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Too Few To Make It: Extinction and the “Allee Effect”

The long, lonely journey of OR-54

A female gray wolf named OR-54 traveled 9000 miles in an attempt to find a mate or another wolf pack, but died before finding one. OR-54, named that because she was the 54th wolf captured in Oregon, was found dead in California in February 2020.

OR-54's movements were known because she had been fitted with a radio collar when she was captured in 2017. The radio collar sent GPS signals to researchers. Scientists found that she had traveled 8,712 miles in her quest to find other wolf companions.

OR-54's journey tells us something about the problems living things face when their numbers shrink. Rare species such as the gray wolf have trouble finding mates. Wolves leave their home packs to find mates that they are not related to. Why? Living things need to be what is called “genetically diverse.” That means that there must be many different types of wolves, or lions, or oak trees, or any other living thing, if the population is to stay healthy.



The Allee Effect: Organisms help each other survive

The “Allee Effect” was named after scientist W.C. Allee. The Allee effect is interactions among members of a population in which the individuals help each other survive and reproduce. The Allee Effect is being seen now in a number of rare and endangered species. In OR-54's case, living alone may have been the cause of her death. “Lone wolves,” wolves living alone, rarely live to the age of five. OR-54 was three or four years old.

The Sumatran Rhino: On its way out?

The Sumatran Rhino was once found in all of South Asia and Indonesia. The population is now down to fewer than 80 individuals. The remaining populations are now found in a few clusters in Indonesia. They are considered “critically endangered,” with numbers so low that they may not be able to make it.

The eighty Sumatran rhinos are scattered in a few remaining forests, and widely separated from each other. They will not be able to maintain population in their current state. A sanctuary has been established to try to breed some of the rare rhinos.

Understanding the Allee effect can help us save endangered species

Why do numbers of animals sometimes get so low that they just can't survive? First, the problem can be like OR-54's - they just can't find a mate. In addition, many animals are social, meaning that they live in groups. Animals in these groups depend upon each other. Family groups take care of each others' young and warn each other when a predator comes near by. Some predators, such as wolves and lions, hunt in groups.

Understanding this can be helpful. When we study endangered species, we need to understand their behavior. Organisms that need to live in large groups will also need large amounts of land. Scientists studying endangered species will need to be sure that they live in large enough groups, and with enough genetic diversity, to be able to survive.

Answer the following questions to show your understanding:

1. What is the “Allee effect”?
2. How are the problems the Sumatran rhino faces an example of the Allee effect?
3. What might OR-54's death tell us about the hardships and troubles of a wolf living alone?
4. Should scientists consider the Allee effect when they are trying to help endangered species? Why?

Explore more:

Brief video of OR-54's journey:

<https://www.independent.co.uk/news/world/americas/grey-wolf-mate-trek-endangered-dies-oregon-california-a9325431.html?jwsourc=cl>

5-minute video on the Allee Effect and endangered species:

https://www.youtube.com/watch?v=-2hkKjKrsLo&feature=push-u-sub&attr_tag=U0gKrdJstcWMcDtZ%3A6

Saving Sumatran rhinos:

<https://www.youtube.com/watch?v=Gtrvk3gm7ls>

A Sumatran rhino's song!

<https://www.youtube.com/watch?v=Twj5aJk2bA>

Rhino resource!

<https://www.youtube.com/watch?v=KNjIS8PxqHg>