"From Snails to Alpha Males"

A. Michael Marzolla

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FROM SNAILS

TO

ALPHA MALES

by A. Michael Marzolla

A Collaborative Project of:

Green Chimneys
Farm & Wildlife Center
Brewer, New York

ROOTS & SHOOTS
THE JANE GOODALL INSTITUTE
"From Snails to Alpha Males"

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Introduction

Only if we understand will we care,
Only if we care shall we help,
Only if we help can they be saved.

- Dr. Jane Goodall

Chimpanzees are disappearing rapidly throughout Africa, due to illegal poaching and the destruction of their forest homes. Many young chimpanzees are collected to sell as pets, and many of these die. One must pause to think about how we humans treat our closest relatives. It is extremely important that people begin to understand that we and all living things are part of a system of interrelationships. We share this planet with a multitude of living creatures; perhaps most, that we take for granted. Does this lack of awareness and empathy for other living creatures translate into how we treat one another? Perhaps. So what can be done? In awareness there is hope for our future. Aware, informed action can become a positive force for change.

• The From “Snails for Alpha Males” project is designed to contribute toward that change. It is designed for use by teen and adult leaders working in cooperation with youth ages 9-12 in non-formal educational settings. It has three equally important goals:

• First, to help youth to better understand animals: their similarities and differences to us and to one another; how and where animals live; and how animals behave and the similarities and differences between human and animal behavior.

• Second, to develop scientific inquiry and critical thinking skills in our youth. All of the activities in this curriculum pose a question or present an animal to be explored. Youth practice the basic scientific processes and critical thinking skills that scientists themselves use as they investigate animals.

• Third, to encourage our youth’s active, intelligent and caring participation in our quest to care for our earth and its living creatures. Community service is an integral part of the curriculum. Understanding is not sufficient. A commitment to informed action is an essential ingredient in stewardship of our earth and its living creatures. The skills and knowledge that the youth have acquired can empower them to act in a thoughtful manner while they continue to query and explore.
What is “From Snails to Alpha Males?”

“From Snails to Alpha Males” is designed to introduce young people to the world of animals: from the common garden snail, to the chimpanzee. The project provides hands-on, guided exploration activities that examine snails, fish, birds, cats, and dogs, and chimpanzees. Young investigators, (project participants), examine animal morphology (form), behavior, and habitat. They are motivated throughout the process to apply what they have learned through further exploration and community service projects on behalf of animals. Young investigators are further encouraged to get involved in Roots & Shoots and SERIES, or other projects that explore animal life in more depth.

"From Snails to Alpha Males" represents a collaboration between The Jane Goodall Institute’s Roots & Shoots Program, 4-H SERIES, and Green Chimney’s Children’s Services, using the development, modification, and piloting of curriculum materials. The project provides youth and adult leaders in school-based and nonformal instructional settings with interdisciplinary, hands-on activities. Some resources have been drawn from existing 4-H SERIES and Roots & Shoots materials; and some new activities have been developed. These activities are geared to youth aged nine to twelve, however, with modest modifications they can be made suitable for younger or older kids.

What is an Alpha Male?

An “alpha male” is the dominant male in a troupe of chimpanzees. Alpha males also occur in wolf packs, as well as other species of mammals.
1. Get Ready To Think Like A Scientist!

Good news! You don’t have to be a rocket scientist, or even a science teacher, to lead these activities. All you need is your own inquiring mind and the unshakable belief that science is, or should be, fun!

Underlying all the activities are the basic concepts and processes scientists use everyday. As a leader, you’ll be learning and practicing these with your group:

a) Observing: The main route to knowledge is through observing, using all of the senses. This process is a distinct one by which people come to know about the characteristics of objects and their interactions. At the end of this activity session investigators should be able to describe characteristics of an animal using at least four of the five senses.

b) Communicating: Names and events are described by people so that they can tell others about them. Communicating is a fundamental human process that enables one to learn and understand more about observed information than could be learned otherwise. At the end of this activity session investigators should be able to relate their findings to each other in oral, written, and pictorial forms.

c) Comparing: Comparing is a distinct process by which people systematically examine objects and events in terms of similarities and differences. By comparing the known to something unknown, one gains knowledge about the unknown. All measurements are forms of comparing. At the end of this activity session investigators should be able to describe objects in terms of color, texture, taste, smell, length, weight, etc. by comparing them quantitatively using other arbitrary units or standard units of comparison.

d) Organizing: Knowledge of principles and laws is gained only through the systematic compiling, classifying, and ordering of observed and compared data. Bodies of knowledge grow from long term organizing processes. At the end of this activity session investigators should be able to gather and organize data to show groupings and/or classifications.

e) **Relating:** Trying out or checking your ideas in a systematic way—experimenting. Once you have an idea about how something works (a hypothesis), you can experiment to test the hypothesis. It also allows you to discover relationships between things and events.

f) **Inferring:** Based upon your findings in using the earlier processes, you can begin to recognize and predict general patterns and relationships, thus forming a more comprehensive theory.

g) **Applying:** Using your knowledge to find, frame, and solve problems. Investigators are expected to begin early to plan a community service project in which they can apply the science they are learning to a community need they have identified.

The activities in the “From Snails to Alpha Males” Project are designed to pose a question and provide a systematic exploration of it, using the science thinking processes. Since there are no “right” results anticipated, there can be no “failure”. You’ll know your sessions are successful when investigators come up with their own questions and together you start finding ways to answer them!

2. **Youth as Investigators**

Youth play a primary role throughout this project as explorers and investigators; therefore youth taking part in this project are referred to as investigators.

3. **Preparing Yourself For A Session**

You should plan on reading through each session before you begin. It would be a good idea to practice with a friend before you meet with a group of youth. The activities can be used separately, but doing them all will give investigators a more powerful experience of the importance of animals. The Session has been designed so that later activities build on knowledge gained in earlier ones.

**Quote:** Feel free to read this to the group to set the mood for the exploration you are beginning.

**Purpose:** This gives the purpose for the whole session and the purposes for each activity in the session. Do not read this to the investigators, but be able to share it with them in your own words.

“From Snails to Alpha Males”
**Background material:** This is provided to help you feel comfortable with the explorations. Use it to give yourself a framework for discussion of the observations the group makes and their interpretations of their observations. This background information is just for the teen leader, it should **not** be read aloud or used as an introduction, or the activities will lose the fun of exploration and discovery.

**Materials you will need for the entire session:** This is a list of all of the materials you will need for every activity in that session. It can be copied and used as a check list.

## Challenge Follow-up and Review

This allows you to see what your group remembers from the previous activities and helps the youth recall important observations and discoveries that may be useful in the next set of activities.

## The Activities

Each **Activity** in the **Session** is divided into sections:

- **Purpose** of the activity - again, don't read this to the investigators.
- **Materials you will need** - for this activity only - and notes as to where you can find them.
- **Advanced preparation** - things you need to do ahead of time.
- **Suggested groupings and time needed for the activity**
- **Introduction to the Action** - This is provided to help you get started the first few times you do the activity. It is written in italics and is meant to be read aloud to the group as a way of setting the stage and posing the starting questions of the day. As you become familiar with the activity, you will probably want to introduce it in your own words!
- **Action** - step-by-step instructions of how to do the activity.
- **Sciencing** - questioning strategies to help the investigators reflect on what has been done and observed. We give you possible questions that you can ask, in order to identify the science thinking processes behind each one. (Please feel free to add your own questions).
Challenge Activity

These are suggestions of activities that each investigator could pursue on his/her own, especially to gain ideas for the community service project. You or your group will come up with some great ideas of your own to do instead of or in addition to the Challenge Activities.

4. Community Service Projects
The Community Service portion of Snails To Alpha Males is important. Knowledge and good intentions alone are not sufficient to ensure good stewardship of the earth and its creatures. Informed action is a necessary component of stewardship! As youth group leaders, you can help youth learn the group skills needed to work together to identify and carry out a Community Service Project. By examining the animals we share our planet with, the “From Snails to Alpha Males” Project aims to help us all understand that our actions affect not only ourselves but also our community and our earth.

“From Snails to Alpha Males” provides a wealth of possible avenues for Community Service Projects. For example, based on your community needs and interests, you could design an:

A. Education Project: You might choose from a variety of topics and develop a theme. For example:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Theme</th>
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<td>Household Pets</td>
<td>Responsible Pet Care</td>
</tr>
<tr>
<td>Farm Animals</td>
<td>Agricultural Awareness</td>
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<tr>
<td>Fish</td>
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<td>Snails</td>
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<td>Birds</td>
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<td>Chimpanzees</td>
<td>Concern for Our Closest Relative</td>
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An education project could increase public awareness in your community, perhaps highlight a problem and suggest possible solutions. This could be done by designing, distributing, or showcasing:

- Posters that highlight the results of you experiments;
- Maps and displays of your area highlighting areas of sensitivity to certain animal species posted in public spaces;

“From Snails to Alpha Males”
• Presentations, science fair projects, plays, skits, etc. at public events, to dramatize an important theme;
• Be creative and let your imagination fly!

B. Projects on behalf of animals: Your group might decide to address an issue involving animals that is of concern to your community. Your group, working as a team, might decide to try and find and carry out a solution. There are numerous groups that can act as resources, depending on the type of project you might decide to carry out. Projects might include:

• Building and setting out bird houses or planting food sources for bluebirds, or other species that need habitat enhancement;
• Surveys of wild birds in your area;
• Stream enhancement projects to protect and increase the number of fish.
• Consciousness raising projects around endangered species issues;
• Projects that help people become better aware of animal health and welfare;
• Projects that help improve animal habitat;
• Many more possibilities...!

Partial list of resource groups:

The Jane Goodall Institute’s Roots and Shoots Program
The Cooperative Extension Service
The Delta Society
Friends of Animals
National Audubon
Greenpeace
State Fish and Game
US Fish and Wildlife
National Wildlife Federation
The Humane Society of the United States
Local zoological societies
Local natural history museums
and many more...

“From Snails to Alpha Males”
5. Resource Appendices: Bibliography; Stories and Folktales; Visual Image File

A bibliography has been provided sources for background materials for these activities. It is divided into five sections: one for each session. It includes books and videos that are excellent resources and inexpensive.

The Animal Stories and Folktales and Animal Visual Image appendices are there as copyright free resources that can be copied, used and added to. Stories, folktales, poems, songs and pictures can serve as entertaining and enlightening tools for exploring the world of animals, as well as a powerful record of the way various cultures view animals. Stories and pictures can be woven into activities, and can inspire the young investigators to collect or create their own.

6. Binder Builders

“From Snails to Alpha Males” is a work in progress. It’s success depends on input from the people that use these materials: investigators, teen leaders, teachers, and volunteer leaders. Should you have an idea for an activity, or a successful adaptation of an activity, or any comment or suggestion to help improve “From Snails to Alpha Males”, it may be published, to your credit, in a future edition. Please contact us at the following addresses:

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“From Snails to Alpha Males”
AN INTRODUCTION TO 4-H SERIES
Science Experiences & Resources for Informal Education Settings

Is SERIES That Different From Other Science Activities?

by Richard Ponzio, Ph.D.
4-H Youth Development Specialist
SERIES Project Director

There are few if any new science activities. The difference is in how they are used. The science learning available to youth in SERIES is significantly different on four dimensions: the science processes imbedded in the experience; the value of cross-age instruction; the Learning Cycle; and the value of the apprentice structure where youth are involved in community service projects.

- **Scientific Thinking Processes.** Virtually all science instruction in schools is content oriented and delivered through readings, lectures or demonstrations. Adding scientific thinking processes to the content and using those processes to find, frame, and find solutions to science-based community service projects provides a fresh avenue for the development of critical thinking skills. Further, SERIES scientific thinking processes, adapted from the 1991 California State Science Framework (see attached list), have been organized in a unique way that other curriculum organizational schemes lack. SERIES reflects knowledge from two research fields: developmental psychology (matching stages of development to the thinking needed to complete each activity); and cognitive science (providing particular kinds of learning experiences that relate to specific science concepts). Great care has been taken to ensure that the processes build upon each other, each subsequent one inclusive of the prior one. Thus, content will build in the same manner towards the advanced concepts that participants use to develop and carry out their community service projects.

- **Cross-age Teaching.** Current research emphasizes the value of social interactions for improving learning. The current national trend toward
cooperative learning is an example of this trend. SERIES builds in opportunities for youngster to learn science from each other - older teens interacting with younger learners to solve problems, record data, make inferences, and so on. The modeling that older youngsters provide is more effective than the modeling provided by an adult in a teaching role because the age differences are less and the time for personal, more individualized contact is increased. With less age and status difference, a truly two-way interaction starts faster and generates more enthusiasm.

- *The Learning Cycle.* The instructional model used in presenting the inquiry based activities is an adaptation of Karplus' Learning Cycle. This instructional format has been found effective in working with youth to develop reasoning abilities in science. Researchers have found it to be particularly effective when used in combination with other instructional interventions such as inquiry labs, peer-led discussions and Socratic teaching methods.

Activities based on the Learning Cycle involve three distinct phases:

**EXPLORATION** ~ introductory activities presented by teens... these are the foundations upon which conceptual understandings can be built. The youth learn through their own actions and reactions with minimal guidance or expectation of specific accomplishments.

**CONCEPT INTRODUCTION** ~ led by teens...begins with the introduction of a concept or principle related to the activity or unit -i.e., evidences of a chemical reaction or concentration - that leads the younger youth to apply new patterns of problem finding and problem framing to their experiences.

**CONCEPT APPLICATION** ~ community service...extends the range of applicability of the new concept. It provides additional time and experiences for stabilization and cognitive-consolidation of the new concepts and reasoning patterns. An assumption in SERIES is that we are not focusing on just providing youth with more information but rather our emphasis is upon developing scientific thinking skills and decision making through the community service applications of what is being learned. Application activities provide increased relevance and connection between what is being learned and “the world” by focusing on high intrinsic interest topics chosen by the participants themselves.

- *Apprentice Structure.* Another form of learning through social interactions is the apprentice structure of SERIES. This allows the
novice to work side by side with the expert to learn the craft the processes and the knowledge of “Sciencing”. The adult volunteers serve as “coaches” for the teen leaders and the teen leaders serve as “personal instructors” for the younger participants.

In *A Place Called School*, based on a study of the nation’s schools, John Goodlad notes that the science instruction found in most schools is just another reading lesson. The goal of SERIES is to encourage the youngster to begin to use the processes and approaches of science in his or her personal decision making as a citizen in our society. Content is carefully chosen and related to the processes so that participants develop a clearer understanding of how science relates to their lives every day. SERIES carries science beyond the 4-H meetings, camp projects, or other group experience by incorporating a community service component into each of the themes. After experiencing the content and processes of the themes the participants take their new knowledge out to their community. Through direct interaction they reinforce and enlarge upon their own knowledge while contributing in the spirit of 4-H, new knowledge and direct service to the community.

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**The Jane Goodall Institute’s Roots & Shoots Program**

The Jane Goodall Institute for Wildlife Research, Education, and Conservation, a tax-exempt, non-profit organization, was established in 1977. The Institute is committed to wildlife research, educational programs, and conservation of the habitats that sustain life on earth. The Institute is dedicated to publicizing the unique status and special needs of chimpanzees, now an endangered species, to ensure both their long-term preservation in the wild and their physical and psychological well-being in captive settings.

"From Snails to Alpha Males"
The Jane Goodall Institute believes that the future is in the hands of the world’s young people. With the support and encouragement of concerned, caring adults, they will grow up with a better understanding of the interdependence of all life on earth. With this in mind, Roots & Shoots was founded in 1991 in Dar es Salaam, Tanzania, East Africa. In only a few years, the program has grown dramatically. Roots & Shoots groups are now found in over 25 U.S. states, Canada, Mexico, and more than 20 other countries!

The Roots & Shoots Program aims to integrate educational goals, environmental awareness, and community involvement. Through constructive activities, young people will more aware of their actions and how they affect their local community and the environment as a whole. Regardless of personal circumstances, young people come to understand that their actions can make a difference.

Green Chimneys
Farm & Wildlife Center
Brewster, New York

Green Chimney’s Children’s Services, Inc.

It is Green Chimneys’ mission to provide care and concern for all living things. Green Chimney’s, founded in 1947, is a voluntary, non-sectarian, multi-service agency dedicated to the development of basic living skills for children and adults in order strengthen their emotional health and well-being. The agency’s main offices are situated on a 150-acre farm 60 miles north of New York City. On this site the agency operates residential treatment programs. Its quiet rural setting provides an environment conducive to learning and rehabilitation. On their main campus children and adults are able to experience the therapeutic value of animals and plants. Over 380 animals can be found in the Farm and Wildlife Conservation Center. Other activities include therapeutic horseback riding, swimming, sports, gardening, animal care, Native American Studies, wilderness pursuits, visual arts, adventure, and farm science.

"From Snails to Alpha Males"
“From Snails to Alpha Males”

SESSION ONE

Introductory Activity A: Ahhh... Nuts!!

Objective

- To provide investigators with experiences in using six of the basic processes of science: Observing, Communicating, Comparing, Organizing, Inferring and Applying.

Time

approximately 45 minutes

Materials you will need

Paper bag with approximately 2-3 lbs. of mixed peanuts in their shells, including salted and unsalted peanuts, in roughly equal amounts;

Flip chart and 5 different felt-tips;

Copies of the Processes of Science terms.

NOTE: TASTEING NUTS CAN CAUSE A SEVERE, LIFE-THREATENING ALLERGIC REACTION IN SOME PEOPLE.

Advance Preparation

Fill the paper bag with the mixed nuts. Set up the flip chart so that it can be easily seen by all of the investigators. Also post the science process terms.

Suggested grouping

Individual, pairs, or small group.

Introduction to Action

Nuts and seeds are a preferred food of many animals, including chimps and humans. The following activity serves as an introduction, not only to a nutritious food source for many animals, but also to the basic processes of science.

“From Snails to Alpha Males”, A. Michael Marzolla 1995
Action 1

Pass the bag of mixed nuts around to the investigators, asking each one to select a handful of mixed nuts.

Tell them to select one nut and study it, getting to know it as much as they can. Encourage them to name their nut. Although they may ask questions, encourage them to find their own answers. Allow 3-5 minutes for them to study their nuts.

Ask the group to tell you what they have observed. Record these observations on a flip chart using different colored felt-tip pens. (Use one color for hearing, another for taste, another for touch, another for smell, and another for sight). Allow at least 5 minutes to record their observations.

Ask the participants to consider why you are recording their observations using different colors.

Referring to the observations listed on the flip-chart, ask the group how their observations are similar to the work that a scientist might do. Also refer to the Science Process terms, and discuss what steps were applied in this activity by asking participants to explain their observations. Allow at least 10 minutes for discussion.

Sciencing

Ask the investigators to describe the nut they selected. Encourage them to identify as many characteristics as possible. (Observing, Communicating)

Sciencing continued...
Sciencing continues...

Tell them to identify the different senses, (sight, touch, smell, taste, hearing), that they used in studying their nut, and chart the observations by identifying the sense that was used for each observation. (Observing, Communicating, Comparing, Organizing).

**Action 2**

Ask the participants to organize their original selection of nuts in any fashion they choose (by size, type, texture, color, etc.). (Be certain to allow enough time).

Ask them to describe how they organized their nuts.

Tell them to reorganize their nuts using a different set of characteristics. Again ask them to describe the new characteristic that they used to organize their nuts.

Sciencing

Ask the investigators to describe how they reorganized their selection of nuts, and why they decided to reorganize them in such a way. (Observing, Communicating, Comparing, Organizing)

Encourage them to compare and discuss the different ways that they organized their selection of nuts. Determine how many different ways the selections were organized, and discuss the results, and why they were the same or different. (Observing, Communicating, Comparing, Inferring)

Activity A continued...

"From Snails to Alpha Males", A. Michael Marzolla 1995
**Action 3**

- On a flipchart divided into four columns, **List** as many animals that you can think of that include nuts in their diet by:

  - Listing the animals that you **know** eat nuts;
  - Those that you think **may** eat nuts;
  - Those you know that **do not** eat nuts
  - Those that you are **not sure** if they include nuts in their diet

Ask the group to discuss how they know that an animal does, or does not eat nuts. This is a good opportunity to make the distinction between their actual observations, and their inferences.

**Sciencing**

Have the investigators talk about the different animals listed on the your flip chart and the categories they are listed in. Do they agree? Can some be listed in more than one category? (Observing, Communicating, Comparing, Organizing, Inferring)

Compare and discuss the different animals on the flipchart, and determine if the investigators are in agreement as to where the animals have been listed on the flipchart. Look at the columns of animals that you think might eat these nuts, and those that you are not sure of: how would you find out if these animals do or do not eat these type of nuts? (Observing, Comparing, Communicating, Inferring, Applying)

Ask the investigators to consider where these animals might live. (Communicating, Inferring)

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*From Snails to Alpha Males*, A. Michael Marzolla 1995
Activity continued...

“From Snails to Alpha Males”

**ACTIVITY B: I Am An Animal!**

**Objectives**

- To observe and discuss a variety of animals, from snails to chimpanzees, noting in particular their similarities and differences in size, shape, color, structure, movement, eating habits, birth, growth and social behavior.
- To gain experience observing animals and to begin recording observations of these animals.

**Time**

Approximately 45 minutes.

**Materials you will need**

- Video cassette: “Snails to Alpha Males”
- Video cassette recorder and television monitor
- Copies of the Snails to Alpha Males Observation Grid
- An enlarged version of the Snails to Alpha Observation Grid On a flipchart
- Flipchart easel
- Pencils / pens and felt-tip pens
- Chairs, tables, or other writing surfaces such as clip boards

**Advance preparation**

Set up the video cassette recorder and the TV monitor. Arrange the chairs and tables (if available) in a semi-circle in front of the TV. Be certain that there are enough grid sheets, pencils and pens for each investigator.

Advance preparation continues...

“From Snails to Alpha Males”, A. Michael Marzolla 1995
Advanced preparation continued...

**Prepare** an enlarged version of the Snails to Alpha Males Observation Grid on flipchart paper, and set it up on an easel so that each participant can see it.

**Suggested Groupings**

Any size group.

**Introduction to Action 1**

*Throughout the Snails to Alpha Males Project, we will be observing a variety of animals from many different points of view: their size, shape, color, how they move, how and what they eat, how they grow, and how they behave toward one another.*

**Action 1**

**Explain** to the investigators that you will be showing them a brief video, “Snails to Alpha Males”. Tell them that the video will show a variety of different animals that we will be studying throughout the course of this program.

**Pass** out copies of the Observation Grid to the participants, making certain that they each have a pencil. Tell them to observe the video closely.

**Tell** the investigators, referring to the posted observation grid, to identify as many animals as they can.

**Ask** them to estimate the various animals’ size and weight, noting its color, and texture, the sound it makes, how the animal moves, and how and what the animal eats. Also, ask them to describe how each of these animals change as they grow, and how they think they might reproduce (bear live young or lay eggs). Ask them to record their observations by making notes or drawings on their individual observation grids. Encourage small group discussions regarding growth, change, communications, reproductions, feeding, movement, etc.

**Show** the video, and allow the participants time to complete their grids.

"From Snails to Alpha Males", A. Michael Marzolla 1995
Sciencing

Have the investigators describe the different kinds of animals that they observed. (Communicating)

Referring to the information recorded on their Observation Grids, ask the investigators to describe, compare and discuss the animals. Ask them which was the largest; which was the smallest? How do each of these animals move? What do they eat and how? How do you think they might reproduce and grow? Ask the group to recollect any displays of animal feeling or expression, such as facial movements of dogs, and tail wagging, or facial expressions of chimps. Record these observations on the large grid. (Communicating, Comparing, Inferring)

Reconsidering the “Ahh...Nuts” activity, which of these animals might eat nuts, and how would they eat them? (Communicating, Relating, Inferring, Applying)

Concept Application

As an extension to this activity, suggest that the investigators track their own growth and development by bringing in early photos of themselves, and then track growth cycles of one of the target animals. Have them compare their observations of the animal’s growth and development with their own growth and development.

“From Snails to Alpha Males”

ACTIVITY C: Snails- “Pleased to Meet You”

Objectives

• To provide the investigators with a practical experience in observing a living animal.
• To give the investigators experience in recording and sharing their observations.

Activity continues...

“From Snails to Alpha Males”, A. Michael Marzolla 1995
Activity continued...

**Time**

45 minutes to 1 hour.

**Materials you will need**

To lead this activity you will need at least **one of each of the following materials** for every investigator. You may want to have a couple of extras of each item on hand.

- Clear plastic tumblers (one per participant)
- Pencils
- Copies of Physical/Behavioral Know/Don’t Know work sheet
- Copies of Snails to Alpha Males Observation Sheets (preferably from Activity B)
- Snails (one per participant)
- Cups of water
- 4 sheets of blank writing paper

**Materials you will need for the investigators to share:**

- A simple balance scale for weighing snails (1 scale per 10 investigators)
- A watch or clock with a second hand, or a digital timer, to time the snail’s speed (1 timer per 10 investigators)
- Small paper clips (1 box per balance scale)
- Paper rulers to measure distance snails travel (1 ruler per 5 people)
- Magnifying glasses (1 glass per 5 investigators)
- A copy of charts #1, #2, #3 and #4

**Advance Preparation**

Make sure that you have placed the materials close at hand so that they can be easily distributed to the investigators when you are ready. You have the option of allowing the investigators to work alone, or with one or more partners. Should they work as partners, one of the partners can write down what is being observed, while the other tries different things. Suggest that they periodically shift roles and work cooperatively. Make sure that you have posted the charts ready to record the information that the participants generate.

“From Snails to Alpha Males”, A. Michael Marzolla 1995
**Suggested Groupings**

Individuals, pairs, small groups

<table>
<thead>
<tr>
<th><strong>Action 1</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ask</strong> the investigators to tell what they know about snails from their prior recollections, and what they do not know about snails. Record their responses on chart #1 in the appropriate spaces on the chart.</td>
</tr>
<tr>
<td><strong>Tell</strong> the investigators that they are going to spend time observing snails.</td>
</tr>
<tr>
<td><strong>Important note:</strong> Explain to the investigators that today the snails are our guests, and they are not to be damaged, teased or killed. The snails are to be cared for, and treated with respect.</td>
</tr>
</tbody>
</table>

Give each investigator a plastic tumbler, a snail, a pencil, and a sheet of writing paper. Tell them to observe the snails using all of their senses (sight, smell, touch, hearing... but not taste!) Encourage them to use the magnifying glass to make closer observations.

Allow 5 -10 minutes for the investigators to observe their snails, and tell them to try and make at least six observations.

**Sciencing**

Have the investigators check their observations against their recollections. Do these observations match their original thoughts about snails? Record these observations on chart # 2. Ask the investigators to compare their snails, looking for similarities and differences. Referring to the information compiled on the Snails to Alpha Males Observation Grid, have the investigators compare their recent observations to the earlier ones recorded on the Grid. (Observing, Communicating, Comparing and Organizing).

**Note:** Be careful to help the investigators distinguish between an observation and an inference, (most inferences are an interpretation of what has been observed. For instance, if a participant says something like, “the snail shell is mostly brown in color,” that is observable... but if they say, “my snail doesn’t like to be around people,” that interpretation is an inference).

*“From Snails to Alpha Males”, A. Michael Marzolla 1995*
**Action 2**

Tell the investigators to weigh their snails using the balance scales and the paper clips as counter-balances. Tell them to keep track of the snails weight in paper clips on their Snails to Alpha Males Observation Grid. (For instance, a snail might weigh, one, two, or more paper-clips).

Instruct the investigators to measure the speed of their snail by placing the snail on a paper ruler, and timing the distance it covers.

Encourage discussion between the investigators regarding the differences between individual snails.

Remind the investigators that they can use this information to update their individual Snails to Alpha Males Observation Grids.

**Sciencing**

Have the investigators record, compare and discuss the weights and speeds of the different snails. (Observing, Communicating, Organizing, Inferring, Comparing).

Discuss the differences and similarities between the investigators snails; Encourage the investigators to predict as to why the snails are similar or different. (Observing, Communicating, Organizing, Inferring, Comparing).

"From Snails to Alpha Males"

**Activity D:**

**Snail Smorgasbord !**

**Objective**

- To have the investigators explore, observe, and record the food preferences of their snails.

Activity D continued...

-10-

"From Snails to Alpha Males", A. Michael Marzolla 1995
Activity D continues...

**Time**

Approximately 30 minutes.

**Materials you will need**

“Snail Food Preference” sheet for each participant  
A “smorgasbord” of assorted leaves, fruits, flowers, vegetables, bread, crackers, honey and nuts from activity A, allowing enough food for each investigator’s snail.  
Pieces of flip chart paper to record observations.  
Paper towels, newspaper, or sponges.  
A copy of chart # 3

**NOTE:** Remind the participants to treat their snails with care. They are not to force the food on their snails. They should allow the snails to make their own food selections.

**Advance Preparation**

Collect the various foods, and lay out the smorgasbord ahead of time, as well as the paper towels and newspaper. Prepare a poster or a flip chart sized copy of the Snail Smorgasbord sheet. Provide each investigator with copies of the Snail Food Preference Sheet.

**Suggested Groupings**

Individual or pairs

**Action**

Ask the investigators to complete a Snail Food Preference Sheet.  
Discuss with the investigators the foods that they predicted their snails might eat, and those foods that they might not eat.

Action continued...

“From Snails to Alpha Males”, A. Michael Marzolla 1995
Action continues...

Record the investigators’ predictions on the posted Snail Smorgasbord Chart.

Instruct the participants to place the food that they have selected on their Snail Food Preference sheet. Place the snail on the sheet; observe the snail’s action. After 10-15 minutes, have the participants report and discuss the actions of their snails: what food did their snail eat, or not eat, and did it agree with their predictions?

Sciencing

Ask the investigators if they can they predict accurately the foods the snails will prefer? How can they prove it? Did they notice any patterns? (Observing, Comparing, Relating, Organizing)

Discuss the benefits of multiple observations. (Communicating, Inferring)

Discuss with the investigators the differences between the larger and smaller snails. Ask them how snails are different from or similar to other animals? Humans. (Refer the investigators to their Snails to Alpha Males Observation Grid). (Observing, Comparing, Relating, Inferring)

Ask the investigators to consider whether they consider snails a wild animal or not. (Comparing, Relating, Inferring)

Additional Challenges and Applications

Encourage the investigators to predict where they think they might be able to locate snails? When do they think they might be most or least active? What might they eat in the wild?

Suggest that the investigators design and build an ideal to home for snails, perhaps using recycled materials.

For additional activities with snails, refer to the 4-H SERIES Sciencing with Snails materials.

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"From Snails to Alpha Males", A. Michael Marzolla 1995
Charts for Sciencing and Snailing
adapted from SERIES “Sciencing with Snails” pg. 6

Chart #1

- snail know/don’t know here
- snail smorgasbord here

Chart #2

- snail observations here
- snail food preferences here

"From Snails to Alpha Males", A. Michael Marzolla 1995
SNAIL FOOD PREFERENCE

Which food does your Snail eat first?

"From Snails to Alpha Males", A. Michael Marzolla 1995
<table>
<thead>
<tr>
<th>Don't Know</th>
<th>Physical</th>
<th>Behavioral</th>
</tr>
</thead>
</table>

**ANIMAL:**
(List the type of animal on the line above)

"From Snails to Alpha Males", A. Michael Marzolla 1995
**ANIMAL OBSERVATIONS**

**ANIMAL** : ________________

<table>
<thead>
<tr>
<th>Physical</th>
<th>Sense</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. _______________</td>
<td>Vision</td>
</tr>
<tr>
<td>2. _______________</td>
<td>Vision</td>
</tr>
<tr>
<td>3. _______________</td>
<td>Smell</td>
</tr>
<tr>
<td>4. _______________</td>
<td>Touch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral</th>
<th>Hearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. _______________</td>
<td></td>
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<tr>
<td>2. _______________</td>
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</tr>
<tr>
<td>3. _______________</td>
<td></td>
</tr>
<tr>
<td>4. _______________</td>
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</tr>
</tbody>
</table>

"From Snails to Alpha Males", A. Michael Marzolla 1995
**Animal Smorgasbord**

**ANIMAL:**

<table>
<thead>
<tr>
<th>Food</th>
<th>will eat</th>
<th>won’t eat</th>
<th>?</th>
<th>did</th>
<th>didn’t</th>
<th>?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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</table>

*Adopted from Sciencing With Snails*
<table>
<thead>
<tr>
<th>SPECIES</th>
<th>PHYSICAL CHARACTERISTICS &amp; BEHAVIOR:</th>
<th>1. SIZE</th>
<th>2. WEIGHT</th>
<th>3. COLOR</th>
<th>4. TEXTURE</th>
<th>5. SMELL</th>
<th>6. SOUND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snail</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Fish, frog, or lizard...</td>
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<td></td>
</tr>
<tr>
<td>Owl, jay, robin.</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Dog, or cat or another small mammal</td>
<td></td>
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<td></td>
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<tr>
<td>Chimp</td>
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</tr>
</tbody>
</table>
PHYSICAL & BEHAVIORAL CHARACTERISTICS (Continued):

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</tr>
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<tr>
<td>Fish, frog, or lizard...</td>
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<tr>
<td>Owl, jay, robin...</td>
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<td>Dog or cat or another small mammal</td>
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<td>Chimp</td>
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<tr>
<td>SPECIES:</td>
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<tr>
<td>Snail</td>
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<tr>
<td>Fish, frog, lizard turtle...</td>
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<tr>
<td>Owl, jay, robin or other bird...</td>
<td></td>
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<tr>
<td>Dog or cat or another small mammal</td>
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<tr>
<td>Chimp</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYSICAL &amp; BEHAVIORAL CHARACTERISTICS (Continued):</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. HABITAT: Describe where they live:</td>
</tr>
<tr>
<td>12. Describe how they respond to one another:</td>
</tr>
</tbody>
</table>
"From Snails to Alpha Males"

SESSION TWO

ACTIVITY A: Fish Are Fabulous!

Objectives

• To gain experience observing different types of fish.

• To practice recording observations of different types of fish, noting their size, shape, how and what they eat, the type and condition of water the specific fish live in, how specific fish move, and how they behave.

Time Required

45 minutes

Materials you will need

Flip chart, felt-tip pen, and enlarged version of Snails to Alpha Males “Animal Know/Don’t Sheet”
Copies of “Animal Know/Don’t Sheet” for investigators
Copy of the “Fish Observation Record Sheet” (One copy per person)
Pencil and clipboard, or similar portable writing surface (One each per person)
Snails to Alpha Males Observation Grid
Optional:
Small hand mirror
Hand lens
Thermometer

Advance Preparation

You will need to make arrangements to visit a local aquarium, aquarium shop, pet store, or find someone who has a large aquarium with several types of fish that will allow your group time to visit and observe the fish.

If access to an aquarium is not an option in your area, you may try and locate a fish hatchery, a fish pond in your local park, or a clear lake or stream where fish might be easily viewed.  

Advanced preparation continued...
Advanced preparation continues...

Prepare a large version of the Snails to Alpha Males “Animal Know/Don’t Sheet” on a large sheet of flip-chart paper.

**Suggested grouping**

Any size group

**Introduction to the Action**

A man can sit for hours before an aquarium and stare into it as into the flames of an open fire or the rushing waters of a torrent. All conscious thought is happily lost in this state of apparent vacancy, and yet, in these hours of idleness, one learns essential truths about the macrocosm and the microcosm. If I cast into one side of the balance all that I have learned from the books of the library and into the other everything I have gleaned from the “books in the running brooks”, how surely would the later turn the scales. (Konrad Lorenz, King Solomon’s Ring, pg. 16)

Today we will be spending time observing different types of fish. We will be looking carefully at their size, shape, and individual characteristics, including age and gender. We will observe where fish spend their time, how they move, how and what they eat, and how they behave towards other fish, including fish of their same size, and species, as well as other species of fish.

**Action**

**Divide** the group into teams of two or three people.

**Distribute** the “Animal Know/Don’t Sheet”.

**Explain** that the teams should complete the sheets as best they can, drawing on their previous knowledge.

**Record** and **discuss** the recollections of the group on the flip-chart.

**Distribute** the “Fish Observation Record” to each of the participants and instruct each team to work together filling in as much information as possible based on their observations of the fish.

"From Snails to Alpha Males", A. Michael Marzolla 1995
Sciencing continues...

Have them discuss the similarities and differences between humans and fish. (for instance, humans and fish have eyes, and breathe air).
(Observing, Communicating, Comparing, Organizing, Relating, Inferring)

Ask them what else would they like to know about fish, and how would they find the information? (Communicating, Inferring, Applying)

Instruct them to log their observations onto the “Snails to Alpha Mails Observation Grid”, and to compare their conclusions with one another.
(Observing, Communicating, Comparing, Organizing, Applying)

“From Snails to Alpha Male”

**Activity B: “Homes for Fish & Fish for Homes”**

**Objectives**

- To consider the different “homes” (habitat) for fish: Ponds, lakes, rivers, streams, and the ocean.

- To applying the previous fish observations by designing and building a model “home” for a fish

**Time**

45 minutes - 1 hour

**Materials you will need**

Flip chart and felt-tip pen

You will need a variety of found or recycled materials for the investigators to use in constructing their fish “homes” or habitat.

Materials continued...
Introduction continues...

Homes for animals is usually referred to as “habitat”. A habitat is where you find an animal, for instance, a trout may live in a lake or stream, a squirrel might live in the woods. Think back to the fish we observed earlier, and where they lived. You might want to use your Fish Observation Sheet, and refer to the drawing you made of its house (habitat) for ideas, and think about other fish you might have seen, read about, or seen on TV or on a video, and what sort of habitat they lived in.

**Action 1**

Ask the investigators to consider the different types of fish that they might know about, and then brainstorm a list of fish, and fish habitats. On the flip-chart, write their responses in the appropriate columns.

Divide the investigators into teams of two, and tell them that they are to design a habitat for their fish.

Show the investigators the materials that you have prepared and explain that they can use them to construct their fish habitat.

Bring the teams back together to present and discuss their habitats after they have completed their task.

**Sciencing**

Have the teams to present and discuss their habitats. Ask them to explain what they based their design ideas on: their recent observations of the fish or previous experience? (Observing, Communicating, Inferring, Applying)

Ask them to describe the sorts of fish that might live in the habitats they designed. (Communicating, Inferring, Applying)

Session 3 continued...

"From Snails to Alpha Males", A. Michael Marzolla 1995
**Action 2**

**Distribute** copies of the “Camou-fish” hand-out to your group.

**Demonstrate** the concept of counter-shading in fish by holding a bent copy of the “Camou-fish” under a light source, so that a shadow is thrown on the bottom half of the “Camou-fish”.

Ask them to consider ways that fish might try to protect themselves from other creatures that could eat them. **List** their ideas on the flip-chart.

**Suggest** they consider the coloration of the fish they observed.

**Instruct** your group to shade their copies of the Camou-fish with a charcoal pencil, blending the charcoal with their fingers. (see example below).

Tell them to cut their fish out, and to connect the tabs, securing them with a piece of tape, then instruct them to place their fish under the same light source used in the previous demonstration, using a piece of masking tape.

**Note:** It is suggested that you use, if possible, a light source on a wall, so that the investigators fish can be stuck to the wall.

Action continued...

"From Snails to Alpha Males", A. Michael Marzolla 1995
ACTIVITY D: Fish Theater
“A Day in the Life of a Fish”

Weed in the wave, gleam in the mud-
The dark fire leaps along his blood;
Dateless and deathless, blind and still,
The intricate impulse works its will.
The Fish, Rupert Brooke

Objective

- To applying the observations of fish behavior by creating short theater pieces.

Time

45 minutes - 1 hour

Materials you will need

Fish Theater Cue Cards

Advance Preparation

None required

Suggested grouping

Any size group.

Introduction to the Action

We have recently finished collecting observations of fish. How do you imagine fish spend their days? How do they find food? Do fish sleep? How do they hide from other fish that might wish to eat them? How do they move and how fast or slow are they? How do they act towards other fish? Do they care for their young? These are some of the questions that we would like you to try and answer based on the fish you observed by creating short plays or skits based on what you observed.

“From Snails to Alpha Males”, A. Michael Marzolla 1995
**Action**

Ask the participants to divide into groups of three or four each.

**Explain** to them that each group is to develop a short play or skit (3 - 5 minutes) based on fish that they observed earlier, and that they will be presenting the play to each other.

**Have** each group draw one of the Fish Theater Cue Cards. Explain that these cards help set the stage for their fish play.

**Explain** to them, for the purpose of this play, that their fish can talk, sing, dance, and move however they please: they don’t have to move like a fish.

**Tell** them that they have 30 minutes to plan and practice their skit.

**Have** the groups present the skits. When they are done presenting the skits, spend time discussing them as a group.

---

**Sciencing**

Ask the investigators what observations did they draw on to create their play or skit? (Observing, Communicating, Applying)

Have them discuss their play or skit: was it a realistic portrayal of the life of a fish? Ask them to explain why or why not? (Communicating, Inferring, Relating, Applying)

**Opportunities for Application through Inquiry and Challenge**

Suggest that your group visit a fish hatchery or aquarium to observe the fish and compare their earlier observations.

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"From Snails to Alpha Males", A. Michael Marzolla 1995
Opportunities continued...

Purchase whole fresh fish from the market, study the fish, use it to learn how to do “goyutaku”, or Japanese fish printing, then cook and eat the fish!

Acquire a copy of *Fishy Science* from Ohio Cooperative Extension and carry out the suggested activities.

**Community Service**

Learn about fishery issues in your area. Contact your local fish and game office or the National Fish and Wildlife Service for resources and information.

Investigate the possibility of your group getting involved in a fish restoration, or a fish habitat restoration project.

Use your groups theater skills to produce plays about fisheries issues and present them in your community.

**Additional Resources:**
Horton, Robert L. *Fishy Science: A hands on approach to learning about fish*, The Ohio State University Extension, 1993. 4-H Publication 4-H 625 GPM

“From Snails to Alpha Males”, A. Michael Marzolla 1995
# Fish Observation Record

*Complete as much information as possible. When you are unable to locate information, record it as n/a for not available.*

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**Time:** from _____ to _____  **Location:**

**Weather:**  **Temperature: Air:** _____  **Water:** _____

---

**Draw a sketch of the fish you are observing in the space above.**

**Fish Name:**

**Fish Color(s):**

---

**Where does the fish spend most of its time? (Circle one):**

- Near the bottom?
- In the middle?
- Near the top?
- All over?

**Describe the fish's behavior:**

---

**Describe what the fish was doing while you watched it:**

---

**DID YOU SEE THE FISH EAT?**

- If so, what did it eat, and how did it eat?

---

**How did the fish act towards other fish?**

---

On the reverse side of this sheet, draw a picture of where the fish lives.

---

"From Snails to Alpha Males", A. Michael Marzolla 1995
## Fish Theater Cue Cards

<table>
<thead>
<tr>
<th><strong>You are a school of fish looking for food, and a fish from another school wants to join your school</strong></th>
<th><strong>You are different types of fish looking for a reef to shelter in. There is room for all but one fish</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>You are trout living in a stream. People are dumping trash and waste in the stream. What will you do?</strong></td>
<td><strong>You are a school of fish living in the sea. A shark comes along... what do the fish do?</strong></td>
</tr>
<tr>
<td><strong>You are a group of fish living in a desert pool that is drying up. What do you do to survive?</strong></td>
<td><strong>You are fish living in a fish tank. People come to look at you and tap on you glass tank while you try and rest. What do you do?</strong></td>
</tr>
</tbody>
</table>

"From Snails to Alpha Males", A. Michael Marzolla 1995
Snails to Alpha Males Fish Camouflage Resource Sheet

"From Snails to Alpha Males", A. Michael Marzolla 1995
Use this fish to explore the following fish survival strategies: counter shading, camouflage, disruptive markings, and false eye-spots. Using scissors, cut out the fish. Connect the two tabs by sliding slot “A” into slot “B”. This should give the fish a half-moon shape when viewed head-on. Consult the “Snails to Alpha Males” Session 5 for additional instructions.

"From Snails to Alpha Males" A. Michael Marzolla 1995
“From Snails to Alpha Males”

SESSION THREE

ACTIVITY A: Find Feathered Friends!

Objectives

- To introduce the investigators to the pleasure of observing birds and bird behavior.
- To gain practice in designing a bird-watcher's data sheet.
- To locate and observe birds and bird behavior in a natural setting.
- To further practice gathering and recording data in the field.

Time Required

1 hour minimum

Materials you will need

Flipchart and felt-tip pens
Enlarged “Animal Know/Don’t Know” sheet on flip-chart
For each investigator:
Copy of “Animal Know/Don’t Know” hand-out
Pencils with erasers
Small notebooks with lined paper or sheets of lined paper and a portable writing surface: sheet of cardboard or a clipboard
Their copy of the “Snails to Alpha Males Observation Sheet”
Optional:

Field guides
Binoculars
Birdcall Cassette tape of bird calls and a cassette player
Advance Preparation

On the flip chart, make an enlarged copy of the “Animal Know/Don’t Know” hand-out. You will need to select an area ahead of time that you are reasonably certain to find birds: a park, somewhere in the country, or even a schoolyard or your own backyard. If you are a city dweller, a city park is almost certain to have birds, certainly pigeons! Try to select a place that is fairly quiet, and away from a lot of distractions. You may wish to contact your local Audubon Society to see if one of their members might join you. Don’t forget to arrange for transportation in advance!

Suggested Grouping

Any size group

Introduction to Action

We are going to have a chance to visit and observe some of the most interesting and wonderful creatures on the planet. Some of these creatures are our neighbors all year round, while others travel great distances. Depending on where you live, some of these creatures might live in tropical rainforests part of the year, and others might live part of the year in the high arctic, with polar bears as their neighbors! Many scientists think that these creatures could be the direct descendants of dinosaurs! What are these creatures that sound so exotic? They are the birds!

We will spend time today in the field sharpening our skills as observers, doing bird-watching, after we have determined what it is that we want to learn from the birds. Adults and young people world-wide are watching birds, and concern for birds is spreading, because they are often very sensitive to changes in their environment. For instance, many song-birds that we used to take for granted, have in some places disappeared, or have become rare where they were once common. Scientists link the disappearance of many of these birds to the destruction of rain forests, and wetlands, places where many songbirds live.

Introduction to Action continued...

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“From Snails to Alpha Males” A. Michael Marzolla 1995
By learning how to gather information on birds, you can begin to help us all gain a better understanding of them, and contribute to helping protect our feathered neighbors.

**Introduction to Action continues...**

**Action 1**

**Distribute** copies of the “Animal Know/Don’t Know” hand-out to your group, and ask the investigators to complete them, writing down everything that they know, and everything that they don’t know about birds.

**Record** their recollections on the flip-chart know/don’t know grid, and discuss their recollections.

**Explain** that they need to develop an observation record sheet that they will take into the field to record their bird observations. Refer to the fish observation sheets that they used in the previous activity, as well as the “Snails to Alpha Males Observation Sheet” as examples.

**Ask** them to imagine what they might see and hear (how many different types of birds, bird songs and calls, birds interacting with one another, birds feeding, individual birds shapes, colors, size, and behavior).

**Brainstorm** for 5 minutes with the group, developing a list of observations that they may wish to look for when they go into the field;

**Ask** the investigators to select observations from the brainstormed list that they will record while in the field. Have them write the list in their notebook, allowing space to record their observations. Also tell them that we are not going to be particularly concerned about identifying the particular species of bird today. Encourage them to make up a name for a bird (“Brown Peeper”, “Gray Hopper”), if they do not know the bird’s common name.

**Option:** You may choose to have the group form teams and have each team collect data on specific categories.

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"From Snails to Alpha Males" A. Michael Marzolla 1995
Sciencing

How many different categories of observations did the investigators identify? Ask them to describe how they plan on organizing the information they collect. (Observing, Communicating, Comparing, Organizing)

Introduction to Action 2

Your group may need to travel to the area where you will be making their observations. Remind them to bring along their notebooks and pencils. Explain to them that:

>You have just completed the design of your bird observation sheets. While we are out doing our bird observations, please take your time and take careful notes, and make sure you note anything unusual that surprises you.

Action 2

Explain that while they are out looking for birds, they should not shout, throw anything, or run around making noise that might frighten the birds.

Tell the investigators to form a circle and to sit down on the ground, being very careful to be very quiet and still, keeping their eyes wide open and their ears tuned to bird sounds. Allow at least fifteen minutes to carry out your observations.

Note: Should you have a difficult time locating birds, try “Pishing” for them. Make the “pish, pish, pish” sound softly, repeating it periodically. This sound will usually attract birds, who associate it with a predator sound (a hawk, for instance), and they will come to the sound to investigate it.

Discuss and process the groups observations.

Provide time for the investigators to complete the section on birds on their copy of the “Snails to Alpha Males Observation Sheet”.

"From Snails to Alpha Males" A. Michael Marzolla 1995
Sciencing

Ask the investigators to share their observations with one another. Encourage them to discuss and compare them with one another. How many birds were observed, how many different kinds? Did their observations confirm their earlier recollections, and did they learn anything new? (Observing, Communicating, Organizing, Relating)

Ask if they recognized the birds. Did they invent a name for the birds they did not recognize? What were the birds doing? Were there birds on the ground and birds in the trees? Were any birds eating? Could they tell what they were eating? (Observing, Communicating, Comparing Organizing)

Discuss with the participants how they could find out more about the birds that they observed? (Communicating, Inferring, Applying)

Referring to their copies of their "Snails to Alpha Males Observation Sheet", ask the investigators to compare the birds that they observed with the snails and fish they had observed previously: How are they similar, and how are they different? (Observing, Communicating, Comparing, Organizing, Inferring, Relating, Applying)

ACTIVITY B: * Predator and Prey: Freeze, Fly or Else!

* Adapted from Project Wild: Fresh Frozen Critters. pg. 122

Objectives

• To explore predator/prey relationships, including adaptations;

• To discover the importance of adaptations in predator/prey relationships;

• To recognize the limiting factors that affect wildlife populations, including predator/prey relationships.

Time Required

20 - 45 minutes

"From Snails to Alpha Males" A. Michael Marzolla 1995
Materials you will need

Food tokens (colored pieces of cardboard): enough to provide 3 per investigator
Strips of colored cloth or other device (T-shirt) for marking predators
Four or five hula hoops, or large loops of yarn or string that can serve as "cover" markers
Large sheet of paper and felt-tip marker to record captures

Advance Preparation

Select a large, flat, grassy area and lay out the game playing field as indicated in the previous diagram: Identify one end of the field as the "food source" area, and scatter the cardboard food tokens, (allowing three tokens per predator); Place the hula hoop or string circle "temporary shelter" within the playing area as indicated in the diagram: Identify the other end of the playing field as the permanent shelter area.

Suggested grouping

Any size group
Introduction to the Action

We are going to play the "Predator/Prey: Freeze, Fly, Or Else" Game. Playing this game helps show how predator and prey animals behave. (Predators are animals that kill and eat animals for food; Prey are animals that are killed and eaten by other animals for food). The animals that will be represented in this version of the game are hawks, doves and squirrels. These animals display a variety of behaviors in the predator/prey relationship. These behaviors are adaptations for their survival.

Prey (in this case doves and squirrels) protect themselves from predators with some of the following behaviors: signaling to others, flight, scrambling for cover, or "freezing" on the spot to escape detection or capture. The type of behavior the prey animal displays depends on how close the predator animal (in this case a hawk) is when detected by the prey. Each animal has a threshold for threat levels. If the hawk is far enough away, the squirrel might feel safe enough to bark out a warning, signaling to others that a predator is near. If the hawk comes closer, the squirrel or dove may try and run away. If the hawk is too close for the squirrel to run, (or the dove to fly), away, it may try to hide. If the hawk is so close that none of these alternatives is available, the dove or squirrel may freeze in place. This "freezing" is a kind of physiological shock in the animal, and camouflage or shelter may help them remain invisible to the hawk.

Sometimes when you come upon an animal suddenly, the animal will freeze, and you might infer that the animal is not afraid, when in reality, the animal is displaying "freeze" behavior.

Action

Have the investigators divide into hawks, squirrels and doves, allowing one hawk for every four to six doves and squirrels combined. Be certain that the hawks clearly identify themselves with a bright T-shirt, a cloth armband or headband.

Explain that the point of this game is for the prey animals (doves and squirrels) to avoid capture by the hawks, (the predators), as they try and reach their food source. Tell them that the prey animals must collect at least three food tokens to survive, and that they can only collect one food token per trip and that they must take it to their "permanent shelter" area. Their travel is hazardous, and they need to be alert for predatory hawks.

Action continued...
They can use various prey behaviors— including warning other prey that a hawk is near. Prey have two ways that they can prevent themselves from being captured by the hawks: they may “freeze” any time a hawk is within five feet of them; they may find cover within the “temporary shelter”, (with at least one foot in the circle), distributed on the playing field.

Tell the hawks that they may start the game anywhere in the open area between the ends of the field and are thus distributed randomly between their prey’s food and “primary shelter”. The hawks attempt to capture their prey by tagging only moving (not “frozen”) prey. Hawks must catch at least two prey to survive. Captured prey are taken to the sidelines of the game area by the hawk that captured them.

Sound or display of a pre-arranged signal,( a whistle, for instance), to begin a round of the game, with the squirrels and doves moving from their “permanent shelter” end of the field, trying to reach the “food source” end of the field.

Allow 5 - 7 minutes for each round of the game, and allow enough time to play at least four rounds.

Remind the prey animals that they can remain frozen for as long as they like, however they must collect enough food (3 tokens) to survive the round. On the flipchart paper, have the investigators record the results of each round, noting how many predators and prey survive each round of the game.

Note: Be certain to establish ground rules for the game beforehand with the investigators. Players should not strike or tackle or trip one another while playing the game.

Variations

• Have the prey that are captured become predators. Each predator not getting enough food becomes a prey in the succeeding round. Record the changes on your flipchart.

Variations continued...
Variations continues...

- Have the predator/prey move slowly, or have them develop different types of locomotion.
- Try this activity using aquatic predator/prey species. Have the investigators move like aquatic creatures, “swimming” towards their food source.

Sciencing

Discuss with the investigators the ways they avoided capture when they were prey (doves or squirrels). Which way was easiest? Which was most effective? How did the hawks catch their prey? Which technique worked best? (Observing, Communicating, Inferring, Comparing, Applying)

Ask them to discuss what happened when a prey animal froze. (Observing, Communicating, Comparing)

Ask them to discuss what they have learned about the importance of these behavior adaptations to both predator and prey animals. (Observing, Comparing, Inferring, Applying)

Have the investigators discuss how the predator/prey relationship affects the population of wildlife. (Observing, Communicating, Inferring, Comparing)

Discuss how the behaviors practiced in the game might apply to human behavior, for example: “fight or flight”. How are our behaviors similar or different? (Observing, Communicating, Inferring, Comparing)
Challenge Activities

Brainstorm a list of activities based on the information collected that might carried out on behalf of animals.

Select a bird or other animal to observe, recording it’s behavior patterns, noting any behavior that might serve to avoid detection or capture.

Design a study of bird food preferences, similar to the previous snails food preference activity (Snail Smorgasbord).

Community Service

Have your group present the predator/prey game to other youth groups and at community events.

Volunteer to work with the National Audubon’s annual Christmas Bird Count.

Involve your group in building and setting out bird houses to help birds such as the Blue Bird.

Set up bird-feeders, and keep track of the birds that visit them. Find out the status of local birds of prey, and learn what you can do to help.
“From Snails to Alpha Males”

SESSION FOUR

ACTIVITY A: A Day in the Life of My Cat, Dog, or...?

“My cat does not talk as respectfully to me as I do to her.” Collete

“A dog teaches a boy [girl] fidelity, perseverance, and to turn round three times before lying down.” Robert Benchly

Objectives

- To provide the investigators the opportunity to apply their animal observation experience observing household pets;
- To compare animal observations, noting similarities and differences between different animals and species.

Time

Time will vary according to arrangements with the group. You will need to allow 15-20 minutes to orient the investigators to action. The investigators should have at least a part of a day to carry out their observations. You will need to allow at least 20 minutes at the end of the pet observation activity to have the participants share and discuss their observations.

Material you will need

Flip-chart with enlarged “Animals Know/Don’t Know” chart
felt-tip pens
For each investigator:
“Animals Know/Don’t Know” hand-out
Notebook, pen, or pencil
Plastic bags
“From Snails to Alpha Males” Observation Grid
Materials needed continues...

Optional materials:
Cloth measuring tape
Magnifying glass
Paper
Black watercolor paint
Camera and film
Videocamera
Bathroom scale

Advance Preparation

This activity requires careful advance preparation, perhaps several days in advance. You will need to assess beforehand the groups access to household pets. Cats and dogs would be ideal, however, any sort of household pet will do. The investigators will need to able to spend at least part of a day with a pet animal. You will need to prepare an enlarged version of the “Animals Know/Don’t Know” chart, as well as copies of the chart for hand-outs for the investigators.

Suggested Grouping

Any size group. People will work individually.

Introduction to Action

How often have we taken the time to carefully examine a dog, cat, hamster, or other household pet? We’ll be doing just that, spending time with a pet, using the observation skills we’ve developed watching snails, fish, and birds. Be sure to take your time, make careful observations and notes about the animal you are observing. Be alert to anything that might seem surprising or unusual to you. Be creative, draw pictures, if possible, take photos or even videotape. Record your impressions any way you like. To begin with we will reflect on, and record what we know about our household pets, their physical make-up, and their behavior.

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“From Snails to Alpha Males” A. Michael Marzolla 1995
Action

**Distribute** the “Animal Know/Don’t Know” handouts to the investigators, and **tell** them to fill them out, based on their previous recollections about their household pet, or one that they known.

**Ask** the investigators to share what they have put down on their handout, and **record** this information in the proper spaces on the “Know/Don’t Know” chart. **Encourage** discussion, and suggest comparisons with previous observations made of snails, fish and birds.

**Explain** to the investigators that they will be spending time observing household pets, and that they will be keeping track of their observations on their Snails to Alpha Males Grid. Tell them that they should use the grid as a guideline for their research, and to attach any additional information they might collect, such as sketches, samples, etc.

**Suggest** that they sketch out a map of where their pet lives, noting where it sleeps, eats, plays and spends its day.

**Tell** them that they should take as much time as possible making their observations. **Encourage** them to try and make their observations throughout the day, noting when their pet is sleeping, eating, playing, exploring, etc. **Encourage** the investigators to collect samples of their animal’s fur, assuming that it has fur, by combing or brushing, and storing the sample in a plastic bag. Small samples of what your pet might eat during the observation period might also be collected. Instruct the investigators to label their samples with a label on/or note in the sample bags identifying the bag’s contents, who collected it, and what day, and at what time it was collected.

**OPTIONAL:** **Propose** that the investigators use water-based paint and paper to collect paw prints of their pets. They might also measure and weigh their pets, and measure the amount of food and water their individual pets consume in a day. **Suggest** that they study their pet’s fur closely with the magnifying glass; if possible, they might also sketch, photograph, or videotape their animal, trying to capture a visual record of their pet’s activity throughout the day.

*Action continued...*
NOTE: Be certain to remind the investigators that they should cause no harm to the pets that they will be working with. They should be careful not to stress their animal, or cause it any pain, or discomfort in any way.

Sciencing

Ask the investigators to refer to the Know/Don’t Know Charts, and their Observation Grids and share what they recollected and compare it with what they observed. How did they carry out their observations, and for how long? Was there anything that surprised them? Anything that they had never noticed before? (Observing, Communicating, Comparing)

Encourage the investigators to discuss and compare the different pets they observed, and to share their maps and samples. What kinds of animals were they? Ask them to share their maps of where their pet lives. What did the pets eat, and how much? What was their day like? Did they seem happy, sad, or indifferent? Which was the smallest? Largest? What sounds did they make? What was their fur (or skin) like? (Observing, Communicating, Comparing, Organizing, Inferring)

Have the participants refer to their Observation Grids, and encourage them to compare and discuss the similarities and differences between the animals that they have observed previously with the observations that they have made of their pets. Also ask them to consider the similarities and differences between their pets and themselves. (Observing, Communicating, Comparing, Inferring, Relating)

ACTIVITY B: Designing a Happy Habitat for Your Pet

“Man is the only animal that blushes, or needs to.” Mark Twain

Action B Continued...
Action B Continues...

Objective

- To provide the investigators the opportunity to apply their pet observations by conceiving and designing an improved living situation for their pet.

Time

45 minutes - 1 hour

Materials you will need

- Snails to Alpha Males Observation Grids
- Sheets of poster paper
- Pencils
- Crayons
- Felt tip pens
- Tape
- Various sheets of colored paper

Optional:
- Sheets of cardboard
- White glue
- Clay
- Various “found” articles: shoe boxes, plastic jugs, clean, used, plastic or Styrofoam food or beverage containers, etc.
- Toothpicks, or popsicle sticks

Advance Preparation

Collect the drawing materials for your group. Set the materials out so that they are easily accessed by your group.

Note: You may decide to collect enough materials for the optional approach to the activity. Should you decide to do this, be sure to take the time to collect enough of the materials so that a wide variety are available for your group to use for construction of three dimensional models. (You might also consider natural found materials such as twigs, leaves, grass, stones, sand, etc., materials that can be easily recycled).

“From Snails to Alpha Males” A. Michael Marzolla 1995
Suggested grouping

Groups of two to three investigators

Introduction to Action

In this activity we will review how and where our pets live, based on our earlier observations. We will use this information to see if we can plan and design an ideal living situation for our pets. What would a perfect environment for your pet look like? How would it work?

Action

Divide the investigators into groups of two or three members each.

Explain that the groups are to serve as design teams, and that each team should decide on a pet, real or imagined, for which they will design an ideal living environment, or living situation. They should consider the information they collected on their Observation Grids as a reference.

Point out the materials that the teams have available to use to draw, (or construct), their designs.

Tell the teams that they have up to 40 minutes to plan and prepare their designs. Explain that each team will be presenting their design to the larger group.

Bring the teams together and allow them time to present and discuss their designs.

Sciencing

Ask the teams to share and discuss their designs with the larger group. (Observing, Communicating, Comparing)

Have the teams describe, compare and discuss the pet observations that they considered while creating their designs. (Observing, Communicating, Comparing, Applying)

Sciencing continued...
Sciencing continues...

Encourage the group to review their designs, discussing how they might realistically apply them.
(Observing, Communicating, Comparing, Organizing, Inferring, Applying)

Referring back to their earlier observations of other animals, ask the group to compare and contrast how their pets live with snails, fish and birds.
(Observing, Communicating, Comparing, Organizing, Inferring, Applying)

**Challenge Activity**

Based on the “Snails Smorgasbord”, design a “Pet Smorgasbord” to test pet food preferences, and record these preferences on the food preference chart.

Encourage the participants to share their observations and their team designs with their family and friends. Ask them to consider if there is anything in their designs that they might be able to apply with their household pets.

Suggest that investigators carry out long term observations of their pet, maintaining an ongoing record of their observations.

Suggest that the group visits their local animal shelter to learn more about abandoned and lost pets.

**Community Service**

Encourage the teams to further refine their designs and develop them as public displays, at schools, libraries, or public events to promote pet welfare.

Suggest that the group contact their local chapter of the humane society, or animal shelter to offer their service as volunteers.
"From Snails to Alpha Males"

SESSION FIVE

ACTIVITY A: Chimpanzee...

Pleased to Meet You!

* WITH LOVE

"Chimpanzees, more like us than any other living animal, form a living link between two worlds, human and non-human beings. When David Greybeard reached out to touch my hand I needed no words to understand his message of reassurance: and I loved him."

Jane Goodall


Objectives

- To introduce the investigators to the basics of chimpanzee morphology, (form and shape), and behavior.

- To practice observing chimpanzees.

Time

Approximately 30 minutes

Materials you will need

- "From Snails to Alpha Males" video, or
- "Among the Wild Chimpanzees"
- VCR
- Television monitor
- Flip-chart with enlarged "Animals Know/Don’t Know" chart

For each investigator:
- Pencil
- Copy of the "Animals Know/Don’t Know" hand-out
- "From Snails to Alpha Males Observation Grid"
Advance preparation

Obtain a copy of the video “From Snails to Alpha Males”, or the National Geographic Video: “Among the Wild Chimpanzees”. (available at many public, and school libraries). Set up the VCR and the TV monitor. Cue the videotape to the chimpanzee section. Prepare a large version of the “Know/Don’t Know” grid on the flip-chart. Make a copy of the “Know/Don’t Know” handout for each investigator.

Suggested grouping

Any size group. People will work individually.

Introduction to Action

Of all the vast array of creatures on earth, none so closely resembles man as the chimpanzee. Indeed, recent biological research has shown that the resemblance is even more profound than we had anticipated. This research has show that the chimp is closer to humans than any other kind of animal. Their brain, their blood and their DNA are remarkably similar to that of humans. Perhaps even more remarkable is how similar chimpanzee behavior is to that of human beings.

Our understanding of these behavioral similarities is due in large part to the work of Dr. Jane Goodall, who has spent 35 years studying chimpanzees where they live, at the Gombe Stream Reserve in Tanzania, Africa.

Most of us will not be able to visit chimpanzees in the wild, however, we are fortunate that much of Dr. Goodall’s research has been carefully recorded on camera.

We are going to see a video of the chimpanzees that she studied. Let’s try and “walk in her sneakers”, and see what we can learn from Dr. Goodall’s chimpanzees. Pay close attention to the chimpanzees. Watch their expressions, how they move, how they eat, and how they behave towards one another. What can you observe that seems similar to how humans look and behave? Before we show the video, let’s consider what you might already know about chimpanzees, and what you don’t know about them, but would like to find out.
Session continues...

**Action**

**Distribute** the “Know/ Don’t Know” grids to the investigators.

**Instruct** your group to complete the grids as best they can, recording what they know and what they don’t know about chimpanzee’s, focusing on their physical and behavior characteristics. Allow them time to complete the grids.

**Ask** the group to share and discuss what they have recorded on the grids, and write their comments in the proper spaces on the large flip-chart form.

**Tell** the investigators that they will be watching the chimpanzee section of the “Snails to Alpha Males” video. Suggest that they note observations about chimps that surprise them, or confirms what they already thought they knew, and record it on the Know/Don’t Know handout.

**Ask** the group to share and discuss what they noticed on the video, and add their comments to the large flip-chart form.

**Sciencing**

Have the investigators share what they learned about chimpanzees. What did they notice that seemed similar to humans, and what seemed to be different? *(Observing, communicating, relating, inferring)*
* Activity B: So Like Us & So Different!


Objectives

- To explore and compare the morphology of chimpanzees and humans.
- To consider the similarities and differences between primates and other animal species.

Time

One and a half hours.

Materials you will need

Flipchart
Felt tip pens
Corkboard or feltboard
Scissors
Paper-punch
Round-headed paper fasteners and/or flat-headed tacks
White paper gum reinforcement rings
Masking tape and sticky putty (for posting flexi-flans)
Fingerpaint
White paper
Paper towels
Bucket of water (for clean-up)
Crayons
Rubberbands
Nuts in shell, coins, cups, pens, and other items that can be handled/eaten.

For each investigator:
Copy of “Flexi-Chimpanzee and Flexi-Human Flexi-flans” (see description below)
Copy of “Chimpanzee Foot and Handprint”
Investigators copy of the “Snails to Alpha Males Observation Grid”

*Adopted from Roots & Shoots “Hey, Who’s Standing There?”, The Jane Goodall Institute, Ridgefield, CT

“From Snails to Alpha Males” A. Michael Marzolla 1995
Materials list continues...
Optional: Pictures, or models of other animal footprints, i.e. dogs, cats, birds, rodents, etc. for comparison.

**Flexi-flans**

Flexi-flans are figures made of paper and/or cardboard that are cut out and fastened with round-headed fasteners or tacks. They are designed to be mounted on a flat surface, such as a cork or flannel board. This activity is supplied with two figures, one chimp, and the other human. To assemble them, cut them out, paper-punch the holes indicated, and reinforce them with the white gum rings. Assemble the joints, using the round-headed paper fasteners, or thumb tacks, if you use a bulletin board.

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**Advance Preparation**

You will need to spend time gathering and preparing materials, and setting them out so that they are easily accessible. You may choose to assemble a set of the flexi-flans for use as examples ahead of time. Be certain to make enough copies of the chimp foot and hand prints for each investigator. Should you wish to locate other animal prints, either on paper, or casts of tracks, check with your local nature center or library.

**Suggested grouping**

Any size group. People work individually, or in pairs.

**Introduction to Action 1**

All primates (humans, apes, Old World monkeys, New World monkeys, prosimians, and tree shrews) share several similar physical characteristics, regardless of their individual physical characteristics, and regardless of their individual species. Primates tend to have a smaller snout and fewer teeth than many other animals, reflecting the fact that much of our food is partially processed by the hands before it reaches the mouth.

*Introduction continued...*
Introduction continues...

Our relatively large brains allow us to be more flexible in our social and physical environments than many other species. Our eyes face forward, and we have a forearm that can turn at the elbow.

Humans and chimpanzees, are genetically different by less than two percent in our DNA. (This is closer than the degree of genetic difference between horses and zebras or grizzly bears and polar bears). As a result, our similarities are quite striking, particularly with regard to our brain development, skeletons, muscles, teeth and embryos. Our trunks are quite similar in shape and size. Due to our similar arm and hand structures, we can both raise our arms above our heads and swing from branches. We both have opposable thumbs, (i.e., thumbs which can move independently of our other fingers), allowing us to handle tools more effectively. In addition, we both have flat faces below the eyes.

Although we share many similarities, there are many physical difference between us, most notably in our body and brain size, canine teeth, and how we move. People tend to be physically larger than chimps, and our brains are about three times larger. The human voice box allows us to speak, whereas chimpanzees communicate through distinct calls: they are not capable of using words the way humans do.

Although our trunks are quite similar in shape and size, the human backbone is upright, and the rest of our bone structure allows us to walk upright. Chimpanzee bone structure forces the backbone to move forward to make it easy to walk on four limbs.

Human bones, in our hands and arms, are shorter than chimpanzees. We have more muscles than chimpanzees in our hands and our thumbs can be used together with the other fingers. This allows humans to use a wider range of tools more easily and, therefore, live in more diverse habitats than other primates. Chimpanzees' larger and curved finger bones aid in hanging and swinging from branches, as well as walking on their knuckles.

Chimpanzee legs are shorter than humans'; human legs are heavier and have knees that lock.

Introduction continued...

"From Snails to Alpha Males" A. Michael Marzolla 1995
Introduction continues...

Human feet also differ from chimpanzees and other primates, with short toe bones, and an attached first toe, which help us walk upright, heel-to-toe. The first toes on chimpanzees feet are opposable, allowing them to grasp object more easily.

We will be exploring some of these differences and similarities in the following activities.

**Action 1**

**Distribute** the human and chimpanzee flexi-flan handouts to the investigators. Each investigator will assemble both flexi-flans.

**Tell** them how to assemble them by cutting them out, and fastening them together with roundhead fasteners, or tacks. Show them as an example, if you have made one ahead of time.

**Ask** the group to post their work on a bulletin board, flannelgraph, or wall, using tacks, or masking tape, or other removable adhesive.

**Encourage** the group to discuss the similarities and differences that they notice between the two species.

**Ask** for a volunteer to record the similarities and differences on the flipchart.

**Allow** time for the investigators to update their “Snails to Alpha Males Observation Grid” with the information they have recently collected.

**Sciencing**

Ask the investigators to compare and discuss the physical similarities and differences between humans and chimpanzees. (Observing, Communicating, Comparing)
Session 5 continues...

**Action 2**

**Distribute** the copies of the chimpanzee foot and hand prints, and the primate hands and feet picture.

**Ask** the group to divide into teams of two.

**Show** them the paper, finger paint, paper towels, and crayons, and tell them that they are going to make outlines of their hands and feet, as well as prints of their hands and feet, using the finger-paint.

**Tell** them to study their prints, and compare them with those of the chimpanzee, and the primate feet and hand pictures.

**Encourage** them to share and discuss their prints and compare them with those of the chimpanzee, and those of the other primates.

**Option:** If you are able to locate pictures of other animal prints or casts of their tracks, include these in the comparison and discussion.

**Sciencing**

Ask the investigators to share the similarities and the differences that they noticed between the chimp’s prints, the other primate’s prints, and their own. *(Observing, Communicating, Comparing)*

Have the group consider what it might be like if they had hands and feet like a chimp: what could they do better, and what would be easier to do? Which of the feet and hands look most like their own, and why? *(Communicating, Comparing, Organizing, Relating, Inferring)*

Session 5 continued...

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"From Snails to Alpha Males" A. Michael Marzolla 1995
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Session 5 continues...

**Introduction to Action 3**

We were recently discussing the similarities and differences between our feet and hands, and those of a chimpanzee. We considered what the advantages and disadvantages of primate hands and feet, and what it would be like to have the feet and hands of a chimpanzee.

*Just imagine what it would be like if you didn’t have a thumb? Well guess what, you’re going to have a painless opportunity to find out!*

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**Action 3**

*Have* the investigators tape their thumb and index finger together, and then cover them with a rubberband, as shown in the following illustration:

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Tape thumb to index finger with masking tape then cover with a rubber band.
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*Indicate* the peanuts, coins, glasses of water and other items and challenge them to manipulate them: i.e. eat the peanuts, drink water, pick up the coins, try to write, tie shoes. Encourage them to experiment, and to challenge themselves. Suggest they try using their feet!

*Ask* them to share and discuss their experience. How did it feel? Was it hard or easy?

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**Sciencing**

Ask the group to consider which task was the easiest, and which was the most difficult, and why. (*Observing, Communicating, Organizing, Relating, Inferring*)

"From Snails to Alpha Males" A. Michael Marzolla 1995
Ask them why they think chimpanzees developed opposable big toes, but not opposable thumbs. (Observing, Communicating, Relating, Inferring)

Ask them to consider why humans have developed opposable thumbs but not opposable toes. (Observing, Communicating, Relating, Inferring)

Encourage the group to speculate about what these physical features might tell us about the behavior of chimpanzees and humans. (Observing, Communicating, Relating, Inferring)

**Activity B: “Priming Around” – Primate Charades & Theater**

**Objective**

- To investigate and increase the investigators’ understandings of chimpanzee behavior and social interaction.

- To consider the similarities in behavior and social interaction shared by many primates, specifically chimpanzees, and humans.

**Time**

One hour

**Materials you will need**

Pictures, drawings, slides or videotape showing chimpanzee facial expressions; (video, or projection equipment if necessary).

For each person: a copy of the “Learning Chimpanzee” handout from the Belfast Zoo.
Advance Preparation

Prepare copies of the handouts for the participants, and be certain to read carefully the “Learning Chimpanzee” handout before hand, and familiarize yourself with chimpanzee facial expression. You might also try and locate other pictures, video or slides of chimpanzees showing facial expressions.

Introduction to Action

Pom Rescues Her Infant Brother

One day eight year old Pom was leading her family along a forest trail. Behind her tottered her three year old brother Prof. Their mother, Passion, plodded some distance in the rear.

Suddenly Pom paused, staring at the ground ahead. There, coiled in the thick undergrowth, was a big snake. Pom uttered a small call of alarm and, with her hair bristling in fear, quickly climbed a nearby tree. Prof, however, continued along the trail. Perhaps he had not heard Pom’s call, or did not understand what it meant. And Passion was not close enough to know what was happening.

And so, with Pom watching from the branches above, Prof moved even closer to the snake. Eventually, when he was but a few meters from it, Pom could bear it no longer. With her hair bristling even more, and a big grin of fear on her face, she leapt to the ground, gathered her little brother into her arms and carried him back into the tree. They were safe, and gradually Pom’s hair sleeked and the grin left her face. By the time Passion arrived, the snake had glided away into the undergrowth.

From Jane Goodall’s With Love, The Jane Goodall Institute, Ridgefield, Connecticut.

This short, but powerful story is a vivid expression of the importance of verbal and nonverbal expression in primates. Imagine how you might of reacted if this had happened to you!

Introduction to Action continued...

“From Snails to Alpha Males” A. Michael Marzolla 1995
Introduction to Action continues...

As you might imagine, chimpanzees, as well as other apes and monkeys, carry out complex social interactions that help them express their wants and needs. They use facial expressions, vocalizations, gestures and body postures to communicate. Does this sound familiar? Let's explore, through charades and theater, the similarity, and differences, between chimpanzee behavior and our own.

**Action 1**

Discuss with the group how they communicate what they want, and how they feel. How do they express fear, hunger, sadness, playfulness, aggression, insecurity, relaxation?

Request volunteers, individually or in pairs to act out first non-verbally, and then using language, their emotions, needs and feelings.

Consider with the group the different types of expression they used, and how they used them, paying attention to facial expression, sound and speech, gestures, and posture.

Distribute The "Learning Chimpanzee" handout, and review it with the investigators.

Ask the group to divide into teams of three and practice making the chimpanzee expression with each other. See if they can guess who is making what chimp expression, and the meaning of that particular expression.

Have the teams share their expressions with the larger group, and see if they can guess what emotion or feeling the expression signifies.

**Sciencing**

Ask the investigators to consider how chimpanzees communicate with one another. (*Observing, Communicating*)

"From Snails to Alpha Males" A. Michael Marzolla 1995
Sciencing continues...

Ask the group to try and list the different types of communication used by both chimps and humans. Are there expressions that humans use and chimpanzees do not, and vice versa? (Observing, Communicating, Organizing, Comparing, Relating, Inferring)

Encourage the group to consider how chimpanzees might use expressions that might be similar to those of humans to communicate the same feelings. (Observing, Communicating, Comparing, Relating, Inferring)

Action 3

Explain to the investigators that they will be, based on the previous activities, divided into teams, in order to create and perform a “playlet” of at least 3 minutes in length done entirely in chimpanzee. This includes facial expressions, gestures, posture, movement and chimpanzee vocalization.

Tell them that the playlet should tell a story. As an example, use the introduction to this session. Explain that for a story to be successful, it usually requires conflict, for example, an orphan chimp looking for a home among strangers. It also requires a beginning, middle and end.

Have the group divide into teams and brainstorm a story, and plan and practice for it. Allow them 15 minutes.

Bring the groups together and have them present their playlets.

Allow for time at the end to process the experience.

Sciencing

Ask the group to consider the difficulty or ease of expressing themselves in “chimpanzee”. How did they feel doing it? (Communicating, Inferring, Applying)

Sciencing continued...

"From Snails to Alpha Males" A. Michael Marzolla 1995
Sciencing continues...

Have the investigators discuss what they noticed about chimpanzee behavior that was similar to human behavior, and vice versa. Why do they think this is so? (Observing, Communicating, Inferring, Comparing, Relating)

Ask them to compare this behavior with that of other animals, snails, fish, birds, dogs, cats, etc. Where do they see similar and different behavior, and why do they think this is so? (Observing, Communicating, Inferring, Comparing, Relating, applying)

Activity C: Animal Morpho-mobile

"The animals of this planet are in desperate peril.... Without free animal life I believe we will lose the spiritual equivalent of oxygen."
- Alice Walker

Objectives

• To explore the physical similarities and differences between species of animals.

• To contemplate the connection and reliance between all animals including humans.

• To encourage further exploration into the world of animals.

• To consider ways of applying what has been learned about animals, on behalf of animals, our families, our communities, and our world.

Time

Approximately one to one and a half hours.

Activity C continued...

"From Snails to Alpha Males" A. Michael Marzolla 1995
Activity C continued...

Materials you will need

String, fishing line, or heavy thread
Sticks, coat hangers or heavy wire
Wire nippers
Scissors
Magazines and newspapers with pictures of animals
White glue
Paper punch
Black card stock or construction paper
Small screw eyes to hang the mobile
Crayons
Colored felt-tip pens
Poster paint and brushes
An international collection of animal folk tales, stories, and fables
(see appendix for some stories and ideas)

For each person:
Copies of the Animal Morpho- Silhouettes handout
Copies of the Animal Morpho-Mobile Diagram

Advance Preparation

Collect all of the supplies listed ahead of time, and set them out on tables for easy access. Plan on asking your group to collect magazines, and old calendars with pictures of animals. Make enough copies of the handouts ahead of time. You might also want to make a mobile beforehand, to show as an example. Also remind the group that they can use some of the material that they made before, on the mobile, such as the “Camou-fish”.

Suggested Grouping

Any size grouping, the investigators will have the option of working alone or in teams.

Activity C continued...

"From Snails to Alpha Males" A. Michael Marzolla 1995
Activity C continues...

Introduction to Action

Every individual, non-human as well as human, matters
Every individual has a part to play
Every individual can make a difference.

Dr. Jane Goodall on Roots & Shoots

The following activity is an opportunity to creatively express the connection between all living things. We will further explore the similarities and differences between all of the creatures we have investigated, and express them scientifically and artistically. We will be making Animal Morpho-mobiles - "morpho" for morphology, which means the form, shape or structure of something, in this case, animals. We will also look for or create stories to go along with the Morpho-mobiles...stories that express our feelings for animals and what we have learned from and about them.

Action

Distribute the Animal Silhouettes handout and the Animal Morpho-mobile diagram, and explain that today the investigators will be making and assembling Animal Morpho-mobiles.

Explain that the mobiles can be built by individuals or by teams.

Show them the supplies that you have made available to construct the mobiles. Explain that they can incorporate their Camou-fish, and any other animals that they might have created during the course of this project. Indicate that there are pictures of animals that we studied on the Animal Silhouette handout, and that these can be used, or they can make their own, by cutting them out of magazines, or drawing them. Explain to them that the mobile can be of any size.

Tell them that, when they cut out their animal pictures, they should trace around the animal they have cut out, and cut out a matching black silhouette of black construction paper or railroad board, and paste the animal to its black silhouette, so that the effect is to have

Action continued...
Action continues...

one side of the silhouette with the animal’s picture, and the other side will be black.

Instruct them to punch a hole in the completed animal silhouette to attach a piece of fishing line or string. Tell them to experiment with their design - the mobile diagram is only an example of how to assemble the mobile.

Encourage them to color one side of their animal silhouettes if they wish.

Explain that they should find or create a story that can go along with their Animal Morpho-mobile. They can use a folk tale, fable, children’s story, news story or they can make up their own story, or relate an experience that they had with an animal.

Allow time for the investigators to share their mobile and their story with the group.

Sciencing

Ask the investigators to share their mobiles and describe the animals that they included in their piece: how are the animals similar and how are they different in terms of their forms and structures? Do they have legs? Feet? An obvious head and eyes? Do they look like us, or are they very different? Which look like us, and which don’t? (Observing, Communicating, Organizing, Inferring, Relating)

Discuss with the investigators why they think the animals are shaped the way they are, and ask them to support their answers with reasons. Also, ask them to consider what purpose their shapes have to do with their behavior: e.g., an opposing toe might help in tree climbing. (Communicating, Organizing, Inferring, Relating, Applying)

Challenge Activities
To further explore primates, request copies of the Roots & Shoots program materials.

Challenge Activities continued...

"From Snails to Alpha Males" A. Michael Marzolla 1995
Challenge Activities continues...

Have the investigators trace full size outlines of themselves, and compare them to other animals.

Have the investigators try swinging from the jungle gym, and try and move like chimpanzees. Was it hard or easy? Why?

Stories can tell us alot about ourselves and how we think. Collect more stories and folk tales about animals, perhaps focusing on a specific animal, or how a specific group of people looked at animals. For instance, in West Africa, the spider is a significant figure in their folk tales, and is known as a joker and trickster; the coyote fulfills the role of trickster for many American Indian peoples. What other animals play a role in other cultures, and why?

Further explore our connections to the natural world by doing the "web of life" activity from the SERIES Reduce, Recycle, Reuse Project. Also look into the SERIES Oakwoodland Wildlife Habitat Project.

Visit your local zoo, paying particular attention to the primates section. If chimpanzees are present, observe then, and consider the video footage you have seen of them in the wild. What behaviors do they exhibit that you recognize? Which behaviors are new to you, and what might they mean?

Search the World Wide Web for information on primates, and other animals, and share this information with others.

**Community Service**

Design a community fair or display based on the work your group has done in this project. Display your groups creations, present your plays and stories, and share activities with other youth and their families.

Start or join a local Roots & Shoots Chapter. Attend a SERIES training and get involved in a local SERIES project.

Create a Webpage focused on what you have learned about animals, and primates in particular.

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"From Snails to Alpha Males" A. Michael Marzolla 1995
*Flexi-Chimpanzee is drawn to the same scale and proportions as the Flexi-man. For instructions on how to assemble the Flexi-chimpanzee, see Session 5, Activity B of "Snails to Alpha Males."

“From Snails to Alpha Males”

Flexi-man

* Flexi-man I drawn to the same scale and proportions as the Flexi-chimpanzee. For instructions on how to assemble the Flexi-man, see Session 5, Activity B of “Snails to Alpha Males.”

* Source: Zihlman, A., Pg. 54. The Human Evolution Coloring Book, Harper Perennial, 1982

“From Snails to Alpha Males” A. Michael Marzolla 1995
FOOTPRINT
FEMALE CHIMPANZEE
12 YEARS OLD

FULL SCALE PRINT OF CHIMPANZEE FOOT

"From Snails to Alpha Males" A. Michael Marzolla 1995
HANDPRINT
FEMALE CHIMPANZEE
12 YEARS OLD

FULL SCALE PRINT OF CHIMPANZEE HAND
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"From Snails to Alpha Males" A. Michael Marzolla 1995
Chimpanzees are likely intelligent animals living in social groups. Each chimpanzee has its own place in the community. Some are more dominant than others, so communication is very important. To express their feelings chimpanzees use facial expressions, noises and body language. Here are some of the most common facial expressions.

FEAR
- with top lip curled in and teeth showing. This is used when frightened or uncertain, such as when approaching a higher ranking chimp.

GRIN
- with lips pushed forward. Used for begging or for greeting from another chimp.

POST
- with the mouth open and top and bottom teeth showing. This may express fear, excitement or a tantrum.

ATTACK DISPLAY
- lips tight shut and hair on end. Used to show dominance by a male. He will also rush about, stamping the ground and making a lot of noise.

ATTENTION
- lips slightly pursed. Used when showing keen interest in something.

PLAY FACE
- a relaxed face. Often with the mouth open and top lip covering the teeth. Used when playing happily.

OPEN GRIN
- with the mouth open and top and bottom teeth showing. This is used when frightened or uncertain, such as when approaching a higher ranking chimp.

RELAXED FACE
- this shows the normal relaxed expression.

REPRODUCED BY KIND PERMISSION OF BELFAST ZOO

"From Snails to Alpha Males" A. Michael Marzella 1995
"From Snails to Alpha Males"

**Silhouettes for Animal Morphology-mobile**

Cut these animals out to create cut-outs to use as templates for your Animal-Morphomobile. Trace around your cut-out onto a piece of black construction paper using a white colored-pencil. Cut out the along the outline along the white line tracing to create your sellout.
"From Snails to Alpha Males"

Sellouts for Animal Morphology-mobile

"From Snails to Alpha Males" A. Michael Marzolla 1995
"From Snails to Alpha Males"
Silhouettes for Animal Morphology-mobile

"From Snails to Alpha Males" A. Michael Marzolla 1995
“From Snails to Alpha Males”

Silhouettes for Animal Morphology-mobile

Alpha male chimpanzee

“From Snails to Alpha Males” A. Michael Marzolla 1995
“From Snails to Alpha Males”
Silhouettes for Animal Morphology-mobile

"From Snails to Alpha Males" A. Michael Marzolla 1995
The Animal Morpho-mobile can be assembled any way you choose. Use this diagram as an example. Use your imagination to personalize your Animal Morpho-mobile. Refer to Activity D, Session 5 for further instructions.
Session 1, Snails:


Ponzio, R. et al. (1989) *Sciencing With Snails*. 4-H SERIES, University of California, Davis.

Session 2, Fish:

Horton, R. (1993) *Fishy Science: A hands on approach to learning about fish*. The Ohio State University Extension. 4-H Publication 4-H 625 GPM


Session 3, Birds:


**Session 4, Dogs, Cats, and Pets:**


**Session 5 Chimpanzees:**


"From Snails to Alpha Males" working Draft
Goodall, J. (1994) *With Love*. The Jane Goodall Institute, Ridgefield, CT.


**General Animal Related Topics:**

**Animal behavior:**


**Animal Stories and folktales:**


"From Snails to Alpha Males" working Draft


**Camouflage and survival adaptations:**


**Wildlife:**


**Video**

Once there was a frog that lived in a pond. A bull would come to the pond everyday to drink water. One day the bull proposed to the frog that it come out of the pond to see the world. The frog asked the bull, "how big is the world, is it bigger than my pond?" The bull replied, "the world is very big, you need to come out and see!" The frog puffed up his belly, and asked the bull, "is the world this big?" The bull replied, "no, the world is bigger". The frog puffed up his belly bigger, and asked: "is the world this big?" The bull replied, "no, the world is much bigger!" Again the frog puffed up his belly even bigger, and asked the bull, "Is the world this big?" The bull replied, "No, the world is even bigger." Finally, the frog puffed up his belly so large, that it popped, and the frog died.

The moral of this story is that very often there are things that beyond our experience and imagination. The lesson here that you should not be so proud to think that world you know is the only world that exists.
The Bird an the King

A Nepali Folktale as told by
Totraman Gurung

It was a hot summer day. The king was sitting under a tree in the palace garden. There was cool breeze blowing in the garden. In the meantime a small bird came and sat on the branch of the tree. The bird began to challenge the king. The bird asked the king, “Who was the most powerful between the two”. The king got mad at the bird. He order his palace guard to catch the bird. They caught the bird. The king was still mad. He spoke with a loud voice. Kill the bird. The guard killed the bird and began to take out all the feathers. The dead bird began to speak, “the king is dark and I am white”. Again the king ordered the guard, “hey cut this little beast into pieces”. The bird said, “hey king you are one but we are hundred brothers”. The king order to his cook to fry the bird's meat with lots of oil and spices. When the cook was frying the bird's meat, it began to speak. It said to the king, “hey king you have a dry skin but we are oily”. The more the bird challenged the king he was more angry than before. When the meat was fried the king asked his cook to put the bird meat into a bowl, and he ate it. Then the bird asked the king, “hey king we are in you are out!” The king said to the bird, “you little beast shut up”, but it did not. Finally the king asked his guard to follow him to the bathroom. He ordered his guard to be careful while he was in the bathroom. “Do not let the bird fly away”, the king said. We should put him in the cage. But the bird was very clever, he flew away from the bathroom. Then the bird sat on the branch of a tree. The bird said to the king. Dear king you should respect all the living creature on earth, whether they are small or big. The king asked the small bird to forgive him. The king told the bird that he was much smarter than himself. The bird was happy. The bird flew away from the palace garden singing a happy song.
The ants in the meantime realized that their cattle were gone and they started to follow the tracks of their cattle. When Jackal saw the ants coming he ran away. The ants found poor Hyena under the skins and bit him until he nearly died.

Folk tales from the World Wide Web: The following folktales are located at: http://www.folkart.com/~latitude/folktale/folktale.htm

The Rabbit and The Coyote

The FolkArt & Craft Exchange proudly presents this Mayan Folktale translated from Q'anjob'al Maya language of Guatemala by Fernando Peñalosa.

This is a story of Uncle Rabbit and the coyote. The rabbit came to a big rock, and there he deceived the coyote. He was leaning on the rock when the coyote came by.

"What are you doing, brother?" the coyote asked the rabbit.

"Come here quickly, brother, the sky is falling down on top of us. Lean against the rock and hold it up while I go for a stick. We'll prop it up with that," said the rabbit to the coyote.

"All right," said the coyote and began holding it up with all his might. Since the coyote was so stupid, he did exactly what the rabbit told him to. The rabbit had said that he was going to get a stick, but he went and left the coyote holding up the rock. When the rabbit didn't return the coyote shouted:

"Come back, brother! The weight of the rock has made me tired."

The rabbit still didn't come back.

"No matter, I'm going to leave even though the sky may fall down on top of us," said the coyote. But when he ran away he fell into a ravine. The rabbit never came back to the rock and the coyote was lost.

"From Snails to Alpha Males" working Draft
Later the rabbit came to a pond and saw the reflection of the moon in there. As the rabbit was very tricky, he was always deceiving the coyote. The dumb coyote always followed him and didn't know that the rabbit was deceiving him. The coyote came to the pond where the rabbit was. When he saw the coyote coming he began to drink the water from the pond.

"What are you doing, brother? The coyote asked the rabbit:

"Look, brother, there's a lot of food down there," answered the rabbit.

"What kind of food?"

"Look," the rabbit told the coyote.

The coyote looked in the water and said: "I see it. What is it?"

"There's a cheese in the water," the rabbit said to the coyote.

"If we drink all the water we can get the cheese. Drink it, you're big and you can finish all the water."

"All right, brother," he said, and began to drink the water.

"I'm going for a walk," said the rabbit, and left. The coyote continued to drink the water, but the rabbit was gone. The coyote's stomach began to hurt him, and he got the runs. He wasn't able to finish the water, so the coyote abandoned the effort and left.

The Rabbit Throws Out His Sandal

The rabbit was in the cave that was the abode of all the animals: the snake, the turkey vulture, the buzzard, the deer, the lion, the skunk and the coyote. They began to get together there to discuss how they could kill the rabbit mayor (the rabbit is often called the "mayor").

But the rabbit mayor was very clever and was looking for a way to escape. They began to keep watch on him in that house because they
intended to kill him, but they were not able to kill him as they had planned. They had wanted to smash him to pieces.

"Make him come out so that he will die right now. Don't let him escape; that good-for-nothing mayor has deceived us too many times. Well, now he's surely going to be finished, we're going to finish him off. Be on your guard and don't let him get away. When he comes out of the cave we're going to smash him to pieces, for there's a lot of us. Pity him. Compared to all of us, he's nothing. We are many against one. I hope now he's going to pay for all the crimes he has committed against us. That's why he must to die now. You, turkey vulture, go and watch for him to come out, and you deer, go right after him. Since you can run as fast as the mayor, you'll be able to catch up with him. Be on guard, all of you."

"All right," they said.

"Snake, you look to see when he comes out, and we'll all pile on top of him. You snake, call him."

"Come on out, hurry," said the townspeople.

"Wait," said the rabbit, "I'm taking off my sandal."

"But hurry," said the snake.

"Wait, I'm coming out. Wait for me there, I'm coming out."

"Well, hurry," said the townspeople.

"Come on out," the snake said to the rabbit.

"I'm coming out. Wait," said the rabbit.

"Well, hurry," said the townspeople.

"All right," said the rabbit.

"I'm coming out now. Please catch my sandal, I beg you."
The townspeople answered: "Catch his sandal, throw it over there. It's not as if it were your father's sandal, that you're obliged to carry it."

"All right, mayor. Throw out your sandal." And the turkey vulture caught the sandal. He gave it to the deer and the deer threw it away, as they thought that it was the rabbit's sandal. They were all shouting in the cave. They didn't know it was the mayor they had thrown away.

"Come on out," shouted the snake into the cave, "come out right away." When they realized that he wasn't answering them they were sad. They sent the snake into the cave and the snake shouted: "He's not here, he's not here."

"Throw it far away."

"He's not here, he's not here. He came out," said the snake.

"He's not here. Maybe it was him we threw."

"Did you notice if it was his sandal that you threw away?" the lion asked the deer.

"Come on out, snake."

"All right." The snake came out.

Afterwards they began to kill each other on account of the mayor rabbit. He managed to go free, and when he was far away he laughed at them: "Some day you'll pay for the crimes you committed against me, the mayor. You wanted to kill me, but you weren't able to. Just wait and see what's going to happen to you later on."

This folktale reprinted from Tales and Legends of the Q'anjob'al Maya, published by Yax Te' Press, copyright 1995. This 178 page book is illustrated and may be ordered from Yax Te' Press, 3520 Coolheights Drive, Rancho Palos Verdes, CA 90275, U. S. A. for $10.95 postpaid if you mention the FolkArt & Craft Exchange. (Foreign postage add $2.00)
FACT SHEET - HOOVER THE TALKING HARBOR SEAL

AGE: 14 years, in Spring of 1985, an adult male.

WEIGHT: About 200 pounds

HISTORY: Hoover is an orphan. He was rescued off the Maine coast as a pup, and spent three months in Maine before he was adopted by the New England Aquarium. Hoover has been at the Aquarium for 13 years.

"TALKING" HISTORY: Hoover mimics human sounds. He developed this behavior on his own. He first began making sounds in 1974 at the age of three. His vocalizations began to resemble "talking" about six years ago. The volunteers and staff who work daily with Hoover encouraged him to repeat his vocalizations. He now vocalizes all year long, however he is more articulate during the breeding season, which runs from May through August.

PRECEDENCE: The ability of harbor seals to mimic human speech is noteworthy because of the rarity of demonstrated vocal learning in mammalian species. (Nottiebohm, 1975)

VOCABULARY: Limited but remarkable. It includes: "Hoover," "How are you," "Hello there," "Get out of here," and "Get over here." Hoover's voice is a guttural, but a clearly distinct bass. Also, Hoover frequently emits a very audible laugh.

RESEARCH: Current research is underway in an attempt to understand this extraordinary scientific phenomenon. Recent studies: Canadian Journal of Zoology, Volume 63, Number 5, 1985 "Vocalization and Vocal Mimicry in Captive Harbor Seals, Phoca vitulina."


DIET: Herring, 12-18 pounds daily.

GENERAL INFORMATION: Harbor seals, Phoca vitulina are native to the New England area. Their normal range is from Canada to New Jersey, although they have been known to travel as far south as Florida. They weigh about 20 pounds at birth, and reach weights in excess of 250 pounds. They reach maturity around five years of age; life expectancy is approximately 20 years.

MARINE MAMMAL RESCUE PROGRAM: The New England Aquarium coordinates the rescue and rehabilitation of harbor seal pups found orphaned along the New England coast during Spring. Hoover, resides in the seal exhibit with several seals who, like him, were cared for by staff and volunteers as part of this on-going program.
Hoover will talk no more

A delight to thousands, Aquarium seal dies at age 14

By Patricia A. Currier
Contributing Reporter

Hoover, the New England Aquarium's famed talking seal, died yesterday at 1 p.m. in the aquarium's animal health care facility at the age of 14.

Renowned for his guttural voice, the middle-aged seal surprised and delighted countless visitors at the aquarium with his repertoire of "Hello there," "Get over here," "Hoover," and a falsetto laugh.

Hoover was featured in magazine and newspaper articles as well as television and radio programs worldwide.

He first began making sounds, without any training, at age 3 in 1974. About six years ago, his sounds began to resemble human speech and aquarium workers encouraged him to repeat words.

"He vocalized all year long but was more articulate during breeding season (May through August)," said Mimi Brown, an aquarium spokeswoman.

Orphaned as a pup, Hoover was found on a beach in Maine and had been a resident of the New England Aquarium's outdoor seal tank since he was a few months old.

He died of complications during his annual molt. Harbor seals molt, or shed, their coats annually. Although most seals molt for only two weeks, Hoover usually molted for a month.

"He had a tradition of laborious and stressful molts," said Brown, adding that the seal's death "wasn't unexpected."

Hoover had been residing in the health care facility during his molt in an attempt by staff members to "do everything possible to baby him and make him as happy as he possibly could be," said Brown.

He weighed 200 pounds at the time of his death, down from his prime weight of 260 pounds.

Hoover sired six pups who now range in age from six years to two months, including daughters Joey, Amelia and Trumpet and sons Lucifer, Cinder and Spark. All of them are residents of the aquarium's outdoor seal pool.
Appendix III

Visual Image File

"From Snails to Alpha Males" working Draft
must be taken into account, and they were not descendents from Abraham or Isaac and their wives only—in fact, could not have been.) If the descendants of those twelve families had never intermarried with outside families in such sort that the descendants of such mixed families came to be regarded as true Hebrews, we should have in the Hebrews a race corresponding to the Simiae as regarded by Darwin, descent from that ape-like progenitor. This involves the important inference that the ape-like progenitor of man was not essentially differentiated from other families of anima
perable.

So far, however, are the considerations above urged from introducing any new or insuperable objection to the Darwinian theory, that, rightly understood, they indicate the true answer to an objection which has been urged by Mivart and others against the belief that man has descended from some ape-like progenitor.

Mivart shows that no existing ape or monkey approaches man more nearly in all respects than other races, but that one resembles man most closely in some respects, another in others, a third in yet others, and so forth. 'The earlobe of the gorilla makes him our cousin,' he says, 'but his tongue is eloquent in his own dispraise.' If the 'bridging convolutions of the orang [and brain] go to sustain his claim to supremacy, they also go far to sustain a similar claim on the part of the long-tailed thumbless spider-monkeys. If the obliquely-ridded teeth of Simia and Troglohyes (the chimpanzees) point to community of origin, how can we deny a similar community of origin, as thus estimated, to the howling monkeys and galagos? The liver of the gibbons proclaims them almost human; that of the gorilla declares him comparatively brutal. The lower American natural selection. Nay, more, these complex affinities form such a net for the use of the telological retarius as it will be difficult for his Lucretian antagonist to evade, even with the countless turns and doublings of Darwinian evolutions.'

It appears to me that when we observe the analogy between the relationships of individuals, families, and races of man, and the relationships of the various species of animals, the difficulty indicated by Mr. Mivart disappears. Take for instance the case of the eight allied families above considered. Suppose, instead of the continual intermarriages before imagined—an exceptional order of events, be it remembered—that the more usual order of things takes place, viz., that alliances take place with other families. For simplicity, however, imagine that each married pair has two children, male and female, and that each person marries once and only once. Then it will be found that the pair A have ten families of cousins, two first-cousin families, and eight second-cousin families; these are all the families which share descent from the eight great-grandparents of the pair. (To have third-cousin families we
calling the great anthropoid ape of the Gulf of Guinea a gorilla.

I propose here briefly to sketch the peculiarities of the four apes which approach nearest in form to man—the gorilla, the chimpanzee, the orang-outang and the gibbon; and then, though not dealing generally with the question of our relationship to these non-speaking (and, in some respects, perhaps, "unspeakable") animals, to touch on some points connected with this question, and to point out some errors which are very commonly entertained on the subject.

It may be well, in the first place, to point out that the terms "ape," "baboon" and "monkey" are no longer used as they were by the older naturalists. Formerly the term "ape" was limited to tailless simians having no cheek-pouches, and the same number of teeth as man; the term "baboon" to short-tailed simians with dog-shaped heads; and the term "monkey," unless used generically, to the
home and going to sea.

Mr. Olifaunt's rage at this was unbounded. In his anger he declared he should for the future regard his son as a perfect stranger. This was the only answer he vouchsafed to Wymond's penitent letter, asking his forgiveness for the step he had taken; and as the boy had no small share of his father's pride and obstinacy, they really were strangers to each other; and Wymond might have been dead for nought the old man knew to the contrary.

Gerald, who was much attached to his cousin, endeavored, but in vain, to get his uncle to relent, and so in silence and estrangement ten years rolled on.

One day the Australian mail came in and brought a packet for Gerald. He opened it eagerly, thinking his cousin might at last have broken the proud silence; but the communication was from the head of a firm with which Mr. Olifaunt had business transactions. It was brief, and as follows:

"In consequence of the news it is necessary to alter your arrangements, and I therefore beg you to be at home by the next train."

With these words the packet was left.

The idea of owing his riches to the death of one who had every right to them, had he been alive, and who had been his own earliest friend and playmate, was alone rather painful to Gerald's warm, kind heart, even without the shadow of a doubt that the death had really occurred. So, to satisfy himself, he started for Australia to inquire into the affair; but he found that Mr. Monkton knew no more than the newspaper paragraph had told him.

Then followed a long series of adventures in search of some clue to the place of Wymond's death. Mr. Monkton could give but little help. He had made inquiries at the newspaper office the morning the paragraph appeared, and had heard from a clerk that the notice had been left by a bush farmer, whose name was unknown; and this was all Gerald had to guide him in his search. Many novel and dangerous scenes did he pass through, visiting nearly every "run," as the bush-farms are called within reach of Melbourne, but in vain.

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LAND MOLLUSCS
“From Snails to Alpha Males”

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“From Snails to Alpha Males” Draft version 5/21/96