Quarrybrook
EXPERIENTIAL EDUCATION CENTER

Program Title: **Webs of Life**

Audience: 5th grade students

Program Theme: Multiple food chains interconnect to form the overall food web of an ecosystem.

Program Goals: Through this journey students will collect clue cards containing information about species and their roles within an ecosystem. Student teams will organize their species cards into food chains and then learn about how those chains interconnect to form an overall food web. Students will take on the predator and prey roles within one food chain in a simulation activity to better understand the species relationships within an ecosystem. Students will then build an interactive eco-web by connecting the ecosystem elements they have been investigating through the day.

Next Generation/Common Core Connections:

Topic: 5-LS2 Ecosystems: Interactions, Energy, and Dynamics

Dimensions:

LS2.A Interdependent Relationships in Ecosystems

LS2.B Cycles of Matter and Energy Transfer in Ecosystems

Crosscutting Concepts: Systems and System Models

Program Outline:

Activity 1: ECOSYSTEM OBSERVATION HIKE (70 min.) – Students will begin to identify different species present in the forest at Quarrybrook. Along the route, student sub-teams will each collect five clue cards. With each card they will need to decipher the riddle it contains, to decide which animal is represented by that card. After de-coding all of their clue cards, the sub-teams will be challenged to assemble those species identities into a food chain, with the correct flow of producer, primary consumer, secondary consumer, etc. Sub-teams will each have a game board with placeholders and directional arrows showing the flow of energy within that food chain. Each sub-team will then present their food chain to the entire group. We will discuss how each food chain interconnects with other chains to form the overall food web of an ecosystem.

Teachers will be asked to separate students into sub-teams. Each adult will work with their own sub-team during this activity. All instructions will be provided by Quarrybrook instructors at the start.

Objectives: Students will be able to identify different species of the Quarrybrook forest ecosystem. Students will be able to position the ecosystem elements into a working eco-web.

Intended Outcome: Students will be able to correctly explain the energy transfer among the species in their team's food web.

Activity 2: RABBITS AND COYOTES (30 min.) – This simulation activity provides students with the experience of what it takes for an animal to survive. Students will take on the predator and prey roles within one food chain to better understand the species relationships within an ecosystem. In a large open area, students will either be a rabbit that needs to find four pieces of food to survive, or a coyote that needs to find three rabbits to survive. (Each round can require different numbers of coyotes and rabbits, or amounts of food necessary for survival, such as in colder habitats or when raising young.) Through this activity, students will understand the operation of a food chain, the difficulties of finding enough food, fluctuations in population size, and carrying capacity.

Quarrybrook instructors will lead multiple rounds of this simulation activity. Teachers are welcome to make connections with what the group has been learning in the classroom. Adults are encouraged to participate, as predators or possibly as "invasives" to the environment!

Objective: Students will gain an understanding of the relationship between species populations and available resources through a kinesthetic activity.

Intended Outcome: Through discussion, students will be able to explain why populations changed each round and in their own words explain the relationship between populations and resources.

Conclusion/Wrap-up:

Activity 3: ECO-WEB (20 min.) – We will wrap up the day's investigations with a thinking activity. Students will be gathered together in a circle and asked to each share something they have seen in the ecosystem today. As students identify their "character," they will be handed a card with that ecosystem element on it. Once everyone has a card, the Sun character will start off with a ball of yarn. Students will be asked to explain a connecting relationship between the Sun and another character within the group. While holding onto the end of the yarn, the Sun character will pass the ball to the identified person. This pattern will continue until everyone is connected to the yarn web at least once. (If a character needs to be used more than once as a relationship, that is fine.) Once everyone is linked together, the group will discuss relationships, the importance of each character within the web, and the difference between food chains and food webs.

Teachers will be helpful by encouraging the discussion of relationships between the various elements of the eco-web. Teachers and adults are encouraged to participate and be a part of the web as well.

Successful completion of this program will help support your students' proficiency in NGSS Performance Expectations:

5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.