



ROB SUMMERFIELD

STATE REPRESENTATIVE • 67th ASSEMBLY DISTRICT

April 15, 2021

Representative Kitchens, Chair
Representative Tusler, Vice-Chair
Members of the Assembly Committee on Environment

Testimony on 2021 Assembly Bill 209

Relating to: biomanipulations to improve the water quality of lakes and impoundments and making an appropriation

Dear Chairman Kitchens, Vice-Chair Tusler, and Committee Members:

Thank you for providing me with the opportunity to testify at today's public hearing on Assembly Bill 209.

Biomanipulation is the deliberate altering of an ecosystem by humans through adding or removing species; chiefly prey. This can cause a shift in predator/prey populations of an area which has an effect on the entire food chain and ecosystem.

Many of the impaired lakes and impoundments in Wisconsin have an excess amount of phosphorus and other nitrates. Bottom-feeding fish (ex: carp), and phytoplankton thrive in these conditions and create harmful algal blooms (HABs). Sedentary bodies of water rarely have their ecosystems change organically; thus, even if/when outside phosphorus/nitrate sources are reduced or eliminated, there can still remain a vicious cycle of ever-increasing bottom-feeding fish and phytoplankton populations.

In these situations, however, biomanipulation can be used as an ecological tool for water quality management when larger amounts of predatory game fish (ex: bass, pike) that feast on bottom-feeding fish are introduced into the lake or impoundment. As bottom-feeding fish decrease, rooted vegetation, beneficial zooplankton, and water clarity and quality increase.

This process has been successfully implemented before; such as with Lake Finjasjon in Sweden, Lake Vesijärvi in Finland, Big Wall Lake in Iowa, and Wingra Lake right here in Madison.

AB 209 creates a one-time, \$150,000 competitive grant application process to fund water quality improvement projects using biomanipulation on impaired lakes and impoundments across Wisconsin. This type of eco-science has the potential to transform how our state addresses water quality issues moving forward, so I thank you again for your time and careful consideration of this impactful legislation.



From: Senator Kathy Bernier
To: The Assembly Committee on the Environment
Re: Testimony on Assembly Bill 209

Relating to: biomanipulation projects to improve the water quality of lakes and impoundments and making an appropriation

Date: April 15, 2021

Chairman Kitchens and members of the committee, thank you for hearing Assembly Bill 209 today. This bill came out of the Speaker's Task Force on Water Quality and is one of many tools that we would hope to give the people of Wisconsin when addressing water quality issues in our many waterways.

Assembly Bill 209 would create a one-time grant allocation to fund water clean up projects using biomanipulation in the state. Biomanipulation is the process of introducing or removing species in the lake's ecosystem in order to reduce algae blooms and other hazards that are harmful to water quality. The DNR is already able to do these projects under current law, this bill would just provide the Department with resources to help lake groups that want to use this method as a means of cleaning up their lake.

Everyone understands that biomanipulation is not a silver bullet for improving water quality in every situation, but it has proven to be a critical step in many challenging lakes and waterways across the globe. The more we can find out about it and its effectiveness, the more Wisconsin lakes can be rehabilitated.

For a relatively small investment, we can see what sort of results we can achieve using this scientific method to help lakes get healthy. I hope you will join me and Representative Summerfield in supporting Assembly Bill 209 and ensuring that everyone has access to clean, healthy water in Wisconsin.



Assembly Committee on Environment

2021 Assembly Bill 209

Bio-manipulations to improve the water quality of lakes and impoundments and making an appropriation
April 15, 2021

Good afternoon Chair Kitchens and members of the Committee. My name is Todd Kalish, and I am the Deputy Bureau Director for the Bureau of Fisheries Management. I am joined today by Carroll Schaal, Lakes and Rivers Section Chief with the Bureau of Water Quality. Thank you for the opportunity to testify, for informational purposes, on Assembly Bill 209 (AB 209), related to bio-manipulations to improve the water quality of lakes and impoundments and making an appropriation.

AB 209 would provide an additional funding source for bio-manipulation studies and activities with the overarching goal of improving water quality for lakes and impoundments on the impaired waters list. While the Department of Natural Resources periodically conducts bio-manipulation projects for various purposes, including enhancing sport fisheries and rehabilitating aquatic ecosystems, this bill would create a new appropriation to assist local water improvement groups in conducting similar projects specifically for improving water quality. Local water improvement groups would conduct these projects under the oversight of the department.

The new appropriation could benefit waters of the state by allowing more work to be conducted on certain impaired waters that the department alone cannot accomplish with current funding or staffing levels. This would also allow local water improvement groups to assume a greater role in management of the waters in their communities. However, the department cautions that bio-manipulation may not be efficient or effective at improving water quality on waters with excessive nutrient or pollutant inputs, without concurrent reduction of those inputs. Experience and research suggest that bio-manipulation may also be less successful on shallow waterbodies connected to flowing waters due to an increased risk of recolonization by detrimental fish species. In addition, anoxic conditions could limit the success of fish introductions aimed to control undesirable fish species.

Some bio-manipulation projects, namely those involving the removal or addition of fish, could impact angler activity on the water. This could lead to a perception of user conflict if anglers feel excluded from any plans to remove fish by methods other than fishing, especially if game fish such as overabundant panfish are considered to be detrimental in the waterbody, or on waters with high angler harvest pressure on stocked piscivorous fish. Outreach and education to anglers in the vicinity of the waterbody could help reduce any concerns and increase public buy-in.

The DNR estimates that the proposed one-time appropriation of \$150,000 would fund bio-manipulation projects on one to two waterbodies during the biennium. To ensure that the projects are feasible for meeting the goal of improved water quality, the department could utilize an existing surface water grants

program to administer these grants, which would draw from a pool of eligible applicants and would require a formal plan to be submitted with the application materials. Grants could also be solicited and awarded for surveys, studies, and developing plans for biomanipulation projects. The department could publish an announcement soliciting applications for biomanipulation projects, including the screening process and procedures for monitoring grant activities, in its annual grant application guidance. These processes would entail collaboration between the Bureaus of Fisheries Management, Water Quality, Watershed Management, Office of Applied Science and potentially other DNR programs. Costs associated with implementing this bill would include staff time to create the needed guidance, review applications, process grants, participate in public outreach efforts at the request of local water improvement groups, and oversee grant project activities, as well as to ensure that the project is supported by biological survey data and management plans.

We would like to thank the authors of this bill for acknowledging our comments on last session's Assembly Bill 798, which required projects to include both zooplanktivorous and benthivorous fish removal and piscivorous fish introductions, as well as comprehensive fish studies, to be eligible for a grant. While Assembly Bill 209 would require the department to prioritize projects that include all three activities, the bill allows for a combination of fish removals or introductions and comprehensive fish studies. We appreciate the additional flexibility in this bill, which would allow the department to also consider projects that encompass other types of ecological activities that may achieve water quality goals, such as water level management, in addition to the specified biomanipulation activities. Such flexibility will expand the pool of local water improvement groups that may be eligible to apply for this grant.

On behalf of the Department of Natural Resources, we would like to thank you for your time today. We would be happy to answer any questions you may have.

Representative Rob Summerfield
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This testimony is in support of Biomanipulation Bill 209.

Dear Committee Members,

My name is Dr. Scott McGovern I am a researcher in cyanobacteria mitigation and the public health concerns that these organisms pose by the toxins they produce. Most of the lakes that are stated as having an algae problem are affected by cyanobacteria, which is a bacterium that performs photosynthesis. Most watershed and lake mitigation techniques emphasize the reduction of phosphate from agricultural runoff because nutrients such as nitrate and phosphate support cyanobacteria growth. However, cyanotoxins produced by cyanobacteria have killed dogs as well as other domesticated animals, wildlife and caused serious human illness, and in my opinion, are the more direct immediate concern. Phosphate remediation in agriculture is important but will take a considerable investment in time ranging from decades to centuries before any reduction in cyanobacteria can occur (Sharpley et. al.,2014). Therefore, in the meantime, something must be done now to reduce cyanobacteria on lakes that have permanent residents and are used for recreation. Consequently, I have been interested in an approach to watershed mitigation that implements multiple techniques. I have done research myself and read thousands of articles in scientific research and have found biomanipulation to be very promising.

Biomanipulation itself utilizes multiple techniques without poisons and other harmful chemicals. The process is referred to in the scientific literature as “nature-based solutions that jointly benefit the environment, society and the economy” (Triest et. al., 2015). The natural process of reducing zooplanktivorous and benthivorous fish to increase zooplankton grazing on cyanobacteria has been effective in lakes around the world. Stocking piscivorous fish often consists of increasing the predator fish like bass, walleye, and muskie and the zooplanktivorous and benthivorous fish can be removed from the list in Wisconsin Act 180 Assembly Bill 377 concerning rough fish without removing any economically important fish species. Zooplankton such as daphnia, copepods, and seed shrimp consume photosynthetic organisms, therefore; increasing zooplankton reduces cyanobacteria improving water quality. The technique increases desirable fish populations, increases water clarity by bringing the lake ecosystem back into balance restoring it to its natural state. In thirty-four whole-lake studies using fish reduction and piscivore stocking were done on hypereutrophic lakes or lakes very high in phosphate and nitrate (Triest et. al., 2015). Many of the successful studies have implemented multiple techniques associated with biomanipulation such as increasing macrophyte-lake-coverage (large aquatic plants), increasing zooplankton, increasing other filter-feeding animals, short-term nutrient precipitation, and pH dynamics. Many new ideas leading to substantial improvements in biomanipulation have been discovered since Joseph Shapiro et.al. first introduced the idea in 1975. For example, in lake impoundments that have substantial flow, the technique of utilizing



**WISCONSIN LEGISLATIVE COUNCIL
ACT MEMO**

2011 Wisconsin Act 180 [2011 Assembly Bill 377]	Rough Fish
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2011 Wisconsin Act 180 designates Asian carp as rough fish and allows the taking of rough fish by crossbow.

DEFINITION OF ASIAN CARP AS "ROUGH FISH"

Background

The statutes recognize two categories of fish that are not game fish. Under the authority of s. 29.424, Stats., the Department of Natural Resources (DNR) has declared that all species of fish that are not indigenous to the state are *nonindigenous detrimental species*. As such, the Asian carp is a detrimental species. There is no closed season on any waters of the state for taking nonindigenous detrimental fish. However, a person may only take these species by hook and line. Further, a person may only take one fish, and must immediately kill the fish and deliver it to the DNR.

The second category, *rough fish*, is not precisely defined, but s. 29.001 (74), Stats., specifies that the term *includes* "suckers, not listed as endangered or threatened under s. 29.604 (3), common carp, goldfish, freshwater drum, burbot, bowfin, garfish, sea lamprey, alewife, gizzard shad, rainbow smelt and mooneye." In general, there is neither a closed season nor a bag limit for the taking of rough fish. Rough fish may be taken by hook and line, by hand, by dip net, and by spear, which includes bow and arrow.

Many species of both categories are also treated as *invasive species* under s. 23.22, Stats. Of pertinence for this Memo, no person may transport any live specimen of an invasive species.

2011 Wisconsin Act 180

The Act amends the definition of "rough fish" by adding Asian carp to the list of included species. The result of this is to remove Asian carp from the strict regulations that apply to the taking of

This memo provides a brief description of the Act. For more detailed information, consult the text of the law and related legislative documents at the Legislature's Web site at: <http://www.legis.state.wi.us/>.

nonindigenous detrimental fish species and apply instead the much more lenient regulations that apply to the taking of rough fish.

ALLOWING THE TAKING OF ROUGH FISH BY CROSSBOW

Under *prior law*, if the DNR adopts rules that establish an open season for taking rough fish with a bow and arrow on a particular body of water, the rules must allow that activity at night. [s. 29.405 (3), Stats.] *The Act* expands this provision to refer also to taking rough fish with a crossbow. The Act further specifies that, if the DNR establishes an open season for taking rough fish with a bow and arrow on a particular body of water, the rules must allow the taking of rough fish with a crossbow under the same terms as it allows the taking of rough fish with a bow and arrow.

Under *prior law*, a person who takes rough fish with a bow and arrow must equip the arrows with a metal barbed tip and a tethered line that allows the retrieval of the rough fish. Also under prior law, a person may not release a rough fish back into the water or leave them on the banks or ice of the water, regardless of whether the fish is living or dead. Rather, the person must remove the rough fish and dispose of it in an appropriate manner. [s. 29.405 (1) and (2), Stats.] *The Act* extends these requirements to the taking of rough fish by crossbow.

Prior law prohibits the shining of wild animals and creates a rebuttable presumption that a person casting the rays of light on a field, forest or other area which is frequented by wild animals is shining wild animals. Prior law further prohibits the use or possession with intent to use a light for shining wild animals while the person is hunting or in possession of a firearm, bow and arrow or crossbow and the use or possession with intent to use a light for shining wild animals between 10 p.m. and 7 a.m. from September 15 to December 31, but provides an exception to these prohibitions for a person who possesses or uses a light while using a bow and arrow for taking rough fish. [s. 29.314, Stats.] *The Act* extends this exemption to a person who possesses or uses a light while using a crossbow for taking rough fish.

In general, it is prohibited to discharge a firearm or shoot a bolt or an arrow from a bow or crossbow from or across a highway or within 50 feet of the center of a roadway. *Prior law* allows a person who is fishing with a bow and arrow to shoot an arrow within 50 feet of the center of a roadway if the person does not shoot the arrow from the roadway or across a highway. [s. 167.31, Stats.] *The Act* extends this exception to the use of crossbows.

Effective date: April 17, 2012

Prepared by: David L. Lovell, Senior Analyst

April 9, 2012

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