**\*\*Park Name**

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| National Park of American Samoa |

**\*\*Lesson Plan Title (255 characters maximum)**

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| [What is a Fruit Bat?](http://www.nps.gov/npsa/forteachers/classrooms/fruit-bats-are-our-friends.htm) |

**\*\*Essential Question and Quick Lesson Description**

**This should include the lesson’s objective or what question the students should be able to answer at the end of the lesson. This section should also include a quick description of what the students will experience in the lesson. (100 characters maximum)**

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| Students will be able to articulate what a fruit bat is, identify and explain the fruit bat’s role in the American Samoan tropical rainforest ecosystem, and the National Park of American Samoa’s role in protecting fruit bats. |

**\*\*Lesson Grade Level: (Check One of the following)**

Lower Elementary: Pre-Kindergarten through 2nd Grade

**\*\*Lesson Subject: (Check As Many as Apply)**

Science

**Feature Image for Lesson**

**This will be shown next to your lesson on the Education Portal. Provide filename and location below.**

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| <http://www.nps.gov/common/uploads/teachers/assets/images/pwr/park/npsa/564AD1EC-155D-4519-3E00099E1F6C0A01/564AD1EC-155D-4519-3E00099E1F6C0A01.jpg> |

**Alt Text for Feature Image**

**If the image does not display, what description do you want to appear in its place?**

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| Fruit bats are considered the only native mammal in American Samoa. Let’s separate truth from myth about this protected creature. |

**\*\*Common Core Standards:**

**Want more information about Common Core? Go to <http://www.corestandards.org/>**

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| **Select Grade Level:** K-1st Grade **Select Subject Area :** English  **Check off Common Core Standards**  W.K.1: Use a combination of drawing, dictating, and wiring to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and sate an opinion or preference about the topic of book.  W.K.2: : Use a combination of drawing, dictating, and wiring to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.  W.K.7: Participate in a shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).  RI.K.1: With prompting and support ask and answer questions about key details in a text.  SL.K.5: Add drawings or other visual displays to descriptions as desired to provide additional detail. |

**\*\*State Standards:**

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| **Select State:** American Samoa **Select Subject:** Science **Select Grade Level :** Grade K-1  **Check off State Standards**  Standard 7 |

**Additional Standards(s) (255 characters maximum): Does this lesson meet additional standards?**

**e.g. Next Generation Science Standards, National Council for Social Studies Standards, Advanced Placement (AP) Courses, International Baccalaureate (IB) Courses, Next Generation Science Standards**

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| K-LS1-1: Use observations to describe patterns of what plants and animals (including  humans) need to survive.  K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.  K-ESS3-1: Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.  K-ESS3-3: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment |

**Thinking Skills (Check As Many as Apply)**

The thinking skills listed below are based on Bloom’s Taxonomy. Consider your lesson procedure and activities. Then check off the thinking skills that students will experience through your lesson.

X **Knowledge** – Recalling or recognizing information ideas, and principles

X **Comprehension** – Understand the main idea of material heard, viewed, or read. Interpret or

summarize the ideas in own words.

\_\_\_ **Application** – Apply an abstract idea in a concrete situation to solve a problem or relate it to a prior experience.

\_\_\_ **Analysis** – Break down a concept or idea into parts and show the relationships among the parts.

X **Creation** – Bring together parts (elements, compounds) of knowledge to form a whole and build relationships for NEW situations.

\_\_\_ **Evaluation** – Make informed judgments about the value of ideas or materials. Use standards and criteria to support opinions and views.

**Complete Lesson File**

**Is there a downloadable file (or PDF) for this lesson plan? If yes, provide filename and location:**

**Be sure your PDF or other file meets universal accessibility requirements, most PDFs do not.**

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| <http://www.coloring.ws/bats1.htm> |

**Lesson Duration**

**Time to complete this lesson plan in minutes (25 characters maximum)**

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| 45 minutes |

**\*\*Background Information for Teacher**

**What important content, contextual, or practical information and background knowledge does the teacher need to successfully implement this lesson?**

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| Large flying foxes, also known as fruit bats, are one of the more unusual animals in American Samoa, especially for visitors from areas where bats are small and rarely seen. Three species inhabit our islands – two large fruit bats (*Pteropus samoensis*, *P. tonganus*) and a small insect-eating bat (*Emballonura semicaudata*). These three are the only native mammals in the Samoan islands.  The two flying foxes are especially distinctive: they are renowned for being large (with a wing span up to 3 feet wide) and active both day and night. *Pteropus samoensis* (*pe'a vao*) is commonly called the Samoan flying fox. The other flying fox, *Pteropus tonganus* (*pe'a fanua*), has several common names such as the Insular, White-naped, White-necked or Tongan fruit bat. In American Samoa, flying foxes can be seen flying, soaring, feeding, or just hanging in trees. Individuals of the two species can seem to overlap in size (adults weigh 300-600 grams). When they consume fruits with small seeds, some seeds that get swallowed do not get digested but are carried and deposited away from the tree source. These seeds grow and become the lush green rainforest that covers American Samoa. They are also considered pollinators as they transfer pollen when they fly from tree to tree consuming nectar or fruits.  During the daytime, *pe'a fanua* form large roosting groups or colonies of hundreds to thousands of bats. These colonies are generally organized according to their reproductive status and may be composed of bachelor males, clusters of females defended by an adult male (suggesting a harem mating system), or groups of females and their young. In any case, individuals appear to be relatively “faithful” to their roosts, usually returning to their respective colonies following foraging flights.  But the *pe'a vao* does not do this. Instead, these bats usually roost singly on branches, or as pairs of males and females (suggesting a monogamous mating system), or as a female with its young. When roosting, *pe'a vao* males tend to hang from exposed or dead branches of trees on ridge tops while females roost in more covered positions on forest slopes.  The care and energy that both bat species put into their young is remarkable. Pregnancy lasts approximately 5 months in both species, and once the young are born, it takes at least another 3 months before they are weaned. Even after they are capable of flight, the young continue to receive parental care, perhaps until they reach adult size or become reproductively active themselves. We know this from observations of pairs of individuals seen to alight independently on the same tree and subsequently come together with one individual (presumably the juvenile) being wrapped up in the other's wings as they settle down to roost. Sightings of pregnant females and individuals carrying young in flight indicate that *pe'a vao* give birth mostly between April and June. *Pe'a fanua* births appear to occur year-round but are more common in January and June to August.  Although their name indicates that they are fruit-eaters, both species also eat nectar, pollen, leaves, and sap. They tend to consume only the “juice” of fruits and leaves. To do this, a bat will carefully chew on food (usually eating around large seeds), press the pulp against the roof of its mouth with its tongue, squeeze and suck in the juice, then spit out most of the pulp in pellets called “ejecta.” These ejecta are especially abundant under breadfruit trees (*'ulu*) where the bats have been feeding overnight. Among the splatter of mushy bits of the fruit, you can find these pellets of drier material that sometimes show tooth and palatal (roof of the mouth) impressions, much like a dental cast produced at a dentist’s clinic.  It may bother us that flying foxes eat some of the fruit that we grow for ourselves, but these bats are tireless workers that help maintain the health of our rainforest, and they are fun to watch. |

**\*\*Important Vocabulary and Terms with Definitions:**

**What terms and academic language will students have to know to participate in the lesson? Lessons typically include 5 to 15 terms and definitions.**

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| Define the vocabulary term **fruit bats-Fruit bats** (Family **Pteropodidae**) are flying mammals that live in dense forests in [Africa](http://simple.wikipedia.org/wiki/Africa), [Europe](http://simple.wikipedia.org/wiki/Europe), [Australia](http://simple.wikipedia.org/wiki/Australia), and [Asia](http://simple.wikipedia.org/wiki/Asia). There are about 166 species of fruit bats. Fruit bats are sometimes known as flying foxes. These [bats](http://simple.wikipedia.org/wiki/Bat) live in huge colonies, known as "camps." These nocturnal (most active at night) animals rest during the day while hanging upside down from their feet. |

**\*\*Lesson Hook or Preview: What activity, video, song, or other experience could get the students excited about the lesson and thinking about the topic? Is there a way to make the lesson important to their lives or link the lesson content to what they already know?**

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| What are two things you know about bats? |

**\*\*Procedure: List the instructions the teacher should follow as Step One, Step Two, Step Three, etc. Make sure your lesson includes new content (information, readings, powerpoint, facts, etc) and something for students to do with that content (lab, simulation, activity, game, primary sources etc).**

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| * Teacher will ask: what is the role of fruit bats in nature? * Ask:  *Has anyone seen a* **fruit bat***? If yes, when and where did you see it? If not, what do you think it is?* * Explain: *fruit bats* are American Samoa’s only native mammal. They do not suck people’s blood but instead feed on fruits, nectar, and seeds of trees * Say: fruit bats inhabit the tropical rainforest ecosystem where they sleep, feed, and fly around. * Ask: *Have you ever spoken to a fruit bat? If not, do you want to meet one?* * Have students gather around and introduce them to *Pua (pu-‘ah)* the fruit bat (puppet). Have *Pua* the fruit bat share a little about himself and what it’s like to be a fruit bat in American Samoa. *Where do they like to roost*? *What do they like to eat*? *Can they see at night*? To illustrate the life of *Pua* the fruit bat, show students images of fruit bats hanging out in the native rainforest using the power point program. * Provide students with crayons and/or markers and have them color the fruit bat. When they have finished, have them write their name at the top of the page. Ask for a volunteer to share their fruit bat coloring to the class. Have *Pua* the fruit bat engage with students during this time. Before the next activity, ask students to put away their fruit bat coloring and return the crayons and/or markers they used. * Gather the students into a circle and ask them to pay attention while you and *Pua* the fruit bat teach them the fruit bat song. Have them repeat every verse. Write the words on the board or use a power point program for them to see and repeat the words. Teach the actions that go with the words after they successfully recite the words of the song. * Have a class discussion about what are fruit bats and their importance to American Samoa’s ecosystem. Include the bat puppet to engage students. Ask the following questions: In Activity 2, what were three facts about fruit bats that you learned? (i.e. nocturnal, eat fruits, they can fly, etc.) What ways are we threatening the survival of *Pua* the fruit bat? (Responses will vary but may include destroying of fruit bat habitats, disturbing roosts, hunting fruit bats, harming fruit bats by throwing rocks at them, etc.) |

**\*\*Assessment: How can teachers tell that each individual student has met the objective? How will teachers see if each student knows the answer to the essential questions or has mastered the skills? Below, include below a brief description of how to use the assessment. Later in this template you are provided with the opportunity to upload a digital copy of the assessment for teachers to print and use.**

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| In addition to the questions asked in the procedure list, the teacher will ask students to describe the role of the fruit bats in nature. |

**Lesson Materials: Any worksheets, photos, primary source, scientific data, maps, graphic organizers, or PowerPoint ‘s should be described and attached using the template below. Please create additional materials boxes if necessary.**

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**Material #1**

**Title (255 characters maximum):**

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| Words to the fruit bat song |

**Summary (how does the material function in the lesson?):**

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| Provides an opportunity to reinforce what students learn about the fruit bat through music. |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| Pe’a, o au o le pe’a x2 (Fruit bat, I am a fruit bat.)  O pe’a e lele i le po    (Fruit bats fly at night.)  Pe’a, o au o le pe’a x2 (Fruit bat, I am a fruit bat.)  O pe’a e ai i fua o laau (Fruit bats eat fruits.)  Pe’a, o au o le pe’a x2 (Fruit bat, I am a fruit bat.)  O pe’a e nofo i le vao (Fruit bats live in a tropical rainforest.)  Pe’a, o au o le pe’a x2 (Fruit bats, I am a fruit bat.)  Pe’a, o oe o le pe’a x2 (Fruit bats, you are a fruit bat.)  (*Yawns!*) Ua fia moe o pe’a! (Sleepy fruit bat!) |

**Material #2**

**Title (255 characters maximum):**

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| Fruit bat illustration |

**Summary (how does the material function in the lesson?):**

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| Students will see the fruit bat in a different medium and color the fruit bat illustration. |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| <http://www.coloring.ws/bats1.htm> |

**Assessment Materials**

**How can teachers tell that each individual student has met the objective? How will teachers see if each student knows the answer to the essential questions or has mastered the skills? Attach below the assessment and, if applicable, a rubric or answer key.**

**Assessment**

**Title (255 characters maximum):**

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| Fruit Bat Assessment |

**Summary**

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| The assessment gives students the opportunity to summarize the fruit bat’s role and it’s relationship with its surrounding environment. |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| see separate document |

**Assessment Rubric or Answer Key**

**Title (255 characters maximum):**

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| Fruit Bat Assessment Answer Key |

**Summary**

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| Measures student responses against correct responses |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| see separate document |

**Supports for Struggling Learners**

**If a learner is struggling to understand the objective, essential question, or skills presented in the lesson, what can be done to help this learner? Is there a lower reading level version of text? Is there a more image heavy or simplified version of content? Can supportive devices be provided such as calculators?**

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| N/A |

**Extensions for Excelling Learners**

**If a learner is really excelling at the objective and skills presented in the lesson, what can be done to continue to challenge this learner? Can the student create a product or learn more in depth about the content?**

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| N/A |

**Additional Resources**

**Please list websites, references, or other materials for further research by interested students that is not already provided within the lesson.**

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| N/A |

**Related Lessons or Educational Materials**

**Is this lesson connected to other lessons within a unit? Is this lesson related to a field trip guide or activity? If so, list the website address or titled of these other materials below.**

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| N/A |