

Appendix J: Upper Illinois Waterway Contingency Response Plan

Participating agencies: ILDNR, USFWS, USACE, USGS, INHS, USEPA, GLFC

Introduction

This Contingency Response Plan describes specific actions within the five navigation pools of the Upper Illinois Waterway (IWW) - Lockport, Brandon Road, Dresden Island, Marseilles, and Starved Rock pools (Figure 1) (river miles 231 to 327). In the event a change is detected in the status of Asian carp in those pools indicating an increase in risk level, this plan will be implemented to carry out response actions. The interagency Monitoring and Response Work Group (MRWG) has maintained a robust and comprehensive Asian carp monitoring program in the Contingency Response Plan area and will continue these efforts as the foundation for early detection capability in the IWW. Annual interim summary reports describing these efforts (including extent of monitoring and Asian carp detection probabilities) can be found at www.asiancarp.us. Based on this experience, MRWG is confident in its ability to detect changes to Asian carp status in the navigation pools in the upper IWW.

The MRWG and ACRC member agencies acknowledge that any actions recommended by the MRWG or ACRC would be considered for implementation by member agencies in a manner consistent with their authorities, policies, and available resources, and subject to the decision-making processes of that particular member agency. Nothing in this plan is meant to supplement or supersede the authorities of the state or federal agencies with regard to their particular jurisdictions. For instance, no other state has authority to direct or approve actions affecting the Illinois Waterway aquatic resources other than the state of Illinois (Illinois Wildlife and Natural Resource Law [515 ILCS 5/1-150; from Ch. 56, par. 1-150]).

Purpose

The purpose of this Contingency Response Plan is to outline the process and procedures the MRWG and ACRC member agencies will follow in response to the change in Asian Carp conditions in any given pool of the upper IWW.

Background

Existing plans for responding to the collection of Asian carps or changing barrier operations have been in place since 2011 and provided guidance focused on potential actions that could be undertaken in and around the USACE electric barrier system and in the CAWS, upstream of the Lockport Lock and Dam (River Mile, RM 291). The ACRC relies on electric barriers within the Chicago Sanitary and Ship Canal (CSSC) at Romeoville, IL, operated by USACE, as a key tool to prevent the establishment of Asian Carp in the Great Lakes Basin. As a result, this Contingency Response Plan reduces pressure by Asian carp on the electric barriers.

Previous response operations have been successfully conducted by the ACRC in response to detections of potential Asian carp above the electric dispersal barriers, including the 2010 response in the Little Calumet River where piscicide was applied to over two miles of waterway. In addition a response was

conducted in 2009 to protect the electric barrier system during scheduled maintenance in which five miles of the CSSC was treated with a piscicide.

This enhanced Contingency Response Plan expands the geographic scope of existing contingency planning efforts, as well as the scope of potential tools to be utilized in such an event. This plan also considers barrier operations and status and is complementary and additive to the existing response plan in the MRP.

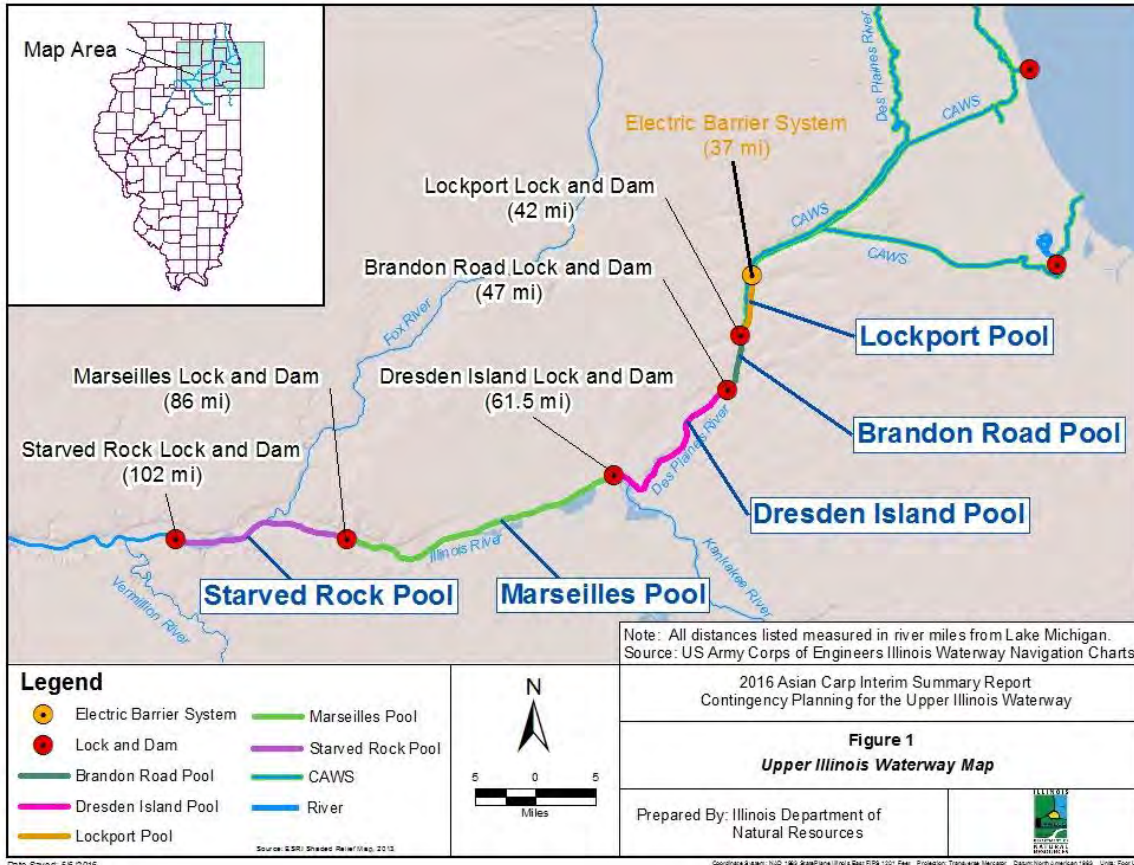
Asian carp distribution has not changed significantly in either abundance or location in the upper IWW since individuals were discovered in the Dresden Island Pool in 2006. This may be due to intensive contracted fishing efforts, lack of suitable habitat upstream, water quality conditions, food availability, or a combination of other factors not yet fully understood. Despite no evidence of range expansion or increasing abundance of the Asian carp population in the upper IWW, it is generally recognized that fish populations may expand their range and abundance. Examples of introduced fishes exhibiting this phenomenon are available from other locations.

Small Asian carp (less than 6" inches in length) are of special concern when considering response actions because of the risk that smaller fish may not be as effectively repelled by the electric barrier or that they may become inadvertently entrained in areas between barge tows and propelled through locks. Such entrainment has not been observed or demonstrated for either Bighead or Silver Carp.

Location

The IWW is a series of rivers and canals running from Lake Michigan circa Chicago, Illinois to the Mississippi River near St. Louis, Missouri. This waterway contains approximately 336 miles of canal and navigable rivers including the Chicago, Calumet, Des Plaines, and Illinois Rivers and connecting canals. The five pools of the upper IWW (upstream toward Lake Michigan) are covered by this document: Lockport, Brandon Road, Dresden Island, Marseilles, and Starved Rock (Figure 1), river miles 231 to 327. Each pool is named for the downstream Lock and Dam which impounds the waterbody. Each pool is defined as the body of water between two structures; such as a series of lock and dams. The body of water upstream of a lock and dam is given the name of that lock and dam. For instance, the Brandon Road Pool is the body of water upstream of the Brandon Road Lock and Dam. The distances (miles) from the upstream structure of a given pool to the electric dispersal barrier are as follows: Lockport- N/A, Brandon Road- 5.5, Dresden Island-10.5, Marseilles- 26, and Starved Rock-49.5.

Figure 1. Illinois Waterway Map and Profile



Note: For the purposes of this map, the Lockport Pool is only highlighted up to the electric barrier system.

Mission and Goal

The MRWG convened a panel of experts on local Asian carp populations, waterways, and navigational structures, and charged the panel to evaluate the Asian carp population status, waterway conditions, predict future Asian carp scenarios, and develop a plan to direct appropriate, prudent, and contingency response actions as needed in the upper Illinois Waterway. Current and/or expected regulatory or other required actions are noted for each contingency measure as practical. The goal of the panel was to define contingency plans to meet the ACRC mission as stated:

The purpose of the ACRC is to coordinate the planning and execution of efforts of its members to prevent the introduction, establishment, and spread of Bighead, Black, Grass, and Silver Carp populations in the Great Lakes.

To meet this goal of the contingency plan is to provide a process to consider appropriate response actions that fully consider available tools and the authorities of member agencies to implement actions. The intent is for the plan to be clear and easy to understand while allowing flexibility needed to ensure

response actions fully address situation-specific issues. The plan uses agreed-to terms, and is designed to be effective and transparent. This plan will also provide for open and transparent communication with the public and special stakeholder groups.

This is a living document that will evolve over time as information changes and additional tools are developed e.g., ozone, hot water, microparticles, water jets, pheromones/other attractants, CO₂, or other unspecified tools).

Additional Resources Considerations

This contingency plan allows for deployment of aggressive monitoring or control tools deemed most appropriate by the MRWG, the ACRCC, and the governmental agency holding locational or operational jurisdictional authority. For example, one of the most aggressive responses in Asian carp prevention occurred in 2009, when approximately 6 miles of the Chicago Sanitary and Ship Canal was treated with a fish piscicide (Rotenone) in support of a barrier maintenance operation. This control action occurred at a time when Asian carp abundance and risk of a barrier breach was less understood. The Illinois DNR remains the sole legal authority to apply piscicide in its waters and has previously made decisions to do so with close consultation of many local, state, and federal partners. Illinois retains the authority, ability, and responsibility to facilitate similar actions and has already determined that this tool is not appropriate for a majority of the rivers, locations, or scopes included in this plan. While not listed as tools in this Contingency Response Plan for the MRWG to consider, the Illinois DNR reserves the right to authorize the use of piscicide in the CSSC or other developing technologies such as CO₂ or complex noise via speaker installation, when it determines the need is prudent. These technologies may be considered if convincing evidence is provided that suggests effective Asian carp control may be obtained.

Temporary modification of lock operations may be used under existing USACE authorities when necessary to support other control measures within the Contingency Response Plan. The duration of the modified operation would be limited to the time necessary to carry out the supported control measures. Such modifications have supported previous barrier clearing events when electrofishing, water cannons, and/or nets were used to sample fish in and around the barrier system. In some instances, restriction of navigation traffic in the waterway may be necessary to safely execute a control measure. Such restrictions fall under the authority of the USCG. As with temporary modification of lock operations, the duration of the restriction would be limited to the time necessary to carry out the control measure. USACE and USCG have processes in place to provide timely evaluation and decisions in response to requests for temporary modified operations to support control actions by other entities and fulfill other necessary posting and communication requirements.

Status

This Contingency Response Plan will be operational in spring 2016, building upon and complementing existing response plans, and will be updated, as needed, based on new scientific information and available technical capacity for Asian carp control.

Planning Assumptions

These planning assumptions anticipate potential realistic situations and constraints on ACRCC and other stakeholder agencies and partners. The following assumptions pertain to all responding agencies and their resources as well as the response situation and are relevant to this planning initiative:

Situation Assumptions

- Response actions will be selected based on the waterway conditions, and the time and geographic location of Asian Carp detection, and other factors.
- Response actions will be located within the designated area of the upper IWW described in the Contingency Response Plan (from Starved Rock to the Lockport Pool, as depicted in Figure 1).
- For planning purposes, under this Contingency Response Plan Asian Carp refers to Bighead and Silver Carp.

Command, Control, and Coordination Assumptions

- All response operations will be conducted under the Incident Command System (ICS) or Unified Command as mandated under Presidential Policy Directive 8.
- Actions recommended by the ACRCC are dependent on agency authority to act.

Logistics and Resources Assumptions

- The MRWG may request ACRCC support to leverage additional resources needed to conduct appropriate contingency response actions.
- Illinois as signatory to the Mutual Aid Agreement of the Conference of Great Lakes & St. Lawrence Governors and Premiers may request assistance if deemed necessary.
<http://www.cglslgp.org/media/1564/ais-mutual-aid-agreement-3-26-15.pdf>
- The need for mobilization of personnel and resources from outside coordinating agencies may affect the response time and planned for accordingly.

Concept of Operations for Response

The following sections present the implementation options for the local response and coordination with the MRWG and the ACRCC stakeholders. If conditions continue to warrant response, the number of coordinating entities could increase along with the need for additional response operations. This expansion will trigger additional command, control, and coordination elements. The overall incident complexity and Incident Command System (ICS) span of control principles should guide the incident management organization.

Methods

Subject matter experts from participating agencies discussed the importance of many factors within the IWW and the Asian carp populations that could potentially change and result in an increased invasion potential of the Great Lakes. The subject matter experts independently evaluated the extent of change each scenario warranted and then the group met jointly to discuss and develop a consistent opinion about the degree of change. Individuals then made independent assessments as to what level of response they would choose under the varying conditions within the decision support trees. These responses were then discussed and agreed upon by the group, which resulted in the contingency table described in section 3.5.

Direct Considerations for Response

The contingency table identifies whether change (moderate or significant) in management or monitoring actions is needed. It then takes into direct consideration: location of Asian carp populations (at the pool scale), life history stages (eggs/larvae, small fish (< 6"), and large fish), and abundance (rare, common, and abundant) of Asian carp collected.

Pool

Navigation pool was determined to be the best and most appropriate scale for the location of Asian carp in a population (relation to distance from the electric dispersal barrier). Since pools are impoundments defined by locks and dams that have the ability to at least partially restrict movements of fish, they were chosen as the most appropriate locational references and geographic scales for contingency planning purposes.

Life History

Fish life history relates to the size of fish (i.e., smaller fish are less susceptible to electricity; larger fish are more susceptible to electricity; management actions may be size-specific) and also indicates the occurrence of spawning and recruitment.

Abundance

Increased abundance of any life stage signifies a change in the population structure at a given location and increases concern of invasion risk. Generally, larval Asian carp have not been found in the upper IWW. Finding Asian carp larvae would represent a potential change in the dynamics of the population in the upper IWW. Responses related to the detection of larval Asian carp would likely be directed at other adult or juvenile life stages of Asian carp.

Electric Barrier Functionality

The operational status of the electric barriers (barrier functionality), directly impact to the ability of Asian carp to potentially breach the barriers and move upstream of the Lockport Pool. That is, decreased barrier function increases the probability of Asian carp passage. Barrier operational status will inform actions considered when planning responses. Meetings of the MRWG and ACRCC will be convened in the event of a complete barrier outage. Such an event could also trigger a response action.

Additional Considerations for Actions and Decision Making Process

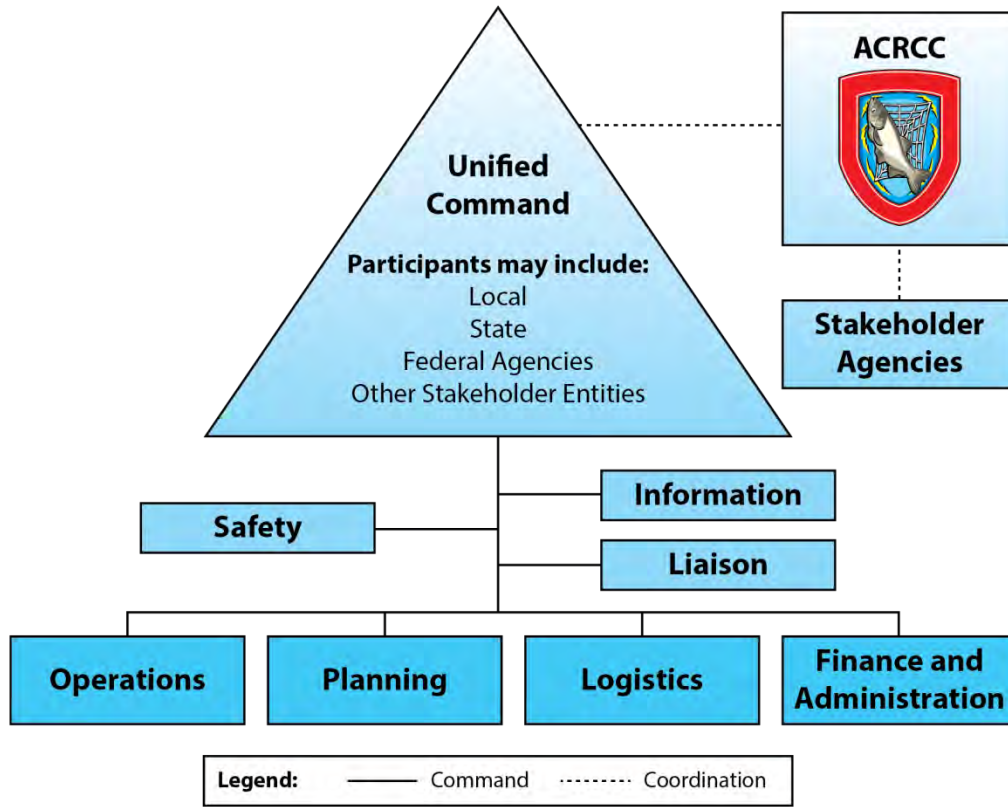
This process will include a recommended set of response actions for decision makers to consider when a change to the baseline condition is identified. Changes may include, but are not limited to, changes in fish population abundance, life stage presence, or new geographical positions in upstream and/or downstream pools, the ongoing rate of change in Asian carp population characteristics, season and/or water temperature, the habitat where fish are sighted or collected, flow conditions, the amount of available data, and whether multiple lines of evidence exist to support changing conditions. Additionally, the group recognized that identified response options are recommendations only. An action(s) could be more or less intense based upon the nature of the change. One example scenario is illustrated in Attachment 1. The scenario is based on a change in conditions in Brandon Road Pool as just one example of when a contingency plan is called into action, and Attachment 2 provides the decision making process and flow of likely activities in such an event. This scenario and decision process illustrates what could occur should a change be identified from this Decision Support Framework.

Command, Control, and Coordination

Command and control of an Asian Carp response in the IWW will be implemented under the MRWG. The Incident Command System (ICS) is a management system designed to enable effective and efficient incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. The MRWG will utilize the ICS to manage response operations to maximize efficiency and ensure a standard approach across all participating agencies. Area Command, Unified Command, or single Incident Commander, depending on the needs, will be maintained to determine the overarching response objectives and in implementing individual tactics necessary to accomplish each objective. Local command and control involves directing resources to establish objectives for eradication, control, or identification of Asian Carp during a response operation.

Figure 2 shows the basic Unified Command organization structure that will be utilized any response that requires the mobilization of resources and multi-agency personnel as well as provides a visual representation of the basic command, control and coordination relationships for Asian Carp response personnel serving during a response.

Figure 2. Unified Command Organization Structure



Incident Action Planning

An Incident Action Plan (IAP) is a standard means of documenting and communicating objectives, strategies, and tactics utilized to address issues resulting from an incident. At the core of a functional

SMART Objective Example

State agency X will contain 2 miles of the river using block nets within 8 hours of notification.

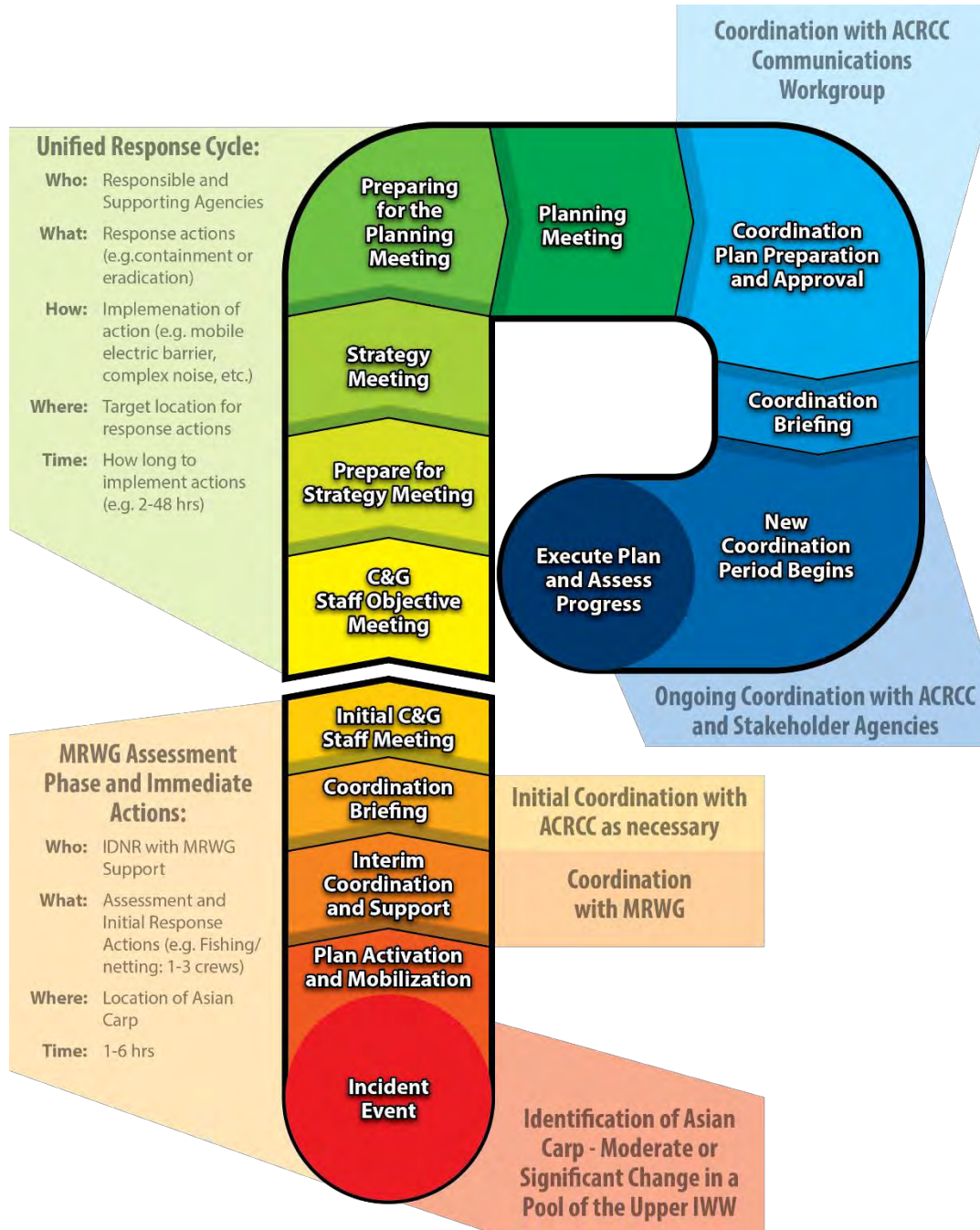
IAP are well-written objectives. The standard acronym is “SMART” objectives—objectives that are (1) Specific, (2) Measurable, (3) Achievable, (4) Realistic, and (5) Task-oriented. Objectives can then be inserted into an IAP template. Each response is unique, but the basic concepts of operations and objectives can be the building blocks for a solid IAP that communicates, internally and externally, the

jurisdiction’s plans for managing an incident.

Incident action planning extends farther than just preparation and distribution of the IAP. This planning includes the routine activities during each operational period of an incident response that provide a steady tempo and routine structure to incident management. The ICS Planning “P” is a guide to the steps, relative chronology, and basic elements for managing an incident. By incorporating the Planning “P” into planning efforts, overlaying anticipated daily operational and logistical chronologies, a local jurisdiction can establish a framework for incident management that provides a rough playbook for local, state, federal, and outside resources to manage Asian Carp under catastrophic incident conditions.

Figure 3 depicts the ICS Planning “P” and further describes agencies that may be involved at various steps in the process, what actions may be taken, and when actions will be implemented.

Figure 3. ICS Planning "P"



Notes:

C&G Command and General Staff
 IWW Illinois Water Way
 MRWG Monitoring and Response Workgroup
 ACRCC Asian Carp Regional Coordinating Committee

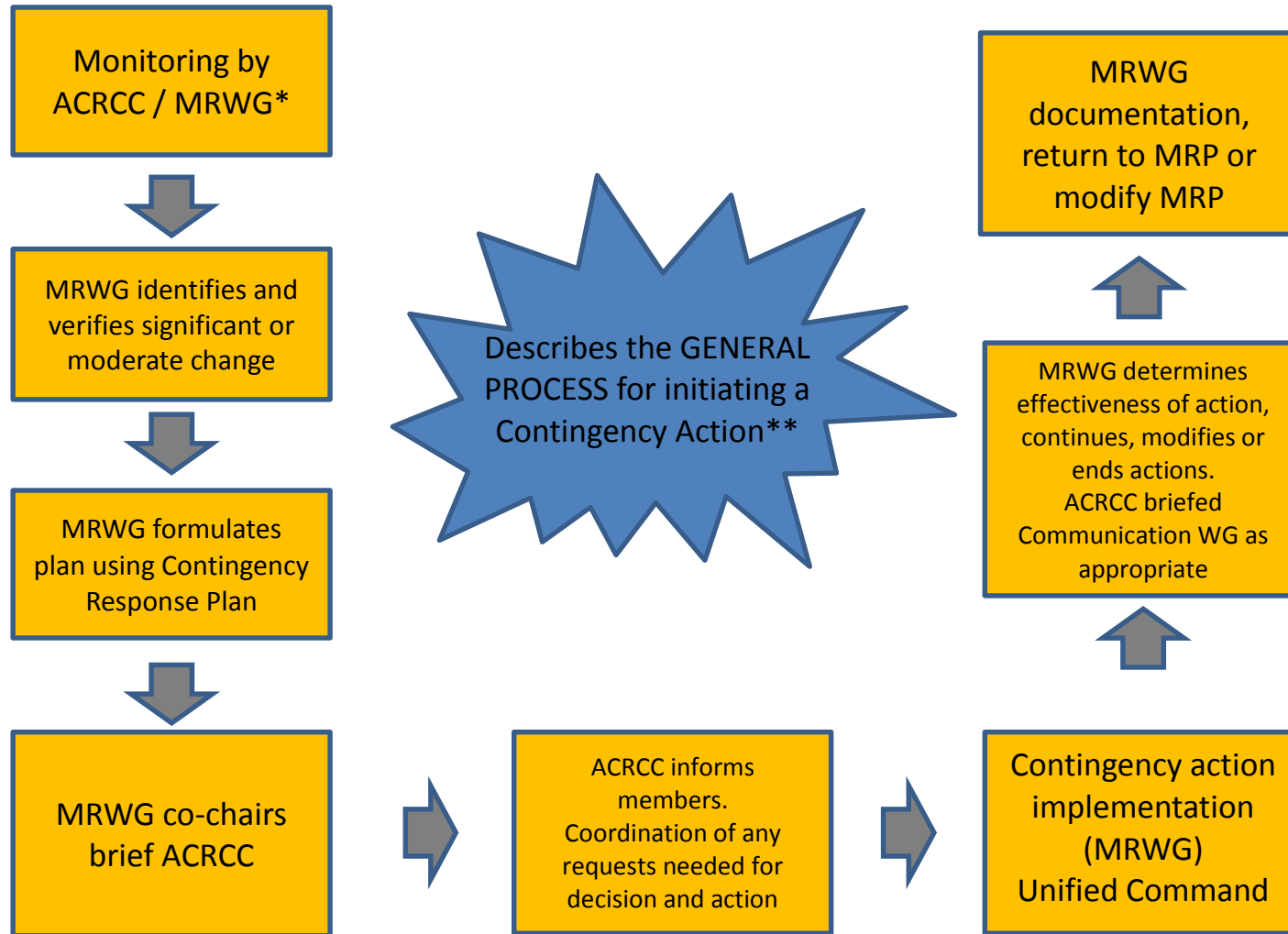
Decision Support Trees

For the purposes of informing contingency response planning in the upper IWW, MRWG developed situational-based “decision support trees” that will aid the MRWG in determining the need for a contingency response action. These decision-support guides use common, agreed-upon definitions (see Attachment 3). The process consists of: 1) identifying the pool of interest, 2) identifying the proper life stage of Asian carp captured (verified by agency personnel) or observed during the sampling event in question, and 3) identifying whether the sampling result is Rare, Common, or Abundant relative to a baseline measurement.

Figure 4 describes the entire contingency response process for all ACRCC stakeholder agencies. The decision support trees are utilized in steps 3 through 7 to assess the need for further response actions.

Once all of these determinations have been made, the decision support tree (figures 5 through 10) will funnel the user to an action response level. This action response level will identify actions that could occur. Response actions may be determined by new findings in one pool, but occur in a different pool. Each pool has an agreed upon set of response actions that can be taken. If change is apparent and a response is warranted, the proper agencies will be notified and can then discuss how best to proceed based upon the options available. A chart of the potential response actions to be considered is provided in table 1. An example is also provided at the end of the decision support trees for illustrative purposes.

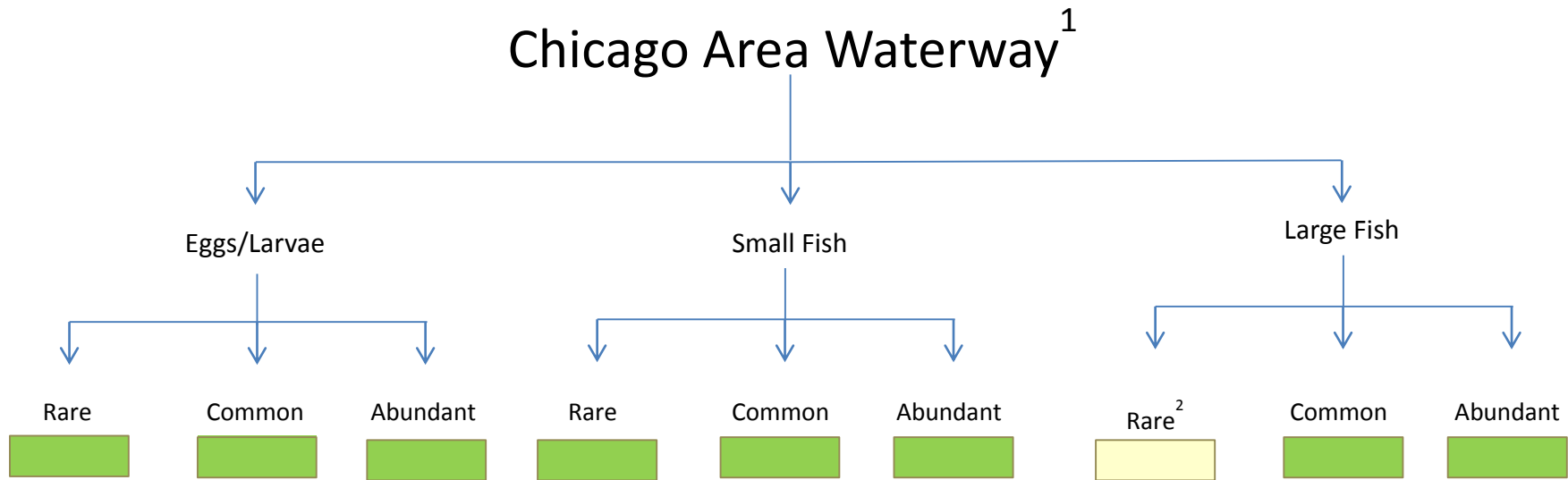
Figure 4. Simplified Process Flow Chart for a Contingency Response





* Monitoring and Response Workgroup (MRWG) is the working level body of the ACRCC. The MRWG implements the annual MRP and contingency actions subject to agency authorities and approvals by their individual Agency

** In this general process, multiple steps may happen concurrently to facilitate the most effective and efficient action is implemented.

Figure 5. Decision Support Tree: CAWS



 = Significant change from baseline requiring further response action

 = Moderate change from baseline requiring further response action

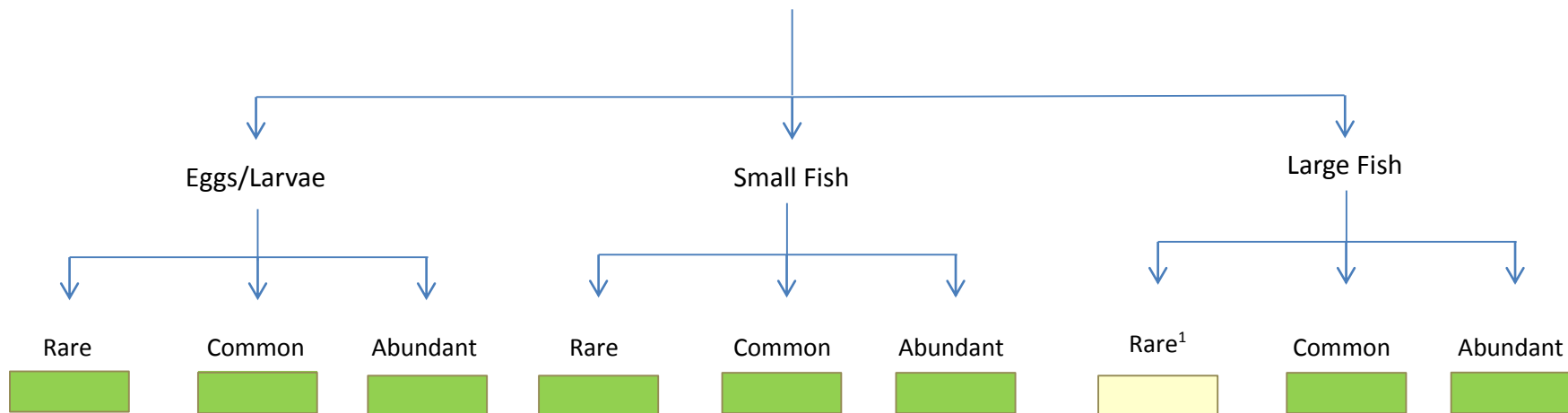
Baseline for comparison and consideration for action is status from intense data collection up to December 31, 2015.


¹ Chicago Area Waterways includes waterways (rivers and canals between USACE electric barrier system and Lake Michigan and includes Chicago Sanitary and Ship Canal, Cal-Sag Channel, Chicago River, North Shore Channel, Little Calumet River, and Calumet River (including Lake Calumet).

² This status is based upon the collection of a single Bighead Carp collected by Contracted Fishers in 2010.

Figure 6. Decision Support Tree: Lockport Pool

Lockport Pool to Electric Barrier System



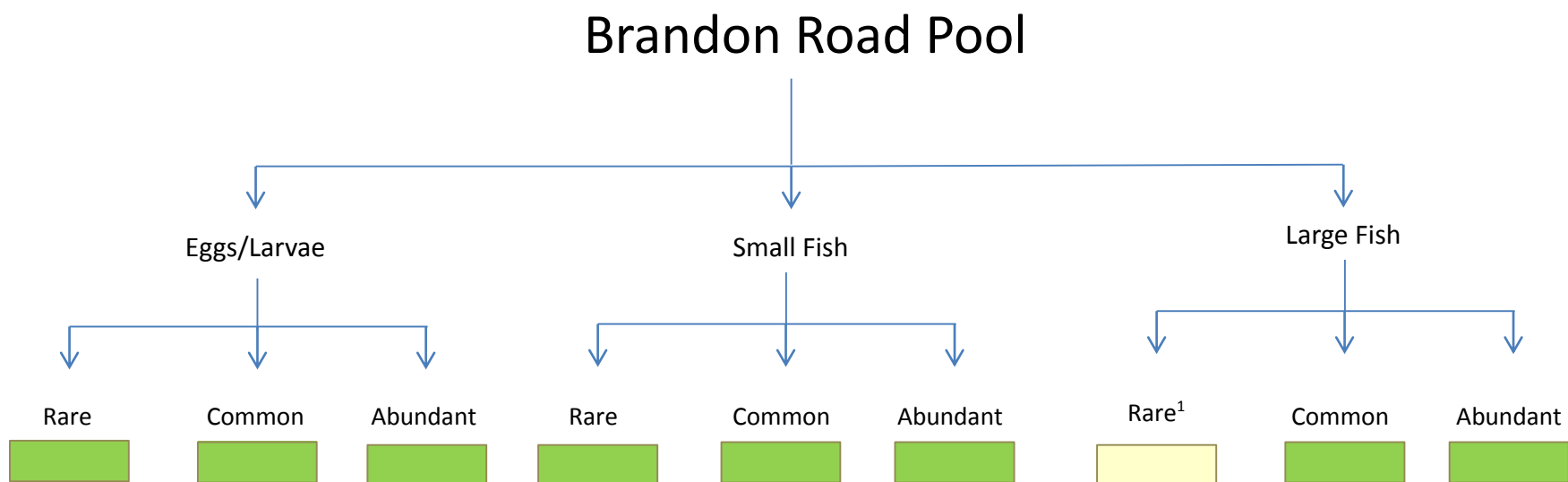
 = Significant change from baseline requiring further response action

 = Moderate change from baseline requiring further response action

Baseline for comparison and consideration for action is status from intense data collection up to December 31, 2015.

¹ This is based upon a single Bighead Carp collected in piscicide treatment of this 6 mile stretch in 2009.

Figure 7. Decision Support Tree: Brandon Road Pool



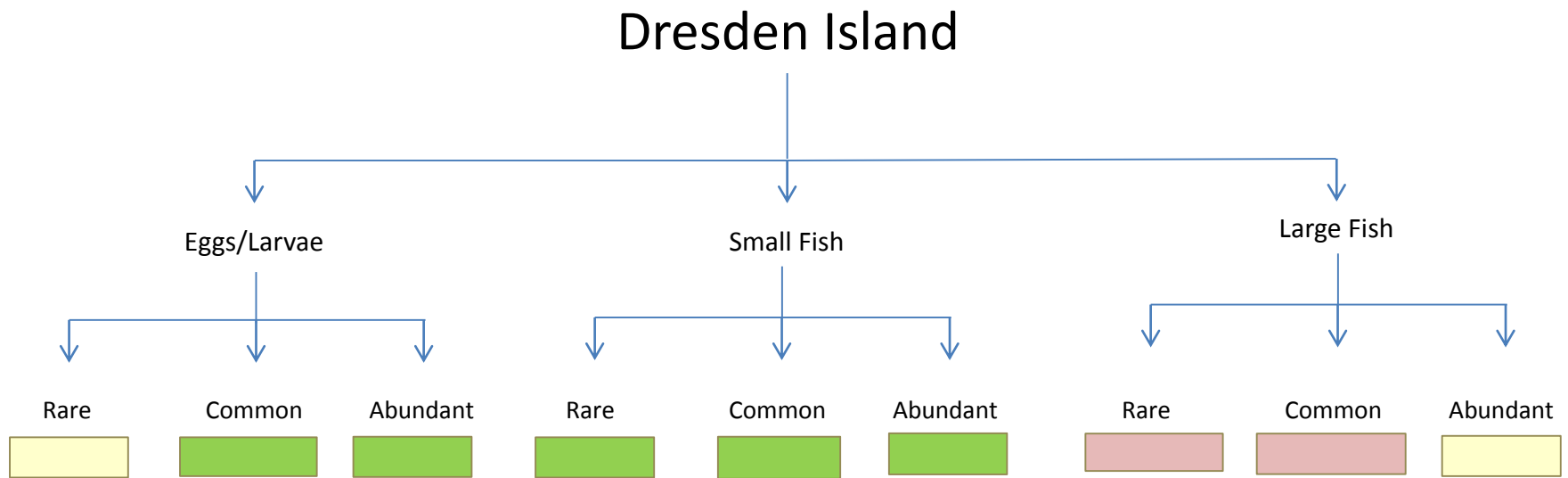
= Significant change from baseline requiring further response action

= Moderate change from baseline requiring further response action


Baseline for comparison and consideration for action is status from intense data collection up to December 31, 2015.


¹ No collection of Bighead Carp or Silver Carp in this Pool; however, sightings in 2010-2011 of 1 Bighead Carp and 1 Silver Carp have been made by MRWG efforts.

Figure 8. Decision Support Tree: Dresden Island Pool



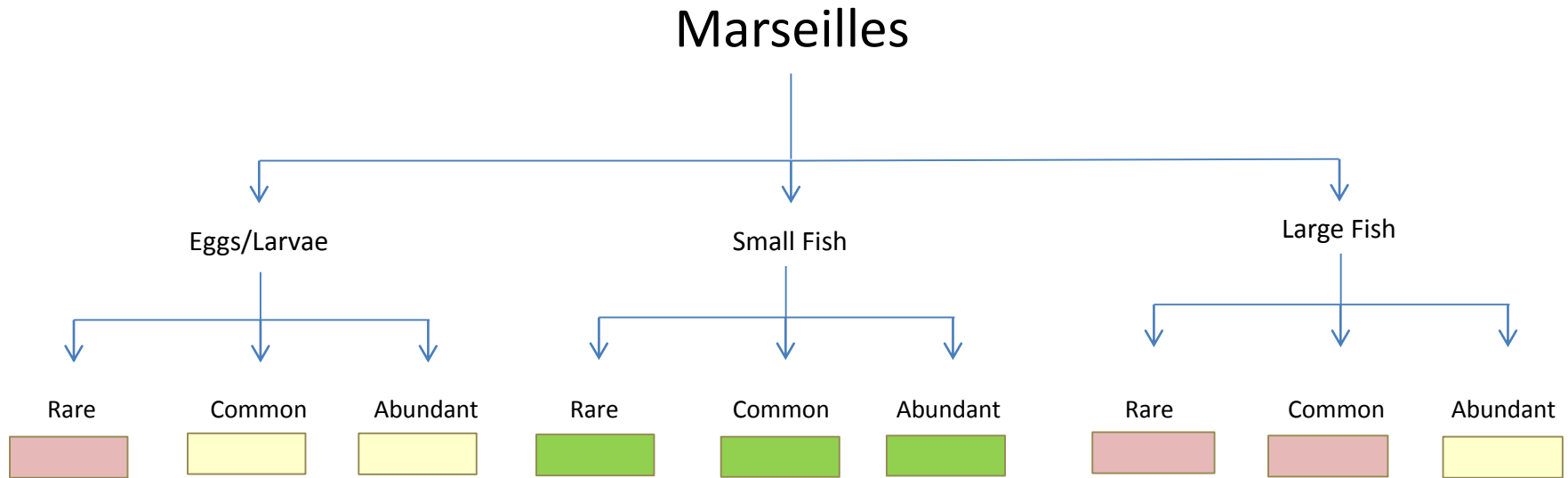
 = Significant change from baseline requiring further response action




 = Moderate change from baseline requiring further response action

 = No Change/Status Quo from baseline. No further action

Baseline for comparison and consideration for action is status from intense data collection up to December 31, 2015.

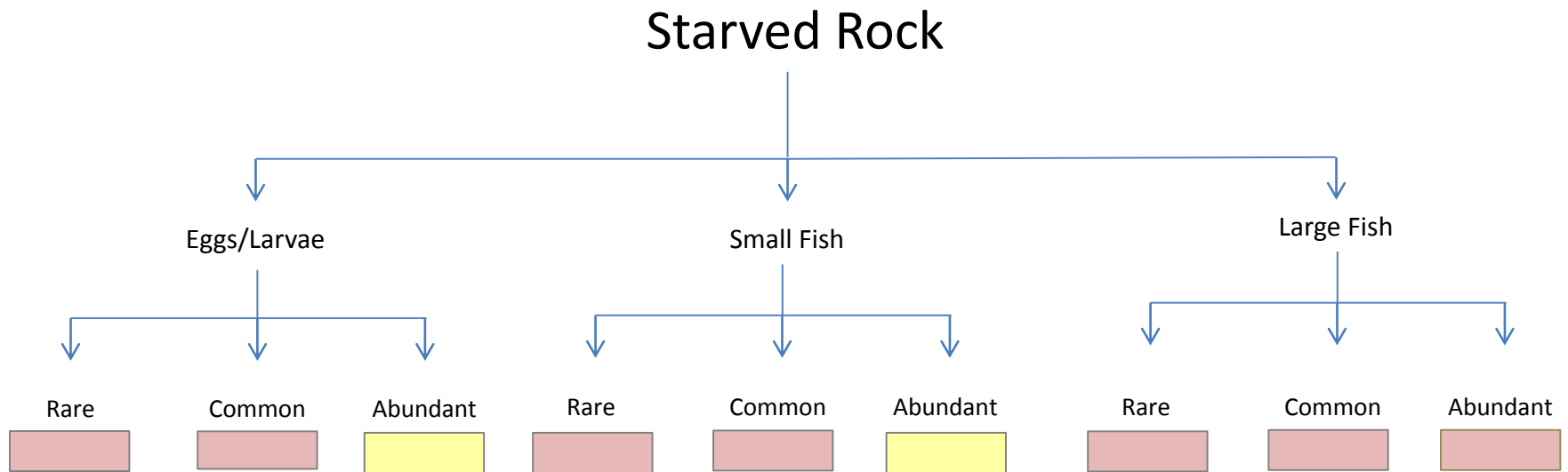
Figure 9. Decision Support Tree: Marseilles Pool





	= Significant change from baseline requiring further response action
	= Moderate change from baseline requiring further response action
	= No Change/Status Quo from baseline. No further action

Baseline for comparison and consideration for action is status from intense data collection up to December 31, 2015.

Figure 10. Decision Support Tree: Starved Rock Pool



 = Moderate change from baseline requiring further response action

 = No Change/Status Quo from baseline. No further action

Baseline for comparison and consideration for action is status from intense data collection up to December 31, 2015.

Table 1. Contingency Response Action Matrix*1

Level of Urgency (Action Response Level)	Potential Actions ²	Applicable Locations	Responsible Agencies	Estimated Time to Implement	Regulatory or Other Requirements	Relative Cost (\$-\$\$\$)
Significant Change	Increased Sampling Efforts ³	All	IDNR/USFWS	1-7 days	Sampling permits	(\$\$)
	Modify Barrier Operations	LP, BR	USACE	1 day	Coordinate with contractors	(\$)
	Complex Noise	All	USFWS/IDNR	1-7 days	Unknown	(\$\$)
	Commercial Contract Netting	All	IDNR	1-7 days	Sampling permits/contracts	(\$)
	Hydroacoustics	All	USFWS/SIU/USGS	1-7 days	None	(\$)
	Block Nets	All	IDNR	1-7 days	Notice to navigation	(\$\$)
	Temporary Flow Control	LP, BR	MWRD	1 day	Notice to navigation	(\$)
Mobile Electric Array	All	INHS/IDNR	Months	Finalize contracting, construction	(\$\$\$)	
Moderate Change	Increased Sampling Efforts	All	IDNR	1-7 days	Sampling permits	(\$\$)
	Modify Barrier Operations	All	USACE	1 day	Coordinate with contractors	(\$)
	Complex Noise	All	USFWS/IDNR	1-7 days	Unknown	(\$\$)
	Commercial Contract Netting	All	IDNR	1-7 days	Sampling permits/contracts	(\$)
	Hydroacoustics	All	USFWS	1-7 days	None	(\$)
Block Nets	All	IDNR	1-7 days	Notice to navigation	(\$\$)	
No Change	Maintain Current Level of Effort	N/A	All	Ongoing	N/A	(\$)

LP Lockport,

BR Brandon Road

* The implementation of some of these actions may require temporary lock closures or navigation restrictions, which fall under the authority of USACE and the US Coast Guard respectively. Temporary lock closures and navigation restrictions would be limited to the time necessary to carry out the supported measures. Such lock closures have supported previous barrier clearing events when electrofishing, water cannons, and/or nets were used to sample fish in and around the barrier system.

1 Additional Resource Considerations (page J-4) describes other measures that may be brought to bare as necessary and aligned with agency authorities.

2 The current monitoring and response activities are covered under existing federal budgets.

3 Response techniques encompassed by Increased Sampling Efforts under Potential Actions in above table

<u>Technique</u>	<u>Participating Agencies</u>
Electrofishing	USFWS, ILDNR, INHS, USACE
Netting (Gill, Trammel, Pound, ichthyoplankton)	USFWS, ILDNR, INHS
Paupier Trawling	USFWS
Fyke Netting	ILDNR, USFWS, USACE
Dozer Trawl	USFWS
Telemetry	USACE, SIU,
USGS	

Information and Data Management

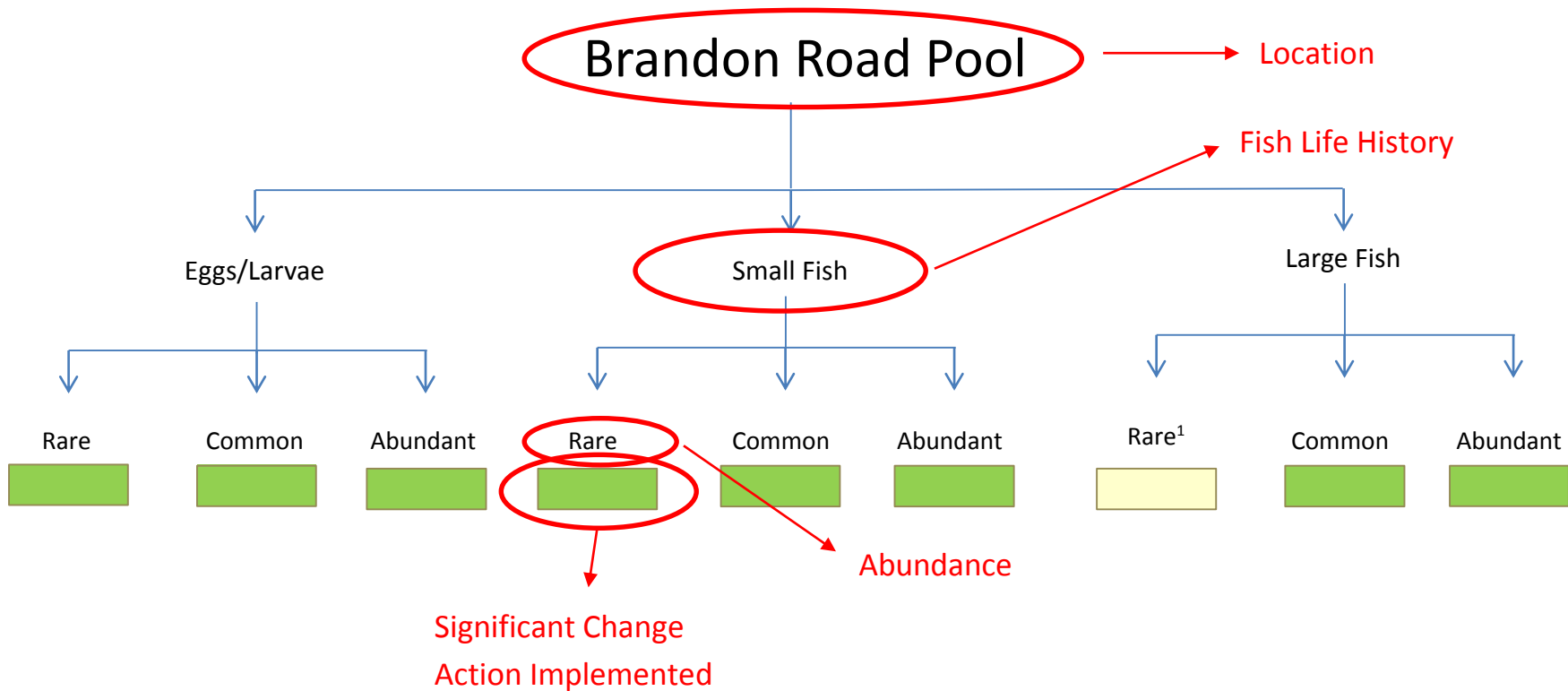
The ACRCC Communications Workgroup will be the primary conduit for ensuring open and transparent communication with both the public and other stakeholder agencies during an Asian Carp contingency response operation. The public and stakeholder groups will be notified as early as possible in the process and according to messaging protocols established by the ACRCC Communications Workgroups. There are many factors that may drive potential response actions including the nature of the change, severity of the change, time of year and environmental conditions.

Essential Elements of Information

At all points of the incident management process, Essential Elements of Information (EEI) should be collected and managed in a standard format. Paper forms, when power and electronic systems are not available and electronic data should be collected with end usage in mind. For instance, if data on how various waterways conditions are used as the basis for logistical requests and response decisions, these data should be separated and properly analyzed to ensure acquisition of adequate supplies for selected response. For response personnel, simple numerical counts of fish, numbers of each species, and all other critical data that must be communicated up the chain early and often. Additionally, routine recording and reporting of staffing levels, available resources, space, capability gaps, and projections are all important for managing overall response under a specific scenario.

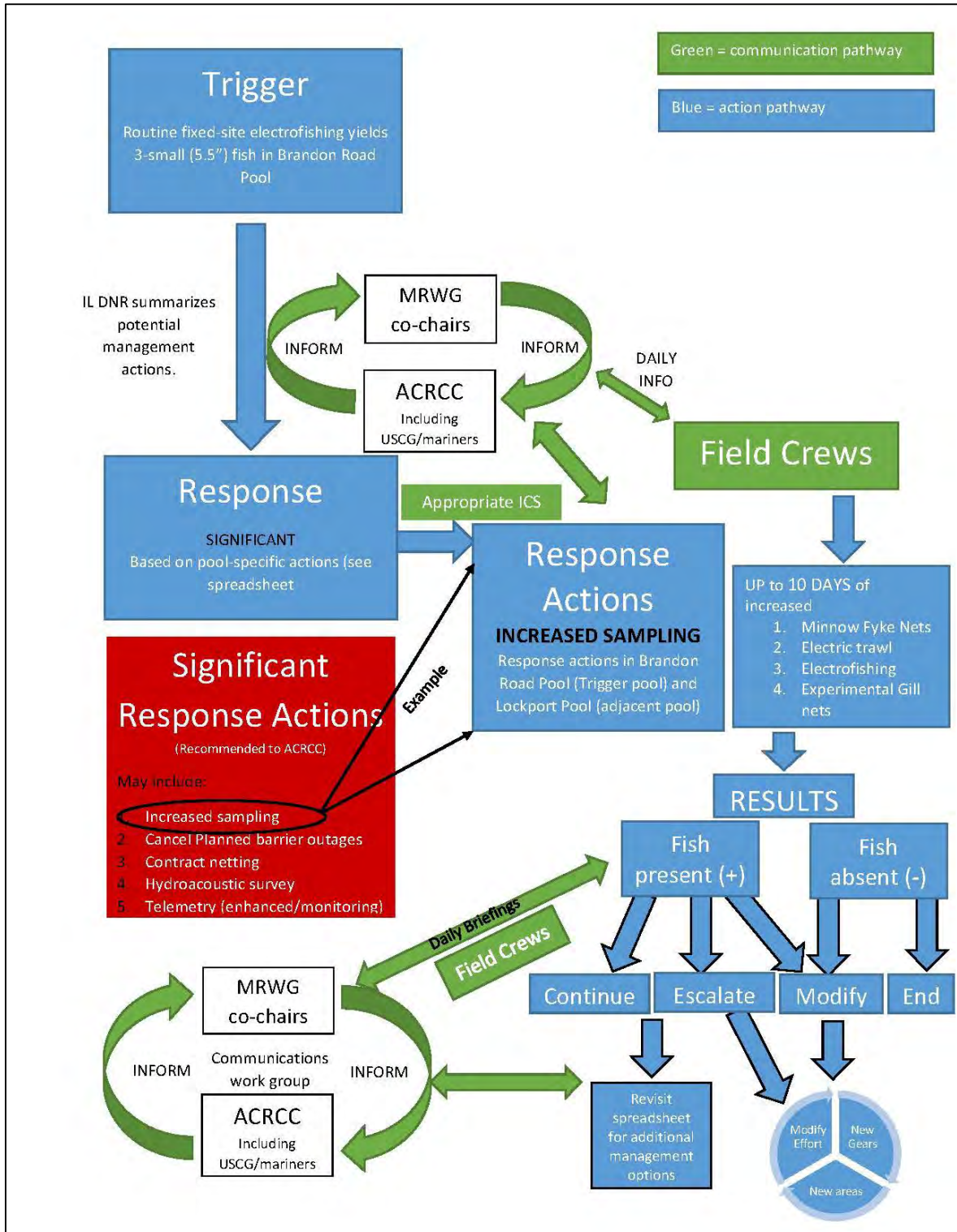
Attachment 1: Hypothetical scenario

Small Asian carp are collected in Brandon Road Pool, while the barrier is operating normally. The location is first identified in the matrix, then barrier Efficacy function, next then fish life history, and finally the abundance. Based on this scenario, a significant change in actions should be considered.



Attachment 2: Sample Action Process

This example illustrates the process should three small Asian carp be collected in Brandon Road Pool.



Attachment 3: Definitions

Life Stage	
Egg	The rounded reproductive body produced by females.
Larvae	A distinct juvenile form of fish, before growth into larger life stages.
Young of Year (YOY)	Fish hatched that calendar year. Also known as age 0 fish.
Juvenile	An individual that has not yet reached its adult form, sexual maturity or size. A juvenile fish may range in size from 1 inch to over 12 inches long or approximately age 0 to 5, depending on the species.
Adult	A sexually mature organism.
Size	
Small	Fish that are less than 6 inches (a conservative length designation to inform actions in which the Electric Dispersal Barrier may be challenged by fish found to be less susceptible to electrical deterrence, identified in USACE Efficacy reports as ones between 2-3 inches).
Large	Fish that are greater than 6 inches.
Populations	
Adult Population Front	The most upstream pool where detection/presence of adult fish is common (see below) and either repeated immigration or recruitment has been verified.
Capture Record	Capture of an adult, juvenile, larvae, and egg verified by agency efforts/personnel, does not notate any qualification of population size/establishment.
Small Fish Population Front	The most upstream pool where detection/presence of small fish is repeatedly recorded and either repeated immigration or recruitment has been verified.
Established	Inter-breeding individuals of Bighead and Silver carp as well as the presence of eggs, larvae, YOY and juveniles that leads to a self-sustaining population.
Range Expansion	Verified population front upstream of the previously identified pool.
Reproduction	
Recruitment	Juveniles survive to be added to an adult population, by successful spawning.
Observed Spawning	Visually documented spawning activity.
Successful Spawning	Spawning that has been confirmed by the collection of eggs or larvae.
Captures	
New Record/ Single Occurrence	When a single fish/egg/larvae is collected in a location it was not previously found. Also referred to as a novel occurrence.
Sighting	A visual confirmation with high likelihood (experience/professional opinion) that the item seen was in fact a bighead carp, silver carp at the noted life stage/activity

	(spawning behavior could be a sighting; silver carp in an electrofishing field but not netted would be a sighting.
Sampling Occurrences	
Rare	One sample containing the targeted species or size group; Asian carp collections are not predictable, and may take multiple sampling trips to collect just one individual.
Common	Consistent catches across the pool; Asian carp collection is predictable with one or multiple individuals being collected in a given day/week of sampling.
Abundant	Consistent catches across the pool in large quantities e.g. Asian carp collection is predictable with multiple fish being collected with nearly every deployment of gear, numerous individuals collected often and daily/weekly.
Action Response Level	
No Change/ Current Level	Maintain current levels of sampling effort.
Moderate Change	Heightened level of response may occur along with maintaining current levels of sampling effort. Prior to any moderate change response, the MRWG will convene to evaluate the data and situation, and recommend a suite of responses to the ACRCC for implementation. Strategies will then be determined for the best course of action and tools available based on the status change and concurrence with jurisdictional authorities and abilities
Significant Change	Substantial or heightened levels of response may occur along with maintaining current levels of sampling effort. All tools from “moderate change” are available during a significant change response, as are additional robust tools along with “maintaining current levels of sampling effort.” for consideration. Prior to any moderate change response, the MRWG will convene to evaluate the data and situation, and recommend a suite of responses to the ACRCC. The ACRCC, after reviewing MRWG recommendations, may concur or offer opinions regarding the appropriate response(s) to implement. Prior to any significant change response, the MRWG will convene to evaluate the data and situation, then strategies will be made on the best course of action and tools available based on the status change and concurrence with jurisdictional authorities and abilities
Potential Response Actions	
Increased Sampling Efforts	Modified or increased number of samples using fish sampling/detection methods currently used by MRWG in Monitoring.
Electrofishing	Standard fish sampling method to sample small and adult Asian Carp currently used by MRWG in Fixed and Targeted Sampling.
Hoop Netting	Standard fish sampling method to sample adult Asian Carp currently used by MRWG in Fixed and Targeted Sampling.
Minnow Fyke Netting	Standard fish sampling method to sample small Asian Carp currently used by MRWG in Fixed and Targeted Sampling.
Paupier Net Boat	Experimental fish sampling method to sample small and adult Asian Carp currently used by MRWG.
Electrofied Dozier Trawl	Experimental fish sampling method to sample small and adult Asian Carp currently used by MRWG.

Ichthyoplankton Tows	Standard fish sampling method to sample larvae and eggs of Asian Carp currently used by MRWG in Fixed and Targeted Sampling.
Pound Nets	Experimental fish sampling method to sample small and adult Asian Carp currently used by MRWG.
Modify Barrier Operations	MRWG and USACE will coordinate upon potential postponements and operations of planned Barrier outages.
Complex Noise	Noise methods to drive/herd/deter fish including revving of outboard boat motors, banging on boats in the waterway, and deployment of speakers with developed sounds.
Commercial Contract Netting	Mobilizing contracted commercial fisherman and using commercial fishing methods used currently by MRWG in sampling/detection and removal including gill netting, trammel netting, large mesh seine, small mesh seine, and hoop netting.
Hydroacoustics	Electronic Fish survey and locating techniques used currently by MRWG including side-scan sonar, and DIDSON sonar to evaluate the number and density of large or small Asian Carp in a given area.
Temporary Flow Control	MWRD authority and ability to reduce flow velocities to complete response actions.
Block Netting	Large nets that can block the waterway or contain selected areas from small and adult Asian Carp movement used currently by MRWG for removal.
Mobile Electric Array	Experimental electric array that can be used as temporary barrier or drive/herd and deter small and adult Asian Carp.
Other	
Pool	The water between two successive locks or barriers within the river system.

Attachment 4: Authorities

Key authorities linked to response actions are listed below. List may not include all Federal, State, and local authorities tied to ongoing operation and maintenance activities.

Illinois - other Illinois agencies authorities may apply e.g., IEPA, ILDOA but key IDNR authorities below

Illinois Department of Natural Resources (from Illinois Compiled Statutes <http://www.ilga.gov/legislation/ilcs/ilcs.asp>)

20 ILCS 801/1-15; 20 ILCS 805/805-100; 515 ILCS 5/1-135; 515 ILCS 5/10-80

Illinois Administrative Rules (17 ILCS Part 890 Fish Removal with Chemicals)

Section 890.30 Treatment of the Water Area

Authority for 17 ILCS Part 890 Fish Removal with Chemicals (found in statute below):

515 ILCS 5/1-135

515 ILCS 5/1-150

ARTICLE 5. FISH PROTECTION

515 ILCS 5/5-5

USACE

Water Resources Development Act of 2007 Section 3061(b) - Chicago Sanitary and Ship Canal Dispersal Barriers Project, Illinois; Authorization.

Water Resources Reform and Development Act of 2014. Section 1039(c) – Invasive Species; Prevention, Great Lakes and Mississippi River Basin.

USFWS

H.R. 3080 Water Resources Reform and Development Act of 2014

Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; the Act of March 10, 1934; Ch. 55; 48 Stat. 401), as amended by the Act of June 24, 1936, Ch. 764, 49 Stat. 913; the Act of August 14, 1946, Ch. 965, 60 Stat. 1080; the Act of August 5, 1947, Ch. 489, 61 Stat. 770; the Act of May 19, 1948, Ch. 310, 62 Stat. 240; P.L. 325, October 6, 1949, 63 Stat. 708; P.L. 85-624, August 12, 1958, 72 Stat. 563; and P.L. 89-72, 79 Stat. 216, July 9, 1965.

Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990

Lacey Act (16 U.S.C. §§ 3371–3378)

Executive Order 13112 of February 3, 1999 - Invasive Species

H.R.223 - Great Lakes Restoration Initiative Act of 2016