Draft Revision of the National Strategy for the Conservation of Native Freshwater Mollusks Issues, Goals and Strategies

Strategies will be further developed through webinar series January 22-24, 2013

<u>Issue 1 – There is a need for a coordinated national strategy for the conservation of freshwater</u> mollusk resources.

Goal: Increase coordination and information sharing among local, state, regional, national and international partners in conserving native freshwater mollusk resources.

Strategies

1. Establish and ad hoc committee every 12 years to review and update the National Strategy document

2. Revise the National Strategy document every 15 years and implement it at multiple scales.

- 3. Help integrate the national strategies into regional, ecosystem, and state action plans.
- 4. Increase collaboration with international partners.
- 5. Develop a formal communications plan for FMCS.
- 6. Encourage publication of research and management actions.

Issue 2 – There is a need to understand and describe the quantity and quality of suitable habitat for freshwater mollusks, and conserve it.

Goal: Maintain and improve habitat for native freshwater mollusks.

Strategies

- 1. Develop habitat suitability indices.
- 2. Develop mollusk community indices.
- 3. Quantify the amount of occupied habitat.
- 4. Develop meaningful mitigation alternatives for activities that impact mollusk habitat.
- 5. Define mollusk habitat requirements at the micro-, meso-, and riverscape scale.
- 6. Develop and implement habitat restoration activities, including connectivity of historic habitats.
- 7. Conserve mollusk habitat through easements, acquisitions, and cooperative agreements.

8. Identify best management practices for riparian and instream work that protects and restores mollusk habitat

<u>Issue 3 – There is a need to understand and describe aspects of life history, reproductive biology, physiology, and ecology of freshwater mollusks.</u>

Goal: Increase fundamental knowledge of basic biology of these animals so managers can more effectively conserve them.

Strategies

1. Define environmental and nutritional requirements necessary for physiological maintenance, reproduction, and persistence of all life stages of native mollusks.

- 2. Describe life history and fish host relationships at the appropriate watershed scale.
- 3. Describe temperature and water quality tolerances of species.
- 4. Describe physiological and metabolic processes of freshwater mollusks.

5. Describe trophic interactions and ecological functions of freshwater mollusks in the environment.

<u>Issue 4 – There is a need to increase knowledge, and its availability, of the current and historic distribution of freshwater mollusks, of phylogenetic relationships, and of population dynamics among healthy native freshwater mollusks.</u>

Goal: Increase knowledge on the status and trends of mollusk populations and communities.

Strategies

- 1. Continue to refine knowledge of systematics and phylogeny of species.
- 2. Update and maintain a database of accepted scientific nomenclature of mollusks.
- 3. Maintain a central depository for mollusk distribution data.
- 4. Assess and publish status of mussels and snails at least every 15 years.

5. Develop population models and population goals for managing rare species and keeping common species common.

- 6. Define minimum population sizes and genetic vigor for species of management concern.
- 7. Develop mollusk community health assessment tools.
- 8. Conserve populations of broodstock mussels and their host fish.

<u>Issue 5 – There is a need to understand and describe the impacts of historic, ongoing, and newly</u> emerging stressors on native freshwater mollusk habitat and populations.

Goal: Eliminate or minimize threats to mollusks and their habitat.

Strategies

1. Compile comprehensive "threats assessments" on riverscape, watershed, and national scale.

2. Work with the states and USEPA to modify water quality standards to be protective of native mollusks.

3. Describe the impacts of stressors (e.g., climate change, increased energy development, water use conflicts, runoff, unregulated contaminants, and hormone disruptors) on native mollusk populations.

- 4. Predict how species and communities will change in response to threats.
- 5. Develop and implement "quick response" tools to assess respond to threats in the field.

<u>Issue 6 – There is a need to understand the impacts of aquatic invasive species (fish, plants, mollusks, crayfish, etc.) and diseases on native freshwater mollusk species.</u>

Goal: Develop management options to track and control invasive and harmful organisms, and eliminate or reduce their spread.

Strategies

- 1. Develop an "early detection and rapid response" system for new aquatic invaders.
- 2. Track the status and trends of invasive organisms.
- 3. Develop and implement disease avoidance and minimization protocols.
- 4. Describe the risk and magnitude of impacts of invasives to native mollusk fauna.

<u>Issue 7 – There is a need to develop and refine technologies for propagation and reintroduction</u> of juveniles, and holding and translocation of adults in order to secure the long-term survival of many native freshwater mollusk populations.

Goal: Determine the best procedures for successful re-introduction and augmentation of mollusk populations and communities.

Strategies

1. Develop conservation and re-introduction plans at the stream, watershed, and landscape level as appropriate which consider propagation goals, genetics, disease, fish hosts, monitoring, etc.

- 2. Define standards for captive and wild refugia for species of management concern.
- 3. Refine nutritional regimens for captive care and rearing of native mollusks.
- 4. Publish protocols for handling, transport, and captive care of mollusks.
- 5. Maintain a database of translocation, propagation, and stocking events.

3. Minimize the impact of collecting broodstock mussels and fish hosts on resident fish and mollusk populations and their habitat.

<u>Issue 8 – There is a need to increase awareness and understanding about the roles and values of our native freshwater mollusks and their ecosystems, and threats to their sustainability.</u>

Goal: Enhance knowledge by the public and decision-makers at all levels, of the values to society of functioning aquatic ecosystems.

Strategies

- 1. Identify specific outreach audiences and develop messages targeting each.
- 2. Describe the ecological functions and roles of native mussels and snails.
- 3. Describe the ecological impact of snails on aquatic and human health.

<u>Issue 9 – There is a need to understand and describe the true replacement costs, as well as the economic value of the goods and ecological services provided by native freshwater mollusk populations.</u>

Goal: Improve science-based consideration of the full economic value of mollusk communities.

Strategies

- 1. Develop and publish the values to society of the economic services provided by mollusks.
- 2. Update the values and replacement costs of mollusk communities lost due to mortality events.

Issue 10 –There is a need to educate and train both current and future generations of resource managers and researchers in order to ensure that conservation of native freshwater mollusks continues.

Goal: Maintain and improve the ability of the mollusk conservation community to implement the best available science.

Strategies

1. Provide continuing education opportunities on relevant topics (e.g., identification, sampling protocols, quarantine, transport, captive care, etc.).

2. Support universities, research institutions, and other educators in advancing scientific knowledge of all aspects of mollusk conservation.