PAUL NICKLEN: EMPERORS OF THE ICE

Documenting Penguin Biology and Escape Strategies Through Photography

For the complete video with media resources, visit: http://www.nationalgeographic.org/media/paul-nicklen-emperors-ice/

Program

This video was filmed on November 15, 2012 as part of the National Geographic Live! Lecture series at National Geographic Society headquarters in Washington, D.C.

Introduction

National Geographic photographer Paul Nicklen uses his camera to reveal the nature of a world melting away under human-induced global warming. "I call myself an interpreter and a translator," says Nicklen. "I translate what the scientists are telling me. If we lose ice, we stand to lose an entire ecosystem. I hope we can realize through my photography how interconnected these species are to ice. It just takes one image to get someone's attention."
Whether he is ice diving among leopard seals in Antarctica, covering hundreds of miles of terrain in minus 40°F temperatures, or mastering aerial shots from his ultralight plane, Paul Nicklen has specialized in photographing polar regions since 1995.

Outline

- Introduction: emperors of the ice (start-0:55 min.)
- Setting the scene: an underwater world and the size of icebergs (0:56-2:18 min.)
- An exciting assignment and the opportunity to capture micro-bubbles on film (2:19-3:27 min.)
- Teenage penguin behavior (3:28-4:59 min.)
- A leopard seal's mistake and the courage to continue onward (5:00-9:05 min.)
- Leopard seal behavior (9:06-9:43 min.)
- Audio: Weddell seals in water (9:44-10:30 min.)
- 200 emperor penguins return from feeding at sea (10:31-11:38 min.)
- A micro-bubble revelation: how emperor penguins use micro-bubbles as an escape strategy (11:39-14:35 min.)
- How micro-bubbles work: emperor penguin behavior underwater (14:36-16:56 min.)
- Video: emperor penguins releasing micro-bubbles (16:57-17:20 min.)
- A different perspective: looking at emperor penguins exiting the water from the ice (17:21-18:56 min.)
- The impact of climate change on emperor penguins (18:57-20:39 min.)
Strategies for Using Video in a Variety of Learning Environments

- Have students preview several of the videos and choose the one they find most inspiring. Have students describe in writing a conversation they might have with the speaker(s).
- Freeze the video on a relevant image. Have students observe details in the still image and jot down predictions of what the full video might address. Discuss students’ ideas before and after watching the video.
- Pose an open-ended question before students watch the video, and have them discuss their ideas before and after in small groups.
- Have students determine what they think the key message of this video is. Was the speaker effective in getting his or her message across?
- Show a short clip to engage students during class, and then have students watch the full video at home and write a paragraph responding to the content or a question you give them.
- Have students note statements that represent facts or opinions, including where it’s difficult to tell the difference. What further research might help distinguish facts vs. opinions? How might the speaker’s viewpoint compare with others’ viewpoints about a topic?

Vocabulary

<table>
<thead>
<tr>
<th>Term</th>
<th>Part of Speech</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>adaptation</td>
<td>noun</td>
<td>a modification of an organism or its parts that makes it more fit for existence. An adaptation is passed from generation to generation.</td>
</tr>
<tr>
<td>Antarctica</td>
<td>noun</td>
<td>Earth's fifth-largest continental landmass.</td>
</tr>
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<td>Term</td>
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<td>--------------</td>
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<tr>
<td>climate change</td>
<td>noun</td>
<td>gradual changes in all the interconnected weather elements on our planet.</td>
</tr>
<tr>
<td>ice</td>
<td>noun</td>
<td>water in its solid form.</td>
</tr>
<tr>
<td>leopard seal</td>
<td>noun</td>
<td>carnivorous marine mammal native to the Antarctic.</td>
</tr>
<tr>
<td>penguin</td>
<td>noun</td>
<td>bird native to the Antarctic.</td>
</tr>
<tr>
<td>predator</td>
<td>noun</td>
<td>animal that hunts other animals for food.</td>
</tr>
<tr>
<td>strategy</td>
<td>noun</td>
<td>plan or method of achieving a goal.</td>
</tr>
</tbody>
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**Articles & Profiles**
- [National Geographic Photography: Paul Nicklen](#)

**Websites**
- [National Geographic Animals: Emperor Penguin](#)
- [BBC Nature: Penguins Take to the Air](#)