

RETAILER PERSPECTIVES ON INVASIVE CRAYFISH IN THE GREAT LAKES



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**Amanpreet Kohli, Carlos Martinez,
Greg Hitzroth, Katie O'Reilly, Natalia Szklaruk**

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INTRODUCTION

Invasive crayfish in the Great Lakes region

Invasive crayfish greatly threaten the Great Lakes region and are considered one of the most impactful aquatic invasive species (Lodge et al., 2000). Due to their aggressive behavior and rapid growth, invasive crayfish have been found to drastically reduce macrophyte density, outcompete native species, shift food webs, alter habitats, and carry diseases (Baldrige and Lodge, 2014; O’Shaughnessey and Keller, 2019; McCarthy et al., 2006; Panteleit et al., 2019). Along with ecological impacts, invasive crayfish may also damage physical habitats via erosion and bank collapse due to their high burrowing activity (Faller et al. 2016). Preventing the introduction and spread of invasive crayfish to new waterbodies is a goal of local, state, and federal agencies.

Pathways of crayfish introduction

Non-native crayfish can be introduced to new bodies of water through various pathways and vectors. Invasive crayfish species have frequently been introduced through human activities including through organisms-in-trade (OIT) pathways (i.e., organisms sold for use in aquaria, gardens, schools, or as live bait or food). These pathways have been significant contributors to the spread of invasive crayfish, with several species often imported for use in aquariums and water gardens. Accidental releases and escapes from aquaculture facilities have also played a role in their introduction and spread. Further, live crayfish are commonly used as fishing bait and are sometimes discarded directly into new locations. These “bait-bucket” introductions are thought to be one of the most common mechanisms by which invasive crayfishes are introduced (Ludwig and Leitch, 1996). A less common but still significant vector of introductions includes the use of non-native crayfish in educational settings such as schools. The invasive red swamp crayfish (*Procambarus clarkii*) and rusty crayfish (*Faxonius rusticus*) are common in biological supply kits used by teachers for science lessons. Following their use in classrooms, crayfish may be accidentally or intentionally released into nearby waterbodies or given to students as pets (Larson and Olden 2008).

Challenges addressing organism-in-trade (OIT) pathways

OIT pathways include some of the most probable ways through which new species are introduced. Thus, addressing these pathways is crucial to preventing the spread of invasive crayfish. However, multiple challenges exist when trying to address these pathways. Studies have found that consumers look to retailers for information about crayfish (Seekamp et al. 2016) and retailers, in turn, look to wholesale distributors for their own information (e.g., compliance with prohibited species regulations). Therefore, there are many points at which information can be lost when travelling through the supply chain from wholesalers, to retailers, to consumers. Additionally, because crayfish are not regulated at the federal level in Canada or the United States (i.e., each Great Lakes state and province has their own regulations and laws), the lack of regulatory uniformity in the Great Lakes basin may cause confusion among stakeholders and make the entire basin vulnerable to invasion (Peters and Lodge 2011).

PROJECT GOALS

Because consumers in OIT pathways who purchase live crayfish from aquarium, bait, and food retailers have been found to be the most likely sources of crayfish introduction in parts of the Great Lakes basin (Smith et al 2018), understanding the extent of knowledge about invasive crayfish within the supply chain (e.g., regulations, sources, species, uses) is crucial to developing targeted outreach and education programs. Here, we build upon Smith et al. and other studies to enhance our understanding of the trade of invasive crayfish in the Great Lakes.

We conducted a telephone survey of OIT retailers that currently sell crayfish to obtain data on the sale, use, and sources of crayfish in their shops. We also examined retailer sentiment regarding crayfish conservation, aquatic invasive species, and environmental stewardship. The objectives of our survey included: (1) determining common species, sources, and uses of crayfish in OIT shops; (2) understanding how and where retailers receive their information about invasive species; (3) identifying and connecting the network of crayfish suppliers and distributors to disseminate future outreach programming; and (4) examining retailer beliefs on issues surrounding invasive species, Great Lakes ecosystems, environmental stewardship, and regulations.

METHODS

We compiled a database of 617 OIT retailers including bait shops, aquarium/pet shops, food retailers/restaurants, plant nurseries/water gardens, and wholesalers/distributors from the eight Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin, USA) using internet search engines such as Google and Yelp. These retailers were chosen as their online description indicated that they may sell aquatic organisms including crayfish (note: not all retailers were found to currently sell crayfish). The contact information and location of these shops are listed by state in Appendix I and are current as of January 2024 (Tables 1-8). Using this database, we contacted 123 retailers in all Great Lakes states except for New York and Pennsylvania during June and July 2023 (Fig. 1A) including 74 aquarium shops, 10 plant nurseries, and 39 bait shops (Fig. 1B). More than half of the retailers contacted were aquarium and bait shops located in Illinois and Indiana due to ongoing outreach work by Illinois-Indiana Sea Grant in this region. The 123 retailers were contacted based on personnel capacity available to conduct surveys. No wholesalers were contacted for the survey. We provide a list of six online retailers in Appendix I (Table 9), but they were also not contacted for the current survey.

CRAYFISH RETAILER SURVEY REPORT

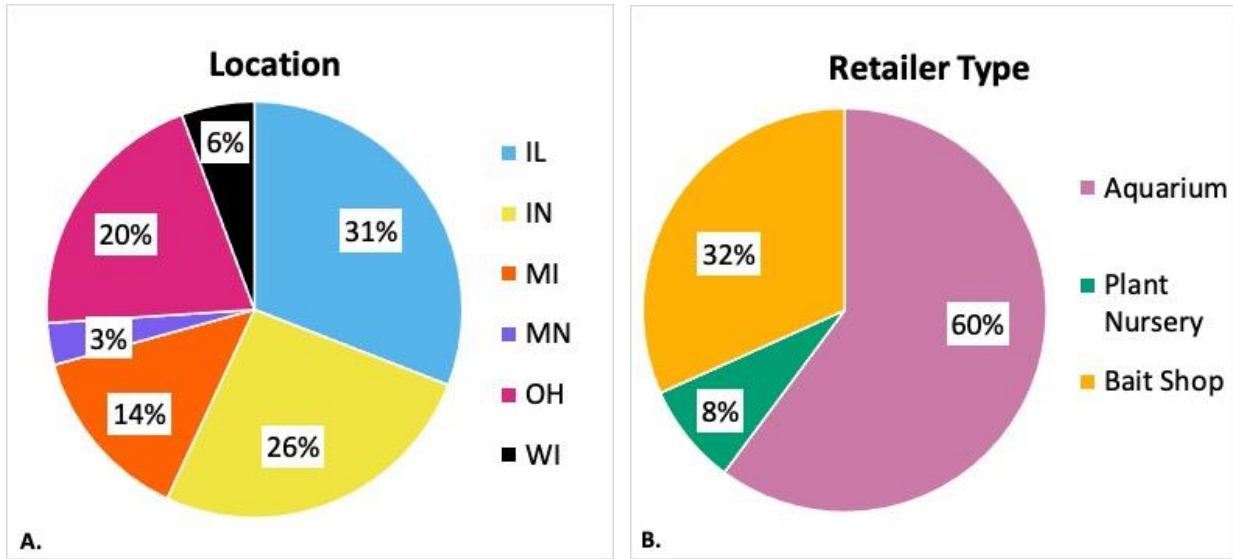


Fig. 1. Distribution of the 123 retailers contacted for the survey by A) Location (state) and B) Retailer Type.

The owners or managers of each retail shop were surveyed over the telephone, with the exception of one survey conducted in-person and one completed through email. A script of 18 questions approved by the Institutional Review Board of University of Illinois (Appendix II) was used to address the retailers’ business practices with crayfish, thoughts on invasive species and the environment, and retailer needs for outreach. Responses were recorded in Qualtrics. The survey took approximately 20 minutes to complete and was completed by 16 of the 123 retailers who were contacted. All 16 of these retailers reported selling live crayfish. These retailers were located in Illinois, Indiana, Minnesota, Ohio, and Michigan (Fig. 2A) and only two of the 16 were classified as a bait shop (all others were aquarium retailers, Fig. 2B).

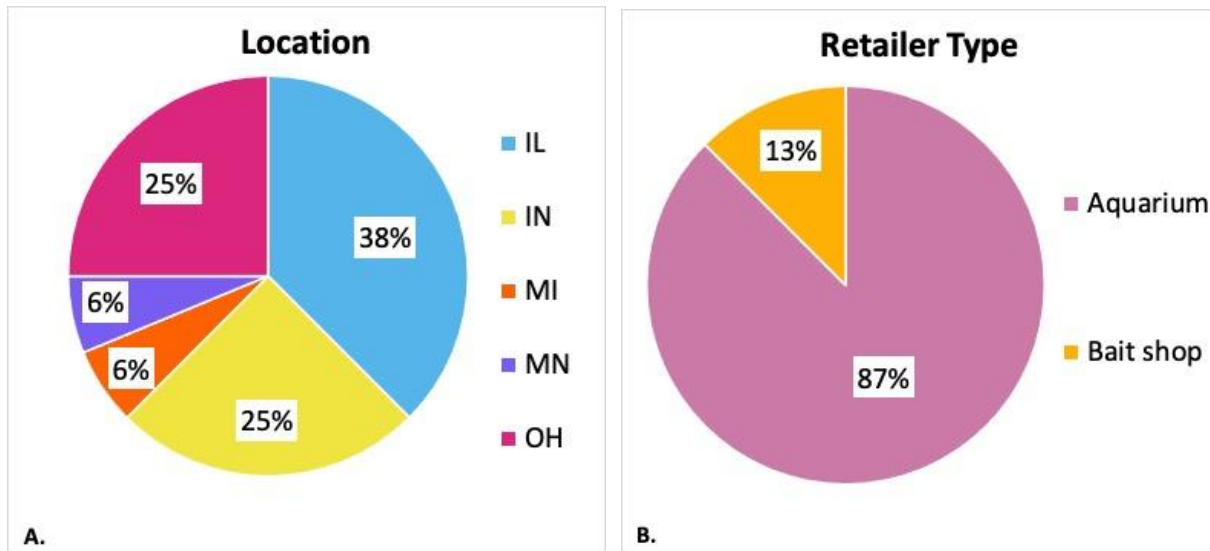


Fig. 2. Distribution of the 16 retailers who completed the survey by A) Location (state) and B) Retailer Type.

RESULTS

Of the 123 shops contacted, 32 responded that they sold live crayfish at some point during the year, while 12 did not respond to the question. The remaining 79 who responded that they did not sell crayfish were further asked to provide potential sources where crayfish could be obtained in their areas. More than half of the respondents did not know of a retailer they could refer to the surveyor. A common reason given by retailers in multiple states was that the sale of crayfish is illegal and only a few legal suppliers (also referred to as wholesalers or distributors) exist. In Wisconsin, for example, a retailer reported that crayfish cannot be used as bait for fishing and there is a ban on their import. Additionally, a retailer commented that crayfish cannot be transported into their state (Minnesota). One retailer reported being previously fined for selling an invasive crayfish species that closely resembled a native crayfish species. Retailers generally noted frequent changes to regulations covering additional species and strict enforcement by various state Departments of Natural Resources (DNRs). As such, the general trend among retailers has been towards stopping the sale of any crayfish. The increasing bans and regulations have resulted in fewer crayfish suppliers and retailers reporting not being able to obtain live crayfish for variable periods of time, ranging from a few months to several years, depending on their location. In addition to the limited availability of crayfish, another common reason why some retailers reported no longer selling crayfish was the difficulty in keeping them. Crayfish typically cannot be kept in aquaria with fish, and they tend to die quickly. Of the 70 retailers who responded to our request for potential sources of crayfish, over 15% reported selling crayfish in the past but not presently due to the reasons mentioned above.

General recommendations for where crayfish could be purchased included aquarium stores and bait shops. A few retailers suggested purchasing crayfish from fish farms or hatcheries, some of which serve multiple states in the Great Lakes region. Areas around Lake Michigan were also suggested by some as a common location for crayfish retail stores. While some retailers suggested visiting local bait shops for crayfish, others reported that bait shops have stopped selling them which has contributed to the overall scarcity. One retailer suggested exploring larger chain pet stores such as Petco and PetSmart, as they may have their own supply. They further added that bait shops need a license to hold more than 100 crayfish, and due to their limited sale, keeping them in stock was often a hassle. Despite this, live crayfish are still in high demand by some consumers, and local bait shops were a common recommendation to purchase crayfish.

A few respondents suggested buying crayfish online, including one respondent who mentioned the issue of illegal sale through eBay. Specific retailers or wholesalers were also suggested, many of which are included in Appendix I. Additionally, respondents suggested purchasing crayfish from states outside of their own, including Louisiana, New York, California, and Kentucky; however, they were uncertain about the regulations within these states as well as the regulations within their own state. Finally, some respondents suggested the option of trapping crayfish in local creeks, and one retailer suggested an Asian (Vietnamese) food store in Illinois.

Overall, respondents exhibited varying levels of knowledge regarding crayfish species they sold and their regulations within OIT pathways. While some individuals were aware of specific bans on invasive crayfish species (e.g., rusty crayfish in Illinois), others lacked the knowledge to differentiate the natives from non-natives. All participants emphasized that DNR websites serve as reliable sources for obtaining information on invasive crayfish. Specific survey questions and their detailed responses are discussed below.

Crayfish sales in the Great Lakes

What purposes do your business sell crayfish for and who are your main consumers?

Pet owners, fish hobbyists, and occasionally anglers comprised the majority of customers buying crayfish from surveyed retailers. Half of the surveyed retailers reported that they sell crayfish exclusively for use as aquarium pets. Ghost electric blue crayfish and dwarf Mexican crayfish (also sold as Mexican mini-lobster) are two popular varieties of ornamental crayfish that retailers reported selling, and were also mentioned to be a good way to keep tanks clean. Other purposes for which crayfish were sold included as bait and to feed other organisms. When used as bait, survey respondents shared that the main target was often catfish, while feeder crayfish such as Alpine Mountain crayfish were mostly purchased for use with predatory fish such as cichlids, piranhas, and puffers. An aquarium retailer added that while they mostly sold crayfish for ornamental purposes, anglers occasionally purchased them for bait due to low supply in local bait shops. Another aquarium retailer added that they cannot control if individuals who bought crayfish from their shop used them for different purposes, such as for fishing or classroom lessons. For example, a retailer from Michigan (not among the 16 who completed the survey) shared that crayfish were also commonly purchased from their store by elementary schools for educational purposes. The use of non-traditional and unregulated shops as sources of crayfish for consumers was also found by Smith et al. (2018), and therefore poses a concern for management of invasive crayfish.

How does your business sell crayfish and do you sell outside your state?

Most retailers indicated that crayfish sales primarily took place in brick-and-mortar stores where they were sold directly to the customers. At aquarium shops, each crayfish typically came with a list price. After the customer selected the crayfish they wanted to purchase, employees packed the animal into a bag and provided the customer with acclimation instructions to take home. One of the two bait shops surveyed shared that they sold crayfish by piece. While retailers believed that most of their customers were from in-state, it is not typically possible to determine when and how often customers visit from out-of-state, and thus, may potentially be breaking interjurisdictional transport regulations. Only one of the retailers surveyed reported that they sold crayfish online. All other retailers said that they did not sell crayfish online and do not ship to other states. However, as stated previously, multiple retailers mentioned that there exist several online platforms to buy crayfish.

What type of crayfish do you sell and what name do you sell them as? Do you ever use their scientific name?

The specific species of crayfish sold by a retailer varied among stores and was dependent on the intended use (i.e., pet vs. bait). Knowledge about different crayfish species and their scientific names also varied widely among the retailers. While most retailers were familiar with common names, few retailers knew scientific names and used them during the survey. Overall, it was common practice for retailers, regardless of their own familiarity with scientific names, to refrain from using scientific names to avoid confusion among customers. Retailers who sold 'feeder crayfish' (any number of species) labeled them as 'baitfish', 'feeder crayfish', 'crawdads', or simply 'crayfish'. In aquarium stores, labelling the species by color morph such as 'electric blue', 'tangerine', 'orange', 'white', 'vanilla', 'ghost' or as 'ornamental' was a common approach. Two crayfish species common in the aquarium trade, *Cambarellus patzcuarensis* and *Procambarus alleni*, were often labeled as 'Dwarf Mexican Orange Crayfish'

and ‘Electric Blue Crayfish,’ respectively. Another labeling approach followed by retailers was based on source location. For example, one retailer that sourced crayfish from Florida labeled them as ‘Florida Crayfish’. Retailers mentioned that they tended to use the same names as used by their suppliers. An aquarium retailer remarked that they use the scientific name for ‘Dwarf Mexican Orange Crayfish’ (*C. patzcuarensis*) but do not use scientific names for other species because of inaccurate or uncertain identifications. This was observed in other retailers as well, as only one retailer knew the correct scientific name for ‘Dwarf Mexican Orange Crayfish’. One Michigan retailer mentioned that they bought their crayfish from the state to avoid accidentally purchasing the invasive *P. clarkii* or *F. rusticus* from wholesalers. A retailer from Illinois reported selling ‘Swamp’ or ‘Marsh’ crayfish and referred to the species as *P. clarkii*.

Do you sell crayfish seasonally or year-round? How do you obtain the crayfish that you sell?

Most of the surveyed retailers sold crayfish year-round but noted that it was largely dependent on availability from their suppliers since crayfish are generally more available in the spring and summer. Four retailers stated that they only sold crayfish seasonally, mostly in the months of May and June. Availability of crayfish in stores can be unpredictable as some retailers carry them on request and consider other factors such as their price and availability of space in-store to hold them. Additionally, a retailer noted that climatic conditions (i.e., a drought and high temperatures) had slowed sales, potentially due to crayfish inactivity or deeper burrowing. When asked about the source of crayfish, most retail stores said that they obtained their crayfish from wholesalers or distributors. While some retailers received crayfish from local suppliers along with their weekly shipments of other freshwater animals, other retailers received their crayfish from areas outside of the Great Lakes basin such as Florida and Georgia. One retailer noted that their ‘Electric Blue Crayfish’ were raised in Florida and captive-bred, and another retailer reported that they received crayfish from a hatchery in Indiana. To the best of our knowledge, there are no crayfish aquaculture operations in the Great Lakes. However, some regional farms sell them as a byproduct of their operations, primarily because they consider crayfish a nuisance in their ponds.

Views on invasive species, the environment, and regulations

What do you feel are people's role in the natural world/the environment?

All retailers shared the sentiment that protecting the environment is an essential duty of humans and that humans have an inherent obligation to maintain the balance in nature and keep the environment habitable. Some retailers suggested promoting aquaculture to avoid disturbing natural populations of aquatic species. Two retailers said that while they believed that humans should live harmoniously with the environment, they did not think it was possible to convince everyone to take necessary precautions for preserving the environment. As the environment is affected by the collective actions of the public, a need to know more and do more to protect the environment exists. One retailer mentioned that they taught aquarium hobbyists about the environment by comparing the similarities between the ecosystem in a tank and ecosystems outside the tanks. Retailers also reflected upon the importance of water and supporting rivers and other aquatic resources. For example, one retailer talked about sustainable harvesting and suggested that crayfish harvesting should be done in a way that ensures the crayfish populations remain abundant for everyone to enjoy. Another participant highlighted the issue of phosphate contamination in freshwater ecosystems and the harm to wildlife. Other retailers discussed topics related to biosecurity and habitat destruction, expressing the need to

be cautious about accidental introductions of invasive crayfish to prevent their negative impacts on aquatic wildlife and the environment.

In further discussions on the issue of invasive species in the environment, there was a consensus among retailers that invasive species pose an environmental threat, although which species were considered ‘invasive’ varied among retailers. Some retailers cited the examples of northern snakehead (*Channa argus*) and invasive carp (referred to as ‘Asian Carp’ by retailers). One retailer believed that invasive crayfish are not a concern because larger fish can consume them, and two retailers believed that invasive crayfish are only a concern for southern Great Lakes states because they believe most crayfish are unable to survive in cold temperatures. Another two retailers said invasive crayfish could be a concern locally depending on the species (e.g., marbled crayfish and red swamp crayfish). While some retailers expressed their thoughts that anthropogenic actions (i.e., exotic pet trade) greatly contribute to the invasive species problem, many shared the sentiment that clearer communication from authorities as well as greater education for the public is needed. Many emphasized that while it is impossible to get rid of all invasive species, stricter regulations could help mitigate damage to the environment. One retailer shared a personal experience of encountering inconsistent enforcement of rules on invasive species while traveling between the U.S. and Canada and mentioned the large difference in priorities between the two countries. Conversely, another retailer believed that invasive species should be addressed on a state-by-state basis due to the differences in climate and habitat in each state. One retailer highlighted the need for more research before classifying a species as ‘invasive’. Only one respondent strongly opposed the notion of invasive species being an issue, blaming the media for it.

***Do you feel like invasive species are a risk to the Great Lakes economies or ecosystems?
Why or why not?***

Further exploring the issue of invasive species in the Great Lakes, survey respondents were asked whether they believed invasive species are a threat to Great Lakes economies and ecosystems. A majority of respondents (62.5%) answered ‘Yes’, while 18.75% each answered ‘No’ or ‘Maybe’ (Fig. 3). Those who responded ‘Yes’ cited invasive carp, zebra mussels (*Dreissena polymorpha*), and round gobies (*Neogobius melanostomus*) as examples of invasive species threatening the Great Lakes and provided insights into their impacts. The impacts discussed included the effects on native aquatic species (including aquatic vegetation) and habitat degradation. One retailer expected higher economic impacts for retailers that rely on native species, and another anticipated that invasive species would have some impact on the fishing industry. An aquarium retailer highlighted their personal efforts to educate customers, including advising them to never release their pet goldfish into the wild. Some respondents further discussed the implications of invasive species impacts by providing examples of regulatory actions taken, such as the banning of moss balls in the aquarium trade to prevent accidental zebra mussel introductions.

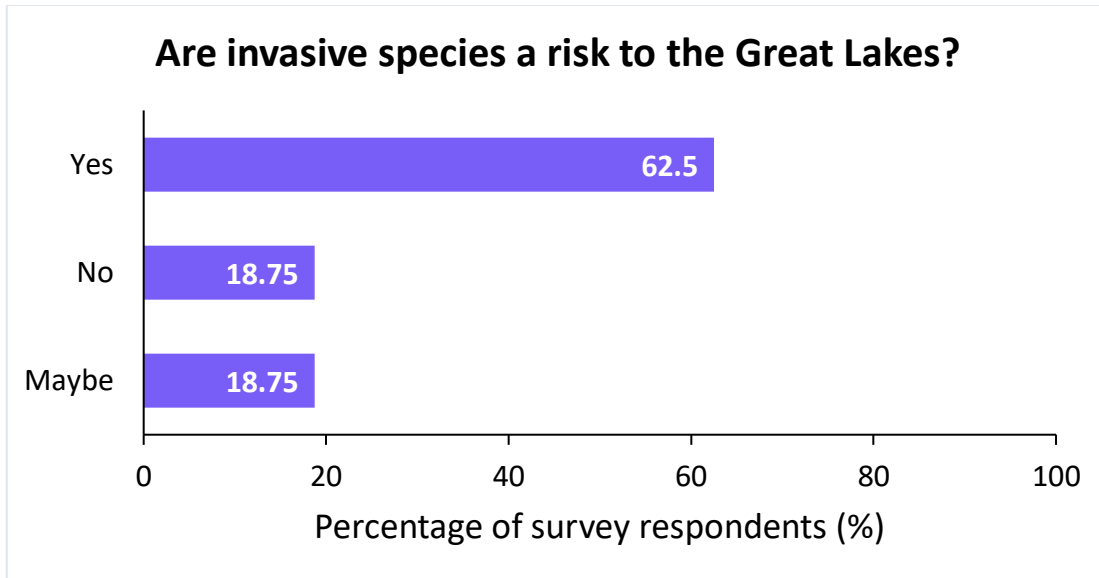


Fig. 3. Survey respondent responses to ‘Are invasive species a risk to the Great Lakes?’ (n=16)

In contrast, some retailers expressed their belief that not all invasive species pose a threat to the Great Lakes, and that impacts would vary by species. Among all crayfish, a retailer pointed to only the marbled crayfish as being a threat to the Great Lakes. Another retailer expressed that invasive crayfish and invasive carp are not a problem because they are edible. This retailer had considered other species resembling what they considered to be an eel or a snake (although not explicitly stated by the retailer, it is possible that they were referring to sea lamprey, *Petromyzon marinus*) to be a bigger issue in the Great Lakes. With respect to the economics of aquarium trade, one retailer explained that they would not be affected if they were unable to sell a particular crayfish species, as there are other similar-looking large shrimp and other organisms that are also in high demand and legal to sell. Another retailer believed that pollution (i.e., chemical discharge into waterways) posed a much bigger threat to the Great Lakes compared to invasive species.

What are your thoughts on the roles and responsibilities of businesses along the supply chain as they relate to invasive crayfish?

Roles and responsibilities for preventing the spread of invasive species were identified for different parties in OIT pathways. About a quarter of the surveyed retailers felt that wholesalers were most responsible for preventing the introduction of invasive crayfish, and therefore the effect of preventing the wholesalers from selling invasives would directly trickle down to the retailers. Many retailers shared that they had not been able to sell crayfish for months as their suppliers no longer carry them due to state restrictions (e.g., in Illinois), highlighting the role of wholesalers in preventing invasive species from spreading. One retailer shared that while they were not familiar with the operations of large fish farms and the safety practices they follow, they expected large suppliers to take greater responsibility in controlling the spread of invasive species.

Other retailers felt that the retail stores are equally responsible for controlling the spread of invasive species. Responsibilities identified for retail stores included: 1) Refraining from carrying species that can outgrow their tanks, 2) Training store employees to educate customers about the risks of releasing unwanted animals into the wild and encourage them to contact the store for alternative options, and 3) Understanding the laws and regulations around invasive crayfish as they vary state-by-state. For example, a retailer shared that crayfish were considered invasive in Illinois, but not in Indiana, Georgia, and Kentucky (i.e., locations from where they sourced their crayfish). Another responsibility identified for retailers was to provide information to customers in a transparent manner, such as the species' native range and impacts, for all species of crayfish at time of sale. One pet store retailer shared that they only typically sell about 25 crayfish per year, and therefore, they believed that pet shops contribute marginally to the crayfish supply chain among all retail types. The same retailer also expressed their belief that bait shops and food markets likely play a more substantial role as they facilitate larger sales volumes, citing the example of northern snakehead introduction, where pet shops were initially accused of spreading the invader. It was later revealed that Asian grocery stores played a larger role in their dissemination. A different retailer also shared the view that crayfish are invasive in the region only because of their importation from China.

In addition to wholesalers and retailers, one retailer expressed that customers also bear responsibility in the spread of invasive species. They further explained that once a customer buys an animal, retailers can only play a limited role afterwards, if any at all. Even if both distributors and retailers abide by the regulations and do not sell invasive crayfish, customers can purchase them from a vendor online. This retailer further explained that in cities that have transient populations (e.g., those with university campuses), individuals may take their pets (e.g., crayfish) with them when they move out of state, for example, after graduation. Therefore, customer education at the time of sale is a key responsibility of businesses.

What are your thoughts on regulations on what you can sell?

Retailers were asked to share their opinions on regulations given that they play a key role in preventing the introduction and spread of invasive species. Smith et al. (2018) found that the sale of the invasive red swamp crayfish increased in retail shops following the implementation of a ban in Michigan. Over 75% of our survey respondents believed that regulations are necessary for addressing all invasive species, and they expressed willingness to comply with rules established by state and federal agencies. However, several challenges to adopting regulations were shared: 1) There is no incentive for retailers to self-report accidents or hitchhikers in shipments, and that there should be some kind of compensation in place for business owners when they have to destroy or confiscate shipments because of accidents or hitchhikers, 2) Regulations are very technical, vary state-by-state, and can be difficult for non-experts to understand, and 3) Regulations change frequently with inadequate and inconsistent communication. Despite these challenges, retailers expressed their belief that regulations ultimately provide more benefits than drawbacks and remain essential for preventing invasive species introductions. A retailer also suggested a change to the license fees, noting that regulations are weak due to the low fees.

Nearly a quarter of retailers believed that blanket regulations cannot exist, and that regulations need to be species-specific. Upon further questioning, these respondents clarified that while they did not have an objection to regulations for species that are truly invasive, they believed invasive fish were a bigger environmental concern compared to crayfish, and therefore, regulation of crayfish sales may be unnecessary. One retailer explained that they sell responsibly, and because 'tropical species' cannot

survive in the Great Lakes region, they do not present an environmental concern. Another retailer noted that they were against rusty crayfish as pets and only sold them as feeders. They further explained that it is only when the crayfish are sold as pets can they become an issue. Another retailer, however, noted the potential benefits of the aquarium hobby for humans, noting that it can serve as a therapeutic outlet for veterans and individuals with post-traumatic stress disorder. Since sales of crayfish are generally low relative to other organisms, retailers expressed that regulations on crayfish sales would not substantially impact their store's revenue, although this may not be true for crayfish wholesalers or breeders.

Outreach for invasive species

How and where do you get information about invasive species?

Retailers were asked for sources of information about invasive species to aid in conducting effective outreach about aquatic invasive species in the Great Lakes region. Overall, about half of respondents reported that they get information directly from their state's DNR through regular emails and occasional store visits, and half reported that they do their own independent research by reading news articles and other scholarly articles on the internet. In addition to state DNRs, other state agencies such as Departments of Agriculture were also listed as sources of information. All retailers reported getting information from multiple sources at any time, and other sources of information included contacts in state agencies, distributors and vendors, and, in one case, even their customers. Two extension programs were also identified as sources of information: 1) the Reduce Invasive Pet and Plant Escapes ([RIPPLE](#)) program by Michigan State University, and 2) outreach materials by Sea Grant and Indiana DNR.

What could Illinois-Indiana Sea Grant (or others) do better to provide you with invasive species information?

When asked what kinds of educational materials they would find helpful, some retailers felt content with the existing resources available online from their state agencies and other sources. One retailer criticized only using trade journals as a source of information due to their national or international focus that may not take regional or local concerns about invasive species into consideration. Others offered the following specific suggestions:

1. **Education for crayfish distributors and retailers:** Retailers suggested agencies provide information packets to crayfish distributors and retailers with materials about why invasive species are harmful, lists of native and invasive crayfish with images, and pictures of crayfish species prohibited and their lookalikes with differences indicated clearly. As businesses may buy directly from distributors online, education of distributors is important so that they can appropriately advise their customers.
2. **Education for the public:** Retailers thought it was important to educate the public about the impacts of different invasive species, and most importantly, that this education needs to be accessible.
3. **Education on invasive plants:** Retailers wanted clear, concise, and reliable information about invasive aquatic plants to be in a single place. A DNR website was suggested as a platform where this information could be hosted for easy access to all.

4. Constant communication with retailers: Retailers suggested that quarterly or yearly updates from the state agencies, perhaps in the form of a newsletter, with clear and concise communication on prohibited species would be extremely helpful compared to browsing the vast amount of information available online from various sources.
5. Public signage: While signs with information about which species can be harvested can be seen around lakes, retailers suggested that signs advising people to be on the lookout for particular invasive species (e.g., rusty crayfish) would also be helpful.
6. Participation in pet advisory council: A retailer suggested sharing information with various pet store owners through participation in pet industry organizations such as the Pet Advocacy Network.
7. Government wholesalers: Retailers thought that having a government supplier of crayfish would be helpful to ensure that shops only carry the species that can be legally traded in their region.

Would you participate in outreach programs that would provide your consumers with information about invasive species? Any reason why or why not? Can you see any other opportunities for your business to participate in invasive species education efforts? If so, can you give an example?

Retailers were generally supportive of outreach events either because of their own personal interest in crayfish or because they believed these events would serve as a source of information for their customers (Fig. 4). To quote one retailer, “Knowledge is power and crayfish are awfully interesting”. Current ongoing efforts retailers reported included participating in a club and providing educational materials from the DNR to their customers. One store issued a regular newsletter to educate its employees on various species, which employees found useful when talking to customers. This store suggested printing these species spotlights and posting them around the store. Retailers currently not involved in outreach expressed interest in sharing educational materials including pamphlets in store as well as putting up signage. A retailer suggested outreach events arranged by professionals from environmental organizations, in addition to store employees, could further their efforts. Another suggestion was to designate drop-off locations for pet owners to bring unwanted species to prevent their release into the environment.

Those retailers who answered that they could not support outreach events at present typically reported that they did so because of either a lack of time, space, knowledge, opportunities for customer awareness besides in-store interactions, a large crayfish customer base, authority in store management decisions, or a combination of these reasons. One retailer reasoned that since they did not carry many potentially invasive species, they did not see merit for either the store or its customers in supporting any outreach.

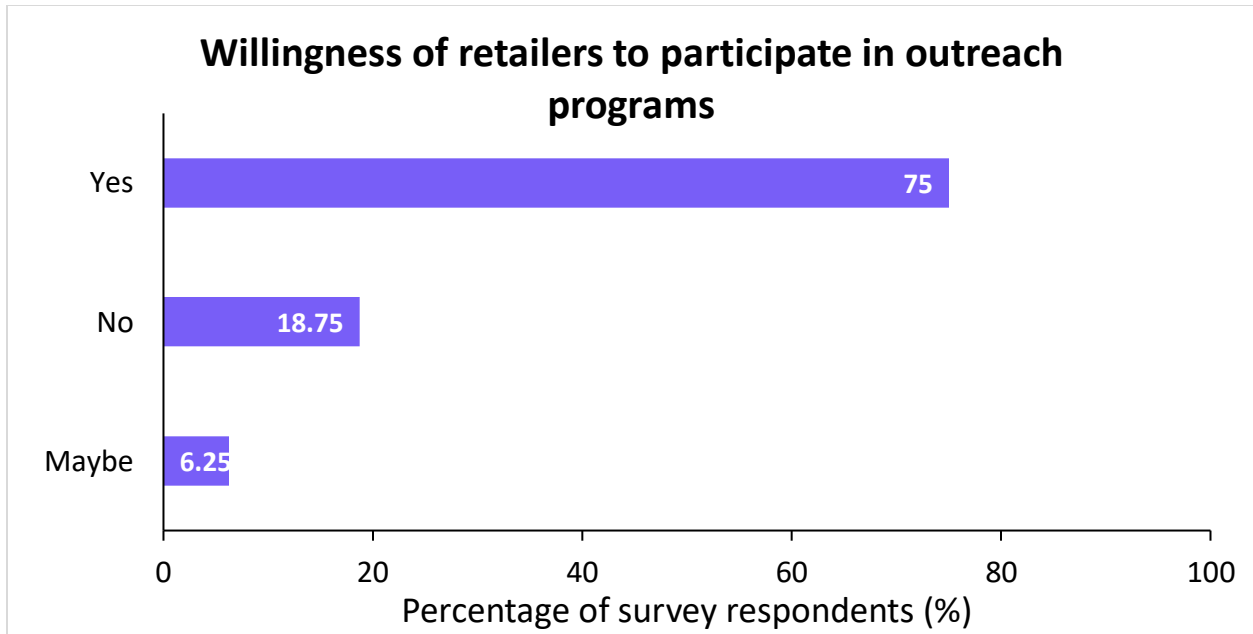


Fig. 4. Survey respondent responses to ‘Are you willing to participate in outreach programs?’ (n=16)

CONCLUSION

The insights gained from this survey of crayfish retailers in the Great Lakes states underscore the complexities surrounding invasive crayfish management in the region, and the importance of effective communication and education to mitigate the threats posed by invasive crayfish. These findings are likely to be of relevance to natural resource managers and outreach professionals working to address the threats posed by invasive crayfish. The reliance of retailers on wholesalers, distributors, and suppliers for information shows a critical need for increased outreach efforts directed towards these groups. The observed inconsistencies around invasive species identification, impacts, and terminology underline the necessity for outreach materials to provide specific information on species identification, pathways, and impacts. Moreover, the demand for clear and consistent communication regarding regulatory changes emphasizes the importance of creating and maintaining open channels of information exchange between the regulatory agencies and the retailers.

It is also important to acknowledge the limitations of this study. The small sample size (n=16) consisted predominantly of aquarium shops, which limits the generalizability of the findings to other types of crayfish retailers such as food markets. Additionally, the incomplete representation of all the Great Lakes states and Canadian provinces further emphasizes the need for working across jurisdictional boundaries to capture diverse perspectives. The challenges encountered in surveying retailers via cold-calling and phone surveys suggest that future research efforts may benefit from employing in-person surveys to foster trust with the retailer and supplier community. Moving forward, addressing these limitations and leveraging the identified future actions can help facilitate more effective strategies for efforts focused on invasive crayfish management and native species conservation in the Great Lakes region.

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APPENDICES

CRAYFISH RETAILER SURVEY REPORT

Appendix I – State-level list and contact details of aquatic organism retailers in the Great Lakes

Note: Although some retailers may be classified under multiple retailer types (e.g., they may be both an aquarium retailer and a plant nursery, or a bait shop and a wholesaler), only their primary retailer type is listed below. Not all retailers listed below sell crayfish, either currently or in the past.

Table 1. Retailers in IL

| | Retailer | Phone Number | City |
|---------------------------|--------------------------------|---------------------|---------------|
| Food Retailers | | | |
| 1 | Assi Plaza | (847) 470-9450 | Niles |
| 2 | Chicago Food Market | (312) 842-4361 | Chicago |
| 3 | Chitown Fish & Seafood LLC | (773) 545-3474 | Chicago |
| 4 | Dirk's Fish & Gourmet Shop | (773) 404-3475 | Chicago |
| 5 | H-Mart Niles | (847) 581-1212 | Niles |
| 6 | JC's Fish Market | (815) 708-7467 | Rockford |
| 7 | Joong Boo Warehouse Market | (773) 478-2550 | Chicago |
| 8 | Lian Sheng Market Inc. | 773-954-1973 | Chicago |
| 9 | Park To Shop Supermarket | (312) 846-1188 | Chicago |
| 10 | Richwell Market | (847) 929-2228 | Morton Grove |
| 11 | Robert's Seafood Market | (217) 546-3089 | Springfield |
| 12 | Supreme Lobster & Seafood Inc | (630) 834-3474 | Villa Park |
| 13 | Tai Nam Food Market | (773) 275-5666 | Chicago |
| 14 | The FishGuy Market & Wellfleet | (773) 283-7400 | Chicago |
| Aquarium Retailers | | | |
| 15 | Animal Island Pet Shop | (708) 293-0600 | Midlothian |
| 16 | AquaCave.com | (847) 775-0640 | Lake Forest |
| 17 | Aquamoon LLC | (833) 723-4635 | Chicago |
| 18 | Aquanexus | (847) 628-5575 | Elgin |
| 19 | Aquapros | (630) 935-1363 | Glen Ellyn |
| 20 | Aquarium Adventure | (630) 739-1128 | Bolingbrook |
| 21 | Aquarium Maintenance Done | (815) 341-1029 | Villa Park |
| 22 | Aquariums Done Wright | (630) 352-8888 | Downers Grove |
| 23 | Aquatic Oasis | (773) 595-3176 | Chicago |
| 24 | Aquatic Paradise | (630) 300-8245 | Lemont |
| 25 | Aquatic Realm Inc | (312) 642-8763 | Chicago |
| 26 | Aquatic Solutions Inc. | (847) 951-3865 | Schaumburg |
| 27 | Aquatic Works | (847) 564-9675 | Northbrook |
| 28 | Aquatic World | (773) 935-2028 | Chicago |
| 29 | Aquatica | (708) 633-7333 | Tinley Park |
| 30 | Aurora Lagoon, LLC | (224) 458-4735 | Chicago |
| 31 | Beyond the Reef | (847) 885-7333 | Schaumburg |
| 32 | Big Fish Aquarium | (773) 295-5175 | Chicago |
| 33 | Blue Line Coral | (630) 857-9166 | Naperville |
| 34 | Blue Planet Aquarium Services | (773) 774-3474 | Chicago |
| 35 | Chicago Discus | (312) 622-0055 | Chicago |
| 36 | Chicago Fish and Coral Company | (708) 349-9055 | Orland Park |
| 37 | Chicago Reptile House | (708) 349-9055 | Orland Park |
| 38 | Chicagoland Aquariums | (815) 304-5666 | Bradley |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|-------------------------|-----------------------------------|-----------------|-------------------|
| 39 | Coral Reef Pet Center | (708) 456-0768 | Norridge |
| 40 | Critters Pet Shop | (224) 856-5780 | South Elgin |
| 41 | Datz Cichlids & Reptiles | (815) 271-5715 | McHenry |
| 42 | Exotic Aquatics | (847) 854-6154 | Lake in the Hills |
| 43 | Fish Help Chicago | (708) 691-4400 | Chicago |
| 44 | Fish Island | (847) 704-2592 | Barrington |
| 45 | Fish Planet | (847) 945-4700 | Deerfield |
| 46 | Gingerbread Tropical Fish & Coral | (630) 857-9404 | Naperville |
| 47 | Golden Aquarium | (773) 376-8355 | Chicago |
| 48 | Hardy's Aquatics & Pets | (773) 840-3420 | Chicago |
| 49 | Marine Concepts Inc. | (847) 344-2422 | Wheeling |
| 50 | Namaka Aquatics | (224) 420-1835 | Hanover Park |
| 51 | Nick's Reef | (847) 770-3065 | Carol Stream |
| 52 | Oak Park Natural Pet and Fish | (708) 660-9500 | Oak Park |
| 53 | Ocean Design Aquarium | (773) 625-3474 | Chicago |
| 54 | Old Town Aquarium | (312) 642-8763 | Chicago |
| 55 | Pet Supplies Plus | <i>Multiple</i> | <i>Multiple</i> |
| 56 | Petco | <i>Multiple</i> | <i>Multiple</i> |
| 57 | Petland Hoffman Estates | (847) 865-9331 | Hoffman Estates |
| 58 | PetSmart | <i>Multiple</i> | <i>Multiple</i> |
| 59 | Prism Bettas | | DeKalb |
| 60 | Rainforest Marine Aquatics | (773) 503-9048 | Des Plaines |
| 61 | Reef Design | (630) 514-5948 | Naperville |
| 62 | Reef Geeks of Chicago | (224) 723-5588 | Northbrook |
| 63 | Reef Plus | (630) 906-7333 | North Aurora |
| 64 | Reefwise | (630) 541-5486 | Lisle |
| 65 | Rob's Aquatics | (708) 444-7627 | Tinley Park |
| 66 | Sailfin Pet Shop | (217) 352-1121 | Champaign |
| 67 | Sea Escapes Inc | (847) 695-9441 | South Elgin |
| 68 | Sho Tank Aquariums | (847) 949-8265 | Mundelein |
| 69 | Slice of the Sea, LLC | (708) 942-5012 | Chicago |
| 70 | Snails to Tails Pet Center | (708) 387-9228 | Brookfield |
| 71 | Something Fishy Inc | (708) 597-3474 | Alsip |
| 72 | Tank it Easy | (312) 600-8265 | Chicago |
| 73 | The Animal Store | (847) 675-5133 | Lincolnwood |
| 74 | The Local Fish Store | (224) 247-2200 | Morton Grove |
| 75 | The Little Reef Shop | (630) 541-7153 | Downers Grove |
| 76 | Trident Aquatic Solutions | (815) 900-2283 | McHenry |
| 77 | Tropi-Quatics Pet Center | (630) 953-2696 | Lombard |
| 78 | Wojtek's Reef | (773) 837-5104 | Chicago |
| 79 | Zooxae | (847) 780-1113 | Elgin |
| 80 | 2nd City Cichlids | (773) 417-3537 | Chicago |
| 81 | 650 Ocean's Reef Inc | (224) 857-8193 | Palatine |
| Restaurants/Bars | | | |
| 82 | Big Jones | (773) 275-5725 | Chicago |
| 83 | Boston Fish Market | (847) 296-1111 | Des Plaines |
| 84 | Brownstone Tavern | (773) 528-3700 | Chicago |
| 85 | Frontier | (773) 772-4322 | Chicago |
| 86 | Maple Tree Inn | (708) 388-3461 | Homewood |
| 87 | McGees Tavern | (773) 549-8200 | Chicago |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|--------------------------------------|---|----------------|-------------------|
| 88 | Mr. Wang | (312)225-2882 | Chicago |
| 89 | Reggies | (312) 949-0120 | Chicago |
| 90 | The Angry Crab | (773) 687-9929 | Chicago |
| 91 | Toons | (773) 935-1919 | Chicago |
| Bait Shops | | | |
| 92 | Advantage Bait Company | (847) 772-9334 | Elk Grove Village |
| 93 | Anglers International Resources | (847) 991-3200 | Palatine |
| 94 | Badass Lures LLC | (630) 557-6373 | Rockford |
| 95 | Bait Shanty | (847) 532-0260 | Algonquin |
| 96 | Bunny's Bait Shop & 24/7 Vending Machines | (815) 288-3812 | Dixon |
| 97 | Buschs Bait Shop | (847) 356-7537 | Lake Villa |
| 98 | Country Corner | (847) 566-5770 | Mundelein |
| 99 | Croegaert's Great Outdoors | (309) 788-4868 | Rock Island |
| 100 | Crappie Pro Shop | (618) 985-8277 | Carteville |
| 101 | Dave's Bait Tackle & Taxidermy | (815) 455-2040 | Crystal Lake |
| 102 | Dicky's Bait Shop | (630) 675-4371 | Montgomery |
| 103 | Drydock Bait and Tackle | (309) 627-2769 | Gladstone |
| 104 | Elliots Bait and Tackle | (815) 304-4137 | Kankakee |
| 105 | Fishing Connection | (708) 532-1476 | Tinley Park |
| 106 | Fishing Tales Guide Service | (630) 732-5461 | Campton Hills |
| 107 | Fishtech | (847) 966-5900 | Morton Grove |
| 108 | Golden Bait Co | (309) 723-6381 | Anchor |
| 109 | Green Acres Bait Shop | (217) 935-9015 | Clinton |
| 110 | Hoss Hawg Bait | (309) 565-3241 | Elmwood |
| 111 | Jon's Bait and Tackle Shop | (815) 237-2822 | Gardner |
| 112 | Just Add Water Bait, Tackle & More LLC | (618) 964-1944 | Marion |
| 113 | Lee's Bait & Tackle | (847) 593-6424 | Elk Grove |
| | | (630) 830-5337 | Carol Stream |
| 114 | Live Bait Shack | (331) 229-9891 | Plainfield |
| 115 | Louie's Lures | (888) 369-1999 | Lindenhurst |
| 116 | Musky Tales | (847) 603-1248 | Antioch |
| 117 | Park Bait Co | (773) 271-2838 | Chicago |
| 118 | Sharky Spoons & Tackle LLC | (630) 673-2983 | |
| 119 | SS Minnows Bait Shop | (847) 289-0135 | South Elgin |
| 120 | The Bait Shop at Allen & Outboard Marine | (815) 761-1947 | Shabbona |
| 121 | The Salmon Shop and the Great Outdoors | (847) 934-4050 | Palatine |
| Plant Nurseries/Water Gardens | | | |
| 122 | Aquascape Construction | (630) 659-2057 | St. Charles |
| 123 | Aquatic Nursery | (847) 741-7678 | South Elgin |
| 124 | Heinz Brothers Greenhouse Garden Center | (630) 377-6288 | St. Charles |
| 125 | Keystone Hatcheries | (815) 678-2537 | Richmond |
| 126 | Koi & More Pond Shop | (847) 432-1350 | Highland Park |
| 127 | Natural Water Gardens | (815) 235-7663 | Belvidere |
| 128 | Picasso Ponds & Watergardens | (847) 493-9322 | Franklin Park |
| 129 | Pond Boy Water Gardens | (630) 521-1997 | Bensenville |
| 130 | Schaefer Greenhouses | (630) 896-1936 | Montgomery |
| 131 | Wannemaker's Home and Garden | (630) 852-0700 | Downers Grove |
| Wholesalers | | | |
| 132 | Apet Inc | (847) 586-5800 | Carpentersville |
| 133 | Aquatics Inc | (708) 457-1454 | Norridge |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|-----|---|----------------|-------------------------|
| 134 | Childers Fish Farm | (309) 565-3288 | Hanna City |
| 135 | Gorham Fish Farm | (618) 763-4496 | Fountain Bluff Township |
| 136 | Hatchery Creek Co | (309) 694-0375 | East Peoria |
| 137 | Indian Trail Fish Hatchery | (573) 743-6215 | Salem Township |
| 138 | Ken's Fish Studio | (815) 633-9434 | Loves Park |
| 139 | Koi Whisperer Sanctuary | (630) 631-9566 | St. Charles |
| 140 | Lake Julian Trout Farm | (847) 639-3734 | Cary |
| 141 | Little Grassy Fish Hatchery | (618) 529-4100 | Makanda |
| 142 | Richmond Fisheries | (815) 675 6545 | Richmond |
| 143 | Ridgley's Fish Farm | (618) 683-4602 | Golconda |
| 144 | Scoville Fish Hatchery | (847) 381-2888 | Tower Lakes |
| 145 | Seven Springs Fish Farm & Lake Management | (618) 201-7686 | Evansville |
| 146 | Shady Lane Fish Farm | (618) 584-3517 | Flat Rock |

Table 2. Retailers in IN

| | Retailer | Phone Number | City |
|---------------------------|--|---------------------|--------------|
| Aquarium Retailers | | | |
| 1 | Abyss Systems Inc. | (317) 913-1537 | Indianapolis |
| 2 | Aquaricare | (317) 224-7875 | Morgantown |
| 3 | Aquarium Concepts | (812) 434-7400 | Evansville |
| 4 | Aquarium World | (765) 447-7371 | Lafayette |
| 5 | Aquatic Arts | (317) 513-2967 | Indianapolis |
| 6 | Atlantis Aquatic Gardens | (812) 232-7387 | Terre Haute |
| 7 | Coralsedge Aquarium Maintenance & Set Up | (219) 331-5054 | Valparaiso |
| 8 | DNA Aquatics | (574) 227-1600 | Elkhart |
| 9 | Exotic Aquatics | (847) 854-6154 | Highland |
| 10 | Exotic Aquatics and Pets | (260) 343-0300 | Kendalville |
| 11 | Fins & Fangs | (812) 821-5677 | Spencer |
| 12 | G and M Pet and Garden Center Inc | (765) 288-9931 | Muncie |
| 13 | Goldfish Gardens | (317) 997-3474 | Carmel |
| 14 | Greentree Pet Center | (812) 282-2594 | Clarksville |
| 15 | Imperial Aquatics, Inc | (317) 670-7757 | Indianapolis |
| 16 | J & K's Mega Pet! | (260) 563-0352 | Wabash |
| 17 | Modern Aquatix | (317) 731-4116 | Indianapolis |
| 18 | Northside Aquatics LLC | (574) 612-4416 | Elkhart |
| 19 | Pat's Pets | (574) 272-5888 | Mishawaka |
| 20 | Pet Supplies Plus La Porte | (219) 402-0100 | La Porte |
| 21 | Petco | (219) 924-9219 | Highland |
| 22 | PetSmart | (219) 942-5598 | Hobart |
| 23 | Petware House | (260) 489-5151 | Fort Wayne |
| 24 | Premium Aquatics | (317) 895-9005 | Edinburgh |
| 25 | Rainforest Farms International | (812) 272-8668 | Bloomington |
| 26 | Reptile Emporium & Aquatic Center | (219) 838-8149 | Highland |
| 27 | Speck's Pet Supplies | (317) 272-7738 | Avon |
| 28 | Summit City Coral | (260) 446-2041 | Fort Wayne |
| 29 | Terry's Aquarium & Pet Center | (219) 931-6724 | Hammond |
| 30 | The Ark Pet Shop | (219) 769-0661 | Merrillville |
| 31 | The Reef Aquarium Shop | (317) 253-9695 | Indianapolis |
| 32 | Uncle Bill's Pet Centers Fort Wayne | (260) 436-9900 | Fort Wayne |

CRAYFISH RETAILER SURVEY REPORT

| Bait Shops | | | |
|------------|--|----------------|----------------|
| 33 | Adams Outdoor Bait & Tackle! | (317) 671-9029 | Beech Grove |
| 34 | Bailey's Bait & Tackle | (812) 988-0585 | Nashville |
| 35 | Bait Bucket | (812) 424-0670 | Evansville |
| 36 | Baitmasters LLC | (219) 265-1777 | Hobart |
| 37 | Bal-Hinch Country Store | (765) 866-1055 | Crawfordsville |
| 38 | Beautiful Bud's Sports & Bait - South Blvd. Sports | (765) 362-0129 | Crawfordsville |
| 39 | Big D's Bait & Tackle | (260) 665-8414 | Angola |
| 40 | Big Jim's fishing and hunting gear | (812) 821-4660 | Spencer |
| 41 | Big Ol' Mouth Baits | (260) 229-1640 | Roann |
| 42 | Big Tales Fishing Tackle | (812) 547-0908 | Tell City |
| 43 | Breezy Hill Bait Shop | (219) 253-8323 | Monticello |
| 44 | Bruce's Bait Shop | (812) 665-9505 | Jasonville |
| 45 | Buck & Dumb Bass Outdoors | (765) 795-2009 | Cloverdale |
| 46 | Chief's Bait Shop | (219) 874-4086 | Michigan City |
| 47 | Country Bait & Taxidermy Shop | (219) 464-9932 | Valparaiso |
| 48 | Curtis Fisheries | (765) 342-6341 | Martinsville |
| 49 | Cy's Tackle Shop | (574) 223-4370 | Rochester |
| 50 | Double D Fireworks/Bass Lake Bait and Tackle | (574) 772-0229 | Knox |
| 51 | Doyle's Bait & Tackle | (765) 481-2140 | Lebanon |
| 52 | Fish On Tackle | (260) 571-5378 | Wabash |
| 53 | Fishin Tales | (812) 530-9821 | Seymour |
| 54 | Fishun' Frannies Custom Baits | (812) 359-0096 | Ellettsville |
| 55 | Fletcher's Bait & Tackle | (574) 267-1622 | Warsaw |
| 56 | Gary's Dam Bait Shop | (317) 364 6366 | Edinburgh |
| 57 | Geneo's Hunting And Fishing | (765) 269-9246 | Lafayette |
| 58 | Honey Creek Tackle | (317) 422-0102 | Bargersville |
| 59 | Indy Bait & Tackle | (317) 362-4548 | Indianapolis |
| 60 | Jays Midlake Bait.Tackle.Restaurant | (765) 458-7554 | Liberty |
| 61 | Jordan's Bait Shop | (765) 397-1929 | Kingman |
| 62 | Jr's Bait & Tackle | (260) 593-0233 | Topeka |
| 63 | Kelley's Bait & Tackle | (574) 784-8859 | Lakeville |
| 64 | KRB Bait & Tackle | (812) 247-3115 | Shoals |
| 65 | Lake Cicott bait and tackle LLC | (574) 870-4435 | Logansport |
| 66 | LBS Bait Shop | (317) 737-0138 | Indianapolis |
| 67 | Lighthouse Bait & Tackle | (765) 287-8587 | Muncie |
| 68 | Master Bait and Tackle | (765) 639-9525 | Anderson |
| 69 | McCollough Taxidermy | (765) 655-3753 | Greencastle |
| 70 | Morton Hook & Sinker Bait Shop | (765) 739-6566 | Greencastle |
| 71 | My Bait Guy | (574) 603-0159 | Logansport |
| 72 | Myers Bait & Fish Inc | (260) 475-5765 | Pleasant Lake |
| 73 | Naptown Bait and Tackle | (317) 735-1147 | Indianapolis |
| 74 | Nick's Bait & Tackle | (260) 508-0208 | Albion |
| 75 | Number 1 Stop Bait & Tackle | (574) 594-2361 | Pierceton |
| 76 | Outdoor World Jefferson Sportsman's Mall | (812) 254-9350 | Washington |
| 77 | Ozark Fisheries | (800) 775-3474 | Martinsville |
| 78 | Peacepipe Bait & Tackle | (260) 468-2768 | Andrews |
| 79 | Premier Bait & Tackle | (574) 528-5005 | Syracuse |
| 80 | Realistic Bait LLC | (219) 690-1765 | Lowell |
| 81 | Red Barn Bait & Guns | (812) 883-6483 | Salem |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|--------------------------------------|--|----------------|---------------|
| 82 | S S Bait and Tackle | (260) 468-2551 | Andrews |
| 83 | SCHMACK EM' Bait & Tackle | (574) 382-0350 | Macy |
| 84 | Schwartz's Bait & Tackle | (317) 776-0129 | Noblesville |
| 85 | Slez's Bait and Tackle | (219) 588-5929 | Lake Station |
| 86 | Small Town Sports & Outdoors | (765) 938-4412 | Rushville |
| 87 | Smiths Triangle Bait & Storage | (765) 458-7106 | Liberty |
| 88 | Soremouth Tackle | (765) 507-5010 | Kokomo |
| 89 | SSC BAIT & TACKLE | (812) 704-8205 | Versailles |
| 90 | Stacy's Bait & Tackle | (574) 289-4559 | Mishawaka |
| 91 | Stan's Bait & Tackle Center | (219) 315-0303 | Hammond |
| 92 | Summit Lake Bait Shop | (765) 524-9700 | New Castle |
| 93 | Tackle And Bait Shop | (574) 214-5214 | Elkhart |
| 94 | Tackle Service Center | (317) 831-2400 | Mooreville |
| 95 | Tackle Shack | (574) 825-0802 | Middlebury |
| 96 | Ted's Bait Shop | (765) 492-9293 | Kingman |
| 97 | The Fishin Shedd | (812) 837-9474 | Bloomington |
| 98 | They're Bitin' Bait Shop | (812) 732-4800 | Central |
| 99 | Track & Channel Outdoors | (574) 457-2490 | Syracuse |
| 100 | Twin Lakes Fish & Game | (574) 583-6635 | Monticello |
| 101 | U Save Bait Shop | (765) 654-4544 | Frankfort |
| 102 | White River Bait & Tackle | (812) 388-7362 | Williams |
| 103 | Woody's Spillway Camp & Bait | (765) 473-6702 | Peru |
| 104 | Wormies Bait & Tackle | (812) 537-5839 | Greendale |
| 105 | Ye Olde Tackle Box | (574) 834-2011 | North Webster |
| Plant Nurseries/Water Gardens | | | |
| 106 | Alsip Home & Nursery | (219) 365-0882 | St. John |
| 107 | Aquatic Design and Supplies, Inc. | (317) 996-3106 | Monrovia |
| 108 | Backyard Blessings | (317) 899-5459 | Indianapolis |
| 109 | Chesterton Feed & Garden Center | (219) 926-2790 | Chesterton |
| 110 | Cool Ponds | (317) 786-3670 | Indianapolis |
| 111 | Dennis Perennials | (219) 477-6704 | Valparaiso |
| 112 | Majestic Water Garden LLC | (317) 793-8649 | Mooreville |
| 113 | Niemeyer's Landscape Supply | (219) 663-1042 | Crown Point |
| 114 | Rosie's Gardens and Hughes Landscape | (317) 844-6157 | Carmel |
| 115 | Sounds of Water | (812) 246-0260 | Sellesburg |
| 116 | Wasson Nursery & Garden Center | (765) 759-9000 | Muncie |
| 117 | Water's Edge Gift, Garden & Pond Center | (708) 895-2554 | Munster |
| 118 | 3E Industries & Woodland Water Gardens and Nursery | (260) 244-0050 | Columbia City |
| Wholesalers | | | |
| 119 | Kelly's Live Bait & Tackle Inc | (812) 442-9221 | Brazil |

Table 3. Retailers in MI

| | Retailer | Phone Number | City |
|---------------------------|------------------------------|---------------------|-----------------|
| Aquarium Retailers | | | |
| 1 | A & M Aquatics | (517) 321-7258 | Lansing |
| 2 | Aqua Blue Aquarium Solutions | (616) 560-6992 | Grandville |
| 3 | Aquallations | (231) 943-2130 | Traverse City |
| 4 | Aquarium Shine | (586) 634-0256 | Rochester Hills |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|-------------------|--|----------------|------------------------|
| 5 | Aquatic Angels | (810) 347-7924 | Lansing |
| 6 | Aquatic Treasures/Bruces Pond Shop | (734) 479-5100 | Brownstown Charter Twp |
| 7 | Atlantis Fish Shoppe | (248) 280-6900 | Clawson |
| 8 | Beyond the Shore Aquatics | (231) 798-5557 | Muskegon |
| 9 | Blue Fish Aquarium | (616) 667-2583 | Grandville |
| 10 | Blue Thumb | (888) 619-3474 | Saginaw |
| 11 | Campbell's Sunken Treasures | (734) 231-4027 | Wyandotte |
| 12 | Clean Aquariums | (734) 249-8065 | Monroe |
| 13 | Critter Pet Shop | (313) 383-9460 | Allen Park |
| 14 | Dotty's Feed and Pet | (810) 742-2443 | Burton |
| 15 | Dutch Family Reef: Aquarium Maintenance and Design | (616) 403-8473 | Byron Center |
| 16 | Fantastic Fins | (734) 464-3523 | Livonia |
| 17 | Fins & Filters - Pet Suppliers | (248) 887-1881 | Highland Charter Twp |
| 18 | Fish Lady | (517) 625-4455 | Morrice |
| 19 | Fishy Bizz | (248) 893-7892 | Farmington |
| 20 | Goody's Pet Supply | (734) 728-5300 | Wayne |
| 21 | Great Lakes Aquarium House | (269) 279-6023 | Three Rivers |
| 22 | Greenwood Pets & Plants | (586) 200-3930 | Warren |
| 23 | Highland Tropical Fish & Bird Haven | (248) 698-9090 | White Lake |
| 24 | House of Pets Inc | (734) 421-5500 | Garden City |
| 25 | IncrediPets Market | (248) 301-5154 | Waterford Twp |
| 26 | Kee's Aquarium & Pets | (586) 739-9140 | Shelby Township |
| 27 | Lake Michigan Cichlids | (269) 326-0546 | Bridgman |
| 28 | Lou's Pet Shop | (313) 885-1560 | Grosse Pointe Woods |
| 29 | M & M Pet Supplies Inc | (313) 882-3944 | Detroit |
| 30 | M V Pets | (269) 492-7387 | Portage |
| 31 | Michigan Tropicals LLC | (810) 513-4468 | Flint |
| 32 | Moby Dick Pet Store Inc | (248) 673-2520 | Waterford Twp |
| 33 | Oceans and Seas | (586) 778-2223 | Roseville |
| 34 | Pet Connection | (734) 525-1270 | Livonia |
| 35 | Pet Station Jackson | (517) 787-9050 | Jackson |
| 36 | Pond Place of Michigan LLC | (248) 889-8400 | Milford |
| 37 | Premier Pet Supply | (734) 855-4505 | Livonia |
| 38 | Preuss Pets | (517) 339-1762 | Lansing |
| 39 | Royal Aquariums Detroit | (734) 634-3000 | Detroit |
| 40 | Royal Tropical Fish & Bird | (248) 541-6600 | Royal Oak |
| 41 | Soldan's Pet Supplies | (989) 775-6900 | Mt Pleasant |
| 42 | Something Fishy | (734) 722-4474 | Westland |
| 43 | Stingray Bay | (586) 778-0547 | Eastpointe |
| 44 | Tank Dreams | (517) 292-0046 | Howell |
| 45 | The Fish Doctors | (734) 434-1030 | Ypsilanti |
| 46 | Tropic Cove Pet Store | (231) 347-5970 | Petoskey |
| 47 | Tropical Treasures | (586) 791-6595 | Clinton Twp |
| 48 | Tropicorium Mini-Reef | (734) 782-2622 | Romulus |
| 49 | V.I. Pets | (616) 281-3900 | Grand Rapids |
| 50 | Watercolors Aquarium Gallery | (616) 667-2424 | Grand Rapids |
| Bait Shops | | | |
| 51 | Andy's Tackle Box | (231) 477-5737 | Brethren |
| 52 | Alexander's Bait & Tackle | (989) 883-9024 | Sebewaing |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|-----|--|----------------|----------------|
| 53 | Baldwin Bait and Tackle | (231) 745-3529 | Baldwin |
| 54 | Bay View Bait & Tackle | (906) 786-1488 | Gladstone |
| 55 | Beckley's M-65 Bait Shop | (989) 756-3651 | Whittemore |
| 56 | Bellaire Bait and Tackle | (231) 350-7126 | Bellaire |
| 57 | Big Moe's Bait & Tackle | (313) 259-1176 | Detroit |
| 58 | Bob's Bait Shop | (231) 885-1150 | Mesick |
| 59 | Brenner's Sporting Goods | (616) 785-3388 | Comstock Park |
| 60 | Buck Country Bait & Tackle | (231) 768-5653 | Le Roy |
| 61 | Cary's bait tackle | (269) 282-1023 | Battle Creek |
| 62 | Charlie's Marina Bait Shop | (231) 869-5000 | Pentwater |
| 63 | Chuckies Bait and Tackle | (989) 493-0302 | Essexville |
| 64 | Clear H2O Tackle Llc | (269) 414-4131 | Edwardsburg |
| 65 | Dean's Bait & Tackle Inc | (989) 836-2460 | Alger |
| 66 | Dip Net Live Bait and Tackle | (313) 388-5811 | Ecorse |
| 67 | Don's Sporting Goods | (231) 723-5028 | Manistee |
| 68 | Double L Bait & Tackle | (269) 649-9676 | Vicksburg |
| 69 | Fish On Bait & Tackle | (616) 935-6985 | Nunica |
| 70 | Fishermans Cave | (734) 848-3935 | Erie |
| 71 | Fisherman's Headquarters | (231) 848-4242 | Wellston |
| 72 | Fishin Hole | (269) 982-3474 | St Joseph |
| 73 | Gordon's Live Bait | (989) 728-2961 | Hale |
| 74 | Grand River Bait and Tackle | (517) 420-4183 | Lansing |
| 75 | Great Lakes Tackle | (269) 208-6178 | Benton Harbor |
| 76 | Hall's Bait & Tackle | (269) 641-2304 | Union |
| 77 | Hank & Sons Tackle Store | (231) 477-5450 | Brethren |
| 78 | Henry's Bait & Tackle | (231) 757-0101 | Scottville |
| 79 | Hooked Bait & Tackle | (701) 590-9523 | Gobles |
| 80 | Jeff's Bait & Tackle | (734) 289-4901 | Monroe |
| 81 | Johnsons Great Outdoors | (231) 893-6688 | Montague |
| 82 | Ken's Sport Shop | (269) 623-6565 | Delton |
| 83 | Lake Leelanau Narrows Resort Bait & Tackle | (231) 624-6201 | Lake Leelanau |
| 84 | Lakes Area Bait Shop | (248) 624-3333 | Wolverine Lake |
| 85 | Lakeview Marine & Tackle | (616) 842-2770 | Grand Haven |
| 86 | Livingston Lakes Live Bait and Tackle | (586) 218-0118 | Brighton |
| 87 | Lyman's On the Lake | (989) 422-3231 | Houghton Lake |
| 88 | MainstreamTackle & Outdoors | (269) 665-5076 | Galesburg |
| 89 | Mac Baits | (616) 392-2553 | Holland |
| 90 | Matts Bait -n- Tackle | (616) 557-3000 | Sand Lake |
| 91 | Michigan Tackle, LLC | (269) 883-6457 | Battle Creek |
| 92 | Michigan Wholesale Bait | (231) 330-3446 | Alanson |
| 93 | Michigan Wholesale Bait Inc | (616) 887-7163 | Sparta |
| 94 | Mick's Bait Shop | (906) 586-6040 | Curtis |
| 95 | M 46 Bait & Tackle | (989) 576-1128 | Riverdale |
| 96 | M-65 Baitshop II | (989) 646-2444 | Au Gres |
| 97 | Outdoorsmen Pro Shop | (616) 457-3630 | Georgetown Twp |
| 98 | Pappy's Bait & Tackle | (231) 848-4142 | Wellston |
| 99 | Parsley's Sport Shop, LLC | (231) 652-6986 | Newaygo |
| 100 | Rick's Bait Shack | (734) 449-8210 | Whitmore Lake |
| 101 | Sadler's Great Outdoors | (989) 365-9559 | Six Lakes |
| 102 | Schafer's Bait & Sporting Goods | (989) 644-3501 | Weidman |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|--------------------------------------|---|----------------|------------------------|
| 103 | Shoreline Service Bait | (231) 759-7254 | Muskegon |
| 104 | Tackle Haven | (269) 925-0341 | Benton Harbor |
| 105 | TC Bait & Tackle | (231) 252-3088 | Traverse City |
| 106 | The Bait and Tackle Box | (734) 301-3281 | Trenton |
| 107 | The Bait Barn | (517) 278-9513 | Coldwater |
| 108 | The Bait Shop | (248) 599-7788 | Waterford Twp |
| 109 | Trenton Lighthouse Bait and Tackle Shop | (734) 675-7088 | Trenton |
| 110 | Wendell's Wholesale Bait | (269) 367-4844 | Woodland |
| Plant Nurseries/Water Gardens | | | |
| 111 | Apol's Water Gardens | (616) 698-1030 | Caledonia |
| 112 | Aqua Creations Pond and Water Garden Supplies | (810) 715-1313 | Flint |
| 113 | Aquatec Ponds LLC | (734) 994-7663 | Ann Arbor |
| 114 | Backyard Oasis Pond & Garden Center | (810) 736-9198 | Flint |
| 115 | Barson Greenhouse | (734) 421-5959 | Westland |
| 116 | Bogie Lake Greenhouses | (248) 887-5101 | White Lake Charter Twp |
| 117 | English Gardens | (586) 771-4200 | Eastpointe |
| 118 | English Gardens Plymouth Nursery | (734) 453-5500 | Plymouth |
| 119 | Grass Roots Pond & Garden | (734) 753-9200 | New Boston |
| 120 | Green Wellies Garden Shop, LLC | (269) 471-4037 | Berrien Springs |
| 121 | Lakeshore Aquascape | (231) 486-0077 | Norton Shores |
| 122 | The Pond Guy | (586) 336-7663 | Armada |

Table 4. Retailers in MN

| | Retailer | Phone Number | City |
|---------------------------|---------------------------|---------------------|--------------|
| Aquarium Retailers | | | |
| 1 | A World of Fish | (218) 729-5161 | Hermantown |
| 2 | Aqualand Aquarium Center | (612) 825-5666 | Minneapolis |
| 3 | Aquatic Pets | (507) 663-1096 | Northfield |
| 4 | Atlas Pet Supply | (855) 285-2726 | Stillwater |
| 5 | Forest Lake Pets | (651) 464-8982 | Forest Lake |
| 6 | Fragtastic Reef | (507) 304-2579 | Mankato |
| 7 | Go Aquatics | (612) 379-1315 | Minneapolis |
| 8 | Joe's Shrimp Shack | (952) 212-7913 | Plymouth |
| 9 | New Wave Aquaria | (763) 710-9386 | Plymouth |
| 10 | Northstar Aquatics Inc | (612) 208-3564 | Savage |
| 11 | Pet Zone | (218) 751-4471 | Bemidji |
| 12 | Premier Aquarium Service | (612) 243-1335 | Minneapolis |
| 13 | Pure Fish Works | (651) 318-7376 | Hastings |
| 14 | Quality Aquatics Pet Shop | (763) 780-3474 | Circle Pines |
| 15 | Reef Collective | (612) 326-0557 | New Brighton |
| 16 | Sea Level | (952) 933-2244 | Minnetonka |
| 17 | Sonnen's Pet Shop | (651) 222-2425 | St Paul |
| 18 | Tamed Waters | (651) 330-8077 | St Paul |
| 19 | Twin Cities Guppies | (320) 587-3202 | Maplewood |
| 20 | Uncle Earl's Pet Center | (952) 758-7297 | New Prague |
| 21 | Wet World | (651) 686-8483 | Eagan |
| Bait Shops | | | |
| 22 | Bait Shop | (952) 886-0604 | Bloomington |
| 23 | Blue Ribbon Bait & Tackle | (651) 777-2421 | Oakdale |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|--------------------------------------|-------------------------------------|----------------|---------------------|
| 24 | Buck's Bait & Tackle | (218) 772-0012 | Crosby |
| 25 | DH Custom Rods & Tackle South | (952) 471-7637 | Wayzata |
| 26 | Express Live Bait | (763) 795-0110 | Spring Lake Park |
| 27 | Full Stringer Bait and Tackle | (218) 363-2031 | Longville |
| 28 | Garrison Sports Bait and Tackle | (320) 692-4477 | Garrison |
| 29 | JR's Tackle Fishing Tackle Outlet | (763) 424-8001 | Brooklyn Park |
| 30 | Kathy's Live Bait | (651) 487-5766 | St. Paul |
| 31 | Northwoods Bait and Tackle Inc | (218) 666-2639 | Cook |
| 32 | Old Carver Bait and Tackle | (952) 426-1599 | Carver |
| 33 | Prior Lake Bait & Tackle | (952) 447-6096 | Prior Lake |
| 34 | Rocky's Bait | (218) 842-5233 | Erhard |
| 35 | Tutt's Bait & Tackle | (320) 692-4341 | Garrison |
| 36 | Vados Bait & Tackle | (763) 784-6728 | Spring Lake Park |
| 37 | Walts (Bait and Tackle) | (507) 625-4872 | North Mankato |
| 38 | Witt's Quality Bait & Tackle | (218) 234-3377 | Detroit Lakes |
| 39 | 507 Master Bait & Tackle | (507) 893-3822 | Winnebago |
| Plant Nurseries/Water Gardens | | | |
| 40 | Aqua Eden | (507) 333-5959 | Faribault |
| 41 | Aquatic Gardens & Landscaping, Inc. | (507) 380-1264 | Mankato |
| 42 | EcoGarden Supply | (651) 647-1896 | St. Paul |
| 43 | Gertens | (651) 450-1501 | Inver Grove Heights |
| 44 | Minnesota Waterscapes | (763) 458-8104 | Corcoran |
| 45 | Mother Earth Gardens | (612) 789-0796 | Minneapolis |
| 46 | Queen Bee'z Lawn & Garden | (952) 440-8165 | Prior Lake |
| 47 | SiteOne Hardscape Center | (651) 748-3158 | Stillwater |
| 48 | Superior Outdoor Expressions | (952) 446-8000 | St. Bonifacius |
| 49 | The Pond Company | (952) 378-1079 | Bloomington |
| 50 | The Watering Can Garden Shop | (218) 666-5398 | Cook |

Table 5. Retailers in NY

| | Retailer | Phone Number | City |
|---------------------------|---|---------------------|---------------|
| Aquarium Retailers | | | |
| 1 | Aqua Star Pet | (212) 431-4311 | New York |
| 2 | Aquatic Creations: Aquarium & Fish Tanks | (347) 674-8845 | Brooklyn |
| 3 | Beital's Aquarium Sales, Services & Ponds | (845) 735-2300 | Pearl River |
| 4 | Complete Aquarium | (914) 244-9174 | Bedford Hills |
| 5 | Exotic Reef Aquatic Inc. | (718) 759-6877 | Brooklyn |
| 6 | Father Natures Aquarium Services | (347) 517-8690 | Brooklyn |
| 7 | Monster Aquarium Inc. | (347) 732-0373 | Queens |
| 8 | New York Reef Aquatic | (718) 888-0902 | Queens |
| 9 | Pacific Aquarium & Plant | (212) 995-5895 | New York |
| 10 | Paradise Aquarium | (718) 366-6921 | Queens |
| 11 | The iFISH Store | (833) 428-0747 | Richmond Hill |
| 12 | The Reef Shoppe | (347) 851-4600 | Bronx |
| 13 | Total Aquariums | (516) 887-5048 | Lynbrook |
| 14 | 1st Class Aquarium | (718) 876-8826 | Staten Island |
| Bait Shops | | | |
| 15 | Bernie's Bait & Tackle | (718) 646-7600 | Brooklyn |
| 16 | Big Ron's Fishing Station | (718) 843-3800 | Queens |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|--------------------------------------|--|----------------|------------------|
| 17 | Coney Island Hook & Bait Shop | (347) 312-3868 | Brooklyn |
| 18 | Daniel's Bait & Tackle Shop | (718) 651-5603 | Queens |
| 19 | Fisherman Depot | (718) 886-2008 | Queens |
| 20 | Jack's Bait & Tackle | (718) 885-2042 | Bronx |
| 21 | Kaseys Cast-A-Ways Bait and Tackle Shop and Fun Farm | (845) 858-2001 | Port Jervis |
| 22 | Mohegan Sportsman | (914) 528-2429 | Mohegan Lake |
| 23 | O & H Bait Shop | (845) 469-2566 | Chester |
| 24 | Stella Maris Bait & Tackle | (718) 646-9754 | Brooklyn |
| 25 | Tom's Bait & Tackle | (718) 474-8232 | Queens |
| 26 | Urban Angler | (212) 689-6400 | New York |
| 27 | Vinnys Lakehouse | (845) 297-3184 | Wappingers Falls |
| Plant Nurseries/Water Gardens | | | |
| 28 | Bergen Water Gardens & Nursery | (585) 293-2860 | Churchville |
| 29 | Cheap Sam's Plant Bargains | (631) 654-3020 | Holtsville |
| 30 | Clearly Aquatics Inc. | (585) 657-7679 | Bloomfield |
| 31 | Coldwater Pond Nursery | (315) 331-8068 | Phelps |
| 32 | Fish Haven Farm | (607) 659-3474 | Candor |
| 33 | Garden State Koi Pond & Waterfall Design Center | (845) 651-4100 | Warwick |
| 34 | Garden World | (718) 224-6789 | Queens |
| 35 | Hahn's Ponds | (716) 731-5513 | Sanborn |
| 36 | Hick Nurseries, Inc. | (516) 334-0066 | Westbury |
| 37 | Hickory Hollow Nursery and Garden Center | (845) 351-7226 | Tuxedo |
| 38 | Koi Market Aquatic Nursery & Bonsai | (516) 809-6771 | Dix Hills |
| 39 | Larchmont Nurseries | (914) 834-5802 | Larchmont |
| 40 | Little York Plantation | (607) 749-4861 | Little York |
| 41 | Natty Garden | (718) 483-8833 | Brooklyn |
| 42 | Putnam Lake Garden Center | (845) 278-5258 | Patterson |
| 43 | Starkie Bros Garden Center | (516) 293-7148 | Farmingdale |
| 44 | S. Scherer and Sons, Inc. | (631) 261-7432 | Northport |
| 45 | Twin Pond Greenhouses | (845) 457-1991 | Montgomery |
| 46 | Twin Ponds on the Farm | (845) 457-1830 | Montgomery |
| 47 | Urban Garden Center | (646) 389-4299 | New York |

Table 6. Retailers in OH

| | Retailer | Phone Number | City |
|---------------------------|-----------------------------------|---------------------|------------------|
| Aquarium Retailers | | | |
| 1 | ABC Aquatics Aquarium Specialists | (216) 215-5139 | Cleveland |
| 2 | Aquarium Adventure Columbus | (614) 792-0884 | Hilliard |
| 3 | Aquarium Artisans | (513) 895-3474 | Springdale |
| 4 | Aquarium Maintenance & Sales | (513) 863-5473 | Williamsburg |
| 5 | Aquarium World LLC | (567) 408-7258 | Sylvania |
| 6 | Aquatic Galore LLC | (937) 422-0478 | Fairborn |
| 7 | Aquatic Technology | (440) 236-8330 | Columbia Station |
| 8 | Aquatica Aquarium Gallery | (330) 866-0559 | Valley City |
| 9 | Aquatics and Exotics | (513) 521-5500 | Cincinnati |
| 10 | Best in Pets | (440) 366-5445 | Elyria |
| 11 | Blue Fish Aquariums | (440) 720-0776 | Cleveland |
| 12 | Blue Hook Aquatics | (513) 443-4741 | Cincinnati |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|--------------------------------------|--------------------------------------|----------------|----------------|
| 13 | Dr. Jack's Aquatics and Exotics | (937) 912-9004 | Beavercreek |
| 14 | Gerber's Tropical Fish | (937) 297-0515 | Dayton |
| 15 | Great Lakes Fish and Coral | (330) 748-2000 | Macedonia |
| 16 | Jurassic Aquatics & Pets | (440) 461-7387 | Willoughby |
| 17 | Ocean Rift Aquatics | (330) 244-9785 | North Canton |
| 18 | Rainy Day Fish LLC | (216) 331-4099 | Cleveland |
| 19 | Rift Lakes Aquatics | (216) 215-1639 | Cleveland |
| 20 | Rivers to Reefs Aquariums | (614) 934-5155 | Gahanna |
| 21 | Rj's Aquarium | (740) 928-2913 | Hebron |
| Bait Shops | | | |
| 22 | Bait OutBack | (419) 296-5257 | Lima |
| 23 | Cedar Lake | (513) 575-0124 | Loveland |
| 24 | East Side Bait & Tackle | (419) 733-8746 | St. Marys |
| 25 | Epic Baits | (937) 479-6429 | Carlisle |
| 26 | Fishing Pole Bait Shop | (937) 289-8027 | Clarksville |
| 27 | Freedom Bait-N-More | (419) 670-2504 | Cloverdale |
| 28 | Gene's Marine Bait & Tackle | (937) 843-2551 | Russells Point |
| 29 | Go Wild Go Fish | (513) 422-2429 | Middletown |
| 30 | Hamilton Bait & Tackle | (513) 869-2248 | Fairfield |
| 31 | Indian Lake Wholesale Bait LLC | (937) 638-8783 | Botkins |
| 32 | Lakeside Pro Bass Shop | (937) 843-2488 | Lakeview |
| 33 | Mike's Bait & Tackle | (937) 843-2261 | Lakeview |
| 34 | Milans Bait & Archery | (419) 221-0672 | Lima |
| 35 | Oxbow Bait & Archery Supplies | (419) 658-4000 | Defiance |
| 36 | Paul's Supply | (419) 782-7400 | Defiance |
| 37 | Rod-Dee's Carryout | (937) 384-9150 | Miamisburg |
| 38 | Spillway Bait & Tackle | (419) 628-3981 | Minster |
| 39 | Spillway Party Supply | (513) 897-9334 | Waynesville |
| 40 | Spring Water Paylake & Bait Shop | (937) 962-1030 | Lewisburg |
| 41 | Wholesale Bait Co Inc | (513) 863-2380 | Fairfield |
| 42 | Windy Point Bait & Tackle | (419) 919-0014 | Celina |
| 43 | 68 Bait & Tackle | (937) 444-0505 | Bethel |
| Plant Nurseries/Water Gardens | | | |
| 44 | Aquatic & Garden Décor | (513) 777-1744 | Cincinnati |
| 45 | Berns Garden Center | (513) 423-5306 | Middletown |
| 46 | Berns Garden Center & Landscaping | (937) 912-0422 | Beavercreek |
| 47 | Midwest Water Gardens LLC | (614) 870-8927 | Delaware |
| 48 | North Dayton Garden Center & Nursery | (937) 233-5761 | Middletown |
| 49 | Northgate Greenhouses | (513) 729-1134 | Cincinnati |
| 50 | Oak Park Garden Center | (419) 825-1438 | Swanton |
| 51 | Pond and Garden Depot | (866) 305-5459 | Kettering |
| 52 | Reading Feed & Garden | (513) 554-4769 | Cincinnati |
| 53 | Starry Water Gardens | (513) 720-0168 | Wilmington |
| 54 | Uncle Bill's Garden Center | (513) 522-4438 | Cincinnati |
| 55 | Water-Smith Systems | (800) 634-7434 | Urbana |
| Distributors | | | |
| 56 | Remlinger Fish Farm | (419) 532-2335 | Kalida |

CRAYFISH RETAILER SURVEY REPORT

Table 7. Retailers in PA

| | Retailer | Phone Number | City |
|---------------------------|--|---------------------|----------------------|
| Aquarium Retailers | | | |
| 1 | Aquarium Management Systems | (570) 275-6160 | Danville |
| 2 | Aquarium World | (610) 485-3189 | Upper Chichester Twp |
| 3 | Aquarium Xpress | (717) 919-2221 | Harrisburg |
| 4 | Aquatic Gardens | (724) 843-5250 | Beaver Falls |
| 5 | Buzz n B's Aquarium & Pet Shop | (814) 616-0065 | Erie |
| 6 | Coral Reef Connection | (484) 709-6621 | West Reading |
| 7 | Coveys Coral Cove | (570) 854-7321 | Bloomsburg |
| 8 | Cuboid Nature Aquarium | (215) 794-3474 | Pipersville |
| 9 | Elmer's Aquarium & Pet Center | (412) 372-6535 | Monroeville |
| 10 | Finatics Aquarium & Pet Center | (814) 862-9357 | State College |
| 11 | Fish Factory | (215) 785-0761 | Bristol |
| 12 | Fish Geeks | (717) 599-2122 | Mechanicsburg |
| 13 | One Fish Two Fish | (570) 992-1230 | Brodheadsville |
| 14 | Seven Seas Aquarium | (610) 876-1117 | Brookhaven |
| 15 | Something Fishy: Saltwater Aquarium Superstore | (610) 502-9760 | Northampton |
| 16 | The Hidden Reef, Inc. | (215) 269-4930 | Liebertown |
| 17 | The Reef Gallery | (724) 453-4099 | Zelienople |
| 18 | The Water Edge Aquarium | (484) 809-3666 | Wind Gap |
| 19 | Van Gogh Aquariums | (610) 500-1789 | Glen Mills |
| 20 | World Wide Aquarium & Pets | (215) 490-9766 | Philadelphia |
| Bait Shops | | | |
| 21 | Bill's Bait and Tackle | (814) 927-7393 | Marienville |
| 22 | Coble's Bait Shop | (717) 272-1171 | Lebanon |
| 23 | Columbia Bait and Tackle | (717) 330-7908 | Columbia |
| 24 | Dean's Line N' Bait Shop | (724) 762-8338 | Indiana |
| 25 | FC's Bait-Tackle and Reptiles | (724) 601-0067 | New Brighton |
| 26 | Fishermen's Haven Bait & Tackle Shop | (814) 909-9016 | Springfield |
| 27 | Gillette's Bait & Tackle | (814) 683-1026 | Linesville |
| 28 | Harrys Lakeside Bait Shop | (724) 962-1504 | Sharpsville |
| 29 | HawgHead Marine and Tackle | (717) 432-4505 | Wellsville |
| 30 | Jimmy's Bait Shop | (724) 837-6475 | Greensburg |
| 31 | Jim's Mino & Bait | (814) 353-4069 | Howard |
| 32 | Poor Richard's Bait & Tackle | (814) 474-5623 | Fairview |
| 33 | Reddi Bait | (724) 888-2932 | Beaver |
| 34 | Red's Bait Shop | (724) 423-4902 | Acme |
| 35 | Robinson's Wholesale Bait | (814) 818-0248 | Linesville |
| 36 | Sportmaster Bait and Tackle | (215) 331-8836 | Philadelphia |
| 37 | S&R Bait Shop | (570) 385-1916 | Schuylkill Haven |

Table 8. Retailers in WI

| | Retailer | Phone Number | City |
|---------------------------|-----------------------------------|---------------------|------------------|
| Aquarium Retailers | | | |
| 1 | America Aquaria | (262) 781-6060 | Brookfield |
| 2 | Aquarium Pet Shop & Grooming | (715) 421-0776 | Wisconsin Rapids |
| 3 | Aquarium Supplies and Maintenance | (715) 863-1031 | Plover |
| 4 | Aquascapes by The Fisherman | (715) 966-6353 | |

CRAYFISH RETAILER SURVEY REPORT

| | | | |
|-------------------|--|----------------|-----------------|
| 5 | Aquatic Realmz Aquarium Maintenance & Design | (414) 800-5825 | Greenfield |
| 6 | Aquatics Unlimited | (414) 543-2552 | Greenfield |
| 7 | Best Fish | (414) 224-0486 | Milwaukee |
| 8 | Bry the Fish Guy Aquarium | (651) 442-6162 | Twin Cities |
| 9 | Easy Aqua Fish & Coral | (262) 612-0395 | Waukesha |
| 10 | Elsner Aquarium Supply | (920) 893-5774 | Plymouth |
| 11 | LiveAquaria | (800) 334-3699 | Rhineland |
| 12 | Marineland Pet Center | (608) 783-3186 | Onalaska |
| 13 | Milwaukee Aquatics | (414) 719-5025 | Milwaukee |
| 14 | Schwaquatics | (763) 412-7045 | |
| 15 | The Fish Factory | (414) 546-2201 | Milwaukee |
| 16 | Tropic Waters Pet Center | (715) 832-0174 | Eau Claire |
| 17 | Vang Aquatic Life LLC | (262) 202-8114 | Butler |
| Bait Shops | | | |
| 18 | A & C Live Bait Inc. | (414) 372-1020 | Milwaukee |
| 19 | B&H Trout Fishing & Bait Shop | (608) 254-7280 | Wisconsin Dells |
| 20 | Dave's Bait & Tackle | (608) 312-4400 | Beloit |
| 21 | Dead End Bar & Bait | (608) 423-2117 | Cambridge |
| 22 | Dick Smith's Live Bait & Tackle | (262) 646-2218 | Delafield |
| 23 | D&S Bait, Tackle & Fly Shop | (608) 241-4225 | Madison |
| 24 | Emma's Bait Shop | (608) 781-4926 | Onalaska |
| 25 | Fat Cat Bait & Fishing Supply | (608) 534-5359 | Trempealeau |
| 26 | Fox River Bait & Tackle | (920) 233-7409 | Oshkosh |
| 27 | Fremont Bait & Tackle | (920) 505-0145 | Fremont |
| 28 | Geneva Lake Bait & Tackle | (262) 245-6150 | Williams Bay |
| 29 | It's A Keeper Bait & Tackle | (608) 757-2061 | Janesville |
| 30 | J&T Bait Shanty | (608) 423-2117 | Cambridge |
| 31 | Long Lake Bait & Tackle | (715) 635-3260 | Sarona |
| 32 | Lured Inn Outdoors Tackle & Bait | (608) 718-2364 | Janesville |
| 33 | Minnesota Leeches | (414) 744-2077 | Milwaukee |
| 34 | Musky Mike's Bait & Tackle, LLC | (262) 560-1189 | Okauchee Lake |
| 35 | Old Powerhouse Bait Shop | (608) 558-9511 | Brodhead |
| 36 | River Haus Bait Tackle & Gifts | (920) 322-9412 | Fond du Lac |
| 37 | Sandy's Port of Call | (414) 762-1960 | Oak Creek |
| 38 | Smokey's Musky Shop | (262) 691-9659 | Pewaukee |
| 39 | The Original Live Bait Shop | (920) 295-6459 | Princeton |
| 40 | Trapper's Bait Shop | (920) 478-3630 | Waterloo |

Table 9. Online suppliers

| | Online Supplier | Website |
|---|-----------------------------|---|
| 1 | Live Crawfish for Sale | https://www.livecrawfishforsale.com |
| 2 | Louisiana Crawfish Company | https://www.lacrawfish.com |
| 3 | Cajuncrawfish.com | http://www.cajuncrawfish.com |
| 4 | Kyle LeBlanc Crawfish Farms | http://www.klcrawfishfarms.com |
| 5 | Critter Runners | https://crawfish.com |
| 6 | Crayfishman | http://www.crayfishman.com |

Appendix II – Crayfish Retailer Survey Questionnaire

All survey questions were optional. Prompts were provided for most questions but were used only when additional details or clarification was requested from the respondent.

Crayfish Retailer Survey

Consent Statement

As part of the interview, I am required by the university to say the consent statement and to let you know what you are agreeing to before the survey.

I am a researcher with the University of Illinois, and we are looking to learn about the supply chain of live crayfish in the Great Lakes region. I'm hoping to speak to a manager or somebody that can answer these questions.

Would you be willing to help us in our research by answering a few questions? We are conducting voluntary phone interviews in which I will ask a series of questions related to the procurement and sale of live crayfish, as well as opinions around invasive species regulations and environmental concerns. This interview will help us understand sources of novel crayfish in the Great Lakes, some of which can become invasive if mishandled.

We are not an enforcement agency. We are only looking to understand how invasive crayfish regulations impact your business. This will help us understand any burdens placed on you by these regulations so we can develop invasive species prevention resources that will be the most useful for businesses like yours. None of your answers will be reported to anyone outside of our working group at the University. The data collected today will be used as part of a final report without any information linking them to your business.

The interview will take about 20 minutes to complete, your name will be kept private and none of the questions will be of a sensitive nature. If you choose to participate, you are free to skip any question I ask, and we can end the interview at any time. I will provide contact information for my team and to the Office for the Protection of Research Subjects at the University in case you have any questions about this research after today. Is it okay if we continue?

Background information recorded

Business: Name, Address, Phone Number, Email

Interviewer: Name, Date and Time of Interview

Interview Questions

Screening and contact

1. Does your business sell live crayfish? If not, where would you refer me to find crayfish?
 2. Are you the best contact for this business? If not, who would be?
 3. What is the best way to get a hold of you/them in the future? Name, email, phone, times, days of the week, preferred method of contact.
-

CRAYFISH RETAILER SURVEY REPORT

Business practice and supply chain

First, we have some questions to better understand the sale of crayfish. The purpose of these questions is to help us provide better educational materials to businesses like yours and your consumers.

4. For what purposes or uses does your business sell crayfish? Or, who are your main consumers of crayfish? (Prompt: Does your business sell crayfish as bait, trade, biological control for gardens, food, or educators? Type of consumers like anglers or pet owners?)
5. How does your business sell crayfish? (Prompt: Do you sell crayfish from a store front to consumers, wholesale to retailers, online, in person, etc.?)
6. Do you sell outside of your state? (Skip if NO) Which state? (Prompt: Could you specify the states where you sell the crayfish.)
7. What type of crayfish do you sell?
 - i. Do you know the species names/common English names? (Prompt: Do you sell them with the name that you were given or sell them with the scientific name such as for an electric blue crayfish as *Procambarus alleni*?)
 - ii. Scientific names? (Prompt: For example, an electric blue crayfish is sometimes sold as *Procambarus alleni*?)
10. Do you sell crayfish seasonally (sometimes) or year-round (always)?
11. How do you obtain the crayfish that you sell? (Prompt: wholesale, breeders, farm it, wild catch, etc.)

To help us to be able to more effectively provide outreach along the supply chain at strategic points, we are asking people from which businesses or individuals you obtain your crayfish. Due to the sensitive nature of this question, we again note that any data collected today will not be shared outside of our working group. This data will however be used to create a list of suppliers of crayfish for outreach purposes along with an estimate of the number of businesses that use them as their source of crayfish.

12. Could you provide us with contact information for your supplier or possibly help us contact them? We will reach out and provide them with the same opportunity to answer these questions.
-

Invasive species, regulations and the environment

We are now wanting to shift into some opinion-based questions regarding invasive species, the environment, and regulations.

13. What do you feel are people's role in the natural world/the environment?
 14. What are your thoughts on the issue of invasive species? Interviewer note: should note if you have to define invasive species at this point or previously.
 15. Do you feel like invasive species are a risk to the Great Lakes economies or ecosystems? Why or why not?
 16. What are your thoughts on the roles and responsibilities of businesses along the supply chain as they relate to invasive crayfish? (Prompt: Who do you feel is the most responsible for preventing the introduction of invasive crayfish?)
 17. What are your thoughts on invasive species regulations? (Prompt: Are they effective? Are you familiar with them? In your opinion, do they help/hurt businesses?)
 18. How and where do you get information about invasive species?
 19. What could we (or others) do better to provide you with invasive species regulation information? (Prompt: what materials would be helpful?)
-

CRAYFISH RETAILER SURVEY REPORT

Outreach

Again, our goal is to create outreach opportunities that provide businesses and consumers with information regarding crayfish and other aquatic organisms in trade.

20. Would you participate in outreach programs that would provide your consumers with information about invasive species? Any reason why or why not? (Prompt: Provide brochures, posters, training, etc.)
 21. Do you see other opportunities for your business to participate in invasive species education efforts?
-

Demographics

Finally, if you are willing to, we would like to collect some demographic information about our interviewees to help us better understand our audiences so as to provide them with the best-possible educational efforts.

22. What is your gender? Male, Female, Other, Prefer not to respond
 23. In what year were you born?
 24. With which racial groups do you identify? White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Other
 25. With which ethnicity do you identify? Hispanic or Non-Hispanic
 26. What is the highest level of education you have completed? (Possible prompts - Less than high school, High school graduate or GED, Some college, Two-year degree, Bachelor's degree, Professional degree, Doctorate)
 27. What is your annual household income before taxes?
-

Others

28. Do you have any final thoughts on any of the topics we discussed today?
-

End Note

Thank you very much for your time! Please feel to reach out to the research team if you have any questions about today's interview.