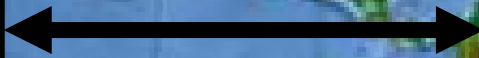
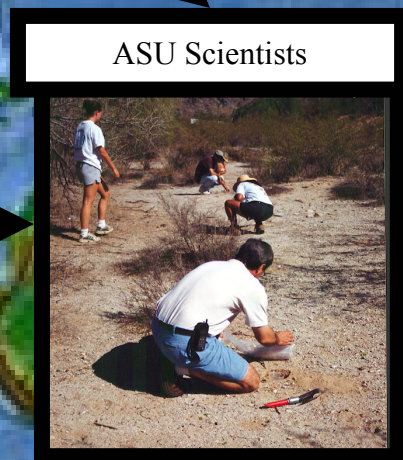




**CAP LTER**  
Central Arizona-Phoenix  
Long-Term Ecological Research

The CAP LTER logo includes a stylized landscape with a sun, mountains, and waves.

**ECOLOGY  
EXPLORERS**



**Students and Teachers  
Exploring Schoolyard  
Ecosystems**





Students participate in CAP LTER research projects by:



Surveying local bird populations



Surveying local insect populations

-Ground Arthropods & Bruchid Beetles



Surveying local plant diversity

## Summer Internships



# Urbanization and Insects

Teachers work with ASU scientists to learn:

- o How to collect and identify ground arthropods in their schoolyard
- o How to analyze insect data
- o What ASU scientists are discovering about local insects
- o How to study the effects of urbanization on insect populations

Teachers work with Education Liaisons to:

- o Learn ways to incorporate the research into their curriculum and meet the state standards
- o Develop lesson plans for their classrooms





## **Summer Internship: Urbanization and Insects**

Teachers go out in the field with Research Tech, Richard Casaletta, to learn the arthropod protocol.





**Summer Internship: Urbanization and Insects**  
Teachers learn how to set ground arthropod traps.





## **Summer Internship: Urbanization and Insects**

They go back into the field to collect from the traps after 72 hours.



**Summer Internship: Urbanization and Insects**  
Teachers practice identifying arthropods.





**Summer Internship: Urbanization and Insects**  
Teachers investigate Palo Verde seed pods.

## Summer Internships



# Bird Diversity and Urban Habitat

### **Teachers work with ASU scientists to learn:**

- o How to survey and identify plants and birds in their schoolyard
- o How to analyze plant and bird data
- o What ASU scientists are discovering about local plant and bird populations

### **Teachers work with Education Liaisons to:**

- o Learn ways to incorporate the research into their curriculum and meet the state standards
- o Develop lesson plans for their classrooms





**Summer Internship: Bird Diversity and Urban Habitat Teachers** are introduced to bird identification on campus with Dr. Eyal Shochat.





**Summer Internship: Bird Diversity and Urban Habitat**  
Teachers practice bird identification in the field  
with Dr. Madhu Katti.





**Summer Internship: Bird Diversity and Urban Habitat**  
Teachers practice bird identification at the Desert Botanical  
Gardens with Dr. Eyal Shochat.





**Summer Internship: Bird Diversity and Urban Habitat**  
Graduate student, Art Stiles, helps teachers identify plants.





**Summer Internship: Bird Diversity and Urban Habitat**  
Teachers learn to take measurements in the field.



**Summer Internship: Bird Diversity and Urban Habitat**  
What's the difference between a fruit and a vegetable?





**Summer Internship: Bird Diversity and Urban Habitat**  
Graduate Student, Elena Ortiz-Barney, assists teachers in  
developing plant keys.





## Classroom Visits

Research Techs visit a classroom while conducting the 200 point count survey.





## **Ecology Explorers in Action!**

One of the first things students do is map their schoolyard.





**Ecology Explorers in Action!**  
Setting their arthropod traps can be challenging!





## **Ecology Explorers in Action!**

Students get excited while collecting arthropods in their schoolyard.



**Ecology Explorers in Action!**  
Students work hard identifying arthropods.





## **Ecology Explorers in Action!**

These students are using a key and team work to identify the arthropods they collected.



## **Ecology Explorers in Action!**

One group of students go to Usery Mountain Park every year to do plant surveys.





## **Ecology Explorers in Action!**

Students use the same method as the CAP LTER plant survey team to collect data at Usery Mountain Park.





**Ecology Explorers in Action!**  
Students and teachers identify birds  
at the Arizona Historical Society.





## **Ecology Explorers in Action!**

One class has adopted an area at The Riparian Preserve at Water Ranch. Along with cleaning up their area, they have added point counts to their monthly visits.



## **Ecology Explorers in Action!**

A mom helps her son focus his binoculars before the bird walk.





## **Ecology Explorers in Action!**

**Scott Anderson, the Director at the Preserve, helps students and teachers identify birds.**



## **Ecology Explorers in Action!**

The students compare the birds they see at the Preserve to the birds they find in their schoolyard .





## **Ecology Explorers in Action!**

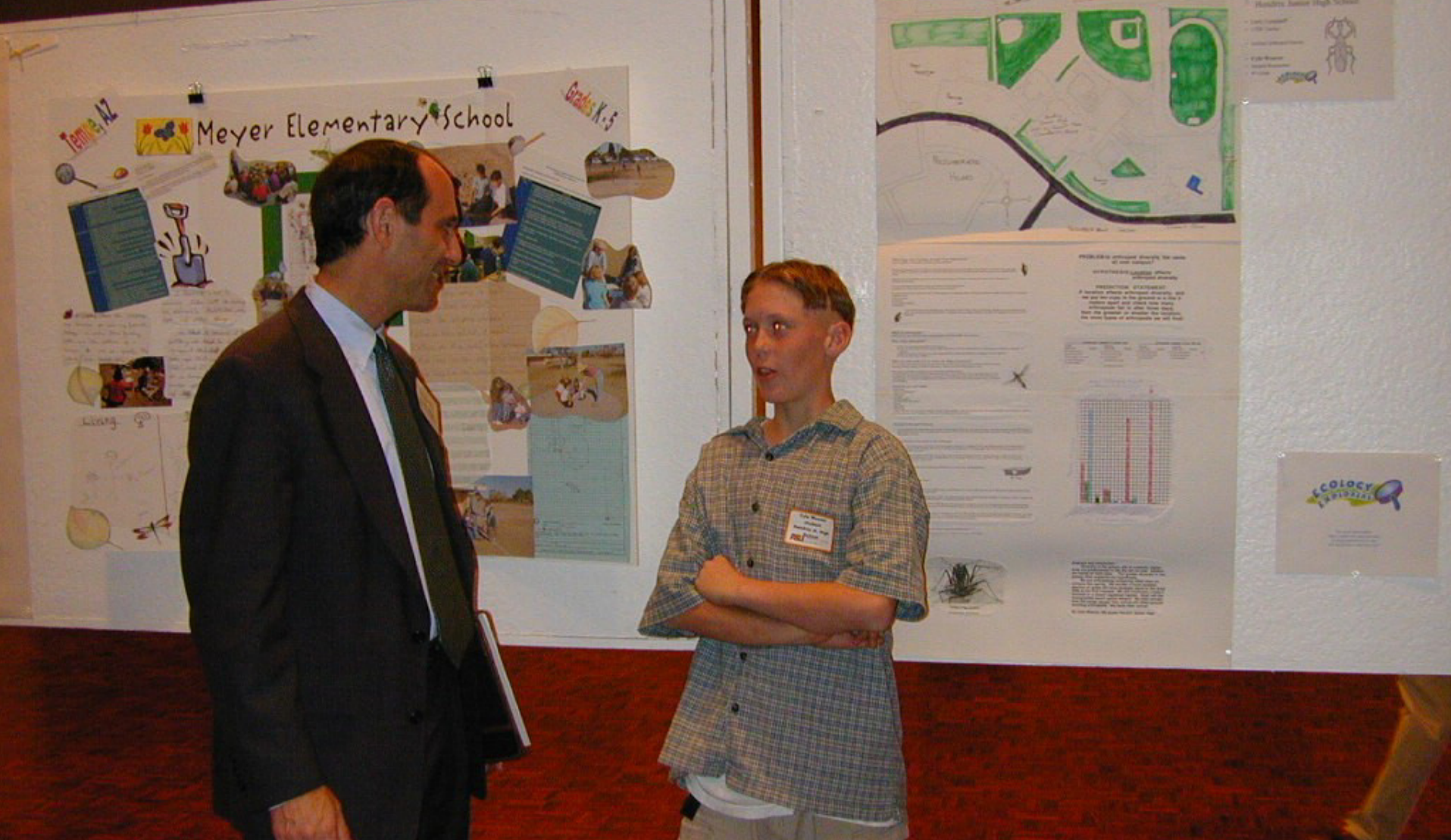
Students collect Palo Verde seed pods in their schoolyard to conduct the Bruchid Beetle Investigation.





**Ecology Explorers Share Their Research**  
Students display their research with ASU scientists at the  
CAP LTER Poster Symposium.





## **Ecology Explorers Share Their Research**

A student enjoys talking with Dr. Jonathan Fink, Vice Provost for Research, about his research at the CAP LTER Poster Symposium.





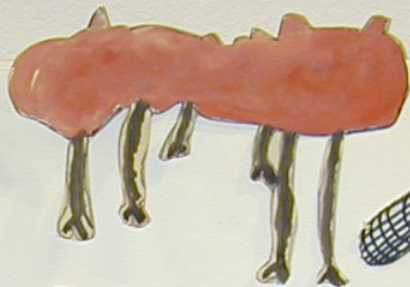
## **Ecology Explorers Share Their Research**

Students show enthusiasm for their research when they can discuss it with others!



# GROUND ARTHROPOD STUDY

Mendoza Elementary School  
Ecology Explorers  
Mesa, Arizona  
3rd Graders - Mrs. Massey



Making an insect collection



Exploring other insects



Arthropod Art

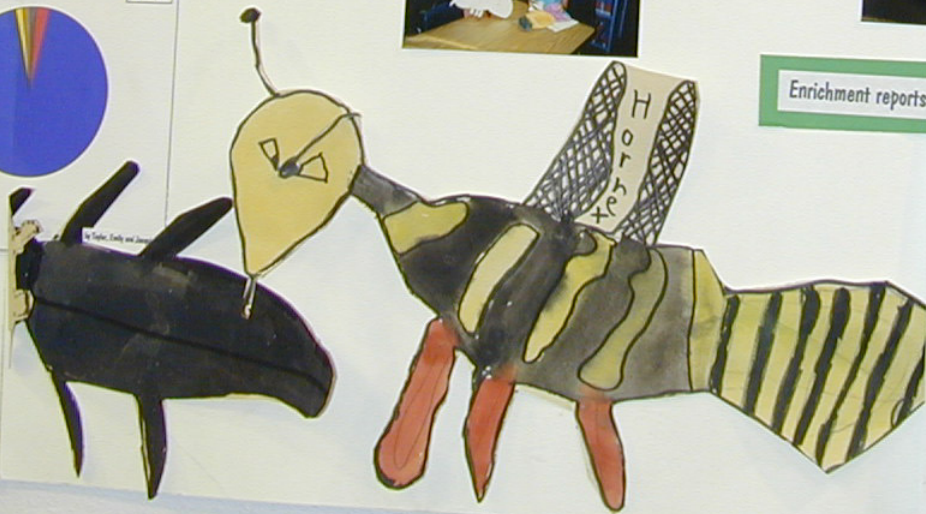


Enrichment reports

Data from pit trap collection on 10-7-99



- Primitiva
- Blattodea
- Coleoptera
- Formicidae
- Orthoptera



## Bombardier Beetle

by Matthew Massey

The Bombardier Beetle lives in the deserts of New Mexico. The beetle is black and its body is flat and oval. They are about a half an inch long. They are nocturnal and they eat small leaves and vegetation. The mother eats the eggs into mud balls and runs them in a hole in soil. It hatches in a few days. The larvae run through these molting stages.

The beetle has a secret weapon. When the beetle is attacked it shoots off hot, poisonous gas with a popping sound. The gas smells terrible. It can also be used to run away from all its attackers. The Greenhornes Museum can catch the Bombardier Beetle and send it to you and into the world in the museum can not be returned.

Bombardier Beetles are a member of the Carabidae family of beetles in the order Coleoptera. There are more species of beetles than any kind of insect. Beetles are the most animals found in the world.

References  
The Encyclopedia of Insects  
Casper's Encyclopedia  
Minnesota Entomology 98 Encyclopedia  
Entomology





Tempe, AZ



# Meyer Elementary School

Grades K-5

Handwritten notes and a magnifying glass illustration.

Handwritten notes on a blue background.



Handwritten notes on a blue background.



I learned a lot in science like not to worry at animal's habitat, and lot of other things.

I liked to because I like getting out about to dig and find things that still from a long time ago that was cool when I applied to go to the well to a house from some books getting and a lot of things.



Handwritten notes on lined paper.



Living

Not Living



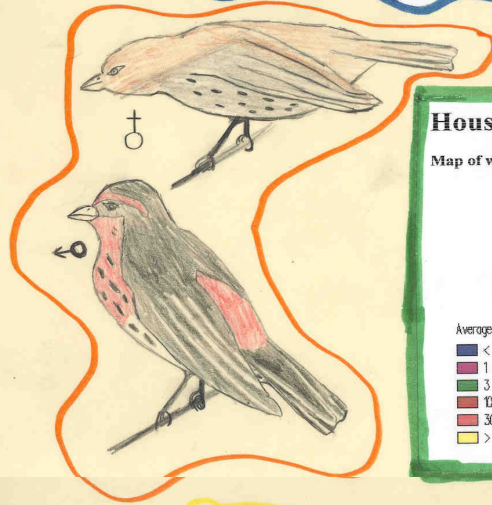
Science Day plans to help children learn



Handwritten notes on graph paper.

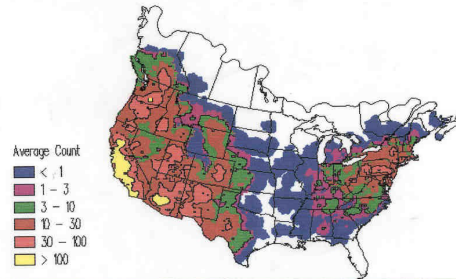


# HOUSE FINCH



## House finch *Carpodacus mexicanus*

Map of winter distribution from CBC



## Color

Males usually have a red chest and streaked brown sides. Females have a brown face and streaked brown sides.

## Scientific Name

*Carpodacus Mexicanus*

## Location

They live on mostly the whole United States main land and on Hawaii but not on Alaska. They are very populated in the south east and west.

## Size

Their size ranges from five inches to six inches. Males are usually longer and heavier than the females. Their eggs are half an inch to three fourths of an inch.

## Nesting

They usually make nests in high in trees. They make them out of sticks, twigs and leaves they make a sphere shaped nest that is hollow and has a hole out of one side.

## Food

They usually eat in trees rarely on the ground. They eat seeds and sometimes small insects. They do like to eat out of bird feeders.

## Calls

They can talk to each other by tweeting, squeaking and whistling. Their calls are not very loud.

By:

Jesse Johnson

Mazen Odish

Miles Wickersham

# Costa's Hummingbird



## Information

- These birds grow to 9 cm.
- They range from South Western U.S. to North Western Mexico.
- Their habitat is in deserts, washes, meadows, sage, scrub, and arid hillsides.
- February is their nesting period.
- The Costa's Hummingbird is fairly common in spring, but not as common in summer and fall.





## **Ecology Explorers in the Community**

Annual community events include Valley Forward's Earthfest.





## **Ecology Explorers in the Community**

Students are engaged in determining in which habitat common urban birds can be found.





## **Ecology Explorers Share Their Research**

**SEE ASU is a major event for Ecology Explorers every year.**





## **Ecology Explorers in the Community**

**Graduate student, Elena Ortiz-Barney, shares the insect collections with visitors at SEE ASU.**





## **Ecology Explorers in the Community**

The most common question asked about the insect collection is:  
“Are those real?”



# Workshops We Offer

- Insects in the Classroom
- Birds, Birds, Birds
- Introduction to Ecology Explorers
- Data Analysis and Technology
- Social Science: Surveys and More
- Ecology in the Schoolyard
- Mapping







**Introduction to Ecology Explorers Workshop**  
Teachers investigate Palo Verde seed pods.





## **Insects in the Classroom Workshop**

Teachers conduct behavioral investigations with arthropods.





## **Teacher Dinners**

Teachers get together twice a year to share ideas, hear a guest speaker from CAP LTER, and eat dinner.





## **Teacher Dinners**

Post Doc, Dr. Amy Nelson, shared with teachers an overview of the Social Science components of CAP LTER.





## Teacher Dinners

Teachers catch up with one another and share ideas..





## Teacher Dinners

Undergraduates, Esther Ellsworth and Brian Lutz, come and celebrate their articles for the Ecology Explorers Kids Newsletter.





## **Teacher Dinners**

Dr. Sam Scheiner, Dr. Tim Craig, and Dr. Nancy McIntyre have time to talk to one another and teachers about their research.









## **Teacher Dinners**

Center for Environmental Studies Director, Dr. Charles Redman, enjoys talking to teachers about their research.



# Ecology Explorers Web Site

- Each protocol and project clearly explained
- Data entry feature/retrieval feature
- PDF Teacher's Guides
- PDF Lesson Plans
- "Ask a Scientist"
- "Meet the Scientist"
- Kid's Newsletter
- Resource Page
- Arthropod Simulation
- Soon....Bird Identification Interactive





[What we're about](#)

[Getting Started](#)

[Ask-A-Scientist](#)

[Protocols](#)

[Contributors](#)

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Doing Science in your Schoolyard

**ECOLOGY  
EXPLORERS**

