
CHALLENGE
YOURSELF
"Never give up, Never quit!"

THE ENVIRONMENT

UG TRB ZOOLOGY

CLASS 1

TOPICS FROM CLASS 6 TERM 3

Professor Academy

In this class,

- The Environment - Ecosystem
- Food chain and food web
- Waste management and Recycling
- Solid waste management
- Pollution and types

THE ENVIRONMENT

- The surroundings or space in which a person, animal, or plant lives - Everything that surrounds us.
- **Two main components:**
  - **Abiotic factors (non-living):** sunlight, air, water, minerals in soil.
  - **Biotic factors (living):** plants, animals, bacteria, etc.
- **Organisms** constantly interact and adapt to their environment.

The Ecosystem

- Community of living and nonliving things that work together.
- Each part plays an important role.
- Environmental changes (e.g., increased temperature, heavy rains) affect ecosystems greatly.
- Ecosystems are of two types:
  - Natural ecosystems
  - Artificial ecosystems

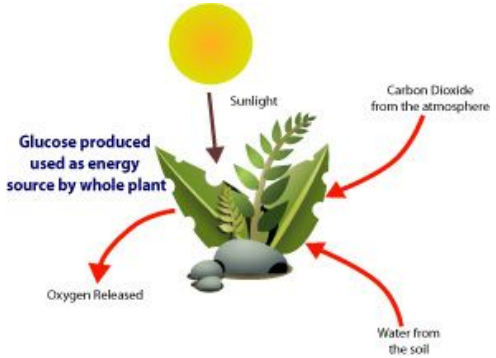

GARDEN
MANAGED FORESTS
GREENHOUSE
HYDROPONICS
AQUARIUM

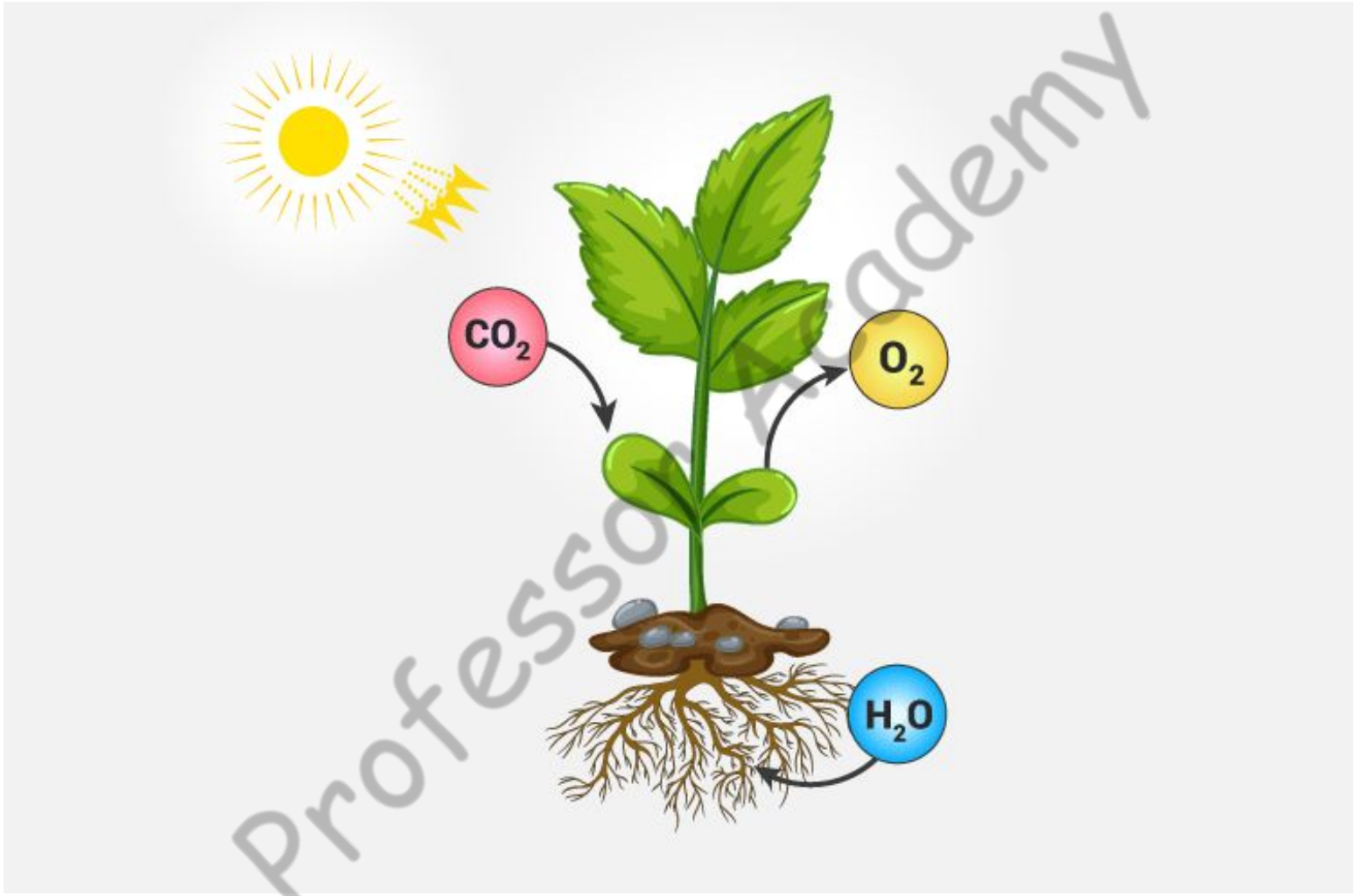
Food Chain and Food Web

- All living organisms need food for physiological activities.
- Some organisms produce their own food; others depend on others for food.
- Feeding mechanisms in ecosystems:
  - Producers
  - Consumers

Producers

- Organisms that produce their own food (**autotrophs**).
- Do not eat other organisms.
  - Example: Plants.
- Plants prepare their food by **photosynthesis**.
- **Requirements for photosynthesis**: sunlight, carbon dioxide, and water.





Consumers

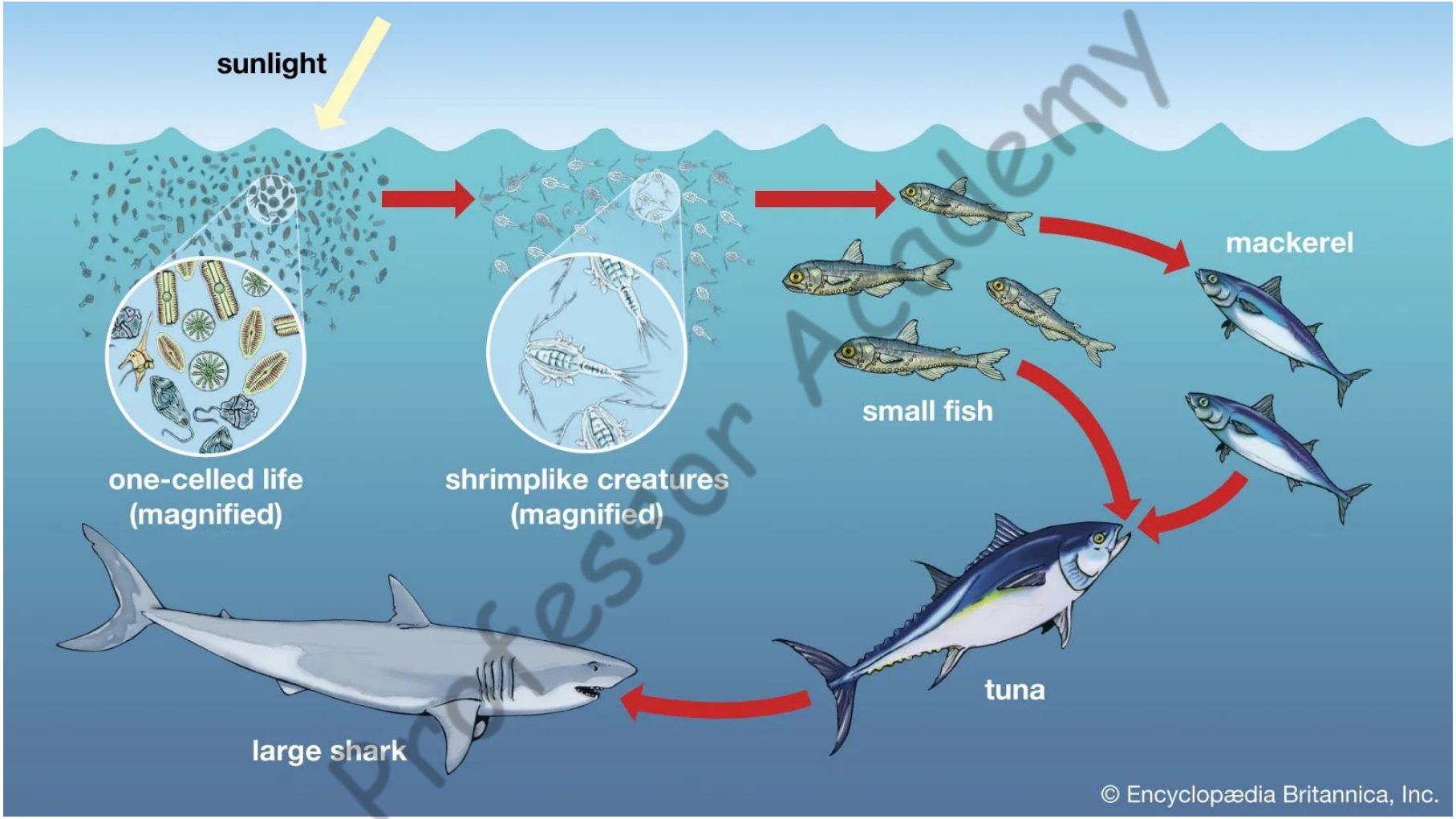
- Cannot produce their own food; depend on others.
- Also known as **heterotrophs**.
- All animals are consumers.
- Classified into groups based on their diet

Types of Consumers:

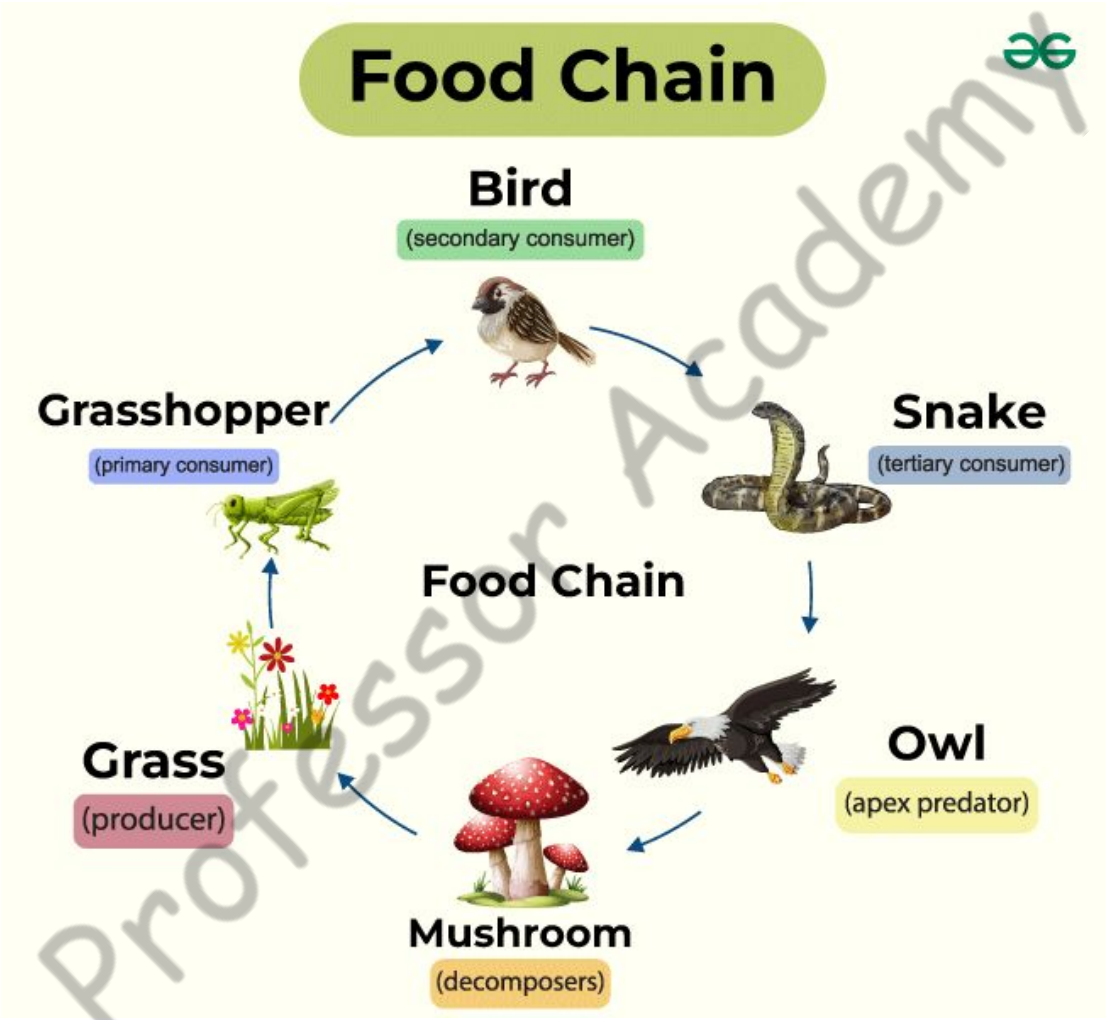
- **Herbivores**: Eat plants or plant products.
  - Examples: Cow, deer, goat, rat.
- **Carnivores**: Eat other animals.
  - Examples: Lion, tiger, frog, owl.
- **Omnivores**: Eat both plants and animals.
  - Examples: Humans, dog, crow.
- **Decomposers**:
  - Microorganisms that obtain energy from chemical breakdown of dead plants and animals.
  - Convert complex substances into simple ones absorbed by plants.
  - Examples: Bacteria, fungi.

Food Chain

- Describes **“who eats whom”** in an ecosystem.
- Shows flow of energy and nutrients.
- Examples:
  - **Terrestrial**: Grass → Deer → Tiger
  - **Aquatic**: Algae → Fish → Crane

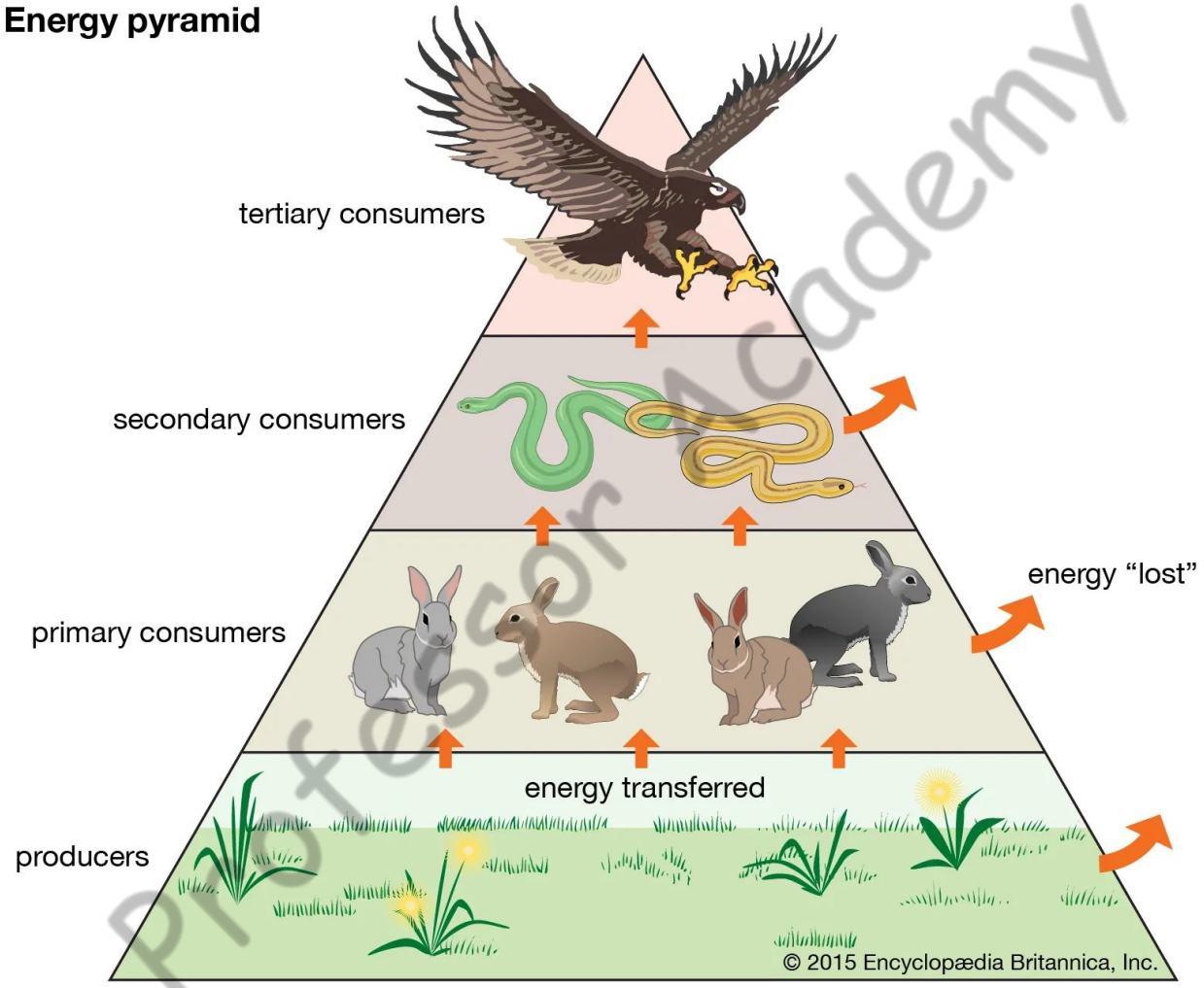


Food Chain



Energy Flow

- **Sun** is the main energy source.
- Energy flows from producers → consumers → decomposers.
- Only 10% of energy is passed to the next trophic level.
- Energy loss is shown using an Energy Pyramid.
- Top predators (e.g., tiger, alligator) have no natural enemies.



Trophic Levels

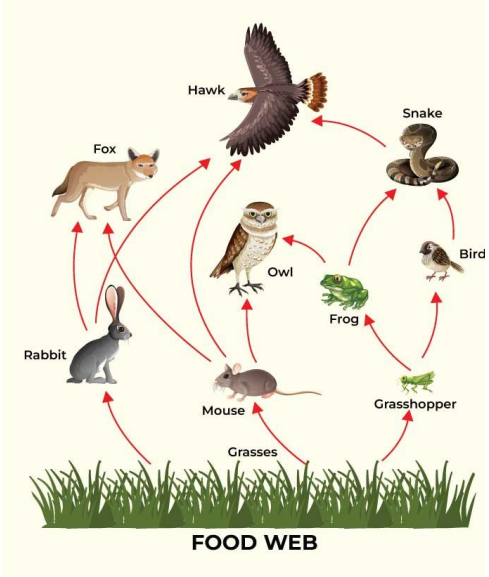
- **Producers**: Plants
- **Primary consumers:** Herbivores
- **Secondary consumers:** Eat herbivores
- **Tertiary consumers:** Eat secondary consumers
- **Quaternary consumers:** Top predators

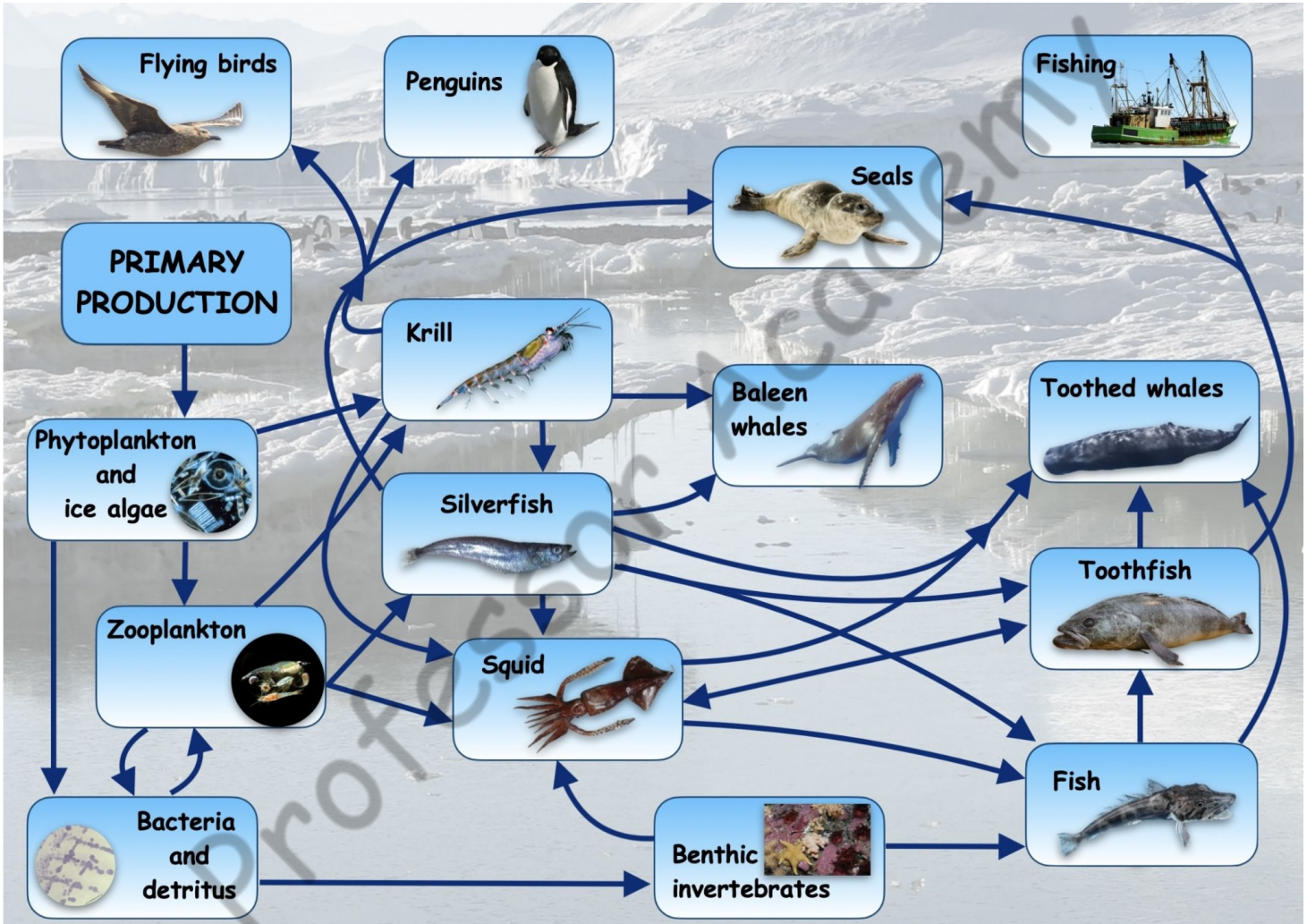
Importance of Food Chain

- Explains feeding relationships in ecosystems.
- Shows energy flow and nutrient cycling.
- Helps track pollutants through food levels.

Food Web

- Interconnected food chains within an ecosystem.
- Shows how consumers have multiple food sources.
- Reflects the complexity of feeding relationships.





Waste Management and Recycling

- Waste = any unwanted material (solid, liquid, gas).
- Improper disposal pollutes ecosystems.
- **Types of waste:**
  - **Liquid**: Drains, sewage
  - **Gaseous**: Factory emissions
  - **Solid**: Garbage, plastics

Biodegradable Waste

- Decomposed by natural agents (water, oxygen, microbes).
- Examples: Fruit peels, food waste, leaves.
- Enriches soil with nutrients after decomposition.

Non-Biodegradable Waste

- Cannot be decomposed naturally.
- Examples: Plastic bottles, metals, glass, cans.
- Persist for thousands of years → cause pollution.

SEGREGATE YOUR WASTE

NON-BIODEGRADABLE / DRY WASTE

- Paper / Plastic / Wood
- Fabrics / Cloth rags
- Metals
- Glass
- Rubber / Rexin / leather
- Thermocol

BIODEGRADABLE / WET WASTE

- Cooked food (veg. / non-veg.) including egg shells, bones
- Uncooked food (veg. / non-veg.) including fruit & vegetable peels
- Fruit and flower waste fallen leaves and other compostable materials
- Kitchen waste


Non-Biodegradable Waste

Solid Waste Management

- 3R’s – Reduce, Reuse, Recycle
- Avoid: Stop using unnecessary materials.
- Avoid packed foods & disposable plastics.
- Reduce: Use durable goods; print less; share materials.
- Reuse: Cloth bags, glass bottles, rechargeable batteries.
- Recycle: Make new items from waste (e.g., paper, mats).
- Compost: Convert organic waste to natural fertilizer.
- Incinerate: Burn medical/toxic waste safely.
- Landfill: Bury non-recyclable waste, later convert to parks.

Waste Separation (SWM Rules 2016)

- Segregate waste into:
  - Biodegradable
  - Non-biodegradable
  - Domestic hazardous
- Never burn or dump waste in open areas or water bodies.
- Hazardous waste: CFLs, batteries, expired medicines, syringes.

Pollution

- Pollution = contamination of environment by harmful substances.
- Pollutants: Substances that cause pollution.
- Types of Pollution:
  - Air
  - Water
  - Land (Soil)
  - Noise

Air Pollution

- Caused by burning fossil fuels (coal, oil, petrol, gas).
- Other causes: Factory smoke, aerosol sprays, burning waste.
- Leads to acid rain, harming soil, plants & animals.
- Prevention:
  - Use bicycles/public transport.
  - Avoid burning waste & fireworks.

Water Pollution

- Caused by sewage, industrial effluents, fertilizers, pesticides, dumping waste.
- Polluted water spreads diseases.
- Prevention:
  - Don’t pour chemicals/oil into drains.
  - Reduce chemical fertilizer use.
  - Reuse water for gardens.

Land (Soil) Pollution

- Caused by:
  - Excess fertilizers/pesticides.
  - Industrial waste, mining, plastics, electronics.
  - Polluted soil contaminates food and water.
- Prevention:
  - Reduce waste; recycle.
  - Never litter or burn waste.

Noise Pollution

- Caused by loud vehicles, music, fireworks, machinery.
- Effects:
  - Stress, hearing loss, sleep disturbance.
  - Affects animals' communication.
- Prevention:
  - Turn off unused electronics.
  - Lower volume levels.
  - Avoid unnecessary honking & fireworks.