Backyard Biologist

SCIENCE OLYMPIAD WORKSHOP 2020

PATRICK LYNCH

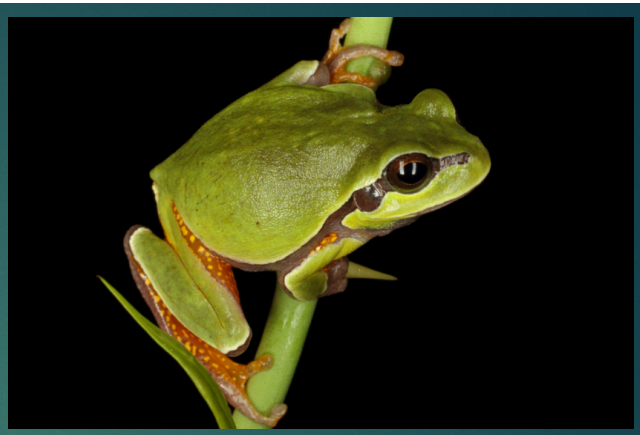
Hello!

- Patrick Lynch
- Park Technician for Wake County Parks. (Crowder and Historic Yate's Mill)
- Graduated NC State in Fisheries and Wildlife Biology, 2017
- Science Olympiad Champion at regional and State levels during high-school.
- Avid Fisherman and Hiker

The Event

- Teams of up to 2 people
- Station based question format; 2 minutes per station
- Each station different. No station will relate directly with another.

Format of Test



- Year of Trees, Amphibians, and Reptiles
- All questions based only on provided species list. (https://www.sciencenc.com/wp-content/uploads/BackyardBiologist2020.pdf)
  - Identification of organisms
  - Functions of animal adaptatio
  - Structure and function of plan
  - Lifecycles and characteristics
  - Terminology
  - Importance to ecosystems
  - Soil

Sample

Many Stations will have samples of the plants, or models of animals. Almost all will have pictures.

No station will ask the same questions or be about the same animal. No repeats.

Station 6

Match the leaves at this station with their trees.

18. Red Oak
19. American Beech
20. Tulip Poplar

A

B

C

21. I took this picture of trees with yellow leaves in November. They can be classified as:
    a. Deciduous
    b. Evergreen
    c. You can not tell from the picture

Sample question

- What is the name of this animal?
- Is this animal venomous?
- What does this animal eat?
- Does this animal give live birth? Yes or No.

Other types of Questions

- Comparisons, eg. "Which of the following are salamander eggs" or "Which pine tree has a bigger cone"
- Matching, eg. "Match each seed with its parent tree", or "Match the habitat type to the organism"
- Labeling, eg, "Fill in the missing life cycle stages" or "Fill in the corresponding part of this organism"
- True/False Questions.
- Questions are NOT designed to trick you, all should be taken at face value.

What to Bring

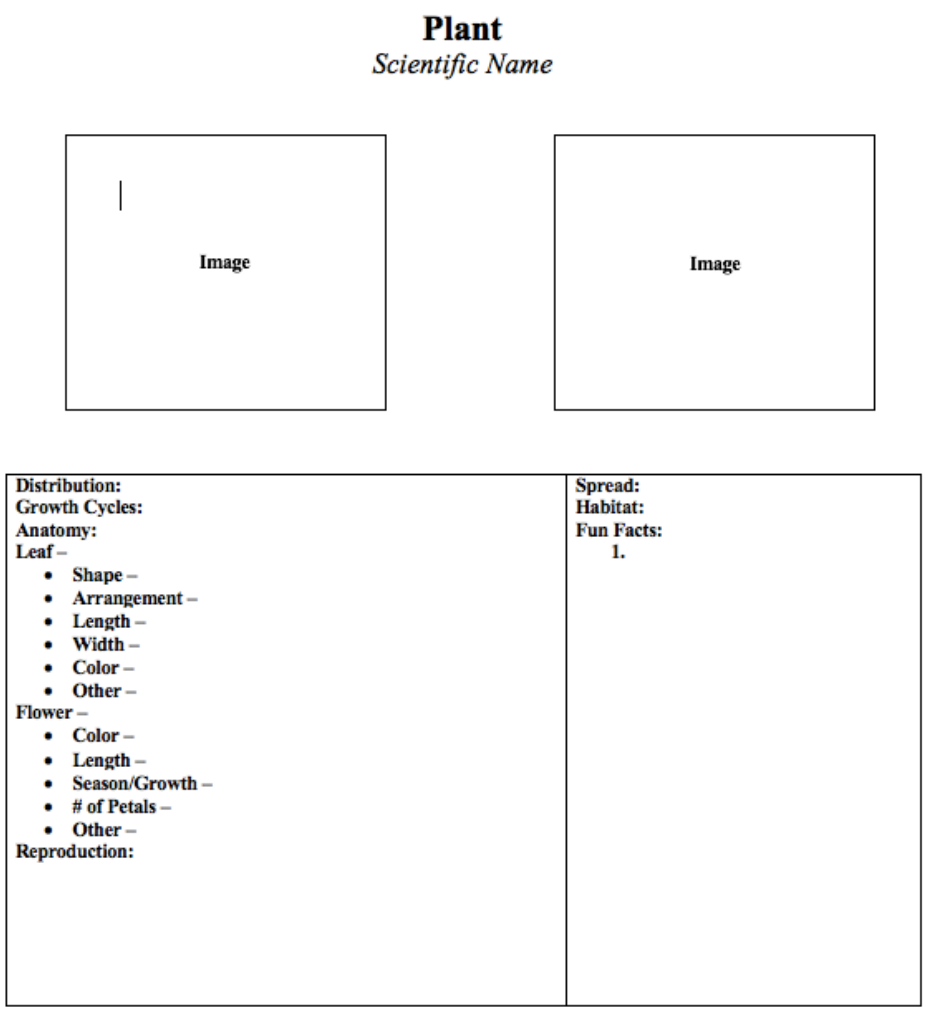
- Writing Utensil (Pencils!)
- 2 field guides, OR 2 1-inch, 3 ring binders. OR a mix of the two.
- This means 2 guides, or 2 binders, or a guide and a binder
- NO MODELS and NO LOOSE SAMPLES

Preparation Tips

- Make your own field guides/binders
- Samples in Binder (Must be in Sheet Protectors):
  - Leaves and Plant Samples are allowed
  - NO animals, models, rocks, or soil.
- Ask your students how **THEY** want to organize their
  - Alphabetical? Type of Organism?
- Students should create their own sheets
  - Allows students to learn while engaging with the material

Example Binder Page

- Have all pertinent information at a glance; wont have time for searching.
- Organization is key! Let students decide how to put together.



Plant

Scientific Name

Image

Image

Distribution:
Growth Cycles:
Anatomy:
Leaf –
- **Shape –**
- **Arrangement –**
- **Length –**
- **Width –**
- **Color –**
- **Other –**

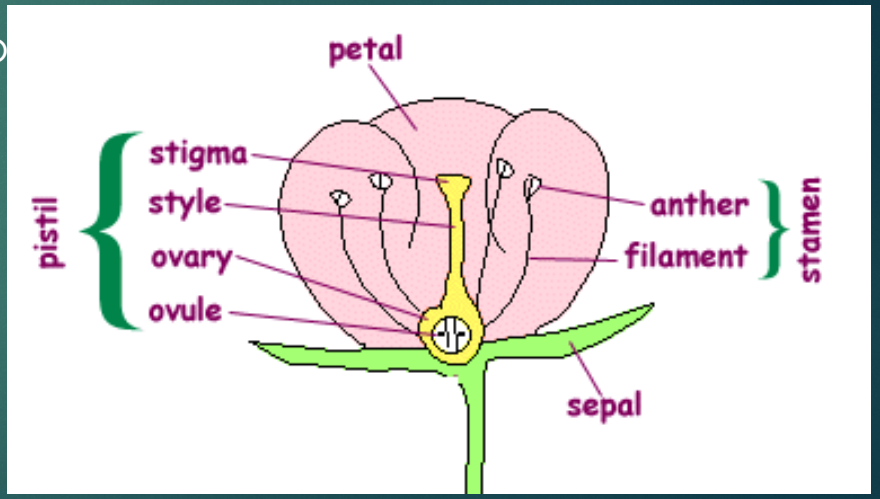
Flower –
- **Color –**
- **Length –**
- **Season/Growth –**
- **# of Petals –**
- **Other –**

Reproduction:

Spread:
Habitat:
Fun Facts:
1.

More Preparation tips

- Having a page of key vocabulary and terminology will be a benefit.
  - Examples include: Trophism types, plant structures, animal body parts, etc.
- Quick Reference Pages are important too
  - Ex. Picture of a flower with labeled parts
  - Ex. Picture of animal's life cycle
  - Ex. Comparison of similar species



Tips and Tricks

- Find samples now! Trees and plants are losing leaves as we speak!
  - Most can be found in any park or natural area. Make sure you can before removing any specimens.
- Experiment! Seeing something happen teaches more than hearing about it.
  - Ex. Grow a few pea plants with different conditions
  - no light, too much water, fertilizer etc.
- Take field trips! Get familiar with the organisms you are studying.
  - Wake county Parks offer free educational programs on many topics.
  - Many preserves and parks have "Tree Trails"
- Citizen Science! Great way to get students involved in the scientific process.

Citizen science oppurtunities

All found on NC Museum of natural sciences website. https://naturalsciences.org/

- Frogwatch USA, https://www.aza.org/frogwatch
- Natural North Carolina, https://www.inaturalist.org/projects/natural-north-carolina
- Neibhourhood Box Turtle Watch, https://naturalsciences.org/research-collections/citizen-science/neighborhood-box-turtle-watch

Handy Apps and Websites.

- North Carolina Wildflowers app=> Allows one to quickly ID plants in the field
- HerpMapper app=> Allows one to see what reptiles and amphibians are in your area.
- Herps of NC=> https://herpsofnc.org/. Great Resource for all your herpetological needs.
- "Find a plant" page from NCSU Extension website. Helps identify and compare different plants. https://plants.ces.ncsu.edu/find_a_plant/
- iNaturalist=> Open source database for flora and fauna of an area. Great way to see what to look for and getting help identifying specimens. https://www.inaturalist.org/

Educator Resources

- Project Learning Tree.=> Education curriculum for learning about outdoors and our environment. Lesson plans and curriculum are available as well as a network of educators happy to share ideas. Some curriculum cost money, but many individual lessons can be found for free other places online. https://www.plt.org/
- Project Wild=> Free resources and lesson plans based on aptitude level. Many to choose and use. https://www.fishwildlife.org/projectwild/project-wild
- Park Programs=> Wake county offers free programs at parks. Many other systems do as well. Check with your local park system for availability. http://www.wakegov.com/parks/events/Pages/default.aspx

Supplemental Resources

- Ecolibrary=> Online, free to use, database with pictures following themes. http://ecolibrary.org/Home

- N.R.I.D=> Great online resource to find local parks with specific species you are looking for. Also has free pictures of wildlife and plants. Only for Wake County however. http://nridwake.com/nrid/public.php

Wrap Up

- Get outside and ask questions
- Latin names will not be used on test. Only common names
- HAVE FUN TEACHING. If you make it fun, your students will have fun. (Not like this lecture)