# Food Chains

## Introduction

# Food Chains

**All living things depend on each other to survive. Food chains are a way of showing how the energy from food moves from organism to organism.**

Food chains always start with a **producer** - they create their own food from sunlight. Producers are eaten by **consumers** and consumers are eaten by other consumers.

### Examples:

Phytoplankton → Shrimp → Mackerel → Grey seal

Seaweed → Sand eels → Whiting → Bottlenose dolphin

Seaweed → Sea urchins → Crabs → Cuttlefish

Phytoplankton → Mussels → Starfish → Herring gull

Food chains are made up of organisms that get their food in different ways. As previously described, producers make their own food usually from sunlight. These are then eaten by consumers. Consumers can be broken into different categories separated by <u>what</u> they eat.

**Herbivores** only eat plants.
**Omnivores** eat both plants and animals.
**Carnivores** only eat other animals.

These can be divided again by <u>how</u> they get their food.
**Prey** are animals that are eaten by another animal.
**Predators** are animals that get their food by killing other animals.
**Scavengers** eat what they can find, including dead animals.

Within food chains animals can be both predator and prey.

| Producer | Consumer<br>Prey | Consumer<br>Predator<br>Prey | Consumer<br>Predator |
|---|---|---|---|
| **Phytoplankton** → | **Shrimp** → | **Mackerel** → | **Grey seal** |

Food chains interlink and overlap with each other. This is called a **food web**. Understanding these food webs can help us to understand the effects of many things on the environment including pollution, habitat loss and species extinction.

**Further research keywords**
Ecosystem, pyramid of numbers, photosynthesis, biomagnification, bioaccumulation, mercury in fish, trophic level, apex predator, autotroph, keystone species.

30 - 45 mins

# Find the Food Chain

**Equipment required**

- Copies of cards S_FC_1 (1 to 6), one per group
- Arrows (3 arrows per group - could print or create arrows with chalk)

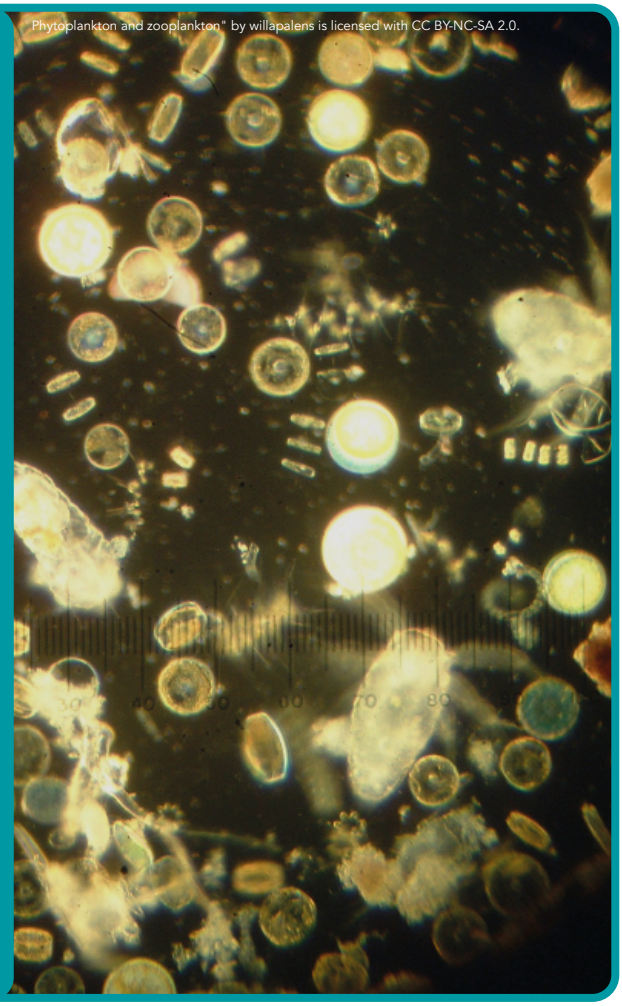
## To complete the activity

1. Either split the class into groups of four, or complete the activity as a whole class, with four learners holding the photos and the whole class deciding where they should stand.

2. Place or draw three arrows on the floor with gaps in-between. Give out the four photos from that food chain, and support learners to put them into the right order.

3. Support learners to complete the six different food chains included based on UK marine species.

Phytoplankton




Shrimp


Mackerel


Grey seal


Sand eel


Bottlenose dolphin


Seaweed


Whiting

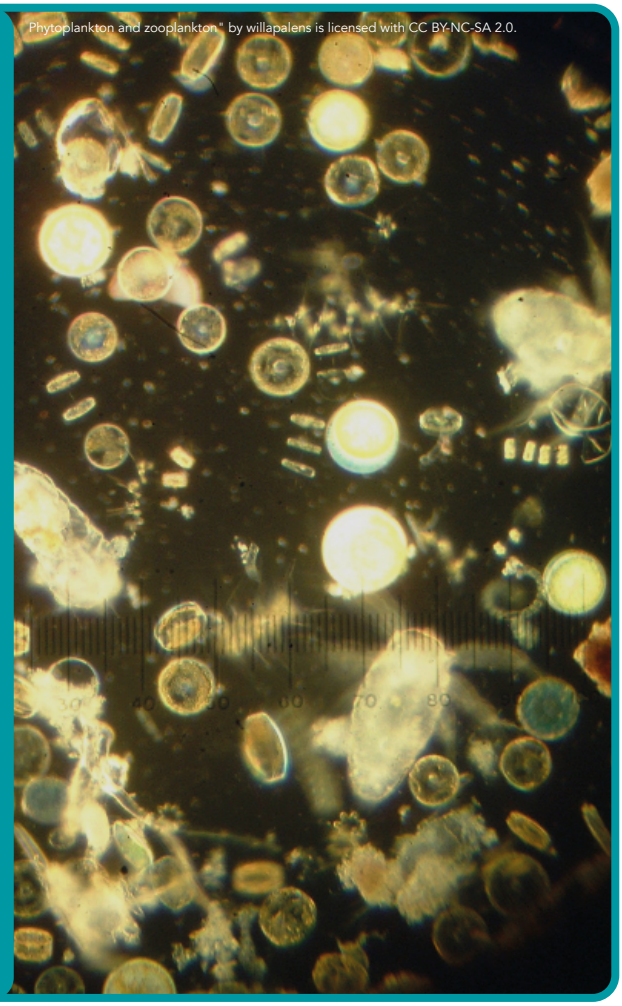
Seaweed


Sea urchin


Crab


Cuttlefish

Phytoplankton




Mussel


Starfish


Herring gull

## Seaweed


## Sand eel


## Puffin


## Great skua

Algae


Limpet


Wrasse


Bull huss

15 - 30 mins

12

# Predator vs Prey

**Equipment required**

- Print out of tokens in S_FC_2, one per group
- Something to mark out the game area and the safe zone

## To play the game

1. Set out the whole game area and the designated 'safe' area - this is the prey's habitat and they cannot be caught there because they are adapted to it and can find safe niches to hide in.

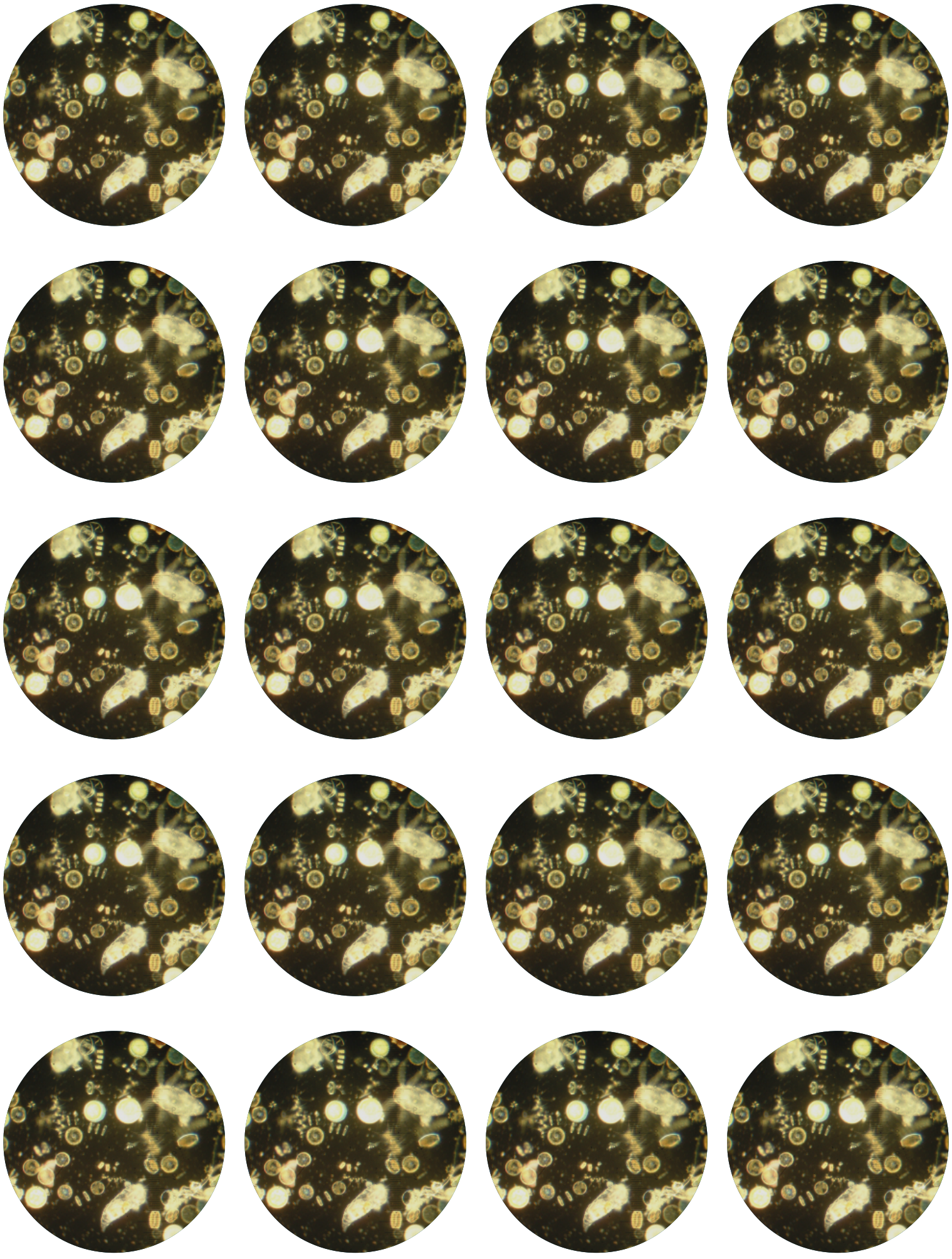
2. Distribute the plankton food tokens throughout the game area.

3. Select 2 - 4 learners to act as predators. The rest of the learners are the prey.

4. The aim is for the learners to collect as many plankton tokens as possible. They have to avoid being 'eaten' (tagged by the predators).

5. Set a timer for the game play and then start the game. The predators run around trying to tag the other learners. If caught by a predator, the learners move to the side and sit until the end of the timer.

6. Once the timer is up, ask all the 'prey' that survive to come together and count their plankton food tokens. The one with the most tokens wins. Encourage learners to collect at least 3 tokens, to demonstrate that the animals must leave their safe hiding places to feed otherwise they would starve.



60 mins




# Make a Food Chain

**Equipment required**

- Print out of the 'Make a Food Chain' worksheet, one per learner
- Pencils or pens
- Books / resources
- Internet enabled devices and internet access for independent research

## To complete the activity

1. Introduce the idea of food chains to the class and share some examples. This could be done using the other two activities within the topic.

2. Introduce the idea of independent research and explain all the sources available.

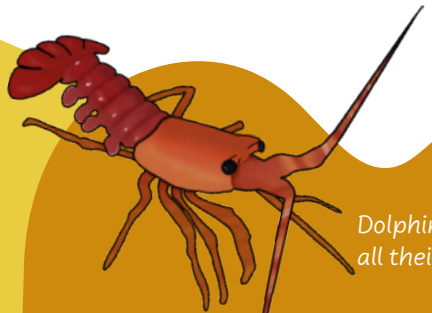
3. Encourage learners to research potential food chains in the marine environment.

4. Ask learners to share their examples with the rest of the class. The lesson could be expanded by creating class food webs from any species in the learners' food chain examples that overlap.

# Make a Food Chain

**Find out about food chains in the sea.**

*Use the boxes below to draw in the plants and animals you have found out about to create two food chains. Write the organism's name and whether they are a herbivore, carnivore or omnivore.*



Dolphins don't need to drink. They get all their water from their food.