Sandhill Cranes and Swainson's Hawks sometimes share the same space, but not at the same time. Each September, Swainson's Hawks leave the Sacramento Valley and fly south for the winter. At the same time, Sandhill Cranes leave their nesting territories and many fly south into this region. The Cosumnes River Preserve protects habitat for them both.

a. Compare migration routes. Locate the positions (longitude and latitude) on a map or globe for the three locations in the table below. What is the closest city to each of these geographic locations?

<table>
<thead>
<tr>
<th></th>
<th>Longitude</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hawk Nesting</td>
<td>122.5</td>
<td>105.25</td>
<td></td>
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<tr>
<td>Crane Wintering</td>
<td>121</td>
<td>21.5</td>
<td></td>
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<tr>
<td>Hawk Nesting</td>
<td>38</td>
<td></td>
<td></td>
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<tr>
<td>Crane Wintering</td>
<td>40</td>
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</tr>
</tbody>
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b. How many degrees of longitude and latitude combined does each bird fly? Which bird flies further in this migration?

c. About how many miles are there between these locations? About how many kilometers are there between these locations?

d. Draw your own map showing these two migration routes. Mark and write the names of the places along the migration route that you think are most interesting on your map.

Learn more about the Giant Garter Snake at: http://www.swainsonshawk.org/ggs.html

Learn more about the Red-legged Frog at: http://sacramento.fws.gov/es/default.htm

Learn more about the Sandhill Crane at: http://www.dfg.ca.gov/hcpb/species

Learn more about the Swainson’s Hawk at: http://www.swainsonshawk.org/who.html

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After you’ve watched the video that accompanies this work sheet, answer the following questions and see how well you do.

1. The 70 species of plants that occur in California’s vernal pools
   a. include trees and bushes
   b. occur nowhere else in the world
   c. can be found all over the world
   d. can be grown in your yard

2. Which of the following are endangered species in our area?
   a. Deer
   b. Bears
   c. Giant Garter snakes
   d. All of the above

3. In the video, what does “take” mean when talking about endangered species?
   a. To take a wild animal home
   b. To kill an endangered animal or destroy its habitat
   c. To take food to an endangered animal
   d. To take pictures of an endangered animal

4. Where can you see wildlife?
   a. Wildlife refuge
   b. Pet stores
   c. Circus
   d. None of the above

5. What can people do to help wildlife in our region?
   a. Decorate with wildlife pictures
   b. Buy clothes with wildlife designs
   c. Watch wildlife TV programs
   d. Volunteer at a nature preserve

6. Open land can
   a. provide homes for wildlife
   b. cool our region in the summer
   c. prevent flooding of cities
   d. all of the above

Vernal (or spring) pools are a rich habitat for our region’s wildlife. Pools form in wet weather but are dry for most of the year. A lot of animals — such as frogs, insects and wading birds — depend on them as places to feed, live and breed. But the pools are threatened as the human population of the Sacramento region expands into undeveloped areas. Two species in our region are the Tadpole Shrimp (Leptodora kindtii) and the Vernal Pool Fairy Shrimp (Branchinecta lynchi). Both species are classified as threatened because they cannot live outside of vernal pools — many of which have been paved over or plowed under.

The Tadpole shrimp gets its name because it has long tail filaments that make it look a little like a tadpole. It is grey/green in color and can grow up to an inch and a half long. It is such an ancient species that it is sometimes called a ‘living fossil’. Fossils from many millions of years ago have been found that are identical to the Tadpole shrimps alive today. Shrimps are crustaceans whose relatives include crabs, crayfish and lobsters. They eat algae, bacteria, protozoa, insects and frog eggs. The Tadpole Shrimp lives at the bottom of vernal pools, but the smaller Fairy Shrimp prefers to swim on it’s back near to the surface. That can make it an easy lunch for wading birds and frogs. If Fairy shrimps ever stop moving, they sink! Because they were around a long time before fish ever appeared, these species never evolved ways of protecting themselves against predation by fish and, so, can only survive in the temporary pools where fish can’t live.

They lay special eggs that are able to survive the dry months and hatch when the pool forms again — they can last up to 20 years without water and still hatch! The eggs are protected by a tough outer coating that stops the baby shrimp from drying out and, also, means the eggs can’t be digested by predators. Sometimes the egg get stuck to wading bird’s legs and can be carried to other ponds to hatch. This way, the shrimp population can spread to new pools.

Would you want to be a friendly Fairy Shrimp swimming around on your back all day? Or would you be a scary tadpole shrimp hiding out at the bottom of the pool waiting to pounce? It’s springtime in the vernal pool — write a short story describing a day in your life.

WEB LINKS
Visit vernal pools locally at Mather Regional Park or go to: www.sacsplash.org
Tips and Tricks for getting a letter published in The Bee at www.sacbee.com/static/live/opinion/tips.html. Or you can phone with any questions: (916)-321-1905

ART / DESIGN
An introduction to the Red-legged Frog and the Giant Garter Snake with accompanying origami and drawing projects.

ENGLISH / SOCIAL STUDIES
An invitation for students to write a letter to the Editor of the Sacramento Bee about wildlife in our region.

BIOLOGY / CREATIVE WRITING
An introduction to the Tadpole shrimp and the Vernal Pool Fairy shrimp.

ABOUT THIS ACTIVITY SHEET
This activity sheet is intended to be used by students after watching the endangered species education video for the Sacramento Region, entitled “America the Beautiful.” It is designed to be photocopied for each student. Further copies of the worksheet can be downloaded in PDF format from: www.swainsonshawk.org. The activities provide a variety of ways to engage in further study of wildlife in our region with regard to the following subjects:

MATH / GEOGRAPHY
Students investigate the migratory patterns of the Swainson’s Hawk and the Sandhill Crane.

This activity sheet also includes a quiz with multiple choice answers that relate to the video. For correct answers, e-mail contact@swainsonshawk.org or visit www.swainsonshawk.org.

Web links are also provided for further study.

FOSHSierra Club Endangered Species Education
817 14th Street, Suite 100, Sacramento, CA 95814
916-447-4956 • phone
www.swainsonshawk.org
www.motherlode.sierraclub.org