



POPULATION (3.3),
HABITAT (3.4) &
NICHE (3.5)



POPULATION (3.3)

Population

- All the individuals of the *SAME* species that live in the same place at the same time

Community

- All the individuals of **DIFFERENT** species that live in the same place at the same time

Why do we care?

◦ Looking at the types of species that live somewhere and how many of each there are can tell you a lot of information!

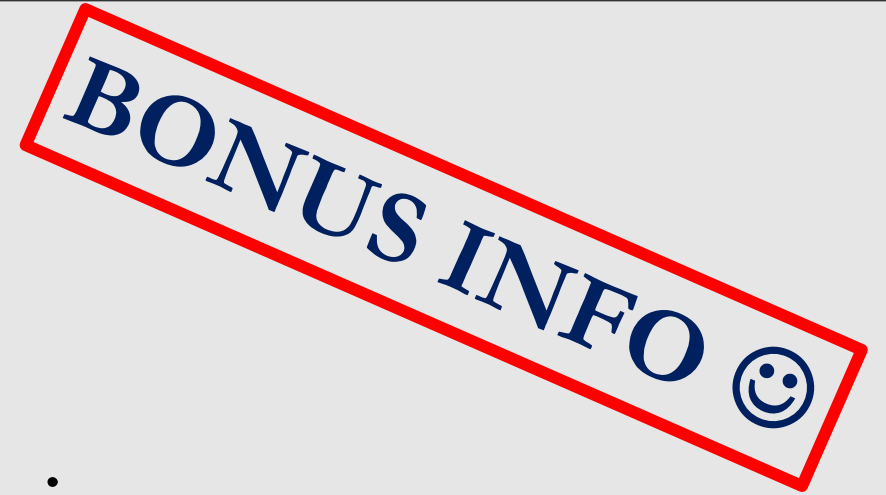
Why do we care?

- Comparing the size of a population in different places can help you figure out which habitat is best

Why do we care?

- Examining how the size of a population changes from season to season or year to year helps you understand how fragile the species is

How is it measured?



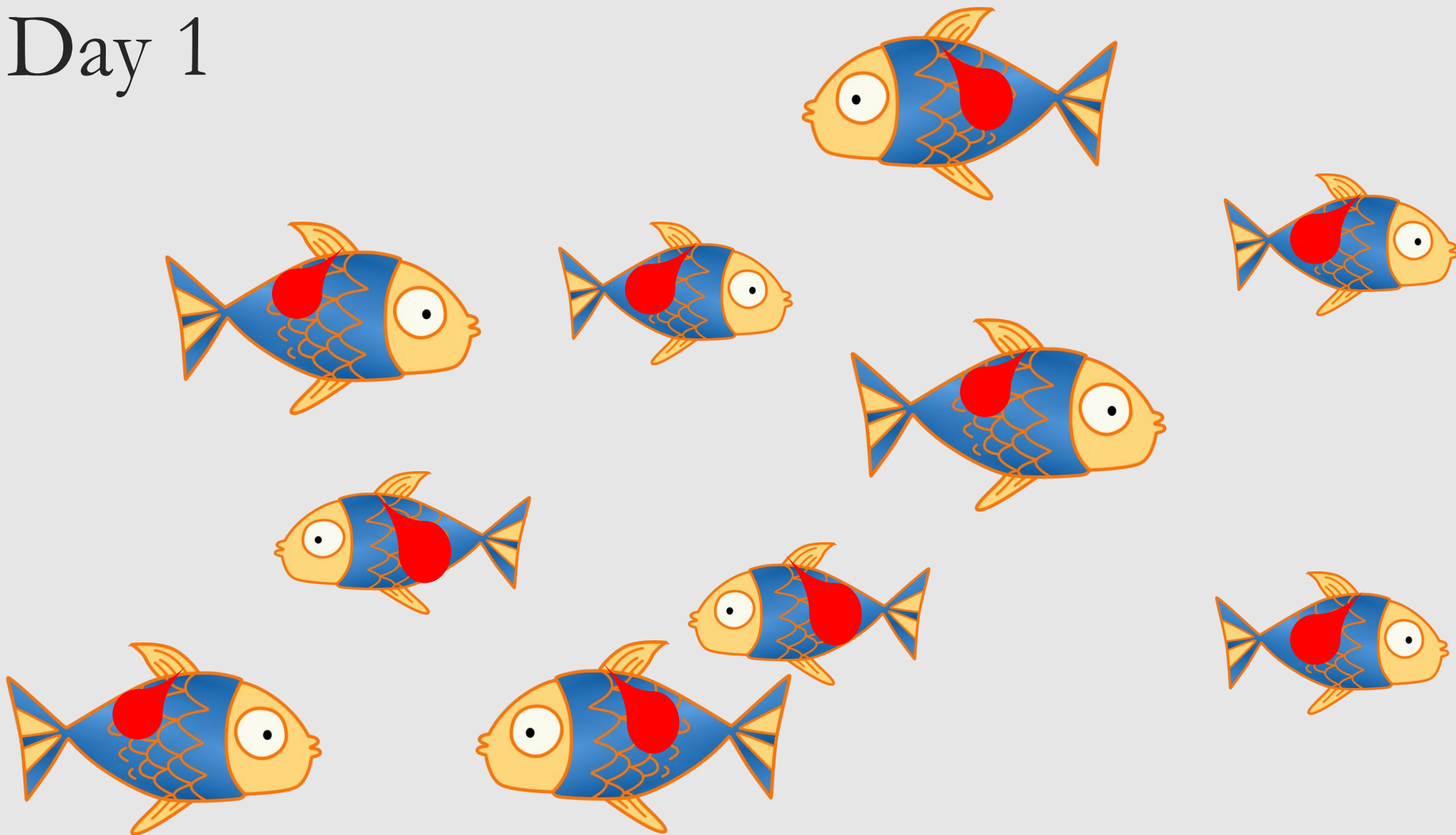
- 1) Count all of the individuals in an area
- 2) Approximation – count a sample and then extrapolate

How is it measured?

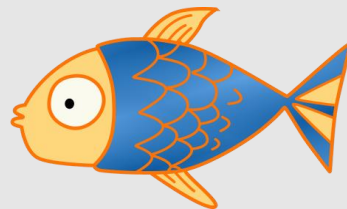
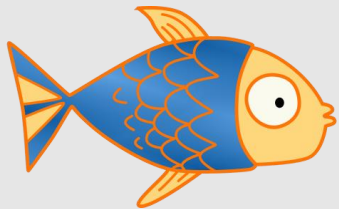
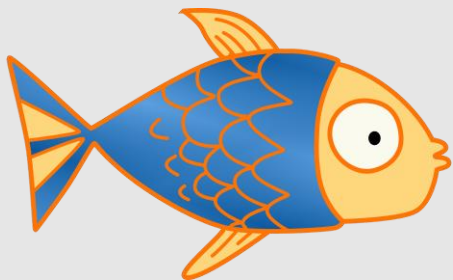
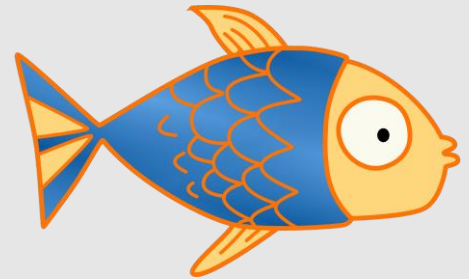
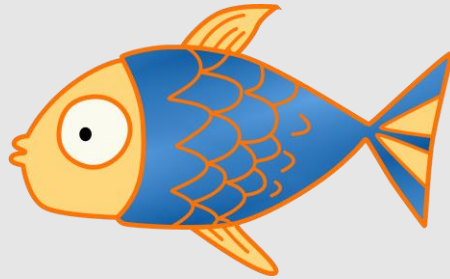
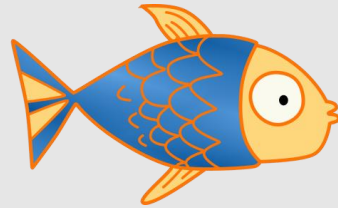
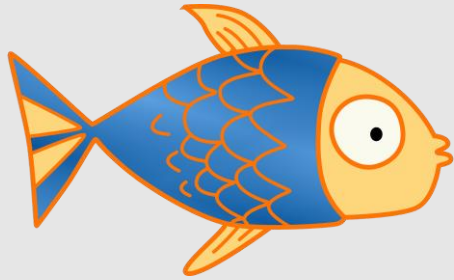
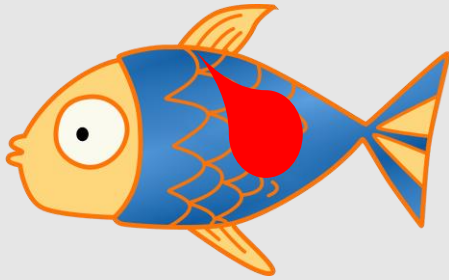
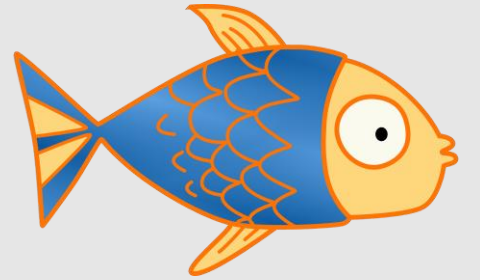
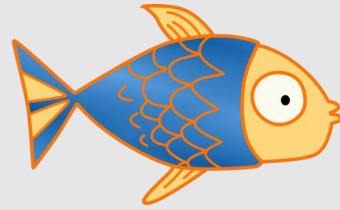
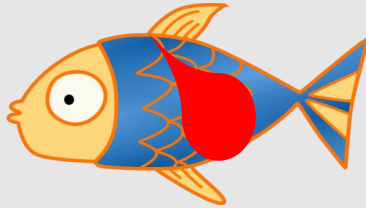
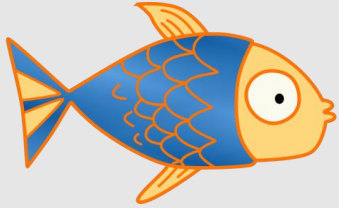
Catch and release

- Catch some animals and then tag them
- Then come back and catch a bunch of animals and see how many are tagged vs not tagged

Day 1



Day 2



Estimating Fish Population

10 tagged fish originally

2 out of 12 fish tagged

$$12 \times 5 = ?$$

$$12 \times 5 = 60$$

$$\frac{10}{?} = \frac{2}{12}$$

The diagram shows the proportion $\frac{10}{?} = \frac{2}{12}$. A blue arrow labeled "x5" curves from the number 10 in the numerator to the number 2 in the numerator. Another blue arrow labeled "x5" curves from the question mark in the denominator to the number 12 in the denominator.

Approximately 60 fish in the lake!

How is it measured?

Sample size

- Divide habitat into a grid
- Count the number of plants in one square
- Multiple based on the size of the habitat

13



3



8

Estimating Tree Population

Calculate average of trees in a square

$$\frac{(13 + 8 + 3)}{3} = \frac{(24)}{3} = 8$$

Estimating Tree Population

Multiply average by number of squares

$$= 8 \times 40$$

$$= 320$$

Approximately 320 trees in the forest!

Workbook

p.90-91





HABITAT (3.4) &
NICHE (3.5)

Can a polar bear live in the desert?



No!

Habitat

- Every species has different needs in order to survive
- **Habitat:** the specific place where a species is normally found that gives it all the conditions necessary to live

Characteristics of Habitat

- Geographic location
- Climate
- Relief (mountains, valleys, etc)
- Other animals
- Other plants
- Presence of water
- Closeness to human structures
- etc

Why are habitats important?

1. They are needed so that animals of the same species can meet in order to reproduce
2. Shelter
3. Food and water
4. To be in a climate to



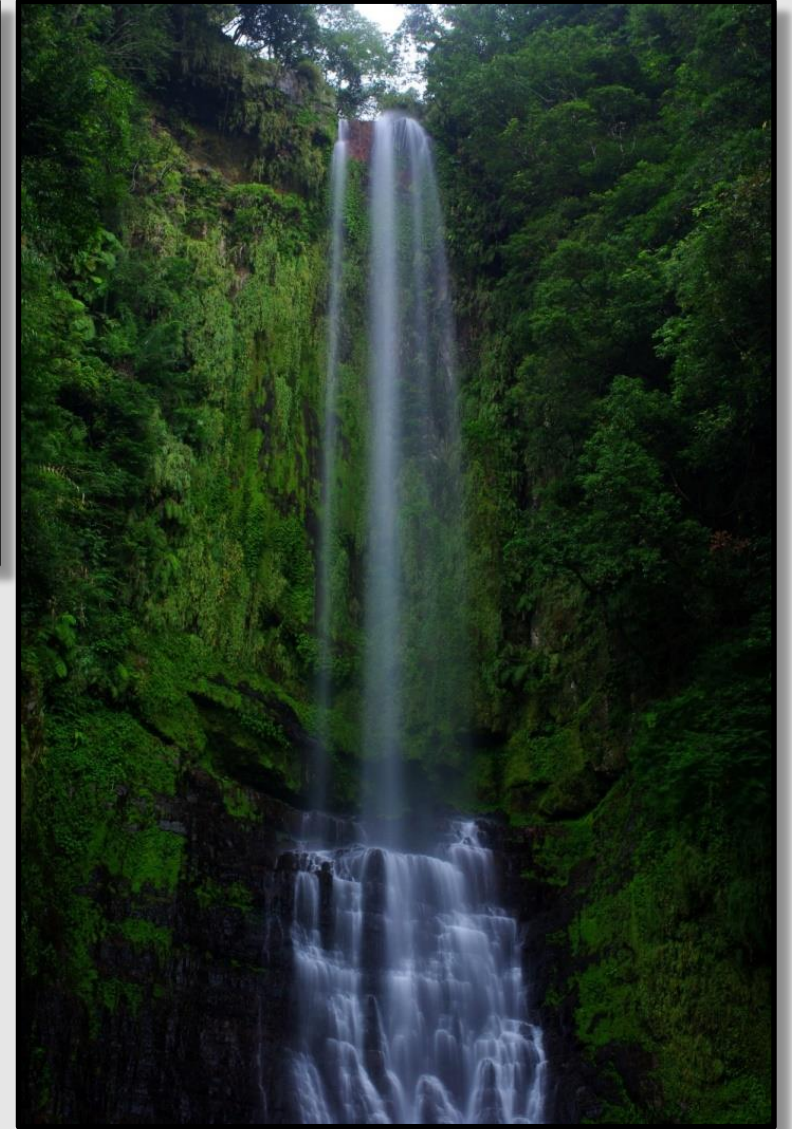
Types of Habitat

◦ Terrestrial



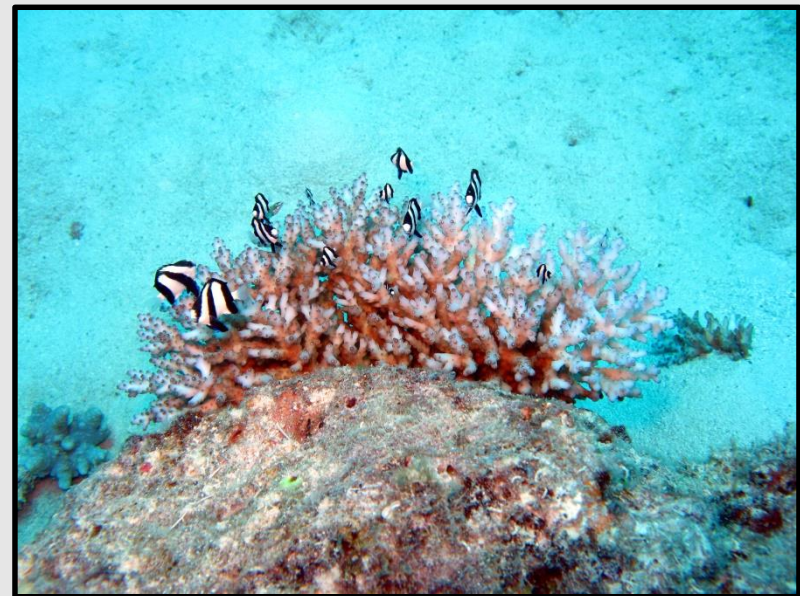
Types of Habitat

- Freshwater



Types of Habitat

◦ Marine



Ecological Niche

- Ecological niche is the **role and position** a species has in its environment:
 - Its daily **routine and sleeping patterns**
 - What it **eats**
 - Where it builds its **shelter**
 - How it **survives (hunt? gather? parasite?)**
 - How it **reproduces**

Think of it like this...

See p. 95 for example

- **Habitat:**

- Organism's home

- **Ecological niche:**

- Organism's lifestyle



Workbook

p.92-94

p. 97-98

