



◀ Field Trip—A Naturalist's Expedition ▶

◀ **Subject/Course:** Life Science, Biology I, Biology II, AP Biology

◀ **Grades:** 6th -12th grades

Zoo Atlanta Field Trip Teacher Information

Reservations and Payment

- Reservations are required 2 weeks in advance.
- Payment is due at the admission gates when you arrive with your group. Please have all funds collected and send one person to the payment window.
- For cancellations, date changes, and refunds, please contact Education Reservations at 404.624.WILD.
- Train and carousel rides are additional and can be purchased on site.
- For frequently asked questions, please visit our website at www.zooatlanta.org.

Field Trip Guides

- Our brand new Field Trip Guides were developed by Zoo staff and experienced Georgia teachers.
- All packets are correlated with the new Georgia Performance Standards.
- Download packets that are relevant to the grade(s) you are bringing.
- Please complete and return the evaluation form with your packet so we can be sure we are meeting your needs.

Chaperone Guidelines

- Review the following rules with your group:
 - Stay with the chaperone at all times.
 - Follow any directions given by teachers, chaperones, and Zoo staff.
 - Do not climb on exhibits, fences or rocks or tap on the exhibits with glass.
 - Walk rather than run to avoid getting hurt and scaring the animals.
 - Pick up your trash and recycle.
 - Respect the animals – do not make loud noises.
 - Headphones or mobile phones must be turned off and put away during the visit.
 - Go to a Zoo staff member if you can't find your chaperone.
- Count your group each time you reach a new exhibit to make sure everyone is present.
- Discipline is your responsibility; consult your lead teacher if you need assistance.
- Make sure you know where and when to meet for lunch and for departure.
- Be sure to obtain a Zoo map and daily schedule from the admission booth or from your lead teacher.
- During your visit, encourage the students to ask questions, and then look for their own answers by observing the animals, reading signs and making guesses.
- Attend Zoo activities listed on the back of your map to ensure a full day.
- Have fun!

If you have any additional questions or concerns, please visit our website at www.zooatlanta.org or contact Education Reservations at 404.624.WILD.

Stage 1-Desired Results

Established Goals:

6th Grade:

- **S6CS1.** Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.
- **S6CS2.** Students will use standard safety practices for all classroom laboratory and field investigations.
- **S6CS9.** Students will identify and investigate problems scientifically.
- **S6CS6.** Students will communicate scientific investigations and information clearly.
- **S6CS8.** Students will analyze how scientific knowledge is developed.

7th Grade:

- **S7CS1.** Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.
- **S7CS2.** Students will use standard safety practices for all classroom laboratory and field investigations.
- **S7CS9.** Students will identify and investigate problems scientifically.
- **S7CS6.** Students will communicate scientific investigations and information clearly.
- **S7CS8.** Students analyze how scientific knowledge is developed.
- **S7L1** Students will investigate the diversity of living organisms and how they can be compared scientifically.
- **S7L4.** Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.
- **S7L5.** Students will evaluate the role of natural selection in the development of the theory of evolution.

8th Grade:

- **S8CS1.** Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.
- **S8CS2.** Students will use standard safety practices for all classroom laboratory and field investigations.
- **S8CS9.** Students will identify and investigate problems scientifically.
- **S8CS6.** Students will communicate scientific investigations and information clearly.
- **S8CS8.** Students will analyze how scientific knowledge is developed.

High School:

- **SCSh1.** Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.
- **SCSh2.** Students will use standard safety practices for all classroom laboratory and field investigations.
- **SCSh3.** Students will identify and investigate problems scientifically.
- **SCSh4.** Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.
- **SCSh8.** Students will understand important features of the process of scientific inquiry.
- **SCSh6.** Students will communicate scientific investigations and information clearly.
- **SCSh7.** Students will analyze how scientific knowledge is developed.
- **SB3.** Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

- **SB4.** Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.
- **SB5.** Students will evaluate the role of natural selection in the development of the theory of evolution.

Understandings:

Students will understand that ...

- Curiosity is an important part of scientific inquiry.
- Communication about scientific information must be clearly and accurately recorded.
- Conservation of biodiversity should be the responsibility of every person.
- All organisms are dependent on one another to maintain balanced ecosystems.
- All living things inherit characteristics called adaptations that enhance their survival in their natural environment.
- In addition to physical characteristics, behaviors are also inherited as adaptations.
- Biodiversity, the great variety of living things, is the result of the evolution of living things in many changing environments, and is vital to the survival of the human species.
- Writing in different subject areas introduces new vocabulary and skills.
- Reading and writing in different genres broadens writing abilities.

Essential Questions:

1. What patterns or similarities do you find in your observations?
2. How is each habitat uniquely suited for each animal?
3. What evidence do you observe that all organisms are dependent on one another?
4. Do your observations lead to questions?

Students will know...

- A field notebook is a detailed record of observations that may be used to focus student attention to the animal and plant environment and their interactions.
- The evolution of behavior is a result of the inherited characteristics that enhance success of the animals in surviving in a habitat while interacting with other animals and the environment.
- The environmental influences have an impact in shaping the characteristics that you find in each animal.

Students will be able to...

- Draw.
- Keep honest, clear, and accurate records in science.
- Record the details of the behaviors that they observe.
- Produce a field journal.
- Acquire new vocabulary and use it correctly in reading and writing.
- Read across subject areas.
- Develop, revise, and evaluate writing.
- Use Internet resources.

Stage 2-Assessment Evidence

Performance Tasks:

1. Drawings.
2. Recording the details of the behaviors observed.
3. Producing a field journal, drawing and describing observations.
4. Marking a country or location on a map.
5. Reading and recording conclusions.
6. Analyzing recorded data and recording conclusions.
7. Writing and revising.
8. Using the scientific method to find the answer to a research question.
9. Presenting information through PowerPoint, story board, concept map, etc.

Key Criteria

- An expedition can be defined as a “team” or a “journey.” Expeditions promote conservation and education. The students may plan their expedition as a safari or field experience. The expedition may be to one area or exhibit or involve the entire Zoo. The purpose of the expedition is to explore the natural world within the Zoo in order to answer a question or questions about the biodiversity of life, both fauna and flora. If no question is selected before the expedition, the students’ observations should lead them to a question. They may want to observe the specific activities of the gorillas, or compare the gorillas to the kangaroos.
- The time and cost of a field trip to the Zoo can be better justified when the trip is interdisciplinary. By offering activities that cover more than one subject area, teachers can stress the importance of the study of animals to the educational progress of the student. Administrators and parents will appreciate the activities that give the students more opportunities to achieve in more subject areas with inquiry, performance-based learning.
- In the following sections, there are suggested activities for students that allow them to study animals. The products of these studies will provide evidence of student understanding in the listed disciplines.

Other Evidence

- Using standard safety practices
- Categorizing relationships
- Researching and evaluating
- Participating in student-to-teacher, student-to-student, and group verbal interactions
- Preparing an itinerary
- Reading a map
- Translating language

Stage 3-Learning Plan

Learning Activities

Pre-visit Activities

Using Internet resources can be a valuable pre-Zoo preparation plan. Visiting useful websites allows the students to research the animals, endangered species and zoos, in order to prepare for a field trip to Zoo Atlanta. Below is a list of activities the students could do using

the computer.

1. Research animal behavior at <http://www.animalbehavior.org/ABS/Education/>
2. Using the map of Zoo Atlanta at www.zooatlanta.org, under Visitor Information, or at http://www.zooatlanta.org/site/visitor_info/zoo_map.htm, prepare an itinerary of your tour of the Zoo.
3. To add interest, the students can find a map of the route from their school to Zoo Atlanta at <http://www.mapquest.com/main.adp> OR <http://tiger.census.gov/cgi-bin/mapbrowse-tbl> , the second site being an excellent resource for geography.
4. Predict the weather on the day of the Zoo trip at <http://intellicast.com/> OR <http://www.weather.com/>
5. Do a search for information about specific animals at <http://www.google.com/>
6. Find out which animals are endangered species and research the laws that protect them at <http://www.bagheera.com/> OR <http://endangered.fws.gov/>
7. What do you call the babies of the animals at the Zoo? at <http://www.enchantedlearning.com/subjects/animals/Animalbabies.shtml> OR <http://www.abcteach.com/abclists/animalbabies.htm>
8. Explore the world of animals, demonstrating biodiversity at <http://animaldiversity.ummz.umich.edu/site/index.html> OR <http://enature.nationalgeographic.com/>
9. Find the scientific name in Latin for Zoo animals at <http://www.seaworld.org/animal-info/animal-bytes/index.htm> OR <http://www.phoenixzoo.org/zoo/animals/facts/index.asp> OR http://www.yptenc.org.uk/docs/animal_facts.html
10. Find the name of the animals in Spanish or French or other language at <http://world.altavista.com/>

Zoo Activities

The students may plan their expedition as a safari or field experience. The expedition may be to one area or exhibit or involve the entire Zoo. The purpose of the expedition is to explore the natural world within the Zoo in order to answer a question or questions about the biodiversity of life, both fauna and flora. If no question is selected before the expedition, the students' observations should lead them to a question.

The investigations must be conducted according to scientific procedure. Data should be collected and recorded using a clearly described methodology. They may want to observe the specific activities of the gorillas or compare the gorillas to the kangaroos. Or the intent may be to observe the environmental essentials that make life possible for each animal. The teacher should provide the students with a Zoo map and an opportunity to research animal information they will need to explore and find the answers to their questions. By planning before hand and studying afterwards, the expedition can be used with an entire unit of interdisciplinary activities that allow the students to reach an understanding about biodiversity and its critical importance to human survival.

A field notebook is a detailed record of observations that may be used to focus student attention to the animal and plant environment and interactions. By keeping a field notebook, the students will have the opportunity to look back at the information discovered during the expedition for future activities back at school. Field notebooks should contain both written observations and sketches. Even if you don't think that you can draw, sketching the shapes

and positions will give you insight later when you look back at your observations. In addition, preparing the journal and creating a cover for the notebook will provide an art activity that will stimulate interest.

Keeping a field notebook requires attention to details. Write details immediately. Memory will not give you the perception that immediate recording does. Describe only what you see. Don't assume or give characteristics to an animal or scene that you think ought to belong there. Likewise, don't neglect to record small movements or actions, even if you don't think that they mean anything. Use the Field Journal Graphic Organizer for students to maintain their journals during their field expedition, or have students create their own.

Post-visit Activities

After returning to school, the field notebook can be displayed or a report can be generated that summarizes your observations and conclusion that explains the answer to your questions. Or a number of different types of presentations can be made to share your field observations with the class, such as a PowerPoint, concept map, or storyboard presentation.

After analyzing your data, if you don't have enough information to answer your questions, you should discuss the ways you might change your research and suggest ideas for future observations.



Suggested Reading

Anderson, Margaret J. 1994. Charles Darwin, Naturalist (Great Minds of Science series)

Bischhoff-Miersch, Andrea & Michael. 1995. Do You Know the Difference? (North-South, ISBN: 1-55858-371-8)

Booth, Jerry. 1996. You Animal! (Gulliver Green/Harcourt Brace, ISBN: 0-15-200696-6)

Curtis, Patricia. 1997. Animals You Never Even Heard Of (Sierra Club, ISBN: 0-87156-594-3)

Bourke, Dr. Andrew. Editor-in-Chief. "Behavioral Ecology". Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY, UK, Published by Oxford University Press Copyright ©Oxford University Press 2004 Print ISSN: 1045-2249; Online ISSN: 1465-7279.

Bradbury, J. W. & S.L. Vehrencamp. 1998. Principles of Animal Communication (Sinauer Associates, ISBN: 0878931007)

Grzimek's Animal Life Encyclopedia - QL3 G7813 vol.1-13

Hardy, Sarah Blaffer. 1999. Mother Nature: A history of mothers, infants, and natural selection. Pantheon Books, New York. ISBN 0-679-44265-0

Lang, Susan S. & others. 1995. Nature in Your Backyard: Simple Activities for Children (Millbrook, ISBN: 1-56294-893-8)

Krebs, John & N.B. Davies. 1993 An Introduction to Behavioural Ecology (Blackwell Scientific

Publications, ISBN: 0878934286)

Krebs, J. R. and N.B. Davies. 1993. An Introduction to Behavioural Ecology (3rd ed). Blackwell Science, Inc. 420 pp. ISBN: 0632035463.

Kuo, Zing-Yang. 1976. The Dynamics of Behavior Development: An Epigenetic View (Plenum Press, ISBN: 0306309769)

Martin, P. and P. Bateson. 1994. Measuring Behavior: An Introductory Guide. Cambridge University Press, New York. ISBN: 0-521-44614-7.

Pianka, Eric. 1999. Evolutionary Ecology (6th ed.). Addison-Wesley. 512 pp. ISBN: 0321042883.

Scott, Michael. 1996. Ecology (Young Oxford Series, ISBN: 0-19-521167-7)

Tinbergen, Niko. 1951. The Study of Instinct (Oxford University Press)

Tinbergen, Niko. 1958. Curious Naturalists (Country Life, Ltd.)

Wilson, E.O. 1992. The Diversity of Life (W.W. Norton & Co, ISBN: 0393310477)

Suggested Websites

Zoo Atlanta- www.zooatlanta.org

Association of Zoos and Aquariums- www.aza.org

Animal Taxonomies- www.york.biosis.org/zrdocs/taxhier/index.htm

The Electronic Zoo - <http://netvet.wustl.edu/e-zoo.htm>

National Museum of Natural History (U.S.) www.mnh.si.edu/nmnhweb.html

National Geographic Nature <http://enature.nationalgeographic.com/>

Animals in Art - <http://hirshhorn.si.edu/education/animals/animals.html>

Amazing Animals in Art - http://www.artsmia.org/animals/animals_activities.html

Access Excellence- www.accessexcellence.org

Animals A-Z - <http://www.oaklandzoo.org/atoz/atoz.html>

Endangered Species Information - <http://www.bagheera.com/>

Animals in Art Lesson Plans (Elementary) -
<http://www.hsv.k12.al.us/schools/art/dixon/animals.htm>

It's a Math World for Animals-

<http://www.sciencenewsforkids.org/articles/20031008/Feature1.asp>

Art-Math-Science- <http://www.princetonol.com/groups/iad/lessons/middle/mathsci.htm>

Animals & Math- <http://www.apa.org/monitor/apr99/math.html>

The Association of Biology Laboratory Education (ABLE)- www.utoronto.ca/able/

Biological Timing Online Science Experiment- www.ct.virginia.edu/Olh.exp.html

Technical writing link - <http://www.rbs0.com/tw.htm>

Suggested Journals and Magazines

[American Scientist](#)

[Animal Behaviour](#)

[Applied Ethology](#)

[Bird Behavior](#)

[Developmental Psychobiology](#)

[Discover Magazine](#)

[Journal of Comparative Psychology](#)

[Psychonomic Society Publications](#)

[Science News - The Weekly Newsmagazine of Science](#)





Zoo Atlanta Naturalist's Expedition
Field Journal Sample

Name: _____ Location: _____

Date: _____ Time: _____

Weather: _____

Animal Description and Information:

What does the animal look like? What is it covered with? What is its habitat and range? What does it eat? Make a sketch of the animal.

Behavioral Information:

What did the animal do? Did the animal interact with others? Anything you didn't expect? Anything new learned today? Sketch the animal when active or interactive.