What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.

5E LESSONS
Two-week lessons with over 100 topics

ESCAPE ROOMS
Engaging activities for review

INQUIRY LABS
Three different levels to fit every student

AMAZING ANCHORS
Anchoring phenomenon to book-end your lessons

SUB PLANS
Never worry about planning for a sub again.

WARM-UPS
Bellringers for the entire year

STATION LABS
Student-led exploration

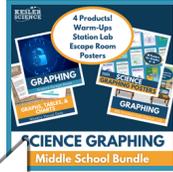### INTERACTIVE NOTEBOOKS
Bring science journals to life.

WIKI TICKETS
Quick formative assessments

STEM CHALLENGES
Real-world STEM problem-solving
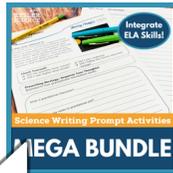
GRAPHING
Table and charts and graphs ... OH MY!

SCIENCE READING COMPREHENSION
Leveled reading passages with mini-activities

SPANGLER COLLABORATION
Exclusive Steve Spangler lessons and videos

WRITING PROMPTS
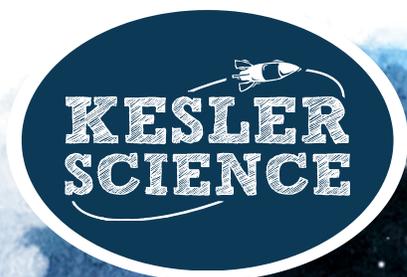Writing activities covering 100+ topics

EXPLORIES
Story-driven units with integrated activities

The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!

Name: _____

Date: _____

Talking to Animals

Sixty years ago, humpback whale populations were dropping fast. Whaling was destroying their numbers, and at one point, it looked like they might disappear entirely. Back then, there wasn't much excitement about protecting these mighty creatures.

Then, in 1966, a biologist studying whales in Bermuda crossed paths with a sound engineer who had a strange recording to share. The sound engineer had recorded whale sounds by accident when he was trying to capture the noises of underwater explosions. When the biologist listened to the recordings, he was shocked to realize the whale sounds weren't random. The whales repeated certain sounds over and over, like a song would repeat a chorus. The biologist was amazed; no one had suspected whales could be capable of such complex communication!

The biologist began sharing the whale songs everywhere he could think of, and four years later, the whole recording was released as an album. People went wild for it! It became, and still is, the best-selling collection of nature sounds ever. Folks began to realize that whales might be intelligent, emotional creatures. As a result, new protections for whales began rolling out.
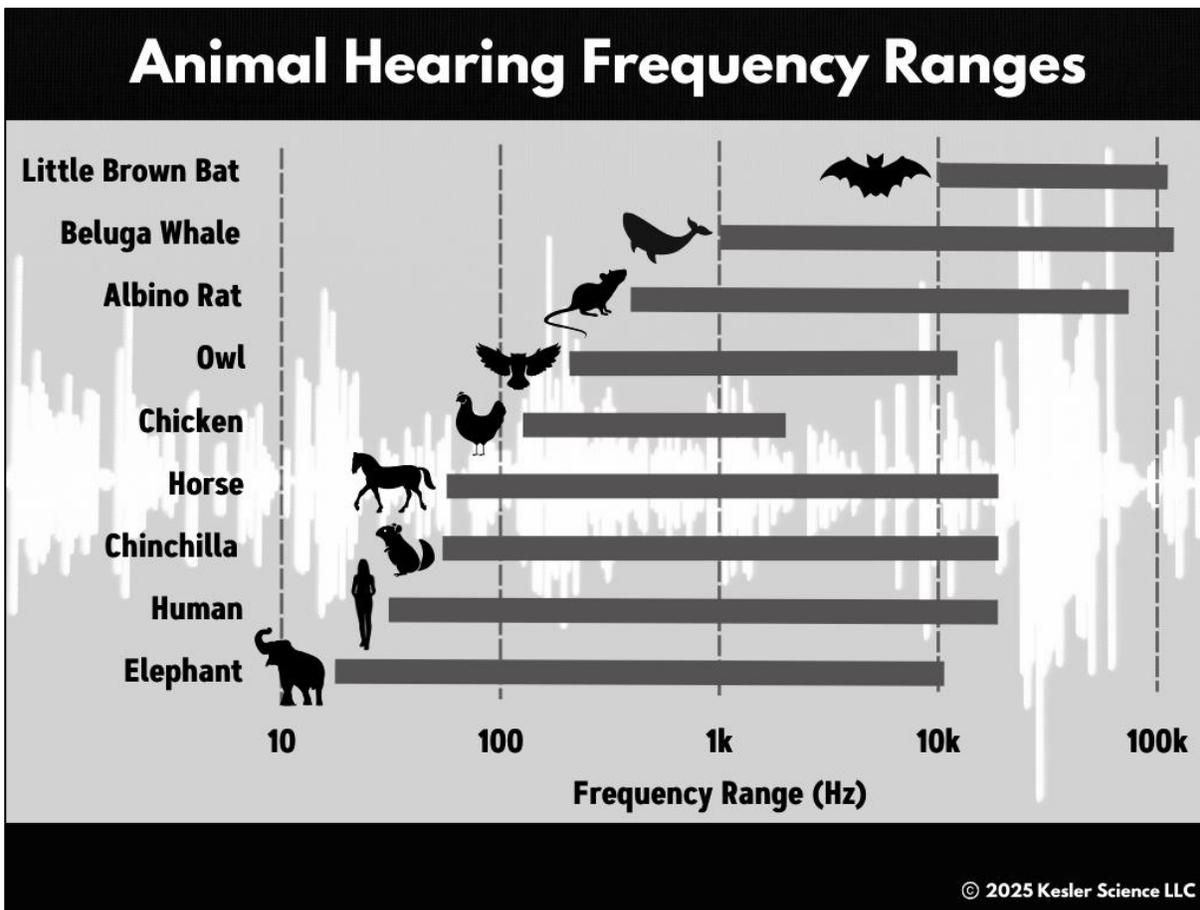
These days, we've got top-notch recording equipment and AI to help us figure out how animals are communicating with each other. We can't say that animals have their own distinct "language," but high-tech tools are helping us spot vocal patterns that might help us understand them better.

For example, conservationists are recording wolves in Yellowstone National Park. The scientists are using their hundreds of hours of recordings to train an AI filter that can identify individual wolves based on their unique howls. Once the AI learns the typical types of howls made in an area, it can also alert scientists in real time if a wolf call is out of the ordinary.

This is a big deal for scientists, because if we can recognize individual wolves based on their calls, there would be no need to go through the difficult process of putting tags or special tracking collars on them. Scientists are even talking about using the wolf calls to intervene if they think the wolves are going to get into trouble with local farmers' livestock.

Our technology is telling us a lot about animal vocalizations, but there are a lot of challenges in studying animal communication. For one, they use tons of cues and signals to communicate - not just sounds. When leader elephants want to move the pack, they'll point in a certain direction they want to go and give a low rumble. Male river dolphins have been observed communicating by ejecting a fountain of urine into the air!

Another issue is some animals are able to sense sound frequencies that we cannot. Animals might be chatting at a level that we just can't hear! Check out my graph on the next page on animals and the sound frequencies they can tune into.

Animal Hearing Frequency Ranges

1. What are two animals that have a similar hearing range to humans?

_____

_____

2. What is one animal that can hear lower frequencies than humans? What is an animal that can hear higher frequencies than humans?

_____

_____

3. Humpback whales can produce tones reaching frequencies as high as 24 kHz. According to the graph, what are some animals that would not be able to hear this sound?

_____

_____

_____

_____

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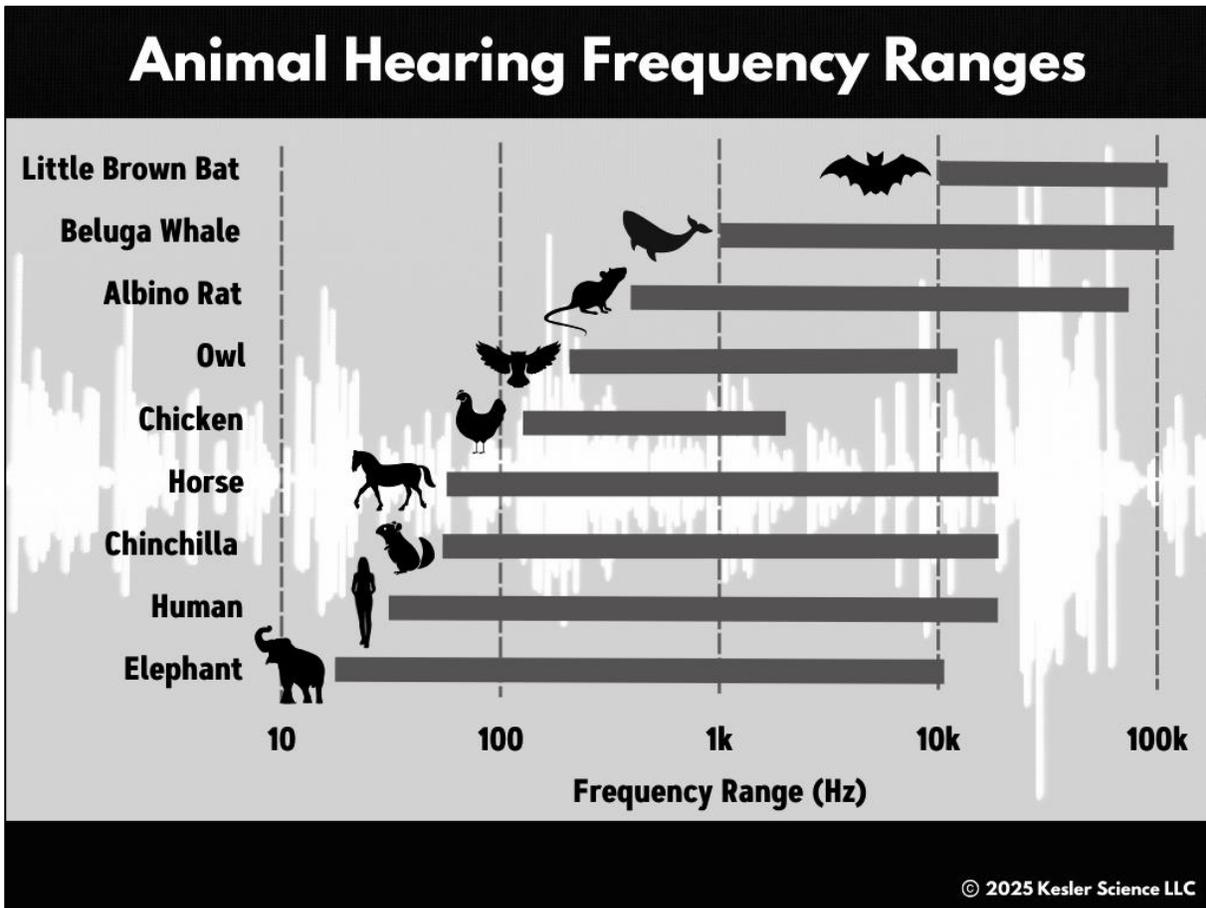
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Animal Hearing Frequency Ranges

Little Brown Bat
Beluga Whale
Albino Rat
Owl
Chicken
Horse
Chinchilla
Human
Elephant

10   100   1k   10k   100k

Frequency Range (Hz)

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1. What are two animals that have a similar hearing range to humans?

   Students could list any two animals that have a similar low point and high point in their frequency range. The chinchilla and horse have a similar hearing range to humans, from 52 Hz - 33.5 kHz.

2. What is one animal that can hear lower frequencies than humans? What is an animal that can hear higher frequencies than humans?

   (Accept all reasonable responses.) *An elephant can hear lower sound frequencies than humans, reaching as low as nearly 11Hz.* A little brown bat can hear frequencies as high as 115 kHz.

3. Humpback whales can produce tones reaching frequencies as high as 24 kHz. According to the graph, what are some animals that would not be able to hear this sound?

   Any animal with an "upper range" that is less than 24 kHz would not be able to hear sound at this frequency. This includes humans, owls, chickens, and tuna.