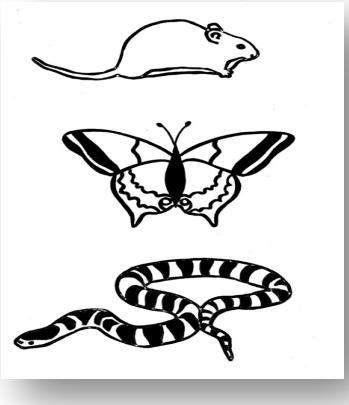
ARTS EDUCATION PROGRAM

LESSON PLAN

VIRTUAL CLUB PELICAN



Project Title: Batiquitos Lagoon Scientific Illustration
Theme: Adaptations
Age Range: 7-12 years

PROJECT INTRODUCTION: Artists will become scientific illustrators that create "creature cards" by tracing and coloring animals native to the Batiquitos Lagoon (Woodrat, Swallowtail Butterfly and California Rattlesnake) as realistically as possible. Students will research, consider and add informational facts about each creature to their works of art, experiencing how art plays an important part in the world of science.

PROJECT MATERIALS:

- Printouts from the Drawing Examples Provided
- Pencil & Eraser
- 2 Small Paper Clips
- 2 Blank White Pieces of Paper (8 ½"x 11")
- Colored Pencils
- Scissors
- Black Sharpie

PROMPT QUESTONS:

1. Imagine if you were walking the trail at the Batiquitos Lagoon: What animals, birds, insects do you think you would see?
2. Why do you think animals choose to live in this area?
3. What makes the lagoon a good environment for them?
4. How do animals adapt to living in different environments?
5. What are important factors of adaptation?

DISCUSSION (discuss or read):

What is adaptation?
Adaptation is any change in the structure or behavior of a species which helps it to become better fitted to survive and reproduce in its environment. Adaptation is important for all creatures because as the earth is constantly changing, species must constantly adapt and change to ensure their species' survival.

What are environmental features of the Batiquitos Lagoon and what creatures have adapted to living there?
The Batiquitos Lagoon in Carlsbad is one of the few remaining tidal wetlands on the southern California coast of the United States. The lagoon is thought to have started it's development when the earth began to warm after the ice-age about 18,000 years ago. The lagoon has gone through many cycles of environmental change from that

time until the present. In 1996 there was an environmental restoration of Batiquitos Lagoon and since that time the ecosystem of the lagoon has gradually changed from a confined non-tidal system with limited habitat value to fully tidal, salt water system with greater habitat value. Factors such as the increase in fish populations and protection of trees and land in the area have provided stable habitats and plentiful food for resident and seasonal species.
There are many different types of habitats at the Batiquitos Lagoon. Some habitat environments found at the lagoon include open water/subtidal, intertidal mudflats, southern coastal salt marsh, coastal brackish marsh, nesting areas, transitional zones, and southern arroyo willow riparian forest. Different creatures are found living in these different environments. Some of the many creatures found today at the lagoon are mammals, insects, reptiles, birds, and amphibians.

Examples of creatures that make Batiquitos their home:

Woodrat/ Packrat

Swallowtail Butterfly

California King Snake

Woodrat/ Packrat: Woodrats are commonly known as “packrats” for their characteristic accumulation of food and debris on or near their dens. These collections, called “middens,” may include bones, sticks, dry manure, cactus joints, shiny metal objects, and innumerable items discarded by or stolen from humans. Because the lagoon area is filled with nature and also has humans walking through it’s trails the woodrat has plentiful objects to choose from to create it’s home, making the lagoon a wonderful place for it to live and have a family! (When you walk the Batiquitos Lagoon trail you can see a packrat den- look for the stop on the self-guided tour!)

Swallowtail Butterfly: Some of the largest and most colorful butterflies in our area are Swallowtails. The lower wings of Swallowtails have a tail-like projection. One of the largest is the Tiger Swallowtail, which is brightly colored with yellow and black. The principal food plant of this species is sycamores, but larvae also feed on willows. Adults feed nondestructively on the nectar of flowers. Because of the lagoon’s lush vegetation, Swallowtails have plenty to eat but must be aware of insect and bird predators. They have adapted to this by their coloration that helps them camouflage into the environment and they eat toxic plants so they will be toxic to their predators.

California King Snake: Snakes only rarely make an appearance on the Batiquitos trails, but they do live in the area. As the weather warms it is more likely that they may make an appearance. California King Snakes are found throughout California. The King Snake is not venomous and is harmless to people unless you try to catch them. They also eat a wide variety of prey which includes other snakes, even rattlesnakes! They have an immunity to rattlesnake venom. Their appearance is distinctive (see photo) so you aren’t likely to get them confused with other snakes that live in this area. The California King Snake has adapted to Batiquitos because of the abundance of rodents at

the lagoon. It has plenty to eat and helps keep the rodent population down in the area. If you see a California King Snake on the trail the best thing you can do is leave it alone. It will get out of your way quickly as they are pretty shy and have adapted to keeping away from potential predators.

ART PROJECT KEY TERMS:

Trace is copying a photograph or drawing, particularly by laying a paper over the image and drawing over the image's lines and features.

Environment is the surroundings or conditions in which a person, animal, or plant lives or operates, can be natural or human-made.

Habitat is the natural home or environment of an animal, plant, or other organism.

Scientific Illustration is art in the service of science. **Scientific Illustrators** are artists that draw or render images of scientific subjects in an accurate and realistic way to inform and communicate. A good scientific illustration does not copy a single specimen, but should be able to summarize or generalize all individuals of this species since there are no two identical specimens. Photography has not achieved this yet, and that is why scientific illustration is still alive.

ART MAKING PROCESS:

STEP 1:

To begin your art project, start with one white piece of paper holding it vertically and fold it in half. Open up the folded paper and you will see 2 rectangles (Fig.1). Use your scissors to cut along the folded line, ending up with 2 equal sized rectangles (Fig.2). Cut the second piece of paper in the same way. You will have a total of 4 rectangles.

STEP 2:

Take one of your rectangles and place one of the included drawings underneath it. Decide where you want the animal to be placed on your page- to the left, in the middle, to the right? Move the drawing underneath until it is placed where you want it. Use the paper clips to hold the papers together so they won't move while you are tracing (Fig.3).

STEP 3:

Take your pencil and your papers that have been clipped together and hold them up against a window with the sunlight so that the lines from the drawing on the bottom paper show through to the top paper. Using your pencil trace over the lines (Fig.4).

STEP 4:

Once you have traced all the lines, take the papers away from the window back to your workspace and unclip the papers to separate them. Using your coloring pencils add colors to your drawing. You can refer to the photos included with this lesson as a guide (Fig.5).

STEP 5:

After you finish your first drawing, continue onto the next one using a different animal drawing example and a new rectangle. Repeat steps 2, 3 & 4 and complete 3 drawings.

STEP 6:

Using your pencil or one of your pens or markers write some of the facts about each creature next to it's drawing (Fig.6).

- Option: Look up additional facts online if you'd like to include more.

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STEP 7:

When you have finished you will have a collection of creature cards that you can look at for reference (Fig.7).

- Option: Go online or use a reference book to research another creature that lives at the Batiquitos Lagoon and use the leftover rectangle to draw it and write facts about it.

POST PROMPT QUESTIONS (reflect and share):

1. How did you like working as a scientific illustrator?
2. How was this different from other art and science projects you have done?
3. What did you learn about the variety of creatures at the Batiquitos Lagoon?
4. How does learning facts about what you draw help you understand more about the subject of your art?

If you have more paper you can continue to research and create more scientific illustrations and add to your collection!

ART PROJECT STEP BY STEP EXAMPLE:

FIG.1

FIG.2

FIG.3

FIG.4

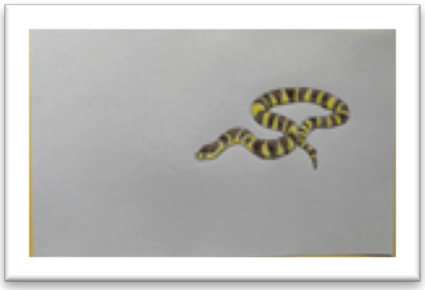

FIG.5

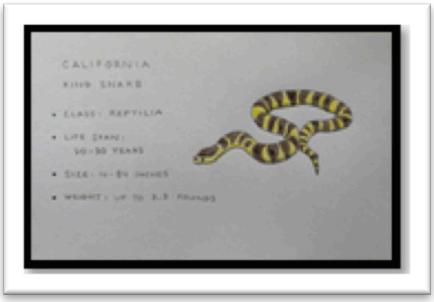

FIG.6

City of Carlsbad
Cultural Arts

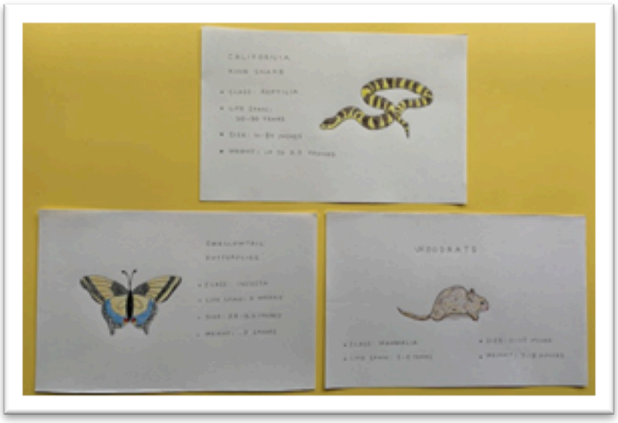

FIG.7

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Example Drawings: