

**Environment and Natural Resources Trust Fund**

# 2022 Request for Proposal

## **General Information**

**Proposal ID:** 2022-261

**Proposal Title:** Commercialization Safe, Selective and Low-cost Carp Piscicide

## **Project Manager Information**

**Name:** Maurice Sadowsky

**Organization:** MJSTI Corp.

**Office Telephone:** (302) 559-2998

**Email:** maurice@carpfree.com

## **Project Basic Information**

**Project Summary:** The project commercializes a proved-on Koi and patented (US 10,617,119,) a safe (FDA additives), selective by digestion and low-cost piscicide with the goal of controlling invasive carps.

**Funds Requested:** $200,000

**Proposed Project Completion:** October 31 2023

**LCCMR Funding Category:** Small Projects (H) **Secondary Category:** Aquatic and Terrestrial Invasive Species (D)

## **Project Location**

**What is the best scale for describing where your work will take place?** Region(s): Metro

**What is the best scale to describe the area impacted by your work?** Statewide

**When will the work impact occur?** In the Future

## **Narrative**

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Bigheaded and common invasive carps are long life, fecund fish that diminish North American environment. Without control of recruitment, Population Dynamics and carp harvesting history state incomplete adult harvesting increases carp bio-density, the “hydra effect”. In a water body above 5,000 acers, it is not possible to remove enough carp to prevent the “hydra effect”. The counter intuitive “hydra effect” suggests the way to control these carps is eliminate/reduce recruitment while increasing fish mortality.
Rotenone is the only general use EPA approved piscicide. Rotenone kills all aquatic life and is harmful to mammals. The USGS Asian Carp piscicide program is focused on overnight kill. The USGS proposals lack commercial viability by ignoring the EPA 2007 antimycin A re-registration, lack of supply of antimycin A and beeswax and has no commercial partners.
The only 2021 Asian carp Action plan population control is harvesting. Harvesting carp in three non-reproducing pools downstream pools from electric barrier is successful. However, harvesting in the lower Illinois, middle Mississippi and Ohio Rivers and Lake Kentucky has not reduced but increased the bigheaded carp population.
Without carp population control the common carp will inhabit Minnesota Lakes and the Asian carp will invade Minnesota and the Great Lakes.

**What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.**

MJSTI proved on Koi, common carp that pellets consisting of fat coated water insoluble basic copper carbonate and a slow water-soluble amino acid will kill carp. The carp consumes both beads. In the carp’s intestines enzymes strip off the fat and the amino acid instantly makes soluble the copper salt. The fish absorbs the copper ion which causes organ damage. In common carp copper poisoning, the fish converts to anerobic digestion and ceases to eat. Sub-lethal copper carp poisoning will decreases fertility/sterilize both male and female carp and impair the viability of embryos/fry.
Copper is a micro-nutrient required for life, ubiquitous in the environment and ten times more toxic to fish than it is to humans. The MJSTI copper piscicide is likely synergistic with MAISRC Koi herpes virus since both affect the carp’s liver. Common carp uniquely consume corn meal which allows for a selective carp piscicide. The USGS demonstrated bigheaded carp will consume beads confined by a foam ring and fed by an augur.
The limitation of the MJSTI piscicide is low toxicity. Since carp are voracious eaters, the fish selectively endanger themselves. The project goals are maximizing and determining toxicity and start EPA registration.

**What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state’s natural resources?**

The outcomes of this project are optimized and increased toxicity of the MJSTI intestinal soluble copper ion piscicide, preferred formula common carp LD50/LD99, agglomeration of a buoyant preferred bigheaded carp formula bead, agglomerated preferred formula bigheaded carp LD50/LD99 and start the EPA formula and usage registrations.

## **Activities and Milestones**

### **Activity 1: Common carp experimental design**

**Activity Budget:** $85,000

**Activity Description:**The purpose of this step is to determine the ratio optimum ratio of copper salt to amino acid, how concentrated the copper salt can be in the bead and determine if tryptophan can replace fat coated lysine. Tryptophan reduces inactive ingredients by 25%. Dr. Mengetti's fish physiology model should provide potential synergistic agents to increased toxicity. Maurice Sadowsky will make the pellets by drying a cross-linked hydro-colloid gel (process perfected in the patent work). COVE Environmental, an independent aquatic laboratory will conduct the fish tests.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Plan work: EPA Consultant, Dr. Mingetti | August 31 2022 |
| Prepare samples | September 30 2022 |
| Run experimental design | November 30 2022 |
| Determine Common Carp LD50/LD99 | December 31 2022 |

### **Activity 2: Prepare optimized buoyant fat coated copper/amino acid bead for bigheaded carp test. Determine LD 50/LD99 on bigheaded carp.**

**Activity Budget:** $75,000

**Activity Description:**The fat coated basic copper carbonate beads float and are imperious to water. Bigheaded carp need to see the beads, so the beads must break the surface of the water without sinking. The ideal bead is about 200 microns and under 500 microns to limit damage to paddlefish. The plan is to experiment with agglomeration of tryptophan and other water insoluble but miscible materials to allow at least a partial breaking of the water surface. The bead formulation will use the learning from the previous common carp experimental design. COVE is willing to handle bigheaded carp but will need permission from at least Oklahoma government. Dr. Menghetti will advise on design experiments. COVE Environmental will conduct the fish tests.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Determine bead agglomerate process | December 31 2022 |
| Bigheaded carp permission | December 31 2022 |
| Prepare beads | February 28 2023 |
| Determine bigheaded carp LD50/LD99 | June 30 2023 |

### **Activity 3: Start EPA Regristration**

**Activity Budget:** $40,000

**Activity Description:**In 2020 by email an EPA manager stated the approval for the fat coated basic copper carbonate/amino acid piscicide should be for a new application and maybe a new form of the EPA approved copper salt aquatic pesticide ingredient. At the time the registration fee was $20,000 and a six-month review. The EPA manager warned me that non-target species testing is likely to be significantly higher than $20,000. The manufacturer of the copper salt will support the registration. An EPA consultant is needed guide the process and complete filling forms.. The EPA suggests a pre-filing meeting in which the EPA “recommends” data needed before filing.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| EPA consultant prepares filing | July 31 2023 |
| EPA pre-registration meeting | August 31 2023 |

## **Long-Term Implementation and Funding**

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?**MJSTI’s market estimate for a carp piscicide is $5 to $10 million per year. The EPA may allow limited sales to support registration. Once registered, the plan is for sales to support needed capital. For a ENRTF $200,000 grant, MJSTI is willing to pay a $0.20 per pound royalty for the life of the patent. Once fully commercial, ENRTF should receive 100% of granted funds per year. Maurice Sadowsky invested over $50,000, at least three FTEs and no income. MJSTI owes about $50,000 in success-based debt. The GLFC provided a $11,000 grant.

## **Project Manager and Organization Qualifications**

**Project Manager Name:** Maurice Sadowsky

**Job Title:** President

**Provide description of the project manager’s qualifications to manage the proposed project.**Maurice Sadowsky is MJSTI Corp. Mr. Sadowsky has over 40 years sales, marketing, and business development experience working for Hercules Inc. and then American Ingredients/Caravan Ingredients/Corbion. Using problem solving Mr. Sadowsky increased sales almost 1,000 over 13 years, turned around a $20 million product from a loss to $2.3 million profit and know for market research. Mr. Sadowsky was a problem solver, listening to customers, researching technologies and self-learning accounting and business skills. Mr. Sadowsky used Dr. Porter’s Five Forces for market research and Dr. Cooper’s Stage-Gate for Business Development.
In 2012 Mr. Sadowsky started market and technology research on the Asian carp problem and determined that the USGS piscicide program lacked commercial viability. Mr. Sadowsky recognized the potential market is small, too small for pesticide companies or private investors. After several false starts in 2017 Mr. Sadowsky purchased a hand-held hot melt sprayer allowing the micro encapsulation of ingredients. Mr. Sadowsky built and operated a fish aquatic laboratory. The development of the soluble copper in the carp’s intestine came from two years of spray and fish testing and literature research. In 2019 the Great Lakes Fishery Commission funded the commercial production of the fat coated basic copper carbonate bead at the Aveka Group, Woodbury, MN. Mr. Sadowsky retained 80 pounds of the trial products. An anonymous laboratory conducted bigheaded carp testing. The laboratory work was sloppy and lacked controls. The recommendation from the laboratory was copper bead needs to be buoyant (vs. floating) and increased toxicity. Both recommendations are in this proposal. The US patent office granted MJSTI US 10,617,119, April 14, 2020, Piscicide Composition. Mr. Sadowsky gave four papers at Midwest Fish and Wildlife and ICAIS conferences and applied for 14 grants.
https://www.linkedin.com/in/mauricesadowsky/

**Organization:** MJSTI Corp.

**Organization Description:**MJSTI is a sub chapter S Delaware corporation whose only employee is Maurice Sadowsky. In addition to the piscicide development, MJSTI completed several market research projects and acted as a manufacturer representative. COVE Environmental LLC is a woman owned small business (SBC\_001695079) focused on aquatic toxicity. COVE uses the Ecological Test Guidelines OCSPP 850.1075 for freshwater and salt water fish acute toxicity test. Dr.. Matteo Minghetti, Assistant Professor, Oklahoma State University will see the project to ensure proper protcols are used by both Maurice Sadowsky and COVE Environmental. Dr. Minghetti is a fish physiologist whose active work includes fish physiology modeling. Dr. Minghettie’ doctoral studies focused on both food borne and waterborne copper toxicity in fish. Web sites: www.carpfree.com, https://covesciences.com/, https://integrativebiology.okstate.edu/people/faculty/367-matteo-minghetti

## **Budget Summary**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category / Name** | **Subcategory or Type** | **Description** | **Purpose** | **Gen. Ineli gible** | **% Bene fits** | **# FTE** | **Class ified Staff?** | **$ Amount** |
| **Personnel** |  |  |  |  |  |  |  |  |
| Maurice Sadowsky |  | Project Manager, Prepare samples |  |  | 0% | 1.3 |  | - |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Contracts and Services** |  |  |  |  |  |  |  |  |
| COVE Enviromental, LLC | Sub award | COVE Environmental will conduct the common and bighead carp toxicity testing. In 2020, COVE estimated the cost is $1,500 per test. |  |  |  | 0.3 |  | $70,000 |
| Dr. Matteo Minghettie, Oklahoma State Univeristy | Professional or Technical Service Contract | Dr. Matteo Minghetti, Assistant Professor, Oklahoma State University will ensure proper protocols are used by both Maurice Sadowsky and COVE Environmental. Dr. Minghetti is a fish physiologist whose active work includes fish physiology modeling. Dr. Minghettie’ doctoral studies focused on both food borne and waterborne copper toxicity in fish |  |  |  | 0.25 |  | $60,000 |
| Not choosen | Professional or Technical Service Contract | An EPA Consultant is required to complete submission paper work and guide the process. The consultant will have two functions in the process. An initial consultation to ensure the tests completed by COVE Environmental meet EPA standards. The second is to complete the EPA submission request and attend the EPA |  |  |  | 0.1 |  | $25,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$155,000** |
| **Equipment, Tools, and Supplies** |  |  |  |  |  |  |  |  |
|  | Tools and Supplies | Tryptophan, other chemicals | Materials used to make beads and pellets |  |  |  |  | $1,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$1,000** |
| **Capital Expenditures** |  |  |  |  |  |  |  |  |
|  |  | Pellitizer, Pan sprayer | Equipment to make pellets and beads |  |  |  |  | $19,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$19,000** |
| **Acquisitions and Stewardship** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Travel In Minnesota** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Travel Outside Minnesota** |  |  |  |  |  |  |  |  |
|  | Miles/ Meals/ Lodging | 0 to 2 trips to Stillwater, OK; 1-2 trips to EPA Washington, DC; est. 3,000 to 6,000 miles | Maurice Sadowsky to visit Stillwater, OK if necessary and Maurice Sadowsky and EPA consulant to visit EPA in Washington, DC. | X |  |  |  | $5,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$5,000** |
| **Printing and Publication** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Other Expenses** |  |  |  |  |  |  |  |  |
|  |  | EPA Filling Fee | To file for EPA regristation of a new application for copper salt as a piscicide |  |  |  |  | $20,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$20,000** |
|  |  |  |  |  |  |  | **Grand Total** | **$200,000** |

### **Classified Staff or Generally Ineligible Expenses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category/Name** | **Subcategory or Type** | **Description** | **Justification Ineligible Expense or Classified Staff Request** |
| **Travel Outside Minnesota** | Miles/Meals/Lodging | 0 to 2 trips to Stillwater, OK; 1-2 trips to EPA Washington, DC; est. 3,000 to 6,000 miles | Meeting in Stillwater to review laboratory and discuss experimental plans. Meeting in Washington DC for pre-filing meeting to discuss the issues of the MJSTI piscicide with EPA before filing for registration. |

### **Non ENRTF Funds**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Specific Source** | **Use** | **Status** | **Amount** |
| **State** |  |  |  |  |
| In-Kind | MJSTI Corp., product made at Aveka Group, Woodbury, MN | Approximately 80 pounds of 14%, 24% and 32% basic copper carbonate coated with fully hydrogenated soybean oil. | Secured | $10,000 |
|  |  |  | **State Sub Total** | **$10,000** |
| **Non-State** |  |  |  |  |
| In-Kind | Maurice Sadowsky | Maurice Sadowsky will manage the project with no income and prepare samples at no income. | Secured | $75,000 |
| In-Kind | MJSTI technology | MJSTI invested over $50.0000, has approximately $50,000 in debt based on success and at least three man years of research. Maurice Sadowsky experience includes what makes a product carp will consume, the understanding of raw materials supply and cost, process to make the products as well as the limits of the optimum technology. The investment total is on the order of $500,000. | Secured | $500,000 |
|  |  |  | **Non State Sub Total** | **$575,000** |
|  |  |  | **Funds Total** | **$585,000** |

## **Attachments**

### **Required Attachments**

#### ***Visual Component***

File: [e53880cc-7b6.docx](https://lccmrprojectmgmt.leg.mn/media/map/e53880cc-7b6.docx)

#### ***Alternate Text for Visual Component***

Bigheaded Carp Population Control, April 2021 is a report by Maurice Sadowsky that reviews the Asian carp problem, the Federal response and Population Control options. The 2021 report is not complete but includes a section on Population Dynamics. Although 21 pages long, the report is full of graphics and has three pages of graphics....

### **Optional Attachments**

#### ***Support Letter or Other***

|  |  |
| --- | --- |
| **Title** | **File** |
| KS Letter of Support | [733a8dd5-9bc.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/733a8dd5-9bc.pdf) |

## **Administrative Use**

**Does your project include restoration or acquisition of land rights?**
 No

**Does your project have potential for royalties, copyrights, patents, or sale of products and assets?**
 Yes

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**
 Yes

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**
 No

**Does your project include original, hypothesis-driven research?**
 No

**Does the organization have a fiscal agent for this project?**
 No