

- Ravens and Tortoises - Level 6

High-tech drones are flying to the defence of tortoises in California's Mojave Desert. The desert tortoises in the western Mojave are **under threat** of being **wiped out** by ravens. The raven is a larger version of the crow. Its population in the Mojave has increased by more than 700 per cent in the past 25 years and this



is having a **catastrophic** impact on the desert tortoises. Allison Fedrick, a local conservationist, **observed** that in some places, "where there used to be 10 ravens, there are now 15,000". Ms. Fedrick noted that if nothing was done to help the tortoises, they would be completely wiped out. Their numbers have **plummeted** by more than 90 per cent since 1990.



Technology is coming to the rescue of the tortoises. A team of biologists and drone operators has come up with a **strategy** to reduce the raven population. They are using drones and the **use** of the method of "egg oiling". This involves flying drones up to the ravens' nests, removing fertilized eggs, **coating** them with a film of corn oil, and then replacing them. The oil blocks oxygen from entering the egg, effectively ending the life of the embryo inside. Biologist Mercy Vaughn said: "If ravens **figure out** that their eggs are rotten, they are likely to eat them and nest someplace else." Conservationist John Griffin said oiling was justified as "part of a **comprehensive** approach that...addresses all other factors".



- Ravens and Tortoises - Level 4

Drones are helping tortoises survive in the USA's Mojave Desert. Tortoises there are under threat from ravens. The raven population in the Mojave has increased by 700 per cent in 25 years. This has been a disaster for the desert tortoises. A local conservationist said that in some places where there used to be 10 ravens, there are now 15,000. They could completely wipe out the tortoises, whose numbers have fallen by over 90 per cent since 1990.

Technology may rescue the tortoises. Biologists have a plan to reduce the raven population, using drones and a technique called "egg oiling". This involves drones removing fertilized eggs from raven nests, coating the eggs in corn oil, and then replacing them. The oil blocks the egg's oxygen and so ends the life of the embryo inside. A biologist said: "If ravens figure out that their eggs are rotten, they are likely to...nest someplace else."

- Ravens and Tortoises - Level 5

Drones are flying to the defence of tortoises in the USA's Mojave Desert. Tortoises in the Mojave are under threat of being wiped out by ravens. The raven is a bigger version of the crow. The raven population in the Mojave has increased by 700 per cent in the past 25 years. This has had a catastrophic impact on the desert tortoises. A local conservationist said that in some places, "where there used to be 10 ravens, there are now 15,000". If nothing is done to help the tortoises, they could be completely wiped out. Their numbers have fallen by over 90 per cent since 1990.

Technology may rescue the tortoises. Biologists and drone operators have a strategy to reduce the raven population. They are using drones with a technique called "egg oiling". This involves flying drones up to ravens' nests, removing fertilized eggs, coating them with corn oil, and then replacing them. The oil blocks oxygen from entering the egg, thus ending the life of the embryo inside. A biologist said: "If ravens figure out that their eggs are rotten, they are likely to...nest someplace else." A conservationist said egg oiling was justified as "part of a comprehensive approach".

Vocabulary Paragraph 1

1.	defence	a.	Eliminated or killed something completely.
2.	threat	b.	A means of protecting something from attack.
3.	wiped out	c.	A particular form of something differing in certain respects from another form.
4.	version	d.	Involving or causing sudden great damage or suffering.
5.	catastrophic	e.	A person or thing likely to cause damage or danger.
6.	conservationist	f.	Fell or dropped straight down at high speed; decreased rapidly in value or amount.
7.	plummeted	g.	A person who protects and preserves the environment and wildlife.

Paragraph 2

8.	rescue	h.	An expert in or student of the branch of science concerning living organisms.
9.	biologists	i.	A thin layer covering a surface.
10.	fertilized	j.	Save someone from a dangerous or distressing situation.
11.	coating	k.	Caused an egg, female animal, or plant to develop a new life form.
12.	film	l.	An unborn or unhatched offspring in the process of development into a baby.
13.	embryo	m.	A thin layer or covering of something.
14.	addresses	n.	Thinks about and begin to deal with an issue or problem.

TRUE / FALSE: Read the headline. Guess if 1-8 below are true (T) or false (F).

1. High-tech drones are flying tortoises away from ravens in the desert. **T / F**
2. The tortoise population in the Mojave Desert had increased by 700%. **T / F**
3. In one place, raven numbers increased from 10 to 15,000. **T / F**
4. Tortoise numbers in the western Mojave dropped by 10% since 1990. **T / F**

5. Botanists and drone operators came up with a strategy. T / F
6. Conservationists are covering raven eggs in oil. T / F
7. Ravens are likely to eat their own eggs if they become rotten. T / F
8. If eggs are rotten, ravens are likely to nest elsewhere. T / F

SYNONYM MATCH: Match the following synonyms from the article.

1. under threat
2. wiped out
3. catastrophic
4. observed
5. plummeted
6. strategy
7. use
8. coating
9. figure out
10. comprehensive

- | |
|---|
| <ol style="list-style-type: none"> a. plunged b. noted c. all-inclusive d. in danger e. covering f. comprehend g. policy h. eradicated i. application j. disastrous |
|---|



Discussion - Drones used to battle tortoise-killing ravens

STUDENT A's QUESTIONS (Do not show these to student B)

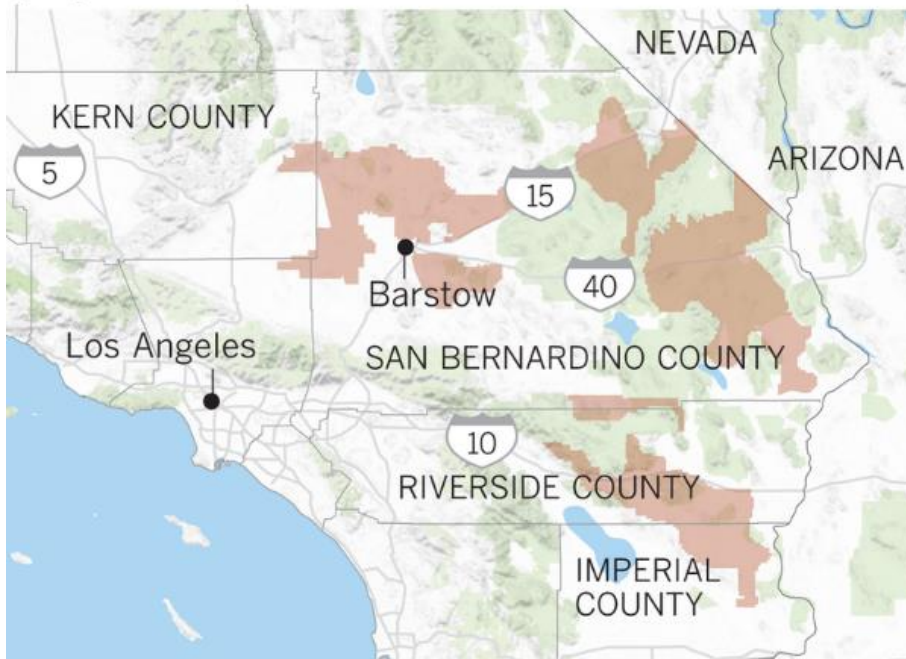
1. What did you think when you read the headline?
2. What images are in your mind when you hear the word 'tortoise'?
3. What do you know about tortoises?
4. How can drones help tortoises?
5. Should we do all we can to help animals in danger?
6. Should we kill members of one species to help another?
7. How sad would it be if the Mohave desert tortoises disappeared?
8. Why are raven numbers increasing?
9. How else can we stop ravens killing tortoises?
10. What work would you do as a conservationist?

STUDENT B's QUESTIONS (Do not show these to student A)

11. Did you like reading this article? Why/not?
12. What do you think of when you hear the word 'drone'?

13. What do you think about what you read?
14. What do you know about ravens?
15. What do you think of the method of egg-oiling?
16. Should people get in the way of nature?
17. What three adjectives best describe this story?
18. Which do you like better - tortoises or ravens?
19. Which species will survive the longest - tortoises or ravens?
20. What questions would you like to ask the conservationists?

Critical habitat for the Mojave population of the desert tortoise



Sources: U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office @latimesgraphics