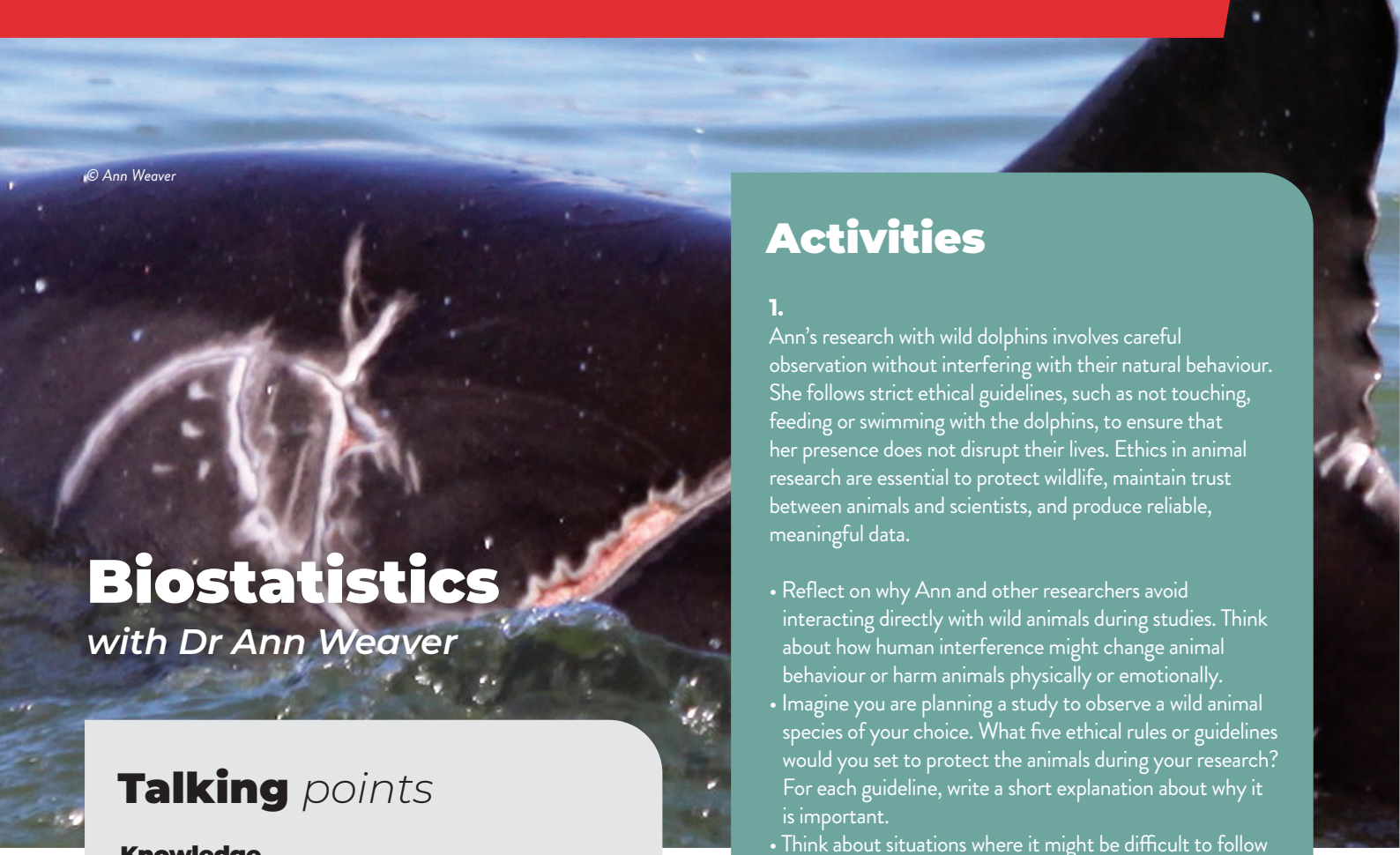

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Biostatistics

with Dr Ann Weaver

Talking *points*

Knowledge

1. What methods does Ann use to study wild bottlenose dolphins in their natural environment?
2. How do researchers identify individual dolphins during field studies?

Comprehension

3. How do dolphins' behaviours suggest that they might have elements of culture similar to humans?
4. Why is 'grass-wearing' important in dolphin communication?

Application

5. If you were a dolphin researcher, what steps would you take to build trust with the animals you study?
6. How could you apply statistical analysis to observe animal behaviour in a different species?

Analysis

7. What patterns in dolphin behaviour did Ann discover using biostatistics, and why are these patterns important?
8. How do the challenges of studying dolphins in the wild compare to those of studying sharks in the wild?

Evaluation

9. How important is long-term observation in understanding animal culture, and what limitations might short-term studies have? In what ways could technology improve or hinder long-term animal behaviour studies?
10. To what extent can studying dolphin behaviour reshape public perceptions of marine predators such as sharks? In what ways might changing these perceptions impact conservation strategies and policies?

Activities

1.

Ann's research with wild dolphins involves careful observation without interfering with their natural behaviour. She follows strict ethical guidelines, such as not touching, feeding or swimming with the dolphins, to ensure that her presence does not disrupt their lives. Ethics in animal research are essential to protect wildlife, maintain trust between animals and scientists, and produce reliable, meaningful data.

- Reflect on why Ann and other researchers avoid interacting directly with wild animals during studies. Think about how human interference might change animal behaviour or harm animals physically or emotionally.
- Imagine you are planning a study to observe a wild animal species of your choice. What five ethical rules or guidelines would you set to protect the animals during your research? For each guideline, write a short explanation about why it is important.
- Think about situations where it might be difficult to follow ethical guidelines, such as when an animal is injured or in danger, or when data collection conflicts with animal welfare. How can researchers handle these challenges responsibly?

Reflection questions:

- How do ethical practices influence the trustworthiness and usefulness of scientific research?
- What consequences could arise if researchers ignore ethical responsibilities when studying animals?
- In what ways can educating the public about research ethics support better conservation efforts?
- How do you think animals' welfare can be balanced with the goals of scientific discovery?

2.

Ann aims to better understand how sharks and dolphins interact and will use biostatistics to help her to do so. When looking at statistics, Ann emphasises how important it is to check the validity of statistics, to know that they can be trusted.

Find 5 to 10 articles about sharks online and consider:

- Which articles include statistics?
- Which statistics do you trust, and why?
- Which statistics are you unsure about trusting, and why?
- What evidence do you need that these types of statistics are trustworthy? How could you verify these statistics?
- If you were researching sharks, what would you want to know and how would you go about finding out?