

**Title:**

*We are Family: Tree Tender Conservation Extension*

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**Abstract:**

*Throughout time, scientists have sought a way to link all organisms together via a common ancestor. The phylogenetic tree allows students to see the relationships organisms have with other organisms and how they are all interdependent. Students will come to understand how the extinction of a plant or animal, or any organism, can create a chain reaction and subsequently, have an impact on the future of many other organisms. Extinction of a species has been a normal progression of life. Today, however, humans are exponentially increasing the rate. Classes will participate in a 2-day learning activity. The first day all students will view the Tree Tender video. Students will be given one organism to research. They will list its characteristics and its classification. On day 2, students will work in groups of ~6, discuss the characteristics their organisms, and create a phylogenetic tree. After each group has completed this task, the class will work together creating a larger tree to include each group's organisms. While the tree is under construction, the teacher will encourage a student-lead discussion asking how would extinction of a particular organism on the list effect the rest of the tree. The pedagogy used here is differentiated instruction through active learning and co-operative learning. Students will be looking at the possible real world implications extinction can have today and will experience experiential learning, inquiry-based learning, as well as engaging in open-ended discussion/learning which will allow them to explore real ways they can help our planet.*

**Subject, Grade, Level:**

*Comprehensive Science, 7<sup>th</sup> Grade*

**Learning objectives:**

*\*Understand the concept of phylogenetic trees*

*\*Understand how organisms are grouped together*

*\*Understand the how different organisms can still share similar characteristics*

*\*Understand how our carbon footprint can leave a lasting impact on other organisms*

*\*Understand how abiotic factors are connected to biotic factors of an ecosystem*

*\*Understand that some damage can be repaired while other damage is irreversible*

**Timeframe:**

*Teacher preparation time for this activity: 15 minutes to make copies, cut out organism cards, and divide them into 6 stacks.*

*Estimated class time for this activity: 2 55-minute class periods:*

**List of materials:**

*Laptop cart*

*Organism cards for 6 teams of 4*

*Chart paper for tree display*

*Colored pencils, markers, or crayons*

**Procedure and general instructions (for instructor).****Day 1:**

- *Have students watch Tree Tender video (15 minutes)*
- *Randomly assign plants and animals to students from the list provided*
- *Give the students a 20-30 minutes to research their organism with its name*
- *Traits listed below start broad, and then become more specific. Students will gather the following information:*
  - *Kingdom: Plants or Animals*
  - *Vertebrates vs. Invertebrates*
  - *Flowers or No Flowers*
  - *Mammal, Bird, Reptile, Fish*
  - *Warm-blooded vs. Cold-blooded*
  - *More categories, as you see fits your classroom and previous lessons*
  - *Remind your students that this is one way scientists classify organisms by characteristics.*

**Day 2:**

*15 minutes for each team to complete the construction of their tree, 5 minutes for each team to present their tree, and 35 minutes for the teams to combine all the trees to create one larger tree. While students are placing organisms on the big tree, ask students how the extinction of one or more the organisms might affect the existence of the remaining ones. Have students elaborate on why we all need to be tree tenders.*

**Procedure and general instructions (for students).**

*Same as teacher instructions*

**Animal and Biome Lists**

*In the table below, you'll find each of the four biomes represented in this activity with the organisms living in each one. Each team will represent one biome with each student representing one organism.*

| Desserts         | Marine    | Prairie     | Woods      |
|------------------|-----------|-------------|------------|
| Sagebrush        | Sea Grass | Grasses     | Pine Tree  |
| Cactus           | Coral     | Wildflower  | Fern       |
| Desert Bumblebee | Crab      | Grasshopper | Earthworm  |
| Kangaroo Rat     | Fish      | Flycatcher  | Bluebird   |
| Desert Tortoise  | Shark     | Wolf        | Armadillo  |
| Vulture          | Dolphin   | Buffalo     | King Snake |
| Desert Bat       |           |             |            |

*The list below shows the approximate order. It is better if students discuss how to arrange the tree, but if confusion occurs the basic order is plants (with the angiosperms, or flowering plants, occurring last), invertebrates, fish, reptiles, birds, and mammals.*

**Phylogenetic Order:**

Fern  
 Pine Tree  
 Sea Grass  
 Prairie Grasses  
 Sagebrush  
 Wildflower  
 Cactus  
 Coral  
 Earthworm  
 Desert Bumblebee  
 Grasshopper  
 Crab  
 Fish  
 Shark  
 King Snake  
 Desert Tortoise  
 Vulture  
 Flycatcher  
 Bluebird  
 Kangaroo Rat  
 Armadillo  
 Desert Bat

Dolphin

Wolf

Buffalo

**Reference list**

TreeTender. (2017). Retrieved May 9, 2018, from <https://www.treetender.org>