%20Wetland%20Law,wetlands%20regulated%20by%20the%20state

[9] Zillow. "Indiana Housing Market." Zillow. Accessed December 5, 2024. https://www.zillow.com/home-values/22/in/.

8.3% compared to the federal residential home price CAGR of 7.4%.[10] Considering the very high growth in home prices (at a rate above the national average), housing has become a hot-button issue for Hoosiers. Legislators sensitive to this issue claim that HEA 1383 and SEA 389 help alleviate the burden for their constituencies.[11]

HEA 1383, the most recent Indiana wetlands legislation, was created with support from the Indiana Department of Environmental Management (IDEM) and the Indiana Builders Association (IBA). Rick Wajda, the CEO of the IBA, points to their estimates, which show that 24% of the cost of a home is "directly tied" to local, state, and federal regulations.[12] Presumably, by changing the classifications of certain wetlands and loosening permitting requirements, the production costs for developers will decrease. This will increase new development projects and raise supply, thus lowering prices. The association also notes that the bill contains an incentive "that saves developers that preserve wetlands money," aligning the interests of builders and environmentalists.[13]

So how much has regulation actually driven up the cost of owning a home, and how much of this price increase results from other factors? Phil Powell, executive director at the Indiana Business Research Center at IU emphasizes that "environmental regulations aren't the biggest drivers when it comes to home prices, but all of those small requirements do add up".[14] This is most relevant to places where land availability is already tight due to high population density and strict zoning, like Bloomington, Indiana.[15]

Hoosier Environmental Council's Indra Frank provides a counter to this: "Since 96.5 percent or more of Indiana's land is not wetland, there appears to be ample space for construction on ground that is not wetlands".[16] He also points to potential construction issues related to

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[10]Zillow. "United States Housing Market." Zillow. Accessed December 5, 2024. https://www.zillow.com/home-values/102001/united-states/.

[11] Smith, Casey. "Bill further rolling back Indiana wetland protections is first to land on governor's desk." Indiana Capital Chronicle. Last modified February 7, 2024. Accessed December 5, 2024. https://indianacapitalchronicle.com/2024/02/07/bill-further-rolling-back-indiana-wetland-protections-is-first-to-land-on-governors-desk/.

[12] Sandweiss, Ethan. "House bill could weaken remaining protections for Indiana wetlands." Indiana Public Media. Indiana University. Last modified February 2, 2024. Accessed December 5, 2024. https://indianapublicmedia.org/news/house-bill-could-weaken-remaining-protections-for-indiana-wetlands.php.

[13] Ibid.

[14] Thiele, Rebecca. "How much do environmental regulations like wetland protections add to home prices?" Wyfi Indianapolis. Last modified February 26, 2024. Accessed December 5, 2024. https://www.wfyi.org/news/articles/how-much-do-environmental-regulations-like-wetland-protections-add-to-home-prices.

[15]Ibid.

[16]Ibid.

building on previous wetlands, which may create housing stock and flooding issues down the line. “While environmental deregulation may provide short-term savings to a particular developer on a particular site, it could also create more widespread negative impacts”.[17]

Examining the data, older legislation that rolled back environmental regulations has shown little to no measurable impact on the direction of Indiana home prices. For example, SEA 389 (2021) “cut protections for most of [Indiana’s] wetlands,” yet we have still seen over $30k growth in home prices since then.[18] Accounting for the numerous alternative drivers behind this growth, cutting wetlands regulations may have an impact but a near-negligible one.

Housing experts note that the broader cost of living crisis is largely due to other factors. (1) High interest rates over the past couple of years have dried up supply in the secondary market as current homeowners choose to lock in their current mortgages and wait for better financing later. (2) Newfound private investment in single-family residential real estate has significantly increased prices. (3) Millennials are not entering the starter-home market, while baby boomers live longer and are more reluctant to downsize. (4) Construction has lagged due to the aftereffects of COVID-19.[19]

Another key consideration generating support for these two bills is related to property rights and farming. Senator Rick Niemeyer (R-Lowell) notes that the recent changes ensure that Indiana can protect crucial wetlands without “needlessly driving up the costs of buying a home, operating a business, or farming”.[20] Complicated and overbearing restrictions on property use can create problems for farmers looking to increase their crop yields or homeowners looking to build on their land. From a governmental perspective, lawmakers will also likely consider the impact of the Takings Clause in the Fifth Amendment to the U.S. Constitution. Under this provision, environmental regulation deemed to *significantly* diminish a property's economic value may be deemed a “taking” by the state government, leading courts to award property owners with “just” compensation.[21] This could pose a considerable challenge to the Indiana State

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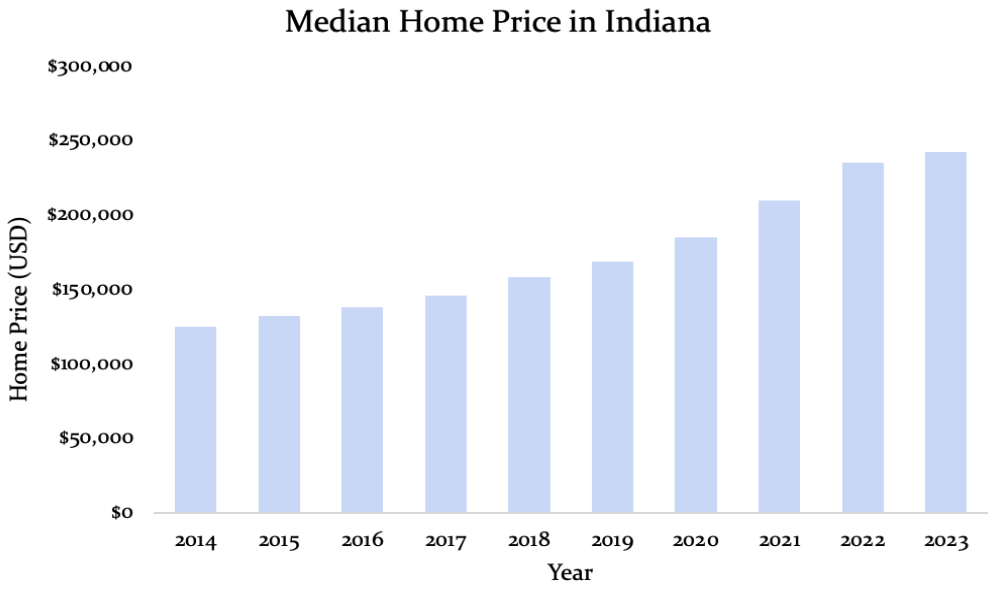
[17]Ibid.
[18]Ibid.
[19]Bundrick, Hal. "Why are home prices so high?" Yahoo Finance. Yahoo. Last modified November 19, 2024. Accessed December 5, 2024. https://finance.yahoo.com/personal-finance/why-are-house-prices-so-high-184935574.html.
[20] Smith, Casey. "Bill further rolling back Indiana wetland protections is first to land on governor's desk." Indiana Capital Chronicle. Last modified February 7, 2024. Accessed December 5, 2024.
[21] U.S. Department of Justice. "Fifth Amendment Takings Law." U.S. Department of Justice. Accessed December 5, 2024.

government due to its broad application of the Indiana Department of Environmental Management's regulations and permitting requirements, causing lawmakers to see the wisdom in pulling back from aggressive regulation. While not an immediate or particularly relevant concern, it does provide important context pertaining to the guardrails Indiana Legislators will have when considering how they alter property owners' rights.

Cost Type	Cost Amount	Cost as a % of House Price
Zoning Approvals	$6,473	1.6%
Hard Costs	$11,791	3.0%
Building Standards/Labor Requirements	$15,248	3.9%
Land left unbuilt	$10,854	2.8%
Pure cost of delay	$2,383	0.6%
Fees/Building codes/design standards	$47,121	11.9%
Total Cost of Regulation on Home Prices	**$93,870**	**23.8%**



While housing costs are a driving force for supporters of these two bills, there are also considerable concerns regarding the inconsistencies of wetland regulations. As stated previously,

https://www.justice.gov/enrd/natural-resources-section/fifth-amendment-takings-law#:~:text=Also%20known%20a%20the%20%22Takings,the%20payment%20of%20just%20compensation.

the restrictions on land use for property and farm owners are often complicated and difficult for the average homeowner to understand completely. Definitions within water regulations have long been debated not only in Indiana, but throughout the country, with conversations surrounding the Clean Water Act's meaning of "navigable waters" and "waters of the United States".[22] The CWA prohibits dumping of pollutants into these "navigable waters", a broad term encompassing a multitude of water bodies that is up for interpretation for both property owners and law enforcement. This poses a challenge for property owners who are unsure of what is regulated and are limited in their development opportunities, and are facing law enforcement that has more freedom on what waters can be regulated and who can be penalized. The vague definition was a primary point of debate in the 2023 Supreme Court case of Sackett vs. EPA, where property owners (Sacketts) had begun laying groundwork on a wetland that was not visible on the surface and in turn, were threatened with penalties up to $40,000 per day if left unrestored.[23] The court ruled in favor of the Sacketts, ultimately limiting the CWA's definition of "waters" to strictly "permanent, standing or continuously flowing bodies of water" with definitive features.[24] The case of Sackett vs. EPA demonstrates the financial repercussions broad or unclear terms on wetland regulations can have on property owners.

In the case of Indiana's HEA 1383, supporters of the bill claim that it will clearly define wetlands and eliminate the possibility of inconsistent enforcement of water-related regulations. Thus, it is no surprise that organizations such as the Indiana Builders Association have been outspoken in their support of the bill, with a statement on their website stating, "We support clearly defined isolated wetlands classifications to provide regulatory relief for property owners and developers".[25] HEA 1383 will shorten the time taken for developers and property owners looking to build on sites to receive permits and could open doors for development in Indiana.

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[22] Bakst, Daren. n.d. "Congress Must Protect Innocent Property Owners from Section 404 Civil and Criminal Penalties." The Heritage Foundation. Accessed November 24, 2024. https://www.heritage.org/environment/report/congress-must-protect-innocent-property-owners-section-404-civil-and-criminal.

[23] "What the Supreme Court's Sackett v. EPA Ruling Means for Wetlands and Other Waterways." 2023. June 5, 2023. https://www.nrdc.org/stories/what-you-need-know-about-sackett-v-epa.

[24] US EPA, OW. 2021. "Revising the Definition of 'Waters of the United States.'" Announcements and Schedules. June 1, 2021. https://www.epa.gov/wotus/revising-definition-waters-united-states.

[25] Napoleon, Carrie, and Chicago Tribune. n.d. "Indiana Wetlands Bill Garners Praise, Criticism as It Heads to Governor's Desk." Accessed November 24, 2024. https://phys.org/news/2024-02-indiana-wetlands-bill-garners-criticism.html.

Significance of Wetlands

Ecological Function

Wetlands are one of the most critical environments on Earth, notable for their numerous ecological benefits. They serve as habitats for thousands of endangered species, regulate water quality, recharge groundwater supplies, dampen the impacts of floods, and play an important role in atmospheric maintenance. Since the 1780s, the lower 48 states have lost about 50% of their wetlands, with the rate of loss accelerating by 50% since 2009[26]. Given the vast ecological benefits provided by wetlands as outlined above, their preservation and restoration is essential

The flood protection wetlands provide draw from one of their greatest ecological benefits as natural regulators of water supplies. Wetlands function as natural sponges, and one acre of a wetland ecosystem is able to store anywhere between 1 and 1.5 million gallons of water[27]. Thus, the maintenance of wetlands is crucial to reducing downstream erosion, controlling the rate and volume of runoff, and lowering flood heights[28]. Flood management is especially crucial given that Indiana is particularly susceptible to the increasing severity and frequency of flooding occurring across the Midwest[29]. Wetlands are also the unsung champions of the water cycle, as they are remarkably efficient sites for rainwater to infiltrate the soil and recharge groundwater supplies. Their deep-rooted plants and high quantities of organic matter direct water into underground aquifers, a much-needed benefit in an increasingly dryer climate.

Additionally, the composition of wetland-specific plant biology is also incredibly efficient at capturing sediment and filtering water. The longer, tendril-like roots the majority of wetland vegetation have developed are able to better capture contaminants from water and prevent them from making their way downstream. Bacteria and other pathogens that run off the land surface are captured in a similar manner. Because water moves slower through wetlands, any contaminants are given adequate time to settle out. Wetlands are also efficient in handling a number of pollutants from human activities. Factory byproducts, human waste, and perhaps most importantly, agricultural runoff are often more efficiently filtered by wetlands than man-made

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[26]Center for Biological Diversity. “Shocking Federal Report Finds 50% Wetlands Loss.” Center for Biological Diversity, March 22, 2024.
https://biologicaldiversity.org/w/news/press-releases/shocking-federal-report-finds-50-wetlands-loss-2024-03-22/

[27]United States Environmental Protection Agency. “Functions and Values of Wetlands.” Office of Water, Office of Wetlands, Oceans and Watersheds, September 2001

[28]Indiana Department of Environmental Management, “The Function and Value of Wetlands.”, Office of Water Quality

[29]“Flooding in Indiana: Not ‘If’, but ‘When.’” n.d. Legacy.igws.indiana.edu.

water treatment facilities. A recent study from the Chesapeake bay found that using traditional wastewater treatment methods to remove Nitrogen would cost $8.56/lb of Nitrogen removed, whereas restoration of wetland buffers would cost only $3.10/lb[30]. The importance to agriculture cannot be understated - their long-term effectiveness and relatively low maintenance enables them to naturally account for agricultural runoff, and that the restoration of wetlands surrounding farm fields reduce nitrate nitrogen runoff by up to 57% and dissolved phosphorus runoff by up to 81%[31].

Wetlands are highly productive and diverse ecosystems with a dense biomass, comparable to that of coral reefs or rainforests[32], and as such are essential contributors to the survival of their ecosystem. One such reason for their importance is their role as massive producers at all levels of the food chain. Vast amounts of vegetative growth encouraged by an abundance of water result in numerous herbivores calling wetlands their home, which in turn provide for predators. In addition, detritus from decaying organic matter is efficiently recycled back into the food chain by smaller aquatic organisms[33]. The result is a unique self-sustaining ecosystem that is crucial for the habitation, development, and provision of countless species. It is thus no surprise that ⅓ of our nation's threatened and endangered species rely on wetlands for survival, and over ½ use wetlands at some point in their lives[34]. From nursery areas for fish and selfish to wintering grounds for migratory birds and beyond, optimal conditions within wetlands allow plant and animal life to flourish there in a degree not really exhibited elsewhere on the North American continent.

Additionally, more research is indicating that wetlands may serve an additional benefit in atmospheric maintenance[35]. Given their high concentrations of both organic matter and oxygen-poor soil, decomposition processes are significantly slower in wetlands and lead to an

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[30] Delaware Department of Natural Resources and Environmental Control. "Wetlands Purify Water." 2024, https://dnrec.delaware.gov/watershed-stewardship/wetlands/purify/

[31]The Nature Conservancy. "Constructed Wetlands Reduce Agricultural Runoff: Study." 2024, April 15, https://www.nature.org/en-us/about-us/where-we-work/united-states/illinois/stories-in-illinois/constructed-wetlands-reduce-agricultural-runoff-study/

[32] U.S. Environmental Protection Agency. "Why Are Wetlands Important?" 2024, https://www.epa.gov/wetlands/why-are-wetlands-important

[33] U.S. Environmental Protection Agency. "Why Are Wetlands Important?" https://www.epa.gov/wetlands/why-are-wetlands-important

[34] U.S. Fish and Wildlife Service. "Essential Habitats: Wetlands and Their Importance." https://www.fws.gov/wetlands-month/essential-habitats

[35] Minnesota Board of Water and Soil Resources. "Carbon Sequestration in Wetlands." https://bwsr.state.mn.us/carbon-sequestration-wetlands

accumulation of organic matter. The high turnover of wetland-based vegetation enables wetlands to efficiently and consistently pull greenhouse gasses out of the atmosphere and trap it within their soils. In fact, wetlands are estimated to hold up to 13.5 billion metric tons of carbon, often buried more than 30 cm below the surface. Freshwater inland wetlands are even more efficient at storing carbon, given their vast acreage and relatively undisturbed geography.

Correlation to Economic Development

Wetlands have many quantifiable benefits to the economies of states that utilize them. In particular, the Indiana State Government has cited several economic benefits to the people of Indiana. Specific wetland protections revolve around utilizing wetlands for their agricultural benefits first and economic benefits next. For example, developing crops on wetlands without draining them allows farmers to utilize the land in a way that helps them and the ecosystem.

The ‘Multiplier Effect' is also significant to note here. The ‘Multiplier Effect’ is a phenomenon that notes the correlation between a small economic input and the creation of a larger output. This effect specifically shows the correlation between spending on Indiana goods and economic output. It is estimated that for approximately 0.91 dollars, a full dollar is generated, bringing money back to the taxpayer. Investment in wetlands has been proven to create this effect due to the growing tourism and farming industries.[36]

Food production is directly linked to the state of wetlands since they provide habitats to creatures hunted for food, such as fish. This also relates to how farmers use land, as they utilize these wetlands for agricultural production. This usually involves vegetation since using a wetland area for crops is easier than livestock. The type of agriculture makes a difference since wetlands are more suited to certain types of crops and livestock. This has more to do with the area than the actual wetland since various factors, such as temperature and soil quality, influence the kind of arable land. It also follows that the most economical solution to determining agricultural land is what already works best since it takes more effort and money to transform the land to fit different needs.

Wood production is an industry in Indiana that generates billions of dollars annually towards Indiana’s economy. Wetlands often contain large amounts of the type of wood used for

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[36] Indiana State Department of Agriculture, *Indiana Grown Economic Impact Study 2022* (Indianapolis: Indiana State Department of Agriculture, 2022), https://www.in.gov/isda/files/Indiana-Grown-Econmic-Impact-Study-2022.pdf.

lumber production. As such, when harvested and replanted by a company, these wetlands contribute heavily to the economy of Indiana. As with agriculture, wood production also runs more smoothly when focusing on the vegetation already existing in Indiana. These trees are much more accustomed to the environment and are more sustainable than other types of vegetation.

[37]While not as large of an industry, trapping is an industry that is heavily dependent on wetlands being of good health. Fur-bearing species need habitats for trappers to find them in; by extension, wetlands are necessary for this industry. They are still an important industry that hinges much more on relatively unchanged wetlands. This allows trappers to have a wide array of areas to work on, and keep track of the best places to trap. The more wetlands change, the more difficult it is for a trapper to rely on what has worked in the past.

Recreation is a significant portion of the economic benefit of wetlands. Many of these monetary benefits go directly to Indiana citizens due to state parks and the hunting and fishing licenses used in Indiana wetlands. The specific effect of wetland tourism is more challenging to quantify since the way a wetland affects the environment around it is not always clear. However, the tourism industry in Indiana is a multi-billion dollar industry. The National Park Industry made approximately 140 million dollars in Indiana in 2020. [38]These statistics show the economic incentives relating to tourism on a broad scale and the specific nature of tourism.

Another important economic benefit is the flood protection that wetlands provide. The Indiana Department of Natural Resources estimates that one acre of wetland annually provides $248 in water purification, $2,270 in water storage, and $1,055 in erosion prevention and nitrate removal equivalent to that found in runoff from 100 acres of cropland[39]. Flood protection is often thought of as having solely ecological benefits, but the economic benefits are often forgotten. It is significantly cheaper to prevent flooding than to deal with its effects.

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[37] Indiana Department of Natural Resources, *Status of Indiana's Endangered and Threatened Wildlife Species* (Indianapolis: Indiana Department of Natural Resources, 2023), https://www.in.gov/dnr/fish-and-wildlife/files/statusof.pdf.

[38] National Park Service, "Visitor Services and Facilities (VSE) 2020," National Park Service, accessed November 27, 2024, https://www.nps.gov/orgs/1207/vse2020.htm.

[39] The Nature Conservancy, "Protecting Our Wetlands," The Nature Conservancy, last modified April 27, 2023, https://www.nature.org/en-us/about-us/where-we-work/united-states/indiana/stories-in-indiana/protecting-our-wetlands/.

State Comparative Analysis

Introduction

Indiana's approach to wetland management provides a lens through which we can understand how states can balance economic growth with environmental conservation through their regulatory frameworks. We compare Indiana's regulations to those of the states of Kentucky, Ohio, Michigan, and Iowa. After a deep analysis, wetland policies in Indiana reflect a shift toward deregulation compared to those in other states. Its framework is influenced by federal and state legislation aimed at reducing regulatory burdens for the state. Our following analysis compares and contrasts how these states approach wetland regulation.

Kentucky

Kentucky's regulatory framework for wetland conservation reflects the state's need to preserve its remaining wetlands, which comprise less than 2.5% of the land area due to historical agricultural conversions, mainly in the western Kentucky region. Most wetlands are privately owned and regulated through private dedication agreements and governmental oversight. In the 1990s, initial mitigation efforts struggled to meet expectations, leading to the establishment of an in-lieu fee program in 1998 to address performance gaps. Despite this, suitable mitigation sites remain challenging to secure. Now, much conservation work has been undertaken to preserve what little remains.

The Kentucky Transportation Cabinet (KYTC) has implemented a separate mitigation banking framework to streamline wetland and stream restoration impacted by transportation projects. In 2004, KYTC partnered with the U.S. Fish and Wildlife Service (USFWS) and the Federal Highway Administration (FHWA) to establish the KYTC Stream and Wetland Mitigation Program. This collaboration expedites the 401 of the Clear Water Act (permitting process) by delegating site selection and proposal drafting to USFWS. This creates the ability to leverage additional resources, streamline regulatory compliance, and negotiate real estate more effectively with land trusts and private landowners. As part of this program, KYTC has acquired multiple properties across Kentucky's significant watersheds, aiming for at least one bank per watershed. The state's monitoring protocols mandate annual reports to ensure that restored wetlands meet ecological standards. Mitigation sites are assessed by functional value, with a 2:1 minimum acreage ratio and stricter criteria for preservation sites. KYTC is financially responsible for these mitigation efforts. They report to regulatory agencies and adhere to maintenance practices. Due

to legislative restrictions and the complex federal reimbursement process, the state needs help advancing mitigation funding. KYTC is collaborating with the University of Kentucky and FHWA to address these funding and procedural gaps to secure sustainable financing mechanisms for Kentucky's essential wetland ecosystems.

A key feature of Kentucky's wetland protection framework which sets it apart from Indiana's is its reliance on agreements between private landowners and the state. Due to the individual nature of these agreements, it is difficult to gauge their effectiveness versus the protections in place in Indiana. However, Kentucky's wetland protection is shaped by their historic dramatic loss of wetlands. As such, the KYTC has undertaken dramatic mitigation efforts, mitigating wetlands at a 2:1 ratio[40] no matter what classification of wetland is impacted, well outpacing Indiana's mitigation conservation efforts.

Iowa

Historically, 90-95% of Iowa's original wetlands, which once spanned 4 to 6 million acres (around 11% of the state's land), were drained to support agricultural expansion and urban development, much like the current framework in Indiana. This effort was fueled by federal incentives prioritizing land conversion over ecological preservation. Iowa's massive wetland reduction has led to significant challenges for the state's environment, such as degraded water quality and a loss of wildlife habitats.

To counteract their wetland loss, the Iowa Wetland Program Plan outlines five core features: Monitoring and Assessment, Voluntary Restoration and Protection, Regulatory Standards, Water Quality Standards, and Education. The Monitoring and Assessment aspect is managed by the Iowa Department of Natural Resources Water Quality Bureau, which designs and runs the state's Ambient Water Monitoring Programs. These programs collect data on Iowa's surface and groundwater conditions, offering objective insights that inform wetland development, protection, and management decisions. Under the Voluntary Restoration and Protection element, the Wildlife Bureau works closely with private landowners, providing technical expertise for wetland restoration on privately held lands, constituting most of Iowa's wetlands. Wildlife Bureau biologists assist in evaluating land for restoration potential,

[40] Kentucky Energy and Environment Cabinet. "Kentucky Wetlands Rapid Assessment Method." Accessed November 24, 2024. https://eec.ky.gov/Environmental-Protection/Water/Monitor/Pages/KYWRAM.aspx

identifying conservation priorities, and connecting landowners with state and federal programs that offer financial and technical support for restoration projects.

The Regulatory Standards element ensures compliance with federal and state wetland protection laws. The fourth element is Water Quality Standards, which establishes guidelines to protect wetland ecosystems and prevents further degradation. The last element is education, which promotes public understanding of wetlands' ecological and economic benefits. This framework is built upon the 2010 Iowa Wetland Action Plan and operates on a 2016-2020 timeline with biennial reviews to adapt to emerging challenges and improvements in restoration science. A vital goal of the plan is to create a sustainable balance between agricultural land use and the ecological integrity of Iowa's remaining wetlands.

The Iowa State Government cites the 'Multiplier Effect' as a central reason for their economic policy revolving around wetlands. The effect states that when money is spent on conservation, it comes back as a profit in the form of jobs and business output that supersedes the initial input. Another economic benefit is the 2.63 billion dollars spent annually at Iowa's government-run parks, which do not even include wildlife areas, water trails, national wildlife refuges, or other outdoor amenities. Relating to the multiplier effect, Iowa calculated that theirs was 1.29, meaning that for every dollar spent, $1.29 came back.

In comparison to Indiana, Iowa is extremely conscious of the quantifiable benefits of wetlands. In particular, both states are concerned about the potential economic benefits and drawbacks associated with wetland preservation. Both states are also concerned about the impact on farmers and taxpayers. Whereas Indiana focuses on economic benefits from deregulation, Iowa focuses more on how wetlands can generate income. To specify, Iowa's policies of preserving wetlands for economic benefits are something that Indiana can do, since it furthers the goal of helping tax paying citizens of Indiana.

Ohio

Ohio's wetland regulatory framework is grounded in its commitment to no net wetland loss. It is managed primarily by the Ohio Environmental Protection Agency (Ohio EPA) through the Division of Surface Water. The Ohio EPA regulates wetlands under the Clean Water Act's Section 401 Water Quality Certification Program, supplemented by state-specific standards and the 2001 Isolated Wetlands Law. The law designates three categories of wetlands based on ecological significance, with Category 1 wetlands having the lowest protection and Category 3

the highest. These categories determine the level of review and mitigation required for any activities affecting these areas. Ohio requires permits for any activity that impacts isolated wetlands, mandating avoidance and minimization of wetland impacts where possible. If consequences are unavoidable, mitigation is required, often at ratios up to 3:1, depending on the category and type of wetland.

Ohio uses bioassessment tools such as the Ohio Rapid Assessment Method (ORAM), Vegetation Indices of Biotic Integrity (VIBI), and other metrics to ensure adequate assessment and restoration. These tools aid in determining the ecological quality of wetlands and guiding restoration efforts. In addition, the state tracks wetland gains and losses through the Surface Water Information Management System (SWIMS), though there is yet to be a current system for monitoring mitigation effectiveness.

The Ohio EPA also collaborates with the Ohio Department of Natural Resources (ODNR) in wetland restoration and management efforts. ODNR plays a crucial role in voluntary wetland restoration, often coordinating with federal programs and offering support to private landowners. Ohio's wetland water quality standards, adopted in 1998, outline protections for hydrology, water quality, and habitat and include antidegradation policies to protect wetland functions such as flood control, biodiversity, and water purification. This comprehensive framework supports Ohio's goal of balancing development with ecological preservation, safeguarding the state's remaining wetlands and critical environmental services.

Ohio has less strict regulations than Indiana. For example, in Ohio, if someone wants to fill or dredge a wetland, they only need a permit from the Ohio EPA.[41] However, Ohio's Wetlands Reserve Easements (WRE) helps people protect, restore, and enhance wetlands that have been affected by agricultural uses.[42] In contrast, in Indiana, if someone wants to fill or dredge a wetland, they need to perform compensatory migration such as restoring or replacing a wetland

[41] Ohio Environmental Protection Agency, Ohio Wetlands Fact Sheet, Ohio EPA, https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/47/facts/ohio_wetlands.pdf.
[42] U.S. Department of Agriculture, "Wetland Reserve Easements—Ohio," Natural Resources Conservation Service, last modified September 14, 2023, https://www.nrcs.usda.gov/programs-initiatives/wre-wetland-reserve-easements/ohio/wetland-reserve-easements-ohio#:~:text=Ohio%20Wetland%20Reserve%20Easements%20Wetlands%20Reserve%20Easements,been%20previously%20degraded%20due%20to%20agricultural%20uses.

or stream.[43] By requiring compensatory migration, Indiana can ensure that their state will not be left without wetlands.

Michigan

Michigan's wetland's regulatory framework is established under Part 303 of the Natural Resources and Environmental Protection Act. It prioritizes protecting and managing wetland resources due to their essential ecological and socioeconomic benefits.[44] Part 303 mandates a permit program regulating most activities that might alter wetlands, with strict requirements to ensure these actions align with the public interest. This program categorizes wetlands based on their size and proximity to other water bodies: contiguous wetlands near lakes, rivers, or streams are regulated regardless of size, while non-contiguous wetlands only require regulation if they exceed five acres. Local governments also hold regulatory authority under Part 303, which empowers communities to protect smaller wetlands through local ordinances.

Permits are granted only for projects within regulated wetlands if they meet criteria indicating public interest, have minimal unacceptable impacts, and lack feasible, less harmful alternatives. Part 303 also includes exemptions for activities like recreation, specific agricultural practices, and limited infrastructure maintenance.[45] This also aligns with the state's requirements with federal exemptions under the Clean Water Act. Michigan ensures additional oversight of potential wetland impacts through further regulation of certain drainage activities typically exempted at the federal level.

The framework emphasizes a "no net loss" approach to wetland mitigation. Permittees must compensate for unavoidable wetland impacts by restoring similar wetland types, often within the same watershed, and establish permanent protection for these mitigated areas. Mitigation ratios vary from 1.5:1 to 5:1 based on wetland type, with up to 10:1 ratios for preservation projects. Local governments in Michigan support these efforts by maintaining

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[43] Indiana Department of Environmental Management, Section 401 Water Quality Certification: Frequently Asked Questions, Indiana Government, https://www.in.gov/idem/wetlands/information-about/section-401-water-quality-certification/frequently-asked-questions/#:~:text=IDEM%20frequently%20requires%20an%20applicant%20to%20perform,existing%20uses%20of%20all%20Waters%20of%20the.

[44] Thomassey, Grenetta. "Protecting Michigan's Wetlands." Tip of the Mitt Watershed Council, 2007. https://watershedcouncil.org/uploads/7/2/5/1/7251350/wetland_ebookfinal.pdf.

[45] Lounds, Amy, Anne Garwood, and Chad Fizzell. "Michigan State Wetland Program Summary." Michigan Department of Environmental Quality. Accessed December 6, 2024. https://www.nawm.org/pdf_lib/state_summaries/michigan_state_wetland_program_summary_083115.pdf.

wetland inventories for planning. They also attempt to integrate wetland protections into site plan reviews and promote partnerships between landowners and agencies to sustain the wetlands.

The primary differences between Michigan's regulations and Indiana's are the scale of regulation itself and the primary regulatory body. Indiana's wetland protections at the state level were greatly weakened after SEA 389, resulting in a much looser definition of wetland than that of Michigan. Thus, the majority of regulation in the state of Indiana is derived instead from the federal government and the provisions laid out in the Clean Water Act. Only Class III wetlands in the state of Indiana have any meaningful protection anymore, and smaller wetlands have all but lost their protections entirely. In contrast, Michigan's regulations under Part 303 of the Natural Resources and Environmental Protection Act prioritize a "no net loss" policy affecting wetlands, with provisions to allow local governments more control over their respective wetlands. The law requires permits for activities near wetlands and those that would affect them, but still allows for continued development and expansion, just in a fashion more cognizant of wetland's importance. Overall, Michigan's framework provides more consistently enforced and robust regulations than that of Indiana's, allowing the state of Michigan to harness a larger extent of the benefits wetlands provide.

Minnesota

The primary regulatory agency for wetlands in Minnesota is the state's Board of Water and Soil Resources, which oversees the provisions of 2009's Wetland Conservation Act.[46] MN Executive Order 12-04 directed the BWSR to develop recommendations on wetland policy that the state has incorporated into legislation since.[47] Wetlands serve as a crucial habitat in Minnesota, covering 10.6 million acres of the state, accounting for 20% of the surface area.[48]

Four programs are the most notable in their protection of Minnesotan wetlands: The Department of Natural Resources Public Waters Work Permit Program and the aforementioned Wetland Conservation Act, both of which are state-specific programs, and Sections 401 and 404 of the federal Clean Water Act, which are further enhanced through the Wetland Conservation Act. The Work Permit Program is particularly effective in preserving already established

[46] "Improving and Protecting Minnesota's Water & Soil Resources." Minnesota Board of Water & Soil Resources BWSR, 2019. https://bwsr.state.mn.us/.
[47] The Minnesota Wetland Conservation Act Manual, September 2004. https://www.leg.mn.gov/docs/2007/other/070605.pdf.
[48] "Wetland Quality." Minnesota Pollution Control Agency. Accessed December 6, 2024. https://www.pca.state.mn.us/air-water-land-climate/wetland-quality.

wetlands, as waterfront and adjacent developments are subject to a strict review process to ensure minimal impact on wetlands.[49] In addition to development, the 88-page manual regarding the implementation of the WCA expands on issues of key importance for wetland protection.[50]

Of note in Minnesota are the regulations for agriculture, given the state's strong agricultural background. Agriculture contributes over 112 billion to the state economy each year, but with such a large sector, agricultural runoff, notorious for disrupting wetlands, becomes a worry. The WCA takes care to address this problem with strict regulations. Overall, these programs have been largely successful, particularly in preserving the northern Boundary Waters, where about three-quarters of all Minnesotan wetlands are found. The Minnesota Pollution Control Agency reports that about 90% of wetland acres that existed before European settlers arrived are still intact. Additionally, widespread wetland losses have stopped, and Minnesota actually gained about 9,000 acres of wetlands between 2006 and 2014.

As a further credit to the regulations, native vegetation can be found in 67% of wetlands, and that number increases to 84% as you move to the Boundary Waters.[51] The overall legislative framework surrounding Minnesotan wetlands is incredibly strong, and it continues to preserve one of the state's most fragile yet most important ecosystems.

In comparison to Indiana, Minnesota's wetland protection framework is renowned for its efficiency, utilizing strong legislative mechanisms for preserving this crucial ecosystem. The Work Permit Program, in particular, enforces a strict permitting process that prospective development projects must adhere to, subsequently mitigating damage to wetlands without inhibiting infrastructure expansion. Indiana, often apprehensive about inadvertently curbing economic development, would benefit from strengthening its review process to strike a more efficient balance between enabling development and protecting wetlands. As highlighted above, Minnesota's Wetland Conservation Act successfully protects wetlands and economic prosperity simultaneously by preserving wetlands on agricultural land, where their absorption of runoff optimizes yield output. Indiana, therefore, could amplify the state's economy by imposing rigid preservation mechanisms on wetlands in agricultural land, subsequently proliferating output.

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[49] "Public Waters Work Permit Program." Minnesota Department of Natural Resources, October 18, 2022. https://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/index.html.
[50] The Minnesota Wetland Conservation Act Manual, September 2004. https://www.leg.mn.gov/docs/2007/other/070605.pdf.
[51] "Wetland Quality." Minnesota Pollution Control Agency. Accessed December 6, 2024. https://www.pca.state.mn.us/air-water-land-climate/wetland-quality.

Wisconsin

Wisconsin's wetlands regulations are primarily managed by the Wisconsin Department of Natural Resources (WDNR). From a legislative standpoint, the WDNR's administrative code provides clear guidance on the bounds of these powers, in addition to setting standards designed to promote water quality and long term sustainability. Chapter NR 103 sets these standards and outlines a "no-net-loss" policy; any loss to wetlands due to commercial activity are required to be accounted for via restoration efforts that expand wetlands in other areas. Likewise, Chapter 281.36 provides the WDNR with certain permitting powers designed to limit environmental damage due to construction. Notably, these powers only apply to developments affecting "more than 10,000 square feet of wetland"- small projects are largely unregulated.[52] The department's involvement also extends beyond the permitting process- should they determine that there is a "danger of imminent harm to the public health, safety, or welfare, to the environment or to the water resources" of the state, they may withdraw approvals and halt the project.[53]

Apart from the WDNR's specific influence, Wisconsin's regulatory framework also contains other initiatives related to state wetlands. This is evidenced through the zoning code and Act 118, which focus on wetlands loss mitigation. SB 222 also provides funding for restoration and conservation efforts led by local governments. This legislation is designed to address issues related to flooding- approximately $365 million in flood damage impacts Wisconsans each year.[54] According to Brian Vigue, director of the Audubon Great Lakes' freshwater policy efforts, a plot of wetland approximately the size of "a football field" can hold up to one million gallons of water.[55] SB 222's efforts recognize this important mitigating effect. In other words, while increased regulations have a negative economic impact by limiting development and curbing private property rights, this must be weighed against the value lost when wetlands are destroyed.[56] For example, according to a report prepared for the Wisconsin Wetlands Association, Wisconsin wetlands provide a minimum of $617/acre/year in economic value,

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[52] Permits for discharges into wetlands; mitigation, No. 281.3 Wis. Sess. Laws (Jan. 9, 2001). Accessed December 4, 2024. https://docs.legis.wisconsin.gov/statutes/statutes/281/iii/36.
[53]Ibid.
[54]Vigue, Brian. "A Win for Wisconsin's Wetlands: SB 222 Passes, Empowers Local Governments to Restore Wetlands." *Audubon Great Lakes* (blog), February 1, 2024. Accessed December 4, 2024.https://gl.audubon.org/news/win-wisconsin%E2%80%99s-wetlands-sb-222-passes-empowers-local-governments-restore-wetlands.
[55]Ibid.
[56]Ibid.

accounting for at least $3.3 billion in economic activity per year.[57] Broadly speaking, these impacts reflect the important contributions wetlands make to flood prevention, tourism generation, and lowering production costs for farmers.[58]

Compared to Indiana, Wisconsin's policies provide a more expansive framework that better recognizes the economic incentives to maintain wetlands throughout the state, most notably due to tourism and flood prevention. Tom Nedland, WDNR Waterway and Wetland Policy Section Manager, notes that the Sackett v. EPA decision will have little impact on Wisconsin wetlands, due to the "state's uniform wetland regulatory program".[59] This is compared to Indiana, who has downgraded protections for many of its wetlands, especially through reclassification in the wake of SEA 389. This has led to a much greater impact in the wake of the removal of federal protections under the Clean Water Act. Ultimately, developers in Wisconsin are required to obtain a permit and mitigate discharges from any projects that affect wetlands, (with limited expectations). Combined with the "no-net-loss" policy, Wiscon's 5.2 million acres of wetlands are protected to a much greater degree than Indiana.[60]

Existing Gaps and Recommendations

Need for Clarification on Laws and Definitions

Wetlands have been a long-debated topic in the United States. In precolonial times, wetlands were thought to cover 220 million acres across the continental United States[61]. Now, after years of loss, there is just half of that. In 1977, the Federal Water Pollution Control Act, also known as the Clean Water Act, was passed[62]. The passing of this bill allowed Waters of the United States (WOTUS)" to be federally protected by the Environmental Protection Agency (EPA). Whether wetlands were considered WOTUS was never officially defined and left to the

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[57] Batker, David, Jennifer Harrison-Cox, Noelani Kirschner, Jonathan Kochmer, Rowan Schmidt, Yvonne Snyder, Tedi Dickinson, Zachary Christin, and Maya Kocian. *Rapid Assessment of the Economic Value of Wisconsin's Wetlands*. February 9, 2012. Accessed December 4, 2024. https://fyi.extension.wisc.edu/beaver/files/2011/10/Wisconsin-Wetlands-Rapid-Assessment-120214-final.pdf.

[58] Ibid.

[59] Kaeding, Danielle. "Wetlands in Wisconsin may fare better than other states after Supreme Court limited federal regulation." Wisconsin Public Radio. Last modified June 2, 2023. Accessed December 4, 2024. https://www.wpr.org/agriculture/wetlands-wisconsin-may-fare-better-other-states-after-supreme-court-limited-federal-regulation.

[60] Ibid.

[61] United States Environmental Protection Agency, *Wetlands: Vital to Life*, accessed November 4, 2024, https://archive.epa.gov/water/archive/web/html/vital_status.html.

[62] BEAT News, "History of Federal Wetland Protection," https://www.thebeatnews.org/BeatTeam/history-federal-wetland-protection/.

interpretation of Congress, the courts, and the EPA. Although wetlands weren't officially included in the act, congress interpreted them to be included in WOTUS since they fed into waterways.

In 2006, Rapanos vs. The United States went to the Supreme Court. Rapanos started construction on Wetlands, and the EPA stopped construction on the land, claiming they were federally protected. The justices ruled in favor of the United States, Justice Scalia and Kennedy, had opposing positions that outlined two different definitions of what made water federally protected[63]. Scalia defined WOTUS as navigable water, regularly flowing tributaries to that water, and wetlands with a continuous surface connection. On the other hand, Kennedy defined WOTUS as wetlands having to have a connection between them and other bodies of water that don't necessarily have to be connected – they can simply share a significant nexus with an adjacent body of water. In the Rapanos ruling, all nine justices agreed that WOTUS included some waters that weren't navigable in the traditional sense[64].

In 2023, the definition of WOTUS was challenged again in a similar case in Sackett vs. EPA. The Sacketts began filling a wetland to start construction on their private land off Priest Lake in Idaho. In 2008, the EPA ruled that they could not start any construction because their land was connected to nearby wetlands, making them WOTUS and protected under the Clean Water Act. The Sacketts challenged the EPA's authority and classified their land as WOTUS since there was dry land between their land and other bodies of water[65]. In the Supreme Court ruling, all nine justices agreed that the EPA overstepped its jurisdiction, but there were opposing views on why. The majority ruling agreed with Scalia's definition of a wetland that he outlined in the 2006 Rapanos ruling. They stated that "when wetlands have a continuous surface connection to bodies that are "waters of the United States" in their own right so that there is no clear demarcation between "waters" and wetlands.' "[66]. They concurred that a Wetland could not be

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[63] National League of Cities, "SCOTUS to Revisit Definition of Federal Wetlands," *National League of Cities*, January 31, 2022, accessed November 4, 2024, https://www.nlc.org/article/2022/01/31/scotus-to-revisit-definition-of-federal-wetlands/.

[64] "Revised Definition of 'Waters of the United States'; Conforming," *Federal Register* 88, no. 173 (September 8, 2023), accessed November 4, 2024, https://www.federalregister.gov/documents/2023/09/08/2023-18929/revised-definition-of-waters-of-the-united-states-conforming.

[65] Natural Resources Defense Council, "What You Need to Know About Sackett v. EPA," *NRDC*, May 25, 2023, https://www.nrdc.org/stories/what-you-need-know-about-sackett-v-epa.

[66] "Revised Definition of 'Waters of the United States'; Conforming," *Federal Register* 88, no. 173 (September 8, 2023), accessed November 4, 2024,

considered WOTUS if it only shared a significant nexus with another body of water due to no continuous flow of above-ground water.

The dissenting opinion included conservative-leaning Justice Kavanaugh agreeing with Kennedy's wetlands definition. Justice Kavanaugh expressed his concern for the act due to the rollback it could cause to wetland protections. He explained that wetlands are an essential ecosystem that needs to be protected due to their integral role in the aquatic environment's health. He explained that wetlands play a crucial role in flood prevention, stating that wetlands "serve to filter and purify water draining into adjacent bodies of water, and to slow the flow of surface runoff into lakes, rivers, and streams.". Wetlands thus "function as integral parts of the aquatic environment"—protecting nearby bodies of water if they are healthy and imperiling neighboring water if degraded. Id., at 135. Simultaneously, wetlands are crucial in flood control – and are arguably more needed now than when the statute was enacted. Wetlands perform those functions, as Justice Kavanaugh explains, not only when they are touching a covered water but also when they are separated from it by a natural or artificial barrier—say, a berm or dune or dike or levee. Those barriers, as he says, "do not block all water flow" and are usually evidence of a significant connection between the wetland and the water"[67]. He expressed concerns that this ruling would leave long-regulated wetlands to now be considered to not fall under the EPA's jurisdiction. He also expressed concern about the court rewriting "adjacent" to mean "adjoining" since they are two very different things that will impact a lot of different wetlands' federal protection status[68].

In Indiana, the complexity of defining "What is a wetland?" is understood. As mentioned on the Indiana.gov website, "One definition could not possibly fit all wetlands." In Indiana, they define wetlands as areas where water covers the soil or is present at or near the surface of the soil for all or part of the year, which includes the growing season for plants. They have soils that are different from soils in dry areas that exhibit the characteristics that show they developed in saturated conditions[69]. A wetland can be a jurisdictional wetland in Indiana, and it can be

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https://www.federalregister.gov/documents/2023/09/08/2023-18929/revised-definition-of-waters-of-the-united-states-conforming.

[67] Supreme Court of the United States, *Sackett et vir v. Environmental Protection Agency et al.*, May 25, 2023, https://www.supremecourt.gov/opinions/22pdf/21-454_4g15.pdf.
[68] Natural Resources Defense Council, "What You Need to Know About Sackett v. EPA," *NRDC*, May 25, 2023, https://www.nrdc.org/stories/what-you-need-know-about-sackett-v-epa.
[69] Indiana Department of Natural Resources, *Section 2.4: Wetland Functions and Values*, accessed November 12, 2024, https://www.in.gov/dnr/water/files/Sectn_2-4.pdf.

identified by three indicators: vegetation, soil, and hydrology. In order for it to be classified as jurisdictional, all three characteristics must be present during a portion of the growing season. Only then will it be considered a wetland that can be protected by the Clean Water Act[70]. Indiana also defines jurisdictional wetlands in accordance with the US Army Corps of Engineers definition, which is "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands that aren't protected on the federal level are subject to regulation on the state level.

In Indiana, wetlands are further classified into Class 1, Class 2, and Class 3 wetlands, each with different regulations to distinguish their ecological value, rarity, and extent of human impact. For a wetland to be classified as Class I, it requires that at least 50% of the wetland has been disturbed or affected by human activity or development by either removing or replacing the natural vegetation and/or modification of the natural hydrology[71]. Additionally, the wetland must support minimal wildlife, aquatic habitat, or hydrologic function because it doesn't provide critical habitat for threatened species. The wetland must also be characterized by one of the following: low species diversity, more than 50% aerial coverage of non-native invasive species vegetation, or lack of significant hydrologic function[72]. For a wetland to be classified as Class II, it requires that it supports moderate habitat or hydraulic functions, including an isolated wetland dominated by a native species. Additionally, it is generally without "the presence of; or habitat for; rare, threatened, or endangered species"[73]. For a wetland to be classified as Class III, it requires that it is one of the following rare and ecologically essential types, located in a setting undisturbed or minimally disturbed by human activity or development and that supports more than minimal wildlife or aquatic habitat or hydraulic function[74].

There are many laws at the federal and state levels regarding wetlands and wetland protection. As previously mentioned, the landmark federal law regarding wetland protection was the Clean Water Act of 1977. While the Clean Water Act wasn't made to specifically regulate

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[70] Indiana Department of Natural Resources, *Section 2.4: Wetland Functions and Values*, accessed November 12, 2024, https://www.in.gov/dnr/water/files/Sectn_2-4.pdf.
[71] Indiana Department of Environmental Management, *Guidance on Class Determination for State Regulated Wetlands*, accessed November 12, 2024, https://www.in.gov/idem/wetlands/files/state_regulated_guidance_class_determination.pdf.
[72] Ibid.
[73] Ibid.
[74] Ibid.

wetlands, several sections specifically focus on wetland protection. Section 404 established a program to regulate the discharge of dredged or fill material into WOTUS, including wetlands[75]. Activities regulated under this section include projects requiring filling land for development, infrastructure projects like highways, water resource projects, and mining projects. Section 404 requires a permit for any proposed activities that have a potential impact[76]. Permits are given out by the US Army Corps of Engineers (Corps) and overseen by the EPA before any dredged or fill materials can be put into WOTUS[77]. The program was created to prevent any and all filling/dredging of wetlands if there is an existing alternative that does less damage to the aquatic area or if the WOTUS would be significantly damaged.

Additionally, on the federal level, the Swampbuster program was introduced in the 1985 Food Security Bill as a part of the Wetland Conservation Compliance Provisions[78]. The program was enacted to discourage agricultural activity on converted wetlands and discourage farmers from converting wetlands into agricultural land. As determined in the 1985 bill, any activity that improves or creates drainage, land levels, fills, clears land, or conducts excavation is considered converting wetlands. If someone were to convert a wetland for agricultural purposes, they would not be eligible for United States Department of Agriculture (USDA) farm program benefits until the wetlands were restored[79]. USDA farm programs can have a significant impact on farmers who can benefit from them; they include provisions such as farm loans, housing assistance, rural development loans, beginner farmer loans, farmers market promotion programs, and livestock insurance[80].

At the state level, additional regulations and laws aimed to protect wetlands. In Indiana, the first adoption of a law to regulate wetlands occurred in 2004 with the passing of IC-13-18-22. This law gave authority to a state agency to regulate wetlands and created a definition of

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[75] United States Environmental Protection Agency, "Permit Program under CWA Section 404," *EPA*, accessed November 12, 2024, https://www.epa.gov/cwa-404/permit-program-under-cwa-section-404.
[76] Ibid.
[77] Indiana Department of Natural Resources, *Section 2.4: Wetland Functions and Values*, accessed November 12, 2024, https://www.in.gov/dnr/water/files/Sectn_2-4.pdf.
[78] Natural Resources Conservation Service, "Wetland Conservation Provisions," *United States Department of Agriculture*, September 2022, https://www.nrcs.usda.gov/sites/default/files/2022-09/nrcs141p2_034361.pdf.
[79] Ibid.
[80] United States Department of Agriculture, "Grants and Loans," *USDA*, accessed November 12, 2024, https://www.usda.gov/topics/farming/grants-and-loans#:~:text=FSA%20makes%20direct%20and%20guaranteed,feed%2C%20seed%2C%20and%20supplies.

wetlands consistent with the federal agencies' definition[81]. Most of these regulations align with Indiana's "No Net Loss/Net Gain" goal adopted by the Department of Environmental Management (IDEM). The goals are to promote a net gain in high-quality isolated wetlands while assuring that mitigation efforts will offset loss in isolated wetlands. The Indiana Department of Management regulates all state-regulated wetlands in Indiana. Those wetlands don't fall under the jurisdiction of the EPA under the CWA. In Indiana, federally protected wetlands are regulated by IDEM under section 401 of the CWA[82]. IDEM regulates state wetlands and issues permits under a series of regulations that are dependent on the wetlands classification. Additionally, some wetlands are regulated under the Flood Control Act by the Indiana Department of Natural Resources, allowing them to require mitigation for a loss of wetlands in floodways[83]. Under the IC-13-18-22, people who wish to construct on state-regulated wetlands must get a permit from the state before beginning any action that could significantly impact the wetlands. These are actions such as filling, dredging, and other modifications to the land. The restrictions are different depending on the classification of the wetland, with the strictest regulations reserved for Class II and Class III.[84]

Prior and Continued Erosion of Indiana's Wetlands

The wetlands of Indiana have undergone a lengthy history of degradation and removal as a result of farming, industry development, and other influences. At one point in time, approximately 25% of all land in Indiana was wetlands. Today, 85% of those wetlands have been drained, and in the two years following House Bill 1383, 250 acres of wetlands have been lost. In other words, storage capacity for 400 million gallons of water has been destroyed in just two years.[85] While the wetlands of Indiana continue to experience degradation today, the start of the state's gradual decline in the natural habitat can be dated back to as early as the 1800s.

The majority of Indiana's wetlands are considered forested habitats, and thus have proved resourceful in the lumbering industry. Early settlements cleared trees of forested wetlands,

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[81] "Indiana State Wetland Program Summary," *National Association of Wetland Managers*, August 31, 2015, https://www.nawm.org/pdf_lib/state_summaries/indiana_state_wetland_program_summary_083115.pdf.
[82] Ibid.
[83] Ibid.
[84] "State Regulated Wetlands Program," *Indiana Department of Environmental Management*, accessed November 13, 2024, https://www.in.gov/idem/wetlands/information-about/state-regulated-wetlands-program/.
[85] Kennett, Jayden. 2024. "Controversial Indiana Wetlands Bill Could Have Local Effects." *Daily Journal* (blog). February 7, 2024. https://dailyjournal.net/2024/02/07/controversial-indiana-wetlands-bill-could-have-local-effects/.

harvesting the timber for its high value, as well as for construction materials and fuel.[86] This process of deforestation can have negative impacts on wetlands by decreasing its water quality and increasing flooding.[87] The primary driving force behind wetland degradation in Indiana during its early years as a state, however, was the agricultural industry. During the 1800s, wetlands were "tiled" to lay the land for the tending and harvesting of crops. In other words, large, ceramic drainage pipes were laid several feet under wetlands to remove excess soil and increase air space within the ground for improved soil conditions. By the year 1882, Indiana's wetlands had over 30,000 miles of drainage tiles installed in its environments. The process of tiling converts essential habitats to farming land, and in turn, endangers native wetland plants and animals.[88] In Indiana, there are currently 30 federally listed endangered, threatened, or candidate species. Of these 30 species, 15 are classified as wetland species.[89]

In the 1850s, Indiana had experienced major population growth that amplified the degradation and conversion of wetlands. The year 1816 documented a sparse population of 65,000, which strikingly opposed the 1,000,000 inhabitants in the following 50 years.[90] By the 1850s, Indiana was home to several cities, and required more housing, transportation methods, farming, and, ultimately, more land. This excessive usage of land primarily driven by population growth has degraded wetlands in many ways. The construction of residential homes and other structures often involved the clearing and removal of wetlands, in turn endangering wildlife, limiting water storage capacity, and a decline in water quality.[91] A prime example of this is the Kankakee Grand Marsh removal. One of the largest wetland systems in the U.S. during the 1800s that stretched from South Bend, Indiana to the Illinois-Indiana border, the Kankakee Grand Marsh covered more than 500,000 miles of land.[92] However, in an effort to free up land for homesteads, farmland, and residential developments, the entirety of the marsh was drained

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[86] "Hoosier National Forest - History & Culture." n.d. Accessed November 6, 2024. https://www.fs.usda.gov/detail/hoosier/learning/history-culture/?cid=FSEPRD576369.
[87] "Wetland Loss/Degradation | UNDRR." 2023. June 7, 2023. https://www.undrr.org/understanding-disaster-risk/terminology/hips/en0016.
[88] "Our Land, Our Literature: Environment - Wetland Destruction." n.d. Accessed November 6, 2024. https://www.digitalresearch.bsu.edu/landandlit/Environment/Issues/Wetland_destruction.html.
[89] "Indiana Ecological Services Field Office | Species | U.S. Fish & Wildlife Service." n.d. Accessed November 12, 2024. https://www.fws.gov/office/indiana-ecological-services.
[90] "Wayback Machine." 2001. December 12, 2001. https://web.archive.org/web/20011212170351/http://www.census.gov/geo/www/cenpop/statecenters.txt.
[91] "History of Wetlands in the Conterminous United States." n.d. Accessed November 6, 2024. https://water.usgs.gov/nwsum/WSP2425/history.html.
[92] Cain, Stephanie. 2019. "Everglades of the North." *General Lew Wallace Study & Museum* (blog). April 26, 2019. https://www.ben-hur.com/everglades-of-the-north/.

through the process of dredging. By 1917, only 1% of the marsh still remained.[93] However, urbanization affects wetlands in more ways than simply removal. Rapid infrastructure development and urbanization has been linked to excess runoff, which pollutes wetlands and is a primary threat to the habitats. Primary pollutants that can enter wetland's waterways include road salts, human sewage, fertilizers, pesticides, and more. While wetlands function to filter out runoff before entering other bodies of water, these pollutants can greatly harm wetland species, and have the ability to accumulate in wetland sediments, thus negatively affecting water quality.[94]

A major catalyst in the degradation of Indiana wetlands (and wetlands everywhere) is climate change. In Indiana, temperatures have increased by 1.2 degrees Fahrenheit since 1895, and are projected to increase by 6-10 degrees by the end of the century. This increase in temperature has the ability to affect evaporation rates and drought stress, ultimately changing groundwater and soil infiltration rates. Increases in temperatures also increase the amount of algae and bacteria in water, decreasing the overall quality of wetland water.[95] Precipitation throughout the Midwest has also increased, with the average annual rate increasing to 5.6 inches. Thus, more extreme rainfall events are expected in Indiana, which can negatively impact flooding rates, surface runoff, and soil moisture. Flooding and erosion from heavy rainfall can greatly impact wetlands by decreasing water quality as a result of nutrient deposition and sedimentation.[96]

Constituencies in Favor of Conservation

A significant number of constituents do not want the state's wetland protections weakened, with a 2021 state-wide poll – conducted by Audubon Great Lakes – demonstrating that 49% of Indiana voters favor stronger protections and 45% of voters prefer to maintain the

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[93] "Indiana's Everglades: Why Water Is Flowing Again in the Midwest's Dried-out Swamps." *Medill Reports Chicago* (blog). March 8, 2022. https://news.medill.northwestern.edu/chicago/indianas-everglades-why-water-is-flowing-again-in-the-midwests-dried-out-swamps/.

[94] Bowman, Katie Wiseman and Sarah. n.d. "Indiana Wetlands Are under Attack Again. Here's Why Environmentalists Keep Fighting." The Indianapolis Star. Accessed November 6, 2024. https://www.indystar.com/story/news/2024/01/22/indiana-wetlands-importance-hb-1403-epa-idnr/72266126007/.

[95] Park, Alice. "Deadly Waterborne Bacteria Are Surging Due to Climate Change." Time, March 23, 2023. https://time.com/6265189/vibrio-vulnificus-spreading-climate-change/.

[96] Widhalm, M. et al., 2018. Indiana's Past & Future Climate: A Report from the Indiana Climate Change Impacts Assessment. Purdue Climate Change Research Center, Purdue University. West Lafayette, IN. https://purdue.ag/climatereport

state's protections; however, the members of the Indiana state government have been systematically weakening the state's wetland protections.[97] A coalition of state Republicans proposed and passed House Bill 1383, which has demoted some Class III wetlands to less protected Class II status. Republicans argued that this bill would expedite the permit process and subsequently save voters' money. Democrats and environmental groups, conversely, pushed back against the bill due to the harm it would pose to the wetlands.[98] The Senate passed the bill 32-17, with mainly Democrats and some Republicans opposing it. While Republicans argue that lessening wetland protections will result in lower housing prices, Democrats and environmentalists argue that the effects of destroying wetlands will accumulate long-term costs, offsetting the ostensible financial savings in regards to housing. However, this issue does not have to be partisan. Most of the state, Democrat and Republican, do not want protections to be reduced. It is vital that the Indiana government reflect what their constituents want, particularly on bipartisan issues. Not only are wetland protections popular with constituents, but there are also several economic benefits. Wetlands absorb water and thus prevent flooding, which is essential as Indiana continues to experience more extreme weather events and flash floods. A study conducted by Purdue University put streamflow gauges around Indiana to test flooding increases. The 30-year study showed 98 out 109 streamflow gauges showed an increase in streamflow with disproportionate increases in central Indiana.[99] Additionally, wetlands help filter and clean water. They are also responsible for recharging groundwater resources, which is important for Indiana.[100] Rolling back wetland protections will only benefit building companies, while most homeowners and constituents feel the effects.

Conclusion and Recommendations

Based on this paper's findings, Indiana would benefit from expanding coverage of wetlands by creating a more inclusive definition of what constitutes a Class II and Class III

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[97] "Indiana Poll Reveals Strong Bipartisan Support for Protecting Wetlands," Audubon Great Lakes, September 27, 2023, https://gl.audubon.org/news/indiana-poll-reveals-strong-bipartisan-support-protecting-wetlands.
[98] "Bill Further Rolling Back Indiana Wetland Protections Is First to Land on Governor's Desk," Indiana Capital Chronicle, February 7, 2024, https://indianacapitalchronicle.com/2024/02/07/bill-further-rolling-back-indiana-wetland-protections-is-first-to-land-on-governors-desk/.
[99] Human and Environmental Center, What Is Flooding? A Current Look in Indiana and Beyond, May 22, 2024, https://www.hecweb.org/2024/05/22/what-is-flooding-a-current-look-in-indiana-and-beyond/.
[100] Kara Berg, "Indiana Wetlands and Their Importance: HB 1403 and the EPA," Indianapolis Star, January 22, 2024, https://www.indystar.com/story/news/2024/01/22/indiana-wetlands-importance-hb-1403-epa-idnr/72266126007/.

protected wetland. By encompassing a comprehensive range of wetlands under a state-recognized preservation framework, Indiana can mitigate the status quo of inconsistent enforcement that has exacerbated the degradation of wetlands. As aforementioned, the advantages that would derive from an inclusive definition – and, by extension, broader coverage – include protecting food security, water storage capacities, and biodiversity. These implications extend to economic productivity as well, as fewer state resources would need to be allocated to reactively combating flooding and subsequent damages to infrastructure due to wetlands serving the ecological function of a natural inhibitor against flooding. Furthermore, the benefits to agricultural output through filtering runoff, facilitating a sustainable lumber industry, and bolstering tourism illustrate how the multiplier effect would be utilized to fiscally stimulate the Indiana economy through the conservation of wetlands.

Analyzing the strengths and shortcomings of neighboring states' wetland protection mechanisms, Indiana should extrapolate elements of Iowa, Michigan, and Wisconsin's frameworks as models for initiatives that would effectively supplement expanded coverage. Specifically, Iowa's Wetland Program Plan cohesive outlining of Monitoring and Assessment, Voluntary Restoration and Protection, Regulatory Standards, Water Quality Standards, and Education collectively contribute to wetland identification and erosion tracking, enabling lawmakers and agencies to successfully monitor the robustness of the state's wetlands and proactively address issues threatening conservation. After broadening the definition of Class II and III wetlands, a multilevel system of identification and coordination would optimize enforcement across Indiana. Moreover, Michigan's delegation of regulatory authority to local governments under Part 303 empowers communities to protect smaller wetlands while simultaneously granting municipalities the jurisdiction necessary to tailor preservation mechanisms to the specific needs of local wetlands. Indiana would benefit from adopting a similar federalist approach to delegating responsibility of wetland protections in conjunction with an aforementioned state-wide monitoring program to ensure oversight and effectiveness. Wisconsin would provide a final model through its bipartisan acknowledgment of the need for wetland conservation – a prerequisite for generating the political will necessary for passing ecologically-conscious legislation and ascertaining the annual economic value derived from Wisconsin's regulatory framework.