Investigating Ecosystem Food Chains

Subject(s) **Basic Science**

Year(s) **9–10**

Learning Intention(s)

Students develop an understanding of the wide variety of organisms that live in the ecosystem and recognise that their interdependence is a means of survival.

Curriculum links

Basic Science

Strand: S9.1 Living Things and the Environment, S10.1 Living Things and the Environment

Sub-strands:

S9.2.1 Living Together

S10.2.1 Living together

Learning Outcome(s)

- 9.1.2.2 Explore the wide variety organisms in the ecosystem and show their interdependence as a means of survival
- 9.1.2.3 Explain the types of interactions which occur between the living things, and with their physical environment for survival
- 10.1.2.1 Investigate and discuss the growth and movement of organisms in response to their environment and describe the feeding relationships that exist between organisms within a community.

Teaching Activity

Note: This activity is adapted from *SAKG Literacy and Numeracy in the Kitchen and Garden – Ideas for Learning in Primary*, p. 67

Materials required

- Butchers paper – 1 sheet per pair, plus 7 sheets if optional vocabulary activity is used
- Teacher Supporting Resource: Food chain and food web images

Key Vocabulary

- **Carnivore**: Meat-eating organism.
- **Consumer**: An organism that eats other organisms. For example, animals that eat plants or other animals to survive.
- **Decomposer**: An organism that eats or breaks down dead or decaying organisms.
- **Ecosystem**: A community of animals and plants and where they live.
- **Food chain**: Linkages that show who eats what in an ecosystem.
- **Food webs**: All the food chains in an ecosystem.
- **Herbivore**: Plant-eating organism.
- **Interdependence**: The relationship between organisms that rely on each other to survive.
- **Omnivore**: Meat- and plant-eating organisms.
- **Predator**: Animal that hunts and kills for food.

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- **Producer**: An organism that can make its own food. For example, plants make their own food through the process of photosynthesis.

Activity 1: Introducing ecosystem elements

1. **Introduce** the topic: understanding the interdependent relationships between various organisms within an ecosystem.
2. **Write on the board** these key terms from the vocabulary list:
    - **Carnivore**: Meat-eating organism
    - **Herbivore**: Plant-eating organism
    - **Omnivore**: Meat- and plant-eating organisms
    - **Predator**: Animal that hunts and kills for food
    - **Ecosystem**: A community of animals and plants and where they live
    - **Food chain**: Linkages that show who eats what in an ecosystem
    - **Food webs**: All the food chains in an ecosystem
3. **Ask** students to provide definitions of the selected words and write them on the board. Students then write down the key words and definitions in their workbooks.
4. **Extension**: Working in pairs, students can create a poster illustrating and explaining the definition of a key vocabulary term.

Activity 2: Introducing food chains and food webs

1. **Conduct a class discussion** on the importance of living and non-living organisms co-existing in the same environment or ecosystem. Explain what producers, consumers and decomposers are:
    - **Producer**: An organism that can make its own food. For example, plants make their own food through the process of photosynthesis
    - **Consumer**: An organism that eats other organisms. For example, animals that eat plants or other animals to survive
    - **Decomposer**: An organism that eats or breaks down dead or decaying organisms
2. **Draw a table** on the board with three columns labelled: Producers, Consumers, Decomposers
3. **Ask** students to suggest any native plants or animals they know that belong to the three categories, and add them to the appropriate column.

   Suggestions, if students are struggling to find examples:

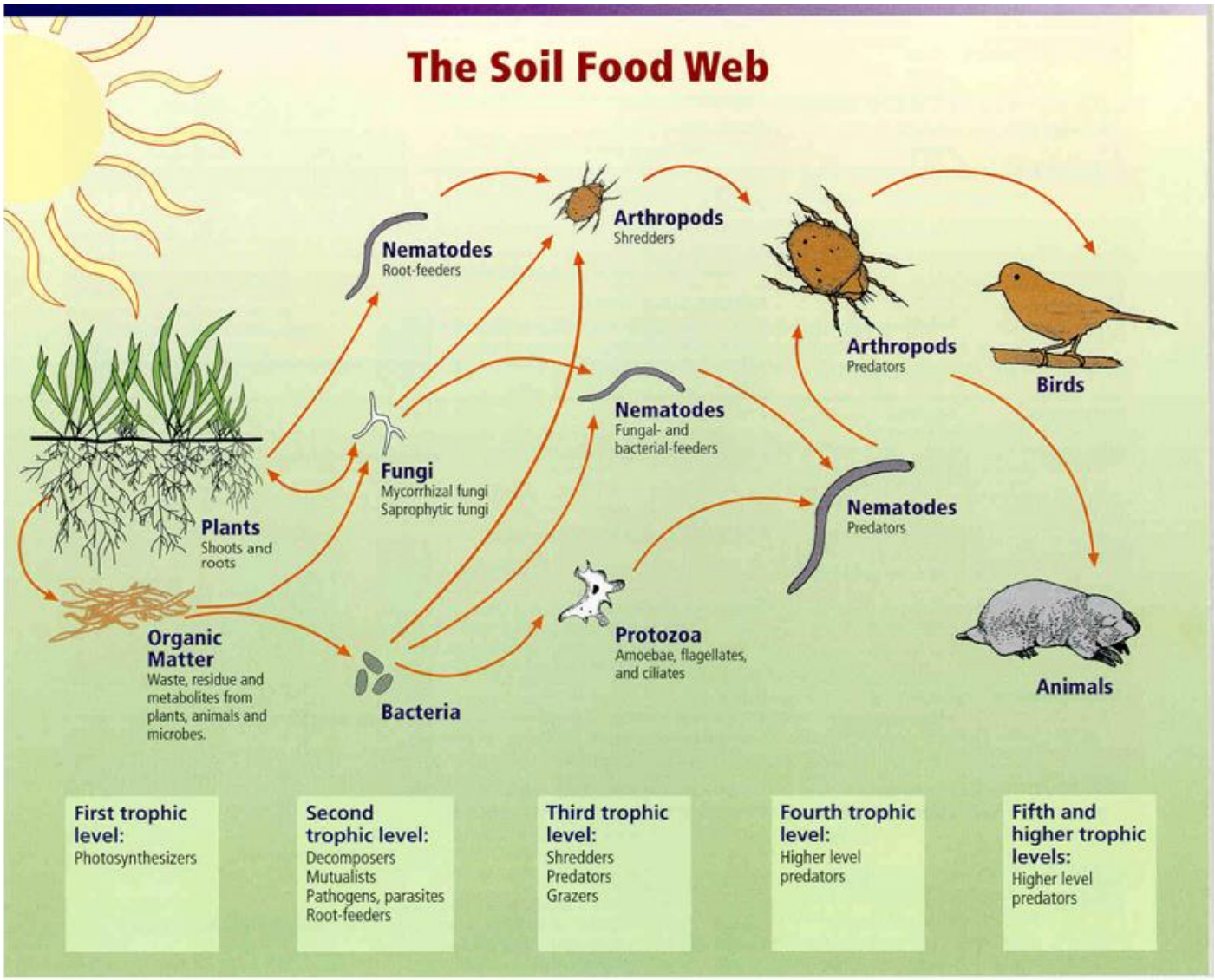
Producers	Consumers	Decomposers
Trees	Seals	Mushroom
Grass	Snake	House fly
Weeds	Spiders	Bacteria
Pond algae	Mongoose	Snail
Sea slug	Mosquitoes	Earthworm

4. **Show** examples of food chains and food webs
    - Search and use internet examples
    - Create a presentation using the images provided in this 'Teacher Supporting Resource: Food chain and food web images' later in this document.
5. **Explain** the important role of the producers, consumers and decomposers in each food chain and web.

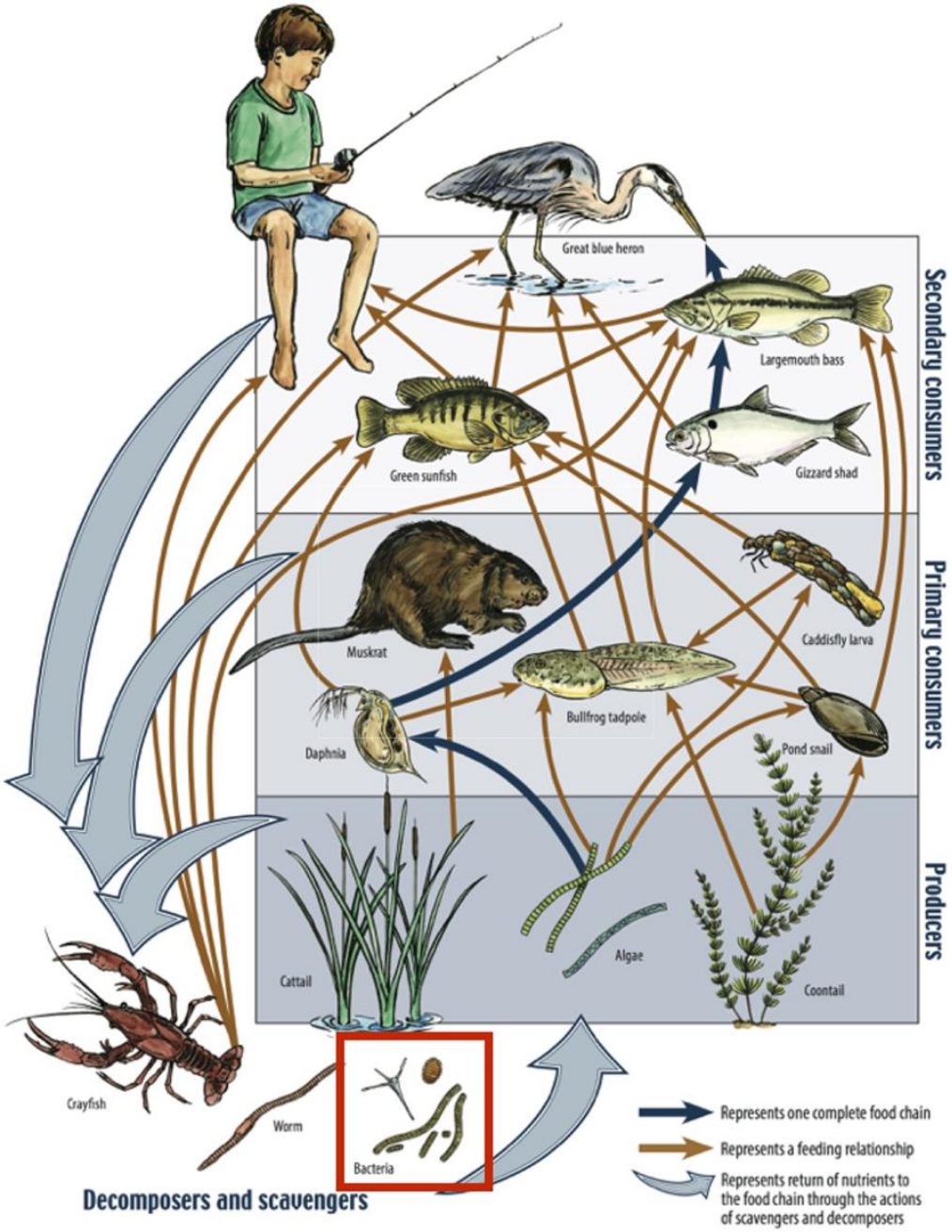
Activity 3: Researching and creating food chain posters

1. **Divide** the students into pairs or groups.
2. Each pair or group will **develop their own food chain**:
    - Support students by allowing pairs to choose how many producers and consumers to include in the food chain, with a minimum of 1 producer, 2 consumers and 1 decomposer. Encourage students to select local organisms.
    - If internet access is available, this site is a useful starting point for research: https://education.nationalgeographic.org/resource/food-chain/
    - Using butchers paper, each pair will draw relevant diagrams and pictures to show the relationships between the different organisms in their food chain.
3. Each pair will **present their findings** to the class, explaining the different relationships between producers, consumers and decomposers in their food chain.
4. **Display** the posters on the classroom wall.
5. **Extension**: Ask the class to identify any connections between the different food chains, and whether any are from the same ecosystem and might form food webs.

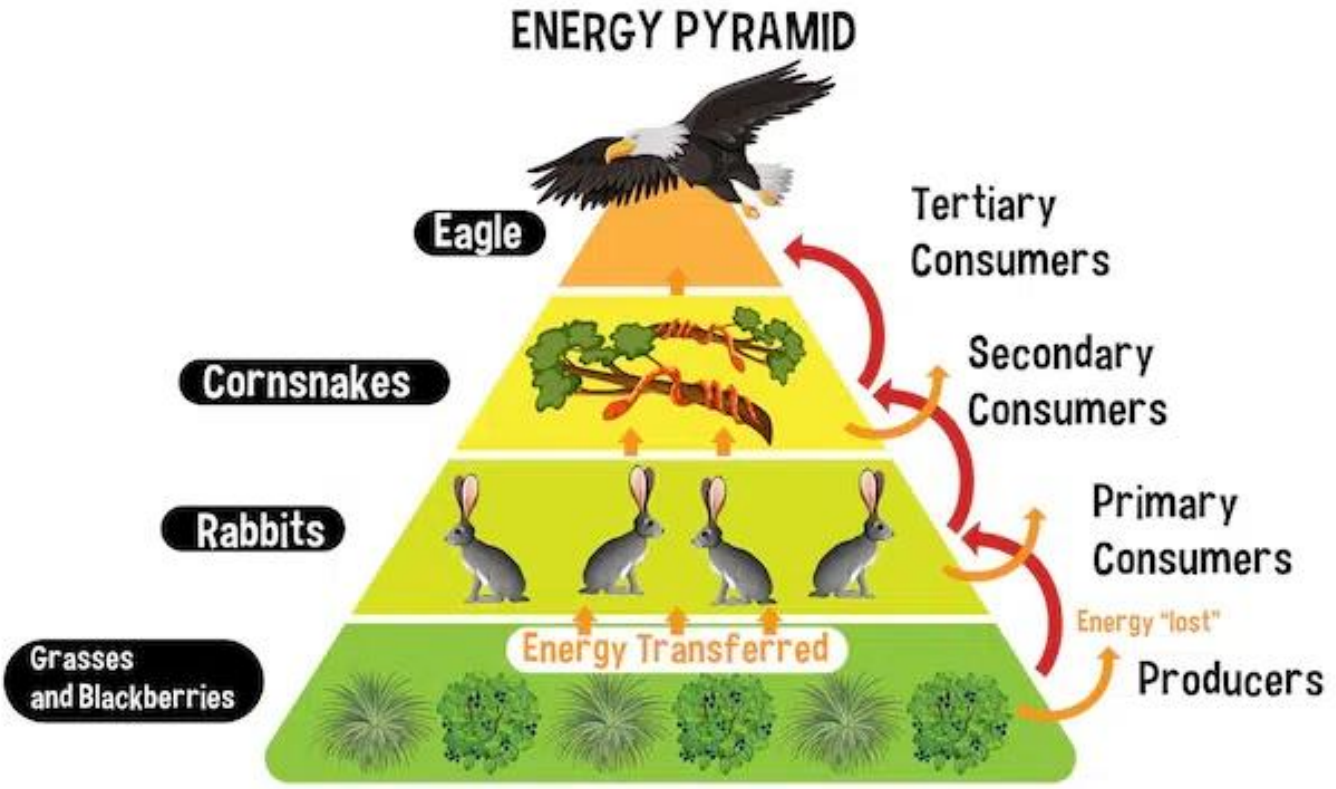
Teacher Supporting Resource: Food chain and food web images



Relationships between soil food web, plants, organic matter, and birds and mammals
Image courtesy of USDA Natural Resources Conservation Service
http://soils.usda.gov/sqi/soil_quality/soil_biology/soil_food_web.html.



Credit: Kestin Schulz, Mariya W. Smit, Lydie Herfort and Holly M. Simon. Courtesy of the Missouri Department of Conservation



Credit:https://upload.wikimedia.org/wikipedia/commons/4/40/Aquatic_food_web.jpg Geeks for Geeks

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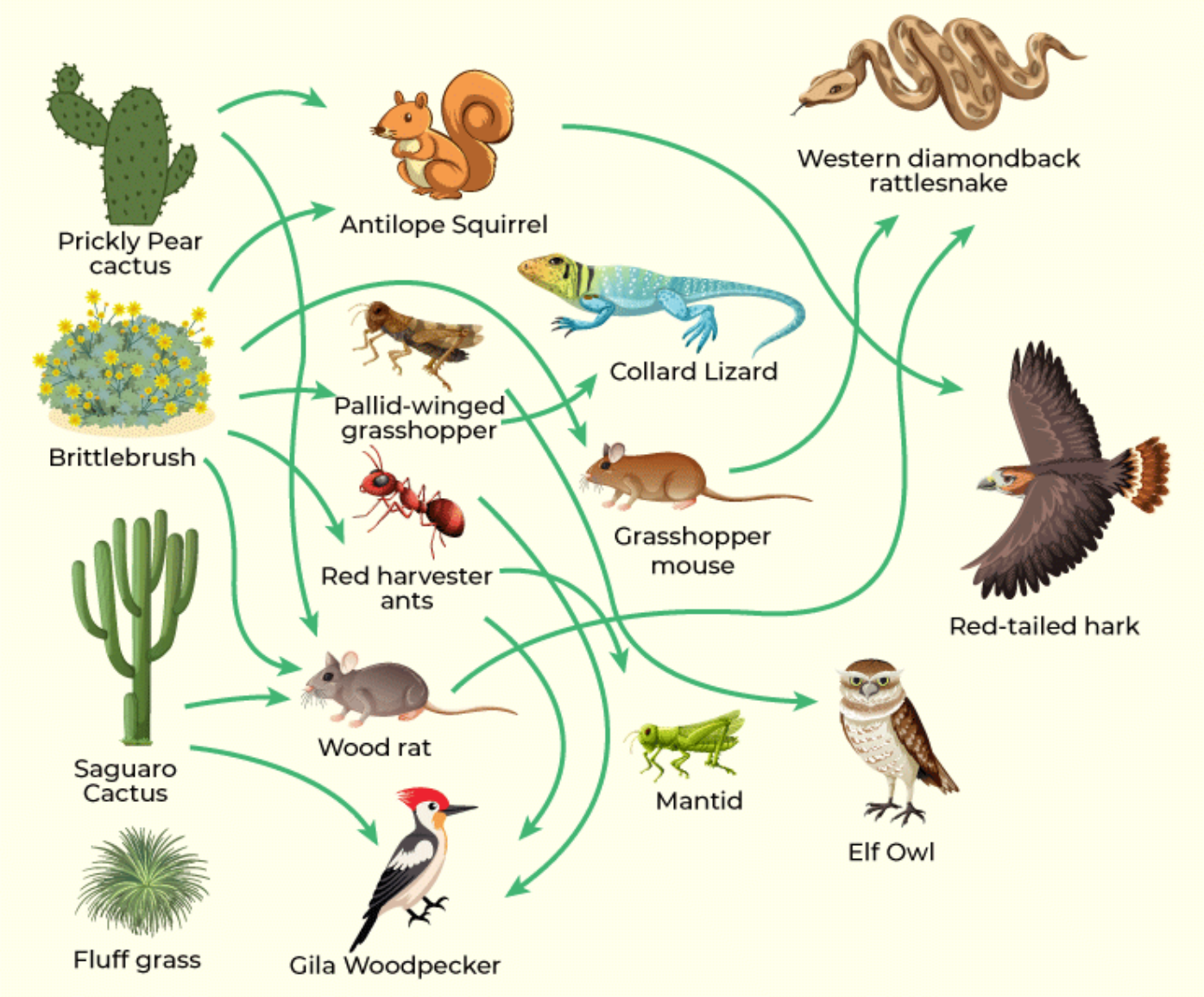

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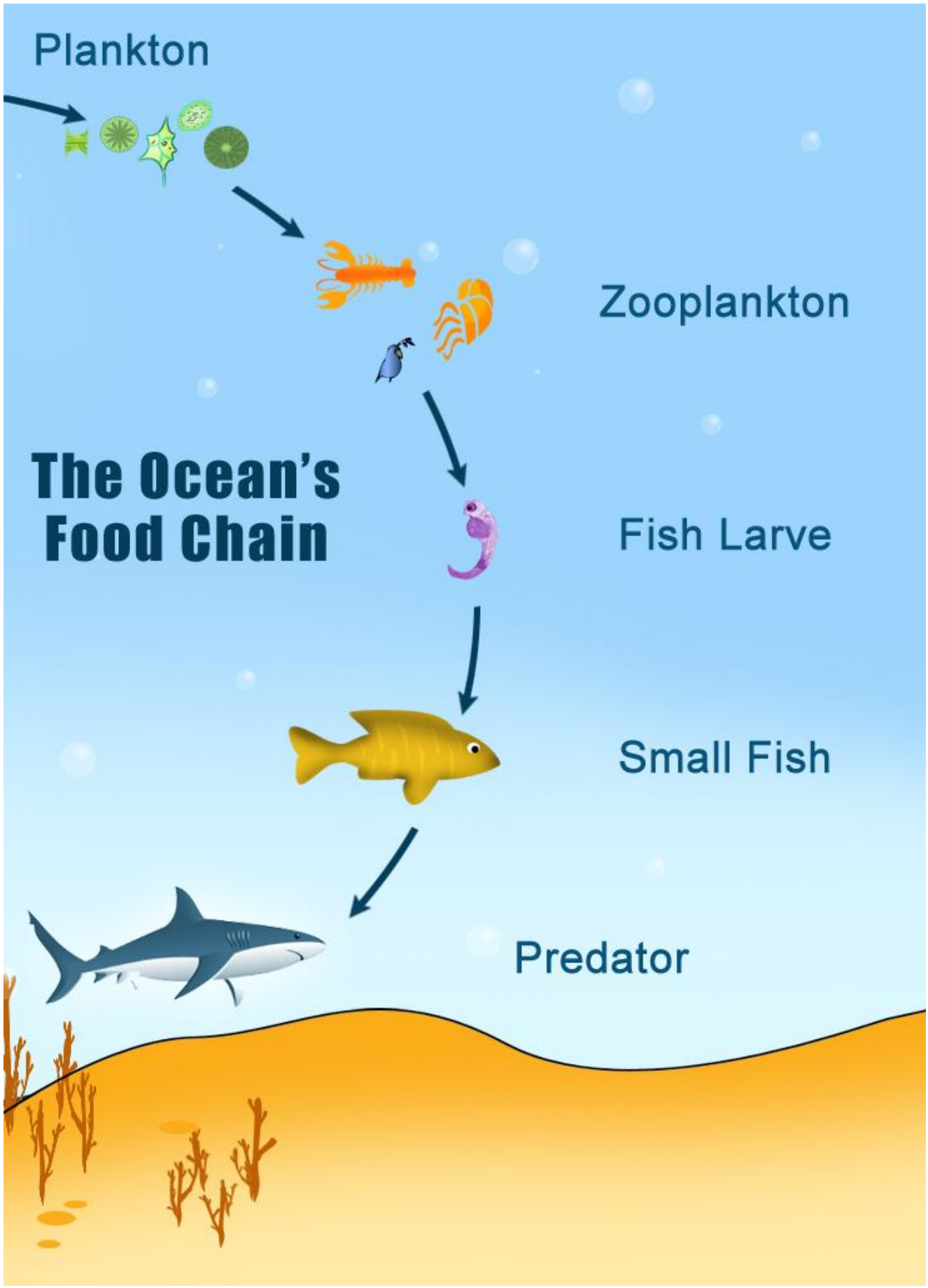

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