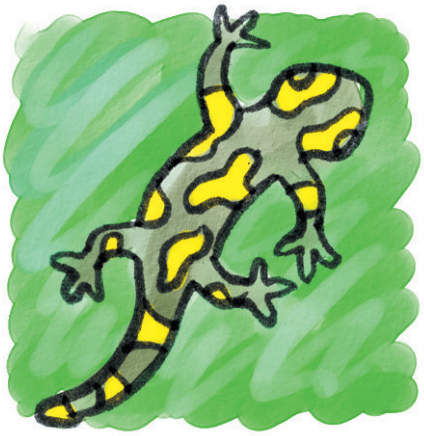
Biodiversity game

"The International Union for Conservation of Nature Red List of Threatened Species shows that 20,000 out of the 64,000 assessed species are threatened with extinction".

International Union for Conservation of Nature

Climate link



Though the science of biodiversity is still quite primitive, we know that species are disappearing on this planet at an accelerating rate. And there are several reasons to suppose that the rising pase of climate change will increase the speed of the extinctions.

Many mechanisms pose challenges to biodiversity. Animals are adapted to specific temperature ranges and precipitation regimes. As these change, the suitability of habitats shifts. Often it will not be possible for a species to migrate quickly enough to avoid extinction. One extreme case is when species respond to rising temperature by moving gradually up a mountain to higher elevation. When they get to the top of the mountain there is no adjacent place remaining to go in response to further temperature rises, and they die out. Shifting cultivation zones will induce migration of human populations into regions that are now sufficiently underpopulated to support wild species. The wild species will be crowded out. Pests and predators will move into regions that are now occupied by species that do not have appropriate defenses.

Each species depends on other for food, pollination, shelter, protection from predators, and for other needs. When one species disappears, it will certainly affect others in ways we cannot yet precisely predict.

About this game

This exercise is designed simply to reinforce the idea that species do not exist in isolation. When one species disappears, it will certainly cause the elimination of others that are interrelated with it.

This exercise is based on a master triangle that is divided into nine smaller, equally sized triangles. It offers an analogy for biodiversity, though the interrelations among interdependent species. The process is removing small triangles from a larger cluster in the number of species. The exercise merely offers a shared experience of one important point and can facilitate useful discussion about the nonlinearity of species extinction.

To run this exercise

Number of people This is a mass game that can be conducted with any number of participants, from one to thousands. If you have a small group and sufficient time, you could give each participant a piece of paper containing of the master triangle. Then ask them to use their own pen or pencil to determine what happens to the number of triangles when different lines are eliminated. With a larger group and less time, you can show them the questions and the answers on slides, pausing long enough to let ec of your participants develop a preliminary answer to each of your questions.

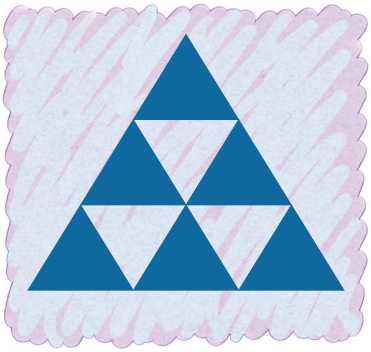
Time The time required depends on the mode you use for running the game. It will range from a few minutes up to twenty minutes.

Space This exercise is suitable for a large seated audience. It is only necessary that every participant can see and hear you.

Equipment Paper and pencil for each participant.

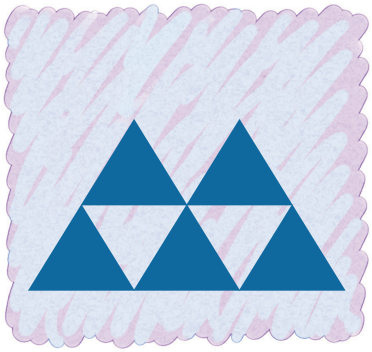
Setup Draw, print or recreate the triangle illustrations shown in this exercise. It is simplest to project slide of each figure on a screen.

Figure 1



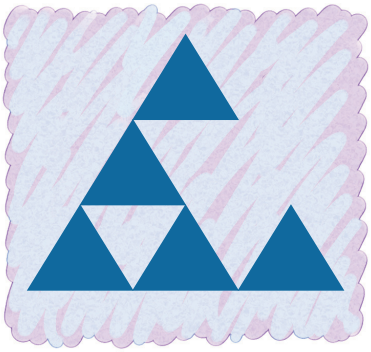
13 triangles

Figure 2



9 triangles

Figure 3



7 triangles

Instructions and script

Conduct the exercise without first explaining its purpose. It is important to get everyone to participate in the process and to give each of them time enough to form of the questions you pose.

Step 1:

Begin by putting up the master triangle on a flip chart or projection screen.

"Please look at this figure. How many different triangles are formed when nine small triangles are connected as shown here?" *Emphasize that all members of the audience form their own answers and give them a minute to calculate.*

"That form contains 13 different triangles." *Show them the answer.*
"There are nine small triangles, three larger ones, and the whole."

Step 2:

Ask, "How many triangles will be left if you take away one of the small ones?"
Give them two minutes to decide on their answer.

"In fact it is impossible to remove only one triangle. If you remove one of the smallest triangles from the thirteen, because their borders go with them, three or five other ones also disappear, depending on which one you remove. You will be left with a figure that contains only seven or nine triangles."

Debrief

Because they are connected to each other, you cannot reduce the number of triangles by only one. Taking away one triangle, also eliminates three or five others. Species are more connected to each other than these triangles. Whenever we lose one species, we will inevitably lose others.

Here are a few questions you could ask during the debriefing:

- "What are the mechanisms through which we could expect that climate change will cause species extinction?"
- "What are some species that are threatened by these mechanisms?"
- "In what ways could the elimination of one species threaten other species?"
- "What can we do now to preserve species during a period of rapid climate change?"

This game is an adapted version of the **Biodiversity Game (The Climate Change Playbook, Dennis Meadows, Linda Booth Sweeney, and Gullian Martin Mehers)**