



GRADE 5



COAST ^{TO} CACTUS

IN SOUTHERN CALIFORNIA

Curriculum and Lesson Plan Resource Guide



theNAT
SAN DIEGO NATURAL HISTORY MUSEUM



Grade 5

Habitat Fragmentation

Essential Question

How do our buildings and roads affect wildlife habitat?

Our neighborhoods were once open natural areas where wildlife thrived. When people moved here they built roads, houses, and other structures. When humans build in natural areas, they can cause habitat fragmentation. Open spaces where wildlife could once move freely are divided, and animals don't have the same access to food, water, and mates.



Activity: Habitat Fragmentation Model

In this activity, students learn how humans transform habitats, affecting wildlife.

Materials

- Black yarn
- Colored pencils and markers
- Construction paper (green, blue, brown, beige)
- Drawing paper (poster-size is best if students are working in groups)
- Glue
- Printed animal and house image sheets
- Writing paper

This activity can be done by students working individually, in pairs, or in groups. The activity can be completed before or after a visit to the *Coast to Cactus in Southern California* exhibition. (See Page 2 for activity instructions.)

Habitat Fragmentation Model



Before the activity

- Read through the activity instructions.
- Gather and separate out materials for each pair or group of students.
- Print animal and house image sheets. (Make sure each student pair or group gets two of each animal.)

Activity

1. Ask your students: **What is a habitat?** It can be defined as the kind of place where an animal or plant lives in a natural state. Today students are going to look at the elements that make up an animal's habitat and how these animals relate to the humans that might live there.
2. Divide students into pairs or groups (optional).
3. Ask students to design and draw a natural outdoor area with hills, trees, rivers, and ponds.
4. Have your students cut out the animals from the printed sheet and glue them in the area where they think each animal would live. (For example, deer would be found on a mountain or in a forest.) Make sure students glue the animals down.
5. Ask students to write an explanation of how their wilderness area provides food, water, shelter, and other resources for animals.
6. When the explanations are complete, let your students know that humans are moving into the area. They've decided to build some houses in the habitat. Have your students cut out the houses and glue them down.
7. Let your students know that the houses need to be connected with roads. Have your students connect the houses with a piece of black yarn. Students should tape long strands of black yarn between the houses to represent how a natural area is fragmented when humans build roads.

NGSS Alignment for Grade 5

Performance expectation: 5-ESS3-1

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Obtaining, Evaluating, and Communicating Information	ESS3.C: Human Impacts on Earth Systems	Systems and System Models Cause and Effect

Interdisciplinary Common Core Connections: SL.5.5, W.5.8, MP.2

Lead a discussion in which students think about and answer guiding questions:

How does habitat fragmentation affect animals' ability to access resources (food, water, mates) in their habitat?

Which animals do they think will survive in the fragmented habitat?

How are natural processes, such as water flow, affected by roads and buildings?

Will trees need to be cut down to make room for buildings?

What happens to the birds and other animals that live in the trees?

What changes could you make to your habitat to create spaces where animals can move freely?



Extension

- Have your students offer solutions to help maintain habitats. Conservation ideas include setting aside land for wildlife reserves, creating wildlife corridors, or planting native plants.
- Discuss what types of animals have adapted to living near humans. Crows, possums, skunks, and raccoons are examples.
- Have students redesign and rearrange roads and houses on their "habitat" to have as little an impact as possible on wildlife and the natural area. Just as a city planner would have to consider ways to balance the benefits and harm to the natural land with what humans want to do with the land, this exercise will encourage your students to think abstractly and decide what compromises they are willing to make when trying to balance the needs of nature and humans.

Key words

Development

The act or process of growing or causing something to grow or become larger or more advanced.

Disrupt

To interrupt the normal progress or activity of something.

Ecosystem

All the living things that exist in a particular environment and how they impact one another.

Fragment

To break or to cause something to break into parts or pieces; a broken part or piece of something.

Habitat

The place or type of place where a plant or animal naturally or normally lives or grows.

Urbanization

The process by which towns and cities are formed and become larger as more and more people begin living and working in centralized areas.

Wildlife

Animals living in nature.

What will they learn?

In this activity students examine how wildlife in natural areas is affected when humans build roads and buildings. These structures can create barriers that restrict animals' access to water and food sources. They also limit animals' natural range, which can cut off their access to other members of their species to mate with. Students think about how to design a solution to minimize the impacts that human structures can have on natural areas. Instead of displacing nature, humans can design communities in a way that works with nature.



Additional Resources

- Visit the *Explore the Region from Coast to Cactus* website to learn more about the different habitats in the southern California region. You can find more information at coasttocactus.sdnhm.org.
- Check out a specimen from our Nature to You Loan Library. Specimens related to this lesson include: North American Raccoon, Coyote, Virginia Opossum, Striped Skunk, American Crow, Red-tailed Hawk. For more information visit sdnat.org/specimenssearch or contact the Loan Library at loanprogram@sdnhm.org or 619.255.0236.
- Visit the San Diego Natural History Museum and explore our *Coast to Cactus in Southern California* exhibition. San Diego is known for its incredibly diverse terrain, ranging from the beaches and chaparral near the coast, to the mountains and the desert farther afield. Using specimens from the Museum's scientific collections alongside immersive environments, hands-on exhibits, live animals, and innovative media, *Coast to Cactus in Southern California* illustrates that richness by taking visitors on a journey through these habitats to explore the plants and animals that live in them.

Habitat fragmentation

