

## Invasive Species Alert!

Zebra mussels have been detected within a variety of moss ball products designed for aquarium use, for example “Betta Buddy Marimo Balls” or “Marimo Balls”.

Zebra mussels (*Dreissena polymorpha*) are regarded as one of the most troublesome invasive species in North America. They are small, fingernail-sized mollusks native to the Caspian Sea region of Asia. Zebra mussels have three life stages – larval, juvenile, and adult. In the microscopic larval stage, the mussels live freely in the water column, allowing them to be easily transported. Adult zebra mussels can stay alive for several days outside of water and are common hitchhikers on boats, fishing equipment – and aquarium plants!

In spite of their small size, zebra mussels clog pipelines used for water filtration, render beaches unusable, and damage boats and infrastructure. They also negatively impact aquatic ecosystems by harming native organisms.

**Moss balls or untreated water should not be disposed of in any location where they could reach local waterways.**

If you have recently purchased a moss ball aquatic plant product, we recommend that you take the following steps to destroy and dispose of the moss ball and zebra mussels:

- 1) Destroy the moss ball using ONE of the following methods, ensuring that the disposal method you choose is in compliance with state laws and animal welfare regulations:
  - Place the moss ball into a sealable plastic bag and freeze for at least 24 hours, OR
  - Place the moss ball in boiling water for at least 1 full minute, OR
  - Submerge the moss ball in chlorine bleach, diluted to 1/3 cup of bleach<sup>1</sup> per gallon of water, for at least 10 minutes, OR
  - Submerge the moss ball in undiluted white vinegar for at least 20 minutes.



<sup>1</sup> Use regular, unscented bleach. Check the label to ensure that the bleach is EPA-registered and has a concentration of at least 5% Sodium Hypochlorite. Bleach is corrosive, use with caution. Read and follow all product labels. Appropriate personal protective equipment should be worn to avoid personal injury when using chemicals.

- 2) Once step 1 is complete, place the moss ball and any of its packaging in a sealed plastic bag and dispose in the trash.
- 3) If vinegar, boiling water, or bleach was used, the liquid can be disposed down a household drain — never down a storm drain where it could enter and damage local waterways.

If the moss ball was placed in an aquarium, please take these additional steps to decontaminate your aquarium and accessories. For additional guidance on holding fish during treatment or re-establishing your aquarium following treatment, contact your local retailer.

- 1) Collect any fish or other living organisms and place them in another container, with water from a separate, uncontaminated water source.
- 2) Remove water from tank and sterilize by adding 1/3 cup of bleach per gallon of water. Let the water sit for at least 10 minutes and then dispose the sterilized water down a household drain.
- 3) Decontaminate the aquarium and accessories using one of the following methods, in accordance with manufacturers' recommendations:
  - Hot Water Method:
    - Pour water that is 120 degrees F into tank, covering all accessories.
    - Allow to sit for a minimum of 2 minutes.
    - Allow the water to cool, then dispose of treated water in a household drain.
  - Salt Water Method:
    - Make a saline solution using 1/2 cup of salt per gallon of water.
    - Soak aquarium, substrate, rocks, décor, and filter media in salt water solution for at least 24 hours.
    - Dispose of treated water in a household drain.
    - Rinse off all items prior to re-setting up the aquarium.
  - Bleach Disinfection Method:
    - Make a disinfection solution using 1/3 cup of bleach per gallon of water.
    - Soak aquarium, substrate, rocks, décor, and filter media in the bleach water solution for at least 10 minutes.
    - Dispose of treated water in a household drain.
    - Rinse off all items prior to re-setting up aquarium.
- 4) Allow tank and accessories to dry for at least 15 minutes before refilling with water.
- 5) It is recommended that you perform a standard water change (~20%) within a week and continue to monitor the tank for any unusual or unexpected aquatic life. If needed, repeat steps 1 - 5.

Decontamination using the steps above is **highly recommended and essential if mussels are observed**; however it is understood that many aquarists make significant investments in establishing and maintaining their aquaria and that disinfecting and reestablishing a system in which mussels have not been observed may not be ideal. As an alternative to decontamination, and consistent with steps necessary to prevent the release of zebra mussels, aquarists may take the following steps to quarantine and monitor their aquarium:

- 1) The aquarium should be closely inspected once a week for mussels for at least 6 months. If mussels are found, follow the decontamination steps above.
- 2) During the quarantine period, take the following precautions:
  - Any live plants removed from the aquarium should place in a sealed plastic bag, frozen for at least 24 hours, and disposed of in the trash.
  - Plants and animals from the aquarium should not be sold or traded
  - The aquarium and any accessories should be decontaminated before selling or trading.
- 3) The quarantine period ends 6 months after no mussels are found.

**Thank you for helping to protect our waters from invasive species!**

These guidelines are provisional and are subject to revision. They are being provided to meet the need for timely best science. Please remember that it is illegal to dump aquaria life into local waterbodies. If you have any questions, please contact your state's appropriate governing body for aquatic invasive species information and regulations.



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