

QUIZ:
What Kind
Of Squirrel
Are You?



3 Ways That Technology Can Help Scientists Learn About Squirrel Behavior

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Squirrels. We all know them and have some feelings towards them. Nature watchers enjoy them, gardeners often think of them as pests, and hunters in many states can pursue them as game. But how much do we really know about why they act so... squirrelly? New (and old) technologies helps us learn more about their behavior than ever before.



(1) Video Cameras - Document Squirrel Personalities

Are squirrels afraid of their own reflection? We can test how squirrels respond to a new situation or object (like a mirror) using video recordings! This allows scientists to not affect the squirrels' behaviors during testing.

- It's not just cats and dogs---all kinds of animals have personalities that scientists are measuring and that can teach us about human behavior.
- Animal personalities may affect a variety of behaviors. For example, more "bold" animals may move around longer in risky habitats to find food.

Learn more!
(Videos #1-3)

Understanding personalities of animals may help us to predict behaviors.

(2) Tiny GPS Units With "Bluetooth" - Record Squirrel Movement

We have learned about large animals with GPS tracking, and we now have small tech for animals like squirrels!

- First, we detect nearby squirrels using radio signals.
- Then, we can download data from up to 2 football fields away! so we do not disturb the animals.

GPS tracking gives us better, more info on animal locations.



Learn more!
Check out our GPS units
+ (Videos #4-5)

(3) LASERS! - Measure Squirrel Habitats

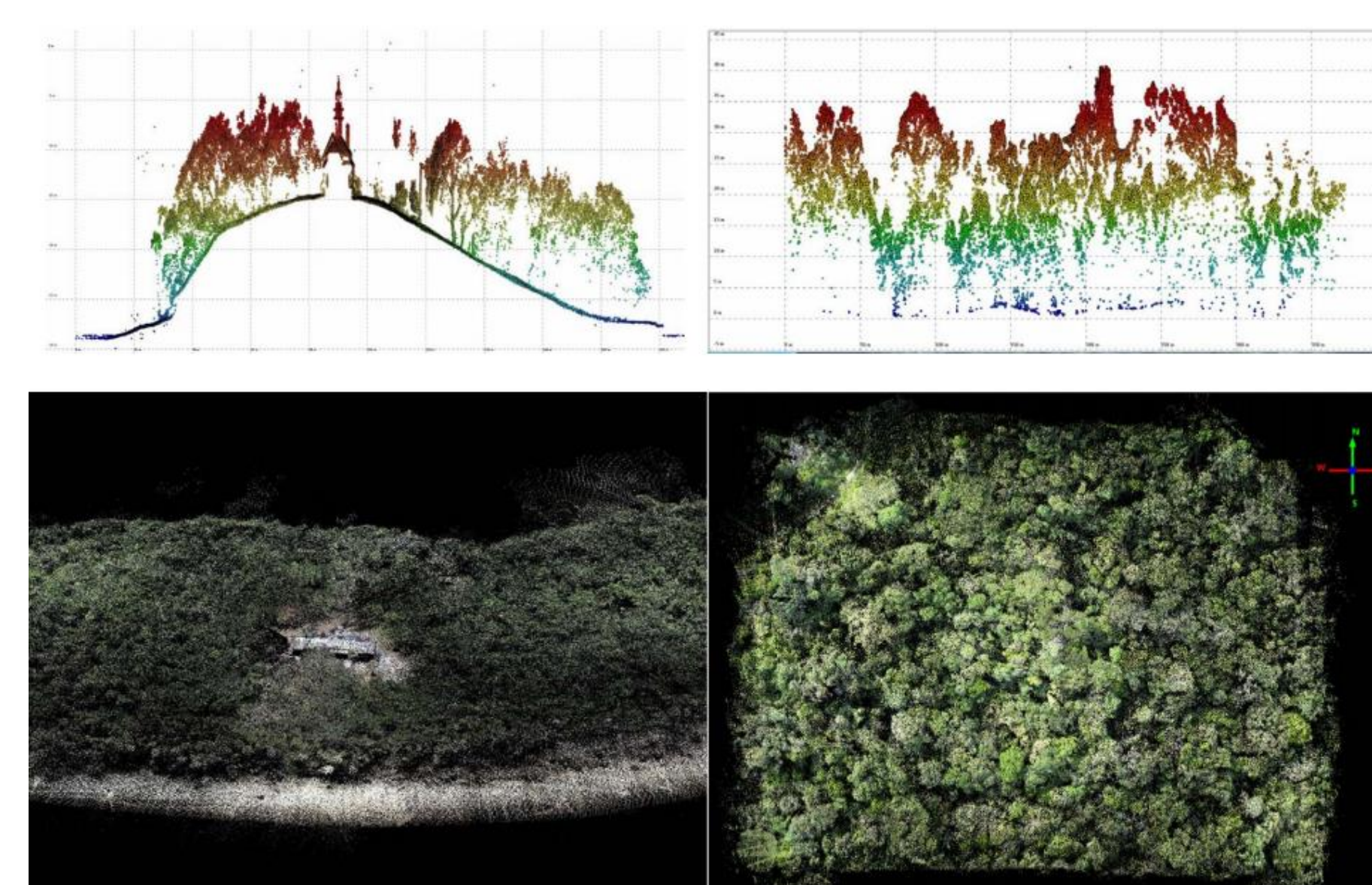
That's right---we are using lasers to study squirrels. We record light that is invisible to humans (like infrared, ultraviolet), use principles of quantum physics, and get information about the environment using remote sensing tech called LiDAR and hyperspectral imaging.

- Data is collected by lasers, cameras, and sensors on airplanes or satellites.
- We turn information (like tree height, elevation, vegetation quality) into a 3-D habitat map!

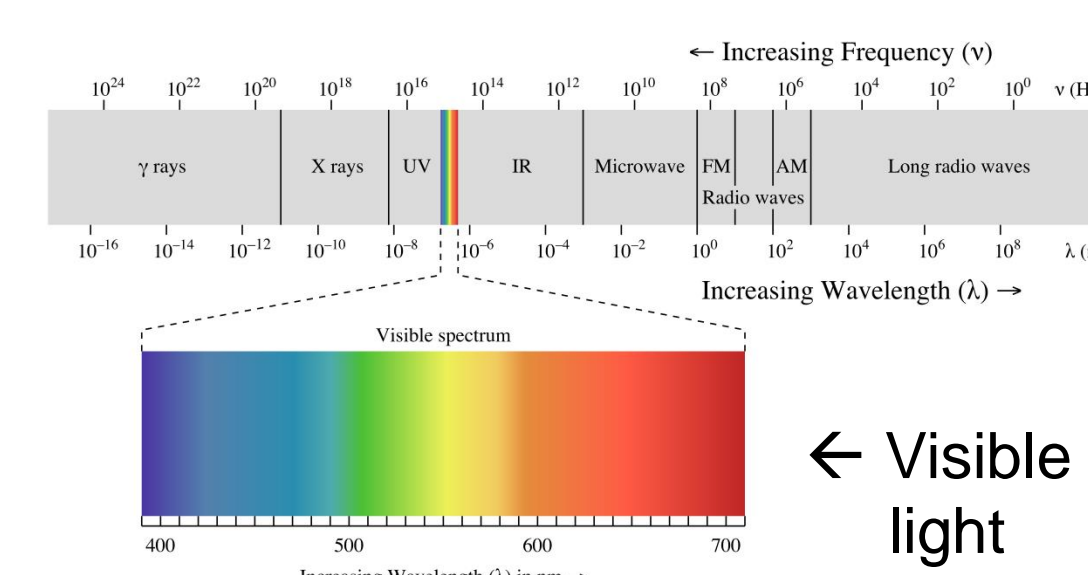
Remote sensing measures habitats in detail over large areas, saving scientists LOTS of time.



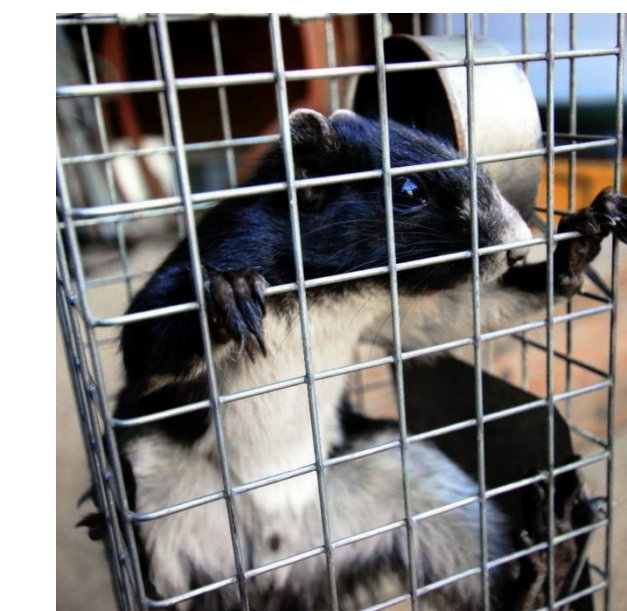
Eben Broadbent



Eben Broadbent



Have You Met Florida's 3 Squirrel Species?

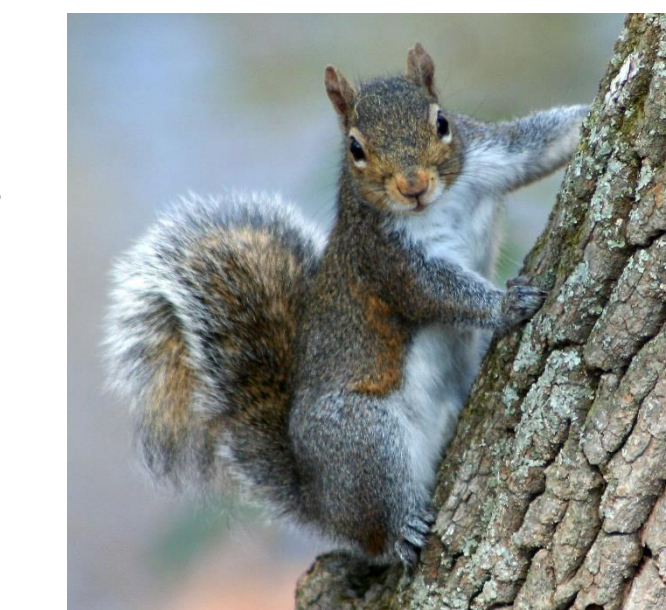


Fox squirrels (*Sciurus niger*)

- Weight: ~2.5 lbs (same as the world's smallest working dog, Lucy the Yorkshire Terrier)
- Can vary in color: tan, gray, black, albino, or reddish
- Remember the location of up to 9,000 nuts!

Gray squirrels (*Sciurus carolinensis*)

- Their tree-top leaps inspire new designs in robotics
- Are good liars: will fake burying an object if they're being watched!
- Communicate with barks, facial expressions, and tail motions



Chiswick, Chag (CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0/))



Southern flying squirrels (*Glaucomys volans*)

- Can rotate ankles 180° to descend trees head-first
- Glow ("fluoresce") under ultraviolet light!
- Have SUPER soft fur
- Are only active at night



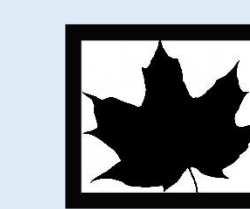
Some Nutty Facts

- Almost 300 species are in the squirrel family! (from chipmunks to prairie dogs)
- Some squirrels can survive the coldest temperatures of any mammal
- Some squirrels can fit through spaces only 1.5 inches wide!
- Some squirrels help trees grow when they forget to recover their caches

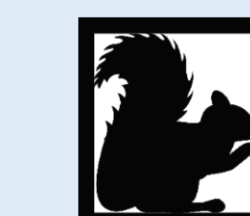
Why Is It Important We Understand Squirrel Behavior?



- Gives us information to understand humans better, like why people engage in risky behaviors



- Allows us to know where plants might grow because squirrels take seeds and nuts to new places



- Tells us how to manage populations of squirrels (either a game species, invasive, or endangered)



- May help explain how and predict which animals can adapt to environmental changes

Are you going NUTS about this poster? Learn even more about:

My research

I am interested in how wildlife species deal with the conditions of our changing planet, which is largely due to humans. I want to identify weather conditions, places within habitats, and behaviors of animals that might provide opportunities for species to survive in the future---even when predictions are bleak.

Learn more! (Videos #11-12)

Invisible light - "Hyperspectral Imaging: Beyond Limitations of Human Color Vision"

Animal personalities - "Fish have personalities too, and they could teach us a bit about ourselves"

Squirrels - "A Squirrel's Guide to Success" PBS episode



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www.themccleerylab.org/cat.html

17-minute video
TEDx talk

2-minute video +
article at qz.com

35-minute video at
pbs.org

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Learn more! (Videos #7-10)