Goals	Current Situation	Inputs/Resources (contributions, investments)	Activities/Outputs (what you propose to do and expected products)	Short-term Outcomes (near term results or changes in condition)	Long term outcomes (changes in condition five years an beyond)
REDUCE INVASIVE CATFISH POPULATIONS AND BIOMASS IN SPECIFIC TRIBUTARIES TO A LEVEL THAT DECREASES/LESSENS ECOLOGICAL IMPACTS ON NATIVE SPECIES	Blue catfish make up a significant proportion of the biomass in several bay tributaries. Recent studies suggest blue catfish are having ecological impacts on native species via predation. There are also economic impacts as catfish co-occur with commercially important species. Eutrophication is likely supporting productive conditions advantageous to invasive catfish.	• ICTF • Science-VIMS, VCU, SERC, MD DNR, VDGIF (VT) • Jurisdiction Management-VMRC, VDGIF, MD DNR, PRFC, DENREC, DDOE, PA Fish and Boat, ASMFC • Federal-NOAA, FWS • CBP • Mid Atlantic Panel on Aquatic Invasive Species • Anglers • Funding	• Complete population estimates for key tributaries • Apply the catfish portal mapping tool to identify candidate tributaries for removals • Design removal methods and initiate pilot removal/protection projects for the Dragon Run in Virginia and 1 to two Maryland tributaries • Use findings from removals to determine the extent to which populations can be reduced and develop “control targets” • Complete a synthesis of current research	• Criteria are established to target tributaries for pilot removals and tributaries are selected • Removal methods developed and tested • Pilot removals in targeted tributaries planned and initiated. • Extent to which populations can be reduced by targeted removals quantified • Synthesis of research projects complete and applications communicated to managers • Anglers understand the impacts and help identify solutions	• Documented changes of lower catfish abundance and decreased ecological impact in targeted tributaries using comparative study of tributaries with and without removal efforts • Targeted citizen groups understand risks and support management efforts to reduce populations and mitigate spread • Improved and tested methods of removal on targeted tributaries • Pilot removal study completed and evaluated • Tributary specific catfish management strategies developed • Develop scientifically based tributary specific control targets

Goals	Current Situation	Inputs/Resources	Activities/Outputs	Short-term Outcomes	**Long term outcomes** (changes in condition I in five years and beyond)
			quantifying ecological impacts on native species • Engage recreational and commercial fishing organizations in dialogue on known risks • Engage community in education on pilot removals		

Goals	Current Situation	Inputs/Resources	Activities/Outputs	Short-term Outcomes	**Long term outcomes** (changes in condition I in five years and beyond)
TO MITIGATE THE SPREAD OF BLUE AND FLATHEAD CATFISH POPULATIONS INTO CURRENTLY UNINHABITED WATERS	Blue catfish have been documented in all major tributaries of the Bay. Recent studies suggest impacts on native species are likely. Models suggest that blue and flathead catfish distribution will continue to expand throughout the Bay, which threatens the native fish species in tributaries that are not yet inhabited by invasive catfish. Eutrophication is likely supporting productive conditions advantageous to invasive catfish.	• ICTF • Science-VIMS, VCU, SERC, MD DNR, VDGIF (VT) • Jurisdiction Management-VMRC, VDGIF, MD DNR, PRFC, DENREC, DDOE, PA Fish and Boat, ASMFC • Conservation areas and refuges (NEERS, etc) • Watermen • Mid Atlantic Aquatic Nuisance Species Panel •	• Develop targeting criteria to identify tributaries to protect from invasion (places where catfish not yet established, with high ecological value, already protected, etc.) • Update distribution data to determine current extent of tributary invasion • Review, communicate, and enforce catfish live transport policies • Design and early detection and monitoring methodology • Complete development of Blue Catfish Portal with fishery independent data and new fishery dependent data to track spread	• Tributaries are identified that should be targeted for invasive catfish early detection and monitoring • Identify conservation partners to collaborate with and integrate invasive catfish monitoring into existing environmental programs • Watermen are informed of fines and regulations associated with invasive catfish • Necessary components of early detection and monitoring programs are identified and accounted for • Conservation areas and groups are working with management agencies to monitor spread • Develop and implement novel,	• Develop tributary-specific public outreach plans in targeted areas to educate the public and watermen of the water about catfish and their impacts • Early detection and monitoring methodology is tested • Early detection and monitoring programs in targeted tributaries implemented

Goals	Current Situation	Inputs/Resources	Activities/Outputs	Short-term Outcomes	**Long term outcomes** (changes in condition I in five years and beyond)
			• Create mobile device app to aid public in identifying and reporting invasive catfish	rapid, and relatively inexpensive surveillance protocols (e.g. eDNA tools) to monitor expansions in near real time	

Goals	Current Situation	Inputs/Resources	Activities/Outputs	Short-term Outcomes	**Long term outcomes** (changes in condition I in five years and beyond)
PROMOTE A LARGE SCALE, SUSTAINABLE FISHERY TO SIGNIFICANTLY REDUCE INVASIVE CATFISH POPULATIONS (NOTE: ALTERNATIVELY THE GOAL COULD BE TO PROMOTE A FISHERY THAT HAS AN ENDPOINT OF COLLAPSE)	A recreational trophy fishery does exist for blue catfish in the Bay. There is currently no significant commercial market or fishery for these catfish.	• Jurisdiction Management- VMRC, VDGIF, MD DNR, PRFC, DENREC, DDOE, PA Fish and Boat, ASMFC • Watermen	• Investigate the contaminant levels to inform any consumption advisories • Testing of different gear types • Use spatially explicit ecosystem models to determine what level of fishing is needed to have a significant impacts on catfish populations in individual tributaries or Bay wide • Develop a marketing campaign to promote the commercial harvest and use of invasive catfish	• Watermen entry into the fishery • Tributaries are targeted for the fishery • Most efficient gear types and mechanism established	• A sustainable fishery built on a valuable market for blue catfish provides a new source of revenue for watermen • Catfish viewed as a valuable product and is used by the consumer • Effective reduction in population sizes in places where fishery takes place (NOTE: The alternative goal of promoting a fishery that has an endpoint of collapse may be possible. However, it is unlikely that such a fishery would drive the population to extinction. Blue catfish numbers may return to high levels following fishery collapse. Thus, it is not clear that collapsing the population by overfishing will provide a long-term reduction in populations.)
IMPROVE PUBLIC AWARENESS ON BLUE AND FLATHEAD CATFISH TO CHANGE BEHAVIOR AND GAIN SUPPORT FOR ACTION	Although information is available on invasive catfish, it is not consistent across	• Jurisdiction fishing guides and web resources • Watermen • ICTF	• Emphasize that it is illegal to transport blue and flathead catfish • Complete a synthesis of	• Increased information and messaging on jurisdiction websites on the impacts of blue catfish and the	• The public and watermen better understand that blue and flathead catfish are invasive and are negatively impacting other species in the Bay • Public support actions to manage blue and flathead catfish

Goals	Current Situation	Inputs/Resources	Activities/Outputs	Short-term Outcomes	Long term outcomes (changes in condition I in five years and beyond)
	jurisdictions, regulations are not easily found, and there is no sense of urgency in the messaging to public or anglers about the risk they pose.	• Social media • CBP • Jurisdiction Management- VMRC, VDGIF, MD DNR, PRFC, DENREC, DDOE, PA Fish and Boat, ASMFC	current research quantifying ecological impacts on native species • Create outreach materials that inform the public and watermen about the ecological impacts of catfish on native species in the Bay • Compile the catfish research into the catfish portal to have a “one-stop shop” for information on invasive catfish in the Bay • Continue research efforts to better understand invasive catfish and their impacts • Work with conservation organizations to integrate invasive catfish information into their programs	associated no transport and other associated regulations • Conservation areas and groups are working with management agencies to inform the public	

Goals	Current Situation	Inputs/Resources	Activities/Outputs	Short-term Outcomes	**Long term outcomes** (changes in condition I in five years and beyond)
			• Create mobile device app to aid public in identifying and reporting invasive catfish		