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Keep Texas Wild

POLLUTION KILLS!

For fish, the water may hold many dangers.

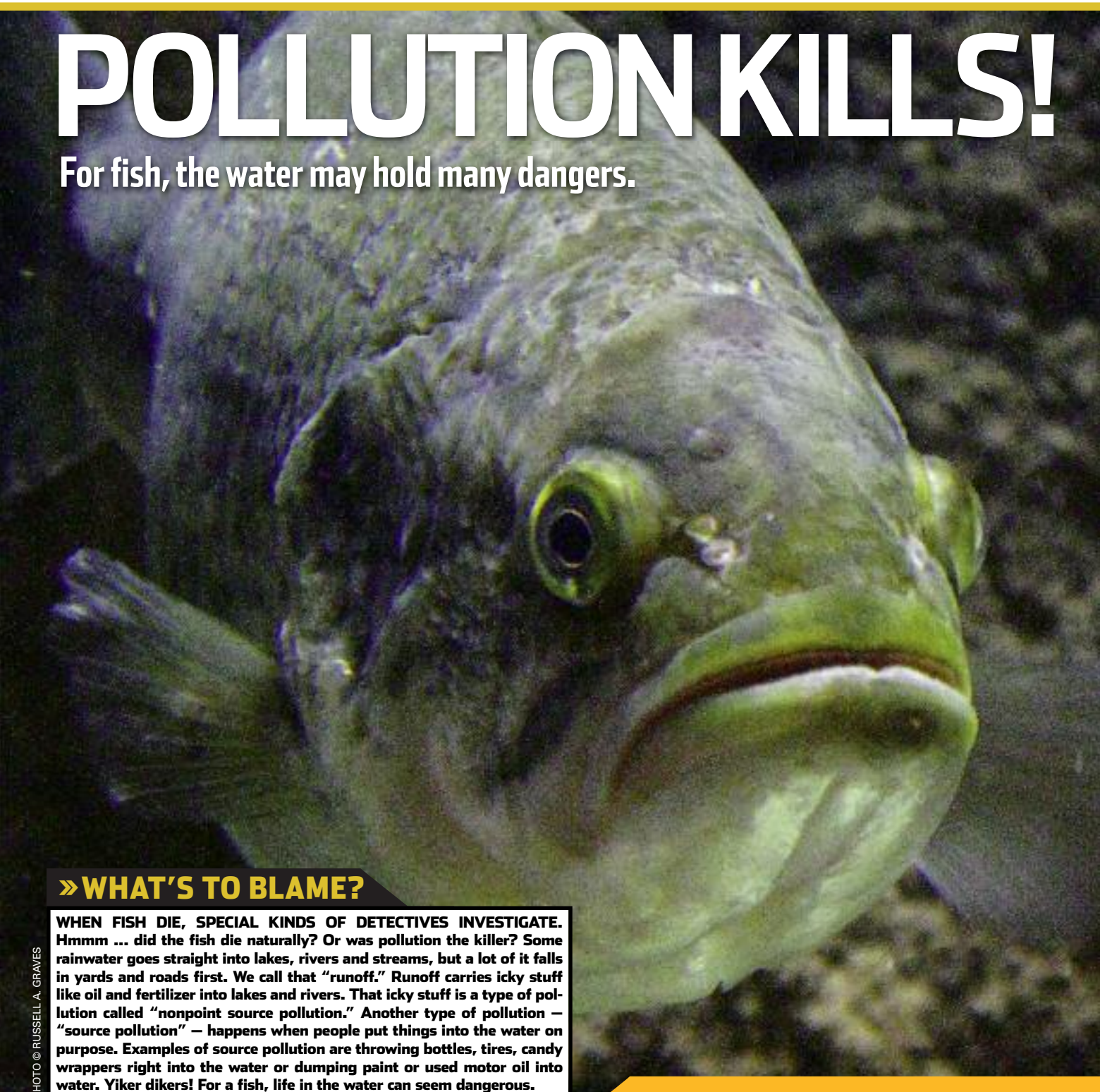


PHOTO © RUSSELL A. GRAVES

»WHAT'S TO BLAME?

WHEN FISH DIE, SPECIAL KINDS OF DETECTIVES INVESTIGATE. Hmmm ... did the fish die naturally? Or was pollution the killer? Some rainwater goes straight into lakes, rivers and streams, but a lot of it falls in yards and roads first. We call that "runoff." Runoff carries icky stuff like oil and fertilizer into lakes and rivers. That icky stuff is a type of pollution called "nonpoint source pollution." Another type of pollution — "source pollution" — happens when people put things into the water on purpose. Examples of source pollution are throwing bottles, tires, candy wrappers right into the water or dumping paint or used motor oil into water. Yiker dikers! For a fish, life in the water can seem dangerous.

What Killed Fr

DETECTIVES DISCOVERED THE LIFELESS BODY OF FREDDY THE BASS. DURING HIS LIFE, FREDDY FACED MANY DANGERS. COULD ONE OF THEM BE HIS KILLER?

DOG POOP!

DANGER: The bacteria in dog poop can make fish sick when runoff carries it from the land into the water.
TYPE OF POLLUTION: Nonpoint source.

MOTOR OIL?

DANGER: Motor oil in the water coats fishes' gills, causing them to suffocate since fish need gills to breathe.
TYPE OF POLLUTION: Can be both nonpoint source and source.

PESTICIDES?

DANGER: Chemicals used to kill insects are called "pesticides." Too many pesticides in the water can kill other critters besides bugs – like fish!
TYPE OF POLLUTION: Nonpoint source.

HERBICIDES?

DANGER: We spray "herbicides," or weed killers, on plants when we don't want them to grow. When runoff brings lots of herbicides into the water, it can kill the plants and animals.
TYPE OF POLLUTION: Nonpoint source.

ILLEGAL DUMPING OR DISCHARGES?

DANGER: "Illegal" means "against the law," and when a person or a business dumps something like chemicals, car batteries or tires into the water, that's breaking the law. Dumping chemicals is dangerous, because it makes fish and people really sick!
TYPE OF POLLUTION: Source.

Dirty Facts About Pollution

- All pollution is caused by humans.
- Nonpoint source pollution: Pollution that cannot be traced to just one person or place. It comes from many different sources.
- Source pollution: Pollution that can be traced to one person or place. You can "point" your finger at it.

FERTILIZER?

DANGER: Fertilizer helps our lawns and flowers grow. When runoff washes into the water, plants grow there too fast, clogging waterways. When the plants die, the decomposition uses up the oxygen that fish need for breathing.
TYPE OF POLLUTION: Nonpoint source.

A PLASTIC BAG?

DANGER: Many fish die each year because they swallow plastic bags and suffocate. Suffocate means they can't breathe.
TYPE OF POLLUTION: Source.

eddy the Fish?

A HARMFUL ALGAL BLOOM?

DANGER: When microscopic plants called algae grow like crazy, we say there's a "harmful algal bloom." These sometimes contain toxins, and the dying algae deplete oxygen in the water. TYPE OF POLLUTION: While the blooms kill plenty of fish, it's not actually pollution.

ILLUSTRATION © FIAN ARROYO

LET'S FIND OUT WHAT THESE DETECTIVES THINK KILLED FREDDY THE FISH:

GREG SOUTHARD, AQUATIC ANIMAL HEALTH INSPECTOR, TPWD

Possible cause of death: Freddy swallowed a plastic bag and suffocated.
Clues: When Freddy is taken to a fish health lab by a TPWD Kills and Spills Team biologist, he's dissected (cut open). Examination of his stomach contents reveals a plastic bag.

Another possible cause of death: Freddy died naturally.
Clues: If Freddy was near the end of his natural lifetime and there are no water quality problems or pathogens (disease-causing organisms), then he probably died naturally.

SGT. JOE BOSTICK, GAME WARDEN, CRIMINAL INVESTIGATOR, ENVIRONMENTAL CRIMES UNIT, TPWD

Possible cause of death: Polluted water caused by illegal discharges.
Clues in the water: Is the water a funny color or murky? Does it have a sheen (shine) on it? Is it foamy? Does it smell strange? Is it too hot or cold?
Clues on Freddy: Is he a funny color? Does he show signs that he is coated with a chemical? Does he have strange foam on or in him? Does he smell strange (not like an ordinary dead fish)?

GREG CONLEY, POLLUTION BIOLOGIST, TPWD KILLS AND SPILLS TEAM

Possible cause of death: Harmful algal bloom caused by fertilizer.
Clues: An algal bloom was created when some people fertilized their lawns and runoff brought those chemicals into a nearby stream. The algal bloom used up the oxygen Freddy needed, causing him to suffocate. Freddy is red at the base of his fins, and his gills are discolored. Freddy was seen gasping for air at the surface just before he died.

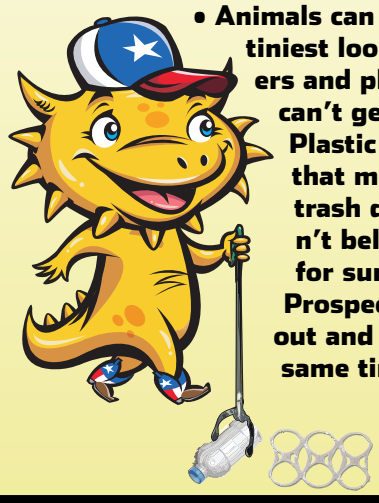
Want to know how Freddy the Fish died? Visit:
www.tpwmagazine.com/ktw/freddyfish

Spike's Activity Page

KEEPING IT *WILD*

For fish, plastic can be a real pain. Become a Plastic Prospector and help them out!

- **Pick up every single plastic bag you find on the loose. (Recycle them!)**
- **Grab plastic bottles before they can float downstream. (Recycle them, too!)**
- **When you buy sodas, cut up the six-pack holders so that no loops remain.**



- **Animals can get caught in even the tiniest loops of six-pack soda holders and plastic bag handles and can't get themselves loose. Plastic doesn't decompose – that means rot – like other trash does. It definitely doesn't belong in the water, that's for sure! As a Plastic Prospector, you can help keep it out and help fish out at the same time.**

WILD *ART*

HOW TO MAKE FISH OUT OF A RECYCLED PLASTIC BOTTLE

THINGS YOU'LL NEED

- RECYCLED DISH SOAP BOTTLE
- SCISSORS
- CRAFT BLADE
- HOT GLUE
- WIGGLE EYES

1.) Recycle a bottle of dish soap after you use the last of its contents. For best results, select a brightly colored, curvy bottle in blue, red or yellow. Wash the bottle out thoroughly using water and the small end of a bottle brush. Remove the label from the bottle and use a citrus-based cleaner and a clean cloth to remove any remaining adhesive. Wash the outside of the bottle with a sponge in soapy water.

2.) Cut out a large triangular section from the bottom of the recycled bottle with a craft blade. Set aside the cut-out section. The triangular opening in the bottle will become the fish's mouth.

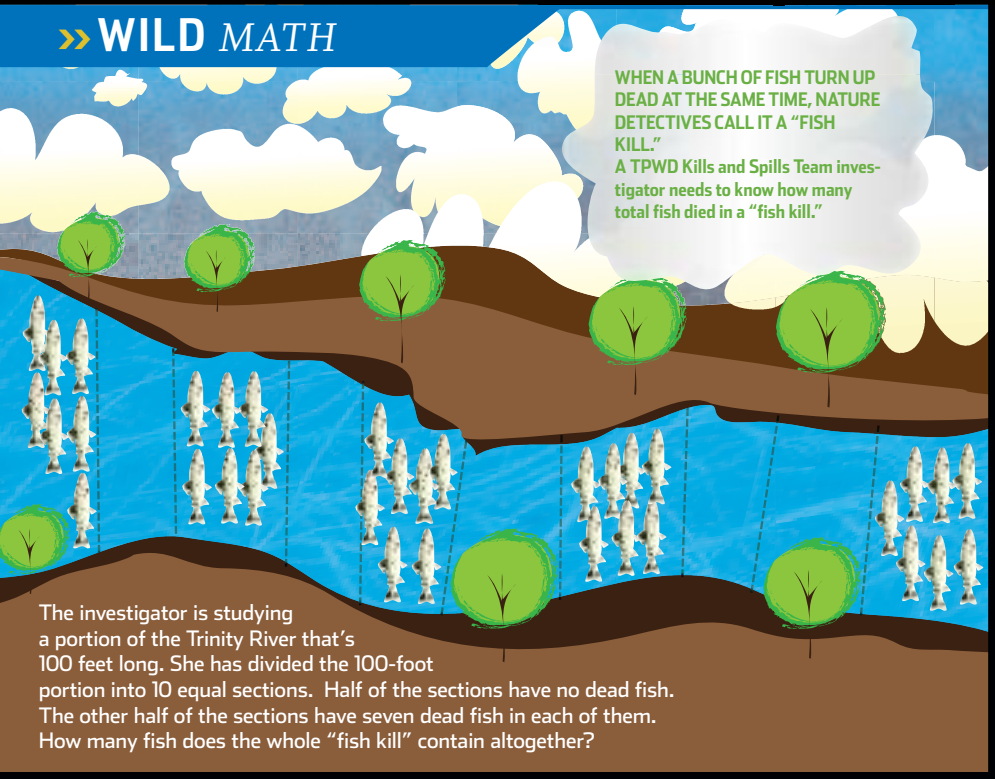
3.) Cut off the top of the bottle just beyond the slight curve at the top with a pair of scissors. The remaining curve will serve as the fish's tail.

4.) Use a craft blade to cut one small slit in the bottom part of the fish's body on one side. Create another, identical slit in the opposite side.

5.) Cut off a triangular plastic piece from each side of the segment from the bottom of the bottle. These will be the fish's fins. Cut two tiny notches at the top of the longest point of each triangle.

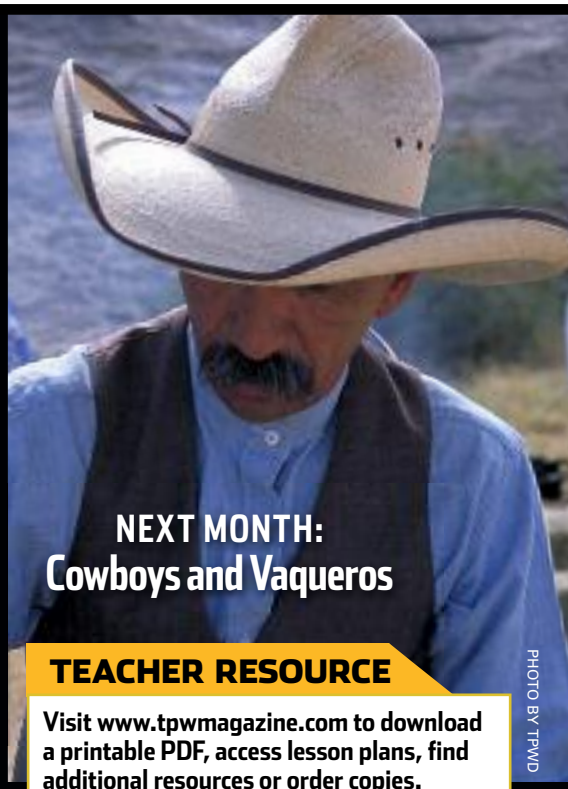
6.) Insert the notched ends of the fish's fins into the slots in each side. Hot glue a large wiggle eye on both sides of the fish about two inches above each fin. Display the fish by balancing it on its fins and tail.

WILD *MATH*



WHEN A BUNCH OF FISH TURN UP DEAD AT THE SAME TIME, NATURE DETECTIVES CALL IT A "FISH KILL."
A TPWD Kills and Spills Team investigator needs to know how many total fish died in a "fish kill."

The investigator is studying a portion of the Trinity River that's 100 feet long. She has divided the 100-foot portion into 10 equal sections. Half of the sections have no dead fish. The other half of the sections have seven dead fish in each of them. How many fish does the whole "fish kill" contain altogether?



NEXT MONTH:
Cowboys and Vaqueros

PHOTO BY TPWD

TEACHER RESOURCE

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