

# TUNA TAG

This activity is an old-fashioned game of tag for 20–30 students. Like Activity 7: Freeloader, it is designed to focus players on how they make decisions about managing a community resource, but Tuna Tag offers a more direct simulation of the *Tragedy of the Commons*, a key concept in the behavioral sciences and in studies of environmental sustainability. The Tragedy of the Commons, first described by biologist Garrett Hardin in 1968, can occur in any situation in which people jointly manage a shared resource—fish in the ocean, the air we breathe, the water we drink. In such cases, each individual is rationally motivated to use as much of that resource as they can to maximize their personal short-term gain. However, if everyone does so, the resource is overwhelmed and perhaps destroyed. The devastating deforestation of Easter Island offers an ancient example; in modern times, numerous fisheries have collapsed due to overexploitation. This game gives players a visceral experience of how they balance their own desires against the longer-term needs of the community—and unlike in the real world, if they should push the shared resource beyond its ability to sustain itself, it gives them a chance to try again with a different social strategy.

Tuna Tag is played in rounds, each corresponding to a “fishing season.” Each round might last only a minute or so and any number of rounds can be played, depending on class size and discussion goals. Preparation and setup time are minimal. The game requires an open space large enough to allow the group to move and run without injury.

## PROCEDURE

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### MATERIALS

- A large empty space—a gymnasium, playground, or field is ideal. If you play in a classroom, move all chairs and tables away from the center of the room.
- Tape, chalk, cones, or another method of delineating areas in the game space.
- A white/blackboard or other scorekeeping method.
- A whistle or other device to mark the beginning and end of each round.

### PREPARATION

In Tuna Tag, some players act as Tuna and others as Fishing Boats. These instructions are based on a ratio of approximately 5 tuna per boat, so if your class has 36 students, you'll need to find a way to designate 6 as boats and 30 as tuna. You can ask students to volunteer for each role, assign them alphabetically, or use some other method. (Note that the tuna:boat ratio can easily be changed to illustrate the effects of different distributions of resources on player behavior. Feel free to experiment with different numbers of tuna and boats to find a ratio that works for your situation.)

Divide the play area into three zones: two safety zones (one at each end) and a fishing area representing open ocean in the middle. You may need to vary the size of the area depending on available space and the number of students playing, taking into consideration overall safety factors.

## PROCEDURE (CONT'D)

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### INSTRUCTIONS

#### *Round/Season 1*

Instruct the Boats to spread themselves out in the fishing area, while the Tuna clump together in *one* of the two safety zones.

Tell them that when everyone is ready, you'll blow the whistle to signal the start of the first fishing season. At that point, the Tuna are to run through the fishing area to the other safety zone. As they run, the Boats attempt to catch Tuna by tagging them as they pass. (Remind them that tagging should be *gentle*—no hitting, slapping, or tripping!)

When everyone is ready, blow the whistle. When all Tuna have either been tagged or have made it to the other safety zone, tally (1) the number of Tuna caught by each Boat, and (2) the number who weren't caught. Tuna who were tagged are out of the game for the next round, but return to the game in the following round. (This simulates the idea that tuna are reproducing.)

#### *Round/Season 2, 3, 4...*

Each round proceeds as above. Keep noting the number of fish caught by each boat and the number of uncaught fish remaining after each round. The game ends when all Tuna have been caught.

When the game is over, note how many rounds/seasons the game lasted and each Boat's total catch.

## DISCUSSION QUESTIONS

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- Ask the Boats about their goals as they were fishing: Were they trying to catch as many as they *could* or as many as they *needed*? (Or did they have some other goal?) After discussing the difference between these two strategies, play the game again, but this time give Boats explicit goals (such as catching either as many as they can or need). How does the game change? Would fish last longer when those fishing are told only to catch what they need? How do those fishing determine how many they “need”?
- Were you aware of the changing size of the fish population? Of how many Tuna each Boat caught? How did you use this information? How did your behavior change as the number of tuna declined—did you fish more avidly or try to conserve?
- Ask the class for examples of how this situation plays out in the real world—in large scale societal situations, but also in their everyday lives. Overfishing is an obvious example, but the same concepts may be at play in many other areas, such as pollution, water use, and deforestation. Review the concept of the Tragedy of the Commons and discuss how a littered park, beach, or subway station might be another example.
- Now that you know what the Tragedy of the Commons is, how might it be prevented? What kinds of social structures or policies might be useful in lessening the tendency of people to concentrate on short-term gains at the cost of longer-term sustainability? What are some of the pros and cons of those policies? How do nations agree on and stick to regulations of the ocean and other shared resources?
- Discuss the role of the concept of “fairness” in situations like this. How would we determine what fair behavior is in a situation involving a shared resource? How do we actually allocate natural resources in the real world? Do some groups get preference? How and why?

## VARIATIONS

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- Adjust the tuna:boat ratio. With fewer tuna per boat, do fishers play more or less selfishly? Ask students to make a prediction *first*, then see if the outcome is consistent with that expectation.
- Another variation discussed earlier involves instructions given to Boats. In addition to giving the entire group of Boats a specific goal, you could secretly give half one goal (“you only need one fish per season to stay alive”) and the other half another goal (“you have a large family to feed and need as many fish as you can get”), then see how those different goals affected the outcome. Were students aware that some fishers were playing differently than others?
- There are several ways to simulate changes in fishing activity or reproductive success to make the game more realistic and see how this affects behavior. For example, if a fisher fails to tag any Tuna, that student could switch to being a Tuna in the next round, increasing the tuna:boat ratio. Or, “caught” Tuna could stay out of two or more succeeding rounds instead of one, lowering the ratio.
- Another way to manipulate the population is to allow pairs of uncaught Tuna to “reproduce”. At the end of each round/season, successful Tunas could pair off and reproduce, adding one or more new Tuna per couple depending on criteria set by the instructor. You could add more complexity and realism by instituting a “catch and release” rule in which only Tuna that are, say, three years old can be kept. (Note that only *pairs* of Tuna can reproduce!)
- Merely changing the name of an activity can alter how players perceive themselves and the world around them. Divide the class into two groups and have them play the game separately. Tell one group that the game is called Fishing Contest and tell the other it’s called The Sustainability Game, then have each group play. When each group is finished, ask them to report on how the game went. Was the population destroyed? In how many seasons? How many fish did each player catch? Then you can reveal that they played the same game with different titles and discuss whether differences in goals, motivations, or behavior might be attributed to those titles. (Manipulating *framing* to see how it affects students’ thoughts and behaviors is also suggested in several other activities, such as Activity 1: Take it or Leave it. Can your students come up with other examples of framing effects?)

## RESOURCES

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### ***Moral Tribes: Emotion, Reason, and the Gap Between Us and Them (2013)***

In this thought-provoking book, Harvard psychologist Joshua Greene reviews research on how people do or don't work together to solve common problems and discusses the implications for human societies.

### **Tragedy of the Commons**

[en.wikipedia.org/wiki/Tragedy\\_of\\_the\\_commons](https://en.wikipedia.org/wiki/Tragedy_of_the_commons)

A discussion of the core concepts behind the Tragedy of the Commons.

### **The Tragedy of the Commons**

[garretthardinsociety.org/articles/art\\_tragedy\\_of\\_the\\_commons.html](http://garretthardinsociety.org/articles/art_tragedy_of_the_commons.html)

Garrett Hardin's 1968 paper describing situations in which joint management of shared resources can lead to tragedy for all.

### **Framing Effect (Psychology)**

[en.wikipedia.org/wiki/Framing\\_effect\\_%28psychology%29](https://en.wikipedia.org/wiki/Framing_effect_%28psychology%29)

A description of research on framing effects.



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