

SCIENCE 10: SUSTAINABLE ECOSYSTEMS

POPULATION INQUIRY

OUTCOME

- SCI10-CD3: Examine biodiversity through the analysis of interactions among populations within communities.

BACKGROUND KNOWLEDGE

- Review terms relevant to population sampling such as quadrat, transect, counting, sampling, % ground cover. Here is a helpful overview of sampling.

ACTIVITY: SAMPLING PROCESS

1. Design a sampling process that would allow you to track changes in plant populations and community composition over time. The area you are sampling should be too large to count individuals.
2. If you are working in the school yard, a soccer field/football field can provide an unit of area that students can accurately conceptualize, rather than starting with a less familiar unit like 100m². Ex. How many dandelions are on the soccer field?
3. Provide students with loose parts to use as field sampling equipment. They will likely need tools to set up transects or quadrants (rope, string, flags, stakes, tent pegs, etc), tools to create standard quadrats (rope, picture frames, hula hoops, cardboard, etc), and tools for measuring (meter sticks, tape measure, standard length of rope, compass (most smart phones have a compass app), or GPS). If you think students need more guidance to create their tools, this video provides a helpful overview.
4. Have students work in groups to design a sampling technique, and then try in in an outdoor space. Once the have determined a successful sampling technique, have them develop a question that they could investigate; for example, "How often do we see Plant A and Plant B growing in X proximity?"



MATERIALS

- Loose parts for sampling: rope, string, flags, stakes, tent pegs, rope, picture frames, hula hoops, cardboard, meter sticks, tape measure, standard length of rope, compass (most smart phones have a compass app).
- Clip Clipboards (something hard to write on)
- Writing utensils

EXTENSIONS

1. SCI10-CD3: Examine biodiversity through the analysis of interactions among populations within communities. How could Traditional Ecological Knowledge and western science work together to support the collection of accurate population data? Think about seasonality, long term fluctuations, the impact of human relationship to populations. Two case studies that demonstrate the importance of recognizing traditional ecological knowledge are the Huna Tlingit gull-egg harvest, and the Sayisi Dene caribou hunt.
2. SCI10-CD3: Examine biodiversity through the analysis of interactions among populations within communities. Investigate available sources of TEK and western science connected to plains bison. What was the impact of slaughtering plains bison populations on prairie communities? How do prairie conservation efforts try to mimic the relationships that bison facilitated? What do we know about re-introducing bison to the landscape? Examples of reintroduction include Grasslands National Park, The Sturgeon River Herd, and Wanuskewin.

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HOME CONNECTION

- You can explore populations, communities, and other ecosystem dynamics from the comfort of your own home with EcoXPT. This virtual field trip will guide you through thinking routines that help sharpen skills for observation and interpretation in the real world

ESSENTIAL QUESTIONS

1. How can we collect information about the populations and communities that inhabit a place?
2. How can our biases impact population/community observation?

DID YOU KNOW?

Meewasin's conservation zone encompasses 6,700 hectares; that's 9,384 soccer fields. Many of the sites found along the Meewasin valley have populations that could benefit from citizen scientist monitoring. Contact a Meewasin representative to inquire about sites that could use your help!