



SeaWorld/Busch Gardens

Bony Fishes

4-8 Classroom Activities

Bycatch Game

OBJECTIVE

The student will explore the advantages and disadvantages of different fishing techniques.

ACTION

1. Explain to students that this is a fishing game. Scatter poker chips over the playing field; these represent fish. Divide class into predetermined groups (see Material Preparation) and gather groups together in their sections. Give each group a bucket and their fishing equipment (rakes or dowels). Explain their fishing method:

Netters use rakes and target red chips: Whole group goes out, holding onto one another. One person rakes, two people scoop chips into first bucket, the other two put only red chips into final bucket. All white and blue chips caught must be dumped outside the play area—they are no longer a resource.

Single-line fishers use dowels and target blue chips: Players take turns going out, hooking a blue chip, returning, and placing it in the bucket as they hand the fishing pole off to next player.

Long-line fishers use dowels and target white chips: Whole group goes out, holding on to one another. One person pulls line through chips, three people remove chips and place white chips in the last person's bucket and toss any blue or red chips outside of the play area—they are no longer a resource.

2. When sections are ready, the teacher calls out "The fish are running." Student groups go out and fish. All groups must leave playing field promptly when teacher calls out "Back to port." Any groups fishing after the back-to-port call are fishing illegally, and lose their catch from the last round.
3. Play until all chips are collected off the playing field. At the end of the activity, gather students to discuss their experience.

BACKGROUND INFORMATION

Humans have gathered fish for food since prehistoric times. Today, fish are a main source of protein for nearly half the world's population. Through time, new techniques have made it easier to catch fish. Spears were more successful than bare hands. Hooks were an improvement over spears. But it was the fishing net that made fishing an economic venture rather than a way to feed just your own family. Today, some of the fish we eat—like alba-

core—are caught on hook and line, but a great variety of nets are used for catching other kinds of fish.

Purse seines and drift nets are examples of the modern nets that have improved the fisher's catch rate. But they've also introduced new problems: the nets catch everything, regardless of species or size. When the nets are hauled in, fishers try to toss back undersized fish or those of the wrong kind, called the 'bycatch;' but the majority of nontarget fish die. The success of one fishery can have negative effects on other species of marine life.

QUESTIONS FOR DISCUSSION

- a. What were the advantages of their fishing method? (Nets gather many chips at once; fishing poles allowed for more selective aim, long lines might be viewed as sort of the best of both worlds).
- b. What were some of the disadvantages of their fishing method? (Nets brought in a lot of the wrong-colored chips, had to spend a lot of energy to dispose of them, fishing line could only bring in one chip at a time, long line "hooked" some of the wrong color chips).
- c. Which method is probably used most for gathering schooling fishes? Why?
- d. Which method would probably be best to use with a species that doesn't school? Why?
- e. Which method had a greater bycatch? Have students discuss how much of the resource is wasted, and what effect that has on the ecosystem and the future of the fishing industry.

MATERIALS

Per five students:

- garden rake
- wooden dowel
- two-foot string
- four-foot string
- child's sand pail
- magnetic craft strips
- child's sand pail

Per class:

- about 35 red, 35 white, and 35 blue poker chips
- glue
- magnetic craft strips
- playing field

MATERIAL PREPARATION

1. Divide your class into groups of five to determine how many sets you have. For example, a class of 30 students will have 6 groups or sets.
2. Evenly (or as close as possible) split the

sets or groups into three sections. For example, a class of 30 students will have 6 groups split into 3 sections. (Each section has two student groups or sets for a total of 10 students in each section.). One section will use rakes to simulate fishing nets, another section will use single fishing lines, and the remaining section will use long lines.

3. To make single fishing lines, glue a small piece of a magnetic strip to the end of a two-foot long piece of string. Tie the other end of the string to the dowel. Make one dowel for each group in this section.
4. To make long-line pole, glue four small pieces of magnetic strip to a four-foot piece of string. Tie the other end of the string to the dowel. Make one dowel for each group in this section.
5. Finally, glue a piece of magnetic strip to one side of both the white and blue chips.