

Read the extracts below then answer the questions that follow.

Killer Whales in Captivity

A new study indicates that captive orca lifespans are shorter than those of their wild counterparts. This may not be the most shocking scientific discovery, but the facts contribute to the ongoing discussion on the morality of keeping whales in captivity. In a study published twenty years ago, researchers examined how killer whales thrive in captivity. Prior to 1995, killer whales in captivity had a 94% chance of surviving the following year, compared to a 98% likelihood in the wild. Since 2005, the fraction of captive killer whales has reached parity with the number of free-living animals.

In this most recent study, published in *Marine Mammal Science*, the journal of the Society for Marine Mammalogy, researchers discovered that while captive and wild whales currently had the same chance of surviving from one year to the next, captive whales have not fared as well over the long term. The researchers determined that only 27% of captive killer whales live to be 15 years old, compared to an estimated 80% of those in the wild. The researchers discovered that aquariums are not created equal. Comparing the lifetime of killer whales at American theme parks to those at similar tourist attractions in Russia and China, the researchers determined that killer whales in the United States live around eight years longer than those in overseas facilities.

Ingrid Visser, a marine biologist from New Zealand's Orca Research Trust, an advocacy group that was not involved in the study, says, "I cannot emphasise enough how essential this publication is; having scientifically robust and up-to-date analyses of the data is invaluable."

Doug Demaster, scientific and research director of the Alaska Fisheries Science Center and co-author of the 1995 article, says his data, which he updated in 2013 and presented at the Society for Marine Mammalogy meeting that year but has not yet been published, validates the paper's conclusions. "They did a wonderful job modifying one of the medical tools used to study survival," he says. Peer-reviewed publications are the gold standard in our industry, therefore they deserve a great deal of credit for putting this together and publishing it.

Trainers at SeaWorld emphasise in their promotional materials that orca lifespans are identical to those in the wild. However, this study, which was peer-reviewed, contradicts this assertion by demonstrating, using thirty years of data, that this is not true. John Jett, the study's lead author, explains, "There is a significant difference between captive-bred whales and those born in the wild."

Jett is a visiting researcher at Texas's Stetson University, but he was a trainer at SeaWorld in the past. Jett and the second author of the study, Jeffrey Ventre, a rehabilitation physician and former chiropractor from Washington State, both participated in the 2013 documentary *Blackfish*, which was critical of SeaWorld and other amusement parks. However, according to Todd Robeck, a reproduction biologist at SeaWorld, their analysis is not only wrong and deceptive but also inconsistent. Robeck claims he cannot reproduce the paper's findings using the same data sources. In addition, he claims that the paper's results regarding how killer whales in the wild may survive through specific vulnerable ages do not align with the most recent lifespan statistics.

Robeck says, "I'm aware that many members of the Society for Marine Mammalogy have a strong anti-captivity stance, which is wonderful, but I didn't expect it to affect the scientific community. I

assumed it was an objective forum, but now I'm unsure, which is quite upsetting from a professional perspective." Jett states, "As a researcher, I am obligated to be neutral. Do I believe that animal captivity is not beneficial? Indeed, and I will be the first to tell you so. However, anyone who understands the science would read it and quickly recognise that I had no ulterior motives."

According to Jett, the argument surrounding captive whales is a complex one, but the most recent study may assist researchers to better understand what causes killer whale fatalities in captivity. The comprehensive survival curves that he and Ventre produced reveal the stages of captive killer whales' lives during which their health is most compromised. For instance, separating calves from their moms could raise the calf's risk of stress-related death. According to him, spatial limitations and diseases that necessitate frequent antibiotic administration to killer whales by their carers may also play a role. These are factors that scientists could further study. Jett expresses hope that the findings can bring about change, or at the very least, better inform decision-making.

Answer the following questions by choosing the letter of the best answer.

1 Which of the following are themes explored in the extract?

- I. Captivity
- II. Wildlife
- III. Nature
- IV. Marine
- V. Ethics
- VI. Research

- A. II, III, and IV
- B. V, I, IV and III
- C. VI, II, I, IV, and III
- D. All of the above

2 Which best describes the information in the second paragraph?

- A. The second paragraph highlights the various technological innovations that have made it easier to keep killer whales in captivity, especially in China and Russia.
- B. The second paragraph provides a historical overview of how killer whales in captivity have been trained and fed over the years in various theme parks around the world.
- C. The second paragraph describes the findings of the study that compared the lifetime of killer whales in American theme parks to those in similar tourist attractions in certain countries.
- D. The second paragraph presents data on the percentage of captive killer whales that survive past the age of 27 compared to their wild counterparts.

3 Visser remarked that she cannot emphasise enough how essential this publication is. Why do you think she feels this way?

- A. She likely feels this way because the publication is useless and a waste of resources.
- B. She likely feels this way because the study's valuable findings can inform public policy and the management of captive orca populations, potentially leading to better welfare for these animals.
- C. She likely feels this way because the study is unimportant and will have no impact on the welfare of captive orcas.
- D. She likely feels this way because the study is important as it supports the limitless captivity of orcas.

4 How does Demaster regard peer-reviewed publications in their field?

- A. He finds peer-reviewed papers to be of little use in his line of employment.
- B. He considers peer-reviewed publications a waste of time and money.
- C. He holds a high regard for it, recognizing them as the leading standard in their field and acknowledging their immense worth.
- D. He believes that peer-reviewed publications are beneficial, but they are not the most essential factor.

5 What is SeaWorld's claim about orca lifespans in their promotional materials?

- A. Captive and wild orca lifespans are the same.
- B. Wild orca lifespans are shorter than those in captivity.
- C. Captive orca lifespans are shorter than those in the wild.
- D. Wild orca lifespans cannot be compared to those in captivity.

6 According to Robeck, what is inconsistent about the study's findings?

- A. The study's findings involve how wild killer whales live longer than those in captivity.
- B. The study's findings concerning how wild orcas may survive through certain ages do not coincide with the current lifespan analysis.
- C. The study's findings regarding how there is no significant difference in the lifespan of orcas in the wild and those in captivity.
- D. The study's findings involve how orcas in the wild are more susceptible to diseases and environmental factors that reduce their lifespan.

7 What factor could raise the calf's risk of stress-related death, according to Jett?

- A. Feeding the calf a specific diet.
- B. Taking the calf from its mother at an early age.
- C. Keeping the calf with its mother longer than usual.
- D. Providing the calf with a large enclosure to play in.

8 According to Jett, what does he wish the findings of the study could do?

- A. That it will not lead to any changes in the current treatment of captive orcas.
- B. That it will delay the reassessment of the welfare and management of orcas.
- C. That it can encourage more orcas to be captured and put on display.
- D. That it can at least lead to sound judgments and perhaps, bring about change.

