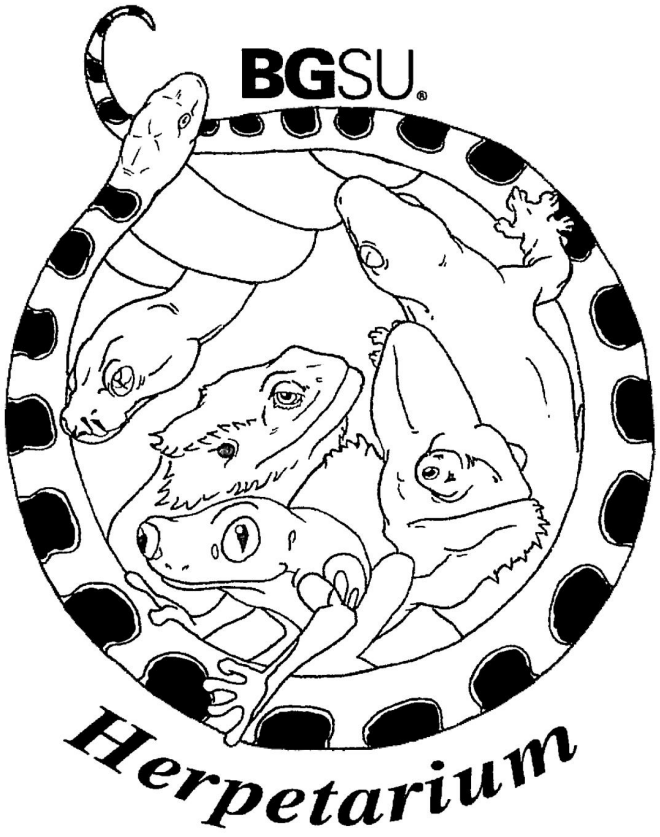
Lab Volunteer Manual

Introduction and Procedure



Introduction

Welcome to the Herpetarium!

In this manual, you will find resources and quick guides on how to care for the various animals in the lab. As a student volunteer, you will be involved in every aspect of the Herpetarium. Some of these duties include feeding, cleaning, and handling the animals on a daily basis. The lab promotes proper reptile and amphibian husbandry, and while volunteering you will learn how to care for the animals in a manner that is healthiest for the species in a captive setting.

Along with husbandry, you will also have the unique opportunity to be involved in Herpetology demonstrations and tours. During these demonstrations, you will learn how to handle and present the animals, offering a great hands-on experience in a public setting.

These are just some of the ways to get involved as a volunteer. Always remember to have fun, and take some time to handle your favorite animals!

Our Mission:

The BGSU Herpetarium is committed to promoting appreciation and education for the biological diversity within the field of Herpetology. Student volunteers work in the lab, offering first-hand experience with reptile and amphibian husbandry. Volunteers also provide hands-on demonstrations to the public to encourage respect towards reptiles through educational information. Student-designed research opportunities utilizing proper husbandry techniques are encouraged through the Department of Biological Sciences at BGSU. The Herpetarium provides a unique contribution to the campus and community by giving them a more accessible place to interact with animals up close.

Common Herp Lab Terms

Herpetology-The study of reptiles and amphibians

Cross- Mating pairs of animals

Caresheets- These sheets outline the general care in captivity for reptiles and amphibians

Feedsheets- List of what animals need to be fed on a daily/weekly basis. Lizard/amphibian list is located in Hatchling Room. Snake list is located in the Entrance Room.

Quarantine- When an animal in the lab is in quarantine, it is either new to the lab, or diseased. New animals must be set up away from the other animals for a designated period of time in case they are carrying mites or disease. Diseased animals are in quarantine until their treatment is complete. If you must clean or handle an animal in quarantine, DO NOT touch any other animal in the lab once you are finished. Be sure to wear gloves to handle animal or clean enclosure. Only use bottles and utensils marked "Quarantine Only" to ensure contamination does not spread to other animals in the lab.

Nolvasan- (the blue stuff)—non-toxic disinfectant used to clean reptile cages. Found in spray bottle next to the sink. **DO NOT USE WITH AMPHIBIANS**

Lukewarm- Water that is just cool to the touch. Used when placing animals in baths.

Tap Water- Water coming directly from the sink. This water is used with most reptiles as their source of hydration.

Aged-Tap Water- Water from the sink that has been allowed to settle for several days in order to dechlorinate it. This water can be found in a large bin located in the Hatchling Room. **This water should only be used for amphibians and other aquatic animals**

R.O. Water- Reverse Osmosis water. This water can be obtained from the faucet with the tapered nozzle on the extreme right side of the sink. All spray bottles should only contain this type of water. *Be aware of water bottles marked "tap water" and those marked "R.O. Only."*

Substrate- The material at the bottom of a tank or enclosure. (i.e. sand, vermiculite, newspaper, moss, etc.)

Vermiculite- Golden looking flaky material found in an enormous bag marked with its name. This is used as bedding as well as setting up eggs.

Lab Procedures

1. Signed volunteer forms must be turned in prior to working in the lab.

2. Close-toed shoes are **REQUIRED** at all times.

3. Backpacks and purses should be placed in the Study Room on the bottom two shelves. This keeps bags out of the way and away from areas where it could potentially be a hazard.

4. Remember to initial what you feed each day. This is the only way we know animals were taken care of.

5. *Leave the lab the way you came into it, and clean up after yourself. Wash any containers/utensils you have used while working, as well as any messes made. Any food items used (rodents, crickets, etc.) must be put away/stored properly. This helps us prevent an unhealthy environment, as well as attracting any unwanted critters.

6. We do have people visiting the lab from time to time. Volunteers should be the only ones taking animals out of their enclosures. This ensures the safety of the animal and visitor.

7. Be sure to close animal cages/drawers properly to prevent animals escaping from their homes.

8. Certain animals require special handling or care. Be aware of any signs on the animal's cage that indicate this care. Other animals, such as the bigger/stronger constrictors, require two volunteers to be present when handling. DO NOT handle any animals that are marked with specific permission requests, or stipulations. Consult Dr. Underwood for these permissions.

9. Do not be afraid to speak up! If you are unsure how to feed/handle a specific animal, ask on of the student coordinators. If you feel an animal looks sick or injured, notify Dr. Underwood immediately.

10. Quarantine animals should not be touched until the very end of the day (or by the person assigned that section). Do not use any bottles or utensils marked "Q" or "Quarantine" on other animals in the lab. This is to ensure the other reptiles do not receive any potential diseases.

11. If you are ill on a day you are supposed to come in, be sure to notify either Dr. Underwood or a student coordinator.

12. **Before leaving the lab, be sure to wash your hands and initial what you fed! Be sure to log your hours on the computer, especially if you are in here for class credit in BIOL 4530. This is the only way we know that you are filling your time requirements.**

13. Have fun! Take some time to handle your favorite animals!

Daily Duties

-Check the Feeding Sheet (located in the hatchling room). Remember to initial what you feed.

-Check nesting boxes for eggs, and moisten moss when dry.

-Check <u>all</u> water dishes. Fill empty water dishes, and clean out dirty bowls.

-Make sure that animals requiring high humidity are misted daily.

-If you notice a box, tank, or enclosure is dirty, clean it out.

-If you open a tank/cage/drawer, make sure it is closed PROPERLY so the animals cannot escape.

-Clean up after yourself and wash dirty dishes and utensils that you use. Many students may need to use the same dishes and utensils on the same day.

-If you have some extra time, clean up, organize, or see if other volunteers need a helping hand (it's always a good way to learn something new!)

-Wash your hands and initial what you fed before leaving the lab.

-Never hesitate to ask questions!

Have fun and don't forget to take some time to handle your favorite animals!!!

Snakes

Snakes

Handling: Never grab a snake's head or tail, as it frightens the animal. Simply hold the snake gently in your hands and let it maneuver over you as if you were substrate. When opening a locked enclosure containing a large snake or a cage marked with special handling procedure, make sure there is another volunteer in the room that is comfortable with handling the snake. **Never handle a snake you are uncomfortable with alone. Never let a snake make a complete loop around your neck.** These mistakes could cause damage to both the snake and the person handling it. **When returning a snake to its enclosure, be sure to latch/lock its cage, and push all drawers in so they do not escape.**

Judging Food Size: Simply find the thickest part of the snake, and find a food item that fits its size. Certain snakes are more prone to regurgitation than others, and these special cases need smaller food than usual. Consult snake feeding sheet for proper sizes for each snake.

Feeding: Snakes are fed weekly, ideally on Tuesdays. Larger snakes are fed every other week (some even less than that). There is a feeding sheet to refer to when feeding the snakes. Each week, a new sheet is printed listing how many of which size of mice, rats, or rabbits to thaw for the snakes. **Be sure to separate any snakes housed together before feeding.** Place the food where the snake can see and smell it, making sure not to place your hand where the snake can strike at it. Food is left in overnight (except for snakes in feeding boxes) and anything left is picked up and recorded the next day. Simply find the name of the snake and record how many food items went in, and how many were not eaten. There is a list of all abbreviations used for snake feeding purposes included with the feeding sheet.

Feeding hatchlings is a little different. These snakes are not on the feeding sheet. Instead, they have their own feeding chart on a card located on the top of their box. Record the date, what was fed to the snake, how many food items were put in, and how many were removed.

Most snakes in the lab eat frozen, thawed food items. Problem eaters may require force feeding or live items. When thawing food items, place number of mice/rats in a container and let them soak in hot water. **DO NOT heat these items in the microwave.**

***NOTICE**: Any food that is uneaten should be either given out to other animals who receive the same food item (check with other volunteers), or should be placed back in the freezer. When placing back into freezer, the item must be placed in either the "once thawed" bag, located in the green bin, or the "bad bag," which is marked with a brown X and sits in the door. The "bad bag" is used for food items that have rotted or bloated due to being in cages for a period of time**. DO NOT** place food items back in their original bags! **DO NOT THROW USED RODENTS IN THE OUTSIDE DUMPSTER OR LAB TRASH CANS.** This is a violation of the health code on campus. If you don't know how to properly dispose of unused rodents or have discovered regurgitated rodents, consult one of the student lab coordinators.

Cleaning: Snakes in drawers need to be cleaned once a week. The newspaper must be removed and replaced, and the snake should be given fresh water. If the bowl is dirty, clean

with dish soap and water. If the drawer itself is dirty, put the snake in a separate container with a lid, take the drawer to the sink and scrub it out with soap and water. Nolvasan can be used to dissolve urates and make the drawer easier to clean. Make sure the drawer is completely dry before you put the snake back in it. The same is true for snakes in tanks or other enclosures. Remove the substrate and clean with nolvasan, then rinse, dry, and replace substrate.

From time to time, a snake itself may need a bath. Run lukewarm water (just cool to the touch) in a bin large enough to put the snake. Allow the snake to swim in it for about 10 minutes.

Shedding Problems: If a snake is having a problem shedding, run a lukewarm bath and allow the snake to soak for 20 minutes. Remove the snake and gently peel the shed from the snake by using your hands. Do not go against the scales, for it can agitate the animal. If the snake has shed left on its eye caps, take a wet washcloth and place over snake's face. Allow the animal to wiggle through the washcloth on its own in order to rub the shed off on its own. *Use caution when helping a snake shed, as it may upset the animal, and can become difficult to work with or even bite. Always be aware of the snake's mood/actions.*

Breeding: Snakes set up in breeding pairs should have their nesting boxes checked daily for eggs. Egg setup and hatchling is included under the last tab of the manual. During breeding season, females should be handled as minimally as possible to reduce the risk of becoming egg-bound. If you are feeding snakes in breeding pairs, do not separate snakes that are in the middle of copulation. Wait until they are finished before separating for feeding.

Lizards and Geckos

Lizards and Geckos

Handling: Never squeeze a lizard or hold onto its tail; this could cause the animal to drop its tail. Let the lizard or gecko crawl over your hands, never letting it drop to the ground. Lizards like having all four of their legs supported. Very fast geckos with wall-clinging abilities should be handled with extreme care. Baby geckos and lizards are equally quick and fragile and therefore should not be handled until a certain age. Hatchlings under one month old should not be handled.

Judging Food Size: Most geckos and lizards eat crickets. To judge proper cricket size, measure the distance between the animal's eyes. The cricket should be the size of the distance between the eyes. Geckos and lizards only require roughly 3-5 crickets per animal. **Do not overfeed** for it can stress out the animal.

Feeding: lizards that require greens should never be fed regular iceberg lettuce. This lettuce has little nutritional value to the animal. Stick with romaine, green or red leaf lettuce. Broccoli or other equally fiber-filled food should not be given to lizards, as they cannot digest it properly and causes diarrhea. Many of the geckos eat baby food. Premade gecko food is found in the refrigerator in a squeeze bottle. Place a capful of gecko food on the floor of the gecko's enclosure.

Lizards that require crickets should have them dusted with Calcium-Vitamin powder. **Use only the calcium mix for lizards**. Place the crickets in a container, sprinkle with Calcium-Vitamin powder, and swish the crickets around to coat them with the mix. **Lizard calcium-vitamin powder is different than the frog powder mix. Be sure you are using the correct powder before feeding animals**

Water: Some animals do not drink from standing water (frilled dragons, chameleons, etc.) If taking care of these animals, they should be misted according to the feeding sheet. Take a spray bottle and turn it to a light stream. Spray the animal's mouth gently until it starts to lick water from its face or from the spray in general. Animal should be sprayed until it finishes drinking in order to ensure it is hydrated.

Cleaning: Geckos in drawers need to be cleaned once a week. The paper towel should be removed and replaced if soiled or moldy, and the gecko should be given fresh water every time it's fed. If the bowl is dirty, clean it with soap and water. If the drawer itself is dirty, put the gecko in a box with a lid, take its home to the sink and scrub it out with soap and water (nolvasan can also be used). Make sure the drawer is dry before you put the gecko back in it. The same is true of geckos and lizards in tanks or enclosures that need cleaned. Remove the substrate and clean with soap/nolvasan and water. Then, rinse, dry, and replace substrate. Water bowls should all be removed and changed a couple times a year.

From time to time, lizards and geckos may need a bath. Simply run a lukewarm bath into a container to a level that the animal can walk in. Allow animal to sit in bath for about 10 minutes, then dry off and return to home.

Shedding Problems: Bath the gecko or lizard in a lukewarm bath for 10-15 minutes and try to remove the remaining shed. Use caution when peeling from the animal's toes. Toes are very fragile and can be removed when pulling too hard on the animal. Be sure to check toes constantly for shed, for it can lacerate the toe and cause it to fall off.

Breeding: Lizards set up with breeding pairs or colonies should be checked for eggs daily. Remove the nesting box and refer to the General Egg Set-up guide under the "MISC." tab. Be sure to make sure nesting boxes are moist.

Amphibians

Frogs

Handling: Many frogs have skin so delicate that they should not be handled (i.e. poison dart frogs). Please consult Dr. Underwood if you need to handle any of the frogs. If you need to handle a frog for any reason, spray your hands with R.O. water and allow the frog to maneuver over your hands. Be careful if the frog jumps not to let it drop to the floor. This can harm the animal.

Feeding: Many frogs require crickets. Measure cricket size by the distance between the frog's eyes. Each frog receives roughly 5 crickets.

Poison dart frogs require fruit flies. They eat around 20 fruit flies per frog, unless the frog is tiny. Frogs need to have their food dusted with a special Calcium-Vitamin powder. **Be sure to use the powder that is labeled "FROG ONLY,"** for it is very different than the lizard mix. Place the crickets/fruit flies in a container, sprinkle with Calcium-Vitamin powder, and swish the crickets/fruit flies around to coat them with the powder mix.

Water: Frogs can have only R.O. water to be misted with and to drink (these bottles are located on top of the smaller freezer in the Ball Python Room). Be sure the bottle reads "R.O. ONLY." **Keep frogs' water very clean.**

Cleaning: It is imperative to keep frog water very clean. They are highly susceptible to environmental changes, especially dirty water. When cleaning water or food dishes, tap water can be used to clean it, along with using brown paper towels to wipe the bowl. If the container is particularly dirty, a tiny amount of diluted vinegar can be used to scrub the dish (1 part vinegar: 10 parts water). Be sure the bowl is rinsed well, and given a final rinsing with R.O. water before returning it to the frog's enclosure. Wipe dry with brown paper towel. ****NEVER use any type of soap or scrub brush that has had soap on it. This can kill frog quickly. Special containers that are labeled "Frog ONLY" or "Tadpole ONLY" should never be washed with soap.****

Breeding: Every frog species breeds differently. The larger frogs will be placed in the rain chamber for breeding. Let Dr. Underwood take care of the eggs they lay, but alert her if you see any.

Poison dart frogs set up in breeding pairs or colonies will have a petri dish with a leaf in it to lay eggs in. The dish is normally underneath a coconut hut. Check daily for eggs and alert Dr. Underwood if you find any. Frog eggs are VERY fragile.

Tadpoles: Tadpoles are very fragile and require daily care. Tadpoles are set up in deep deli cups with a serrated lid. Water should be changed daily and replaced with fresh R.O. water. Tadpoles receive special food located on their tray.

Morphing Tank: When tadpoles reach a certain stage in their life, they are upgraded to the morphing tank (usually when the tadpole is able to move both of its back legs freely, and has its front legs formed). This is a special tank with mossy substrate, and small dishes filled with water. A leaf is sticking in the water so the froglet can climb out of the water, where it will be moved to a new enclosure. Be sure to check the morphing tank daily.

Axolotl

Handling- Axolotls should not be handled unless they are being moved to a different enclosure. If they must be moved, you may either use a fish net, a clean plastic container, or your hands. Gently scoop the animal out of the water, and transfer to the new enclosure as quickly as possible to avoid over stressing. Be sure to avoid the gills, since they are very delicate.

Feeding- Depending on the size of the axolotl, they may require different food items. Sub-adult and adult axolotls can be fed crickets, earthworms, or frozen bloodworm pellets. Rotate the type of food items often to give the animals variety in their diet. When feeding crickets, each animal should receive 3-4 crickets. When feeding earthworms/bloodworms, each axolotl receives only one worm. Juveniles are fed live blackworms, located in the square, blue containers in the main refrigerator. When feeding the larger tubs that hold several axolotls, be sure to give a generous amount of worms to go around; this prevents cannibalism among the smaller axolotls. The animals housed in containers should receive around 10-12 blackworms each.

Water- The quality of water is crucial to axolotls, especially ones housed in tanks/tubs that do not have a filtration system. Spikes in the quality of water can easily make axolotls sick, or even kill them. Water changes must be done several times a week on tanks that do not have filters. Tanks with filters can be changed on a bi-weekly basis. Axolotls receive aged tap water, located in the large bins marked "Aged-Tap Water."

Water quality tests must be taken weekly, and recorded on the spreadsheets attached to the tanks. An example of a water quality spreadsheet is located on the next page.

Test	Range
pH	6.5-8.0
NO2-	0-0.5ppm
NO3-	0-40ppm
NH3/NH4+	0-0.25ppm

The following table shows the accepted values of each test:

Cleaning- As well as water changes, tanks should be cleaned weekly. For the glass tanks, use the special scrub pad to clean algae off of the inside glass walls. (Algae does not harm the animals, but it does make the tank look dirty). If the juvenile tubs/containers are particularly dirty, transfer the axolotls into a new tub that is labeled "Frog/Tadpole Only." **NEVER** scrub dirty tubs or containers with soap. Use regular tap water and brown paper towel. If a tub/container is particularly dirty, a diluted solution of vinegar (1 part vinegar: 10 part water) can be used along with the "frog only" scrub brush.

Breeding- When breeding, set up a separate plastic bin labeled "Tadpole only." Fill the bin ¾ full of aged tap water, and add an airline as well as moss. Place both axolotls in the tub for a few days, monitoring behavior. The tub should be wrapped with a towel to keep the area relatively private and dark. If eggs are laid, remove adults from the bin and place them in their respective tanks.

Salamander

Handling- Salamanders should not be handled. Consult a student lab coordinator or Dr. Underwood if they do need to be moved.

Feeding- A salamander's diet consist of crickets. Measure the cricket size by the distance between the animal's eyes. Each salamander receives roughly 5 crickets each. Sprinkle crickets with the "Frog-only" calcium-vitamin mixture.

Water- Salamanders receive aged tap water. This water can be found in large bins located in the Study room. Be sure that the water in the salamanders' tank is filled weekly, and never let the water line go below the water pump (you will hear a motor noise coming from the tank if the water is too low).

Cleaning- When cleaning the salamanders' tank, tap water can be used to clean it, along with brown paper towels to clean the walls. If the tank is particularly dirty, a tiny amount of diluted vinegar can be used to scrub the walls (1 part vinegar: 10 parts water). Be sure the tank is rinsed well before putting the tank back together.

Never use soap or scrub brushes that have touched soap on the salamanders' tank.

Turtles/Tortoises

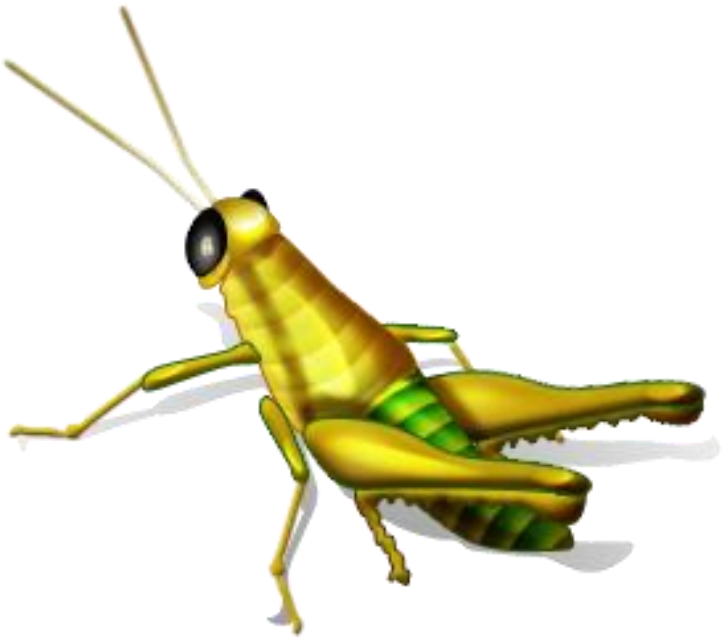
Turtles/Tortoises

Handling: Turtles and tortoises should be given support under their shell so they are not frightened and feel as if they are falling. This can cause stress to the animal.

Feeding: Turtles and tortoises are herbivores and omnivores, and have fairly strict diets. Follow caresheets with care (they are located in the Sink Room). Turtles and tortoises require clean, fresh water each time they are fed.

Cleaning: Turtles and tortoises require weekly bathing. To bathe, run lukewarm water into a clean sink to a level that the animal can walk in. Allow to bathe for 10 minutes, wiping away any waste or dirt. Turtles and tortoises will often defecate in their water. Drain, rinse the animals, and refill the water for another bath if this occurs. Dry the animals before putting them back in their home. To clean a turtle enclosure, remove the substrate and clean with Nolvasan, then rinse, dry, and replace substrate. Clean water bowls weekly.

Feeding Logs



The Feeding Sheet (Lizards and Geckos)

(Located in the Hatchling Room)

This list is the most important thing in the lab to pay attention to. It contains a list of every animal in the lab in checklist format, divided into day s of the week. The animals are listed according to which room of the lab they are currently residing in. Once you feed the animal, simply initial next to that animal on the day that you fed it. If you notice that there is already food in with an animal, simply initial that space to make sure that no one else feeds that animal. There are some abbreviations on the list that you should be aware of:

(*) = Feed the Animal [i.e. crickets, mealworms, etc] **(b)** = Baby Food

(ff) = Fruit Flies **(g)** = Greens **(m)** = Misting **(c)** = Crickets

Numbers besides the name of the animal indicates how many animals are in the enclosure. Two numbers separated by a period (.) indicate that there are both males and females in the enclosure. Males are noted first. For example, 1.1 would indicate one male and one female.

Animals on the feeding list have stars in the box corresponding with the day s of the week they are fed. For example, baby cricket eaters are fed daily and will have starred boxes Monday thru Friday. It is important to know that not every animal on the log is fed every day. If there is no star or other abbreviations marked in the animals' box for a particular day, it is fed other items, or not fed at all. Daily feeders include baby cricket eating lizards and poison dart frogs.

Animals that eat baby food should have their food replaced on Monday, Wednesday, and Friday. Baby food is found in the main refrigerator located in the Ball Python Room.

Some of the animals on the feeding sheets do not get crickets, such as the turtles, tortoises, and skink. Please pay attention to the caresheets located on the wall by the sink so you know their exact diet requirements.

An example Feeding Log is located on the following page.

	WEEKLY CRICKET FEEDING LOG Thanks to everyone for all the good work.								Habitat issues
	HERP	SAT	SUN	MON	TUES	WED	THURS	FRI	temp?
Entrance									
	Giant Day gecko #3 green - 1.1 (b)			*b	m	*b/c	m	*b	
	R. chahoua Purple female	m	m	*b	m	*b/c	m	*b	
	Gg #12 Red B (1.2)			*b	m	*b/c	m	*b	
	CG#26 Blue B (1.2)			*b	m	*b/c	m	*b	
	Gg#7 Green A (1.2)			*b	m	*b/c	m	*b	
	CG-#25 Red D (1.2)			*b	m	*b/c	m	*b	
	Frilled Dragons (0.1) large cage		m	*/m	*g/m	*/m	*g/m	*/m	
	R. chahoua 1.1 -#4orange MT			*b	m	*b/c	m	*b	
	R. chahoua 1.1 #5 Purple P7-1/ R8-3			*b	m	*b/c	m	*b	
	R. chahoua 1.1 #6 Green			*b	m	*b/c	m	*b	
	R. chahoua 1.1 #7 Blue			*b	m	*b/c	m	*b	
	R. chahoua old male								
	R chaohua 1.2 #8 Red			*b	m	*b/c	m	*b	
	Leopard geckos (0.2)			*		*		*	
	U. milii # #11 (black)			*		*		*	
	Underwoodisaurus mili 1.1 (#4 orange)			*		*		*	
	Underwoodisaurus mili 1.1 (#10 Purple)			*		*		*	
	Underwoodisaurus mili 1.2 (#8 Red)			*		*		*	
	Crested gecko juvis - rack systemACTION			*b	m	*b/c	m	*b	
	Rainchamber								
	CG#24 Orange C (1.2)			*b	m	*b/c	m	*b	
	CG#31 Red E (1.1 Red x Tiberia)			*b	m	*b/c	m	*b	
STUDY									
	R.leacheanus-1.1 Flapjack. Jemimah (2 tanks)			*b	m	*b	m	*b	
	R. leachie, Lyla			*b	m	*b	m	*b	
	Cg#27 Brown (1.2) juvi			*b	m	*b/c	m	*b	
	Gg#13 Blue B (1.1)			*b	m	*b/c	m	*b	
	axolotl adults (2 tanks)	*		*		*		*	
	D. auratas			*	*	*	*	*	
	Cg#30 Purple C (1.2)	m	m	*b	m	*b/c	m	*b	

The Feeding Sheet (Snakes)

(Located in Entrance Room)

The feed sheet for snakes is a little different than the one used for the lizards and geckos. This log contains a list of the majority of the snakes we have in the lab. There is a small portion of snakes that have their feeding log located on their enclosure (these are mostly juvenile snakes). The animals are listed according to what rack they are located on.

We feed our snakes frozen-thawed rodents, which are located in the two freezers on the right side of the Ball Python Room. When feeding snakes, always make sure you are thawing the correct number of rodents. Do not thaw more than you actually need. A quick list of food item types and number of each food item is located on the last page of the feed sheet. The feed sheet has a record of the animal's ID, common name, cage location, sex, last successful feeding, last attempted feeding, food size eaten, as well as how many were offered/eaten.

First and foremost, make sure there is only one animal in the cage when you are feeding. Some cages have several animals enclosed, which in that case, separate the animals into different feeding boxes. This prevents animals fighting over food items, as well as ensures each animal is eating the right amount of food. If you place an animal in a feeding box, be sure to place a label on the snake's box to ensure the animal returns to the correct enclosure. Next place the food item(s) in with each snake. Some snakes do not require to be tease-fed (corn snakes) and can just have the food placed in the box with them, while others (pythons/boas) do need teased. *Note when feeding pythons, the food item needs to be very warm, otherwise the animal will most likely ignore it.* We record eaten food items based on an "in/out" system. Once you have placed the food item into the enclosure, be sure to record the number of items you placed in followed by a slash mark (/). Once the animal has finished, write the number of items that were not eaten. For example 2 food items go in, and the snake eats both items, you will record "2/0" on the feed sheet. If the animal receives 2 food items and only eats 1, you record "2/1."

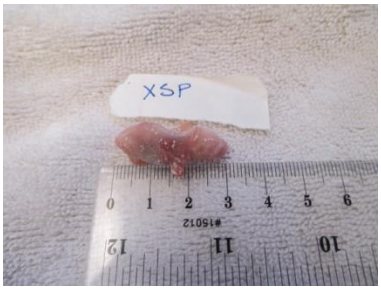
If an animal upgrades/downgrades in size of food, be sure to record what size was given to the animal that week. For example, if the animal received a DRW last week, and is upgraded to a DRASM, write "DRASM" and the number in/out next to it. *Snakes should receive the same size rodent every week, unless designated an upgrade/downgrade by Dr. Underwood or a student coordinator.*

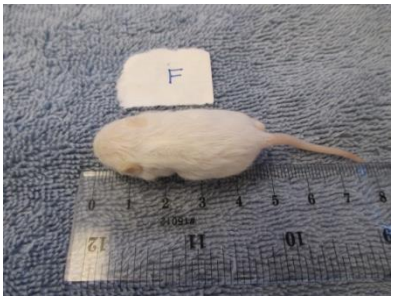
An example snake feed sheet, as well as rodent sizes and codes are located on the next page(s).

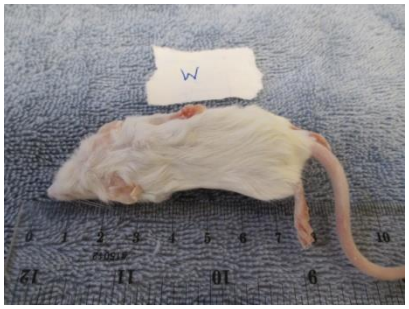
Feeding Sheet For a 1 day period 8/26/2014 through 8/27/2014 Feeding Group - 1

Animal ID Individual Name	Cage	Common Name	Status	Sex	Last Success	Last Attempt	Frequency (Days)	Last Food	Last In # /	Last out # /	Current Feeding Food / In / Out
* * * * * * * * * * * * * *					Proposed Next Feed Date		8/26/2014		* * * * * * * * * * * * * *		
Housed At: BG	BGSU Herp Room										
Pgg05009F AztecGhost, TLH#5	A1	Corn Snake	ABR	F	7/15/2014	8/19/2014	7	DMW	2	2	
Pgg09001M SZ/O#4,ghost	A1	Corn Snake	ABR	M	8/19/2014	8/19/2014	7	DMW	1	0	
Pgg09002F Mel/PS-1, cs,odd	A2	Corn Snake	ABR	F	8/19/2014	8/19/2014	7	DMW	1	0	
Pgg11023M AZL/PS#16, snow-line	A2	Corn Snake	AH	M	8/19/2014	8/19/2014	7	DMF	1	0	
Pgg00037M broken back CN	A3	Corn Snake	ABR	M	8/19/2014	8/19/2014	7	DMW	1	0	
Pgg08015F OAp/BL#3,amel,odd	A3	Corn Snake	ABR	F	8/19/2014	8/19/2014	7	DMW	2	0	
Pgg05006M Patternless-snowZS/BL	A4	Corn Snake	ABR	M	8/19/2014	8/19/2014	7	DMW	1	0	
Pgg08037F Okeetee zig, OL/D	A4	Corn Snake	ABR	F	8/19/2014	8/19/2014	7	DMW	2	0	
Pgg09010M SZ/Odd-2,snow,odd	A5	Corn Snake	ABR	M	8/19/2014	8/19/2014	7	DMW	1	0	
Pgg10012F M/BL16, amel,aztec	A5	Corn Snake	ABR	F	8/19/2014	8/19/2014	7	DMH	2	0	
Pgg07006M amel,Oddball,MS/BkL	A6	Corn Snake	ABR	M	8/19/2014	8/19/2014	7	DMW	1	0	
Pgg08005F Aztec,AZL/MeSn#1	A6	Corn Snake	ABR	F	8/19/2014	8/19/2014	7	DMW	2	0	
Pgg08033F ABR/BR#3,blood	B1	Corn Snake	ABR	F	8/19/2014	8/19/2014	7	DRP	4	0	
Pgg09005M Mel/PS-3,amel,odd	B1	Corn Snake	ABR	M	8/19/2014	8/19/2014	7	DMW	1	0	

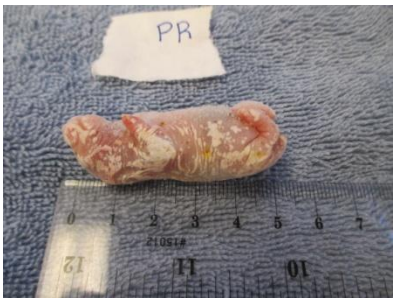
Mice

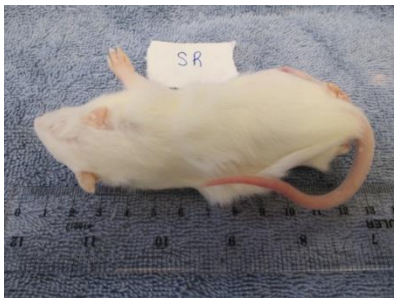


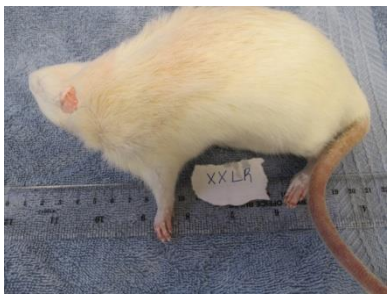




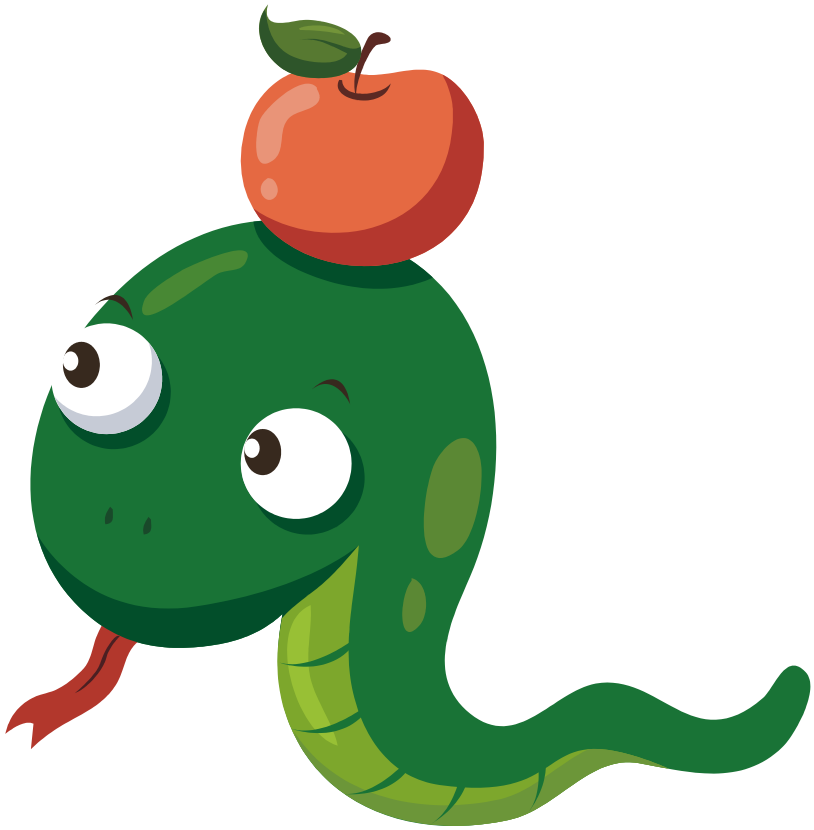
Rats







MISC



Potential Zoonoses/Hazards Associated with Reptiles

Modified from Cornell University Center for Animal Resources and Education:
http://www.research.cornell.edu/care/documents/OHS/zoonosis_information_sheet_reptiles.pdf

The intent of this Information Sheet is to describe the most common zoonotic agents seen in reptiles and the safe work practices suggested to mitigate the exposure to these pathogens.

1. **Introduction**: This document provides information about potential zoonotic exposure while working with reptiles or their products (e.g. fecal sample) as well as hazards associated with venomous reptiles. The agents listed here are not all inclusive, but provide the most common zoonotic agents seen in reptiles. The safe work practices are provided as suggestions for staff and researchers who work with animals, in animal facilities, or with animal products.

2. **Zoonotic Pathogens**

a. **Salmonellosis**

i. Organisms: Salmonella spp.

ii. Clinical Signs:

1. Reptiles – usually asymptomatic carriers; can cause diarrhea
2. Humans – diarrhea, nausea, vomiting, abdominal pain; increased incidence in immunocompromised individuals

iii. Transmission: Fecal-oral route; handling contaminated objects; contact with contaminated surfaces

b. **Aeromoniasis**

i. Organism: Aeromonas spp.

ii. Clinical Signs:

1. Reptiles – asymptomatic; can cause ulcerative stomatitis, septicemia, anorexia, pneumonia, hemorrhage
2. Humans – profuse diarrhea, fever, abdominal pain, vomiting; wound infection, cellulitis

iii. Transmission: Contact with contaminated water in open wounds; accidental ingestion of contaminated water or tissues; ingestion of bites or scratches inflicted by reptiles living in aquatic environments

c. **Campylobacteriosis**

i. Organism: Campylobacter spp.

ii. Clinical Signs

1. Reptiles – usually asymptomatic carriers
2. Humans – diarrhea, cramping, abdominal pain, fever

iii. Transmission: Fecal-oral route; handling contaminated objects; contact with contaminated surfaces

d. **Mycobacteriosis**

i. Organism: Mycobacterium spp.

ii. Clinical Signs:

1. Reptiles – granulomatous disease, ulcerative stomatitis (snakes)
2. Humans – circumscribed granulomatous disease at site of infection; may have serious secondary complications in immunocompromised individuals

iii. Transmission: direct contact with the organism through defects, scratches, or bites in the skin; inhalation; contact with contaminated surfaces

e. **Zygomycosis**

i. Organisms: ubiquitous saprophytes belonging to class Zygomycetes

ii. Clinical Signs:

1. Animals – common GI inhabitants; can cause upper respiratory disease or pneumonia, granulomatous or ulcerative lesions
2. Humans – upper respiratory infections, conjunctivitis, gastritis or enteritis, dermatitis or skin infections

iii. Transmission: Inhalation, ingestion, inoculation, or contamination of the skin with spores

f. **Cryptosporidium**

Cryptosporidium is a microscopic parasite that causes the diarrheal disease cryptosporidiosis. Both the parasite and the disease are commonly known as "Crypto."

There are many species of *Cryptosporidium* that infect humans and animals. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very tolerant to chlorine disinfection.

While this parasite can be spread in several different ways, water (drinking water and recreational water) is the most common method of transmission. *Cryptosporidium* is one of the most frequent causes of waterborne disease among humans in the United States. (http://www.cdc.gov/parasites/crypto/index.html)

ii. Clinical Signs:

1. Animals –
2. Humans – watery diarrhea, dehydration, weight loss, lack of appetite, cramping, abdominal pain, fever and vomiting.

iii. Transmission: water (drinking water and recreational water) is the most common method of transmission

Cryptosporidium serpentis

3. Safe Work Practices

a. **Good Personal Hygiene**

i. **Wash hands** after working with animals or animal products and when leaving animal facilities

ii. Do not eat or drink while working with animals. Food use should be confined to the student study area and Dr. Underwood's office. Dinks may be consumed in other rooms only if they are in closed containers (e.g., sports bottles with lids or drinks with straws) and not when working with animals.

b. **Animal Care**

i. Isolate sick or infected animals when possible.

ii. Handle and care for sick or infected animals last.

c. **Cleaning**

i. Maintain clean, dry, and uncluttered animal areas and workspace.

ii. Wipe down work surfaces after use.

iii. Dispose of deceased animals in the appropriate freezer (or store temporarily in the refrigerator until a necropsy can be performed.

4. References

Acha, PN and B Szyfres. *Zoonoses and Communicable Diseases Common to Man and Animals, 3rd ed.* Washington, DC: Pan American Health Organization, 2001.

Colville, J and Berryhill, D. *Handbook of Zoonoses: Identification and Prevention.* St Louis: Mosby Elsevier, 2007.

Johnson-Delany, CA. *Reptile Medicine and Surgery, 2nd ed*. DR Mader, ed. Philadelphia: W.B. Saunders Company, 2006

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Emergency Preparedness and Response. *How to Prevent or Respond to a Snake Bite*. CDC, 2008. http://www.bt.cdc.gov/disasters/snakebite.asp

Terrestrial Animal Housing and Support Areas

- **Construction:**
  - animal room doors (*Guide*, p 137)
  - floors (*Guide*, p 137)
  - walls and ceilings (*Guide*, p 138)
  - heating ventilation and air conditioning (*Guide*, p 139)
  - power and lighting (*Guide*, p 141)
  - noise control (*Guide*, p 142)
  - vibration control (*Guide*, p 142)
  - environmental monitoring (*Guide*, p 143)
- **Room/Cage:**
  - temperature and humidity (*Guide*, p 43)
  - ventilation and air quality (*Guide*, p 45)
  - illumination (*Guide*, p 47)
- **Primary Enclosure:**
  - durable, nontoxic materials in good repair and no risk of injury (*Guide*, p 51)
  - adequate bedding and structures for resting, sleeping, breeding (*Guide*, p 52)
  - procedures for routine husbandry are documented (*Guide*, p 52)
  - socially housed animals can escape or hide to avoid aggression (*Guide*, p 55)
  - animals express natural postures, can turn around, access food and water, and rest away from urine and feces (*Guide*, p 56)
- **Environmental Enrichment, Behavioral and Social Management:**
  - structures and resources promote species typical behavior (*Guide*, pp 52-54)
  - enrichment is considered (*Guide*, pp 53, 58, 60, 63)
  - additional enrichment for single housed animals is provided (*Guide*, p 64)
- **Sheltered or Outdoor Housing:** (e.g., barns, corrals, pastures, islands)
  - weather protection and opportunity for retreat (*Guide*, p 54)
  - appropriate size (*Guide*, p 54)
  - ventilation and sanitation of shelter (no waste/moisture build-up) (*Guide*, p 54)
  - appropriate security (*Guide*, p 55)
- **Food:**
  - feeding schedule and procedures including caloric intake management (*Guide*, pp 65-67)
  - contamination prevention (*Guide*, p 65)
  - storage in sealed containers (*Guide*, p 66)
  - expiration date labeling (*Guide*, p 66)
  - rotation of stocks (*Guide*, p 66)
- **Water:**
  - ad libitum unless justified (*Guide*, pp 67-68)
- **Bedding and Nesting Materials:**
  - species appropriate (*Guide*, pp 68-69)
  - keeps animals dry (*Guide*, pp 68-69)
- **Sanitation:**
  - frequency of bedding/substrate change (*Guide*, p 70)
  - cleaning and disinfection of microenvironment (*Guide*, pp 70-71)
  - cleaning and disinfection of macroenvironment (*Guide*, p 72)
- **Waste Disposal:**
  - procedures for collection (*Guide*, pp 73-74)
  - procedures for storage and disposal (*Guide*, pp 73-74)
  - hazardous wastes are rendered safe before removal from facility (*Guide*, pp 73-74)
  - animal carcasses (*Guide*, pp 73-74)
- **Identification:**
  - cage/rack cards contain required information (source of the animal, the strain or stock, names and contact information for the responsible investigator(s), pertinent dates, and protocol number) (*Guide*, p 75)
- **Recordkeeping:**
  - clinical records accessible and contain appropriate information (*Guide*, pp 75-76)

Notes