EarthCorps

LOCAL RESTORATION · GLOBAL LEADERSHIP

Building global community through local environmental service

Decontamination

For crews & gear

May 22, 2012

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Overview

- Introduction
- Targeted Species
- Developing your decontamination protocol
- Current best management practices
- Issues and ideas

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Introduction

Targeted Species - Aquatic

- **Threats to Fish**
  - Whirling Disease
  - Viral Hemorrhagic Septicemia (VHS)
  - Infectious Hematopoietic Necrosis (IHN)

Photo: Associated Press

- **Threats to Amphibians**
  - Chytrid Fungus

Photo: USGS

- **Weeds & Algae**
  - Didymo (Rock Snot)
  - *Cymbella sp.*
  - Eurasian milfoil

Photos: USGS

Targeted Species - Aquatic

➢ New Zealand Mudsnails

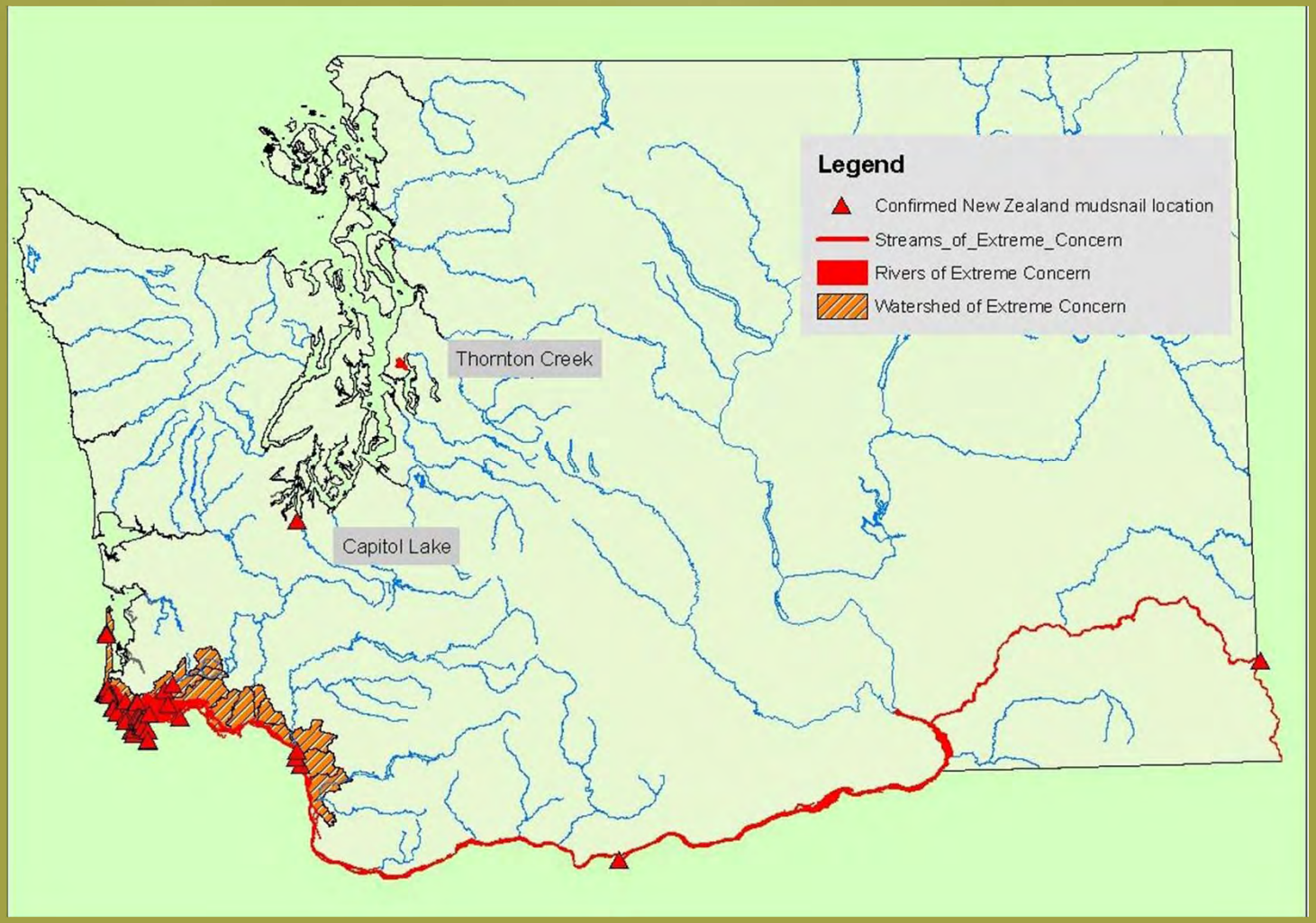
- **Extremely small:** .5 to 5mm
- **Light brown** to dark brownish-black
- **Whorls:** Typically 5 or 6
- **Clonal reproduction:** Single individual may lead to population of thousands in 1 year

Photo: USGS

Photo: R. Draheim

- **Density** of >200,000 per meter^2 possible
- **Adapted** to wide variety of habitats
- **Resilient:** May live up to 24hrs in dry conditions, or several weeks on damp surfaces
- **Infestations** include many rivers in CA, ID, MO, WY and the Great Lakes

New Zealand Mudsnail:
2011: Known Washington Populations



Targeted Species - Terrestrial

Decontamination: Goals & Protocol

Goal #1: Minimize contact w/invasive organisms

- Education & Awareness
- "Know before you go"

  - What known invasives are on site?

  - How are they transferred?
- Plan alternative routes & strategies

  - Begin work from upper watershed, heading downstream

Decontamination: Goals & Protocol

Goal #2: Don't be a vector!

- Select gear that can be easily inspected, manually cleaned and dried
- Have cleaning supplies on-hand (scrub brushes, water, etc.)

Decontamination: Goals & Protocol

Photo: USDA

Goal #2: Don't be a vector!

- Clean vehicles, clothing, tools and equipment – remove all seeds, plant matter and sediment
- If possible, keep separate sets of gear for work in different watersheds

Photo: NPS

Decontamination: Methods

After manual removal of debris, further decontamination may still be necessary!

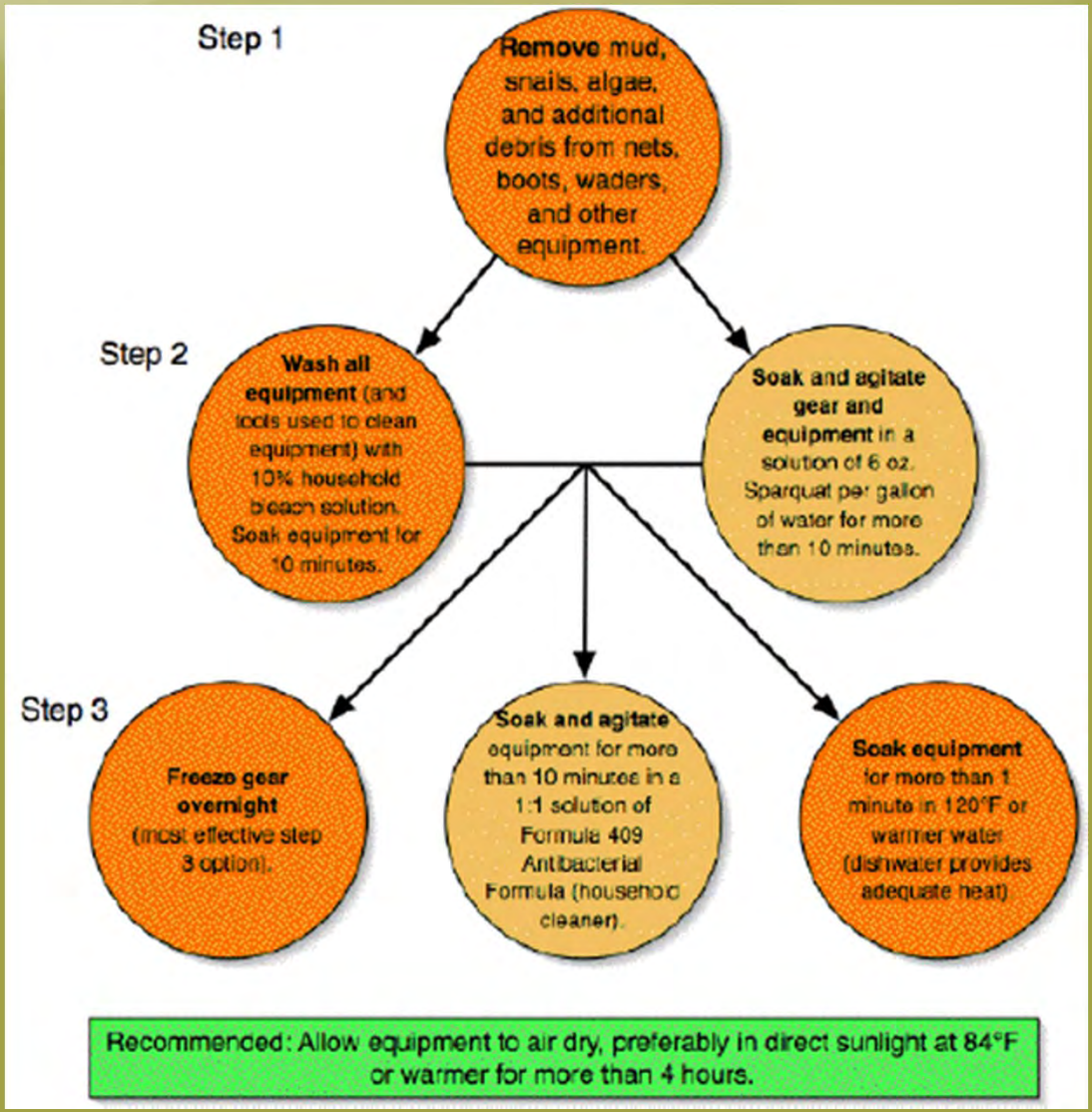
- **Drying:** At least 48 hrs
- **Hot Water Soak:** 60°C (140°F) for 1min
- **Freezing:** -4° C for 4hrs

Methods

Treatment	New Zealand mudsnails	didymo	chytrid fungus	zebra/quagga mussels	whirling disease
Bleach	not effective	2% (800 ppm) for 1 min	20% for 30 sec or 7% for 10 min	rinse with 0.5%	1% for 10 min
Formula 409 - antibacterial formula	full strength, 10 min exposure	likely effective	effective unknown concentration	no data	50% mixture for 10 min
Sparquat 256	3.1% or higher, 10 min	1.2% for 1 min	effective unknown concentration	no data	3% 10-15 min
Quat 128	4.6% for 10 min	2% for 1 min	0.15% for 30 seconds	no data	4.4% 10-15 min
Hot water	120-130° F for 5 min (time starts when all gear is at temperature); 50 C° for 15 seconds	60° C for 1 min	60° C for 5 min; 47 C° for 30 min; 37° C for 4 hours	60° C for 3 min	90° C for 10 min; >75°C for 5 min
Cold	0° C minimum 4 hours (time starts when gear is thoroughly frozen)	0° C minimum 4 hours	unknown	0° C minimum 4 hours	- 20° C 4 hours freezing may not completely inactivate cells
Drying	48 hours at low humidity (completely dry at least 24 hours)	48 hours sunlight best	be dry 3 hrs, in sunlight best	dry 3-5 days, sunlight best	24 hrs, sunlight best

Source: WA Dept. of Ecology

Methods



Courtesy – Trout Unlimited

Methods

- Issues? Other Ideas?

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Thank you

Kym Foley, Project Manager

kym@earthcorps.org

www.earthcorps.org