Name: Paul Turk

Grade Level: 11/12

Subject Area: Zoology

Duration: 1 ½ class periods (70 minutes)

**Rationale:** Students need to understand under what conditions native animals survive and/or thrive, and how animal populations are inseparably connected to plant communities.

**Objectives:** Students will:

* Know what biotic and abiotic conditions are necessary for native animals to survive
* Understand the interrelationship between habitat conditions and animal populations
* Understand the interdependence of plant communities and the animals that live there

**SDA Standards addressed:**

BIO1.4.5 Comprehend the interdependence between organisms and their environment

BIO1.5.4 Investigate relationships between organisms within their niche

BIO1.6.4 Determine how the relationships between organisms affect the balance of the ecosystem

BIO1.6.5 Assess the environmental issues facing local ecosystems and earth’s biomes

Biol2.2.1 Develop critical and creative thinking skills (analysis, evaluation, divergent questioning, modeling)

Biol2.2.2 Understand and utilize the scientific method of problem solving

Biol2.2.3 Utilize the principles and methodologies of cooperative learning

BIO2.4.6 Exhibit an understanding of global conservation efforts

BIO2.5.5 Research the impact of plant life on the biosphere

BIO2.6.5 Analyze the importance of plant life to human life

BIO2.7.1 Strengthen belief in God as Designer and Creator by applying the higher concepts of Biology II

BIO2.7.2 Utilize the concepts of Biology II to improve lifestyle choices

BIO2.7.3 Apply the study of Biology II to ethical issues regarding life

**Pre-Assessment:** Students have already learned in class about basic needs of animals in their habitat; in the initial presentation (native pollinators) students will be encouraged to share what they already know about animals in their habitats.

**Procedure:**

 Introduction: Slide show on native California insect pollinators

 Discussion: In groups of three, students will choose one of the groups listed below:

 Hummingbirds

 Bees

 Non-Bee insect pollinators (butterflies, flies, etc.)

Research: Student groups will research the requirements for their group of animals; these requirements should include all of the following:

* food
* shelter/homes
* access to mates
* safe places to raise young

 As students find answers to these questions, they will put them into a visual presentation that they will share with the class (Google Slides, PowerPoint, etc.)

Conclusion: Each group will share their presentation with the class; if time permits, similarities in requirements will be identified for all three groups (with the intent of incorporating all these similarities into the native plant garden)

**Differentiation:** students will be allowed to choose the topic they are most interested in (birds, butterflies, bees) and will be grouped with other students with a similar interest

**Technology needed:** Nearly all students have their own computer; all that is absolutely required is one per group, required is one per group, but if each student has their own device that can access the internet, one student can be creating the presentation while the other two are researching the topic; all that is necessary is a reliable internet connection

**Estimated time required:**

 Introduction/discussion/group selection: 15 minutes

 Research/creation of student presentations: 40 minutes

 Presentations: 20 minutes

**Assessment:** Students will prepare presentations that they will share with the class that will summarize the conditions required for one of the following groups to survive and thrive in a particular area.

 a. native bees

 b. butterflies and other non-bee pollinators

 c. vertebrates such as hummingbirds and bats

A rubric will be provided that will specify expected information in the presentation.

**Lesson extension:** If there is not enough time for the presentations on the same day as the research, (most likely there will not be) the presentations can easily be the next day. In a 50-minute class period, there is no chance that there will be time left over!

**Connections:** Students will be encouraged to make connections between setting up native habitat here at school and the possibility of creating microhabitats at home; they will also have opportunity to recognize the importance of maintaining habitat that already exists to prevent loss of species that are at risk, and to recognize the importance of species that may seem insignificant.

**Presentation rubric:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Adequate (C)** | **Good (B)** | **Excellent (A)** |
| **Information** **(60%)** | 70-79% | 80-89% | 90-100% |
| **Completeness** **30%** Food Shelter/homes Mates Young | Some of the required information21-23 | Most of the required information24-26 | All required information27-30 |
| **Accuracy** **30%** | Some inaccurate data21-33 | Mostly accurate24-26 | Completely accurate27-30 |
| **Presentation****(25%)** | Present18-20 | Somewhat interesting, mostly read21-23 | Well-done, mostly not read24-25 |
| **Visual Aid****(15%)** | Small, difficult to see10-11 | Large enough to see, somewhat interesting12-13 | Captures attention14-15 |
| **Total** |  |  |  |