



Project Pre-Season Guide

Please note that all the videos and FAQs for next season refer to the Innovation Project as just “Project”. As a result, there may be changes to the project scope, expectations and/or rubrics. We strongly recommend that you do not commit yourself to any particular project topic until the challenge release in August. Use the pre-season simply to explore the overall theme and develop a general interest in biodiversity.

1

Keywords in Announcements

What keywords do you see in the released text on the *FIRST* or LEGO Education websites and Facebook/Twitter posts? These words are a great place to start your research process. Even if you do not know the exact Project requirements, these keywords give you insight about the topics you can learn about this season.

“Nothing on Earth thrives alone. Every gene, species, and ecosystem is part of a rich web of biological diversity that powers clean air, fresh water, and food. With STEM as their tool and nature as inspiration, today’s boldest innovators are finding new ways to strengthen the connections that protect our shared home. Building. Problem solving. Growing stronger through teamwork. Welcome to our biodiversity-themed robotics season, *FIRST CANOPY*.”

“In Houston, we planted the seeds for our next season with the reveal of *BIOGLOW™*, inspired by the power and diversity of life all around us—plus a first look at the new Future Edition. A bright new season takes root on August 4, 2026.”

“In *BIOGLOW*, the 2026/27 season will focus on biodiversity and the question of how technology, creativity, and research can help better understand and protect natural habitats. Children and young people will develop innovative ideas using STEM skills – inspired by nature itself.”

2

Keywords in the Future Edition Showcase

What keywords were used in the prompt shared with the 4 demo teams at World Festival?

“For this showcase, teams were tasked with a Project that asked them to identify a keystone or invasive species in their local ecosystem and propose a way to restore ecological balance.”

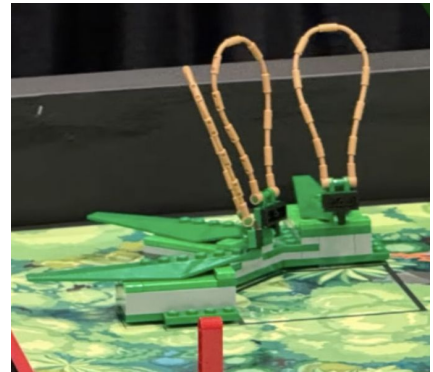
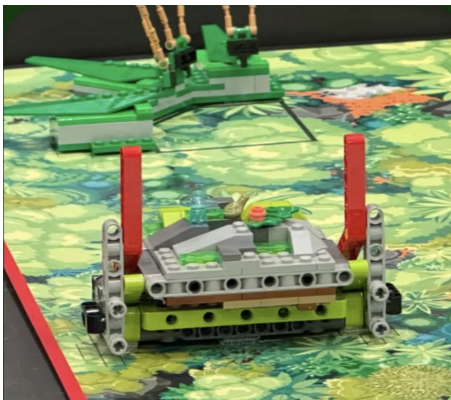
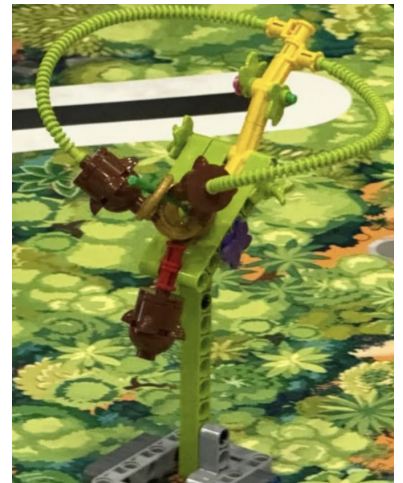
What keywords do you see and want to learn more about?

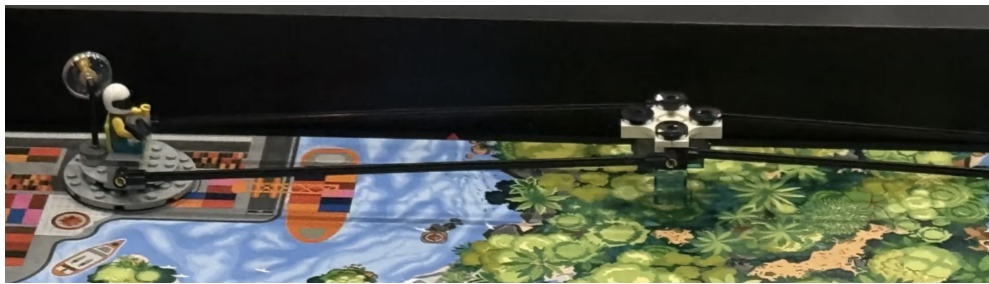
3

Released Video and Images

Take a look at the BIOGLOW [Teaser Video](#) and any images of the BIOGLOW season mats/mission models (Founders or Future Edition). Also take a look at the [Future Edition Showcase Video](#) where emcees refer to the models by name.

What do you see? Identify what you think each mission model might represent in the real world when considered in connection with a theme of biodiversity.







4

How to do Research

Most students in *FIRST* LEGO League Challenge have not been taught how to do research. Discussing how to research is an important first step.

You can use the keywords from Step 2 to begin a search. Discuss what makes a source more reliable than another. Learn how to take notes and how to cite sources. In FLL, citations do not have to follow any particular format. Keeping track of the author and website/links is a great place for a young student to start. Your coach could also generate a list of safe and reliable sources ahead of time and have students select from that subset. Finally, discuss how to communicate your research to others (each other or judges). For example, some information is best presented in a comparison table. A pie chart might be useful for other information.

Develop keywords/search terms

[Searching is Strategic](#)

Select reliable sources

[Credibility is Contextual](#)

[Format Matters](#)

Take Notes

[Taking Notes](#)

[Quote/Paraphrase/Summarize](#)

Cite Your Sources

[Basics of Citing](#)

Share Information/Results



Recent Biodiversity-Related Topics in the News

- [Fire Ants on Maui](#)
- [Seed Bank to Preserve Plant Diversity](#)
- [Decline in Birds](#)
- [Fungus](#)
- [Urban Biodiversity](#)

Learn about the Theme

There are many fun, hands-on ways to make the topic of biodiversity interesting to learn and experience. You can visit rainforests, ponds, lakes, forests, wetlands, swamps, deserts, streams, ponds, grasslands, etc. in your community. Even urban areas have ecosystems and face problems related to biodiversity.

As you do research, learn what biodiversity is, why it matters, and what threatens it. Below are a small sampling of resources including articles, videos, hands-on projects, and field trip ideas to get started.

[Britannica Kids - Biodiversity](#): Introduction explaining what biodiversity is, why it matters, and why it is important for humans.

[National Geographic Kids - Declining Biodiversity](#): Articles detailing how plants and animals depend on each other and the threats they face, such as habitat loss.

[National Geographic](#): Biodiversity overview

[Frontiers for Young Minds - Biodiversity](#): Scientific articles written specifically for kids

[AMNH OLogy - Biodiversity](#): Interactive stories and articles focusing on deep-sea life, coral reefs, and other habitats.

[World Wildlife Fund - What is Biodiversity?](#): "Web of life" and how we can protect ecosystems from collapsing.

[UNICEF](#): Why biodiversity is important for children

[Science Journal for Kids/Teens](#): Articles relevant to biodiversity

Lesson Plans/Activities:

[Hands-on projects on biodiversity \(Science Buddies\)](#)

[Biodiversity Project \(University of Arizona\)](#)

[Science Journal for Kids](#)

[World Wildlife Fund Teaching Tools](#)

[Biodiversity Institute \(University of Wyoming\)](#)

Videos:

[PBS Videos](#)

Field Trip Destinations:

Audubon Society

Zoo Conservation Labs

Nature Reserves

Nature Centers

Zoos and Aviaries

[Nature Conservancy \(Virtual\)](#)

National Parks (e.g. [Haleakala](#))

Words to Learn: “**Native species** are plants and animals that naturally inhabit an area. **Introduced species** or **foreign species** are species that have been introduced into an ecosystem by humans, either intentionally or accidentally. They do not naturally inhabit the ecosystem. Introduced species are usually beneficial or harmless. However, some introduced species, known as **invasive species**, can dramatically change or destroy ecosystems. The rapid spread of introduced invasive species is a major cause of global biodiversity loss. Introduced species can affect native species through competition, predation, disease, parasitism, and habitat alteration.” (Source: McGraw-Hill Ryerson)

Sample Resources:

NAPIS - Pest Tracker: <http://pest.ceris.purdue.edu/index.php>

National Invasive Species Information Center: <https://www.invasivespeciesinfo.gov/>

The Nature Conservancy: <http://www.nature.org/initiatives/invasivespecies/>

Center for Invasive Species and Ecosystem Health: <http://www.invasive.org/>

Invasive Species Specialist Group Database - <https://www.iucngisd.org/gisd/>

National Geographic - <https://www.nationalgeographic.com/environment/article/invasive-species>

National Geographic - <https://education.nationalgeographic.org/resource/invasive-species/>

American Museum of Natural History - <https://www.amnh.org/explore/videos/biodiversity>

Sample Invasive Species:



Garlic Mustard is an invasive species in my hometown that was brought to the USA in 1860s for food and medicinal use. It crowds out native plants by producing a chemical that prevents other plants from growing. Each garlic mustard plant produces thousands of seeds, and spreads rapidly. Active community management is needed to pull out the plants before they seed in the summer.

Source:

<https://www.nature.org/en-us/about-us/where-we-work/united-states/indiana/stories-in-indiana/garlic-mustard/>



Spotted Lanternfly is an invasive species that has infested at least 19 states in the USA. They were first detected in 2014 and may have been transported via wood products from China. They are a threat to grapevines, fruit trees, and various other plants. Active community management is needed to kill the the spotted lanternfly.

Source: <https://www.aphis.usda.gov/plant-pests-diseases/slf>

Instructions: As a team, research 4 types of invasive species in your local region. What is the invasive species and how was it introduced? What effect did it have on the ecosystem? Pick at least one of the four and think about how you could “restore ecological balance”.

Type of Impact	Invasive Species	Effect on Ecosystem
<p>Competition</p> <p>Introduced invasive species reproduce rapidly and are often aggressive. Lacking natural predators, they easily outcompete native species for food and habitat.</p>		
<p>Predation</p> <p>Introduced predators can have more impact on a prey population than native predators, as prey may not have adaptations to escape or fight them.</p>		
<p>Disease/Parasites</p> <p>An invasion of parasites or disease-causing viruses and bacteria can weaken the immune responses of native plants and animals.</p>		
<p>Habitat Alteration</p> <p>Introduced invasive species can make a natural habitat unsuitable for native species by changing its structure or composition.</p>		

Source: Definitions from McGraw-Hill Ryerson 2008, “How Introduced Species Affect Ecosystems”

Words to Learn: “**Keystone species** are a species that has a disproportionately large effect on its environment compared to its relative abundance. When a keystone species is removed from a system, the ecosystem may change drastically, even if the species removed was a small part of the entire ecosystem.” (Source: Wolves of Yellowstone, PBS)

Types of Keystone Species (different scientists identify different types of keystone species. the most common are predators, ecosystem engineers, and mutualists)

Predators – Animals that keep populations of their prey species in balance. Examples: Sharks, Grey Wolves, Sea Stars

Ecosystem Engineers – Organisms that create, change, or even destroy habitats. Examples: North American Beaver, African Elephant, Mangroves, Oysters

Mutualists – Pairs of species that provide each other with some kind of service/benefit. Examples: Bees, Hummingbirds, and Coral.

Sample Resources:

HHMI Biointeractive - Exploring Keystone Species: <https://media.hhmi.org/biointeractive/click/keystone/map.html>

HHMI Biointeractive - Some Animals Are More Equal than Others:

<https://www.biointeractive.org/classroom-resources/some-animals-are-more-equal-others-keystone-species-and-trophic-cascades>

National Marine Sanctuary Foundation: <https://marinesanctuary.org/blog/what-are-keystone-species/>

National Geographic: <https://education.nationalgeographic.org/resource/keystone-species/>

PBS - Wolves of Yellowstone:

<https://thinktv.pbslearningmedia.org/resource/a58e3ca2-52ab-45f5-87ac-26ee0d681146/wolves-of-yellowstone-earth-a-new-wild/>

Sample Keystone Species:



Mangroves are Ecosystem Engineers that are critical to their ecosystem, responsible for preventing erosion and providing a home to a diverse group of species.

Source: <https://www.amnh.org/explore/videos/biodiversity/mangroves/why-mangroves-matter>



Grey Wolves became nearly extinct in the Yellowstone National Park and much of the USA. This had a huge impact on the ecosystem. Elks overgrazed the park which resulted in population reduction of grizzly bears, small mammals, pollinators, song birds, fish, and beavers. In 1995, the government decided to reintroduce 41 wolves into the area, which resulted in restoring balance to the ecosystem by reducing the elk population and allowing plant and animal populations to regrow.

Source: PBS - Wolves of Yellowstone

Instructions: As a team, research 3 types of keystone species in your local region. What is the keystone species? What effect do they have on the ecosystem if this species was removed?

Type of Keystone Species	Keystone Species	How is this Species Important to the Ecosystem?
Predators Animals that keep populations of their prey species in balance.		
Ecosystem Engineers Organisms that create, change, or even destroy habitats.		
Mutualists Pairs of species that provide each other with some kind of service/benefit.		