

Conservation and Pumpkins Stations

Packet includes teacher instructions, station materials, student answer sheet, and teacher answer sheet key.

Teacher Instructions – Classroom Set-up

This station lesson works best if students can move throughout the room and utilize printed copies of station instructions with additional materials.

Print station materials (in this file) in the packet, cut cards, laminate materials (if desired), and collect all printed and supplemental materials (included in [station set-up and material list](#)) for each station. *Please note that depending on the number of students and classroom size, two or three of each station set up may be necessary.* Set up at least one of each six stations around the room with all necessary materials.

Print [student answer sheets](#) for the class and a [teacher answer sheet key](#) for your use.

During class, hand out student answer sheets, give directions to class of how and when they are to rotate to different stations, and divide students into small groups.

Teacher Instructions – Grading Recommendation

These stations are intended to be a student-led learning activity at the beginning of a unit. If you are grading stations, it is recommended that you consider giving points for 1) station engagement or participation 2) correct answers at certain stations such as Video, Reading, Vocabulary.

Additional Station Tips

- Keep student groups to 3-4 students per group.
- Give students 7-10 minutes at each station.
- Set a projected or visible timer so students know how much time they have at each station and when to move to the next station.
- Continue circulating throughout the room during stations to be available for questions or checking answers.

Teacher Instructions – Station Set-up & Material List

Day 1 Stations

These stations introduce topics and students will begin learning about pumpkins and associated conservation practices.

- Video

Place a device (laptop, iPad, etc.) at the station. The video for this station is on YouTube. Students will watch the video and answer the related questions.

Full URL:

https://youtu.be/8EwxlrJ_dZ4?si=GxfbQ4CN-j6hmNZ5

- Reading

Print 2-3 copies of the [article](#) so students can read independently at the station. The article can be found on the Crop Science Society of America website. Students will read the article and answer the related questions.

Full URL: <https://www.crops.org/news/science-news/pumpkin-production-can-benefit-conservation-practices/>

- Vocabulary

Place 1 or 2 sets of word and definition cards (included in this file) at this station. Students will pair the word with the correct definition and check with you for correctness.

Day 2 Stations

It will be helpful for students to have notes and introductory information from Day 1 stations before completing these stations.

- Model

Place a device (laptop, iPad, etc.) at the station. Key information for this station is found in the printed graphic (in this file) and a time-lapse video on YouTube. Students will review the materials and draw an accurate model of a pumpkin plant.

Full URL:

<https://youtu.be/yHaPDJCLCqM?si=yiWMKvePoUdgsqDU>

- Comparison

Place a device (laptop, iPad, etc.) at the station. The video for this station is on YouTube. Students will watch the video and draw on knowledge from the previous day of stations to answer related questions.

Full URL:

<https://youtu.be/K58bCncnNMQ?si=z3eghnTjelu1Ofn->

- Review

No additional materials beyond station information (in this file) are needed. Students will draw on knowledge from previous stations to answer the prompt.

Teacher Instructions - Stations Roadmap

<i>Station(s)</i>	<i>Learning Objective</i>	<i>Related AFNR Standard(s)</i>
Video & Reading	Students will be able to list at least two conservation practices utilized on pumpkin operations that can improve soil health, water quality, wildlife habitat, etc.	AFNR PS.03.04. Apply principles and practices of sustainable agriculture to plant production.
Vocabulary, Model, Comparison	Students will be able to recall at least three components and functions of pumpkin plants' flowers.	AFNR PS.02.02.05.a Identify and summarize the components of a flower, the functions of a flower, and the functions of flower components.
Review	Students will be able to describe the role of pollinators in pumpkin growth and production (when considering pumpkin flower structure and function) and the connection to conservation practices.	AFNR NRS.02.05 Communicate information to the public regarding topics related to the management, protection, enhancement, and improvement of natural resources.

Video Station - Instructions

Each student in the group will watch the video, [Habitat Tip: Pumpkins, Pollinators, and Great Habitat video](#) by Conservation Blueprint, and answer the questions from the cards on the answer sheet in the “Video” section.





1. Pumpkins are an example of produce that relies heavily on pollinators. The video focuses on what conservation practice that helps pollinator populations?

- A. Nutrient management
- B. Habitat establishment or enhancement
- C. Wetland establishment
- D. Buffer strips



2. One native pollinator that helps produce pumpkins is the:

- A. Leaf cutter bee
- B. Pumpkin bee
- C. Squash bee
- D. Honey bee



3. Key components of pollinator habitat include all but:

- A. Diverse habitat with a lot of flowering plants
- B. Consistent pesticide use
- C. Areas of bare, open ground
- D. Sunlight exposure on the ground



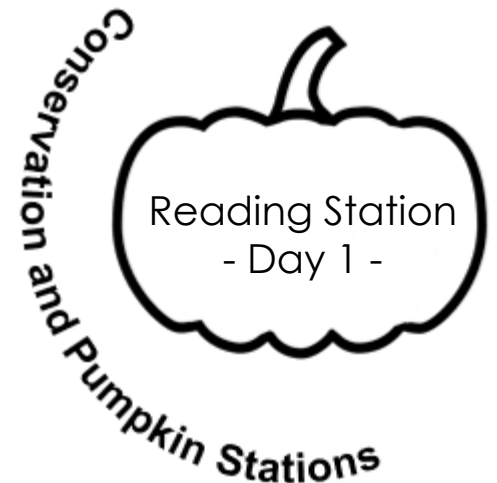
4. When planning a pollinator habitat project to support pumpkin farming operations, what question(s) should you consider?

- A. What is the cost of the project?
- B. What management activities (ie: prescribed burns) do you plan to apply?
- C. What is the target species?
- D. All the above

Reading Station - Instructions

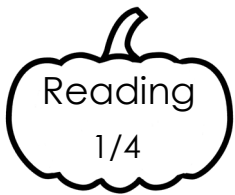
Each student in the group will read the article, [Pumpkin Production Can Benefit From Conservation Practices](#) by Susan V. Fisk, and answer the questions from the cards on the answer sheet in the “Reading” section.

Remember that answers will come directly from the reading passage.



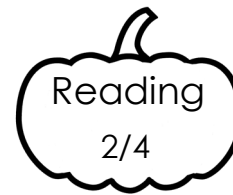
Reading Station - Article

Print several copies of [*Pumpkin Production Can Benefit From Conservation Practices*](#) by Susan V. Fisk to include at station.



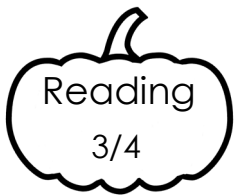
1. According to the article, what conservation practice(s) do vegetable growers in the Midwest not commonly use?

- A. Reducing tillage
- B. Using cover crops
- C. Fertilizing
- D. Both A and B
- E. Both A and C



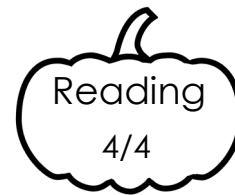
2. The study in the article supports that the conservation management used improved total **soil aggregation**. Soil aggregates are:

- A. Silt particles
- B. A type of fertilizer
- C. Unrecognizable fossil pieces
- D. Small particles of soil held together with a glue-like substance



3. This article focuses on these two conservation practices for a farming operations that grows pumpkins:

- A. Using cover crops and reducing tillage
- B. Reducing tillage and planting buffer strips
- C. Reducing tillage and irrigating
- D. Adding wind buffers and rotational grazing

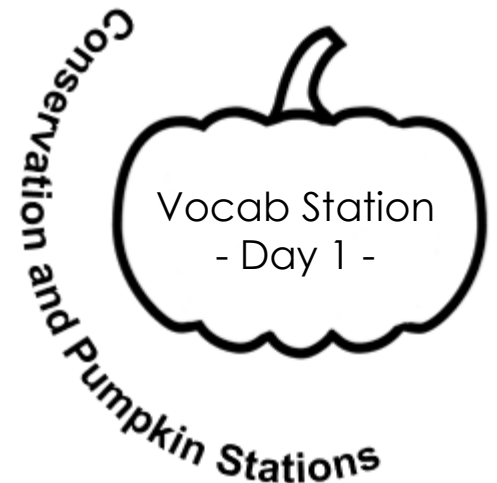


4. Write a summary statement of the article. The statement should be 2-3 complete sentences.

Vocabulary Station - Instructions

Students in the group will work together to match the word cards with corresponding graphic or definition cards. (See [Illinois Ag in the Classroom's Pumpkin Ag Reader](#) page 1.) Once the cards are paired, signal for the teacher to come and check the answers. Fill in definitions to vocabulary words on the answer sheet in the "Vocabulary" section.

Please shuffle cards before moving to the next station to reset the Vocabulary Station.



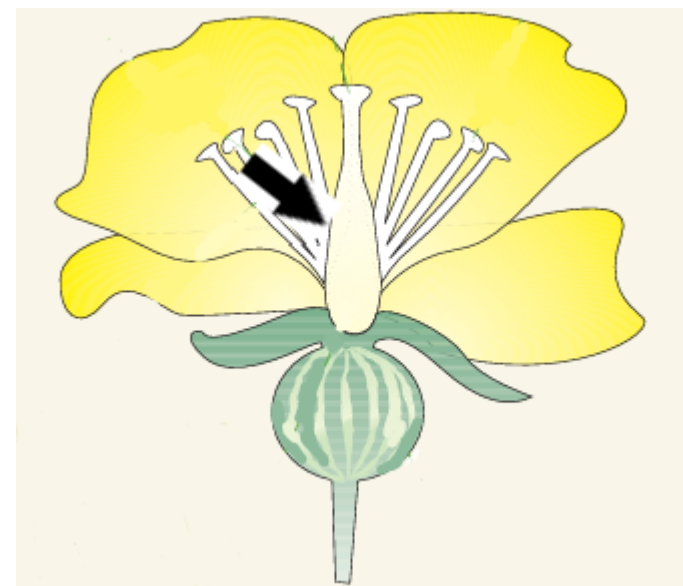
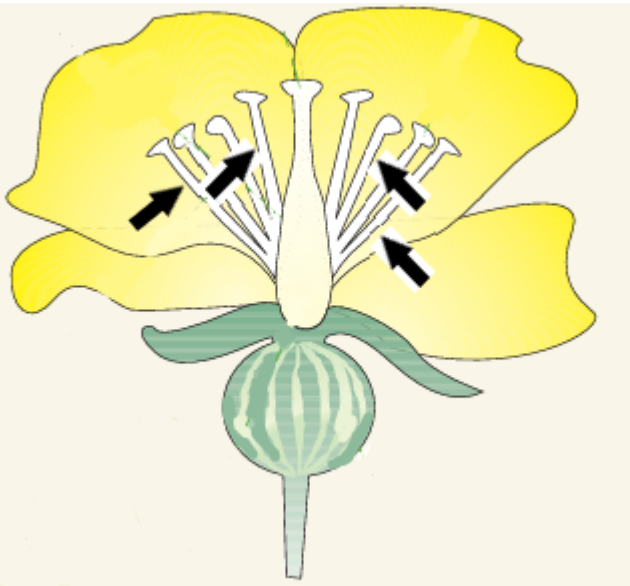
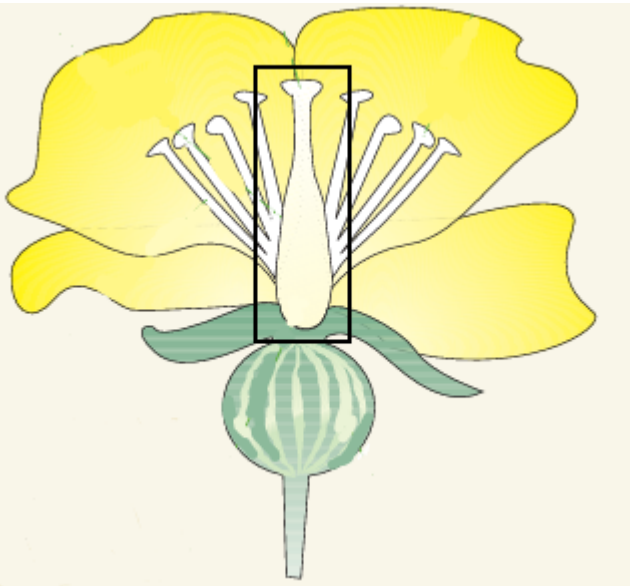
Vocab Station – Pumpkin Ag reader

Print several copies of [Pumpkin Ag Reader](#) by National Agriculture in the Classroom, Illinois Agriculture in the Classroom, and The University of Arizona Cooperative Extension.

Pistil

Stamens

Stigma

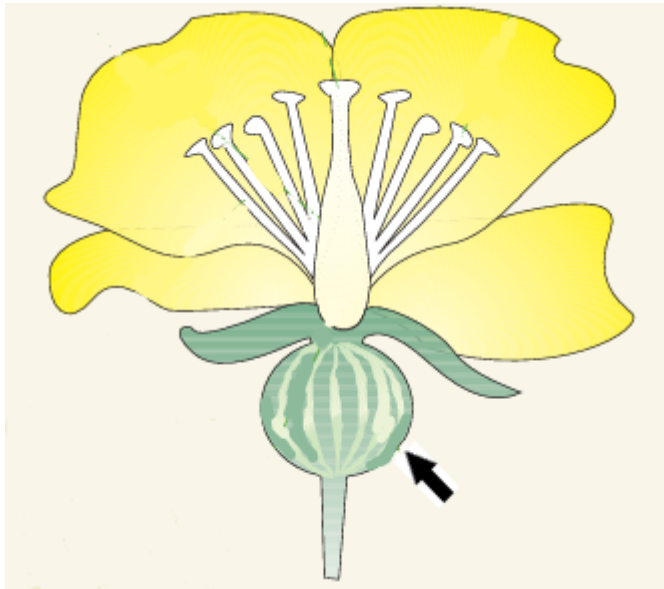


Pollen

Pumpkin

Ovules

Yellow powder
made by **stamens**



Tiny egg cells at the
bottom of the **pistil**

Vine

Long flexible stems that trail or creep along the ground or climb by clinging to a support with tendrils or clasps

Blossom

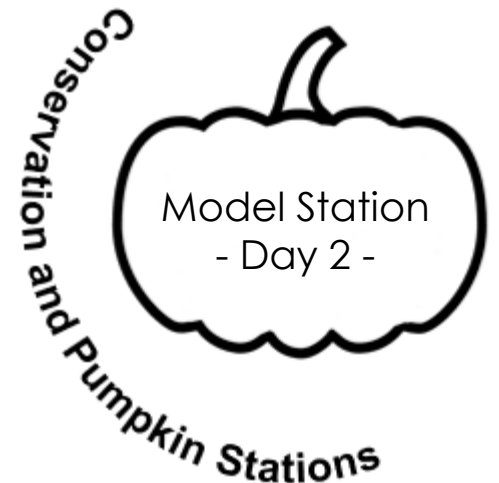
Flower of the plant that will turn into the pumpkin

Pollination

Transfer of pollen from the **anther** (from **stamen** of a male flower) to the **stigma** (from **pistil** of a female flower)

Model Station - Instructions

Each student in the group will review the supporting materials and draw a simple sketch that illustrates an accurate model of a pumpkin plant and include labels for key structures in the “Model” section.



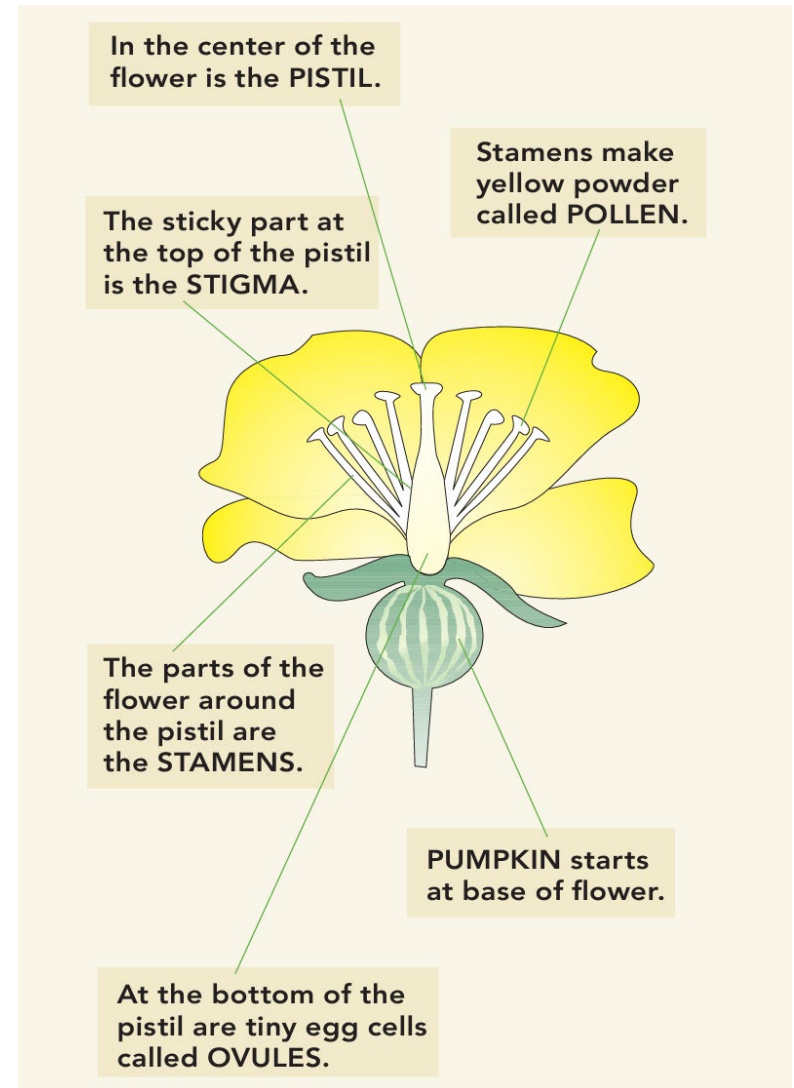
Model Station – Supporting Information

Refer to the [graphic](#) by Illinois Ag in the Classroom (right) and a [time-lapse video](#) by Seemingly Forever Timelapse (on YouTube) when drawing the model of a pumpkin plant.

Video full URL:

<https://youtu.be/yHaPDJCLCqM?si=yiWMKvePoUdgsqDU>

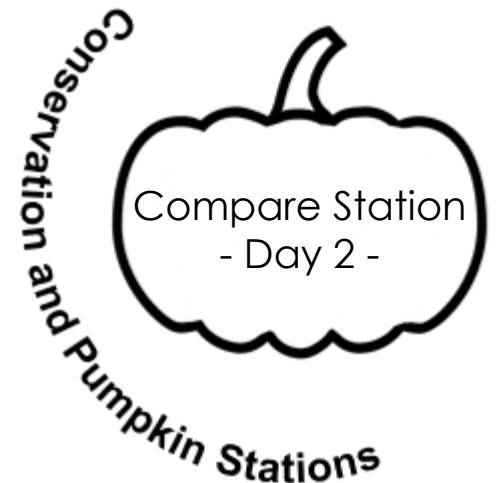
After reviewing the materials, each student will draw an accurate model of a pumpkin plant. The drawing should include: vine, leaves, female flower, male flower, and pumpkin.



Graphic credit: Pumpkin Ag Reader by National Agriculture in the Classroom, Illinois Agriculture in the Classroom, and The University of Arizona Cooperative Extension

Comparison Station - Instructions

Each student in the group will watch the video, [Male vs. Female Pumpkin Flower](#) by Wild Floridian, and answer the questions from the cards on the answer sheet in the “Comparison” section.





1. How are the male and female flowers of pumpkins similar or different in terms of **size**?



2. How do the **stems** of male and female flowers of pumpkins compare?



1. How is the timing of male and female flowers development and appearance similar or different?



For a pumpkin to grow, pollen must transfer from a male to a female pumpkin flower. What are the specific flower parts that the pollen transfers to and from?

(Hint: Both were featured at the Vocabulary station.)

Review Station - Instructions

The group will review their answer sheets and discuss what they've learned at previous stations for 3-5 minutes.

Each student will answer the prompt using information learned throughout the stations on the answer sheet in the "Review" section.



Review Station - Prompt

Write a 3-5 sentence summary statement answering the question “**What did you learn during the Conservation and Pumpkin stations?**”

Your answer should include:

- 1) conservation practices utilized on pumpkin operations
- 2) components and functions of pumpkin plants' flowers
- 3) a description of pollinators' role in pumpkin growth and production.



Conservation and Pumpkins Stations

Name: _____

Date: _____

Video

1. _____
2. _____
3. _____
4. _____

Vocabulary

- Pistil - _____

- Stamens - _____

- Stigma - _____

- Pollen - _____

- Pumpkin - _____

- Ovules - _____

- Vine - _____

- Blossom - _____

- Pollination - _____

Reading

1. _____
 2. _____
 3. _____
 4. _____
- _____
- _____
- _____
- _____

Model

Review

Comparison

1. _____

2. _____

3. _____

Bonus. _____

Conservation and Pumpkins Stations

Name: ANSWER KEY

Date: _____

Video

1. B
2. C
3. B
4. D

Vocabulary

Pistil - center of the female flower

Stamens - parts of the flower around the pistil

Stigma - sticky part at the top of the pistil

Pollen - yellow powder created by the stamens

Pumpkin - fruit that starts at the base of the female flower

Ovules - tiny egg cells at the bottom of the pistil

Vine - long flexible stems that trail or creep along the ground or climb by clinging to a support with tendrils or clasps

Blossom - the flower of the plant that will turn into the pumpkin

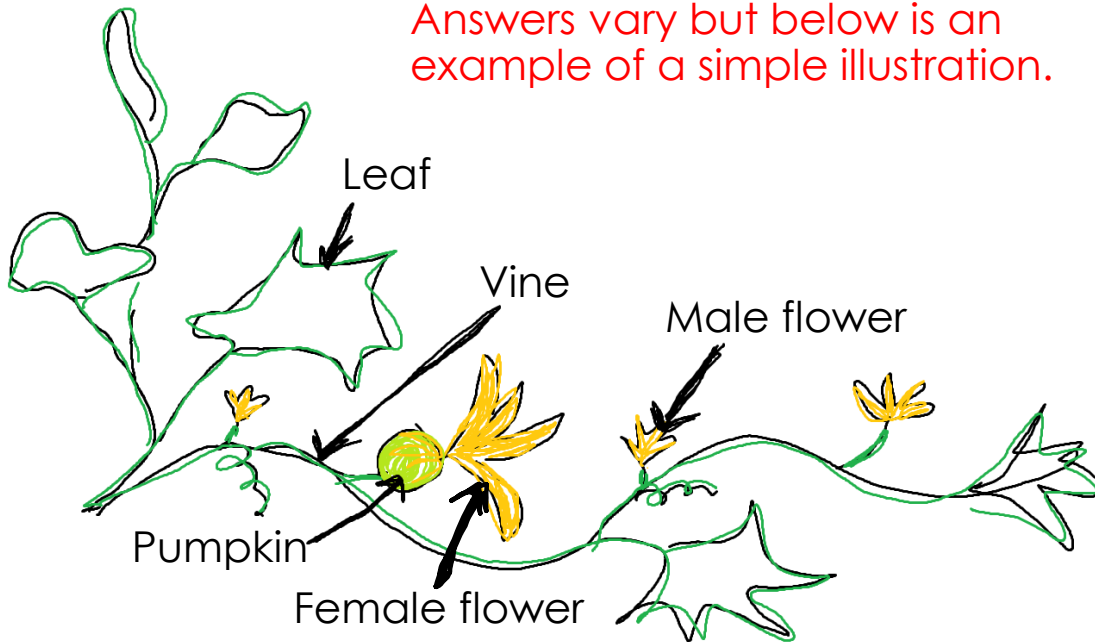
Pollination - the transfer of pollen from the anther (from stamen of a male flower) to the stigma (from pistil of a female flower)

Reading

1. D
2. D
3. A
4. Answers vary. Answer could include that using cover crops and reduced tillage or no till can decrease erosion, reduce runoff, improve wildlife habitat, etc., and is generally more beneficial compared to a conventional system.

Model

Answers vary but below is an example of a simple illustration.



Comparison

1. male flowers are smaller
 2. male flowers – flower, stem
female flowers – flower, fruit, stem
 3. male flowers show up first
- Bonus. Male – anther, part of stamen
Female – stigma, part of pistil

Review Answers vary.

Answers could include:

- Using cover crops, reducing tillage, and establishing or enhancing pollinator habitat are a few conservation practices that can be utilized on pumpkin operations.
- See vocabulary section for full list of flower components.
- Pollinators like squash bees are **critical** in the growth and production of pumpkins. A pumpkin develops at the base of a female flower after it is pollinated.

Acknowledgements

Resources referenced are provided by Conservation Blueprint, Illinois Agriculture in the Classroom, National Agriculture in the Classroom, Seemingly Forever Timelapse, Susan V. Fisk, the University of Arizona Cooperative Extension, and Wild Floridian. Station format is modeled after Kesler Science Station Labs.

