



# Rapid Response to Zebra Mussel Contamination in Marimo Moss Balls



Susan Pasko  
U.S. Fish and Wildlife Service  
Columbia River Basin AIS Team  
June 9, 2021





Photo by Aaron Martin, USFWS



Photo by Stephen Jackson, USFWS

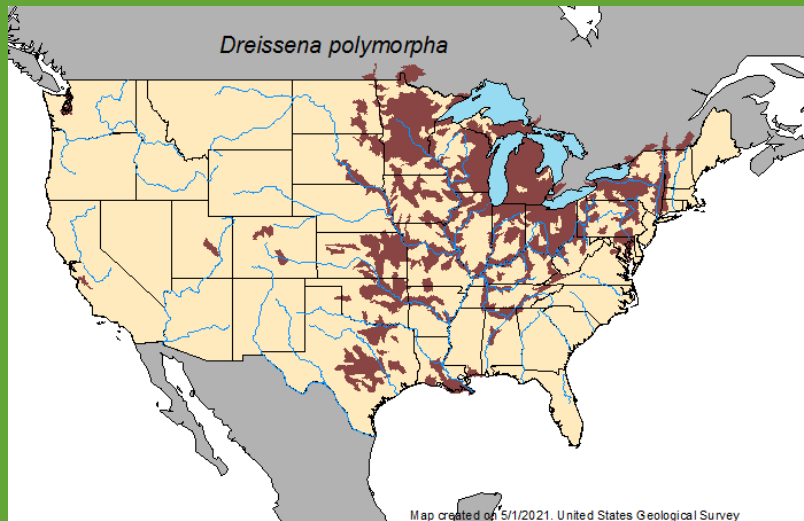
# MOSS BALL 101

- **Filamentous Green Algae**
  - “Mari” = bouncy ball
  - “Mo” = grown in water.
- **A Widely Sold Plant Commodity**
- **Mainly Found in Northern Europe and Japan**
  - Declared a Japanese Natural Treasure in 1921
- **No History of Invasivness**

# MOSS BALL CONCERNS



- **USGS confirmed zebra mussels confirmed inside moss balls on March 2, 2021**
- **Native to the Black and Caspian Sea drainages in Eurasia**
- **Introduced into North America through ballast water in 1980's**
- **Notorious Biofouling Invader**
- **Listed as Injurious Wildlife under the Lacey Act**





# An Atypical AIS Challenge

A **contaminated plant commodity** but not with a plant pest

- ✓ Zebra mussels listed as injurious wildlife

**Widely dispersed:** At least 46 States with a contaminated moss balls

- ✓ Pet stores, grocery stores, water garden, eCommerce retailers
- ✓ Invasive species management and law enforcement responsibilities

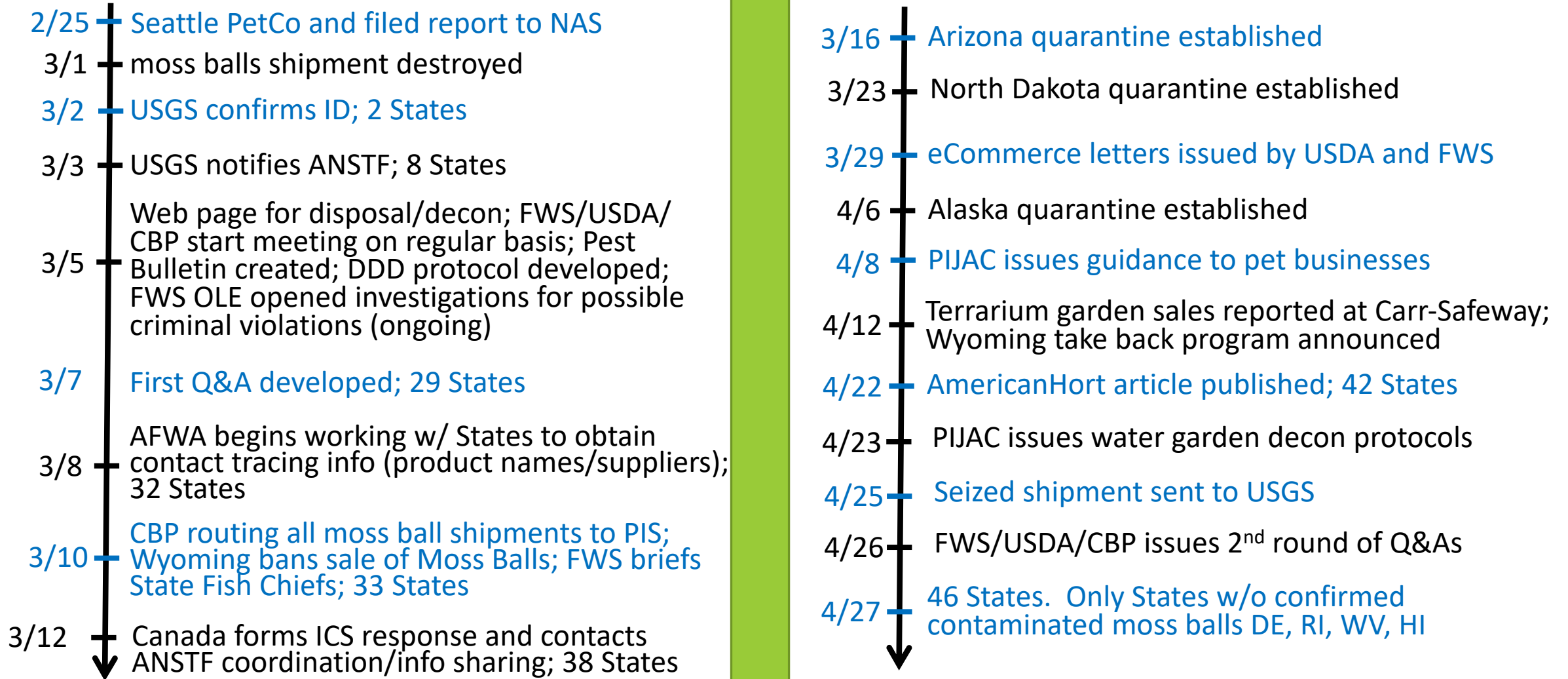
Active **law enforcement investigation** at State and Federal levels

- ✓ Complicated communications: Federal to State enforcement staff

# Two Primary Management Objectives

- Stop the importation of zebra mussel contaminated moss ball products into the United States
- Properly dispose of contaminated moss ball products already in the U.S. supply chain, retail stores, on-line eCommerce, and home aquariums.

# Timeline of Some Key Activities and Events



# Moss balls: Examples of Federal Action

## **U.S. Fish and Wildlife Service**

- Coordinating enforcement of international, federal, and state levels
- Maintain Destroy, Dispose, and Drain website and protocols
- Communicating information to federal, regional and state partners
- Coordinating with industry
- Securing eDNA technology for use at inspection sites

## **U.S. Department of Agriculture**

- Working with USFWS to intercept ZM at plant inspection stations
- Communicating with eCommerce to restrict sales

## **U.S. Customs and Border Protections**

- Targeting certain international shipments for referral to CBP Ports of Entry
- Traceback and trace-forward efforts

## **U.S. Geological Survey**

- Maintains records in NAS database, Assists with identification of specimens
- Development of point-of-use eDNA tools

# Examples of Industry Action

## **Pet Industry Joint Advisory Council**

- ✓ Industry alert – March 5th
- ✓ Developed decontamination protocols
- ✓ Developed water garden decontamination protocols
- ✓ Recommended industry “Place a moratorium on the importation, purchase, and sale of all moss balls until a method of testing and treatment can be established to ensure a clean trade.”

## **PetCo/Pet Smart**

- ✓ Recommended disposal
- ✓ Refunded/recalled contaminated products
- ✓ Issued consumer alerts
- ✓ Supportive of law enforcement officials collecting moss balls as evidence



# Examples of Industry Action (Continued)

## Albertsons – Carr/Safeway

- ✓ Removed terrarium moss ball products from shelves

## AmericanHort

- ✓ News letter “protocols do not exist to enable safe, clean, and compliant trade in moss balls. Until such protocols are developed, **retailers are urged not to sell moss balls.**
- ✓ Retailers and their customers are **urged to safely destroy moss balls and to decontaminate the aquarium or water garden systems in which they were growing.”**

## On-line market places, such as Amazon, Etsy, and eBay

- ✓ **Removed listings of foreign IP addresses** where direct imports into the United States of propagative material was occurring

# Examples of State Action

## **Agricultural quarantines of moss balls: WY, AZ, AK, OR, ND**

- ✓ This has been extremely helpful in reaching out to industry on a national basis.

## **Many States regulate the use, possession, and transport of zebra mussels.**

- ✓ Working with local stores.

## **Contact tracing information and local enforcement of State laws and regulations**

## **Facilitating communications between Federal & State law enforcement and AIS personnel**

# Moss Ball Entry Into U.S.: Key Changes Due to Contamination

---

Pre	Post
Moss ball State regulations: HI	Moss ball State regulations: HI, WY, AZ, AK, OR, ND
	CBP, USDA, FWS law enforcement and invasive species staff meet regularly
< 12 moss balls non-commercial shipment	1 moss ball = commercial shipment and referred to PIS
Non-commercial person-to-person shipments	All moss ball shipments under permit
Imports arriving through Plant Inspection Stations at JFK, LAX, and Miami	Imports must arrive through JFK or LAX
Shipments cleared if no pests or pathogens of plants	All moss ball shipments referred to the USFWS
	Agreement to pursue eDNA testing of moss ball shipments by USFWS

# Going Forward

## **Continue working with Industry**

- ✓ To develop clean trade protocols and processes

## **Continue working with eCommerce**

- ✓ Direct imports into the United States

## **Continue working with USDA**

- ✓ Continue working to resolve broader AIS concerns with importation of moss balls

## **Develop Post-Incident Assessments**

- ✓ Potential for development of Legal Authorities document Development of After Action Report

# Thank You!

Susan Pasko

ANS Task Force Executive Secretary

57725 Leesburg Pike Falls Church, VA 22041

Phone: 703-358-2466

Email: [Susan\\_Pasko@fws.gov](mailto:Susan_Pasko@fws.gov)



---

PUBLIC INQUIRIES CAN BE SENT TO: [MOSS\\_BALL\\_RESPONSE@FWS.GOV](mailto:MOSS_BALL_RESPONSE@FWS.GOV)