

# How do scientists study plant populations in the field?

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## Plant Demography

- Plant demography is the science of studying plant populations
- To study plant populations we mark all plants along a transect and then record survival, the size of the individuals, the number of fruits present, and any new recruits every year
- We are able to see how plant populations are doing: whether they are growing, staying the same size, or becoming smaller
- Demography can be done on many different plant and animal species to study their population growth rates!

# Plant Demography in Alaska

Watch 5min video:



## Video take-aways

Where can you do plant demography?

What are they doing to the plants?

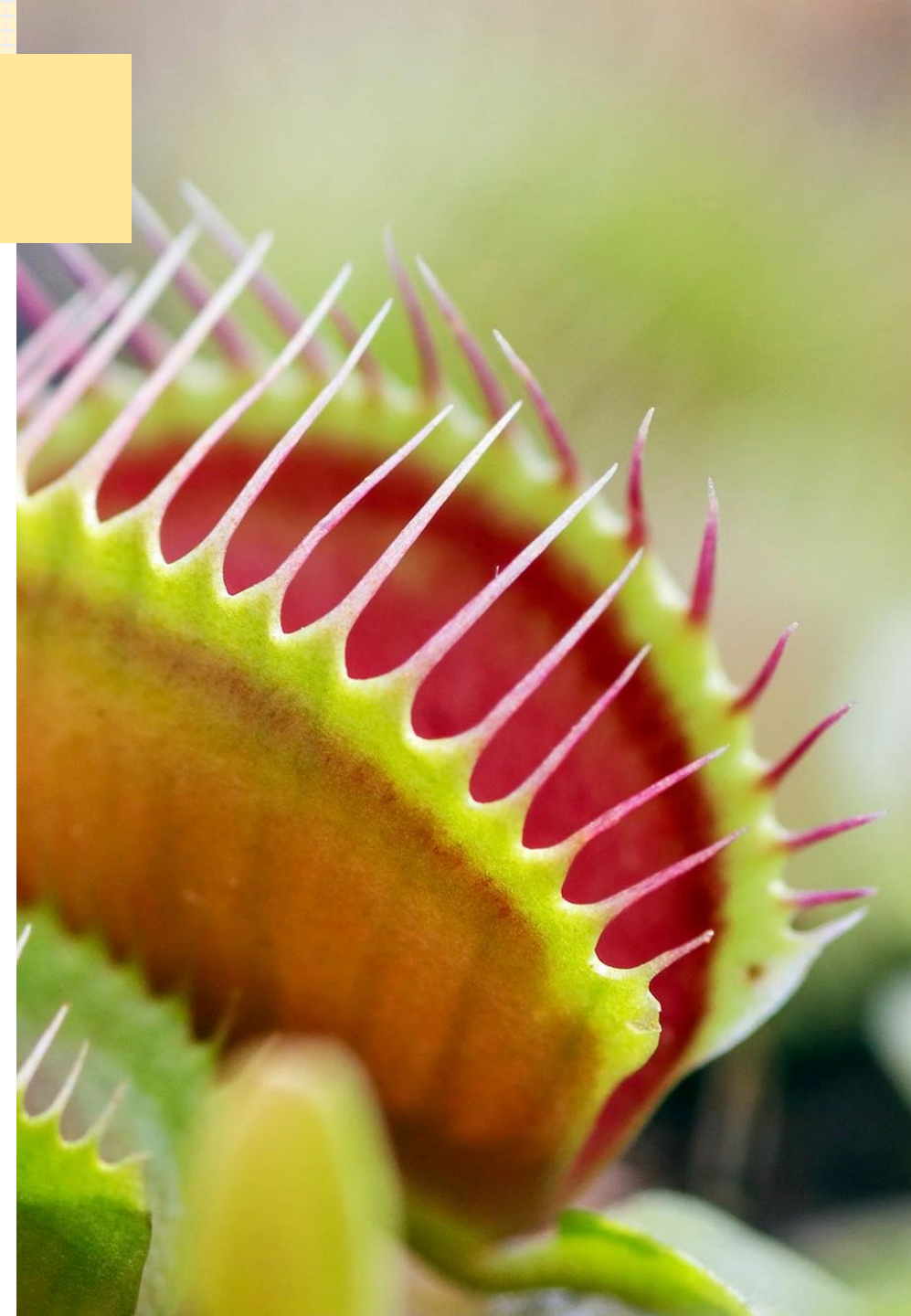
What different types of species can you study using demography?

Why is plant demography important?



## Plant demography close to home... with the Venus Flytrap (VFT)!

- The Venus Flytrap is only found in NC near Wilmington, and in a small area in South Carolina
- They grow in long leaf pine savannahs
- They are the only terrestrial carnivorous plant with an active snap trap
- The VFT traps have trigger hairs in them, and two of the hairs need to be touched at the same time in order for the trap to close
- Historically, the VFT have done well with frequent fires, which can burn away their competition
- We are studying them because they are a potentially threatened species in North Carolina
- They are threatened by habitat loss, poaching, and climate change etc.



# Activity Directions

- Pretend you are a plant demographer studying the Venus Flytrap populations on the Costal Plains of North Carolina.
- Each 'year' you will be collecting data. You will be going out into the field 3 'years' in a row and recording data about the population.
- Below are some slides representing the same quad of plants year after year, for 3 years. Each plant will be marked with its own unique color dot. This way you will be able to follow the same individuals year after year.
- Use the attached activity worksheet to record the number of leaves and the number of flowers that each plant has. This will be your demographic data.
- Using your demographic data, answer the questions at the end of the presentation.

## Activity worksheet

Year	Plant	Number of leaves	Number of flowers
1	red		
1	blue		
1	green		
1	yellow		
2	red		
2	blue		
2	green		
2	yellow		
3	red		
3	blue		
3	green		
3	yellow		
3	orange		
3	white		

# Year 1

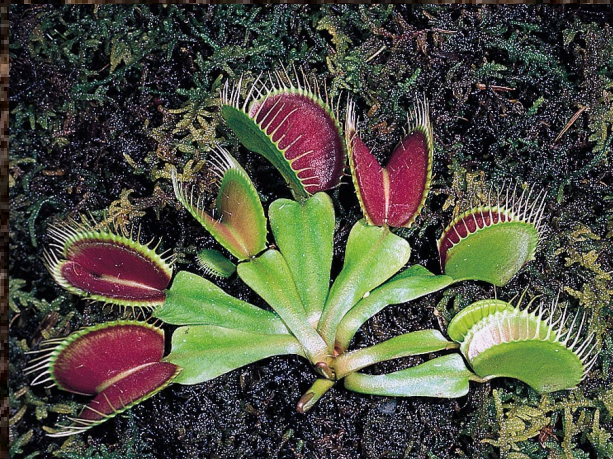
Lots of rain this  
year!





# Year 2

A fire happens this year!





# Year 3

There is a drought  
this year!





Year 4





# Questions

1. It was a very wet year in Year 1. How did the plants respond in Year 2?
  - a) Is rain very important for the Venus Flytrap?
2. There was a fire after you took the census in Year 2. Looking at Year 3, how did the plants respond to this fire?
  - a) Do you think management should focus on fire frequency and intensity?
3. If a drought happens during Year 3, what do you predict will happen to the plant populations in Year 4?
4. What do you think could happen to the Venus Flytrap population if drought were to become more and more common?



# Answers

1. The plants grew, and one of the plants flowered.
  - a) Water/ rain is really important for the Venus Flytrap populations
2. The plants grew, there is more flowering, and there were many new baby VFT individuals (called recruits). Fire could be good for the recruitment of new individuals as it burns away the above ground competition, while the VFT are tolerant to the fire.
  - a) Management should make sure that fires are frequent enough to maintain populations
3. With drought, you could expect some of the smaller individuals to die in Year 4 and the larger ones to not grow as much, or shrink in size.
4. With continued drought year after year, the Venus Flytrap population could seriously decline





# The future?

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- Given climate projections we are able to predict how the VFT populations might fare in the future.
- With climate change, drought frequency is expected to increase
- Studies like this can give us insight into which management practices might be best to conserve the populations of rare and threatened species

