

Junior Zoo Crew Manual



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For environmental conservation, Junior Zoo Crew volunteers will no longer be receive a paper copy.

As of June 1, 2016 there will be an online copy of this manual for reference at **<http://tinyurl.com/noyfv6a>**

You may check out a paper copy of the manual at any time from the Education department.



Junior Zoo Crew



PURPOSE

Junior Zoo Crew (JZC) is a volunteer education program for teenagers interested in working in the Children's Zoo. It is an educational opportunity for youth interested in exploring careers in animal care. Youth volunteers assist in zoo keeping and help visitors explore the Children's Zoo.

GOALS

- | | |
|-----------|---|
| Service | To initiate a desire to work with others in a zoo setting, with no expectation of pay. |
| Respect | To foster an appreciation of the environment, the need to preserve our dwindling wildlife, and understand our interconnectedness our natural world. |
| Education | To learn proper care of domestic animals.
To learn to interact with peers, staff, and the public and provide a great customer service experience.
To learn to communicate knowledge and concern for wildlife and nature
To learn to follow directions, carry out assigned tasks and assume responsibility. |

TRAINING

Before the summer season begins, there will be mandatory training sessions. The date(s) will be given during the interview and confirmed in the acceptance letter. Training sessions will cover rules, safety, emergency procedures, duties, animal handling and husbandry care. Additional mandatory continuing education classes will be scheduled throughout the summer. All Junior Zoo Crew must attend these sessions. Absence from a continuing education class will incur the requirement to write a detailed, 6-page (*minimum* 2,000 word) report on the missed topic and submit it within 2 weeks of the absence. Failure to do either one will result in dismissal from the program and you will not be invited to return.

REQUIREMENTS

Junior Zoo Crew members are expected to be:

1. Dependable and punctual
2. Polite and helpful to the public
3. Helpful in any task
4. Conscientious about animal welfare
5. Act appropriate for a representative of the zoo
6. Stay in assigned areas
7. Able to perform tasks unsupervised
8. Knowledgeable about the animals for which they care or handle

Those members of the JZC not performing to the satisfaction of the zoo staff will receive a written evaluation outlining the points needing improvement and may be placed on probation. If, after evaluation, zoo staff does not see immediate improvement, the JZC member may be dismissed at any time without a refund of the program fees.

BASIC EXPECTATIONS OF JR. ZOO CREW VOLUNTEERS

1. Junior Zoo Crew **must come ONLY during their scheduled work times** unless they are asked to participate in a special program. There shouldn't be more than the scheduled number of Zoo Crew members in the Children's Zoo at any time, unless asked to help with a specific project. You may be asked to leave if you are disrupting the work of staff and volunteers during your off-time. If you would like to work an extra shift, you **must** call the Education Department (612-8453 or 612-8418) **at least 2 days before** the shift so it can be approved and keepers notified.
2. All routine work must be done **BEFORE** any JZC volunteer is released for extra projects.
3. All JZC members **MUST** follow all directions given by the keepers. Failure to follow directions will be cause for probation and/or dismissal.
4. **JZC will NOT be allowed to text or talk on cell phones during their work shift except in the event of an emergency.** It is for your safety that your attention not be divided while working around animals and the public. **Non-emergency use of cell phones will result in phone confiscation by staff until the end of your shift and a misconduct report may be written. Repeated violations will lead to probation and/or dismissal.**
5. All JZC members' performance will be reviewed by the Education staff periodically. Those not performing their duties will receive a written evaluation. At that time, they may also be put on probation and/or dismissed, if problems warrant. Consider no news to be good news!
6. JZC will NEVER be alone on zoo grounds nor alone with any member of zoo staff. **JZC must ALWAYS be in a group of THREE: either two JZC per staff member, volunteer, or one JZC per two zoo staff.**
7. Children's Zoo Keepers will complete an unexcused absence report for any JZC who fail to report for a shift or fail to call in sick. You are responsible for shifts you agree to cover for someone else. **JZC with 2 unexcused absences will be placed on probation. Three unexcused absences are cause for dismissal.**
 - a. We ask that you volunteer for a minimum of **70 hours** during the summer program. If you cannot make your scheduled shift, it is up to you to find a replacement. You must make schedule changes on the copy posted in the Children's Zoo. If you have tried your hardest, called every JZC member, and *still* cannot find a replacement, then please call the Education Department at 612-8453 OR 612-8418 to inform staff your shift will not be covered. In cases of sudden same day cancellations due to an emergency, please call the gift shop at 612-8422 and ask them to inform the Children's Zoo Keeper via radio.
8. JZC will only be allowed to handle those animals on which they have been trained and checked off. A copy of the Junior Zoo Crew's animal handling sheets will be kept in the Children's Zoo and Habitat. Animals must be handled and transported according to the guidelines. JZC **MUST** have a keeper, education staff member, or trained animal handling volunteer with them **at all times** when an animal is taken out.

9. No one may handle an animal except a trained JZC member, zoo staff member, or volunteer! **Do not let the public hold ANY animal.... no exceptions!** If this rule is violated, the person involved will be subject to a review and probable dismissal.

10. First year JZC members will be assigned only Children's Zoo, special event, and Education shifts. Second year JZC can work in areas 1, 2, and 3. Third year and up JZC gain the privilege of working in area 4 and can be trained to handle birds, including the birds of prey. They may also assist keepers in training behaviors of Children's Zoo animals.

History of Idaho Falls Zoo

1880s

The land now known as Tautphaus Park was named for its initial developer, Mr. Charles Tautphaus. Mr. Tautphaus acquired 58 acres under the Homestead Act and began improving it by terracing, planting and adding a lake in 1886. Because the land was virtually an oasis in the desert, it was referred to as "Tautphaus Park" before extensive use by the general public.

Early 1900s

In 1912, J. Frank Reno bought the property, called it Reno Park and operated it as an award winning sheep ranch. During the depression years, the Reno Park property reverted back to the American National Bank. In 1934, the City of Idaho Falls paid \$13,500 for the land and developed it as a city park and renamed it "City Park." In 1943, the park's name was officially changed back to Tautphaus Park.

1930-1960

The first collection of zoo animals consisting of elk, deer, antelope, badgers and a coyote were originally maintained by the Heslop family on their own property. In the summer of 1934, the hoofstock were moved to Highland Park and the rest to Sportsman's Park. Mr. Al Heslop became the first resident superintendent at Tautphaus Park.

During the fall of 1934, approximately \$62,000 was spent on recreational improvements and animal facilities for a zoo. All of the buildings were planned to be constructed of logs, and most of them were financed through the Works Progress Administration (WPA) project and city matching funds. Zoo animals were moved to the Idaho Falls Zoo in Tautphaus Park in 1935. By the late 1960s, all animal pens were connected to the sewer system, gas heat was added, and a chain-link fence was constructed around the park for security.

1970-1990

In 1979, a Mayor's Zoo Committee was formed to identify and accomplish needed improvements to the Zoo's aging facilities. Unfortunately, as other needs in the city consumed most of the resources, only a few of the recommended smaller projects were completed. In 1985, another committee, also appointed by the mayor, formulated a ten-year plan to modernize Idaho Falls Zoo stressing natural habitats and shelters for the animals. This instigated a major renovation of the zoo that would continue to the present day.

The first improvements involved phasing out the small cement and chain-link enclosures housing felids, canids, ursids, and birds. In 1989, nearly an acre was developed with spacious, natural terrain exhibits with running water for African lions, Siberian tigers and mountain lions. Canids and ursids were phased out of the collection in the late eighties, hopefully to return at a later date. Some birds were given new spacious exhibits, others were mixed with hoofstock in open multispecies exhibits, and the remainder removed from the collection.

1991-2000

In 1991 - 1992, improvements to service areas took precedence and the zoo's name changed to Tautphaus Park Zoo. A commissary, maintenance shop, indoor animal holding facility, and hay storage building were added to the grounds. A restraint chute was added to the elk enclosure and more off-exhibit holding for hoofstock was created. Also, the old condemned monkey house was demolished and plans for a new primate building were begun.

Tautphaus Park Zoo was approved to participate in its first Species Survival Plan in 1992. A pair of snow leopards were acquired for future breeding in accordance with SSP Committee recommendations.

A 501c3 support organization, the Tautphaus Park Zoological Society, was created in 1992 to assist the city with fund-raising, developing and expanding the zoo, and increasing public awareness and support for the zoo and its conservation/education goals. Since their inception, the TPZS has sponsored several fund-raisers and special events including Zoobilation, the Zoofari Ball, Boo at the Zoo, and the Bear Bash which have generated and continue to generate moneys for exhibit construction or renovations.

Similarly in 1992, the Tautphaus Park Zoo Docent program was developed to provide volunteer resources for public education programs, special events, and animal maintenance. In 1993, the "Habitat," a facility to house education animals, biofacts, and materials was completed, staffed by Docents, and opened to the public on weekends.

During the early 1990s, several animal exhibits were developed or renovated with the intention of improving the diversity and conservation goals in the collection. These included: a multispecies Asian exhibit housing muntjac deer, demoiselle cranes and mandarin ducks; an outdoor macaw aviary with natural perching and ground cover; an Aldabra tortoise exhibit and winter barn; a 1/2 acre Bactrian camel exhibit; a multispecies Australian exhibit containing wallabies, emu, black swans, egrets, ducks, and public restrooms; a serval cat/Debrazza's guenon complex; and an American alligator exhibit. In 1993, the first phase of the Primate Discovery Center was completed with two holding enclosures, a squeeze, an indoor and an outdoor exhibit for lemurs and a nocturnal exhibit for a bush baby (now an exhibit for cotton-top tamarins).

The long awaited "Explorer's Station" gift shop and renovated entry and parking area opened in April 1995. The building, donated by a local businessman, was relocated to the front of the zoo and a new entry way developed around it. It provides space for admissions, visitors' services and a gift shop.

Participation in subsequent SSPs included Amur tigers and red-ruffed lemurs in 1995, cotton-top tamarins, ring-tailed lemurs, and African penguins in 1996.

"Penguin Cove," a black-footed penguin facility paid in part by the Idaho Falls Zoo Society premiered in 1997.

Tautphaus Park Zoo became the first zoo in Idaho accredited by the American Zoo and Aquarium Association (AZA) in 1998.

A stage area and education programs for regularly scheduled "Animal Encounters" with keeper interns were developed in 1998. A formal Education Department was finally realized in 1999 with addition of an Education Coordinator to the zoo staff. This much-needed position allowed the zoo to dramatically expand its education programs, as well as improve the merit of existing programs.

1999 also increased the South American collection with "Patagonian Realm," which added Chilean flamingoes, Patagonian conures and a walk-through aviary containing 9 species including the first elegant-crested tinamou imported into the US in several years.

2001-2010

A 2000-2001 joint society-city campaign and a grant from the CHC Foundation raised \$280,000 for the CHC Animal Health Care Center, a veterinary facility to provide basic and emergency care, isolation and quarantine for the animal collection.

The SSP for Debrazza's guenons was added in 2001.

In 2002, the former superintendent's residence was renovated and Zoo Administrative Offices were relocated. These new offices provided humane office space, work areas including separate space for graphics development, meeting space, special events preparation and storage essential to professional operations. The former offices were divided into a much-needed classroom and additional office/work space for other staff.

In 2003, a multispecies New Guinea complement expanded the "Land Down Under" with New Guinea singing dogs, magnificent ground pheasants and yellow-faced mynas. The Tautphaus Park Zoological Society kicked off the "Bring Back the Bears" campaign to raise funds for Asian Adventure. Asian Adventure phase I was completed in the summer of 2004 with the a bridge accessing a plaza with a renovated Bactrian camel exhibit, a new Manchurian crane exhibit as well as renovations to public areas at Amur tigers and snow leopards. In the summer of 2005, Asian Adventure phase II brought red pandas to the zoo. 2003 also saw the largest donation from a single entity to the zoo. The ALSAM Foundation, a philanthropic organization based in Boise, Idaho gave more than a half million dollars in memory of their grandmother, Vivian Howe-Skaggs, who grew up in Idaho Falls (then called Eagle Rock). The funds were used to finish the final two phases of the Primate Discovery Center and renovate the otter/eagle complex. In late summer 2004, the Primate Discovery Center reopened at twice its previous size with 2 new species of gibbons, black-and white-colobus, and Goeldi's monkeys. The expanded holding space for primates allowed for a breeding troupe of ring-tailed lemurs to be held and a pair of Mona monkeys. In the summer of 2005, the Vivian Howe-Skaggs Memorial Otter Exhibit premiered with all-new artificial rockwork in the exhibit and in the public viewing areas. A state of the art water filtration system, new 25 ft. waterfall and grassy bank as well as a new 70 sq. ft. underwater viewing window were added.

In 2009, the zoo saw the completion of the Bring Back the Bears Campaign and the Sloth Bear exhibit. This new exhibit and the new animals were a long awaited addition to the zoo and proved to be very popular.

The zoo continued its history of AZA accreditation when on October 22, 2009 Kris Vehrs, Executive Director of AZA came to Idaho Falls to present the AZA Certificate of Accreditation to the City of Idaho Falls.

In February 2010, the zoo acquired a Savannah Monitor for use as an educational animal. During May of 2010, we received a donation of an Auger Buzzard ("Kalahari") from the Oregon Zoo. August 6, 2010 the Diamond Zoobillie Gala was held at the zoo. On August 18, the zoo lost its aging snow leopards, Butch age 17 and Cheyenne age 18. The zoo's 75th Anniversary was held during 2010 on August 21 with discounted zoo admissions. Other events held throughout the park included a car show, photo display of early years of the zoo and park, a memorial presentation and live concert. At the end of November the Mona monkey building started being replaced.

2011-2016

In January of 2011, the Lollywater Hut Café was purchased by the Zoological Society for \$10,000. The name was changed to Kookaburra Kafe and Diamond Concessions ran the café.

On March 30, 2011 Dave Christiansen retired after 33 years with the IF Parks & Rec. Dept. and shortly after Greg Weitzel was hired.

The zoo received two Asian Sloth bears during March 2011, one from Little Rock Zoo, AR and one from Sunset Zoo in KS. They were one of only eight pairs in North America.

In April of 2011, two new pools were added, one to the Flamingo exhibit and one for the African Crowned Crane exhibit. In April the walk-thru bird aviary was removed after a sudden snow storm caused considerable damage.

In April of 2012, Jeff & Tracy Curry took over concessions for the Kookaburra Kafe.

On May 2, 2012 we received the announcement of a new director for the IF Parks & Rec. Dept. Our new director was Greg Weitzel from Allentown, PA.

During May 2012 our 18-year-old Amur Tiger, ("Seelni") was euthanized and replaced with Basha, a nine-year-old female from Utah's Hogle Zoo. Also, in May a new Penguin Interactive Program began during the Memorial weekend as part of a new conservation program to save penguins. Keepers educate the guests on each penguin personality.

On May 2, during Idaho Gives, the Roger & Hazel Rose Fund donated \$2,543 thru the Idaho Community Foundation to the zoo. From May 31 to August 31 the zoo introduced a new program called "Backstage Pass." It is a behind the scenes 1 ½ hr tour on Fridays and

Saturdays.

October 8, 2012 the Serval exhibit underwent \$20,000 in repairs. The exhibit originally housed a sun bear. Renovations included a new pool, new concrete footings and metal fencing. Funding was approved by the City Council on September 25 due to safety concerns of the 20-year old enclosure.

November 2012, the zoo welcomed the birth of its first two sloth bear cubs, "Saahasi" and "Kyla."

During July 2013, the new Mueller's Grey Gibbons were introduced to the zoo. There were only 17 Muller's Grey Gibbons in North America. The male, "Sterling" was from Cleveland Metro- Park Zoo and the female, "Shannon" from Gladys Porter Zoo, Brownsville, Texas.

February 2014 began the remodeling of the Otter exhibit which would house two new young otters that coming spring. In February, a new female Red Panda arrived from the Knoxville Zoo. Remodeling work was done February on the donkey barn in the Children's Zoo. Originally, the barn and Children's Zoo structures were built by the generosity of the Idaho Falls Civitans Club in the 1990s. Over time, deterioration led to needed repairs. In 2014-2015, wood walls were replaced with cement blocks and new pathways were added. This project was funded by a grant from CHC Foundation.

During 2015, the name of the zoo was changed back to Idaho Falls Zoo at Tautphaus Park to honor the history of the zoo, the park and also to market to tourists passing through the area.

June of 2015, a new program named "Quarters for Conservation" began where zoo visitors paid a quarter contribution to support local and global conservation initiatives identified by the zoo. In 2016, the program contribution was increased to .50 in support of a regional wolverine monitoring project, Snow Leopard Trust, SANCCOB and a new program through Gorongosa Restoration Project that supported female Mozambicans pursuing ornithology degrees.



Daily Guidelines

1. Arrive a few minutes early to your shift.
2. Wear CLEAN clothing! You are representing the zoo with your appearance.
3. Always have your nametag. You will NOT be allowed entry for your shift without it! Completely missing a shift due to forgetting your nametag WILL count against you, and being tardy due to returning home to retrieve it WILL ALSO count against you. Replacements will cost \$10.
4. Enter only through the front of the zoo, via the exit door of the Giftshop. Swipe your nametag at the computer in the gift shop to electronically sign in each day.
5. Report to the Children's Zoo keeper for assignment. Returning volunteers may report in groups of 2 to a scheduled animal keeper only AFTER first checking with the Children's Zoo staff concerning any unexpected need for assistance.
6. Each JZC volunteer is expected to complete his/her assigned job before moving on to a new task. Upon completing a task, report to the staff in your area for a new assignment.
7. FRIENDS AND FAMILY ARE NEVER ALLOWED TO COME TO WORK WITH YOU! They may encounter you during a visit to the zoo, but if they disrupt your ability to work they will be asked to leave.
8. You are an extra set of eyes and ears for us to help keep the animals safe. Due to natural instincts most animals will try to "tough it out" when feeling bad instead of openly showing it. Be observant! If you see anything unusual in an animal's behavior or the appearance of an enclosure, report it to the animal staff immediately.
9. Visitors are **NEVER** allowed to hold any of the zoo's education animals for ANY reason. Sheep and goats may be pet or brushed by the public only while you are monitoring the interaction. Education animal ambassadors can only be touched according to the handling protocols.
10. If a visitor violates a rule, is unruly, or otherwise exhibits inappropriate behavior, contact a member of staff immediately for help and inform them of the violation.
11. If a visitor asks you a question that you don't know the answer to, please reply that you don't know instead of guessing! No one is an expert on everything, and it is important that we teach accurate information. A great response is "I don't know, but I'll try to find out for you!" If your current task doesn't allow time for you to find out, politely direct them to a zoo employee who might be able to help them instead. Be courteous. Your personal conduct directly affects whether guests view our zoo as educational and friendly.
12. No teasing or mistreating any of our animals! This type of behavior will NOT be tolerated and is grounds for immediate dismissal.
13. It is illegal for anyone under the age of 18 to smoke. If you are found engaging in ANY illegal behavior, you will be immediately removed from the JZC program and your parents will be called.
14. Upon the end of your shift, you must swipe your nametag again at the gift store to electronically sign out and then promptly leave zoo grounds. No lingering. We need an accurate record of your actual time spent volunteering for several reasons.

15. When visiting the zoo as a guest on days off, you must remain in public areas. There is ZERO behind-the-scenes access allowed outside of your scheduled volunteer shifts.
16. Off-duty JZC members may visit the zoo free of charge while they are active JZC members (for the current year only, this season it will be May 28-Sept. 9, 2016). Please enter only through the front admission gate of the zoo and present your nametag as proof you are a current member of the JZC. Any guests you bring with you (family and friends) will be required to pay the applicable admission fees.

Children's Zoo Rules & Guidelines

1. Help in every way possible to quickly and efficiently feed and clean. Opening shift volunteers are expected to have the Children's Zoo ready when the zoo opens each day.
2. Be at your assigned station when the first zoo visitor arrives. Opening is at 9am every day.
3. When assigned to monitor an animal's pen or activity, **STAY THERE** until officially relieved by staff or a zoo volunteer, even if more than 30 minutes has passed. **NEVER LEAVE THE CONTACT YARD UNLOCKED OR UNATTENDED.**
4. No horsing around while working in the Children's Zoo. Please maintain professional behavior at all times. Visitors see you as a representative of the zoo.
5. No eating while on duty. It is unsanitary and unprofessional. You should keep a bottle of water with you in the Children's Zoo, but if you want to eat or have a soda, go to the service area or the picnic area for a break. Just remember to get permission first before leaving your post!
6. Be courteous, patient, and friendly when supervising the contact yard. Always inform visitors of the contact yard rules and be polite when pointing out the signs posted around the yard. Remember that some of our visitors cannot read or may require more assistance than others.

Dress Code

1. As an official representative of our zoo you should be neatly dressed in uniform. It is required to wear the official Junior Zoo Crew t-shirt and nametag to each and every shift. If your shirt or nametag is lost or ruined, you **must** purchase a replacement. Additional shirts cost \$20. Nametags are \$10. They can be obtained by giving the Education Curator money with your name and size.
2. No modifications should be made to the shirts. Refrain from cutting off, rolling up, or tying up the sleeves or the waist line of the shirt. It looks unprofessional.
3. Wear **BLACK** shorts or long pants. No other color is allowed. No sweatpants or gym shorts. Shorts must be of a professional length. They must end no shorter than 3" above the knee.

4. A hat may be worn but must be logo-free. The only logo allowed is the Idaho Falls Zoo logo. Hats with the zoo's logo are available to purchase in the gift shop.
5. **ALWAYS** wear closed toed shoes. **No sandals ever.** This rule is for your safety and hygiene.

Failure to comply with any of the above dress code rules will result in a misconduct report. If you are sent home due to inappropriate attire it **will** count as an unexcused absence.

Attendance

You are expected to work at least two 3½ hour shifts per week. If you would like to work more, that is up to you. You are welcome to take on additional shifts when other JZC volunteers are looking for replacements, but you are under no obligation to do so. You must volunteer for a minimum of **70 hours** during the summer. If you do not complete the required hours you will not have the opportunity to be invited back. Remember, the zoo is open all holidays and weekends, and if you are scheduled during these days, you will be expected to attend your shift.

Absences/Vacations:

We understand that going on a family vacation or attending a summer camp for a week is part of enjoying life to the fullest. We do not wish to deny you these opportunities. However, you were expected to notify the Education Department at the beginning of the season during application and interviews, of any known dates that you will be gone. We have tried our best to schedule you around these dates. **All known absences for August must be submitted in writing to Education by the 11th of July.** Remember, YOU are responsible for finding a replacement for any shifts for which you are scheduled that you are not able to attend for any reason. After finding coverage, please let the Education staff know, in writing, WHO, WHAT DAY, and WHAT SHIFT your substitute will be there AND write the change on the schedule inside the Children's Zoo. First year volunteers can have any level JZC cover a shift, but returning volunteers can only use other returning volunteers to cover shifts outside of the Children's Zoo. Once you have agreed to cover a shift for someone, you are responsible for doing so. If you do not notify us that you plan to miss a shift, an "unexcused absence report" will be in your file. **JZC with 2 unexcused absences will be placed on probation. Three unexcused absences is cause for dismissal.**

Illness:

If you are ill and unable to attend your shift, please call the zoo as soon as possible at 612-8418 to notify the Education Department. If Education staff does not answer the phone, leave a message and then call the gift shop at 612-8422 and ask the person answering the phone to notify the Children's Zoo keeper of your absence via their radio. **IF NO ONE ANSWERS AT THE GIFTSHOP, LEAVE A DETAILED MESSAGE ON THEIR PHONE.** We understand that emergencies happen: illness, death in the family, or other occurrences outside of our control. Each JZC has 3 excused absences for the whole season. We will evaluate each case individually to decide whether it counts towards one of your excused absences. We are counting on you to be there; so please call us immediately.

Misconduct:

If a Junior Zoo Crew member is exhibiting inappropriate behavior then ANY staff member may fill out a misconduct form and submit it to the Education Department. Misconduct forms are taken into consideration during the mid-season evaluations as well as determining if the Junior Zoo Crew will be invited back the

following year. Once a volunteer receives 2 misconduct reports, then the Education Department will ask to discuss appropriate behavior with the volunteer. Ultimately, a letter may be sent to your parents/guardians. If a combination of several misconducts reports and unexcused absences occur then it **will** result in dismissal.

Weather:

Poor weather does not mean the zoo closes. To borrow a phrase from the postal service – “Neither snow, nor rain, nor heat, nor gloom of night will stay us from our appointed rounds.” The animals must still eat and will require cleaning up after despite the weather. Therefore bad weather does NOT excuse a Junior Zoo Crew volunteer from his/her duties or scheduled shift. Please dress appropriately in a rain coat if needed.

Social Media Policy

It is the policy of the Idaho Falls Zoo that any pictures posted on social media must be taken from public viewing areas. No behind-the-scenes photos, or photos of any type of medical procedure will be posted on social media. Social media includes, but is not limited to, Facebook, Snapchat, Instagram, Vine, Twitter, Google, Friendster, Periscope, Flickr, YouTube, Vimeo, Tumblr, Reddit, Pinterest, etc. What you post is a direct reflection of yourself and the Idaho Falls Zoo. Confidential or sensitive zoo information will not be posted to any social media website or discussed with unauthorized media outlets. This includes but is not limited to animal procedures, acquisitions, deaths, illnesses, finance, personnel, donor, and husbandry issues. Think about what you are going to post and how it will affect you and the zoo. Be kind, respectful, discrete, and mature when posting anything online. Failure to comply with this policy will result in severe discipline and possible dismissal from the program.



Additional info for returning JZC:

Returning Junior Zoo Crew are required to assist in the Children's Zoo as a first priority, but may participate in extra activities as scheduled, if time and resources allow.

1. **Please only enter/sign in and exit/sign out via the Gift Shop using the new ID system, so we can keep track of your hours! This new rule is also important for safety purposes!**
2. If you are scheduled for a Children's Zoo shift, please assist the Children's Zoo Keeper and the new volunteers. During the first month, you may **only** trade Children's Zoo shifts with another **returning** JZC. This initial period is your opportunity to mentor the new JZC volunteers on procedures and public interactions. You might make some new friends!
3. Even if you are scheduled for a shift elsewhere, always check in first with the Children's Zoo Keeper. It is possible that someone assigned to the Children's Zoo may not have shown up for their shift and you will be needed there instead. They will alert the other department of the change in your plans for the day. If the Children's Zoo Keeper does not require your assistance, *they* will release you to the keeper or educator with whom you are scheduled.
4. After the first month, returners will be scheduled to work in animal areas and with Education, in order to get the most out of volunteering. Be sure that you are assisting, not encumbering, the staff. If you become a hindrance, you will be reassigned to the Children's Zoo or the kitchen instead. If you are interested in helping with education camps/classes or special projects, please let the Education staff know. We love seeing JZC expand into other areas, as long as you are being helpful. If you are working an afternoon animal area shift, you **must** leave at 4:30 p.m. so the keeper can close their area. The final hour of duties can be a very stressful and busy time for them.
5. If you finish all your assigned duties with a staff member (keeper, educator, etc.) and are released, you are welcome to walk around the zoo with a biofact providing education to the public and answering questions for our visitors. Just remember you must stay in groups of 2.
6. Returning JZC may perform on stage during portions of "Animal Encounters" shows, if they so desire. This may consist of acting, public speaking, showing an animal to the audience, or any combination of the three. Preference for acting and/or public speaking will be given to third year and above returners. If you have a desire to speak on microphone during or after a show, please communicate this to us. Public speaking is a vital skill to develop in life.
7. If you would like to work more shifts than what you are scheduled for, call the Education Department **at least 48 hours in advance** to sign up for open time slots.
8. It is up to you to be proactive and make the most of the JZC program. Ask questions, propose using your talents/other interests towards something new in the zoo, and learn all you can about zoo operations, careers, and the animals in our care. Returning JZC may be trained to handle more animal ambassadors upon approval from the Education Department. **Third year** and above JZC may assist with animal training upon approval. If you need assistance finding more learning resources or have questions/comments feel free to contact the Education Department at 612-8453 or 612-8418 or zooeducation@idahofallszoo.org.

A general outline of what to expect



JZC will be required to work two or more sessions each week. There are three standard Children's Zoo shifts each day -- morning, midday, and late afternoon. The last shift will usually end at 6:00 p.m. Occasionally, there will be an additional 2-hour evening shift from 6:00 p.m. to 8:00 p.m.

MORNING (8:00 - 11:30 a.m.*)

1. **Meet at the Zoo Administrative office at 8:00 a.m.**
2. Enter/sign in at the Gift Shop
3. Report to the Children's Zoo for assignment of your duties
 - a. Clean contact yard and barns
 - b. Clean hoofstock barn and yards
 - c. Help with feeding of all petting zoo animals
 - d. Prepare pig diet and feed
 - e. Clean pig barn and yard
 - f. Clean chicken coop
 - g. Fill contact yard feeder and prepare for public
4. Assist staff with preparing for daily 9:00 a.m. zoo opening
 - a. Monitor contact yard and brush all goats and sheep
 - b. Clean walkways
 - c. Water and weed plants and flower beds as necessary
 - d. Halter, groom and fly spray llama, alpaca or donkeys
 - e. Spot clean animals' yards
5. Assist staff in public contact areas. Contact yard opens at 10 a.m.
6. One fifteen-minute break
7. On Saturdays only, the first "Animal Encounters" show is at 11 a.m.
8. Sign out and leave at 11:30 p.m.

*** Returning JZC volunteers may be scheduled 8:30 a.m. to noon instead ***

MIDDAY (11:30 a.m. – 3 p.m.*)

1. Enter and sign in at the Gift Shop at 11:30 a.m.
2. Report to the Children’s Zoo Keeper for assigned duties.
 - a. Monitor contact yard and brush/fly spray all sheep and goats
 - b. Dump and refill water tubs
 - c. Clean contact yard and barns
 - d. Water and weed flower beds as necessary
 - e. Animal and public interactions (if time available)
3. Assist staff in public contact areas
4. Daily “Animal Encounters” shows always occur at 1:30 p.m.
5. One fifteen-minute break
6. Sign out and leave at 3:00 p.m.

*** Returning JZC volunteers may be scheduled 1 p.m. to 4:30 p.m. instead ***

LATE AFTERNOON/EVENING (3:00 p.m. – zoo close)

1. Enter and sign in at the Gift Shop at 3 p.m.
2. Report to the Children’s Zoo Keeper for assigned duties.
 - a. Monitor contact yard
 - b. Refill water tubs as necessary
 - c. Spot clean yards
 - d. Halter, groom and fly spray llama, alpaca or donkeys
 - e. Animal and public interactions (if time available)
 - f. Water grass and plants. Weed flower beds and clean sidewalks
 - g. Feed and water all Children’s Zoo animals
3. On Sundays only, a second “Animal Encounters” show is at 3:30
4. Assist Children’s Zoo Keeper with closing procedures. The contact yard typically closes at 5 p.m.
5. The zoo will usually close at 6 p.m. Since this is a shorter, 3-hour shift you may not receive a break.
6. One Friday July-Sept. the zoo will stay open later, until 8 p.m. The animal care closing procedures will take place from 7 to 8 p.m. on those select nights.
7. Sign out and leave at 6 p.m. The **ONLY** potential 8 p.m. exceptions are the Friday late nights and special events.



You may be scheduled at other times of the day or for longer shifts depending on the needs of the different zoo departments including education and animal care.

If scheduled to work a two-hour only 6 to 8 p.m. evening-only shift, follow standard procedure. Sign in at the Gift Shop at 6 p.m., report to the Children’s Zoo for assignment, and sign out/leave via the Gift Shop at 8 p.m.



Husbandry in the Children's Zoo

Husbandry is the care of animals. When working with all animals, remain calm and always use slow, deliberate movements. Let the animals know where you are at all times and make NO loud noises.

FEED ROOMS must remain neat and tidy at all times because this is where all zoo keeping tools are stored. Each tool has its place. When not in someone's hand, tools should be hanging in the feed rooms.

- ❖ Each rake, scoop, broom, dustpan, and shovel has a designated place to hang and should be labeled. If not, or if you are unsure where something goes, ask the Children's Zoo Keepers.
- ❖ Grains and other feeds are labeled in separate cans. Be sure the tops are always placed securely on cans because rodents will take advantage of open feed cans at any opportunity.
- ❖ Also kept in the feed rooms are GRASS for goats, sheep, llamas, and donkeys; ALFALFA for pigs; STRAW for bedding. These should be stacked by type on pallets in the feed rooms. Please make sure the floor is kept as clean as possible and swept throughout the day.
- ❖ Feces should never be found in feed rooms.

GOAT & SHEEP

Tools rake, shovel, scoop, broom, trash bags, sifter

Tasks Shovel and scoop out feces and old hay from the stalls. Place waste in trash bags. Hose out the stalls towards the rear of the barn and into the gutter behind the barn. Dump out water tubs and refill with fresh water. Rake up hay in yard and sift feces out of sand. Clean out gutter behind barn.

POT-BELLIED PIG

Tools rake, scoop, wheelbarrow

Tasks Prepare diets as directed. Feed. Remove feces and any other debris from the yard and barn. Rake entire yard to improve overall appearance. Change water. Fill wallow.

DONKEY/LLAMA/ALPACA/CAMEL/YAK BARN

Tools rake, scoop, wheelbarrow

Tasks Remove all hay, feces and other debris from barn and yards. Rake entire yard to improve overall appearance. Change water. Hose barn as needed. Apply new dirt and/or gravel to toilet areas in outside exhibits as needed.

CHICKEN COOP

Tools small rake, sifter, shovel, broom

Tasks Sift or rake outside yard. Change water and fill feeder as necessary. Clean coop and change pine shavings as directed by the Children's Zoo Keeper. Gather any eggs and place in the refrigerator at the shop kitchen.

PUBLIC AREAS

Tools broom, dustpan, hose, trash bags

Tasks Spot clean public areas throughout the day as needed. Sweep and hose walkways. Empty garbage cans and replace liners. Water plants and grass as needed. Weeding will be under supervision. Pick up litter throughout the day. Place the contact yard feeder outside of the contact yard for the public in the morning. Fill the contact yard feeder as needed. Notify a Children's Zoo Keeper if it appears that the money needs to be emptied. They will contact a cashier. Place the feeder in the barn at night.



Safety

RULES

1. The zoo has high security levels for safety reasons. Some areas are off-limits. **DO NOT** go anywhere behind the scenes or animals exhibit without keeper permission. **ASK** if in doubt.
2. **DO NOT FEED** any animals in the main zoo without animal staff assistance.
3. Pick up all trash you encounter - yours *and* others. Put trash in a garbage can. It's amazing how much you can help our zoo's image out just by picking up litter.

Emergencies

Any emergencies should be reported immediately to the nearest zoo staff.

FIRE PROCEDURES

There are two fire extinguishers in the Children's Zoo: in the barn & gazebo.

1. **STAY CALM!** Panic helps no one.
2. If you smell smoke, alert a staff member immediately and quietly! If a staff member is not in the immediate vicinity, issue a call on the radio to "all Z units" and report the smoke/fire location.
3. If you see a fire in the zoo, shout "FIRE!" and evacuate visitors from the area. **STAY CALM!!**
4. Under the direction of the zoo staff, prepare to:
 - a. Evacuate any animals who are in immediate danger. **STAY CALM!**
 - b. Evacuate all visitors, whether they are in danger or not.

LOST CHILDREN

1. Crouch down to the child's level to talk. Take child to nearest staff to notify all "Z" units via radio
2. Help staff search the area. It helps to ask what color shirt, hair, etc. the lost person has.

LOST AND FOUND

1. Found articles are to be taken to the front gate and given to the cashier at the gift shop window.

ACCIDENT/INJURY – VOLUNTEER

1. Ask the nearest staff member for assistance. There are first-aid kits in the gift shop, Education office, main office, and in the keeper's break room.
2. Report any accident/injury to staff. It is essential that proper forms are completed by the staff and turned in within 24 hours. The forms can only be filled out by heads of departments – i.e. Animal Care Supervisor, Zoo Registrar, Zoo Superintendent, Education Curator, or General Curator.

ACCIDENT/INJURY - PUBLIC

1. Ask the nearest staff member for assistance. Offer help if indicated. JZC volunteers should not administer first aid, but can assist staff with gathering supplies.
2. Refrain from any discussion of "who is to blame" or discussing the circumstances of the situation.

Animal Escapes

CHILDREN'S ZOO

These are not dangerous animals in the same sense as a lion or bear, but the fact that an animal is loose can cause panic and confusion among visitors and, above all else, can stress the animal! An animal knocking down a child on pavement can be dangerous. **WHATEVER ESCAPES, DO NOT CHASE IT!** These animals *will* panic and cause more problems if chased. Keep your cool.

1. Inform staff immediately via radio. Say which animal is out and where it is if you can see it.
2. Quickly, but calmly and quietly, go to the front entrance of the Children's Zoo. Quietly inform all staff/volunteers that you pass about what has escaped.
3. Stand by the yard's front gate and block the way of any person or animal wishing to enter or leave. Reassure visitors there is no need to panic and ask them to please stand out of the way.
4. Most petting zoo animals are unlikely to leave the general vicinity, but if they do then try to keep the escaped animal in view or determine which direction it went until animal staff arrives.
5. Follow the directions the zoo staff gives you as to how you can help further. Junior Zoo Crew will most likely be asked to help keep the area free of visitors, while the staff quickly and quietly herds the animal back into its enclosure.

MAIN ZOO

In the extremely rare instance that one of the other zoo animals should escape, you will be notified by the zoo staff either by radio or personally. "Code Green" indicates an escaped animal.

1. **DO NOT PANIC.** Zoo staff is trained to handle animal escapes, even large & dangerous ones.
2. If you are in an area with staff, they will direct you accordingly. **STAY CALM!**
3. If you are without staff in the Children's Zoo and it is a dangerous animal that has escaped, **CALMLY** ask everyone to come into a barn immediately. Immediately close the barn doors. Stay near the door to let others in as needed.
4. Explain what has happened and ask everyone to remain calm and quiet. Panicking will only make matters worse and could lead to guest injuries. Reassure visitors that the situation is being handled by trained staff. Everyone should remain in the barn until an "All clear" signal has been issued by staff over the radio. **STAY CALM!**



Hazardous Materials

Chemicals are a necessary tool used in zoos. Many people take cleaning products for granted without respecting the potential hazards they pose. It is very important to be aware of the hazards involved in the use, handling, storage, and disposal of any chemical. The federal government, through the Occupational Safety and Health Administration (OSHA), has issued rulings on hazard communication. These standards require manufacturers to clearly label all containers and to provide the consumer with Material Safety Data Sheets (MSDS) describing potential hazards involved with the use of the product.

Labels - It is imperative that labels on all chemical containers be read and understood PRIOR to use.

Material Safety Data Sheets - MSDS for all chemicals used in the zoo are available in the keeper break room, zoo office, and other areas within the zoo. MSDS contain information about contents/ingredients, protections and precautions, and first-aid following exposure.

Protective safety equipment is available in the work shop or gardener's shed.

Technical Support - If possible, chemicals not routinely used in the zoo will be applied by trained professionals from other departments (example: pesticides and herbicides).

Storage of Hazardous Materials

Chemicals are not to be stored on high shelves or in breakable containers. Specific storage areas have been designated for the various hazardous chemicals used at the zoo. Chemicals used by the animal staff for cleaning and disinfecting are kept on the bottom shelves in the kitchen area. Chemicals used by the grounds staff are kept in the service room of the public restroom building and inside the gardener's shed.

Chemicals are NEVER to be stored in unmarked containers. **NEVER use ANY non-labelled fluid.**

Disposal of Hazardous Materials

Chemicals are not to be disposed of in the garbage or down drains. Proper disposal information is included on the MSDS and/or label and should to be followed accordingly. Any substances that must be disposed of by chemical waste services will be handled by the Building Maintenance Department and will be stored in their appropriate containers and location until removed.

BIOHAZARDS

Clean up of any human fluids and deceased animals are to be handled ONLY by staff members. Staff is instructed on proper precautions with regard to hazardous biological materials during First Aid and CPR training. Biohazard clean up kits are located adjacent to first aid kits and should be used for all human biohazard clean up. A sharps container is maintained in the Animal Health Care Center for needles and other sharps. Disposal of animal remains is coordinated by the veterinary staff.

Caution is necessary to minimize the risk of zoonotic diseases. JZC volunteers must practice good personal hygiene. Use antibacterial soap after handling ANY animal and especially before eating or drinking. Using proper animal restraint techniques and equipment will minimize the risk of bites or scratches.

City Policy Concerning Minors

Purpose

The City of Idaho Falls is committed to providing an environment as safe as possible for all youth. Employees and adult volunteers of the City of Idaho Falls should avoid situations which would make them vulnerable to allegations of abuse, and shall promptly report suspected neglect, exploitation, or abuse as required by law. In addition, the City of Idaho Falls is committed to taking necessary precautions to protect its employees from accusations and suspicions by providing clear rules for working with children and vulnerable adults. This policy is intended:

- To provide a safe and secure environment for children and vulnerable adults.
- To protect adult employees and adult volunteers from unwarranted allegations of inappropriate behavior.
- To promote and protect the best interests of children and vulnerable adults at all times.
- To make all aware of the zero tolerance of child abuse and that there is mandatory reporting of confirmed or suspected child abuse.
- To have effective risk management strategies in place to prevent child abuse.

Policy

This policy applies to:

- Staff
- Board Members
- Volunteers

Adult employees or adult volunteers shall never work one-on-one with children, youth volunteers, or vulnerable adults. The “two adult rule” or “two youth rule” shall always apply. **When employees or adult volunteers are working with youth the number working together shall always be a minimum of three.** Whether this is one youth working with two adult employees or two youth working with one adult employee. At **no** times shall an employee or adult volunteer working with children or youth **ever** be one-on-one. There must **always** be a third person.

Children, youth, and employees should not put themselves in a situation where something unethical could happen or where conduct could be perceived as inappropriate.

Staff and volunteers shall see that activities are avoided that could easily lead to allegations of abuse, harassment, or inappropriate behavior.

All employees and adult volunteers working with children and youth shall attend yearly or special training and educational events provided by the City to keep employees and adult volunteers informed of City policies and state laws regarding child abuse.

All youth volunteers shall attend training to be informed of policies and state laws regarding child abuse and ways to prevent child abuse.

It is City policy to provide a work environment for volunteers harmonious and free from intimidation and harassment. Toward this end, the City will not tolerate any form or degree of harassment.

Harassment includes unsolicited remarks, gestures, or physical contact; display or circulation of written materials or pictures derogatory to either gender or to racial, ethnic, or religious groups.

The City prohibits sexual harassment of its volunteers within the workplace by other volunteers, outside individuals, or City employees. Sexual harassment means unwelcome sexual advances, requests for sexual or romantic favors, and other offensive verbal or physical conduct of a sexual nature. Sexual harassment includes unwelcome verbal behavior, such as comments, suggestions, jokes or derogatory remarks based on sex; physical behavior such as pats, squeezes, repeatedly brushing against someone's body, or impeding or blocking normal work or movement; visual harassment such as posting of sexually suggestive or derogatory pictures, cartoons, or drawings. It also includes unwanted sexual advances, pressure for sexual favors, or basing employment decisions (such as a volunteer's work assignments, performance evaluations, etc.) upon the volunteer's acquiescence to sexually harassing behavior in the workplace.

The employee who oversees the Youth Volunteers Program in a department shall randomly monitor the activities and duties of the youth volunteers while the youth volunteers are on duty.

All adult employees and adult volunteers are responsible for being aware of people in the proximity of the Youth Volunteers.

Standards of Conduct

The City expects and encourages a work environment of respect and professionalism. All City employees and volunteers are required to conduct themselves in a courteous manner that is appropriate for the workplace. While it is not possible to list every type of conduct that is unacceptable, the following are examples of conduct that is not acceptable:

1. A violation of City policies or regulations.
2. Any conduct violating any federal, state, or local law or regulation.
3. Threat of harm (direct or indirect) to any City employee or representative, member of the public, City government, or City property.
4. Physical violence against persons or property.
5. Damage or threat to City property, regardless of location, or other property that the City controls.
6. Intentional or negligent misuse or destruction of City property, including tools, equipment, vehicles, records, or other material.
7. Possession or carrying of deadly weapons, explosives, or similar items on City property or process.
8. Forceful or unauthorized entry to or occupation of City facilities, including buildings and grounds.
9. Refusal or failure to carry out assignments or to comply with policies, regulations, rules, procedures, or directives, including oral instructions.
10. Failure to keep management informed on matters that pertain to or affect work-related duties or City business.
11. Making malicious, vindictive, false or harmful statements about others or engaging in verbal abuse, altercations or outbursts, including the use of profanity, name-calling, threats, or ridicule.
12. Intimidating or bullying others.
13. Use, possession, distribution, or sale of illegal drugs, paraphernalia, or controlled substances not prescribed to the user by a physician on City property.

14. Violating any safety rules or practices or engaging in any conduct on the job that causes a safety hazard.
15. Failure to report an accident or injury or making false claims or inaccurate statements in the reporting of a job injury or accident.
16. Using City equipment or time to view pornography or other images or websites that are considered inappropriate for the workplace.
17. The City's information technology is provided to enhance business processes within the City. Volunteers shall only use the City's information technology for City business-related purposes.

The above restrictions are not intended to be all-inclusive of the proper standards of conduct or obligations that volunteers or employees shall observe at all times. When a situation arises in which the proper course of conduct is unclear, the employee or volunteer involved should request direction from his or her supervisor.

Reporting Procedures

In all cases where someone has reasonable cause to believe that inappropriate behavior may have occurred or is occurring with anyone under the age of 18, this should be reported **immediately** to the appropriate staff supervisor, superintendent Department Head, or Division Director, or the Human Resources Office.

If the child is at immediate risk, and none of the above can be reached, then the police should be contacted immediately.

A person making a report of inappropriate behavior should complete "Report Form for Suspected Inappropriate Behavior" and submit to the Department Head. If the Department Head is the subject of the report or can't be reached, the report should be submitted to the Division Director. At any time the person may submit the report directly to the Human Resources Office.

Any report of inappropriate behavior will be properly investigated. If a complaint meets the conditions for a criminal investigation, it will be reported to the authorities immediately.

Responding to the Report

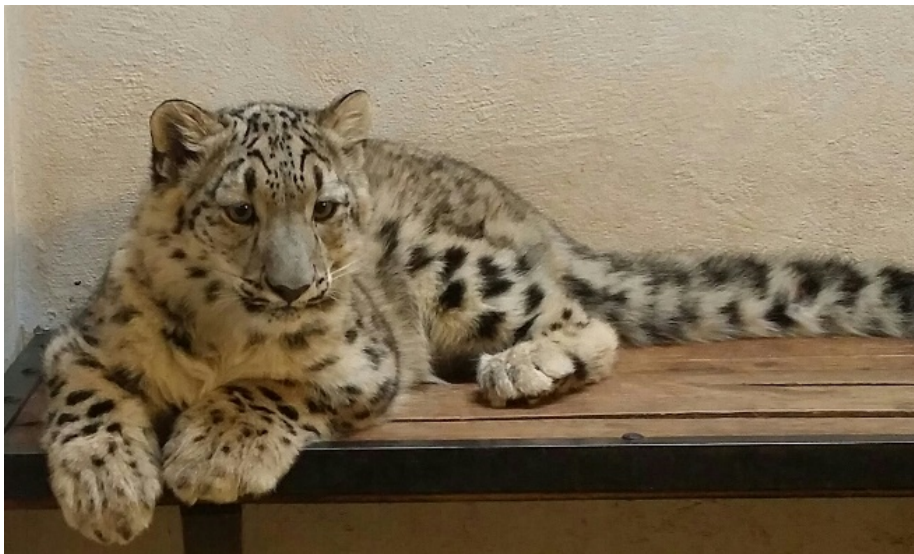
When someone receives a report of an incident of inappropriate behavior or abuse, immediate action shall be taken to ensure the safety of the alleged victim.

Reasonable steps shall be taken to ensure that the alleged wrongdoer has no contact with the alleged victim pending investigation.

Radio Communication Procedures

Our zoo uses portable radio units to maintain contact between staff. These radios are assigned to certain individuals and locations on zoo grounds. All employees have a radio for daily use. Volunteers may be issued a radio as needed and available. There will always be one within the Children's Zoo area. Additional radios will also be kept at the veterinary hospital, gift shop, and the Habitat, for emergency purposes. These radios are not for general use and must remain at their locations. We share our radio frequency with parks, animal control, building maintenance, and planning and zoning. The city of Idaho Falls is licensed by the Federal Communications Commission (FCC), and as such must follow all applicable FCC regulations.

- Keep radio turned on at all times and make sure it is on channel 1.
- This is expensive equipment; treat it as such. Do not abuse the radio. Keep it dry and clean.
- Initiate radio calls using your Z number followed by the Z number(s) of the person(s) you are calling. Acknowledge receipt of a message. "Clear" at the end of the conversation. For example:
 - "Z2 to Z4"
 - "This is Z4"
 - (communication)
 - "Copy. Z4 clear"
 - "Z2 clear"
- Radios are for necessary internal business only. Keep conversations to the point and as brief as possible. Use codes (on next page) when appropriate. Remember that other city departments can hear your conversations!
- Do not attempt to repair a radio yourself if you have any problems or if it malfunctions. Turn it in.
- Know and use your call number. **Junior Zoo Crew is Z23**
- Give a person time to answer back in case they are on the phone, holding an animal, etc.
- Keep in mind that use of this equipment is regulated by the federal government.



Emergency Radio Codes

Radio codes are used to quickly relay important information to other zoo employees/volunteers to alert them to possible emergency situations. As much as possible avoid giving specific details or sensitive information over the radio. **The phrase “Priority One” is to be used whenever immediate assistance is required.** These codes are intended to cover five types of emergencies. Always remember two things - **STAY CALM** but **WILD ANIMALS ARE DANGEROUS**. During an emergency your composure, or lack of it, can be heard by others over the radio and will affect their reactions to your instructions. Always follow the instructions given to you by a keeper/staff member.

DISPOSITION: Used to report an animal has died. Notify the General Curator and/or Superintendent via radio upon discovery of a dead zoo animal. Use “**priority one**” if immediate assistance is needed (example: to remove a large animal from its exhibit before the public arrives).

CODE BLUE: Used to report an animal is injured, ill, or in distress and requires attention. Notify the Animal Care Supervisor, General Curator, Vet Tech. or the senior animal care staff member on grounds. Identify the type of animal involved and its location. Use “**priority one**” if immediate attention is required and “**vet required**” if the veterinarian needs to be called in immediately.

CODE GREEN: Used to report an animal escape. Call “all Z units, Code Green” and state the animal(s) involved, location and any other pertinent information. The senior staff member on grounds will answer and direct the response. A code green should be called any time an animal gets outside of its exhibit or holding area. When in doubt call a code green. If immediate assistance is needed broadcast "Code Green Priority One". Once a "Code Green" message has been broadcast, all unrelated radio communication shall be stopped until the animal escape emergency has been resolved.

CODE YELLOW: Used to report a visitor or employee is injured or ill and assistance is required. It is automatically assumed that all code yellow alerts are “priority one”. Call “all Z units, Code Yellow” and give location and brief description of situation. The senior staff member on grounds will answer, dispatch first aid equipment, and direct the response. If immediate emergency medical attention is required you may call 911 before reporting a code yellow.

CODE RED: Used to alert all zoo staff of an emergency situation that requires immediate response. It is automatically assumed that all code red alerts are “priority one”. Call “all Z units, Code Red” and give the nature and location of the emergency. The senior staff member on grounds will answer and direct the response. Code red situations include:

- **Animal Attack:** A person(s) is being attacked or is in eminent danger of attack (inside an exhibit). This can refer to visitors, volunteers, and staff.
- **Fire**
- **Criminal Activity:** Assault, armed robbery, public intoxication, or any other activity that may pose a danger to zoo visitors, volunteers, staff, animals, or facilities.

Note: The codes are guidelines only. In any emergency situation the important point is to remain calm and relay your message clearly and concisely so that staff members can respond in an appropriate manner. USE COMMON SENSE. Do not overreact. The purpose of the codes is for the zoo staff to be able to react to emergencies competently without drawing unwanted/unneeded public attention while resolving the situation.

Threats to Wildlife Biodiversity

The top 5 threats currently reducing biodiversity can be abbreviated as HIPPO:

Habitat destruction – This is the greatest threat to animals worldwide. As humans grow in population we destroy natural wildlife habitats to instead build our roads, farms/ranches, dams, power plants, homes, parking lots, etc.

Introduced species – When non-native (“exotic”) species are introduced to an ecosystem by people they are usually able to eat more food faster and reproduce more rapidly than the native version. In addition to outcompeting the natives, exotic species may also EAT native species who have no defenses against a predator they did not evolve around.

People overexploit resources – Humans and threatened species are often concentrated in the same areas competing for food. One hundred years ago, there were one billion people in the world. Now there are over 7 billion and we grow by about 200,000 humans every single day! We label wildlife who want food/shelter as “pests” and kill them. We often waste resources like water and food. We are consuming natural resources, both renewable and nonrenewable, at an alarming rate and competing to the detriment of other species and possibly our own.

Pollution – Pollution kills living organisms and interferes with ecological processes. Arctic animals are reducing in numbers because of global warming caused by exhaust fumes. Amphibians are declining due to manmade chemicals. Large numbers of birds have been found dead on extremely remote islands due to eating tiny pieces of plastic. Due to worldwide human waste, there is a swirling patch of trash and chemical sludge within the Pacific Ocean that is at least the size of Texas if not larger. Even outer space is polluted by a ring of trash circling Earth!

Overharvesting – When an organism is continually hunted or collected as pets faster than it can reproduce, it will eventually become extinct in the wild. Large, desirable animals usually produce few young and at a slow rate, and are thus incredibly prone to overharvesting.

What are zoos doing to conserve?

Zoos coordinate with each other and with conservation groups to preserve species and habitats for future generations. Zoos actively help provide funding, expertise, and manpower to:

- Purchase habitat lands as natural reserves,
- Sponsor litter clean ups and other habitat restoration projects,
- Fund research projects for threatened species,
- Rescue/rehabilitate injured wildlife and re-release them back into the wild,
- Improve management techniques of wildlife,
- Improve veterinary healthcare,
- Improve husbandry of animals already in human care,
- Increase genetic diversity of animals,
- Increase public education,
- Promote better economic planning,
- and more!

Species Survival Plans (SSP) – These are captive breeding programs carefully managed amongst zoos and aquariums with the ultimate goal of replenishing species that are endangered and/or extirpated in the wild. Participating zoos move males and females of each species between facilities in order to mate. In addition to preventing inbreeding, the program also allows

researchers to study the courtship behavior and breeding patterns of animals in a controlled, scientific setting. There is public disagreement about whether moving animals between zoos for reproduction purposes, **as well as** even whether the artificial insemination techniques being developed to eliminate the need to move animals, is humane or correct, but from the point of view of the conservation of endangered species SSPs have already saved from extinction and succeeded in re-introducing the following animals back into the wild: black-footed ferrets, California condors, Guam rails, Przewalski's horses, Scimitar-horned Oryx, and Spix's macaws. The Idaho Falls Zoo currently participates in SSP programs for snow leopards, Amur tigers, black-footed penguins, cotton-top tamarins, red-ruffed lemurs, and ring-tailed lemurs.

What is Idaho Falls Zoo Doing?

In June 2015, Idaho Falls Zoo at Tautphaus Park began its Quarters for Conservation program. This program helps selected global and local conservation programs with a portion of admissions. Visitors are given a token that they can use to vote for which conservation program they wish to support. Half of all money raised goes to our global conservation projects, while the other half stays local. In 2015, the zoo raised over \$11,000 for conservation programs! In 2016, we hope to raise over \$30,000 for conservation programs! Currently, the zoo is globally supporting Snow Leopard Trust, SANCCOB, and the Gorongosa Restoration/ bird project. Locally, we support Wolverine Regional Ecology project and research with long-billed Curlews.

Professional Zoo Organizations

The following are the most widely recognized professional organizations that were created to share knowledge amongst zoos and aquariums in order to simultaneously coordinate wildlife conservation efforts and improve the lives of animals in human care. All of them are non-profit.

Association of Zoos and Aquariums (AZA) = An international organization founded in 1924 to promote conservation, education, visitor enjoyment, and scientific research amongst zoos and aquariums. Accreditation is given only to institutions who excel at animal care, and the process involves incredibly strict guidelines of animal welfare, veterinary care, conservation efforts, safety measures, and educational outreach. This group is who created the Species Survival Plan program about 20 years ago. In addition to their network of participating zoos and aquariums, individual membership is also open to anyone who supports the efforts of zoos and aquariums.

International Marine Animal Trainer's Association (IMATA) = An international community formed in 1972 to advance the humane stewardship of marine animals living both in the wild and in human care through communicating current marine biology scientific research findings, rescue efforts, and the latest animal training techniques in aquariums and government organizations. Membership is open to college students, professionals working with marine animals, and anyone interested in learning more about marine animals.

American Association of Zoo Keepers (AAZK) = A mostly U.S. and Canadian group begun in 1967 with the purpose of promoting communication and education amongst North American zookeepers to increase their professionalism, advance animal care, foster personal connections, promote animal welfare, and further conservation projects. In recent years, the organization has created a stand-alone group called the **International Congress of Zookeepers (ICZ)** which has expanded membership to zookeepers in 24 other countries as well.

Association of Zoo and Aquarium Docents & Volunteers (AZADV) = An international collection of zoo volunteers created in 1986 with the purpose of improving their educational presentations through global communication with each other. Anyone who volunteers as a guide or interpreter at any zoo or aquarium in the world is invited to join.

U.S. Laws Protecting Wildlife

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES offers varying degrees of protection to more than 30,000 species of animals and plants, whether they are traded as live specimens, body parts such as fur, or dried herbs. Countries adhere voluntarily, forming conservation agreements with the membership. Currently there are 169 countries.

- **Lacey Act of 1900:** The first federal law created in the U.S. to ever protect wildlife. It imposes civil and criminal penalties for illegally trading animals and plants, and covers all species listed by CITES. This act makes it unlawful to buy, sell, acquire, purchase, import, export, or transport any wildlife, plants, or parts taken, sold, or otherwise possessed in violation of any federal, state, international, or tribal law. The protection given includes a broad definition concerning plants/plant products obtained through trespassing, such as products made from illegally logged woods, and it penalizes any guided tours/outfitters who wrongfully profit from protected species. It also helps prevent the spread of exotic species.
- **Migratory Bird Treaty Act of 1918:** Makes it illegal to pursue/hunt, take, kill, possess, transport, sell, offer for sale, buy, or barter any migratory birds, their eggs, their nests, or any of their body parts including feathers without a federal permit. The birds covered are any species naturally occurring within the U.S., Canada, Mexico, Japan, and Russia.
- **Animal Welfare Act of 1966:** Regulates the treatment of animals on public exhibit, commercially transported, used in research, or sold/traded. The law requires a minimum standard for animal care be established and enforced, covers animals even after death, and sets requirements for record keeping and animal identification rules.
- **Marine Mammal Protection Act of 1972:** Protects all marine mammals by making it illegal to feed, approach, harass, restrain, detain even temporarily, capture, collect, tag, hunt, take, kill, or import any marine mammals or any of their body parts. Enforcement is divided between the Department of Commerce and the Department of Interior. The National Oceanic and Atmospheric Administration (NOAA) oversees cetaceans and non-walrus pinnipeds,

while the US Fish & Wildlife Service is responsible for all other marine mammals, including polar bears, sea otters, walruses, dugongs, and manatees.

- **The Endangered Species Act of 1973:** Provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered anywhere in the world. Protection includes the conservation of ecosystems. Provisions are made for listing species within the U.S., as well as creating species recovery plans, monitoring delisted species, purchasing land for conservation goals, and the designation of critical habitat for listed species.
- **Wild Bird Conservation Act of 1992:** Protects exotic birds by limiting or prohibiting importation of exotic bird species covered by CITES. Sets a limit on the importation of species not covered by CITES. Sets standards for qualifying bird breeding facilities. The U.S. is the world's largest importer of exotic birds. The international pet trade in wild-caught exotic birds is significantly contributing to the decline of species in the wild, and the mortality rate associated with the pet trade remains unacceptably high.

Government Agencies

AT THE INTERNATIONAL LEVEL...

- **International Union for Conservation of Nature (IUCN):** Supports scientific research to conserve nature, manages international fieldwork on climate and food needs, and encourages international partnerships to develop policies and laws. It is the world's oldest and largest global environmental organization, consisting of 160 countries.

AT THE FEDERAL LEVEL...

Department of Agriculture (USDA): Oversees issues related to food, agriculture, & natural resources. The USDA maintains quarantine facilities for international importation of hoofstock and birds. It is the agency safeguarding against animal diseases like foot-and-mouth disease, mad cow disease, bird flu, etc.

- **Animal and Plant Health Inspection Service (APHIS):** Is responsible for protecting and promoting U.S. agricultural health, administering the Animal Welfare Act, and carrying out wildlife damage management activities. APHIS requires licensed exhibitors provide their animals with adequate care and treatment in the areas of housing, handling, transportation, sanitation, nutrition, water, general husbandry, vet care, and protection from extreme weather/ temperatures.
- **US Forest Service:** Manages the sale of timber within government lands, oversees national grasslands, and protects any areas designated by Congress as "Wilderness".

Department of Health and Human Services: Works with the USDA to protect humans against zoonotic diseases associated with birds, reptiles, primates, and other animals.

Department of the Interior: Oversees energy and mineral resources, regulates the use of land and water resources, and oversees conservation of wildlife.

- **US Fish & Wildlife Service (USFWS):** Focuses on protecting and enhancing wildlife, plants and habitats. Monitors and regulates all import or export of wildlife and their parts.
- **National Park Service:** Preserves natural and historic areas for public enjoyment/recreation.
- **US Geological Survey (USGS):** The sole scientific agency of the Department of the Interior. It is a fact-finding organization researching the landscape of the U.S. and its natural resources, including any natural hazards that threaten it.
- **Bureau of Land Management (BLM):** Inherited the unclaimed “undesirable” land leftover after the colonization of the west. Manages wild horse populations within western states, as well as regulates livestock grazing, mining, and energy production on government land.
- **Bureau of Indian Affairs:** Manages all natural resources held by Native American tribes.

AT THE STATE LEVEL...

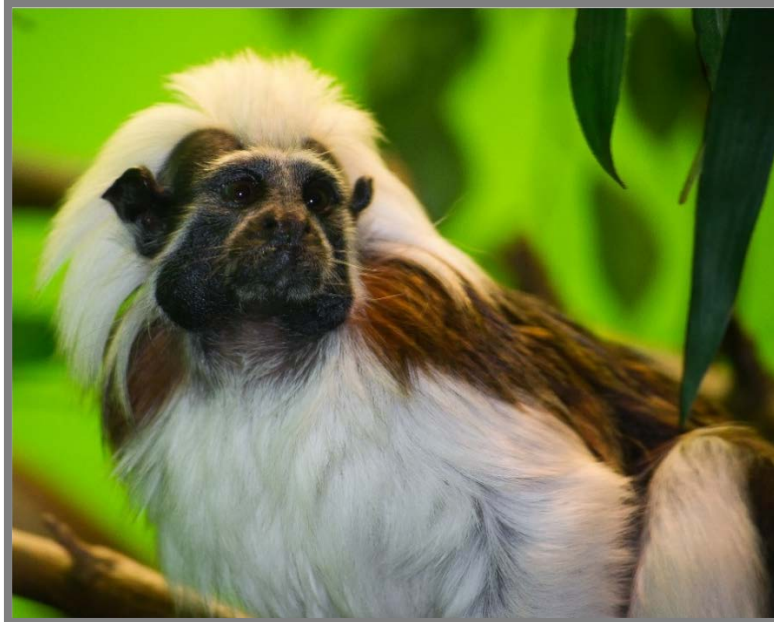
Idaho Dept. of Fish and Game (IDFG): Issues permits to band, collect, possess, sell or trade wildlife in Idaho.

Idaho Department of Environmental Quality (IDEQ): Was created by the Idaho Environmental Protection and Health Act to preserve the quality of Idaho’s air, land, and water for use and enjoyment today and in the future. It serves to ensure clean environmental resources and to protect human health from the dangers of pollution.

Idaho State Dept. of Agriculture (ISDA): Has decreed that all species of mammals, birds, or reptiles found in the wild that are not species of special concern may be held in captivity in Idaho without a permit so long as the possessor retains proof that the animal was lawfully obtained. Before bringing an animal into Idaho an owner must obtain an import permit and comply with specific caging requirements for the animal.

Conservation Terminology

The IUCN Red List classifies species around the world into different categories based on their population size, rate of decline, area of distribution, and the amount of fragmentation.



Endemic = A unique species that only naturally occurs within a very small area. For example, Key deer are endemic to Big Pine island south of Florida and lemurs are endemic to Madagascar.

Extinct = The total loss of a species from the planet. The moment of extinction is the death of the very last individual of that species.

Extirpated = The species has become locally extinct in the area, but still exists elsewhere.

Critically Endangered = Species that are in immediate danger of becoming extinct. This is the highest risk category possible and includes species believed extinct that have yet to be confirmed thru exhaustive surveys. Species in this group have less than 250 individuals left in the wild and their probability of extinction is at least 50% within the next 3 generations.

Endangered = Species with a very high risk of extinction. Species in this group have 2,500 or less individuals left and their probability of extinction is at least 20% within five generations.

Vulnerable = Threatened species very likely to become endangered soon. Rare species of less than 10,000 individuals left with some likelihood of extinction within the next 100 years.

Near Threatened = A species facing enough reduction of population or habitat to already be on the cusp of almost being in the “Vulnerable” category. While not yet threatened with extinction, these are species of concern.

Least Concern = Widespread and abundant species. This is the lowest risk category.

YOUR ROLE AS AN EDUCATOR

In order to better educate our visitors, each JZC member will be required to take out one of the sheep, goats, llama, alpaca, rabbits or other available education animal ambassador and present it to the public for at least **one hour each month**. In addition, each JZC member will be required to present a biofact or exhibit animal to the public, **OUTSIDE** of the Children's Zoo area at least twice during the season. Staff will monitor this to make sure it is being done. This public interaction can be informal or formal, include animal demonstrations, use biofacts, and/or use storytelling. It should be performed in groups of 2 JZC per session. This is an opportunity for JZC to talk to the public and educate our visitors about the importance of animals, their ecosystems, and what we can do to help conservation efforts around the world. If you need assistance coming up with ideas, ask the Children's Zoo Keepers or Education staff. You may also ask volunteers to help get animals or biofacts out from the habitat.

HANDLING GUEST COMPLAINTS

If any visitor brings a complaint to your attention, tell them you'd be happy to help them by referring them to the main Administration office or the gift shop ticket booth. A "Complaint Form" will be filled out by zoo staff and the complaint investigated. Never assume blame nor get defensive with a guest. Remember to smile and act politely at all times.

GUIDELINES FOR WORKING WITH ANIMALS

1. Check the *Animal Interaction Book* located in the Habitat to choose an animal that needs handling. Each animal should be handled at least twice per week and you must have an animal-handling trained staff member or volunteer with you at all times when you take out an animal.
2. Work with the animal for at least 15-20 minutes at a time, for a maximum of 60 minutes at a time, maximum use of twice daily.
3. With a keeper present, you may halter a Children's Zoo animal, brush it, and inspect its feet.
4. With keeper assistance and approval, you can take animals out of the pen area (haltered, of course) and walk them around their approved area.
 - a. For the donkeys, llama, and alpaca, you must have a Children's Zoo Keeper, zookeeper, or trained animal handling Docent volunteer with you to take these animals out of their pens. Have the animal stand or "cush" (sit) in the grass. Walk them on the path.
5. Please indicate that you interacted with the animal in the Animal Interaction Book in Habitat.
6. Under keeper or Education staff supervision, a returning JZC may walk the animals around the zoo. Remember, they cannot go near the cat exhibits, camels or guanacos (when in the service area, be sure to keep them away from the guanaco back fence).

JUNIOR ZOO CREW CONTINUING EDUCATION CLASSES

We take your role as an educator of the public very seriously. The Junior Zoo Crew is not just a volunteer program but also your opportunity to learn. Your initial training for the JZC program is just the beginning. All members are required to attend additional continuing education classes held each month during the summer. These classes will cover a variety of topics to increase your knowledge. Every JZC member is required to attend all classes and complete a poster project on a topic of their choice within the given parameters. The dates for these classes and poster presentations will be provided at the training day. This will be a fun learning experience, and you may even be able to use your poster during the school year! If you miss any of these classes, you will be expected to complete a related research paper to be allowed to continue volunteering.

PRESENTATION TIPS

Be prepared!

1. Plan your presentation

- Analyze your audience – their age, backgrounds, knowledge level, etc.
- Identify key points you want to discuss
- Identify supporting details you will need
- Organize your presentation in a logical order. Create a brief outline, if it helps.

2. Rehearse

- Use keywords. Don't rely on reading a script from paper. Memorize it if needed or don't have a set-in-stone script.
- Mentally review your script in sequence. It helps to learn back to front.

3. Set up

- Check your equipment in advance – cart, crate, perches, etc.
- Double check the arrangement of your space – Can everyone see & hear you?

GIVING YOUR PRESENTATION

Anxiety

- Nervousness and excitement are normal.
- You have prepared. Your audience is unlikely to notice minor mistakes. **It will be OK.**
- Harness your nervous energy positively with passion, excitement and interest in you presentation.
- Breathe slowly and deeply. Your cardiovascular system will slow down and help ease your anxiety.

Delivery

- Stand up when presenting. It will help you appear, sound, and even feel more confident.
- Face your audience. Make eye contact with each person at some point.
- If writing or manipulating an object or animal; complete the task and then turn and talk
- Use natural gestures. Do not put your hands in your pockets, wring them, or fiddle with objects

Voice

- Using a natural conversational style helps you relate directly and personally to an audiences
- Don't read your presentation verbatim from paper
- Use a comfortable pace suited to your audience. For example, go slower for younger kids
- Speak clearly and loud enough to be heard in the back. If you are not sure, ask the people in the back if they can hear you.

Eye Contact

- Maintain eye contact with your audience to gather feedback from the audience. Do they look bored? Puzzled? Engaged?
- Try to keep audience attention by looking eye to eye at each member for several seconds. Don't quickly scan the audience nor stare at a fixed point in the back nor stare at your notes for long.

BIOFACTS

Biofacts are any natural, organic material from something that was once living. This includes seeds, fur, skulls, feathers, shells, pieces of wood, etc. They are valuable educational tools that can be used in a wide variety of ways. We have a lot of animals that cannot be approached and especially not touched! Biofacts are an opportunity to let people get “up close” to these animals. Biofacts can be used to demonstrate animal adaptations almost as well as, or sometimes even better than, the live animal itself! Please take the opportunity to explain to people WHY we have biofacts and their value in education. Here are some examples of some ways to use biofacts:

1. **Skulls, Teeth, Jaw Bones** - You can tell a lot about an animal (what it eats, how strong it is, how old it was, where it lives, etc.) just by looking at its skull.
 - Illustrate features of an animal’s skull to zoo visitors. Show how the teeth shape, size of sagittal crest, eye socket placement, horns, etc. help it survive.
 - Compare skulls from herbivores, carnivores and omnivores. Herbivores have flat grinding molars and “lawn mower like” front teeth. Herbivores also tend to have eyes on the side so they can see a wider range of view to spot predators. Carnivores have sharp, pointy canines for holding onto wriggling prey and sharp, ridged molars for shearing meat. Carnivores tend to have forward facing eye sockets and good depth perception for capturing prey. Omnivores have a mixture of both types of teeth and usually have forward facing eyes.
2. **Hides/Pelts/Sheds** - There are few places in the United States where people get the opportunity to legally touch monkey fur or a lion pelt. All animals, including humans, have an outer layer covering their bodies. The nature of this covering gives clues to an animal’s adaptations that help them to survive in their environments.
 - Use a boa constrictor shed to show the size of these amazing snakes. You could take along a shed from one of the smaller snakes as a comparison and to show people how big boas get. They start out small enough to fit in an egg but grow to be over 10 feet long!
 - **Compare animal coverings and their functions.** Feathers, horns, scales (including on tortoise shells), nails, and hair/fur are all essentially made from keratin. As animals evolved the ability to regulate their temperature internally, they needed to also evolve coverings that held in heat. Scales have provide very little insulation, but fur and feathers can help warm or cool animals. On some animals they can even be almost waterproof!

Have fun! Don’t stress out about the complexities of animal bodies, because most audiences NEED you to keep it to simple facts. Zoo guests are here to have fun, not to feel like they are in school. People instinctively want to touch and feel things in order to learn. You’ll find that biofacts are a lifesaver for helping people finally understand concepts. If you need help with what to talk about, feel free to ask the volunteers what they use or ask the Education staff for ideas.

ANIMALS IN THE ZOO

(*) Indicates animal ambassadors. You will only be able to handle animals you have been approved on.

(SSP) Indicates animals that are part of a *Species Survival Plan*.

For more information about any animal in the zoo, see the animal's fact sheet. There is a fact sheet book located in the habitat.

REPTILES

African Pancake Tortoise*
African Spurred Tortoise
Aldabra Tortoise
American Alligator
Ball Python*
Crested Gecko*
California King Snake*
Corn Snake*
Leopard Tortoise
Northern Blue-tongued Skink*
Red-tailed Boa Constrictor*

BIRDS

African Penguin (SSP)
American Kestrel*
American White Pelican
American Wigeon
Azure-winged Magpie
Baikal Teal
Barred Owl*
Barrow's Goldeneye
Black Swan
Blue-bellied Roller
Call Duck
Canvasback
Cape Thick-knee (SSP)
Cattle Egret
Chicken
Chilean Flamingo (SSP)
Common Peafowl
Demoiselle Crane (SSP)
Double-toothed Barbet
Elegant Crested Tinamou (SSP)
Emu
Golden Eagle
Greater Rhea (SSP)

FISH

Goldfish
Koi

AMPHIBIANS

Ornate Horned Frog*
White's Tree Frog*

ARTHROPODS

Chilean Rose Tarantula*
Madagascar Hissing Cockroach*
Emperor Scorpion*

Green Woodhoopoe (SSP)
Green-naped Pheasant Pigeon (SSP)
Grey Crowned Crane (SSP)
Guira Cuckoo
Harris' Hawk*
Helmeted Guineafowl
Hooded Merganser
Kookaburra (SSP)
Lesser Scaup
Lilac-breasted Roller
Mandarin Duck
Military Macaw
Nicobar Pigeon (SSP)
North American Wood Duck
Northern Pintail
Northern Shoveler
Radjah Shelduck
Red-and-yellow Barbet (SSP)
Red-crowned Crane (SSP)
Redhead
Ringed Teal
Ring-necked Duck
Roseate Spoonbill

Rose-breasted Cockatoo*
Ruddy Duck
Sacred Ibis (SSP)
Saffron Finch
Scarlet Macaw
Silvery-cheeked Hornbill
Snowy-headed Robin Chat (SSP)
Southern Ground Hornbill (SSP)
Spur-winged Lapwing (SSP)
Superb Starling
Taveta Golden Weaver

Tawny Frogmouth (SSP)
Temminck's Tragopan
Tundra Swan
Turkey Vulture
White-bellied Go-away Bird
White-cheeked Turaco (SSP)
White-crested Laughing Thrush (SSP)
White-faced Whistling Duck
White-headed Buffalo Weaver (SSP)

MAMMALS

African Lion (SSP)
Alpaca
Amur Tiger (SSP)
Bactrian Camel
Barbados Black-bellied Sheep
Bennett's Wallaby
Black-and-white Colobus (SSP)
Chinchilla*
Cotton-topped Tamarin (SSP)
De Brazza's Monkey (SSP)
Domestic Ferret*
Domestic Rabbit*
Goeldi's Monkey (SSP)
Plains (Grant's) Zebra (SSP)
Guanaco
Llama
Mueller's Gibbon
New Guinea Singing Dog
Nigerian Dwarf Goat
North American River Otter (SSP)
Nubian Goat
Patagonian Cavy
Prevost's Squirrel (SSP)

Red Panda (SSP)
Red-flanked Duiker (SSP)
Red-ruffed Lemur (SSP)
Reeves' Muntjac
Ring-tailed Lemur (SSP)
Rock Hyrax (SSP)
Sardinian Donkey
Serval (SSP)
Sloth Bear (SSP)
Snow Leopard (SSP)
White-handed (Lar) Gibbon (SSP)
Yak

ANIMAL NAMING POLICY

The current philosophy underlying our zoo's policy is...

- Visitors want to know the animals' names. We do not believe that appropriate names "humanize" or demean the animals when used infrequently.
- Knowing names appears to help people appreciate the animals and "bond" more closely with them. This appreciation may help inspire a deeper interest in learning more about the animals. In this way, our animals may act as ambassadors for their species in nature. Visitors may consider the possibility of a world with no more Kubu or Zowie and want to help in some way.
- Visitors may return more often to see their animal "friends", thus generating additional revenue to support our conservation and education programs.

Our Animal Naming Policy Rules

1. It is acceptable to name animals in the collection. However, animal names should be from the country of origin and respectful of the animal. Public naming contests are acceptable but must be approved by the Superintendent.
2. Names may be used in press releases and during interviews, but may NOT be used on graphics.
3. Names should be used as extra information only. They should be used rarely and should NOT become the central focus of attention. They should be explained if questions arise.
4. Employees and volunteers should feel free to share and explain animal names with the public but should not to make them the central focus of attention.



EDUCATION ANIMAL AMBASSADORS

<u>Animal Type</u>	<u>Name</u>	<u>How to ID</u>	<u>Approximate Date of Birth</u>
Alpaca	Andy	Brown, shorter than llama	1/2003
Barbados Sheep	Sugar	White ear tag	3/2010
Barbados Sheep	Sunny	Yellow ear tag	3/2010
Barbados Sheep	Rosie	Red ear tag	3/2010
Ball Python	Squeeze	Brown python with splotches	6/2008
Barred Owl	Bentley	Brown and white striped owl	4/2013
Blue tongue Skink	Fitzroy	Large lizard	5/2002
Chilean Rose Tarantula	Chile		6/2005
Chinchilla	Chasca		1/2008
Cornsnake	Scarlett	Small, reddish orange snake	Unknown
Crested Gecko	Harley	Small, harlequin colored lizard	3/2011
Donkey	Gramma	Fluffier face	1989
Donkey	Jenny	Shorter hair	10/1992
Emperor Scorpion	Striker	One of largest spp of scorpion in world	Unknown
Ferret	Misty	Albino	2/2011
Ferret	Shadow	Mostly brown	2/2012
Galah (Rosebreasted Cockatoo)	Aurora	Small, gray and pink parrot	5/2010
Harris Hawk	Hunter	Brown colored hawk	1997
Kestrel	Sundance	Small falcon with bluish gray wings	1/2006
Kingsnake	Lacey	Small, white and black banded snake	Unknown
Llama	Francis	White & brown, taller than alpaca	5/1997
Madagascar Hissing Cockroaches		Wingless, one of largest spp of roaches in world	
Nigerian Dwarf Goat	Trixie	Tri-colored, smallest adult	2014
Nigerian Dwarf Goat	Spirit	White, old	5/2004
Nigerian Dwarf Goat	Cosmos	Tri-colored baby with moon spots	3/2015
Nigerian Dwarf Goat	Prince	Brown baby with moon spots	3/2015
Nubian Goat	Marie	Black with some tri colors	5/2012
Nubian Goat	Leo	Black with more moon spots	5/2014
Nubian Goat	Jack	Black w/ less moon spots & waddles	5/2014
Ornate Horned Frog	Mr. Toad	Large, green and brown frog	7/2005
Pancake Tortoise	IHOP	Flat shelled tortoise	5/2001
Pot-bellied pig	Chandler	Black colored	8/2007
Singing Dog	Kubu	Male	10/2011
Singing Dog	Lexie	Female, more timid	11/2009
White's Tree Frog	Cami		7/2007
Yak	Bhutan "Boo"		8/2003

ANIMAL HANDLING GUIDELINES

GENERAL INFORMATION

Only the General Curator, Education Curator, Education staff, or Animal Care staff may teach animal handling to an individual. Training will be in a hands-on session. **No animal may be used by a person who has not been previously approved in handling that particular animal.** All new animals coming in require individual instruction before being handled.

RULES

1. **Set yourself up to succeed.**
 - a. **Get a transfer crate set up before you ever open an enclosure.**
 - b. **Make it easy on yourself to get an animal in or out. Think ergonomically!**
 - c. **Clear pathways in advance so you will have a clear walking path.**
 - d. **Remove jewelry, pins, etc. before handling.**
 - e. **Be sure all outside doors are closed before removing any animal from enclosures.**
2. **Report any unusual symptoms you notice while handling an animal.** Symptoms such as sneezing, runny nose, cuts, falls, lethargy, vomiting, diarrhea, etc. should be reported to zoo staff immediately.
3. **You are in control. You decide if, when, and where the animal may be touched.** Be sure the animal is fully aware of you and calm before handling. Control the animal's head position/direction at ALL times. Remember, some animals may need to eliminate shortly after becoming active (5-20 minutes). To help calm the animal, keep the front legs level with the back. **DO NOT** roll the animal back in a way that may make it feel as if its abdomen is exposed to possible attack. If possible, keep your hand or arm under its belly and chest.
4. **Do not expose animals to extreme heat or cold.** Do not use any of the animals outdoors if the temperature is below 45 degrees. There are temperature guidelines for each species posted in the Habitat. Invertebrates, amphibians, reptiles, tropical mammals, and tropical birds are particularly sensitive to cold temperatures. The only exception is transportation to/from a vehicle if exposure to outside temperatures will be minimal. Always cover carriers if it's cold.
5. **Wash hands before, between, and after handling animals.** Use antimicrobial soap or waterless disinfectant. A series of zoonotic diseases can be spread by our animals. Try to handle reptiles before birds or mammals. Always wash hands before handling a snake. This will help prevent the snake from mistaking your skin for lunch. They smell better than see.
6. **If the public touches ANY animal they MUST use disinfectant** after the last animal is presented. Make sure they rub disinfectant on their hands for 20 seconds (the time it takes to sing the Happy Birthday song twice) and allow it to air dry. It's the air drying that kills any bacteria.
7. **NO touching of any reptile is allowed for anyone under the age of 5, or in a health care facility or hospital.** This is federal law! Health impaired individuals and young children are at extremely high risk for becoming seriously ill from touching ANY animal.

8. **Do not apply hand lotion or perfume before animal handling.** The animals may not like it, or they may like it too much! When handling amphibians, always wash hands and arms all the way up to your elbows. Sunscreen and insect repellent can KILL an amphibian!
9. **You need to feel comfortable with the animal you are handling.** They can sense anxiety and will become anxious/defensive themselves. Ask for more training if you feel fear.
10. **Always support the full body weight of the animal.** DO NOT ever let the animal “dangle”. Holding any animal only by the tail or legs can injure it.
11. **When handling animals, maintain control and direction of the animal’s head.** Keep audiences away from the animal’s face and head. Attempt to control the animal with only one hand when practical. A free hand can prove valuable in opening doors, demonstrating the proper way to touch the animal, and in holding back onlookers.
12. **Know your animal’s behavior before you take it out. Put it away at the first sign of stress.** Common signs of stress include yawning, restlessness, nibbling, scratching, etc.
13. **Do not allow any animal to run or fly loose.** Do not let animals crawl on a table or floor. They should be inside an exercise pen with newspapers if getting exercise.
14. **Be sure enclosures are locked after returning animals.**
15. **Visitors can NOT hold any zoo animal EVER!!** It is against zoo policy for insurance reasons and the safety of the animal.
16. **Always line carriers with newspapers or towels when transporting animals.**
17. **Clean, disinfect, and return carriers to their proper location after using them.**

ADDITIONAL JUNIOR ZOO CREW RULES

18. **JZC must have a qualified adult handler present when handling ANY animal.**
19. **JZC cannot handle an animal they are not trained to handle.**



PUBLIC INTERACTIONS

1. When you take any animal out on zoo grounds, you must take its crate with you in case of emergency. The only exception is for a very short walk in the immediate vicinity of the Habitat or the Education Office.
2. Animals are **MAGNETS** for attention. The welfare of the animal takes precedence over anything else. Position yourself to protect the animal from unwanted advances from the public. Have your back against something solid so people cannot walk up behind you.
3. If taking an amphibian, take a small bottle of “frog water” with you so you can mist the animal. If taking a raptor out, take a bottle of tap water to mist their feet with.
4. **NO touching of any reptile is allowed for anyone under the age of 5. Use your best judgment on assessing a child’s age.**
5. Visitors should have all food put away if you are going to let them touch an animal. **ALWAYS** have a visitor use hand sanitizer after they touch an animal and remind them to wash their hands before they eat anything.
6. Clean, disinfect and return carriers to their proper location after using them.

ANTICIPATED PROBLEMS

Fear of some animals (for example, snakes or spiders) is common. Announce your species before presenting it. Let a teacher know in advance in case they have students who are fearful.

While presenting an animal in a crowd, position yourself such that people cannot crowd behind you, in order to protect the animal from reaching hands. Always know where your animal is. This is especially important with the New Guinea Singing Dogs.

Divert “overachievers” – people who insist on monopolizing your time. Try to change the subject or find something to talk about that they do not know.

Bites are to be reported immediately. **KEEP THE PERSON INVOLVED THERE UNTIL A STAFF MEMBER CAN TALK TO THEM** – preferably someone from Administration. This is extremely important as only a senior staff member can fill out an accident report.

Report any problems to staff. If you have problems with the staff (rude, unhelpful, etc.) then report it to Administration.

ANIMAL HANDLING GUIDES

Animals in the Children's Zoo:

Goats
Sheep
Sardinian donkeys
Rabbits
Ducks

Llama
Alpaca
Potbelly Pig
Chickens

Animals in the Habitat:

Hissing cockroaches
Tarantula
Emperor scorpion
Snakes
Skink
Cockatoo

Frogs
Tortoise
Chinchilla
Ferrets
Gecko

GOATS AND SHEEP

Most of the goats and sheep enjoy being brushed or petted. Occasionally some of the individuals will reject the attention and this is ok. Volunteers are encouraged to spend time with them in their enclosure whenever they would like, but must have permission to do so and follow a few simple guidelines given by Children's Zoo staff. If a volunteer wants to take a goat or sheep **out** for walks, they must receive proper training from area keeper staff. It is very important to learn proper haltering and handling techniques and each animal's individual personalities. A volunteer must be able to demonstrate the ability to properly halter the animal and to be able to handle and control it before they are to be considered a trained handler. Only trained handlers will be allowed to walk with the goat or sheep outside of its enclosure.

1. The public may touch and pet the animal only if the handler feels certain they have complete control.
2. They are NOT to be walked around the cat loop, Asian Adventure, or through the Patagonian Realm.
3. It is always very important to keep a firm hold on the lead rope at all times as these animals can spook and try to bolt for any number of reasons. Generally if you hold tight and remain calm they will settle back down. Try to always keep a hold should they try to bolt, but in the event that one of the animals escapes, it is very important to remain calm, try to gently walk up to it, grab the lead rope, and regain control. If that is not possible and you are carrying a radio then immediately call on the radio to "all Z units we have a CODE GREEN" sheep or goat and give the location and direction of travel. Wait for a response and listen for directions. The Supervisors or Head Keeper will facilitate in the recapture. If you are not carrying a radio then send someone to call for a Keeper and stay with the animal until a keeper shows up. Remember to stay calm.

DONKEYS

The donkeys love attention and love to be brushed or petted. They can be worked within their enclosure quite easily without being haltered by most volunteers. The requirement for this is simply having an area keeper teach a few simple guidelines. JZC must still obtain permission to do so each time. If a JZC volunteer wants to take a donkey out for walks they must receive proper training from area keeper staff. It is very important to learn proper haltering and handling techniques and each animal's individual personalities. The JZC volunteer must be able to demonstrate the ability to properly halter the donkey and to be able to handle and control each animal before they are to be considered a trained handler. Only trained handlers will be allowed to walk with the donkey outside of its enclosure.

1. When walking the donkey, it is important to always walk with them on your right-hand side. This means you are on the animal's left. Always hold the lead rope securely in your right hand close to the donkey with the remaining slack in your left hand. For safety reasons NEVER wrap the rope around your hands or arms. Instead, hold the excess rope in a folded manner.
2. The donkey should know where you are at all times. If you need to walk around them, talk to them and slide your hand across their body as you walk around so they will know where you are. Donkeys can kick and/or bite, but as long as you don't startle them they are not likely to. Always be cautious of where their feet are so you do not accidentally get stepped on.
3. When walking a donkey outside the enclosure and around public, it is important to have another volunteer along to assist with crowd control and to keep people from spooking the animal. Up to two guests at a time may pet the donkey on the neck, shoulder, or back area. Do not allow anyone to walk behind the donkey. If for some reason you feel the animal is not in your full control it is perfectly fine to not allow touching by the public.
4. Each animal is different and will have certain personality and mannerisms that will require certain handling techniques.
5. Donkeys are NOT to be walked around the cat loop, Asian Adventure, or through Patagonia.
6. It is very important to keep a firm hold on the lead rope at all times as these animals can spook easily and try to bolt. If you hold tight and remain calm they will usually settle back down. Try to always keep a hold should they try to bolt, but in the event that one of the animals escapes, it is very important to remain calm, try to gently walk up to it, grab the lead rope, and regain control. If that is not possible, then immediately call on the radio "all Z units we have a CODE GREEN donkey" and give the location and direction of travel. Wait for a response and listen for directions. The Supervisors or Head Keeper will facilitate in the recapture. If you are not carrying a radio then send someone to call for a keeper and keep the animal in sight until a keeper shows up. Remember to stay calm.

LLAMA and ALPACA

Although very curious, llamas and alpacas can be somewhat flighty and anxious of being touched. However, they are fun to work with and great to use in all of our education programs, including the Teachable Moments. Please use caution when working around them, and if you have questions, ask a staff member. After being taught a few guidelines, JZC volunteers may enter the llama/alpaca enclosure without an animal keeper to lead or groom it inside the enclosure. However, they must still ask for permission first and the llama or alpaca **MUST** be haltered inside the barn only. If a volunteer wants to take a llama or alpaca **out** for walks they must receive proper training from area keeper staff. It is very important to learn proper haltering and handling techniques and each animal's individual personalities. They have different mannerisms and stubborn behaviors. A volunteer must be able to demonstrate the ability to properly halter each animal AND to be able to handle and control each animal before they are to be considered a trained handler. Only trained handlers will be allowed to walk with the llama or alpaca outside of its enclosure. A staff keeper must be present when you halter or unhalter the animals and this must always be done in the barn.

1. When walking the llama or alpaca it is important to always walk with them on the right. This means you are on the animal's left. Always hold the lead rope securely in your right hand close to the animal and the remaining slack in your left hand. For safety reasons NEVER wrap the rope around your hands or arms, but hold the excess rope in a folded manner.
2. The llama/alpaca should know where you are at all times. If you need to walk around them, talk to them and pat them on the body as you walk around so they know where you are. They can kick, bite, or spit, but as long as you don't startle them they are not likely to.
3. When walking the llama/alpaca outside, it is important to have another volunteer along to assist with crowd control and to keep guests from spooking the animal. The public must stand back and just look.
4. They are NOT to be walked around the cat loop, Asian Adventure, or through the Patagonian Realm.
5. It is always very important to keep a firm hold on the lead at all times as these animals can spook and try to bolt for any number of reasons. If you hold tight and remain calm they will usually settle back down. Try to always keep a hold should they try to bolt, but in the event that one of the animals escapes, it is very important to remain calm, try to gently walk up to it, grab the lead rope, and regain control. If that is not possible and you are carrying a radio then immediately call on the radio to "all Z units we have a CODE GREEN" llama or alpaca and give the location and direction of travel. Wait for a response and listen for directions. The Supervisors or Head Keeper will facilitate in the recapture. If you are not carrying a radio then send someone to call for a Keeper and stay with the animal until a keeper shows up. Remember to stay calm.

Listed below are the commands to be used when handling the llama and alpaca. Consistency is very important. Please use these commands and do not deviate from or change any of them. Failure to use commands will result in the denial of llama/alpaca handling privileges.

STEADY:	To hold the body in positions, i.e., lying down, standing
MOVE UP:	Move forward, continue moving forward
CUSH:	Lie down, sit. They are allowed to raise their head for comfort
ALL RIGHT:	Release a command. For example, to stand from cush or to release from control
GOOD:	Words of praise. Use this phrase whenever the animal does anything good. Llamas respond only to positive reinforcement.

PIG

The pot-bellied pig is only to be handled under staff supervision. If you are taking the pig out on grounds, he must be harnessed and leashed. Only zoo staff can harness the pig. He is to be walked only in the Children's Zoo area. When walking the pig, you may target him with a Frisbee or tennis ball pole. Only target the pig if you have been trained by a Kid Zoo Keeper to do so.

RABBITS

1. **Support rabbit next to your body with elbow holding hindquarters close and with hand holding front legs and neck.** May use a halter hold. You may also hold the rabbit by supporting it on your forearm with its head by your elbow between your arm and body and its hindquarters supported by your hand.
2. You MAY use the scruff of its neck, while holding its ears back, to lift it while your hand supports the body weight; however, rabbits relax more with a body grip and feet touching a surface.
3. Staff and volunteers may use a rabbit leash and halter when taking the rabbit out and may set up the exercise pen in a grassy area to allow the animal to "run" around but they MUST be observed at all times and if it's a hot, sunny day, they need a shade source.
4. While the animal is on the ground/exercising, the public cannot touch. The animal can only be touched when the Handler is holding it.
5. Backing the animal out of the carrier is recommended after allowing the option of the animal to come out on its own.
6. Transport in large carrier lined with newspaper and cover carrier when cold.

THE PUBLIC MAY TOUCH THE BODY BUT NOT THE HEAD.

CHICKENS - HIGH RISK ESCAPE ANIMAL

If coop is locked, the keeper will need to unlock the enclosure. Be sure to lock it after removing or returning the animal. Pick up with your little fingers between its legs and your thumbs over its wings and back. Let it rest in the palms of your hands. It should relax in this hold. Do not squeeze too tightly. This animal may become too warm inside. If it does it should be removed and placed in a cooler area. Do not leave the animal unattended.

THE PUBLIC MAY FEEL THE FEATHERS IF THE ANIMAL IS CALM. IT MAY PECK OR CLAW BUT IT'S NOT LIKELY TO.

MADAGASCAR HISSING COCKROACHES

*** HIGH RISK OF ESCAPE!!! ***

May be used outside when it is 65 - 92°F. This animal is fragile and the risk of injury if dropped is high. Volunteers are only allowed to display the cockroaches in the clear plastic terrariums. Staff are allowed to handle the cockroaches outside of the terrarium with caution.

1. **Use only adults cockroaches.** The small ones are too fast!
2. **Pick up the body with your thumb and finger in midsection and other palm under the animal or curl your fingers under the body allowing the animal to crawl onto your hand.** Do not squeeze! Remember, it might hiss when disturbed.
3. **Transport in a plastic terrarium with wet substrate** (paper towel, newspaper, wood chips, or moss). Keep them moist and warm.
4. **During cold weather transport in appropriate, labelled styrofoam container.**
5. **Make sure you are in a shady spot if outdoors.** As with all animals, and especially those in a terrarium, do not leave them in direct sunlight. They will overheat.

IF STAFF IS HANDLING, THE PUBLIC MAY TOUCH WITH ONE FINGER. USE YOUR JUDGMENT BASED ON THE TYPE OF AUDIENCE YOU HAVE. IT MIGHT BE BETTER JUST TO TAKE THE ENCLOSURE AROUND FOR VIEWING.

TARANTULA and EMPEROR SCORPION

*** Extremely fragile! Handle gently! ***

May be used outside only when it is 65 - 92°F. Both arachnids are EXTREMELY fragile and can be killed by even a short fall – Be gentle!

1. The tarantula or scorpion are **never to be handled with bare hands** by volunteers. Trained staff is working to acclimate the scorpion to being handled but it will be a very long process.
2. As with all of our animals, **do not leave them in direct sunlight.**
3. **To remove:** Use an appropriately small transport box. Place the bottom of the container on its side in the animal's aquarium in front of the animal. Then very gently touch the arachnid on the legs with the lid and encourage it to crawl into the container. Once the arachnid is inside the container, slowly remove the container from the aquarium and very slowly ease it into an upright position, then put the top on the container. Be sure the lid is secure! Emperor scorpions are tropical animals and require you keep them moist. **If cold weather, transport an arachnid in a styrofoam box by putting the terrarium inside with hot water bottle and pack towels around to prevent sliding of the smaller terrarium.**
4. **NEVER pick up a container by the lid or handles.** If the bottom slips out and the container drops, the tarantula or scorpion will be injured. Tarantulas are so fragile that their exoskeleton will shatter almost like glass. This results in a slow, agonizing death of the animal. Scorpions are slightly more hardy but can easily be deformed for life due to accidents
5. **Do NOT disturb during or within a week of molting.** Molting usually takes a few hours at most, but they will be extremely fragile afterward and should not be disturbed in any way for

at least a week until their new exoskeleton hardens. When a tarantula is preparing to molt, it will flip over on its back or side. It is extremely rare for a tarantula to do this for any other reason. Dying spiders generally curl their legs under them. When a tarantula flips on its back, do not touch it.

6. When showing arachnids to the public, we encourage you to hold the container high enough so visitors can look under it and see their undersides. Both have very fascinating undersides!
7. **To return the arachnid to its aquarium** unclasp the lid and place the container in the aquarium. Gently tip the container on to its side and allow the tarantula or scorpion to exit on its own. **DO NOT** dump the animal out or shake it out. These are easily scared creatures who may be more inclined to continue hiding inside the transport box instead of leaving. You may touch it very lightly on the rear legs with tongs or snake hook if significant time has passed without exiting. However, keep in mind that this may cause the scorpion in particular to become even more scared/stubborn, as they have legs designed for holding on tightly. The most common defense for the scorpion will be to use her large, powerful pinchers to keep herself safe. The scorpion's stinger is extremely mild, like a bee sting, and should be secondary in your focus compared to the distance from her pincers to your skin.

FROGS and GECKO

*** HIGH RISK OF ESCAPE!!! ***

NO PUBLIC TOUCHING!!

Do not use outside if the temperature is below 70° F. Minimize exposure and transport in Styrofoam container in winter.

1. **Remove all rings, bracelets, watches, and anything else on your hands or wrists.**
2. **Wash your hands and forearms thoroughly with soap and water**, making sure to remove any remnants of lotions, perfumes, cleaning products, etc. that may have been on your skin. Amphibians have highly permeable skin which will absorb chemicals and kill them.
3. **Make sure your hands are very wet.** Wet your hands from the "frog water" bottle.
4. **Pick up the frog or gecko with both hands.** Cuddle the animal's face into the palm of your hand. These are slippery little devils! If they see a way to make a break, they're going to try to jump out of your hand.
5. **Transport these animals in small terrariums with a wet paper towel on the bottom. If the animal is to be out for an extended time (more than 30 minutes) place wet moss on top of the paper.** Remember to bring a small spray bottle of frog water with you at all times. **In cold weather, place the small carrier inside a Styrofoam container.** Pack the Styrofoam with towels to ensure the small container holding the frog will not slide around

during travel. A hot water bottle is recommended for fall/winter and spring programs! Imagine how you would feel if you were outside, wet, in the cold!

6. **Do not remove the frog or gecko from the terrarium.** Children can see it just fine through the clear container. **If you want to hold the animal up for people to get a better look, use a larger terrarium but do not lift the animal out.**

SNAKES

Do not use any reptile outside if the temperature is below 70° F. All reptiles must have 2 handlers at all times when taken out on grounds – one person to hold the animal and the second to dispense hand sanitizer.

1. **Do not use a snake that is beginning to shed** if the eyes are opaque or skin coloring is dull. A snake's skin is more sensitive to damage at this time. Also, a snake's eyesight is impaired when they are shedding and therefore they may be more easily startled and likely to strike.
2. **Do not use a snake that has eaten within 48 hours.** They will vomit. Check the feeding log
3. **Try to handle the snakes BEFORE handling other animals. Wash well between snakes.** Remember, the king snake eats other snakes in the wild! Any of our 3 snake species may smell animal scent on your skin or clothing, mistake it for food, and bite you. If bitten, do NOT pull your hand back. Reacting will hurt you worse and seriously injure the snake.
4. **Open enclosure door slowly just in case the snake is right next to door. Always find the snake's head first so you can prevent escapes.**
5. **Always alert the snake to your presence before picking it up.** This should be done through a combination of making sounds while opening the enclosure AND very gently stroking the snake about midway down its body before picking it up. Do not stroke its head or tail area.
6. After gently touching the snake along its midsection, if you need to reposition it with a snake hook before picking it up, you may very gently do so. Once ready, gently slide your hands under the snake, avoiding the head and making certain you are supporting its weight evenly. Snakes are very nervous about having their heads or tails touched because this is where a predator would attack them. They may act defensively if you scare them. **BE CONFIDENT WITHOUT BEING SCARY!** We are the size of Godzilla to them, waking them up from their beds in their nice warm homes, and snakes are easily scared. If you feel nervous or hold them tightly, they will become nervous. Do not make sudden, jerky moves; move smoothly.
7. **Support the majority of its weight at all times.** Smaller snakes should be supported by both hands or comfortably coiled about one of your forearms. Starting at the back, weave its body along your arm while controlling the direction the head faces. Let lie loosely in your arms.

8. **DO NOT allow snakes to wrap around your neck!** If it is starting to coil around where you don't want it to, unwrap starting at the snake's tail end first. Their back halves are weaker.
9. **When showing a snake, control the direction the snake's head is pointed so that the head is not pointed at the audience.**
10. **Protect from temperature extremes (hot or cold).** Do not place near heating or air conditioning vents.
11. **To transport,** place the snake in a clean pillowcase by lowering the snake gently into the case, tail first, while supporting total body weight.
 - a) Pull the case over the snake instead of pushing the animal into the case. Have the entire animal in the case before releasing your grip.
 - b) Allow the snake to settle into the case before securing. Tie the top of the pillowcase in a knot or use the plastic clips. Take special care to not tie the animal in the knot.
 - c) Transport in a Styrofoam cooler. A warm water bottle can be used during the winter.
 - d) To remove the snake, look into the bag and locate the snake's head, then lower the sack around the snake. Do not force it!
12. **To return a snake,** support the weight of the body until the snake's entire body is resting fully on the bottom of its enclosure. Allow it to move its front half off of your hand first and then you may gently remove the back half from yourself. Always be aware of the location of the head so that it can't escape. Always wash your hands after handling a snake.
13. **Lock up exhibit! They are escape artists!**
14. Always wash transport containers with disinfectant afterward and store in proper location.

THE PUBLIC MAY TOUCH SNAKES MIDWAY DOWN BODY, USING A MAXIMUM OF 2 FINGERS TO STROKE IN SAME DIRECTION OF SCALES ONLY IF THE SNAKE IS CALM AND UNDER CONTROL. AVOID TOUCHING THE HEAD.

VOLUNTEERS MAY ONLY HANDLE THE SMALL SNAKES THAT LIVE IN THE HABITAT. LARGE SNAKES REQUIRE SPECIALIZED TRAINING!

Snake Bite Protocol:

1. Handlers should be able to assess beforehand whether a snake is uncomfortable and in danger of striking. Most snake bites can be easily prevented. Signs of fear include: open mouth, hissing, frantic movement, turning body upside down, or lifting front quarter of body. If a snake is not calm, immediately remove the source of anxiety and secure them.
2. If the snake strikes you, **STAY CALM!!** The corn snake, king snake, and ball python can not seriously hurt you with their teeth. If the snake does not release and is trying to eat part of you, **STAY CALM!** The corn snake, king snake, and ball python do not have the ability to sever a body part. **DO NOT PULL BACK!!** They have rear-facing teeth and thus pulling will

rip your skin, turning a tiny puncture wound into a cut. Pulling back is also likely to rip out their teeth. Squirt vinegar into the mouth of the snake. It will release its bite.

3. Be sure to instruct the public to stay calm. You can help by staying calm yourself. Explain WHY snakes bite – out of fear or mistaken identity. For the snake's safety, the public should stay back while you remove a snake that is latched on due to having mistaken you for food.
4. Administer first aid if necessary, but do not bandage puncture wounds. For legal reasons, make sure to complete an accident report afterward.

BLUE TONGUED SKINK

Do not use any reptile outside if the temperature is below 70° F. All reptiles must have 2 handlers at all times when taken out on grounds – one person to hold the animal and the second to dispense hand sanitizer.

1. **Pick up the skink with both hands and always support its full body weight.**
2. **Grasp the animal under the shoulders to control the head and front legs.**
3. **Adjust the animal so that it rests comfortably on your forearm and secure one leg between your index and middle finger.**
4. **Transport in a pillowcase and Styrofoam.** See snake section for specific instructions.
5. The animal can only be touched when the handler is holding it and only when the skink is calm and under control. **THE PUBLIC MAY TOUCH ITS BODY IN THE DIRECTION OF SCALES ONLY, USING 2 FINGERS MAXIMUM. AVOID TOUCHING ITS HEAD.**

TORTOISE

Do not use any reptile outside if the temperature is below 70° F. All reptiles must have 2 handlers at all times when taken out on grounds – one person to hold the animal and the second to dispense hand sanitizer.

1. **Grip firmly on both sides of the shell and lift.**
2. **Do not hold too tightly, but tight enough to maintain complete control of the animal.** A juvenile's bottom shell may be somewhat soft and quite delicate and the pancake tortoise shell is hinged on the sides.
3. **You may rest the back legs on your forearms** for additional support while displaying but be very careful not to drop it.

4. **Present over a table or on the ground.** They will be severely injured by a fall.
5. **Use both hands to hold firmly if carrying around/through the audience.**
6. **Never turn a tortoise upside down because this can suffocate it.**
7. **Transport in a small Styrofoam container lined with towels. A hot water bottle wrapped in a towel may be included in cold weather.**
8. Since these animals sometimes urinate or defecate when held, you may use a paper towel underneath the hindquarters when picking it up.
9. The animal can only be touched when the Handler is holding it. **THE PUBLIC MAY TOUCH THE SHELL AND LEGS ONLY. NOT THE HEAD OR TAIL.**

AFRICAN PYGMY HEDGEHOGS

1. **Use gloved hands or a towel to gently pick up the animal.** Their spines will not harm you, but a barrier is needed to insure you don't drop the animal if it startles or jumps.
2. **Use both hands to handle securely or place on a flat surface on a towel.**
3. **These are timid animals and must feel relaxed and secure or they stay rolled in a ball.**
4. Transport in a carrier lined with newspaper and with a towel for it to hide under. Use a carrier cover when it's cold outside.
5. Since these animals sometimes urinate or defecate when held, you may use a paper towel underneath the hindquarters when picking it up.

PUBLIC MAY TOUCH ONLY WITH TWO FINGERS AND ONLY IF IT IS CALM.

CHINCHILLA

*** HIGH RISK OF ESCAPE!!! ***

Do not take outside if the temperature exceeds 80 degrees! These are nervous, timid animals and are easily stressed in crowded or chaotic situations. Chinchillas should be kept in a moderately cool environment. Temperatures approaching 90 degrees are fatal for them. All doors and windows should be closed before handling this animal.

1. **Hold hand out towards chinchilla and gradually slide under chest and abdomen to lift.**

2. **Bring chinchilla towards you while securing the base of its tail between your index and middle finger.** The chinchilla will be sitting on your palm, facing your forearm with its tail tucked in your fingers.
3. **DO NOT grab the animal by the tail EVER!** Injury to the animal is possible and may result in loss of their tail!
4. **If necessary, a towel may be used to capture the chinchilla.**
5. Transport in a paper lined carrier with a towel for it to hide under. Cover carrier if it is cold.
6. Chinchillas will release their fur easily as a defense mechanism. Some chinchillas nibble on fingers but they generally do not bite. Be careful not to drop the animal. If the animal is flighty or restless, it is either scared, is being held too tightly, or may need to eliminate. Let the chinchilla rest in your hand while stroking it. This may help soothe an excited animal.

THE PUBLIC MAY TOUCH THE BODY WITH A MAXIMUM OF TWO FINGERS AND ONLY IF THE CHINCHILLA IS CALM. NO TOUCHING OF ITS HEAD.

FERRETS

Ferrets are very active and curious. When holding and handling ferrets it is important to make your ferret feel comfortable and secure. Allow your hands to move with the animal. Do not restrain it too severely.

1. **Ferrets should be picked up from behind using two hands. Hold them with one hand cradling their chest and place the rest of the body along your forearm with its back legs on either side.** The ferret can be given additional support against your body. Support their full body weight at all times. You may allow your arm to rest on the table while presenting.
2. **A ferret should never be grabbed at or be picked up by its tail.** It hurts them and the ferret may bite if you do.
3. **Do not attempt to pick up ferrets when they are hyperactive** or rough-housing with each other. Speak to them calmly and confidently until they settle down.
4. Only demonstrate the flexibility of the spine if the animal is fully relaxed. **DO NOT FORCE.**
5. You must use the leash and halter if taking the ferret for a walk or presentations. The ferret should be exercised on the leash, in a ball, or in the exercise pen. Do not allow the animal to run loose in the Habitat.
6. Transport in carrier lined with newspaper and include towel for it to hide under. Cover carrier when it is cold.

7. While the animal is on the ground/exercising, the public cannot touch. The animal can only be touched when the Handler is holding it. PUBLIC MAY TOUCH THE BODY WITH TWO FINGERS ONLY. FERRETS CAN BITE SHARPLY SO BE SURE TO ALWAYS KEEP THE HEAD AWAY FROM AUDIENCE

BITING

Ferrets have thick, tough skin and play roughly with each other, which includes playful nipping. They need to learn they cannot bite their handlers. It is up to us to teach acceptable behavior. A ferret should never be hit for nipping because that may make it more aggressive.

1. At the first sign of nipping, the ferret should be redirected by moving its head away from your skin and saying, “no” firmly. If necessary reposition the animal in your arms.
2. IF the ferret continues to nip, say, “no” again and hold the ferret by the loose skin on the back of the neck until he settles. Afterwards, hold him comfortably and securely and talk soothingly. Rewarding good behavior is more effective than punishing bad behavior.
3. If you feel it is not responding or represents a biting danger to the handler or the public, immediately return it to its enclosure/carrier and notify animal staff.

BIRDS

The birds of prey and the rose breasted cockatoo are subject to special handling protocols. Third year and above JZC who would like to work with these animals MUST coordinate with education and animal care staff for specialized training. No one should attempt to handle these animals unless they have been cleared to do so.

Visitor Relations and Visitor Bill of Rights

We depend on our visitors to support our efforts. We must never lose sight of the fact that we are in the hospitality business. It is up to volunteers to help make sure that the public's experience visiting the zoo is a safe, fun, and pleasurable experience. Return visits and good word-of-mouth advertising are necessary for our continued success.

GREETING VISITORS

Greeting the public is one of the simplest yet most effective ways you can promote visitor relations. When people visit a public place, they want to feel welcome and comfortable in their surroundings. The easiest way to make our visitors feel welcomed is just to say "Hello" and ask something about their visit such as "Have you seen the baby animals yet?" Even if you are pressed for time or don't feel up to talking, don't underestimate the power of a smile. If you have the time and inclination, however, then answering questions can really personalize their zoo visit. We want our visitors to know that we appreciate them and that they are important to us. A little bit of friendliness really goes a long way.

SAYING THANK YOU

Another simple yet highly effective visitor relations practice is simply thanking the guest for visiting the zoo. It lets the guest know we appreciate their visit.

BEING OBSERVANT AND PROACTIVE

We've all seen the look on a parent's face when they suddenly discover they have been separated from their child. When you observe a guest in distress, be it mild or severe; take a moment to see if they need assistance. It can be something as simple as helping them with map directions or reuniting them with that lost child. This shows our guest that we care that they have a positive experience and we'll do what we can to make that happen.

LOST AND FOUND:

1. Articles are to be taken to the gift shop. Tell them when/where the item was found.
2. Articles unclaimed after sixty (60) days become the property of the finder.

COMPLAINTS:

1. If anyone brings a complaint to your attention, refer it to administration or the gift shop. The staff will complete a "Complaint Form".
2. Please reassure the guest that ALL complaints are reviewed and investigated by the Superintendent.

2016 Staff Directory

ZOO INFORMATION LINE: (208) 612-8552

Administration

Zoo Superintendent:	David Pennock	612-8401	Z 1
Director of Operations:	Linda Beard	612-8423	Z 2
General Curator:	Darrell Markum	612-8419	Z 3
Registrar/Reception:	Debbie Jensen	612-8470	Z 11

Animal Department

Supervisor:	Emily Lutz	612-8419	Z 6
Children's Zoo	Onna Johnston	(none)	Z 22
Children's Zoo	Sydney Adams	(none)	Z 22
Keeper	Amy Vargas	(none)	Z 4
Keeper	Meta Schmitz	(none)	Z 5
Keeper	Aaron Young	(none)	Z 7
Keeper	Dallas LaDucer	(none)	Z 8
Keeper	Kenzie Buie	(none)	Z 9
Seasonal Keeper	Ashley Cram	(none)	Z 10
Seasonal Keeper	Erika Alderete	(none)	Z 32
Seasonal Keeper	Amy Tracy	(none)	Z 33

Veterinary Services:

Veterinarian:	Dr. Rhonda Aliah		Z20
Vet Tech:	Alison Holderman		Z21
Backup Vets:	Dr. Seda & Dr. Herras		

Education Department:

Education Curator:	Sunny Katseanes	612-8418	Z 16
Zoo Educator:	TBD	(none)	Z 17
Animal Encounters Show:	Benjamin Berriman	(none)	Z 18
Education Assistant:	Natalie Stier	612-8453	Z 19

Gift Shop/Guest Services:

Manager:	Mary Leigh	612-8420	Z 27
Cashier:	Kitira Howard	612-8422	Z 28
Cashier:	Katie Savage	612-8422	Z 29
Cashier:	April Stevens	612-8422	Z 29
Cashier:	Nate Pollard	612-8422	Z 29

Grounds/Facilities Department:

Supervisor:	Mitch Porter	612-8424	Z 12
Assistant:	Steven Scholes	(none)	Z 13
Gardener:	TBD	(none)	Z 14
Janitor:	Tyler Jensen	(none)	Z 15

Other:

Kookaburra Kafe:	Toni & Jim Lee		Z 30
Membership Coordinator:	Laurie Gravatt	612-8241	Z 31

* The Junior Zoo Crew radio number is Z23 *

I found a baby bird, what should I do?

Many people report finding orphan birds of various types. In many cases these are fledglings who purposefully left the nest. Although they are not fully flighted, they are still cared for by their parents.

If you find one of these in your yard, and it is not in immediate danger, it is usually best to leave it be and observe from a distance to see if it is being tended by its parents.

Sometimes if a baby has blown out of a nest and it is obviously too young to be fledged, you may be able to locate the nest and place the baby back inside. This is ALWAYS the best choice before humans take on the responsibility of trying to raise the baby. No one can care for a baby bird as well as a mother bird.

ALL migratory birds are protected by federal and state laws. It is illegal to keep these birds without proper permits. Doing what you feel is right, despite your best intentions, does not exempt you from the repercussions of breaking the law. If you truly have an orphan that needs to be cared for, your first course of action should be to contact the Idaho State Department of Fish & Game. The Department of Fish and Game will transfer the bird to a permitted wildlife rehabilitator. Wild birds are not normally suited to life as cage birds or pets. Once mature, they usually hurt themselves trying to escape confines, damaging their feathers or beak. Wildlife rehabilitators are not pet keepers. Their goal is to release the bird back to the wild as soon as the bird is able to fend for itself.

The only exceptions to the law are house sparrows, starlings, and Eurasian collard doves. Those are non-native exotic invasives causing harm to native birds and thus do not fall under the Migratory Bird Act.

To keep a bird alive until it can be transferred to the appropriate party, it is important to understand what type of bird you have.

A baby robin, starling, or sparrow may be fed soaked dog food mixed with some bread and apple sauce. If you have found a baby owl or hawk it must be fed small pieces of raw meat. Do not use hamburger. Ideally, you would feed this bird a food item that would be naturally eaten by the species, such as a rat, mouse, or sparrow. In the absence of this, chicken hearts will work for a short period of time. However, these birds have high calcium requirements, and meat without bone and fur will eventually cause serious crippling bone deformation. **Get the bird to a licensed rehabilitator as soon as possible.**

Can't the zoo take the baby bird? Regrettably, we cannot. We are a licensed USDA facility and taking wildlife violates our quarantine regulations. The best thing to do is call Fish and Game.

Idaho State Fish and Game - Upper Snake Region

4279 Commerce Circle

Idaho Falls, ID 83401

Phone: (208) 525-7290

Fax: (208) 523-7604

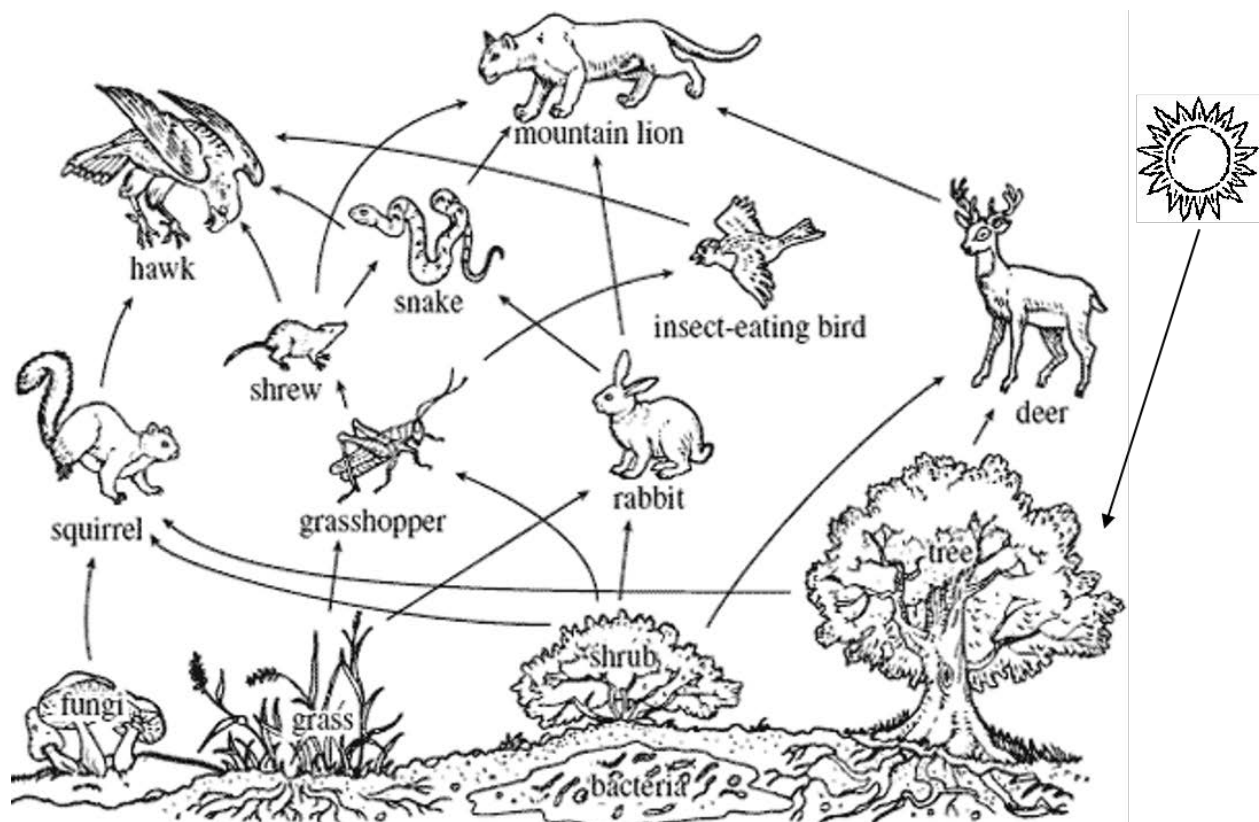
THE STUDY OF ANIMALS



HOW TO STUDY AN ANIMAL

When studying an animal there are certain things that are important to know.

1. Name of animal. Common name(s) and taxonomic (i.e. scientific, Latin) name.
2. Which continent and country is it from?
3. What kind of habitat does it live in? For example, ocean, temperate forest, savannah, swamp, rainforest, desert, arctic tundra? Where does it build its home? In a tree? Underground? etc.
4. What does it eat? Is it an omnivore, carnivore, or herbivore? Grains? Insects? Mice? etc.
5. What adaptations does it have for getting food? A long tongue? Nighttime vision? etc.
6. How does it protect itself? Quills? Armor? Plays dead? Camouflage? Odors? etc.
7. How does it fit into its environmental niche? Top predator? Lives in groups? Territorial?
8. Does this animal cause conflicts with humans? How? What can we do? Does the animal need protection due to low population numbers in the wild? If so, why is it rare? What can we do?



TAXONOMY

Taxonomy is the identification and classification of living organisms into groups based on their similarities and evolutionary relationships. Taxonomy helps scientists organize species by defining the characteristics of each species and the relatedness between species.

Binomial Nomenclature = Carl Linnaeus' system of taxonomy assigns each species a two-part Latin name called a "binomial". This name minimizes confusion created by the fact that animals have more than one common name and provides an international system for naming species in only 1 language.

1. The first word is the **Genus** to which the species belongs. A genus includes similar species.
2. The second word is the **species**. In rare cases there is a third word called **subspecies**.

Example: Tigers are within the Genus *Panthera* and the species *tigris*.

There are several types of tigers; so subspecies names are used. Bengal tigers are *Panthera tigris tigris*, Sumatran tigers are *Panthera tigris sumatrae*, Siberian/Amur tigers are *Panthera tigris altaica*, Indochinese tigers are *Panthera tigris corbetti*, and Malayan tigers are *Panthera tigris jacksoni*.

Linnaeus created a system for filing animals into a hierarchy of increasingly general categories.

1. The first step is built into binomial nomenclature. Animals who have the exact same genetics and geographic range are put in the same species. Species that are similar are then placed in the same Genus. For example, we group species of cats that purr into one genus - *Felis*, to distinguish them from cats that roar instead - Genus *Panthera*.
2. The categories or **taxa** (singular **taxon**) then become progressively broader as we group upward from there. The levels of classification above Genus are: Family, Order, Class, Phylum, and Kingdom. Using the previous example, all Genera of cats are grouped together inside the Family *Felidae*, and all Felidae are grouped together with other animals with meat-eating teeth inside the Order *Carnivora*. All Carnivores are group together inside the Class of milk-producing backboned animals called *Mammalia*, and all Mammals are grouped together inside the Phylum of backboned, spinal cord possessing animals called Chordata. All Chordates fall within the Kingdom *Animalia*, to set them apart from fungi, plants, bacteria, and protozoans. Therefore, an Amur tiger is classified as: *Animalia > Chordata > Mammalia > Carnivora > Felidae > Panthera > tigris > altaica*

There are several mnemonic devices to help you remember the levels of taxonomy.

KINGDOM PHYLUM CLASS ORDER FAMILY GENUS SPECIES

King Philip Came Over From Great Spain
Kings Play Chess On Fat Green Stools
Kevin's Poor Cow Only Feels Good Sometimes

If those don't work for you, then make up one of your own to help you remember

ANIMALIA - KINGDOM OF ANIMALS

All creatures inside the Kingdom Animalia have certain characteristics in common including:

- Multicellular – They have more than one cell
- Heterotrophic – They must ingest other organism or their products to obtain their nourishment
- Eukaryotic – Their cells contain a nucleus and organelles within membranes
- Cell wall – Their cells lack a rigid cell wall
- Mobile – They can move spontaneously or independently at some point in their lives.
- Reproduction – most animals reproduce through sexual combination, not necessarily via intercourse, with gamete cells (eggs & sperm) from each parent. Some animals are capable of asexual reproduction without mating. Most animals are a hollow sphere of cells surrounding a fluid-filled cavity at some embryonic stage of their development.

Animalia is divided into about 35 different phyla. The two we will focus on are Phylum *Arthropoda* and Phylum *Chordata*. All arthropods are invertebrates. Most chordates are vertebrates, but there are some Chordate invertebrates.



INVERTEBRATES = ANIMALS WITHOUT BACKBONES

A majority of animals in existence are considered invertebrates, including all within the Phylum *Arthropoda*. Animals without backbones make up about 97% of all known animal species. Invertebrates come in many shapes and sizes, from grasshoppers to clams to jellyfish. Invertebrates have nerve fibers that carry signals to control body movement. Some invertebrates have groups of nerve cells called ganglia and a brain. ALL of the invertebrates in our care have a brain. Most invertebrates digest food using enzymes secreted into a gut. A few soft-bodied invertebrates have only one opening to accomplish this. Most invertebrates, including all the ones in our care, have a tube system for digestion instead (like vertebrates do), where food travels from mouth to esophagus to crop/gizzard to intestines to anus.

PHYLUM ARTHROPODA

JOINTED LEGGED ANIMALS

About 80% of all animal species are arthropods making this the largest phylum. There are more unique species of arthropods than any other animal on the planet! There are over a million different species already known and new ones are discovered, and go extinct before discovery, every day. A few examples of arthropods include insects, spiders, lobsters, shrimp, barnacles, millipedes, and centipedes.

Characteristics of Arthropods

1. **Exoskeletons** – A protective and supportive hard outer shell made of chitin. This takes the place of an internal skeleton. Because an exoskeleton is hard, arthropods must molt to grow larger. Molting involves secreting a new exoskeleton beneath the existing hard shell. The old shell is then shed off. Then the arthropod typically pumps up its body (for example, with air or water) to allow the brand new exoskeleton to expand to a larger size before it hardens. For this reason, newly molted arthropods typically appear pale but darken in color as their new shell hardens.
2. **Jointed appendages** - The name arthropod means “jointed leg” due to the bendable arms and legs they have. Inside their joints and exoskeletons are muscles that help them move.
3. **Segments** – Arthropod bodies can be visually divided into sections. All arthropods have a head. You will work only with insects and arachnids. Insects have a separate thorax and abdomen. Arachnids have a combined head/thorax called a cephalothorax but have a separate abdomen.
4. **Advanced sense organs, brain and head.** A brain and sense organs allow arthropods to gather information from the environment and respond to it. A couple well known examples are antennae and compound eyes.

Conservation Issues

Conservation threats faced by arthropods include loss of habitat, introduced exotic species, pollution, pesticides, public persecution, and a lack of public education/research. Despite being the largest group of living creatures in the world, arthropods do not often get conservation attention. This is mostly due to poor public perception caused by a lack of education and pre-conceived ideas about them. The situation is made worse by a lack of funding. As of 2012, the IUCN Red List only had 3844 insect species listed so far with 700 marked as vulnerable, endangered, or critically endangered, and 33 species of arachnids listed with 19 marked as vulnerable, endangered, or critically endangered. A significant portion of the species listed need to be updated or are reported to have a deficient amount of data. Arthropods play an incredibly important role in the ecosystem. E. O. Wilson states that if invertebrates as a whole group were to go extinct he “doubt(s) that the human species could last more than a few months.”

Arachnophobia - An irrational fear of spiders is called arachnophobia. Only a few spider species have venom that is dangerous to people, and spider bites are actually pretty rare. Most spiders have such small, weak fangs that they can't break through human skin. The fear is mostly spread through horror movies and children learning to be fearful after seeing scared adults.

CLASS INSECTA

80% of all known animal species are insects. Insects live everywhere - on land, in freshwater, and at the edges of the sea. Many insects are beneficial to the planet. Most flowering plants depend on insects to pollinate them. They also have a vital role in the food chain and are even eaten purposefully by humans!

Insect Body Basics

The Latin word “insectum” means “with a divided body”. Insects have 3 body sections (Head, Thorax, and Abdomen) and 6 legs.

- **Head** houses the brain and beginning of nerve cord
 - **Mandibles** = chewing mouth parts. Insects also have salivary glands producing saliva.
 - **Compound eyes** have a series of facets, each one acts like a little eye with its own parts.
 - **Antennae** are primarily olfactory (smelling organs). Are segmented and incredibly sensitive.
- **Thorax** is divided into 3 sections – Prothorax, Mesothorax, and Metathorax
 - 1 pair of jointed legs attach to each segment to form 6 legs total on each insect
 - If present, forewings attach to the Mesothorax and hindwings attach to the Metathorax. Insects were the first organisms to fly! Several species developed wings of transparent chitin and flight muscles which contract quickly. Flying was a big advantage allowing insects to spread where other organisms could not. Because insect wings are extensions of the exoskeleton, insects can fly without sacrificing any legs. In contrast, flying vertebrates (like birds and bats) have their upper legs modified into wings instead and as a result are clumsier on the ground.
- **Abdomen** is divided into up to 11 sections. Contains digestive, respiratory, and reproductive organs.
 - **Respiration:** Insects do not have lungs. Instead, a system of internal tubes and sacs deliver oxygen directly to the tissues in need via the trachea. This is the biggest factor that limits insects to being small. Gas exchange (taking in oxygen and releasing carbon dioxide) can happen many different ways in insects and differ during their life cycle.
 - **Circulatory:** Since insects lack lungs, their circulatory system is simplified and lacks veins or arteries. They have a heart that pumps plasma and blood cells into direct contact with organs.

Metamorphosis is the way that all insects develop and grow. The word means “to change form”. The majority of insects hatch from eggs which are drought resistant and have adaptations to withstand cold.

- **Incomplete Metamorphosis** – These are insects which change gradually through a series of molts. Wingless nymphs or naiads hatch from eggs, looking similar to their adult version, and molt several times until they finally reach adult size and body shape with wings. About 12% of all insects go through incomplete metamorphosis.
- **Complete Metamorphosis** - About 88% of all insects go through complete metamorphosis and have 4 very easy to see life stages. Larvae hatch out of eggs looking nothing like the adults and are usually worm-like. A larva grows until it becomes a pupa. At this time it seals itself within a cocoon and stops eating. The pupa stage can last anywhere from 4 days up to several months. As a pupa, the insect changes dramatically in shape before emerging from its cocoon as an adult.



CLASS ARACHNIDA

Arachnids include spiders, scorpions, mites, ticks and harvestmen. Almost all arachnids live on land, but a few are in freshwater and on the edges of the ocean. There are estimated to be over 100,000 species.

Arachnid Body Basics

Two body sections (cephalothorax & abdomen), 8 legs, and 2 extra appendages (chelicerae & pedipalps)

- **Cephalothorax** = fused head and thorax
 - **8 legs**, each of the 4 pairs is attached to the cephalothorax
 - **Pedipalps** = pair of feelers or grasping organs on either side of the mouth.
 - **Chelicerae** = special mouth parts that look like pincers or fangs to bite with.
 - **Simple eyes** – Arachnids have either six or eight eyes for sight.
- **Abdomen** - contains the digestive, respiratory, and reproductive organs

All arachnids lack both wings and antennae. Both spiders and scorpions are opportunistic predators, feeding on other live arthropods, mostly insects. A few have been seen eating small lizards, minnows, and mice. Both scorpions and spiders feed through external digestion – their food must be liquefied before they can swallow it. Both exude digestive juices which turn their meals into protein juice smoothies that are sucked dry, but the mechanics differ.

Order Scorpiones (Scorpions)

Scorpions are nocturnal arachnids found around the world and numbering about 1,750 species. Only 25 species have venom dangerous to humans. Scorpions avoid light as much as possible and are susceptible to damage from UV rays. Scorpions have modified pedipalps called claws or pincers and a narrow, segmented tail ending in a **telson**, often called the stinger. Their pedipalps are covered in extremely sensitive hairs. They catch their food with their pincers and then either crush it to death or paralyze it with venom from their tail. They have a very unique way of eating. They use a pre-oral cavity below their chelicerae to hold food while it is being liquefied. Their sharp, claw-like chelicerae move small amounts of food into the pre-oral cavity. Any solid, indigestible matter like exoskeletons are spit back out later after the liquid food is sucked inside. They are very efficient at storing food within their body and excrete very little waste. One of the most fascinating body features to look for underneath a scorpion is their **pectines**, which are comb-looking structures forming an inverted V shape which help them sense chemical and tactile information.

Order Araneae (Spiders)

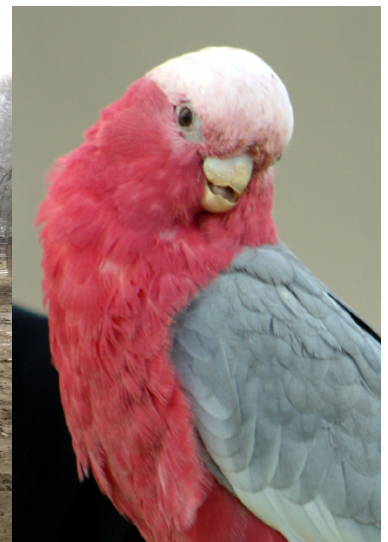
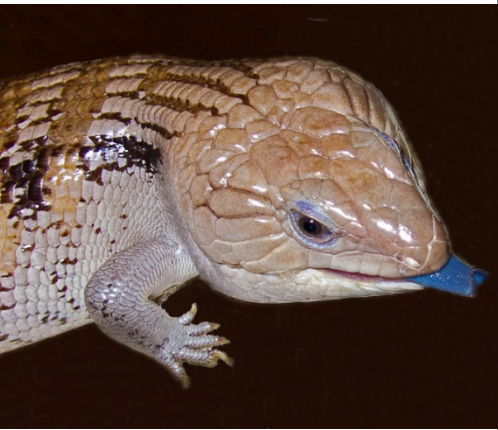
There are over 40,000 different species of spiders worldwide. Baby spiders are so light they can put out a line of silk and float away on a breeze. In this way, they spread around the globe. Spiders that live in peoples' houses often get transported by accident when people move. Unlike scorpions, spiders have no muscles and instead move their limbs through hydraulic pressure. They bite their prey with venomous fangs that causes paralysis and inject digestive enzymes to liquefy their food. Their pedipalps are modified to help grind the food, since they have no jaws. Spiders have **spinnerets**, nipple-like structures that spin silk from glands on the back underside of the abdomen. Spider silk is a protein produced as a liquid spun into fibers that solidify upon contact with air. Spiders use these fibers in a variety of ways: as drop lines for rapid escape, as cocoons for eggs, as balloon-like parachutes for travel, as gift wrap for food that certain male spiders offer to females during courtship, and, of course, to make webs. Not all spiders make webs, however. Some are wandering predators who pounce instead of using silk to catch prey. For those that create webs, each spider engineers a style characteristic of its species and constructs it perfectly on the first try. Apparently, this complex behavior is inherited.

PHYLUM CHORDATA

Most members of the Phylum *Chordata* are vertebrates. At some stage in life, all chordates have a stiff rod of cartilage running along their back. In vertebrates, this turns into the spinal backbone as the embryo grows. At some stage of development, all chordates also have a bundle of nerve fibers running down their back connecting their brain to the rest of their nervous system. In vertebrates, this turns into the spinal cord as the embryo develops. Chordates all have a muscular tail that extends backward from the anus. However, in some vertebrates, such as humans, this has evolved to be re-absorbed during embryonic development because it is no longer needed. Chordate embryos also all have a series of slits in the area of the throat just behind their mouth. In fish, these develop into gills. In humans they develop into our eustachian tubes, tonsils, middle ear, and other nearby organs. Because humans and other vertebrates have these slits while developing as embryos, they were one of the sources of the infamous “ontogeny recapitulates phylogeny” theory that animals go through stages as embryos that represent their evolutionary past.

VERTEBRATES = ANIMALS WITH A BACKBONE

Vertebrates are animals with backbones. Over 64,000 species of vertebrates have been described and include fish, amphibians, reptiles, birds, and mammals. The backbone is a series of bones articulated end-to-end. It provides attachment for the muscles and appendages such as arms, legs, and wings. All vertebrates have a nerve cord, also called a spinal cord, on their back side. The backbone column surrounds and protects this spinal cord. Vertebrates have a closed circulatory system with oxygen and nutrients carried within closed vessels. The body wall of a vertebrate consists of skin, muscle, bone, and connective tissues. In between the body wall and the gut is a body cavity containing organs.



CLASS AMPHIBIA (AMPHIBIANS)

Amphibians are found throughout the world except in areas of extreme cold or aridity. Areas directly alongside water are common habitats such as ponds, streams, or swamps, but they can also be found living high up in trees, underground, and deep within the rainforest. All amphibians use their skin as either secondary or primary respiratory surfaces. This is why it is soft and permeable, and thus why they need to keep it moist to avoid losing too much water. A few species of frogs and salamanders have no lungs and rely entirely on their skin to breathe! The word “amphibian” meant "double life" in ancient Greek. Most amphibians start life in water breathing through gills, metamorph into adults living on land breathing with lungs, and require water again to lay their eggs in. Their eggs have no protective shell and are susceptible to drying out. A few species have found ways to avoid needing water by surrounding their eggs with a foam instead or by carrying their eggs inside their mouths! On the other hand, some species never leave the water and are entirely aquatic. Amphibians are ecological indicator species because they are often the first organisms to suffer from the effects of pollution and climate change, providing an early warning of environmental degradation. Their permeable skin is very susceptible to man-made toxins and pollutants.

Other Characteristics of Amphibians

1. **Ectothermic** = “Cold blooded”. They cannot produce their own body heat and thus their body temperature is the same as the environment surrounding them.
2. **Three-chambered heart** – right and left atria, single ventricle
3. **Toes without claws**
4. **Tear ducts and moveable eyelids**
5. **Muscular tongues** that are usually very long in most species
6. **Eardrum on or near surface of head** – They can detect both airborne and ground vibrations. The order of amphibians which are frogs can switch between two frequency ranges; a low frequency for detecting predators and a high frequency during mating season.
7. **Reproductive** fertilization is external in most species. Some species must lay vast numbers of eggs because mortality is so high. Either males or females defend the eggs.

Metamorphosis is a process of change in form, structure, or function as a result of development. Not all amphibians go through metamorphosis. The larval stage is hatched out of the jelly-like egg. It is usually aquatic with gills and a long, finned tail. During metamorphosis, the gills are reabsorbed and walking legs develop. The young tetrapod crawls onto shore and begins its second life as a terrestrial hunter. Larval salamanders are carnivorous, larval frogs are herbivorous, and larval caecilians are usually born in an egg with yolk for nutrition or in the mother’s womb feeding on skin cells.

Conservation

Amphibians are going extinct. The IUCN estimates that between 35-50% of all amphibian species are threatened with extinction. More than 100 species have gone extinct since 1980. Like all wildlife, amphibians are threatened by habitat destruction, climate change, and pollution. When an ecosystem is rapidly altered, amphibians, which are critical in all ecosystems as both predator and prey, are the first to be affected. That's why biologists refer to amphibians as "nature's indicators." Amphibians have a brand new threat as well – a devastating disease caused by a species of chytrid fungus. The fungus attacks the amphibian’s skin hindering their ability to respire or breathe through their skin. The fungus also damages the nervous system, affecting the animal's behavior. The risk of losing the world's amphibians represents a threat to losing entire ecosystems and damaging our planet beyond repair.

ORDER CAUDATA (Salamanders and Newts)

“The tailed ones”

There are over 600 known species of salamanders and newts. They are the most similar to prehistoric amphibians. They range in size from a few centimeters to 1.5 meters.

ORDER ANURA (Frogs and Toads)

“The tail less ones”

Frogs and toads make up 90% of amphibians with an estimated total of 5,966 different species. They are highly adapted for life on land with strong leg muscles for jumping, well developed ears, and vocal cords for calling. They also have extendible sticky tongues attached to the front of their mouth so it can be quickly flipped out to catch prey. Some Anura have developed interesting ways to care for their young such as carrying the larvae on their backs, incubating their eggs in their stomachs (these frogs are now all extinct), or even carrying their eggs/babies in their mouths! Larval Anura are called tadpoles.

GYMNOPHIONA (Caecilians)

“The legless ones”

There are estimated to be 186 species of rare caecilians. They are aquatic or damp soil burrowing, wormlike amphibians, living in tropical areas of Asia, Africa & South America. In appearance, they look sort of similar to an eel.



CLASS REPTILIA (REPTILES)

Reptiles were the first animals to live completely away from bodies of water. Reptilian dinosaurs were once the largest land animals on earth, but today most reptiles are relatively small. The largest reptiles now are crocodiles reaching up to 30 feet. There are over 8,200 species reptiles. Reptiles are found everywhere, including mountain tops, deserts, caverns, rainforest, large urban cities, remote islands, in freshwater, and in saltwater oceans.

Characteristics of Reptiles

- **Ectothermic** = “Cold blooded”. They cannot produce their own body heat and thus their body temperature is the same as the environment surrounding them.
- **Scales** containing the protein keratin cover their skin. Scaly skin absorbs heat from the sun and prevents animals from drying out. Scales come in many forms include scutes on turtles, bony armor of crocodilians and the horny scales of lizards.
- **Breathe through lungs** only
- **Amniotic egg** – an egg with a shell that protects the embryo and prevents it from drying out. Reptile eggs usually have soft, leathery shell
- **Internal fertilization** – necessary with shelled egg
- **Mostly three chambered heart** (except for alligators and crocodiles, which have four-chambered hearts)
- **Most have claws** on their toes (keratin modification also)
- **Most have teeth** – Homodonts = all teeth present are same or similar

Reproduction

Most reptiles lay eggs (oviparous) with a soft, leathery shell in sand, soil humus or rotting logs. Nests vary in structure and construction from an angle between tree roots, a deep urn-shaped cavity scratched in the sand, or the raised, mounded nest built by the alligator. Some reptiles, like crocodilians, provide some care to their young, but most leave their hatchlings to fend on for themselves. Some lizards and snakes bear live young (viviparous) and others hatch from eggs retained inside the parent's body (ovoviviparous).

ORDERS OF REPTILES

***CROCODILIA* – Crocodiles, Alligators, Caimans, and Gharials**

Crocodylians have remained virtually unchanged in 65 million years. There are 23 living crocodylian species recognized found in over 90 countries and islands. Crocodylians are generally found in the tropical regions, being unable to survive and reproduce successfully in cold climates. The American and Chinese alligators are the most cold-tolerant species.

Crocodylians are semi-aquatic reptiles with muscular tails for swimming and defense, short legs with toes (usually 4 in front, 5 in back) and an almost a 4-chambered heart (partial division between their ventricles). They are well adapted predators with their nostrils, eyes and ears located at the same level on top of their head. This allows them to remain less detectable while cruising the water looking for prey. They have slits on their heads that lead to a well-developed inner ear; these slits close up when they dive to keep water out. They also have keen eyesight with membrane covered eyes. They can probably see some color, and they have good vision at night because their vertical pupils can open wider than our round ones to let in more light.

Conservation

Crocodylians, like many high level predators, suffer from declining populations due to overharvesting (for skin), conflicts with humans, and habitat destruction. The Chinese Alligator is the most critically endangered crocodylian in the world. Thousands are bred in captivity, but fewer than 150 remain in the wild.

***SQUAMATA* – Snakes and Lizards**

Approximately 6500 - 7000 species are in this order whose members can be found on all continents except for Antarctica, but tend to be most abundant in tropical zones with some in temperate zones. All squamates have a lower jaw loosely connected to their braincase that enables them to eat prey much larger than if their jaw was attached. This is particularly visible in snakes, which are able to open their mouths very wide. The male members of the group Squamata are the only vertebrates with a [hemipenis](#). This is also the only reptile group in which can be found both viviparous and ovoviviparous species, as well as the usual oviparous reptiles.

- Largest snakes - reticulated python and anaconda
- Largest lizards - Komodo dragon (10' long, over 300 pounds)

Snakes

Snakes are skilled predators despite having no arms or legs. Since snakes have no legs, claws, or paws to help them capture food, they must have other ways to overpower their prey. Trying to overcome prey can be a great risk to a snake. Struggling animals can tear tender tissues and loosen teeth in a snake's mouth. Venomous snakes have poison to inject in their prey. The venom keeps small prey still so the snake can grab it with its mouth and swallow it whole. Pythons and boas suffocate their prey by wrapping their coils around the animal and squeezing tighter each time the animal exhales.

Lizards

Lizards usually have four legs, a tail and external ear openings. Most lizards have mobile eyelids. Encompassing forty families, there is tremendous variety in color, appearance and size. Due to their smooth, shiny appearance, some lizards can appear slimy or slippery although their skin is actually very dry.

Many are also capable of regeneration of lost limbs or tails. Some lizard species have some vestigial structures though no functional legs. They are distinguished from true snakes by the presence of eyelids and ears and a tail that can sometimes break off as a physical defense mechanism.

Lizards feed on a wide variety of foods including fruits and vegetation, insects, small tetra pods, carrion and even large prey. Most lizards are oviparous, though a few species are viviparous.

Conservation

Even though they survived the worst changes in Earth's history (whatever eliminated dinosaurs), today a lot of Squamata species are in danger due to habitat loss, hunting and poaching, pet trade, and introduced species. Some reptiles have recently gone extinct with Africa having the most extinct species of squamates. However, captive breeding programs and wildlife parks are trying to save more reptiles from extinction.

***TESTUDINATA (CHELONIA)* – Turtles, Tortoises, and Terapins**

Turtles have been on the earth for more than 200 million years. They evolved before mammals, birds, crocodiles, snakes, and even lizards. 250 known living species of turtles and tortoises are easily recognized by their tough shells, which consist of two main parts: the **carapace**, or dorsal (top) part connected to the backbone and ribs, and the **plastron**, or ventral (underside) part. These are connected along the sides of the turtle to form the fused shell compartment. Chelonians have four legs, a tail and a head with a sharp horny beak and no teeth. Most can retract their limbs and head into their shell.

Chelonians range in diets from grazing to predatory and habitats from aquatic to continental, and thus fill a variety of ecological roles. The armored shells of turtles may seem impregnable, but still they have their predators -- sea turtle adults and juveniles alike must deal with sharks and similar threats; aquatic turtles have large fish, predatory birds, some mammals, and crocodilians to deal with, and even the heavily armored terrestrial tortoises occasionally fall prey to cunning predators who find their weaknesses -- enterprising lions are known to crack open tortoises, as do crows and coyotes.

Chelonians lay eggs in nests on land regardless of primary habitat. Generally, young are left to fend for themselves without parental care or even presence.

American English tends to use the word turtle for all species regardless of habitat, although tortoise may be used as a more precise term for any land-dwelling species. Oceanic species may be more specifically referred to as sea turtles. The name "terrapin" is strictly reserved for the brackish water species. Most scientists prefer the term "Chelonians."

Turtle – aquatic; mainly meat-eaters, frequently scavengers; top half of shell (carapace) flatter than that of tortoise to decrease drag while swimming; sea turtle - omnivorous.

Tortoise – terrestrial; mainly vegetarian; carapace generally high and dome shaped; legs adapted to walking on land, club-like and covered with hard scales.

Terrapin – brackish or salt/fresh water mixed habitats, noted for the variety and beauty of their shell coloration.

Conservation

The IUCN Red List of threatened species currently lists over 200 species of Testudines with 75 species needing updates as of 2012. About 60% of the species listed are in trouble listed as vulnerable, endangered, or critically endangered. Risks include habitat loss, pollution, climate change, human disturbances, and invasive species. There are several organizations dedicated to the research and conservation of turtles and tortoises including the Turtle Conservancy, the Turtle Conservation Project, Turtle Conservation Fund, as well as other private and government organizations.

TUATARA

Tuatara are greenish brown lizard-like reptile with a spiny crest along the back, especially pronounced in males. Their dentition, in which two rows of teeth in the upper jaw overlap one row on the lower jaw, is unique among living species. They are further unusual in having a pronounced parietal eye, dubbed the "third eye", whose current function is a subject of ongoing research. The tuatara, like many of New Zealand's native animals, is threatened by habitat loss and introduced species, particularly rats. There are less than 10,000 left found only on remote offshore islands of New Zealand. Tuatara is the last representative of this order.

CLASS AVES (BIRDS)

The 9,000 living species of birds have adapted to ecosystems across the globe, from the Arctic to the Antarctic. Birds first appeared on earth about 150 million years ago and are descendants of dinosaurs. Most birds fly. Even flightless birds, like the ostrich or penguin, are descended from flighted ancestors. Consequently, bird adaptations for flight dominate their form and function.

Characteristics of Birds

- **Endothermic**
- **Feathers** – Unique to birds – all birds have feathers, anything with feathers is a bird.
- **Forelimbs modified as wings**
- **Bipedal** – walk, run or waddle on two legs
- **Beak with no teeth**
- **Internal fertilization**
- **Hard-shelled amniotic eggs**
- **High metabolic rate**
- **Four-chambered heart**

Adaptations for Flight

Wings – A bird's wing is very similar in structure to our arm and hand. We have 29 bones in our hand and arm, while most birds only have 11 much longer, simpler, and fused bones. Fewer bones = fewer joints = increased rigidity. This makes the wing very strong. It is the 'hand' section of the wing that produces the power to propel the bird through the air. The shape of a bird's wings is related to the kind of flying it does. Short, rounded wings allow for tight maneuvering in small spaces like you find in forests. Short, pointed wings combined with rapid wingbeats make for high speeds (peregrine falcon fastest speed at 165-180 mph). Wings that are far longer than wide are for slower flying and gliding long distances. Broad wings with slots in the primaries are used by soaring birds reaching great heights on little energy (Bearded vulture flies the highest at 25,000 feet).

Wing feathers

- **Primary feathers** – on “hand”, power for flight
- **Secondary feathers** – forearm, smooth surface for lift
- **Tertiary feathers** – near body, smooth connection with body to reduce drag
- **Covert feathers** – front edge, give curved edge to front of wing, also reduces drag

Feathers – Feathers are one of the strongest by weight structures ever found in nature. Feathers facilitate flight, provide insulation for thermoregulation, and are used in display, camouflage, and signaling. Feathers consist of a shaft with rows of fine filaments (barbs) on each side. The barbs themselves have finer filaments with hooks (barbules) branching from them. The interlocking rows of the barbules give feathers their shape and strength. In the down feathers, the barbs and barbules are loose and fluffy. They trap an insulating layer of air close to the body and so reduce heat losses.

Types of Feathers

- **Flight** - wing and tail feathers; used for flight; long, stiff with rigid shaft
- **Contour** - body feathers give bird shape and color; shorter than flight feathers
- **Down** - soft, fluffy under-feathers; provide insulation

Preening – Birds take good care of their feathers by constantly grooming, oiling and arranging their feathers to reduce wear. A preen gland located at the base of the tail secretes an oil that birds rub onto their feathers to keep them cleaner and water repellent.

Molting (shedding) – Birds renew their feathers at least once a year, often twice. Molting usually follows a regular pattern of feather loss. Plumage changes drastically in appearance from newly hatched chick to adult or may vary with the season in some adult birds for courtship or camouflage.

Lightweight but strong skeleton - Bones are hollow with internal cross supports reducing weight and adding strength. Bird skeletons are compact and reduced by fused bones. The backbone, ribcage and hip bones are rigid while the tail remains flexible. Birds that fly have a keeled breastbone for attachment of powerful flight muscles. Ratite birds have a flat breastbone.

Air sac respiratory system – Special organs spread throughout their body increase the amount of oxygen a bird takes in and allows air to flow in one direction through the lungs. Wingbeats are coordinated with breathing to draw air flow through this system. Similarly, birds have very high heart rate due to increased gas exchange (hummingbird's 1000 beats/min).

Absence of structures to reduce weight. E.g. females have only one ovary; all birds have no teeth.

Weight and balance are centralized – Heaviest organs are located in the center of the body. Muscles for flight are not actually in the wings. Most of the muscle mass is along the central keel and function via long tendons.

Large eyes provide the keenest vision of any group of living creatures. Excellent eyesight allows them to avoid objects while flying and spot food from long distances.

Very high metabolism – Flying requires more energy than any other form of locomotion. Because weight is a factor, flying birds tend to eat frequently on high fat, high protein diets. Birds have small digestive tracts with food going from the mouth to the **crop**, where it stored before moving into the gizzard. The **gizzard** often contains small stones that help grind up the food.

Reproduction

Nests - Most birds build some type of **nest**, but construction and materials used is widely varied. Most nests are shaped like a large bowl - the right shape for oval eggs to rest without rolling out. Birds that don't build elaborate nests, like penguins, have elongated eggs to prevent them from rolling away and breaking.

Eggs - Coloration is laid upon a bird's eggshell by glands as it passes down the oviduct. Eggs laid in open nests are speckled, spotted, blotched or lined. Birds lay hard shelled eggs that are remarkably well-designed. Bird eggs are very strong – they are engineered to withstand a lot of weight. Birds **brood** their eggs: they sit on the eggs using their body heat to keep the eggs warm until they hatch. Some species share brooding duties among males and females. Some birds, like cuckoos and cowbirds, lay their eggs in the nests of other species leaving brooding and rearing to foster parents. Birds may be born altricial (weak and helpless at birth) or precocial (fully active, ready to eat on own). The largest egg is from the ostrich (weighs 3 lbs., 6" to 8" long). The smallest egg is from the bee hummingbird (weighs 5/1000 of an ounce, the size of a pea).

Singing

Singing is done primarily to establish territory by warning other males of its species to stay out. A secondary result is attraction of a female who desires a "man of property". Most birds hold territories in the spring at the start of the breeding season. "Calls" are used for communication, such as calling young, giving an alarm, and keeping a migrating flock together.

CLASS MAMMALIA (MAMMALS)

With about 4500 species, mammals are actually a small class of animals. About 200 million years ago, the first mammals appeared in the fossil record. These mammals were about the size of mice. Even early mammals were endotherms. Because they did not depend on their surroundings for heat, they could forage at night and avoid their dinosaur predators during the day. When dinosaurs became extinct, there was more land and food available for the mammals. Mammals began to diversify and live in many different environments. The blue whale, with a mass of more than 90,000 kg, is the largest animal – vertebrate or invertebrate – that has ever lived. You can find mammals in the coldest oceans, in the hottest deserts, and in every climate in between.

Characteristics of Mammals

- **Endothermic**
- **Mammary Glands** - secrete nutritious fluid called **milk**. Although only mature female mammals make milk, male mammals also have small inactive mammary glands. Milk is made of water, protein, fat, and sugar. But the milk from different animals has varying amounts of each nutrient. For example, human milk has half as much fat as cow's milk but twice as much sugar. The milk of seals may be more than one-half fat.
- **Hair** - All mammals, even dolphins, have hair somewhere at some point in their life.
- **Muscular Diaphragm** - a large muscle at the bottom of the rib cage helps bring air into lungs. All mammals including marine mammals breathe through lungs.
- **Heterodont teeth** - mammal teeth are specialized. They have different shapes and sizes for different functions.
- **External Ear and 3 middle ear bones** – not all mammals have outer ears, but only mammals have outer ears. Pinnae (outer ears) help collect sounds and direct them to ear canal. Position of the pinnae often indicates temperament of animal. Ears erect, directed forward often indicates alertness. Ears flat against head can indicate anger or fright. Ears lose a lot of heat so they get smaller as you increase latitude or altitude.
- **Large Brains** - mammals brains are much larger than the brain of other animals the same size. Mammals sense their environment well and learn, move, and think quickly.
- **Internal Fertilization**

Reproduction

Not all mammals were created equal. Mammals have 3 reproductive strategies:

1. **Monotremes – Egg-laying mammals** (duck-billed platypus, spiny anteater)
Monotremes were the first mammals and are more closely related to reptiles than any other mammal. They have not yet evolved a way to have their babies live but rather continue to lay eggs in nests. Monotremes are only found in Australia, Tasmania, and New Guinea.
2. **Marsupials – Pouched mammals** (kangaroos, koalas, opossums, etc.)
Marsupials are special mammals that give birth to their young live, but the babies mature in pouches. While they are in the pouch they suckle on the mother's milk for nourishment. Most marsupials are on the island continent of Australia. Because of its isolation, placental mammals didn't take hold in their ecosystems. Australia is like a mammalian time capsule.
3. **Placental – Live bearing mammals** (all the rest)
Placental mammals deliver their young live and ready to drink mother's milk. Although the babies still need care, much of the basic development is done inside of the female's placenta. After a variable gestation (21 days for mice to 22 months for an elephant) mammalian mothers nourish their babies and teach them living strategies. Since there are no pouches, the baby must walk or be carried. Placentals are the dominant form of mammal on the planet. Placental mammals are everywhere, even in the oceans. A

group called cetaceans includes dolphins and whales. Their mammalian ancestors evolved on land but returned to the ocean. They still breathe air, feed their babies milk and even have tiny hairs like other mammals.

Clutch sizes (how many young per litter) and parental care- usually smaller mammals have larger numbers of young and invest less time teaching their young. Mice have up to 115 young per year. Larger mammals tend to bear fewer young and provide longer parental care. Elephants normally have one birth per four years. Generally, mammals take better care of their young for a longer time than any other type of animal.

Teeth

The kinds of teeth a mammal has reflect its diet. Dogs, cats, and other meat-eating mammals have large canines. Molars are better developed in herbivores. Unlike other vertebrates, mammals have two sets of teeth. A young mammal's first small teeth are called *milk teeth*. These teeth are replaced by a set of permanent adult teeth after the mammal begins eating solid food and its jaw grows larger. *Tusks* of elephants, hippopotamuses, and wild boars are modifications of incisors or canine teeth that protrude from the mouth when it is closed. They may be used in defense, territorial display or courtship.

- **Incisors** - front cutting teeth for biting, nipping or gnawing
- **Canines** - stabbing teeth help grab food and hold onto it
- **Molars** - flat back or cheek teeth that help grind up food. These are modified in cats: instead of flat molars, they have four "carnassials," which work like shears for cutting food.

Feet

Mammals have highly variable feet. Toenails may be modified into hooves or claws and be adapted to running, scratching, digging, climbing, or catching food. Reducing weight in the foot is one way to increase speed, so faster animals generally have smaller, lighter feet.

1. **Plantigrade** - walk on soles of foot (primates, bears, raccoons, rodents). Slower heavy foot, but very stable.
2. **Digitigrade** - walk on padded toes (cats, dogs). Small, lighter foot with pad; fast but quiet runners, often carnivores.
3. **Unguligrade** – walk on tip toes, usually a hoof (horses, antelope, giraffe) lightest strong foot for size, fast but less quiet, often herd herbivores
4. Modified into **flippers** (sea lions, whales) – aquatic mammals
5. Modified into **wings** (bats) – only true flying mammal

Hair

All mammals have hair. Mammals that live in cold climates usually have thick coats of hair. But large mammals that live in warm climates, like elephants, have less hair. Essentially, there are three types of hair:

1. **Guard hairs** – long, coarse outer hair protects animal from environment
2. **Under hair** – soft, dense, shorter inner hair insulates against temperature extremes
3. **Specialized hair** – usually sensory or protective, e.g. spines of hedgehog and porcupine, vibrissae (whiskers) of cats, bristles of hogs, or wool of sheep

Tails

Tails are extensions of the spine, highly modified in some, useless in others. Tails have a variety of uses:

- A **communication** device or signal - lemurs
- An **extra hand** - spider monkey
- Extra **insulation** while sleeping - chipmunk
- A **decoy** - squirrels
- A **fly swatter** - hoofed mammals
- To **sound warning** - beavers
- As a **chair** - kangaroos
- For **balance** - climbing mammals

Horns and Antlers

Imagine balancing heavy objects on your head and carrying them everywhere you go! Horns and antlers are physiologically different.

Horns are a keratin cone developed from the outer skin layer which grows over permanent bony knobs on the skull. Horns are not shed, but can be knocked off by injury. The bone and cone continue to grow over the animal's lifetime.

Antlers are an annual growth of soft bone covered by skin (velvet). Antlers are shed and new set grown each year. In some species such as moose and deer only males grow antlers whereas in caribou both males and females grow antlers each year.