

Attack of the Invasive Carp: Why Asian Carp are Devastating to Kentucky and What the Commonwealth Can Do to Fight Against Them.

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INTRODUCTION

Invasive species are one of the largest threats to both the ecological status of local environments and local economies.¹ For example, one species, “Asian Carp,” have infiltrated American waterways, threatening the environmental stability and economic prosperity of impacted states.² Throughout Kentucky, these carp pose a major threat to the commercial and sport fishing industries.³ B.A.S.S. Conservation Director Gene Gilliland has warned the Asian carp population is at a tipping point to completely overtake native fish populations.⁴ However, now that Asian carp have been introduced into American Waterways, complete eradication is no small task.⁵ These carp pose threats to the economic prosperity of the Commonwealth and the environmental stability of waterways and watersheds.⁶ In order to combat this threat, Kentucky should declare reduction in the Asian carp population the primary focus of its environmental policy, ensure adequate funding from state and federal governments is allocated to programs which combat the invasive species, expand the use of well-tested programs in the fight against Asian carp, and consider programs that have succeeded in other states to be adopted in the Commonwealth.

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¹ See *Invasive Species*, NAT'L WILDLIFE FED'N <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Threats-to-Wildlife/Invasive-Species> (last viewed Oct. 19, 2020) [<https://perma.cc/8USN-3YJL>].

² *Asian Carp Information*, KY. DEP'T OF FISH & WILDLIFE RES. <https://fw.ky.gov/Fish/Pages/Asian-Carp-Information.aspx> (last viewed Oct. 19, 2020) [<https://perma.cc/3GN2-CREK>].

³ Dave Precht, *Kentucky Lake's Asian carp crisis*, BASSMASTER (Sept. 28, 2018) <https://www.bassmaster.com/conservation-news/kentucky-lake-s-asian-carp-crisis> [<https://perma.cc/9A5V-B7DT>].

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

The effects of an unchecked Asian carp population on Kentucky waterways could be catastrophic. As the invasive population overwhelms native fish populations, it is capable of outbreeding native species and consuming much of their food.⁷ This would not just massively damage the Commonwealth's environment, but also important industries which make use of Kentucky's aquatic resources.⁸ Asian carp also have a dangerous tendency to leap out of the water when frightened by loud noises—such as a boat passing overhead.⁹ As the fish are so large, they can leap out of the water and cause severe injuries to both boats and people.¹⁰

Fortunately, if swift action is taken, the effects of Asian carp on the environment and economy can be mitigated. Through the use of regulations and statutes, the Commonwealth has already begun to fight against the threat of Asian carp. Further, some programs have already been implemented to foster a working relationship between the Commonwealth and the private sector in the fight against Asian carp.¹¹ However, by itself, this is not enough and the Commonwealth should implement additional methods to fight against Asian carp. Kentucky reimplement former, cost-effective programs—which have fallen by the wayside in recent years—and create new programs to drive up awareness of this issue. Further, and perhaps most importantly, Kentucky should learn how other states have attempted to solve their Asian carp crises and apply these lessons to the Commonwealth's own fight against the invasive species. So long as the Commonwealth takes appropriate measures to head off the Asian carp threat before it becomes untenable, Kentucky waterways should remain stable. If not, the situation could quickly turn grim.

This Note is divided into five distinct parts in its analysis of the Asian carp problem. The first four parts will address the Asian carp crisis and provide various solutions to the issue while the fifth part will serve as a general conclusion. Part I analyzes the threat that Asian carp present to the Commonwealth in three major sections: (1) environmental impact unchecked Asian carp populations can cause, (2) economic devastation, which could be

⁷ See Precht, *supra* note 3.

⁸ See KY. DEP'T OF FISH & WILDLIFE RES., *supra* note 2.

⁹ See Precht, *supra* note 3.

¹⁰ *Id.*

¹¹ See KY. DEP'T OF FISH & WILDLIFE RES., *supra* note 2.

unleashed in western Kentucky, and (3) potential health and safety hazards for people on the water. Part II discusses funding for Commonwealth programs to fight against Asian carp, particularly looking at how the Commonwealth should request federal funds and how the Commonwealth should attempt to alleviate the burden of state level funding. Part III of this Note looks at regulations already enacted by the Commonwealth as well as programs put in place by executive and legislative agencies. Further, this part evaluates the procedures which are currently in place to determine their general effectiveness and whether these programs should be continued. Part IV of this Note looks at new programs that the Commonwealth should adopt. This part is broken down into two smaller sections: (a) new programs which should be implemented or reimplemented by the Commonwealth and (b) programs which have had success in other states that the Commonwealth should consider implementing. Finally, this Note ends with a general conclusion which provides a reiteration of all the previous points made within this Note.

I. WHY THE ASIAN CARP SHOULD BE A FOCUS OF COMMONWEALTH POLICY

A. Background of Asian Carp in the United States and the Commonwealth

As invasive species tend to do, the variety of carp that are classified as “Asian Carp” have had a major negative impact on the Commonwealth’s environment as well as its overall economic status.¹² Asian carp come in four major varieties: (1) bighead carp, (2) black carp, (3) grass carp, and (4) silver carp.¹³ The carp were originally brought into the United States to be used for cleaning in aquaculture ponds.¹⁴ At the time, biologists thought that the carp would be better for the environment than previously used pesticides.¹⁵ However, due to flooding and accidental releases,

¹² *Id.*

¹³ Press Release, James Comer Representing Kentucky’s 1st District, Congressman Comer Testifies on Funding to Combat Asian Carp (Mar. 27, 2019) <https://comer.house.gov/media/press-releases/congressman-comer-testifies-funding-combat-asian-carp> [<https://perma.cc/35L2-NTSV>].

¹⁴ *See* Precht, *supra* note 3.

¹⁵ *Id.*

these fish were able to enter the Mississippi River.¹⁶ Asian carp then used the river to branch out into other waterways.¹⁷ The first documented appearance of grass carp was in 1974.¹⁸ Over the years, other varieties of Asian carp have slowly snuck their way into Kentucky waterways, with the most recent sighting of a new Asian carp species spotted in Lake Barkley in 2017.¹⁹ Asian carp have almost reached the Great Lakes in significant numbers, which has made them a concern not just in Kentucky but also in states that rely on the Great Lakes for fishing.²⁰ Further, the carp are able to travel through Kentucky and reach important waterways in Tennessee—which could also lead to immense damage in that state.²¹

B. Environmental Consequences of Continued Asian Carp Spread

The environmental impact of Asian carp on Kentucky waterways cannot be understated. The primary concerns with Asian carp are threefold: (1) they rapidly outbreed native species of fish in the Commonwealth, (2) they have no natural predators, and (3) they feast on smaller fish which are vital to the food chains in Kentucky waterways.²² Female Asian carp can lay nearly 5 million eggs at a time.²³ This allows the Asian carp population to rapidly explode wherever they are able to lay their eggs.²⁴ Asian carp quickly outgrow many predators, often within the first year.²⁵ The biggest of the Asian carp, known as the “bighead carp,” can grow to over 110 pounds.²⁶ Bighead and silver carp eat vital plankton—which are the primary food source for various forms of

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Protecting our Waterways: Examining Federal Efforts to Control Asian Carp in Kentucky*, U.S. DEPT. OF THE INTERIOR (July 27, 2018), <https://www.doi.gov/oc/asia-carp-control-0> [https://perma.cc/36WF-4DZN].

¹⁹ *Id.*

²⁰ Travis Loller & John Flesher, *Asian carp roundup in Kentucky opens new front in battle*, ABC NEWS (Feb. 12, 2020, 1:00 pm) <https://abcnews.go.com/US/wireStory/asia-carp-roundup-kentucky-opens-front-battle-68931982> [https://perma.cc/XS9Q-XPJR].

²¹ Precht, *supra* note 3.

²² *See generally* KENTUCKY DEPT OF FISH & WILDLIFE RES., *supra* note 2.

²³ Loller & Flesher, *supra* note 20.

²⁴ *Id.*

²⁵ Tony Gabriel, *Great Lakes Sea Grant Network Releases Comprehensive Report on Asian Carp Prevention*, OHIO STATE UNIV. (Nov. 2, 2017, 12:08 pm) <https://ohioseagrant.osu.edu/news/2017/7p0kn/asia-carp-report> [https://perma.cc/V33P-92T7]

²⁶ *See* Loller & Flesher, *supra* note 20.

aquatic life.²⁷ Black carp tend to feast on endangered mussels and snails.²⁸ Grass carp eat aquatic vegetation on river and lake beds, which can change aquatic habitats.²⁹ These carp also eat the eggs and larvae of species that are endangered, which could eventually lead to the extinction of these endangered species.³⁰ The negative impacts of these carp on local wildlife has already been seen, as sonar has found that areas which usually team with bass have been completely overtaken by Asian carp.³¹ With native fish populations having been thinned due to the invasion of Asian carp, there has been a reduction in the food supply for waterfowl in Kentucky.³² Asian carp clearly harm native fish populations and local habitats which—if the Commonwealth does not take a strong stand against—could have widespread consequences for the state’s environment for years to come.

C. Economic Consequences of Continued Asian Carp Spread

Economically, the introduction of Asian carp into Kentucky waterways has been disastrous for commercial fishing. In particular, Kentucky Lake and Barkley Lake have been economically injured due to the ever-increasing prevalence of Asian carp in these watersheds.³³ Of the \$1.2 billion that fishing tourism in western Kentucky contributes to the Commonwealth’s economy, Kentucky and Barkley Lake alone contribute 700 million dollars collectively.³⁴ In 2019, fishing tourism decreased by 75 percent at both of those lakes thanks to the invasive carp.³⁵ Fishing tourism supports about 12 thousand jobs, which spans across approximately fifteen counties in the western water-land’s

²⁷ See Precht, *supra* note 3.

²⁸ See Gabriel, *supra* note 25.

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ Staff Report, *Local business pitching festival as weapon against Asian carp invasion*, MARSHALL CTY. TRIB. COURIER (Oct. 25, 2019), https://www.tribunecourier.com/news/local-business-pitching-festival-as-weapon-against-asian-carp-invasion/article_2c7c37ba-f769-11e9-b40d-7f1abd51da3f.html [https://perma.cc/Z3B5-3VGF].

³⁴ *Id.*

³⁵ *Id.*

region.³⁶ The concern in these lakes is that the Asian carp will outcompete the local population of bass.³⁷ Locals have stated, “[t]he lakes offer some of the best largemouth bass fishing in the United States.”³⁸ As Bighead and silver carp eat the plankton needed by bass to grow, they easily outcompete the more valuable largemouth bass.³⁹ The plague of Asian carp has led to an exodus of Kentucky fishers from Kentucky Lake.⁴⁰ Fishers in other states have also been deterred from visiting Kentucky Lake on account of the invasive species.⁴¹ Not only has the fishing industry been affected by the invasive carp, but also waterfowl hunting industries and boating industries have been negatively affected.⁴² If the Commonwealth does not take the necessary strong stance in combating the invading carp, a significant portion of western Kentucky’s economy will be devastated. This would lead to an increase in unemployment and poverty in the region.

D. Health and Safety Consequences of the Continued Spread of Asian Carp

In addition to the environmental and economic concerns surrounding Asian carp, there are also concerns for anglers on their boats.⁴³ Asian carp, when startled by loud noises, tend to leap high out of the water.⁴⁴ This can be particularly dangerous when a fishing vessel passes through a group of Asian carp, as the carp may leap out of the water and strike boats as well as fishers.⁴⁵ Being struck by an Asian carp while boating can cause serious and costly injuries. In addition to the potential harm to humans, boats can receive significant hull damage from leaping carp.⁴⁶ These

³⁶ Daryl Tabor, *Economy the main drive to eradicate Asian carp*, TIMES LEADER (Feb. 8, 2020), https://www.timesleader.net/news/local/economy-the-main-drive-to-eradicate-asian-carp/article_b3d0b81a-3f2c-5dc8-80bc-cf02f13a25d2.html [https://perma.cc/V4KY-X5R6].

³⁷ *Id.*

³⁸ *Id.*

³⁹ See generally Precht, *supra* note 3.

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ Art Lander, *Art Lander’s Outdoors: Asian carp invasion and the war to rid Ky. Waterways of these nuisance species*, N. KY. TRIB. (July 10, 2020), <https://www.nkytribune.com/2020/07/art-landers-outdoors-asian-carp-invasion-and-the-war-to-rid-ky-waterways-of-these-nuisance-species/> [https://perma.cc/JUJ5-AWMK].

⁴⁶ *Id.*

sorts of injuries, whether it is paying medical expenses or damaging fishing boats, can be costly to citizens of the Commonwealth. Therefore, it would be in the Commonwealth's best interests to combat the Asian carp infestation, if not for the previously mentioned environmental and economic dangers that the Asian carp present to the Commonwealth.

E. Summary

Allowing Asian carp to further spread into Kentucky waterways has the potential to be extremely dangerous for the Commonwealth. Kentucky's environment could be permanently changed by Asian carp overwhelming native wildlife and destroying valuable ecosystems.⁴⁷ The Commonwealth's economy could also be devastated by a loss of more than \$1.2 billion if the carp are allowed to infest valuable waterways, such as Barkley and Kentucky lakes.⁴⁸ Further, startled Asian carp can potentially be a great threat to boats and people, as the large fish jump out of the water and hit passing by boats and people.⁴⁹ Therefore, it would be in the best interest of the Commonwealth to spend significant resources to fight against Asian carp.

II. ON THE ISSUE OF FUNDING

A. Ensuring that the Commonwealth can Fund the Fight Against Asian Carp

If the Asian carp invasion were "at the tipping point" as previously mentioned, it would most certainly be in the best interest of the Commonwealth to ramp up the fight against the invading carp. Before any meaningful discussion of policy is engaged in, the conversation must begin with funding. The Commonwealth must have sufficient funds to fight against the potentially disastrous invasion of Asian carp. Perhaps the greatest concern for lawmakers is the various costs related to fighting an

⁴⁷ See Precht, *supra* note 3.

⁴⁸ See *Local business pitching festival as weapon against Asian carp invasion*, TRIB. COURIER (Oct. 25, 2019) https://www.tribunecourier.com/news/local-business-pitching-festival-as-weapon-against-asian-carp-invasion/article_2c7e37ba-f769-11e9-b40d-7f1abd51da3f.html [<https://perma.cc/KFV8-C52B>].

⁴⁹ See Precht, *supra* note 3.

invasive species.⁵⁰ Physically removing Asian carp from Kentucky waterways can be very expensive, and the currently allotted funds have already been stretched thin.⁵¹ There are two ways for the Commonwealth's budgetary concerns to be resolved: either through (1) increasing the amount of funds available, or (2) investing in inexpensive programs to fight the carp. To accomplish either, there are two primary channels for funds to be obtained: the Commonwealth can either attempt to request more funds from the federal government or Kentucky can allocate funds more efficiently through its state budget.

B. How the Commonwealth Should Request Federal Funds

While the federal government does have deep pockets, it becomes difficult for the Commonwealth to directly receive large funds. \$25 million has been allotted to all states which are suffering from the Asian carp invasion.⁵² Of this \$25 million, \$2.5 million was specifically put aside to be used by Kentucky and Tennessee to combat the then-existing Asian carp in Kentucky and Barkley lakes.⁵³ While there were some funds allocated to Kentucky, the federal government is prioritizing funding to the Great Lakes region's fight against Asian carp, as the federal government recently awarded a large grant to that region.⁵⁴ While the Commonwealth has been successful in acquiring some small federal funds, it has also been extremely effective in securing federal funding towards experimental programs. The Bio-Acoustic Fish Fence ("BAFF"), an experimental technology which attempts to deter the Asian carp through the creation of bubbles and sound while still allowing boats to pass through, has been built and is being tested in the Kentucky.⁵⁵ The BAFF was funded by the federal government to the tune of \$10 million.⁵⁶ In comparison, the most recent state budget only earmarked \$5.5 million to combating

⁵⁰ See generally Press Release, *supra* note 13.

⁵¹ *Id.*

⁵² Drew YoungeDyke, *Budget Agreement Includes Funding for Efforts to Stop Asian Carp*, NAT'L WILDLIFE FED'N (Dec. 18, 2019), <https://www.nwf.org/Latest-News/Press-Releases/2019/12-18-19-Stop-Asian-Carp> [<https://perma.cc/N8JX-W2P7>].

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Lake Barkley Bio-Acoustic Fish Fence*, U.S. FISH & WILDLIFE SERV. (2019), <https://www.fws.gov/southeast/pdf/frequently-asked-questions/lake-barkley-bio-acoustic-fish-fence.pdf> [<https://perma.cc/XC7R-7KDV>].

⁵⁶ *Id.*

Asian carp.⁵⁷ Therefore, it would be difficult for the Commonwealth's government to afford the hefty price tag which comes with the creation of such experimental programs. Therefore, the Commonwealth should pursue deals with the federal government to fund these expensive new programs and policies, as opposed to relying on the pittance that the federal government regularly hands out to fight Asian carp.

C. How the Commonwealth Should Utilize State Funds

The other method of funding that Kentucky can use to combat the Asian carp invasion comes from the Commonwealth itself. Recently, there has been conflict in the Commonwealth's legislature over whether or not funds should be allocated to funding efforts to curb the Asian carp invasion.⁵⁸ Conflicts arose between the state legislature and the governor in Frankfort over where previously earmarked funds should go.⁵⁹ In the end, the two sides came to an agreement to restore the \$5.5 million of the Commonwealth's budget to fund the fight against the invasive carp.⁶⁰ It would be best if the Commonwealth specifically allocated in the budget specific funds to fight against Asian carp to squash the threat of losing valuable funding to combat Asian carp.

As mentioned previously, failing to fight against the Asian carp would be potentially devastating to the Commonwealth's economy and would have a massive impact on the prosperity of western Kentucky.⁶¹ The Commonwealth must ensure that money is specifically allocated in the budget for the fight against Asian carp. Cost associated with construction and implementation of programs can be quite expensive.⁶² One way the Commonwealth can allocate funds to fight against Asian carp in Kentucky waterways is through subsidies for commercial anglers and fish

⁵⁷ John Shoulberg, *Asian Carp Eradication Funding Restored in Final Kentucky Budget*, THE WATERWAYS J. (May 18, 2020), <https://www.waterwaysjournal.net/2020/05/18/asian-carp-eradication-funding-restored-in-final-kentucky-budget/> [<https://perma.cc/F4LD-LHBF>].

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ See Press Release, *supra* note 13.

⁶² See generally Press Release, *supra* note 13.

processors.⁶³ The Commonwealth is already subsidizing one fish processing center to fight against Asian carp.⁶⁴ The original plans to fight against Asian carp involved three fish processing centers subsidized by the Commonwealth to take large quantities of Asian carp and process them into food.⁶⁵ The Commonwealth should look at quickly awarding two more fish processors the subsidies for the Asian carp processing program. If this can be done quickly, the Commonwealth will be able to have three fish processing centers, which can help control the Asian carp population by providing commercial fishers locations to sell their catches.

D. Summary

There are several paths which the Commonwealth should take regarding the issue of requisition and utilization of federal and state funds. The Commonwealth should continue to look towards acquiring federal funding by volunteering for experimental Asian carp population control methods, such as the Bio-Acoustic Fish Fence (“BAFF”), so long as these experimental programs do not harm species of fish and other wildlife indigenous to the Commonwealth. For state funds, the Commonwealth should allocate portions of the budget to programs which would drive up the public sector interest and involvement in helping to combat Asian carp through subsidies for industrial fish processors. As there have been conflicts between the legislature and the Governor’s office over whether to fund initiatives to fight Asian carp, it would behoove the Commonwealth to create incentives for the private sector to fight the invasive species in case the public sector were to take away funding from larger, more costly programs.

⁶³ Kevin Irons, *Illinois Department of Natural Resources Asian Carp Business Process Analysis Final Report and Action Plan*, ILL. DEP’T OF NAT. RES. (Jan. 11, 2018), <https://www.ifishillinois.org/programs/AsianCARPReport.pdf> [https://perma.cc/88VP-W6XW].

⁶⁴ *Id.*

⁶⁵ *Id.*

III. EXISTING REGULATIONS AND PROGRAMS AND THEIR EFFECTIVENESS

A. *The Commonwealth's Regulations*

The Commonwealth has adopted various statutes and regulations that have seen great success in combating the spread of Asian carp. The first and foremost of these statutes is KRS § 150.180, which controls the buying, selling, and transportation of protected wildlife.⁶⁶ KRS § 150.280(2) grants the Fish and Wildlife Department the ability to create administrative regulations which prohibit the holding or transporting of species that could be potentially dangerous to Kentucky ecosystems.⁶⁷ One of these regulations, 301 KAR 1:122, defines particular non-native fish which are not permitted to be bought, sold, possessed, imported, or released into Kentucky waterways.⁶⁸ Section 4 of the regulation mentions the four varieties of Asian carp, and provides an exception for buying, selling, importing, and possessing sterile grass carp.⁶⁹ Further, the regulation states Asian carp can be possessed, sold, and transported so long as they are not transported in water, dead, and being transported to a fish processing facility.⁷⁰ This regulation is vital in the combating Asian carp in Kentucky, as it provides the specific rules for what conduct relating to Asian carp is not permitted in the Commonwealth.

In addition to the administrative regulations, the Commonwealth has placed information on Asian carp in its yearly fishing guides.⁷¹ The Commonwealth has created informational packets for fishers which outline the steps Kentucky anglers should take when dealing with these invasive fish.⁷² In their yearly fishing guide, the Commonwealth has printed information that informs anglers on how they can prevent the spread of invasive species into new waterways.⁷³ Further, Kentucky materials note

⁶⁶ KY. REV. STAT. ANN. § 150:180 (LexisNexis 2020).

⁶⁷ KY. REV. STAT. ANN. § 150:280(2) (LexisNexis 2020).

⁶⁸ 301 KY. ADMIN. REGS. § 1:122 (LexisNexis 2020).

⁶⁹ *Id.*

⁷⁰ *Id.* § 4(2).

⁷¹ KY. DEP'T OF FISH & WILDLIFE, *Kentucky Boating and Fishing Guide: March 2020 – February 2021* (2020), <https://kentuckylakegateway.com/wp-content/uploads/2020/02/20202021fishguide.pdf> [<https://perma.cc/CD2T-ZBST>].

⁷² *Id.*

⁷³ *Id.*

that possession of live Asian carp is illegal in the state, to provide anglers with the appropriate foreknowledge.⁷⁴

B. Programs Which Have Seen Early Success and Should Therefore be Maintained

In addition to these successful statutes, regulations, and budgeting that the Commonwealth has passed, there are also several experimental programs which both the Federal Government and the Kentucky Legislature have begun to implement in Kentucky watersheds, but which should be adopted in full force. There have been several programs that the Commonwealth has adopted which have shown great promise in their ability to control the spread of Asian carp. These programs include the implementation of the “Modified Unified Fishing Method” in Kentucky waterways, the construction of a “Bio-Acoustic Fish Fence,” the Kentucky Public-Private Partnership for Asian Carp, and the Asian Carp Harvest Program.⁷⁵

The Modified Unified Fishing Method is a method for mass harvesting fish which has had great success when applied in foreign countries and in Kentucky.⁷⁶ In February of 2020, the Commonwealth performed a test of the Modified Unified Fishing method in order to determine whether the method would be effective at “[h]arvesting Asian carp herded from entire bays in Kentucky Lake,” and to determine whether using the method annually would provide Kentucky Fish and Wildlife services with data necessary to determine the amount of Asian carp in the waterways.⁷⁷ This test was deployed in two of Kentucky Lake’s bays: Smith and Pisgah.⁷⁸ With water temperatures unusually warm for February, there were some difficulties ensuring the test would be effective. Many carp were able to leap over the various nets and seines, a type of fishing net buoyed to the top of the water with weights dragging it down, used to corral the fish.⁷⁹ There were many issues getting the seines into place, as obstructions in the

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ KY. DEP’T OF FISH & WILDLIFE, *Kentucky Boating and Fishing Guide: March 2020 – February 2021* (2020), <https://kentuckylakegateway.com/wp-content/uploads/2020/02/20202021fishguide.pdf> [<https://perma.cc/CD2T-ZBST>].

⁷⁸ *Id.*

⁷⁹ *Id.*

water—both natural and manmade—caused the seines to snag.⁸⁰ Further, many of the seines employed by the fishers were torn by obstructions in the water, which allowed many of the carp to escape the traps.⁸¹

Despite all of these obstacles, 69,228 pounds of fish were harvested from the two bays.⁸² While the method captures fish en masse, the tests showed it would be easy to selectively remove sportfish from the hauls, as the sport fish which were caught using this method were safely released back into the bays.⁸³ More fish could have been harvested if not for time delays.⁸⁴ So far, the Commonwealth has deemed this method as having the potential to effectively control the Asian carp problem.⁸⁵ While this method has had success in the testing phase, the Commonwealth should look at pre-deployment methods to ensure there are no obstructions in the areas which the seines would be placed in order to protect the integrity of the seines. Further, the Commonwealth should further push the use of the modified unified method into colder seasons for a greater chance of the water being cooler, which makes the fish more lethargic. Overall, as it stands, this method has seen great early success and its use should be expanded into Kentucky waterways and the Mississippi River Basin.

Another project that should be maintained and expanded revolves around the use of bio-acoustic fish fences. Bio-acoustic fish fences deploy “customized sound signals, strobe lights and an air bubble curtain to steer the fish away.”⁸⁶ Traditional locks, which prevent fish from travelling through while closed, are flawed, as when the lock is opened for vessels, fish can sneak through.⁸⁷ The unique strength of these specialty fences is that the bubble curtain deters invasive fish without impeding the movement of ships through waterways.⁸⁸ Lab tests of bio-acoustic fish fences have shown that the fences are about 97 percent effective in deterring

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ KY. DEP'T OF FISH & WILDLIFE, *Kentucky Boating and Fishing Guide: March 2020 – February 2021* (2020), <https://kentuckylakegateway.com/wp-content/uploads/2020/02/20202021fishguide.pdf> [<https://perma.cc/CD2T-ZBST>].

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ U.S. FISH & WILDLIFE SERV., *supra* note 55.

⁸⁷ *See id.*

⁸⁸ *Id.*

Asian carp.⁸⁹ The one bio-acoustic fish fence which has been constructed so far has seen great success in deterring Asian carp. Despite the effectiveness of the system, there is one significant drawback to the widespread implementation of the system—cost. The construction of bio-acoustic fish fences is tremendous, totaling over \$10 million.⁹⁰ This cost may be well outside of the Commonwealth's budget, making the state dependent upon government grants to help fund these large projects. A potential workaround to this problem would be to cooperate with other states which share waterways with Kentucky, such as Tennessee with Lake Kentucky, and Ohio and Indiana with the Ohio River. Such partnerships could operate to alleviate the burden of the cost for the bio-acoustic fish fences, as each state would greatly benefit by having their waterways protected. Therefore, the construction of additional bio-acoustic fish fences should be pursued only when funding for such projects is secured, preferably in coordination with other states in high-risk areas.

The Commonwealth has also looked to the private sector for help in combating the spread of Asian carp by opening previously restricted areas to fishers who are targeting Asian carp, and providing grants to companies to process the invasive fish. The Kentucky Department of Fish and Wildlife Resource's Asian Carp Harvest Program is one of the methods used by Kentucky state agencies to deregulate at-risk areas and allow commercial fishers more leeway in the restrictions when they are targeting Asian carp.⁹¹ Created in 2013, the Asian Carp Harvest Program ends fishing restrictions in certain areas for commercial fishers who are targeting Asian carp.⁹² This program has seen success since its implementation.⁹³ In 2019, commercial fishers harvested a total of 5.89 million pounds of Asian carp from Kentucky Lake and Lake Barkley alone.⁹⁴ In 2020, commercial fishers across the state harvested over 7.5 million pounds of Asian carp.⁹⁵ Commercial

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ KY. DEP'T OF FISH & WILDLIFE RES., *supra* note 2.

⁹² *Id.*

⁹³ *See id.*

⁹⁴ Lander, *supra* note 45.

⁹⁵ *Commercial Fishers Removed Over 7.6 million Pounds of Invasive Asian Carp From Kentucky Waters in 2020*, WLWT 5 (Feb. 3, 2021, 6:44 P.M.), <https://www.wlwt.com/article/commercial-fishers-removed-over-76-million-pounds-of-invasive-asian-carp-from-kentucky-waters-in-2020/35411147> [https://perma.cc/8H7L-Q9DJ].

fishers should be allowed to continue to fish in these areas to help control carp populations. Further, the Commonwealth should think about expanding the number of areas where unrestricted commercial fishing of Asian carp is permitted.

Another example of the Commonwealth and the private sector working together to combat Asian carp in Kentucky is the Kentucky Public-Private Partnership for Asian Carp. In 2018, the Commonwealth created a loan program which awarded a contract to Kentucky Fish Center, LLC to develop a fish processing house.⁹⁶ The goal of this program is to have 20 million pounds of Asian carp processed annually by 2024.⁹⁷ This program has already seen success, as between January and April of 2019, 1.5 million pounds of carp were harvested and processed by Kentucky Fish Center.⁹⁸ The head of Kentucky Fish Center stated she hopes they will be able to process 78 million pounds of fish by 2025.⁹⁹ As this program has already been successful, the Commonwealth should pursue a second loan, similar to the first. The second loan does not need to be as large as the first, but it would be prudent to increase the role that the private sector plays in the fight against the invasive Asian carp.

C. Summary

The Commonwealth needs to continue its effective use of regulations, as well as the ensuring that effective programs which have already been implemented continue to see success. The combination of regulations and statutes, as well as the implementation of specific fishing methods and the creation of fences, have been effective in cutting down the numbers of Asian carp in Kentucky. Therefore, the Commonwealth should make its best efforts to expand the scope of such programs, such as the modified-unified fishing method and ensure that statutes and regulations continue to be enforced with regularity. Further,

⁹⁶ Steve Bittenbender, *Kentucky Awards Fish House Contract to Combat Asian Carp Presence*, SEAFOODSOURCE (Oct. 10, 2018), <https://www.seafoodsource.com/news/environment-sustainability/kentucky-awards-fish-house-contract-to-combat-asian-carp-presence> [https://perma.cc/7J7K-B3VP].

⁹⁷ *Id.*

⁹⁸ Matt Markgraf, *New International Fisheries Park to Expand Asian Carp Processing in Ballard County*, WKMS (Apr. 12, 2019), <https://www.wkms.org/post/new-international-fisheries-park-expand-asian-carp-processing-ballard-county#stream/0> [https://perma.cc/E29D-4U3P].

⁹⁹ *Id.*

Kentucky should continue to pursue policies in which the state works with business enterprises to encourage the private sector to become more involved in the eradication of Asian carp from waterways through cost effective programs such as the Public-Private Partnership and similar subsidy programs.

IV. METHODS WHICH THE COMMONWEALTH SHOULD IMPLEMENT TO COMBAT ASIAN CARP

A. Methods of Carp Control the Commonwealth should Implement or Re-Implement

In addition to the programs Kentucky should continue to support and maintain, programs which have had success in the past but are currently not implemented, such as the Carp Madness Tournament, should be taken into consideration for reimplementation. When first introduced in 2013, the Carp Madness Tournament was deemed a great success.¹⁰⁰ During this first tournament, commercial fishers gathered 82,953 pounds of carp at Kentucky and Barkley lakes over a two-day period.¹⁰¹ The tournament was proof that commercial fishers can harvest large quantities of invasive carp without harming the natural ecosystems of Kentucky waterways.¹⁰² Furthermore, the tournament helped build awareness for the Asian carp problem.¹⁰³ The main draw for the program is that it is relatively inexpensive to implement, especially considering its rate of success relative to its cost.¹⁰⁴ Simple and cost-effective programs which have been abandoned in recent years, such as the Carp Madness tournament, should be reimplemented.

Further, the Commonwealth should also promote recreational activities that target the spread of Asian carp. One way this can be achieved is through the creation of a bow fishing tournament similar to that of the Carp Madness Tournament. Bow fishing has become popular in recent years, especially in areas where Asian carp have become prevalent, such as Kentucky.¹⁰⁵ Furthermore, there are no restrictions placed on bowfishing of

¹⁰⁰ KY. DEP'T OF FISH & WILDLIFE RES., *supra* note 2.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ *See id.*

¹⁰⁵ Lander, *supra* note 45.

carp—they can be caught any time of year without any limit as to how many may be taken.¹⁰⁶ The creation of a tournament similar to the Carp Madness could help promote additional awareness of the threat of Asian carp while showing alternative ways to tackle the problems this species presents.

B. Methods of Carp Control Adopted by Other States that the Commonwealth Should Adopt

In addition to the maintenance and expansion of pre-existing programs and the reimplementation of abandoned but effective programs, the Commonwealth should look outside of its borders—both inside the United States and abroad—to find new methods to control the spread of Asian carp.

One common method utilized by many states is the implementation of a bounty program, wherein state governments pay commercial fishers to sell the invasive carp to fish processors. One state that utilizes this system, Illinois, pays commercial fishers ten cents per pound of Asian carp sold to fish processors.¹⁰⁷ Illinois's bounty program has experienced great success, with 246,816 pounds of invasive Asian carp having been harvested in a small pool of the Illinois River as of December 2019 alone.¹⁰⁸ Given the success experienced by Illinois, it would be wise for the Commonwealth to adopt a similar bounty program. However, unlike Illinois, the program should be much larger in scope, potentially encompassing the entire state to increase the amount of Asian carp caught. If this program was combined with other programs to promote commercial fishing of Asian carp, such as the Carp Madness tournament, the Commonwealth would have a plethora of low-cost programs to drive commercial fishers to harvest and sell carp to processors, helping to remove them from the ecosystem.

Even if it is impossible to fully eradicate Asian carp from our waterways, the Commonwealth should at the very least look at turning this invasive fish into an economic benefit to help thin the population numbers and find a comfortable balance between

¹⁰⁶ *Id.*

¹⁰⁷ ILL. DEPT OF NAT. RES., *Enhanced Contract Fishing Program Success & IDNR Requesting Proposals to Create Asian Carp Brand* https://www.ifishillinois.org/Asian%20Carp/AC_contract_RFP.html (last viewed Jan. 18, 2021) [<https://perma.cc/86A4-ALXD>].

¹⁰⁸ *Id.*

the native species of Kentucky and Asian carp. The Asian carp industry in the People's Republic of China currently generates around \$10 billion annually.¹⁰⁹ While the Commonwealth of Kentucky is nowhere near the size of China, nor does Kentucky have China's amount of Asian carp, the size of the Asian Carp industry in China is indicative that processing and selling Asian carp products can lead to a sizable economic boon to Kentucky.

Other states have created special grants to help sell Asian carp products such as food, fertilizer, and other products. Illinois has created a special grant program to promote the sale of Asian carp as food.¹¹⁰ Asian carp allegedly "make good table fare for the person willing to remove the many bones and the undesirable strip of red meat."¹¹¹ The problem with Asian carp is that the meat is very difficult to get off the bone.¹¹² This makes it difficult to sell the fish in the United States, as it is more time consuming to clean than other species, and Americans tend to think of the carp as being dirty due to the connotation surrounding its name. Therefore, providing grants—perhaps like the loan provided to the Kentucky Private-Public Partnership—to processing plants which can efficiently turn the Asian carp into food is one idea that could be implemented. However, it is not enough to merely provide grants for businesses that can turn Asian carp into food. The ideal solution would also provide grants to businesses which promote the sale of such fish as food. Because of the massive supply of Asian carp, the fish is overall very cheap to buy, which could make it appealing to consumers.¹¹³ Furthermore, carp are extremely healthy due to their high amounts of dietary protein and omega-3 fatty acids and are virtually free of mercury and lead.¹¹⁴ In blind taste tests, consumers tended to rate canned Asian carp as tasting

¹⁰⁹May Zhou, *The Lure of Asian carp: turning a pest into gold*, (May 4, 2019 7:55 am) https://www.chinadaily.com.cn/a/201905/04/WS5cccd4e3a3104842260b9a4d_2.html [https://perma.cc/A5P9-6GTC].

¹¹⁰ Elizabeth Tomev, *New Grant Program Available to Help Companies Market Asian Carp Products*, ILL. DEPT OF NAT. RES. <https://www2.illinois.gov/dnr/news/Pages/New-Grant-Program-Available-to-Help-Companies-Market-Asian-Carp-Products.aspx> (last viewed Jan. 18, 2021) [https://perma.cc/XSN7-UV4E].

¹¹¹ KY. DEPT OF FISH & WILDLIFE RES., *supra* note 2.

¹¹² *Id.*

¹¹³ *See id.*

¹¹⁴ *Id.*

better than canned tuna and salmon.¹¹⁵ The Commonwealth could go a step further and purchase Asian carp itself to use as food for prison cafeterias.¹¹⁶ A fish that is both affordable and nutritious could be appealing to restaurants and commercial food sellers, as they would be able to market something healthy and affordable, which could potentially resonate with customers.

If it is too difficult, based on market research, to sell Asian carp as food, there are still many other uses for the fish which could be pursued. Currently within the Commonwealth, Asian carp are used in fertilizers.¹¹⁷ Cosmetic makers are looking into using proteins in the skin of Asian carp in their makeup products.¹¹⁸ Some overseas companies have pursued the use of Asian carp in pet food.¹¹⁹ Kentucky could create a grant program similar to the Public-Private partnership to lure in a pet food manufacturer which would work with commercial fishers in Kentucky to purchase commercial hauls of Asian carp to use in its products. The processing and selling of the Asian carp would be a very effective way to get the invasive species out of Kentucky waterways, regardless of the form. Therefore, it would be a good idea for the Commonwealth to follow the lead of Illinois and create an additional grant program to promote the commercial sale of Asian carp.

If the costs associated with the construction of additional bio-acoustic fish fences is too high, the Commonwealth should look at passing legislation to create additional traditional electric fences to control the flow of Asian carp in Kentucky waterways. Electric fences have traditionally had great success in keeping out invasive species.¹²⁰ States such as Illinois have used electric fences to great effect to slow down the spread of Asian carp.¹²¹ While

¹¹⁵ *Oregon Sea Grant*, OR. STATE UNIV. (Last accessed Jan. 18, 2021) <https://seagrant.oregonstate.edu/sites/seagrant.oregonstate.edu/files/invasive-species/toolkit/asian-carp-factsheet.html> (last viewed Jan. 18, 2021) [<https://perma.cc/VV3W-VYXZ>].

¹¹⁶ *Id.*

¹¹⁷ Markgraf, *supra* note 98.

¹¹⁸ OR. STATE UNIV., *supra* note 115.

¹¹⁹ Lea Mitchell, *Asian Carp Goes From Water to Dog Dishes*, GREAT LAKES ECHO (Dec. 15, 2020) <https://greatlakesecho.org/2020/12/15/asian-carp-goes-from-water-to-dog-dishes/> [<https://perma.cc/WJ35-MYCE>].

¹²⁰ See Lorraine Boissoneault, *A Huge Underwater Electric Fence IS the Great Lakes' Big Hope Against a Carp Invasion*, ONEZERO (Jan. 6, 2020) <https://onezero.medium.com/a-huge-underwater-electric-fence-is-the-great-lakes-big-hope-against-a-carp-invasion-787da3f35c08> [<https://perma.cc/G9P4-UW3D>].

¹²¹ *Id.*

electrical fences are not the be-all, end-all of Asian carp spread, they can help buy more time for Commonwealth officials to locate and control Asian carp populations.¹²² However, Illinois's electric fence was part of a larger federal scheme in order to protect the Great Lakes, so it may be unlikely for Kentucky to receive similar amounts of federal funding to undertake this project; therefore, the state would have to spend more money.¹²³ If there was an economic downturn, it would be difficult for the Commonwealth to allocate funding to this area when funding is needed elsewhere and cheaper options that rely on the private sector exist. Therefore, the creation of additional electric fences should be pursued so long as there exists enough funding in the state budget to fund such endeavors, and if not, the funding should go to projects that rely more on the private sector's involvement.

C. Summary

A plethora of programs exist which the Commonwealth should be pursue in the near future to fight against the Asian carp threat. The Commonwealth should be pursuing cost-effective programs which have been abandoned in recent years, such as the Carp Madness Tournament. Further, the Commonwealth should look at the creation of other cost-effective recreational events, such as bow fishing tournaments, to drive up public awareness of the threat of Asian carp, like how the Carp Madness tournament did. The Commonwealth should also be taking notes on the successful programs that other states have implemented in their fights against Asian carp and apply solutions such as the general bounty program for Asian carp and the grant program to encourage Kentucky businesses to utilize carp in their products.

V. GENERAL CONCLUSION

The Commonwealth must recognize that Asian carp present a tremendous risk to both the ecosystem of Kentucky as well as the state's economy. If left unchecked, the environment of the Commonwealth will be devastated, as Asian carp have the

¹²² *See id.*

¹²³ *See generally* *Army Corps Approves \$778M Plan to Block Asian Carp Advance*, WTTW (May 24, 2019 4:28 PM) <https://news.wttw.com/2019/05/24/army-corps-approves-778m-plan-block-asian-carp-advance> [https://perma.cc/NKU7-53RR].

potential to outcompete and replace the native aquatic life. This would be immensely damaging to Kentucky's economy, especially in western Kentucky, where sport fishing makes up a massive chunk of the local economy. Further, if left unchecked, there will be more incidents where Asian carp leap out of the water, causing damage to boats and injuries to people—potentially even death.

Regarding the funding of the fight against Asian carp, before expanding any efforts in the fight against the species, Kentucky must ensure that sufficient funding is available. The Commonwealth can look at partnering with the federal government to receive more funds through general requisitions or through volunteering to participate in new, experimental programs. The Commonwealth can also look at creating additional programs, similar to the Public-Private partnership, to shift some of the state-level costs onto private business by using subsidies to encourage the processing of Asian carp.

To combat this threat, the Commonwealth should look at adopting policies that best optimize the allotted funds to combat Asian carp. This could be in the form of relatively cost-effective public information campaigns to providing grants and loans to the private sector to requesting additional funds to create experimental diversion methods, such as the bio-acoustic fish fence. Programs to support commercial fishing should be paramount in the Commonwealth's efforts to combat Asian carp, as they are effective at processing the carp at a cost that is reasonable for the Commonwealth to bear. The Commonwealth should also look to see what other states have accomplished in their fight against Asian carp and copy successful methods. Most notably, the Commonwealth should implement a bounty program like that of other states to promote commercial fishers harvesting large masses of carp and selling them to fish processors located within the Commonwealth. The Commonwealth could also copy other states initiatives to promote the use of Asian carp in other industries to both clean up the amount of carp in Kentucky waterways as well as to provide a major boost to the local economy. Whatever course of action the Commonwealth takes, so long as it increases its efforts soon, a scheme consistent with the recommendations of this Note should be met with success in protecting our environment and our economy.

