

## Mapping the Darién Gap

### OVERVIEW

This worksheet complements the short video [Mapping the Darién Gap](#) from the *Scientists at Work* series.

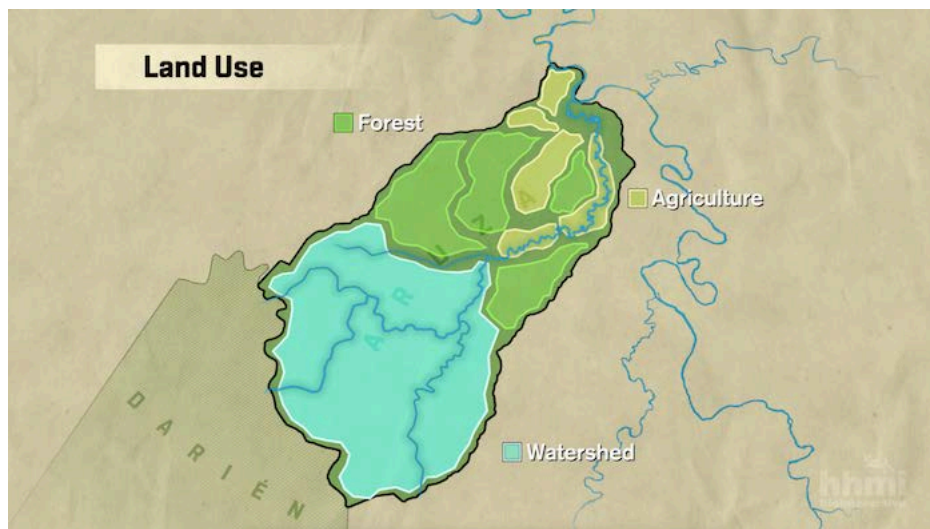
### PROCEDURE

1. Prior to watching the film, read the questions below.
2. Watch the film.
3. If working with a partner or in a small group, discuss and answer the questions below. If working alone, think about and answer the questions below.

### QUESTIONS

1. The Darién Gap is a remote swath of jungle that spans the border of Panama and Columbia. What about Darién's location makes this forest unique?
2. Like many tropical forests with rough terrain, the Darién Gap had been shielded from development because of the challenges of building roads. Identify two pressures that threaten Darién National Park as new roads are being built deeper into the forest.
3. The maps being produced by the Indigenous Geographic Information System team are "powerful tools for indigenous communities." Identify three ways in which the communities can use these maps.
4. What is the first step for communities to apply for legal title to their land? Why is legal title important for these communities?

5. What are three benefits of using drones to map community land instead of other mapping techniques?
  
  
  
  
  
  
  
  
  
  
6. Tom Bewick of the Rainforest Foundation works with the Indigenous Geographic Information System team to help the people of Aruza preserve their forest using a human rights-based approach to conservation and land-use planning. Describe this strategy.
  
  
  
  
  
  
  
  
  
  
7. Identify three new technologies the Rainforest Foundation teaches communities to use to monitor their land.
  
  
  
  
  
  
  
  
  
  
8. Community leader Bonarge Pacheco says “We want to make sure that we have clean, pure water, a forest that gives us oxygen to breathe, with many animals for us to hunt.” Provide evidence for how land use planning maps like the one below support these goals.



**Caption:** Land use map of the Aruza community.

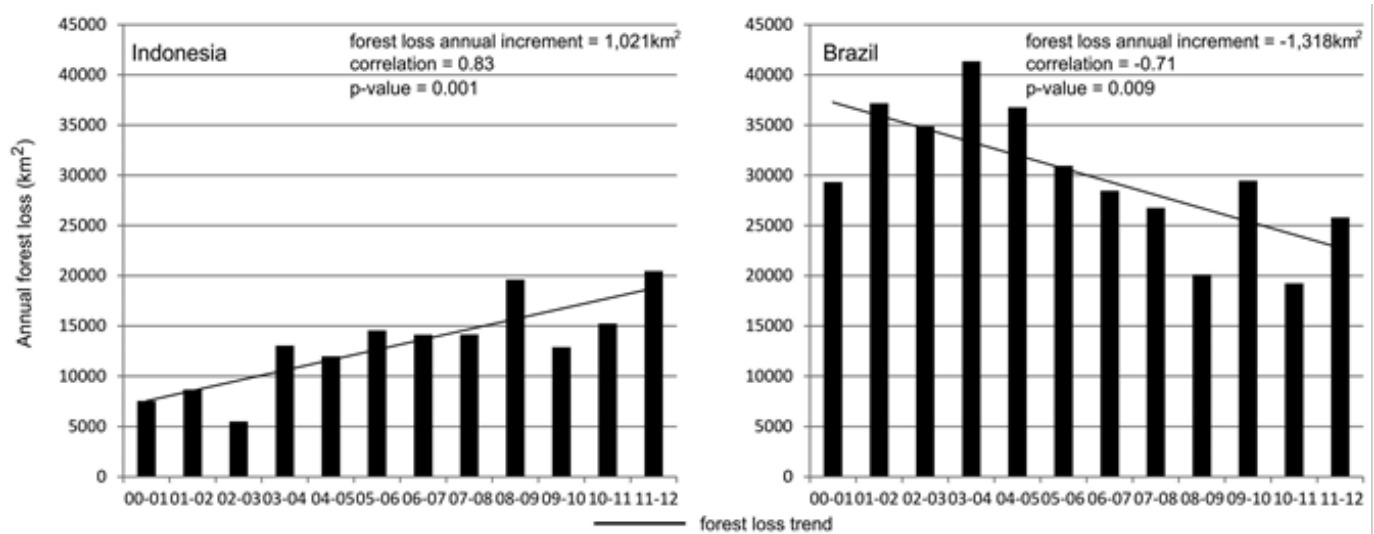
9. Aerial images like the one below can help communities pinpoint land incursions. What is a land incursion? How are maps of land incursion used by these communities?



**Caption:** 3D photo of land incursions in Aruza using imagery captured by drones.

10. Drones can be used to create high-resolution maps of the same community multiple years in a row. Why is this approach useful for communities like Aruza?
11. Carlos Doviaza explains the importance of communities taking ownership of conservation planning, saying “We, the indigenous people, are the stewards of the rainforest. Now we fly the drones and we ourselves handle the information. This is part of a revolution!” Why is engaging communities important for global conservation of tropical rain forests?

12. The pair of graphs below show forest loss in Indonesia (left) and Brazil (right) each year from 2000 to 2012. The data was collected using global satellite imagery from each time period. The forest loss annual increment is the estimated amount of change in forest loss each year in square kilometers (km<sup>2</sup>). This is also the slope of the trend line on each graph.



- What do the bars on these graphs represent?
- What do the trend lines on these graphs represent in terms of forest loss?
- Describe the trends that you see in each of the two graphs.
- Compare the two graphs in terms of the trends you observed. How are they similar or different?
- Make a claim stating which country is at the greatest risk for forest loss in 2013. Use evidence from the figures to support your claim. What additional evidence could you gather to make a stronger claim?
- Based on what you saw in the film, what are some potential reasons that the rate of forest loss could be declining in one country compared to the other?