

# ENVIRONMENTAL SCIENCE

WITH DR BEN HAYWOOD AND PROFESSOR JULIA PARRISH

## Talking points

### KNOWLEDGE & COMPREHENSION

1. What is place attachment?
2. What is citizen science, and why is it important?
3. What is civic scientific literacy?
4. How long has COASST been running, and what is its purpose?
5. Why are citizen science projects like COASST important?

### Application

6. What would you find interesting about being involved with COASST or another citizen science programme focused on marine ecology? What do you think you could learn from the experience?

### Analysis

7. What are the benefits of citizen science? How are these benefits connected to place attachment based on Ben and Julia's research? How is citizen science different from formal science education or research?

### Evaluation

8. "Formal education alone has failed to foster the kind of civic scientific literacy necessary in the 21st century." To what extent do you agree with Ben's comment? In what way have your own experiences of science – both in and out of school – impacted your ability to "understand and use science to advance the common good and engage in public scientific discussion and decision-making?"
9. According to Ben and Julia's research, there are several elements that can cause participants in citizen science to feel attached to a place including self-identity, science affinity, environmental bonding, and family and friend bonding. Which of these reasons do you relate to the most? Why else do you feel connected to places that are important to you?

### CREATIVITY

10. What type of citizen science programme would you create? What issue would you focus on, and why? Where would your programme be located?

## Activities

### 1. The importance of place

Ben says, "I have a strong attachment to the small patch of woods behind my childhood home. The trees, rocks and animals there spurred my interest in the natural world. I also had so many adventures on the coastline of North Carolina growing up. Even today, when I visit those places, I have a rich flood of memories that make me feel connected to and responsible for protecting that area. When I feel sand or smell salty air, it takes me right back to that place."

Think of an outdoor place that means something to you. Draw an image of this area, and ask yourself:

- What do I like to do in this place?
- Does this place have a certain smell?
- What can I hear when I am there?
- Do I go there alone or with other people?
- Have I always felt connected to this place or did my attachment grow over time?
- How do I feel when I spend time there?
- How would I feel if I could no longer visit?

Now, do some research on this area:

- Which ecological cycles take place there?
- Do plants and animals depend on it? In what ways?
- What are the human social and cultural uses of this place?
- How could a citizen science project help you and others better understand, monitor or care for this place?

### 2. Get involved!

You could:

- Organise a trash clean-up/beach clean with friends
- Count the birds you see in your local area
- Talk to teachers about opportunities to conduct research in your local environment
- Find a citizen science project to join:

[scistarter.org/finder](https://scistarter.org/finder) is a great place to find projects all over the world

[www.citizenscience.gov/catalog/#](https://www.citizenscience.gov/catalog/#) has hundreds of projects you might join in the US.

[www.nps.gov/subjects/citizenscience/be-a-citizen-scientist.htm](https://www.nps.gov/subjects/citizenscience/be-a-citizen-scientist.htm) has a list of projects in national parks in the US.

Ben also recommends joining a science or nature club at your public library or school: "The more you engage, the more people you will meet, and the more opportunities you will have to learn and grow."

## More resources

- A BioBlitz is a species inventory that involves observing and documenting living things in a certain area. National Geographic has a video on how to organise your own BioBlitz: [education.nationalgeographic.com/resource/do-it-yourself-bioblitz](https://education.nationalgeographic.com/resource/do-it-yourself-bioblitz)
- Explore citizen science programmes across the US: [www.citizenscience.gov/toolkit/case-study](https://www.citizenscience.gov/toolkit/case-study)