



Freshwater Bycatch Game

Audience

Activity designed for ages 10 years old and up.

Goal

Students will understand what bycatch is and how different fishing methods can increase or decrease bycatch.

Objective

- To explore the advantages and disadvantages of different fishing techniques.
- Get outside and be active.

Conservation Message

Commercial fishing and bycatch are typically terms that we hear in association with marine environment, but it is also a large issue in freshwater habitats. There are many freshwater species that face getting tangled in nets or caught in long line hooks. Educating fisherman and the general public on species that need our help can prevent loss of biodiversity in freshwater habitats. Developing new techniques for commercial fishing that allows fisherman to harvest the target species sustainably is key in fighting species extinction.

Background Information

Current commercial fishing techniques pose a bycatch threat not only in the oceans but in freshwater as well. Bycatch is the accidental catch of nontarget animals. Freshwater bycatch is an issue all over the world. The Eurasian otter is a near threatened species found in rivers throughout Europe, Eastern Russian and China. This species is often found tangled in large nets and traps. Lake Sturgeon are found throughout the Mississippi river basin and were once killed as a nuisance bycatch species because they would damage fishing gear. The Chinese River dolphin was found in the Yangtze River but in 2007 they were deemed an extinct species due to over 50% of the population getting tangled in fishing gear; the Amazon river dolphin now faces the same threats. Fishing is the main source of income and food in the Amazon River basin. The increase of fishing and use of outdated techniques in the Amazon River causes more species to end up in fishing gear. Giant river otters and Amazon River dolphins get tangled in nets

and trapped in long lines. The arapaima has been targeted as a trophy species as well as found tangled in nets and are now no longer found in much of its range.

There are many different commercial fishing techniques used today, for this activity we will focus on 3; nets, long line and single line. All these fishing techniques are used in oceans, lakes, and rivers.

Nets are used in a variety of ways in commercial fishing. Some nets are placed in the middle of the water column and cover a very large area, other nets can be attached to the boat and dragged along the bottom of the water. Nets are even able to cover the entire width of a river while being fixed to the river bottom, so a boat is not necessary. The netting technique of being fixed to the river bottom is commonly used on many European and Asian rivers. These types of nets can be over 300 feet long and 130 feet across!

Long line fishing is a very long fishing line with hooks every few feet, these long lines can also be placed on the bottom of a river or be dragged behind a boat. Some longlines can have hundreds or thousands of hooks attached. Most longlines are operated from specialized boats that use a winch to bring the line in.

Pole and line fishing method is used with multiple people on a boat targeting fishing individually. This technique is used with scattering small bait fish on the surface to mimic a school of fish. When using pole and line fishing the equipment is generally a handheld wooden or fiberglass pole with a line and barbless hook attached.

Materials Needed

- Bycatch Questions Worksheet
- Rake
- Shovel
- Broom
- Timer or stopwatch
- Tape measure (optional)
- 30 Target Fish/Peacock Bass print outs
- 24 Arapaima print outs
- 18 Giant River Otter print outs
- 15 Amazon River Dolphin print outs

Length of Activity

30 minutes

Procedure

1. Use the information in the background information, answer the questions on the Bycatch Questions Worksheet.
2. Find an area to be your "fishing grounds." This area should be around 5 feet wide by 5 feet long and can be outside or inside.

3. Cut apart the animal print outs and mix together.
4. Spread out all animal printouts in your fishing grounds.
5. Set your timer or stopwatch for 20 seconds.
6. Grab your shovel, this item will represent pole and line fishing.
7. When ready, start your timer. Using the shovel, scoop up as many Target fish/Peacock bass as you can. Remember, you are trying to catch only the Target Fish/Peacock bass and not any other animal. If you happen to catch a different animal, don't throw it back yet. Once time runs out, count how many of each type of animal you caught and record on your worksheet.
8. After you counted and recorded all caught animals, release them back into the fishing grounds.
9. Grab your broom, this item represents long line fishing. Repeat the same process you did for the shovel; however, this time sweep for the target fish instead.
10. After you counted all animals release them back into the fishing grounds.
11. Grab your rake, this item will represent using a net. Repeat the same process you did for the broom, however, this time rake for the target fish instead.
12. Compare your findings in the chart with your answers to the questions. Were your predictions the same or different?

Follow Up

During this activity you might have found that using a rake (or the net technique) is the easier way to catch the target fish, however, you also have the most bycatch. Using the shovel (or the pole and line technique) was the hardest and most time consuming but you can target exactly what fish you want without the bycatch. This is the dilemma that most commercial fisherman face. What fishing technique would you use if you were a commercial fisherman? Why?

Bycatch Questions



Which fishing technique do you think will catch the most fish? The most bycatch?

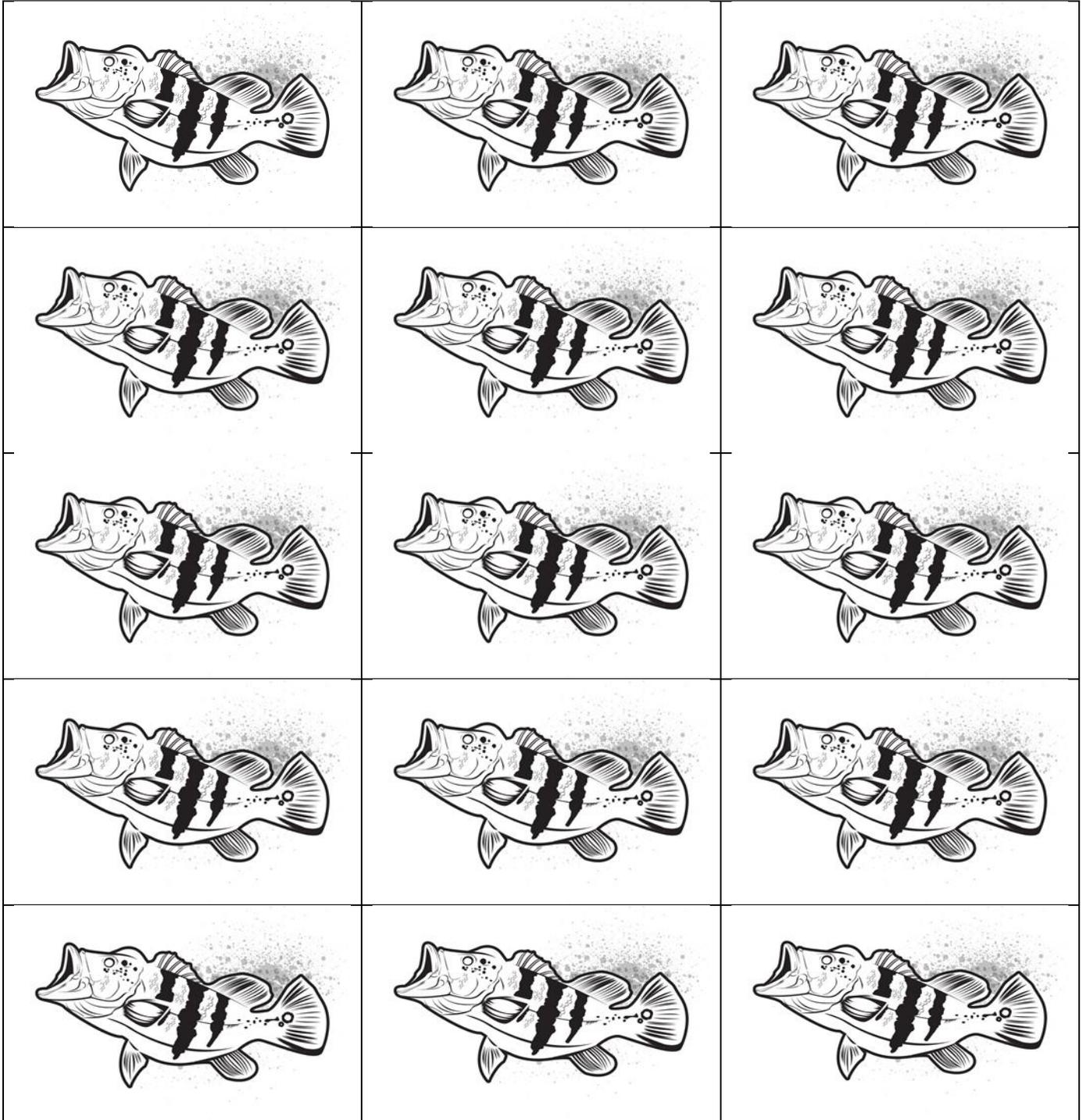
Which fishing technique do you think will catch the least amount of fish? The least amount of bycatch?

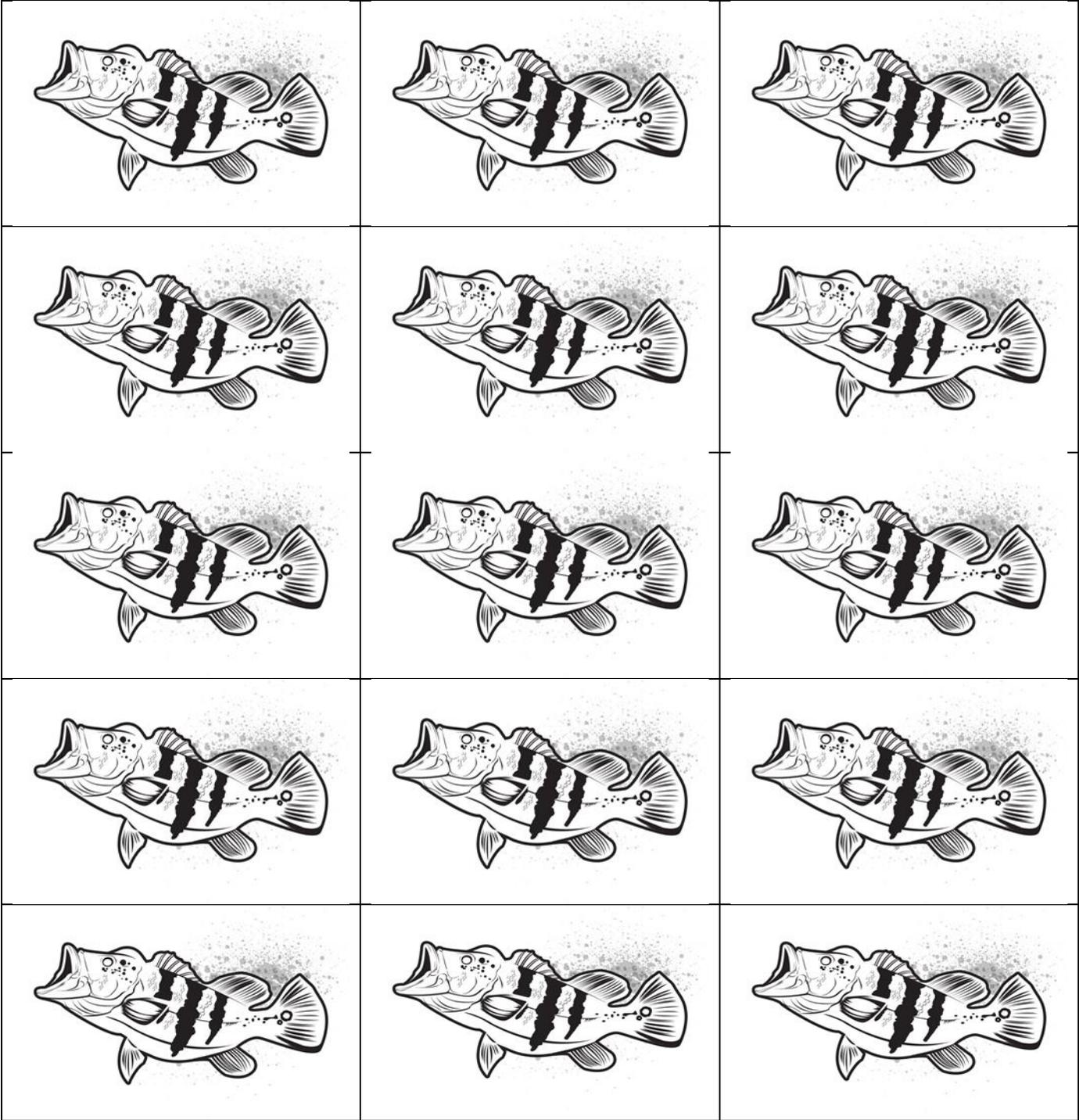
Bycatch Table

Fill out how many of each animal you catch with each tool after each turn.

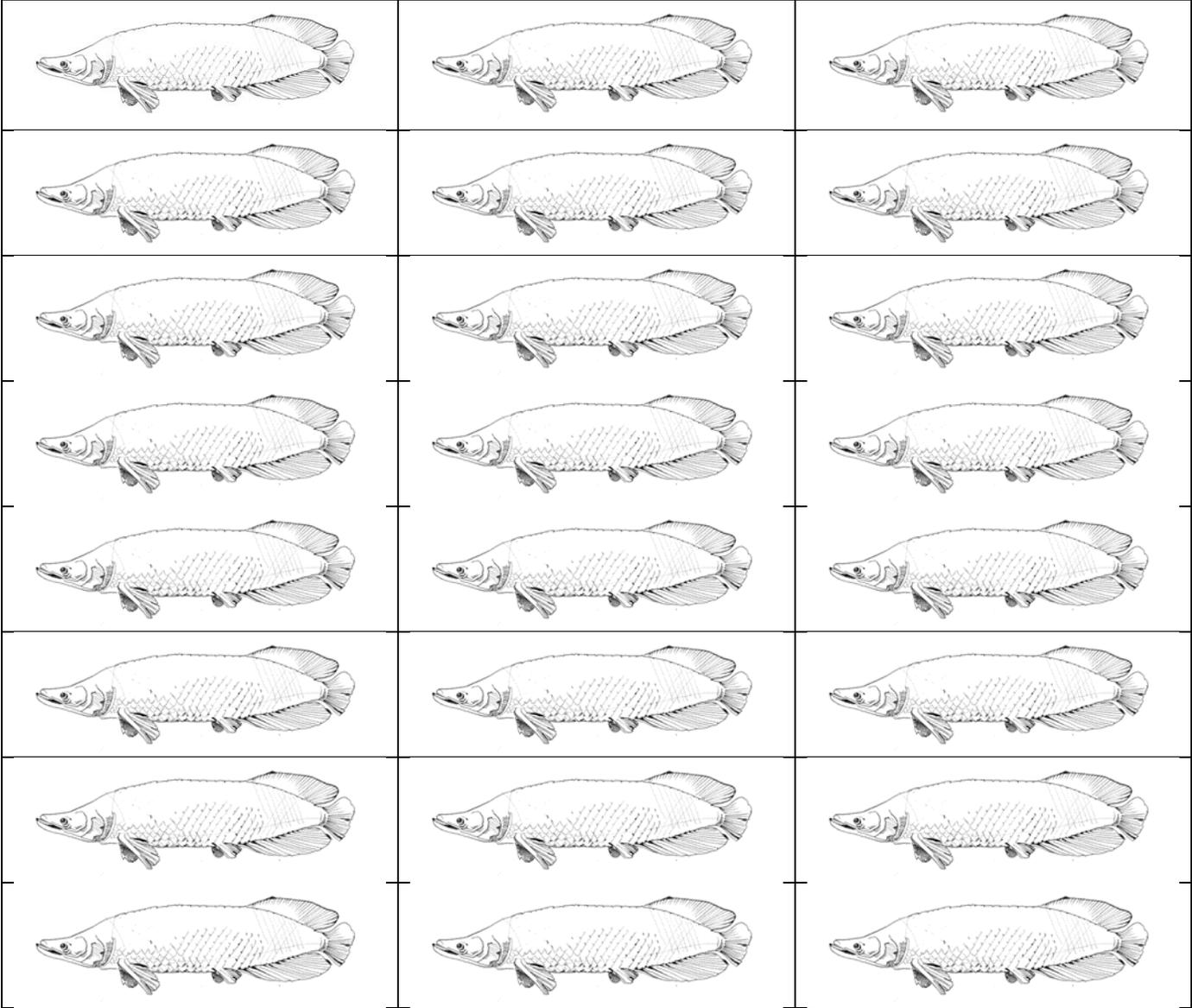
	Rake	Shovel	Broom
Target Fish (Peacock Bass)			
Otter			
Arapaima			
River Dolphin			

Target Species- Peacock Bass

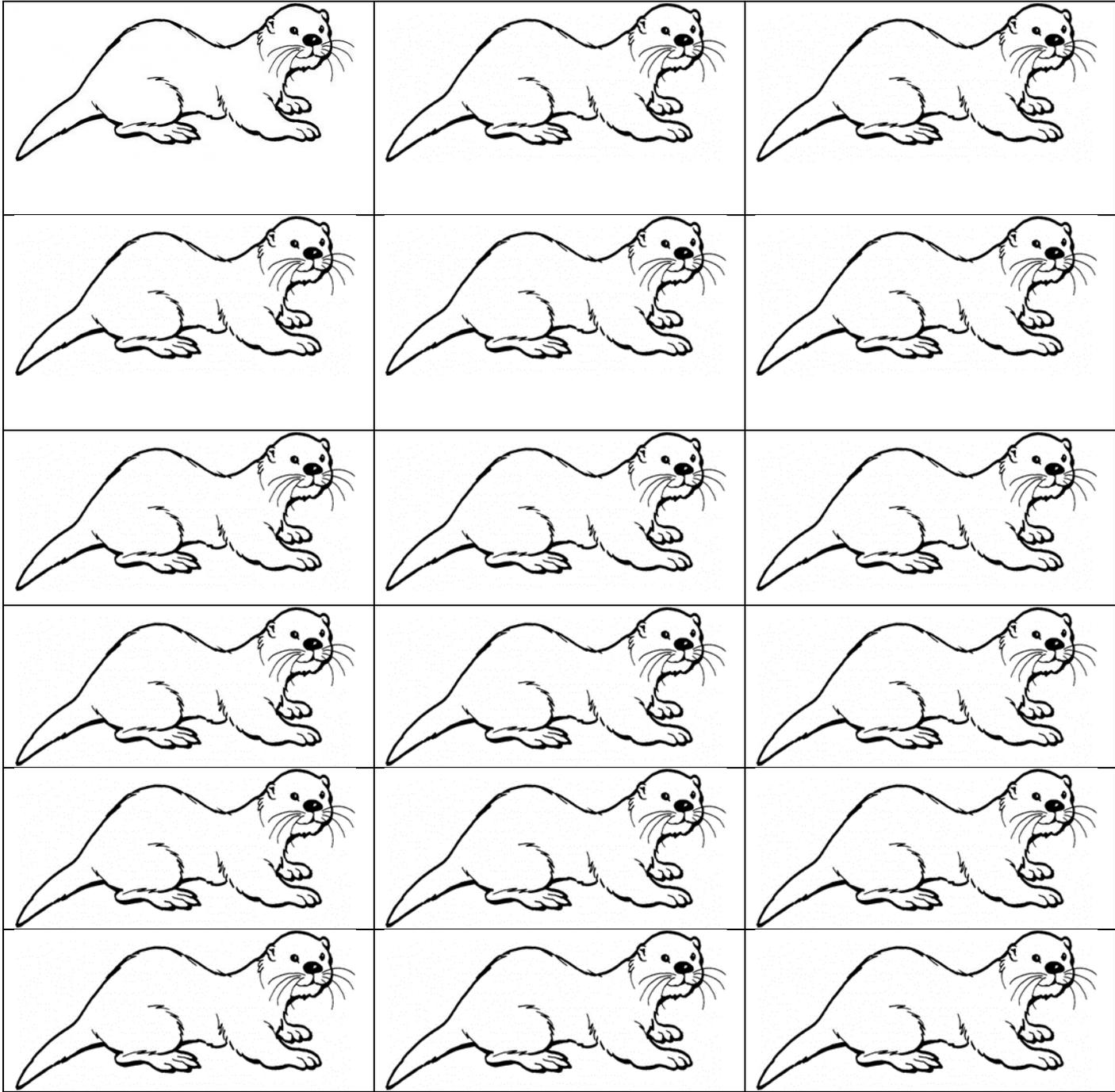




Bycatch- Arapaima



Bycatch- Giant River Otter



Bycatch- Amazon River Dolphin

