

# Disaster Preparedness Plan for Fish



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Pet fish are vulnerable and need our help to stay safe during a storm or evacuation. Fish owners must be prepared for power outages, particularly during natural disasters, as well as flooding, climatic extremes, and wildfires.

## Power Loss

Power outages that last no more than several hours are usually not a major concern, however, monitor your fish for signs of stress, such as “gaping” at the water’s surface. If “surfacing” is observed, the short-term solution is to agitate the water’s surface with the use of a battery-powered aerator. The movement of air within the bubbles creates a current that moves water to the surface where dissolved oxygen can be absorbed.

Unfortunately, long-term power loss frequently occurs during disaster events, but there are several critical measures that you can take beforehand to protect your fish.

### BEFORE power loss

If you know that the power will be going out for any length of time, **stop feeding your fish** to reduce organic waste in the water, which can lead to potentially lethal ammonia levels. Fish are often fasted for 2-3 days before transport to reduce ammonia excretion and improve water quality during shipping. Most fish can go more than a week without eating in an emergency situation.

**Perform a large (up to 50%) water change** before power loss to provide the best water quality possible.

Create **water reserves** for future water changes using 5-gallon buckets, clean trash cans, or large plastic totes. Municipal water sources contain chlorine and chloramines and will need to be dechlorinated prior to use by adding water conditioners or by allowing chlorine to naturally evaporate in open containers over 24 hours.

Pond owners should set up a **temporary tank** in case fish need to be moved. A gas-powered generator could also be used to run electrical equipment. Also have a backup aerator and plug it in separately from other components. If possible, also stretch nylon (not plastic) mesh over the entire pond surface to prevent debris from collecting.

## DURING power loss

When the power goes off or if the power flickers on and off, **unplug electrical equipment** so it will not be damaged by a power surge when it turns back on. Equipment should also be plugged into a surge protector strip.

**Perform more water changes** to ensure fish have adequate water quality. Use of a portable or battery-operated aerator as well as hydrogen peroxide can also be increase oxygen levels. Gradually mix in 1 ml H<sub>2</sub>O<sub>2</sub> per 4 liters (1 gallon) of water to provide additional oxygen for approximately 24 hours.

## Fish checklist

• Spare aquarium tank, plastic tub, kiddie pool <sup>a</sup>	• Nylon netting or mesh cover (to prevent escape and predation)
• 5-gallon bucket(s), clean garbage cans, or plastic totes	• Fish net <sup>b</sup>
• Fish-safe plastic bags	• Sharpie to mark bags (species/ date/time)
• Rubber bands	• Plastic aquarium tubing (for siphoning)
• Battery-operated and/or portable air pumps <sup>c</sup>	• Backup electrical aerator(s)
• Power adapter (to charge the air pump in the vehicle)	• Water conditioner (dechlorinator)
• Nonpowdered nitrile or neoprene wetsuit gloves <sup>d</sup>	• Hydrogen peroxide
• Waterproof thermometer	• Waterproof pH meter
• Surge protector	• Turkey baster/pipette/large syringe

**a** The container should be 30.5 cm (12 in) deep at minimum

**b** Nonabrasive nylon sock nets are ideal for handling larger fish, such as koi

**c** Bicycle tire pumps can also be used as an aerator for large tanks

**d** When handling is necessary on rare occasions, wear gloves to protect yourself & the delicate skin of your fish

## Flooding

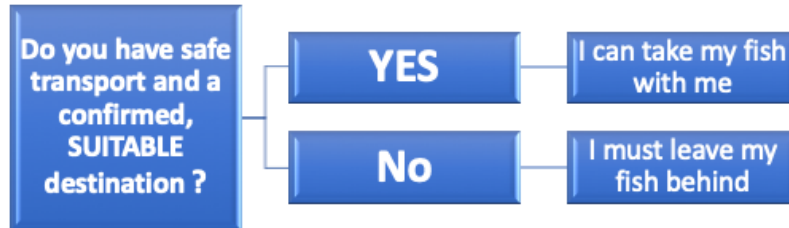
Move fish tanks to higher ground (or a higher floor) when there is risk of flooding. Place the relocated tanks away from windows on a solid surface, even the floor will do.

Flooding is an even more serious concern for ponds. If a pond overflows, fish can escape the confines of their pond and become stranded on dry land when the water recedes. Flooding can also push runoff contaminants and debris into pond water, adversely affecting water quality. To reduce the runoff that enters a pond, build up the pond's edge using rocks or bricks. A pond at risk of overflowing, can also be drained with a pump beforehand so there is room for rainwater. It is also possible to create a

drainage outlet so that excess water will flow out of the pond, although it is essential that fish cannot pass through this drainage outlet.

### **If you must evacuate...**

As fish veterinarian Jessie Sanders writes in Disaster Planning for Fish, “If you are able to take your fish with you, you **MUST** have a suitable destination **READY**. **NOT** the hotel bathtub!”



### **Traveling with fish**

Most fish can be transported in large, fish-safe, plastic bags or 5-gallon plastic buckets or some other watertight container. When using plastic fish bags, fill one-third of the bag with water and two-thirds with air. Secure the bag with rubber bands for easy opening and closure, then load bags perpendicular to the forward motion of the vehicle so fish are less likely to suffer facial trauma during transport. Buckets or other water tight containers should have a lid with a hole in it for the portable air pump that is plugged in with a power adapter or a battery-powered aerator. There should be enough water in the transport container to cover the fish completely. Do not add pond or tank furniture to the transport container.

Keep transport times as short as possible to reduce the risk of a waste accumulation and drastic temperature change.

Stressed fish normally will not eat, but once your fish are set up in their temporary, or new, home, wait at least 24 hours. Then offer small amounts of food gradually until fish are eating a normal amount.<sup>8</sup>

### **If you must leave your fish behind**

Do not provide extra food and never use a “vacation feeder” as this will increase organic waste and reduce water quality. Also perform a large (up to 50%) water change.

### **After the disaster event**

Once the power is back on, confirm all equipment is working properly. Check the filters to ensure they do not need to be cleaned or replaced. Wait briefly, then test water quality. Pond water may be unbalanced due to runoff. Once imbalances have been corrected, gradually introduce fish to their new water source in floating bags.