

# REHABBING OPOSSUMS 101



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## TOPICS WE WILL DISCUSS

- Mentorship
- Goal of Rehabbers
- Opossum Facts
- Growth & Development
- Where do the Babies Come From?
- Recordkeeping
- Rehabbers Golden Rule
- Weighing & Hydrating
- Feeding/Formula
- Good poop/bad poop
- Tube Feeding
- Teaching to Lap
- Possum Foods
- What do possums eat in the wild?

- Causes of Diarrhea
- Stress in Opossums
- Medical issues to Watch for
- MBD
- Housing and Caging
- Parasite Control in your cages
- Cleaning Cages
- Enrichment
- Normal and Abnormal Behavior
- General Sanitation
- Releasing your Opossums
- Misconceptions about Opossums
- Wish list items

# WILDLIFE REHABILITATION

The process of restoring a  
wild animal to its natural habitat  
after being cared for in captivity



# MENTORSHIP

- A mentor is an experienced rehabber who can help you to begin down the path of successful wildlife rehabilitation.
- Some states require that you work under a licensed mentor for 1-3 years.
- A mentor is invaluable to the new rehabber for ongoing guidance, motivation, and support.
- Having an experienced mentor could be the difference between life or death for your babies.



# GOAL OF A REHABBER

RELEASE, RELEASE,  
RELEASE!!



# OPOSSUM FACTS

- North America's ONLY marsupial
- Eats thousands of ticks every year along with other insects
- Will eat dead or decaying carcasses
- Rabies? EXTREMELY RARE: Low body temp
- Short life span in the wild – 1.5 years+
- Continue to grow throughout their lives
- Immune to venomous snakes
- Nocturnal behavior & solitary
- Size of a honeybee at birth/weigh about .16 grams
- Have 1-3 passels per year
- Females are called *Jills*, males are *Jacks*, babies are *Joeys*
- A group of opossums is called a *Passel*
- Prehensile tail and opposable back thumbs
- Have 50 teeth – more than any other North American mammal



# DEVELOPMENT OVERVIEW



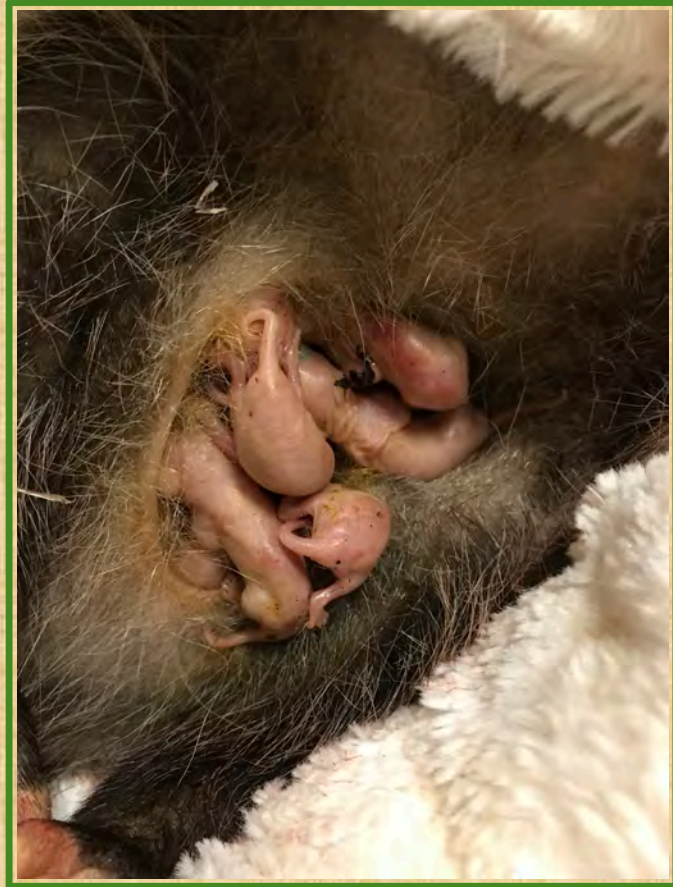
- 13 day gestation
- Born blind, hairless and partially formed. Brought to term in mom's pouch
- Breathe through their skin
- Must climb into pouch and attach to nipple, first 13 get to stay....
- Remain in pouch for 2 months and finish their development
- Will then start to venture out of the pouch and ride on mom's back
- After about 100 days old, they are weaned and begin to fend for themselves



Always check the pouch  
of injured or dead females.

These littles were  
removed from a dead  
mom's pouch.

They were 8 grams.





# OPOSSUM GROWTH & DEVELOPMENT

## *Birth – 4 weeks*

### *Under 25 grams*

Babies are born embryonic and the size of a bumblebee.

Their mouths are sealed around mom's nipple and the esophagus is paper thin. Tube feeding these babies is difficult and can easily tear the esophagus and cause their death.



## *4 to 6 weeks*

### *25 - 45 grams*

Skin is turning grey as fur is starting to emerge, mouth opening. Initial feedings are every 2-3 hours with 1 or 2 feedings during the night. Incubators are valuable to provide a moist warm environment (like mom's pouch). Babies begin to release mom's nipples between 30-42 days.



## *7 to 8 weeks*

### *45-100 grams*

An 8 week old opossum is comparable to a placental mammal at birth.



# OPOSSUM GROWTH & DEVELOPMENT

## 9 to 10 weeks

*~100-400 grams*

The youngsters are eating on their own. If in the wild, they might be all on their own. During rehab, these babies will still be in an inside cage. There will be a lot of growth during this time.



## 10 weeks to release

*400++ grams*

This stage is an outdoor stage. Opossums can usually be moved to an outdoor cage between 400-500 grams (once they are eating solids).



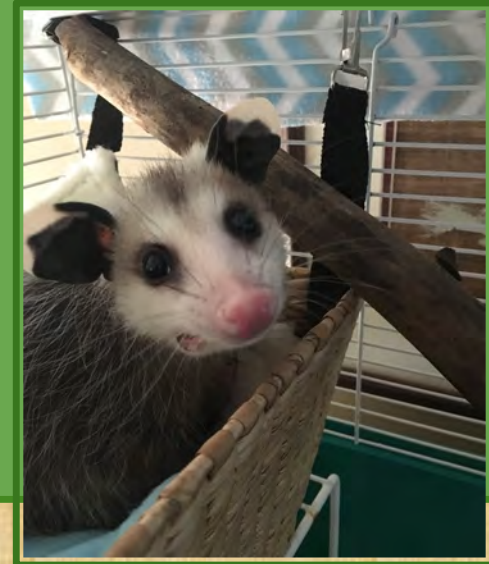
## Release

Release opossums when they are between 10-12 inches from nose to base of tail. They should weigh 2.5 lbs. or more



## WHAT TO EXPECT WHEN YOU BRING HOME AN OPOSSUM

- You will need a space in your home with natural light that is quiet and away from your busy household
- Tubs/cages/heating pad
- Daily food preparation – hope you enjoy cooking and food prep
- Keep good records/daily weighing
- Build a release cage....
- How long will you have them?
- Planning and finding a site for their release



# RECORDKEEPING

- It's always important to keep good records. Intake information, weights, treatment, medicines, appetite, stools, urination, etc.
- This information could be invaluable for the rehabber when transferring your opossum to another rehabber, taking your opossum to the vet, learning what works and what doesn't in treating illnesses and injuries, especially for the next opossum you treat, tracking their development, etc.
- Recordkeeping can and will alert the rehabber when there is a problem and your babies might be having nutrition issues/losing weight.
- If applying for a license, a record log of your animals may be required.
- Design a recordkeeping form that works for you. Keep it with the animals by attaching to the cage. As we rehab more and more animals, this information will be invaluable....

5 POSSUMS from TUBING CLASSES (PAGES POSSUMS) 1/20/1

Date	Weight (grams)	Formula (cc)	Time	U	D	Notes
4/15	57g F 60g F 52g M 82g M	2.5	8am	✓	✓	onto full strength
Lunch			2:30pm	✓	✓	firm syringe
evening			9pm	✓	✓	w/ tubing
4/16	62g M 60g M 57g F 62g F	2.5	8am	✓	✓	tubed
			2:5	✓	✓	lapped
			8pm	✓	✓	tubed
4/17	62g M 62g F 65g F	2.0	7am	✓	✓	tubed

Date	Weight (grams)	Formula (cc)	Time	U	D	Notes
4/19	62g M 67g M 57g M M M F	2.0	8am	✓	✓	+ Benbac de hair
			1pm	✓	✓	
			2:5	✓	✓	
			8pm	✓	✓	Benbac & Bio Spun
4/20	78g M 72g F 71g F 71g F	3	8am	✓	✓	Ben & Bio lapped
			8:30	✓	✓	
			3:30	✓	✓	
			9pm	✓	✓	
4/21	82g M 82g M 86g F 86g F	2.5	7am	✓	✓	Isabel
Isabel			8:30	✓	✓	Ben & B
			8:45	✓	✓	50% + form

Patient Name: \_\_\_\_\_ Age: \_\_\_\_\_ Patient Name: \_\_\_\_\_ Age: \_\_\_\_\_  
Gender: \_\_\_\_\_ Gender: \_\_\_\_\_

## HOW DO BABIES COME INTO OUR CARE?

- Orphans: from tree cutting or clearing land
- Public calls: “I found a baby eating my cat food”
- Hurt or mom killed by finder’s dog/cat
- Dead mother on side of the road
- Separated from mom: by predators, cars, or they fall off the mother
- Veterinarians: receiving babies found from the public
- Trapped by wildlife removal service



AND HOW WE GET ADULTS?



# REHABBERS GOLDEN RULE

**#1: WARM**



**#2: WEIGH**

**#3: HYDRATE**



**#4: FEED**

## WEIGHING YOUR BABIES

- ✓ Example of a good weighing station
- ✓ Weigh your baby daily to track growth and to determine how much to feed.
- ✓ Stimulate first, then weigh
- ✓ Your opossums should gain or maintain weight daily.
- ✓ Dramatic weight loss could be a red flag
- ✓ When weighing older opossums, use a hermit crab box to contain them temporarily while weighing





# HYDRATING

## How to Determine Dehydration:

- ✓ Skin turgor/tenting skin
- ✓ Sunken Eyes
- ✓ Yellow or No Urination
- ✓ Pale & dry mucous membranes
- ✓ Scaly skin
- ✓ Dirt in and around mouth
- ✓ Listlessness/lethargic

**Severe dehydration is  
life threatening.**



## How to Hydrate:

- ✓ Orally and Subcutaneously (SubQ)
- ✓ Home made hydration fluid, FV Electrostat, Pedialyte, Lactated Ringers Solution (LRS), (always warmed up), etc.
- ✓ SubQ for severe dehydration or for those who have difficulty swallowing oral fluid
- ✓  $\% \text{ dehydration} \times \text{Body weight in grams} = \text{ml needed in 24 hours}$ , try to give hydration every couple hours for the best results
- ✓ Monitor urination/amount and color

# FORMULAS

There are many different powdered milk replacers to choose from. These are the two brands that are most common. Reconstituting your powders correctly is crucial to ensure that you get the best nutrition for your babies. Using the “simple approach” instructions on the package labels can result in formula with up to 25% dry powder still undissolved, which can affect both GI function and nutritional availability.

Check out [ewildagain.org](http://ewildagain.org) to learn more about powdered milk replacers, how to correctly reconstitute and nutritional needs for your species.


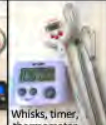
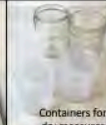




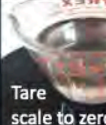


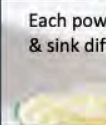
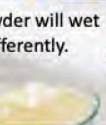






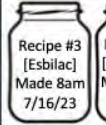
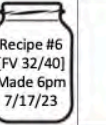




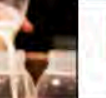
Download their formula calculator and learn how to use it!



# PREPARING YOUR MILK REPLACER POWDER



## 'Quick Guide' - Formula Preparation Steps Using 2 Milk Replacer Powders

<b>Set-up</b>	Clean hands & workspace. Gather tools & recipe.	 Gram scale, mixing containers	 Whisks, timer, thermometer	 Containers for dry measures	List your other tools:   
<b>Weighing</b>	Remove only amt of powder needed from fridge. Break up clumps. Warm powder to $\approx 70^{\circ}\text{F}$ .	 #1 Weigh each separately	 #2 gf	 Use fork, strainer, sifter to disperse.	 $\approx 70^{\circ}\text{F}$
<b>Water</b>	Weigh specific amount of water for each powder. Heat water to $110\text{-}130^{\circ}\text{F}$ .	 Tare scale to zero	 grams	 $110\text{-}130^{\circ}\text{F}$	
<b>Powders</b>	Pour powder on warm water. Wait 5 min. for wetting/sinking.				 5 min
<b>Whisking</b>	Hand whisk for 5 min. Strain/mash large clumps back into the formula. Cool (room temp).			 5 min	 $\approx 70^{\circ}\text{F}$
<b>Resting</b>	Label formula containers. Rest in fridge for 8 hours.	 Recipe #3 [Esbilac] Made 8am 7/16/23	 Recipe #6 [FV 32/40] Made 6pm 7/17/23	 $40^{\circ}\text{F}$	 8 hrs
<b>Combining</b>	Combine formulas & other liquid ingredients. Ready to use or store for later.		Storage of combined leftovers ( <i>unheated</i> ).		
		 $40^{\circ}\text{F}$	Up to 72 hrs (after 8 hr. rest).	 $0^{\circ}\text{F}$	Up to 2 mos

## HOW TO GET TO FULL STRENGTH FORMULA

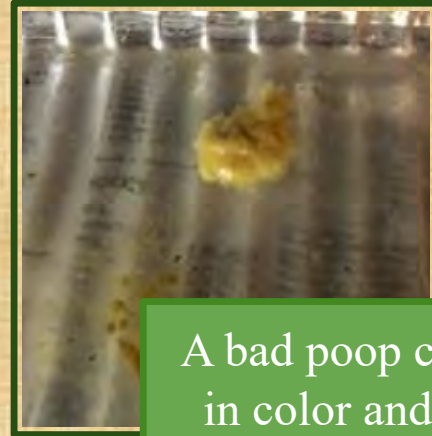


- NEVER give full strength formula on a new intake
- Work up to full strength formula VERY slowly (the smaller the baby, the slower you go)
- Start new intakes with hydration fluid only, to flush out their system
- Move to 25% formula/75% water.....and so on.....
- Never dilute formula with LRS or hydrating fluids
- Back off strength if signs of diarrhea
- Avoid overfeeding if tubing - slow weight gain is OK  
(.05 x weight(g) = cc's)
- Keep watch on color and consistency of poop

## GOOD POOP VS. BAD POOP



A good poop will look like it came out of a tube of toothpaste.  
Dark green to brown in color.



A bad poop could be light in color and very loose.  
Light or white poop indicates that your baby is NOT absorbing its food.

# TUBE FEEDING

- Opossum babies do not have a sucking reflex, and so for this tube feeding is needed for babies until they are lapping.
- Tubing may NOT be for the beginner opossum rehabilitator
- After rehabbing for a period of time, ask an experienced rehabber to train you to tube feed.
- Special tubes and supplies are needed to successfully tube a baby. The tubes you see here are the clear umbilical catheters
- Tube Sizes: 2.8 and 3.5 single lumen. Never use the red tubes, they are barbaric and stiff – they are double lumen and cause damage to the esophagus and can aspirate small babies
- Always Strain formula to prevent clogs

YouTube Video of tubing an opossum:

<https://www.youtube.com/watch?v=WkBAQpn3AyE>



## FEEDING SCHEDULE FOR OPOSSUMS

Best guideline for calculations:  $.05 \times \text{weight} = \text{cc's}$

WEIGHT in GRAMS	FREQUENCY and APPROXIMATE AMOUNT OF CC'S	TOTAL AMT. of CC's per DAY	NOTES
25g-30g	Every 3 hours= 6 times a day 1.00 cc to 1.50 cc	6-9cc a day	Tube feed
30g - 45g	Every 3 hours=6 times a day 1.50 cc to 2.50 cc	9-15cc a day	May begin lapping from syringe. If not, continue tube feeding
*30g - 40g	<i>Babies should eat easily from a syringe</i>		
45g- 60g	Every 4-5 hours=5 times a day 2.50 cc to 3.00 cc *Learning to lap from a dish	10 to 15 cc a day	*Make sure babies are eating enough from a dish. Syringe feed those that need topping off
*45g- 60g	<i>Start teaching babies to lap formula from a dish. Continue to tube feed until babies show interest in lapping. Wash and refill dish 4-5 times in 24 hours.</i>		
60g - 70g	Every 6 hours = 4 times a day 3.00 cc to 3.50 cc	12 to 14cc a day	Keep fresh formula available at all times. You may need to refill bowls more often until you figure out how much your group will eat a day.
70g - 80g	Every 6 hours =4 times a day 4.0cc	16 cc a day	Keep formula available
80g - 90g	4 times a day 5.0cc	20cc a day.	Keep formula available
90g - 100g	3 times a day 6.0cc	18cc a day	Keep formula available
100-300g	When babies are lapping well from a dish, begin the opossum pudding on the next page. <b>Have a separate dish of crushed dry Purina Beyond dry dog food available at all times.</b> Give fresh water morning and night.		
300-400g	Begin to withdraw pudding and introduce opossum stew (recipe on following pages) and solid foods...veggies first, protein with bone, yogurt and a very small amount of fruit (treats), etc. See suggestions for solid food on next page. Continue to have dry dog food available at all times. Give fresh water morning and night.		

## TUBE FEEDING A PASSEL

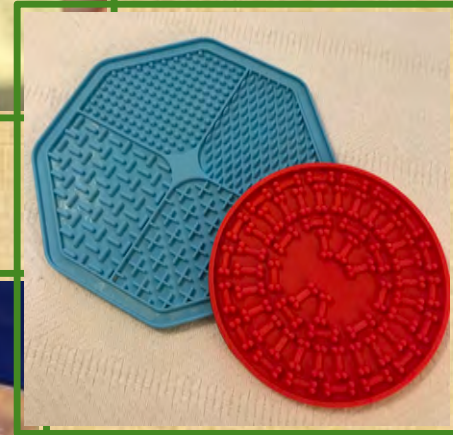
- Use a 2 bin system to place babies that have been fed
- Mark your babies to be able to tell them apart
- Always stimulate before and after feeding
- Always weigh each baby each day to track their development





## TEACHING TO LAP

- When they can walk, they can start to lap
- You can start them lapping from a syringe
- Use a Lick Pad or low dish, lets them walk thru formula to get it on their feet
- Offer a cut up apple or banana to start them licking
- Mix applesauce in with a little formula
- Offer yogurt
- Rub formula on their mouths/faces
- They will clean each other off

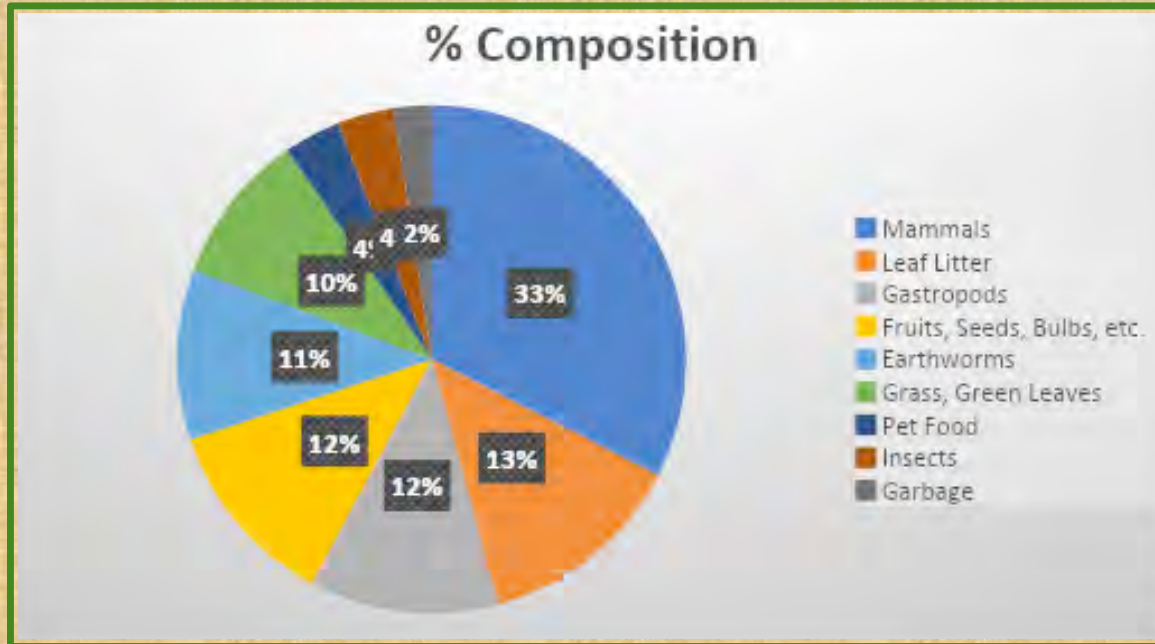


## SPECIAL DIETARY NEEDS

Opossums have very unique dietary needs. They are omnivorous, consuming both animal and plant material. In the wild they do eat almost anything, but sometimes that is all that is available to them. When in captivity, we can do better. Their diet needs to be taken very seriously. They must have a certain amount of calcium and phosphorous in the diet with a specific calcium to phosphorous ratio (Ca:P). The desired ratio is 1.5:1. How do you navigate this? There is NO commercially available diet correctly formulated for the opossum. So I will try to break it down for you with different foods and recipes to raise healthy, happy babies.



# FOODS FOUND IN WILD OPOSSUMS



## AFTER FORMULA: POSSUM PUDDING

### Possum Pudding:

Introduce around 100 grams  
(to be mixed in blender)

- 1 cup FV 25/30 powder + 2 c hot water
- 1 raw egg with shell
- 1 small jar chicken baby food
- 1 Tbls. plain yogurt (carrageenan free)
- ½ cup dry dog food (soaked in water)
- 1 cup veggies (start with one and gradually add a variety of veggies)



**Helpful tip:** Pour leftover pudding in  
ice cube trays and freeze until you  
are ready to use them

# POSSUM STEW

## Possum Stew:

Introduce around 300 grams  
(to be mixed in blender)

- 2 cups water
- 1 raw egg with shell
- ½ c. plain yogurt (carrageenan free)
- 1 cup dry dog food (soaked in water)
- 1 cup veggies (start with one and gradually add a variety of veggies)
- 3 raw chicken thighs, skin removed with bones OR 1/3 sleeve of frozen ground chicken with bone (2 lb. sleeve) (Blue Ridge Chicken w/bone)



**Helpful tip:** Make large batch and freeze in containers to be thawed as needed

# TYPES OF DRY FOODS



**GUARANTEED ANALYSIS:**

Crude Protein (Min)	26.0%
Crude Fat (Min)	16.0%
Crude Fiber (Max)	4.0%
Moisture (Max)	12.0%
Linoleic Acid (Min)	1.4%
Calcium (Ca) (Min)	1.0%
Phosphorus (P) (Min)	0.8%
Zinc (Zn) (Min)	150 ppm
Selenium (Se) (Min)	0.35 ppm
Vitamin A (Min)	14,000 IU/kg
Vitamin E (Min)	150 IU/kg
Omega-3 Fatty Acids* (Min)	0.30%
Omega-6 Fatty Acids* (Min)	1.60%
Bacillus coagulans* (Min)	.600 million CFU/lb

\*Not recognized as an essential nutrient by the

**GUARANTEED ANALYSIS**

Crude Protein (Min)	34.0%
Crude Fat (Min)	15.0%
Crude Fiber (Max)	2.0%
Moisture (Max)	12.0%
Linoleic Acid (Min)	1.4%
Calcium (Ca) (Min)	1.0%
Phosphorus (P) (Min)	0.9%
Zinc (Zn) (Min)	150 mg/kg
Selenium (Se) (Min)	0.35 mg/kg
Vitamin A (Min)	10,000 IU/kg
Vitamin E (Min)	100 IU/kg
Taurine (Min)	0.15%
Omega-6 Fatty Acids* (Min)	1.5%

\*Not recognized as an essential nutrient by the AAFCO Cat Food Nutrient Profiles.



# SOLID FOODS: DO'S AND DON'TS

## Do's:

- Raw chicken with bone, chicken necks
- Smelt, whole fish
- Feeder mice or cockerels, quail
- Bok choy, collard greens, kale, mustard greens, arugula, dandelion greens, broccoli, cauliflower, zucchini, cucumbers, mushrooms
- Yogurt, cottage cheese, mozzarella cheese
- Avocado in moderation
- Livers and hearts in moderation
- Pumpkin
- Raw or cooked eggs, scrambled with formula
- Cooked or raw sweet potato
- Crickets, mealworms, etc. from pet store
- Fruit in moderation – PAPAYA-good choice

## Don'ts:

- Cooked chicken bones
- Processed meats
- Beef or pork
- Insects/worms/etc. from the wild
- Processed foods: pasta, bread, cereal, etc.
- Food high in sugar
  
- NO MEAT WITHOUT BONE, EVER

# CAUSES OF DIARRRHEA

- Overfeeding or feedings too close together is the most common cause
- Overheating from heating pad or hot/humid air temperature
- Overall stress
- Formula too hot or too cold
- Old formula
- Wrong formula (can't digest)
- Lactose intolerance
- Changes in the milk formulas by manufacturer
- Parasites
- Antibiotics
- Introducing too many solids too quickly
- Unsanitary feeding utensils or bedding



Over Feeding



## STRESS IN OPOSSUMS



Possoms do get stressed. Stress significantly contributes to increased morbidity and mortality. It can cause their immune system to be compromised, opening them up to illness and injury. Cannibalism and self mutilation can be caused by stress. Weight loss, panting and pacing, excessive preening, diarrhea, and aggression.

- Try to prevent stressful situations
- Don't overcrowd
- Don't house them in a high traffic area of your home or yard
- Provide enrichment to reduce boredom while in your care

## COMMON MEDICAL ISSUES TO WATCH FOR

**Metabolic Bone Disease:** if you notice your opossum is not moving right:

- Crouching “walking on eggshells”
- Decreased appetite
- Bent crooked limbs
- VERY painful AND preventable

**Cuts or wounds:**

- Can be just a cut or wound from something sharp in the enclosure
- Can also be flesh eating bacteria (necrotizing fasciitis, dermal septic necrosis)
- Can start with differing symptoms – skin issues, abscesses, limping, or lethargy, etc.

**In all of these cases, separate your opossum from others and seek medical advice.**

**Bloat:** when abdomen is distended.

- Very tight abdomen. Can't poop or pee. Take very seriously. Stop feeding and seek medical advice.

**Aspiration Pneumonia:**

- From aspirating formula into the lungs.



# METABOLIC BONE DISEASE (MBD)

## What is it?:

- A serious disease resulting in severe crippling or death. Affects the skeletal system, making it weak and causing severe pain that prevents the opossum from being able to move properly

## What causes it?:

- Poor diet: Deficiency in calcium, vitamins A and/or D, which leads to bone calcium loss.
- Common when untrained “good Samaritan” wants to keep an opossum as a pet

## Reversing MBD?

- If MBD is caught early enough, it can be treated and reversed. The diet must be corrected and supportive care offered (pain management). Feed a high quality, balanced diet with sufficient calcium and a proper Ca:P ratio.
- Offer daily sunlight...
- Opossums are NOT always releasable after recovery

# FLESH EATING BACTERIA (FEB), NECROTIZING FASCIITIS(NF) AND DERMAL SEPTIC NECROSIS(DSN)

## **What is it?:**

- DSN and NF are both forms of FEB. A bacterial infection in the bloodstream that affects the extremities like the feet, tail tips and ears. NF is the more aggressive and can blister and abscess within minutes. Can affect multiple organs such as heart, liver, kidneys and skin

## **What causes it?:**

- Not always clear how they contract it. Streptococci bacteria is found in the soil and on skin Somehow finding its way into the blood stream through a cut or scratch on the opossum's skin
- Compromised immune system (stress sometimes a factor)

## **Symptoms?**

- Early symptoms: loss of appetite and weight. Limping or dragging a limb
- Red spot or ulceration on skin. Crispy ears on edges, red tail tip. Hemorrhage under nails
- swelling of extremities

## **Treatment: (always separate from others)**

- Treatable if caught early with strong antibiotics, fluid therapy

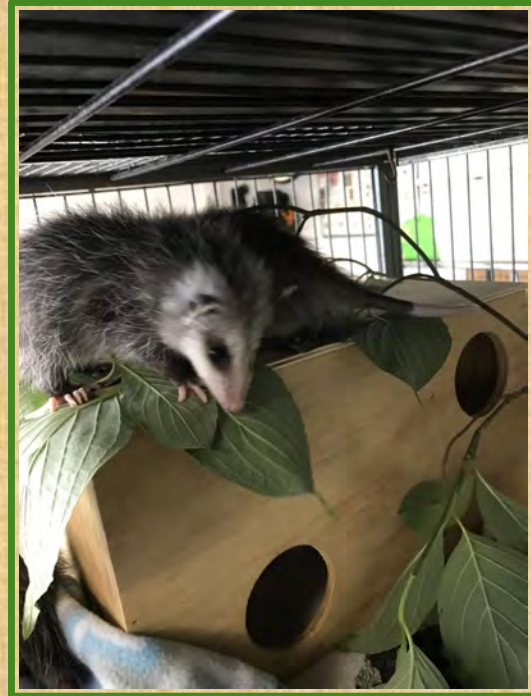
# CONGESTIVE HEART FAILURE AND PARASITES IN OPOSSUMS

The lives of opossums are tough. Their lives are short. Two common causes of death besides trauma is congestive heart failure and parasites. In rehab, we can help with both. Diet and exercise (common sense for opossums and humans), but very important. And treating for parasites during rehab and before release will definitely give them a good start.

- Feed a heart healthy diet, foods high in taurine (amino acid). Helps regulate blood pressure and improve heart function. Has antioxidant and anti-inflammatory properties. Helps build and repair tissue. (shell fish, fish, dark meat chicken or turkey, eggs) and/or taurine supplement
- Treating for parasites: Possums in rehab should be dewormed during rehab and before release. A topical such as Revolution (Selamectin) is a good choice. Monthly treatment for adult fleas, flea eggs, flea larvae, heartworm, hookworms and roundworms.
- Treating Adults for Parasites: When receiving an adult “wild” opossum, we can assume they will have parasites. A fecal can help to determine treatment, but if that is not an option, we can deworm, deworm, deworm!! Panacur (fenbendazole) is a good choice. It is safe and can handle a lot of different worms. Roundworm, hookworm, whip worms, tape worms and lung worms. 50mg/kg. Heavy load: treat for 14 days, 2 weeks off, then treat for 3 days. Repeat every 2 weeks if needed. Monitor closely...

## HOUSING STAGES OF CAGES

**Always size  
appropriate, Always  
hidey/nest boxes,  
Never overcrowd!!**



# CARRIERS AND TOTES



# INDOOR HOUSING

## Infant Housing: Phase 1

- ✓ Small tub with mesh lid or Incubator
- ✓ Ravel free light colored fleece, don't use terry cloth towels
- ✓ Keep 1/2 of tub sitting on top of a heating pad on lowest setting  
Heating pad must NOT have "Auto" shutoff
- ✓ Provide pouch type fleece for babies to burrow in/fleece hat





# INDOOR HOUSING

## Phase 2 Housing:

- ✓ Large tub with mesh lid
- ✓ Raise in groups of 3 or more if possible. They rely on the resources of the “litter” mentality.
- ✓ Provide plenty of space to hide/nest boxes, limbs to climb, and explore
- ✓ Provide heating pad until they can thermo-regulate
- ✓ Give plenty of natural sunlight
- ✓ Introduce small food bowls
- ✓ Introduce potty pan (shallow dish with water)
- ✓ Introduce an exercise wheel – if they can walk, then can run on a wheel



# INDOOR HOUSING

## Phase 3 Housing:

- ✓ Large indoor cage: Critter/Ferret Nations are a good choice
- ✓ Larger nest boxes with fleece
- ✓ 2 ½ - 3” diameter hardwood branches for climbing
- ✓ Newspaper for lining cage (No cedar chips)
- ✓ Small food bowls for offering more solid foods
- ✓ DO NOT mix babies over 100 grams
- ✓ DO NOT overcrowd babies. Make sure there is plenty of room to move around, climb, and sleep
- ✓ Babies can be moved outside once they reach 400-500 grams and are eating solids



# OUTDOOR CAGING

- Requirements: 4'x4'x8' for a release cage – ½" wire mesh with a solid roof
- Pick a shady area of yard with some filtered sunlight
- Secure release cage to ground or nearby tree
- Provide solid footing - no bare mesh on floor or on shelves
- DO NOT overcrowd
- Provide plenty of branches for climbing
- Provide plenty of hiding places/nest boxes/leaves/rotten logs/moss
- Place nest box high in cage with ramp or branches for access
- Use leaves or straw for bedding (no hay, cedar or wood chips)
- 3+ weeks minimum in outdoor release cage
- 2.5-3.0 lbs. at release



## OUTDOOR CAGES



4x4x8 Release  
Cage



8x8x8 Release  
Cage

# POTTY PANS

Lapping babies over 45 grams can be litter trained with a potty pan. This makes clean up easy. They will continue this practice through release.

Choose a shallow dish that cannot tip over and is large enough for the opossum to stand in. Ceramic or glass pans work well.

TIP: you can add apple cider vinegar to potty water. This will:

- Keep bacteria from growing
- Is a natural probiotic (they might drink from this pan)
- Once outside, the vinegar solution kills mosquito larvae
- Browse local thrift stores for these pans



# PARASITE CONTROL



- Always keep your cages clean
- Use clip on fan to help blow bugs away from food or feces
- Use food grade diatomaceous earth around base of cage
- Use vinegar solution in potty pans for mosquitos
- Treat opossums and/or cage for fleas
- Ants can be a major problem when possums are outside. Place food bowl inside a larger dish with water - This moat will keep ants away
- Feed only at night
- DO NOT use bug spray on opossums or around their cage



# CLEANING CAGES

- Chlorhexidine solution and water
- Simple Green is an easy and safe cleaner to use on cages
- White vinegar and water solution can also be used to spray down and clean cages and is safe for animals and the environment.
- Diluted bleach and water
- Spray and scrub down cages with cleaner – hose off
- Leave out in the sunshine to dry



# FOOD ENRICHMENT

With any animal in captive care, for short term or long term, it is important to offer some nutrition and entertainment from the outside, and to be creative with what you have all around you. Cage enrichment should be provided indoors as well as outdoors. Change or rotate the items daily. Drastically reduces boredom.

Enrichment foods: Feed them live food items when possible:

- Feeder mice/mealworms/crickets/smelt/whole eggs with shell/cockerels/snakes/chicken with bone
- Letting them forage for their food – hide it in their cage
- Hang food from branches or side of cage

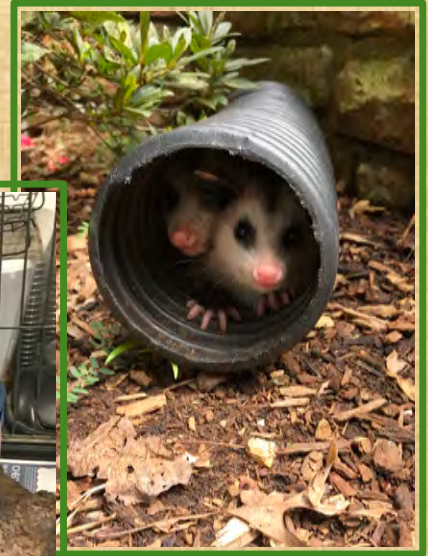




# LET THEM PLAY!



- Give them tunnels to hide in
- Provide a bowl of dirt
- Utilize their senses - touch & smell



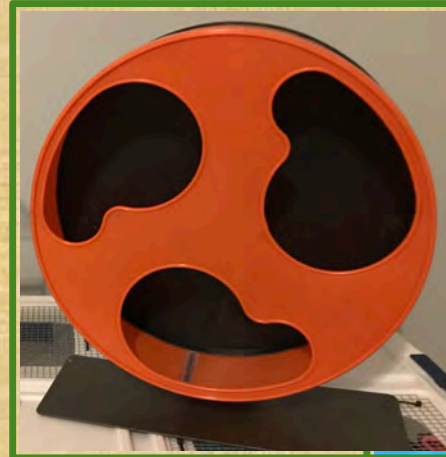
# EXERCISE WHEELS



Bad



Good



Better



Best



## MORE ENRICHMENT IDEAS

Think of items you can put in their cage that will stimulate smell, taste, sounds, touch and sight. Things they can chew on, carry around, dig in, etc. Introduce natural elements from the yard or woods.

- Corn husks, pieces of bark, leaves, rocks, tree branches with moss, lichen or leaves, bamboo, pine cones, grass, sunflower seeds, snake skin, coconut shells, sea shells, turtle shells, flowers, sand, feathers, deer antlers, moss, grass, stumps, hollow logs,

Items from around the house:

- Cinnamon sticks, paper towel and toilet paper tubes filled with treats, tennis ball, cat toys, rope, hammocks, hang a fleece hat



Taking them out  
into the fresh air  
and sunshine  
to explore



## BEING MINDFUL: NORMAL OPOSSUM BEHAVIOR

- ✓ Sleeping all day
- ✓ Active at night
- ✓ Small bites that do not hurt/”tasting” your fingers
- ✓ Climbing on branches, sides and ceiling of cages
- ✓ Eyes that “pop” or bulge out of head
- ✓ Washing their hands and face
- ✓ Hissing or sneezing sound when small, clicking when older, low growl when upset
- ✓ Gaping when approached



## BEING MINDFUL: ABNORMAL OPOSSUM BEHAVIOR

- ✓ Excessive shaking (hypocalcemic, neuro, lead poisoning, head trauma)
- ✓ Loss of appetite
- ✓ Gagging or coughing/regurgitating
- ✓ Spinning or walking in circles (Head trauma)
- ✓ Unable to stand upright, falling over
- ✓ Can't walk
- ✓ Dragging a limb
- ✓ Being aggressive towards other opossums



## GENERAL SANITATION



- Always wash your hands before and after handling your opossums
- Wash all food and water bowls with hot soap and water
- Wear gloves when treating an injury or cleaning cages
- Change out branches and nest boxes often
- Change out and wash fleece in dye free, unscented, natural detergent
- Do NOT bath your opossum unless they really need it.....

# PREPARING FOR RELEASE

- Should be acclimated to the outdoors for at least 3 weeks
- Should be at least 2.5 to 3 lbs.
- Minimize your contact with them. They should be gaping or freezing when you approach
- Feed and clean cages when they are sleeping
- Hide the food in their cage and let them find it. Feed whole prey foods
- They should be healthy and free of injuries
- Eyes should be clear, bright and alert
- They should be treated for fleas and parasites prior to release day
- They should be able to run, climb and grip easily and quickly
- Check for 3 or 4 days of good weather before releasing
- Location, location, location! Release location needs to be away from roads and close to a water source. Preferably a non-residential area away from humans/dogs/cars
- Can you release in the same site that they were found (this is ideal)?
- Feed them on the day of release
- Release at dusk or evening
- Throw some kibble around the release area and go back if possible periodically to leave food.
- When to abort the release. And try on another day...







# MISCONCEPTIONS ABOUT OPOSSUMS AND WHY WE REHAB THEM?

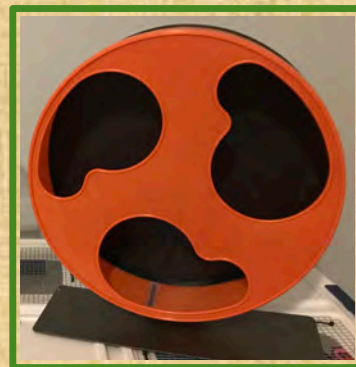
- They are NOT related to rats
- They do NOT smell bad, they are very clean
- They do NOT attack humans
- They will NOT attack your pets
- They will NOT chew their way into your house or shed
- We all know, they will NOT give you rabies
- They are so misunderstood and often mistreated by humans.
- We rehab them, because they need us! Millions are killed every year by cars, pets and other predators.
- Let's change how the public feels about them, one person at a time  
(start with your neighbors)



“Nice to have”



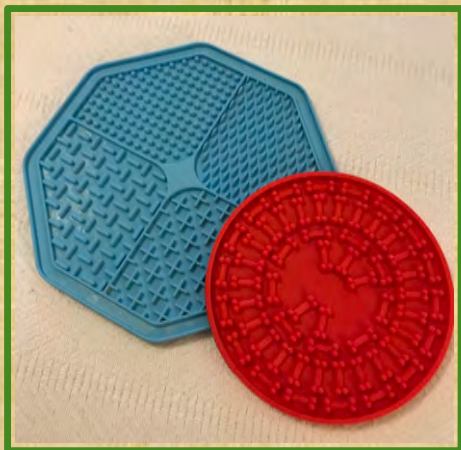
**Niteangel hanging hammock**



**Silent Runner 12” Wheel**



**.009 Guitar string**



**Udorich Dog/Cat Lick Pad**



**Rechargeable hand warmer**



**Silicone ice cube w/ lid**

**Saving one opossum won't change  
the world, but it will change the  
world for that one opossum!!**



## THINGS TO THINK ABOUT??

- Do I have the time to dedicate to the babies in my care?
- Will I make sure I don't take on more than I can handle?
- Will I get attached? Will I be able to release them when it's time?
- Is there someone I can reach out to for help/guidance?



The reason opossums have survived 75 million years  
is because God made them perfect!!



The numbers are the ratio of calcium to phosphorus (Ca:P)

### GOOD VEGGIES

COLLARD GREENS	14.5:1	beta-carotene
TURNIP GREENS	4.5:1	beta-carotene
ARUGULA/ROQUETTE	3.1:1	beta-carotene
BEEF GREENS	2.9:1	oxalic acid beta-carotene
DANDELION GREENS	2.8:1	beta-carotene
BOK CHOY	2.8:1	
KALE	2.4:1	beta-carotene
PARSLEY	2.4:1	oxalic acid beta-carotene
MUSTARD GREENS	2.4:1	beta-carotene
SPINACH	2.0:1	oxalic acid beta-carotene
WATERCRESS	2.0:1	
SQUASH - SPAGHETTI	1.9:1	
ENDIVE/ESCAROLE	1.9:1	
CELERY	1.7:1	
LEEKS	1.7:1	
CABBAGE/GREEN&RED	1.5:1	
SQUASH - BUTTERNUT	1.5:1	beta-carotene carbs/sugar
BROCCOLI RAAB/RAPPINI	1.5:1	
CILANTRO/CORIANDER	1.4:1	
OKRA	1.3:1	oxalic acid
RADISH	1.3:1	low nutritional value
GREEN LEAF LETTUCE	1.2:1	beta-carotene
SWISS CHARD	1.1:1	oxalic acid
ROMAINE LETTUCE	1.1:1	
TURNIP	1.1:1	low nutritional value
SQUASH - ACORN	1.0:1	carbs/sugar

### FAIR VEGGIES

GREEN BEANS	1.0:1	oxalic acid
CARROTS	0.9:1	low end carbs/sugar beta-carotene
PEAS - SNOW/SUGAR	0.9:1	carbs/sugar
RUTABAGA	0.8:1	carbs/sugar
BROCCOLI	0.7:1	
CUCUMBER	0.7:1	
BRUSSEL SPROUTS	0.6:1	carbs/sugar
SWEET POTATO	0.6:1	oxalic acid/carbs beta-carotene
PEPPERS/BELL-GRN,YLOR	0.5:1	nightshade carbs/sugar
CAULIFLOWER	0.5:1	
PARSNIPS	0.5:1	carbs/sugar
PUMPKIN	0.5:1	low end carbs/sugar beta-carotene

### RISKY VEGGIES

BEETS	0.4:1	oxalic acid carbs/sugar
ASPARAGUS	0.4:1	
ZUCCHINI	0.4:1	
SUMMER SQUASH	0.4:1	
RED TOMATOES	0.4:1	nightshade
PEPPERS/BELL-RED	0.3:1	nightshade carbs/sugar
PEAS/GREEN-GARDEN	0.2:1	carbs/sugar

### EVIL VEGGIES

CORN - DRIED	0.07:1	phosphorus high carbs/sugar
MUSHROOMS	0.03:1	phosphorus vitamin D
CORN - RAW	0.02:1	phosphorus/selenium high carbs/sugar
WHITE POTATOES	-	phosphorus/carbs nightshade

#### FOODS WITH RED TEXT WARNINGS SHOULD BE GIVEN IN MODERATION

**Phosphorous** - Mammals require a delicate balance of 2 parts calcium for every part phosphorus in order for their bodies to function properly. The smaller the animal, the more delicate that balance is. Too much phosphorus or too little calcium in the diet causes MBD (Metabolic Bone Disease). The number one cause of MBD is too many nuts.

**Oxalic acid** - (oxalates) impedes the absorption of calcium by binding the mineral. When calcium is bound, the body cannot use it, negating any calcium the vegetable contains. As little as 125mg can kill a small squirrel, but much less can cause kidney issues.

**Nightshade** - foods in the nightshade family contain alkaloids (solanine). These can cause a host of digestive and immune diseases.

**Carbs/Sugar** - although the carbs and sugars in vegetables are the good kind, squirrels cannot process them in large amounts.

**beta-carotene** - acts as an antioxidant which helps fight against disease. The body converts beta-carotene to Vitamin A, which is important for immune system function, vision, cellular communication, and more. Veggies containing this nutrient are important because foods rich in the natural form of Vitamin A, we would never feed to a squirrel, like liver, fish and dairy.

**Vitamin D** - normally squirrels get their Vitamin D from the sunlight, but some indoor squirrels may require extra in the diet to compensate. Please note that mushrooms do not contain enough Vitamin D to outweigh the extremely high levels of phosphorus, so give sparingly.

The numbers are the ratio of calcium to phosphorus (Ca:P)

### GOOD FRUITS - all fruits contain carbs/sugar

PAPAYA	4.8:1	
KUMQUAT	3.3:1	
ORANGE	2.9:1	
TANGERINE	1.9:1	
PINEAPPLE	1.6:1	
GRAPEFRUIT - WHITE	1.5:1	
BLACKBERRIES	1.3:1	
GRAPEFRUIT - PINK/RED	1.2:1	beta-carotene
CHERRIES - SWEET	1.1:1	cyanide

### FAIR FRUITS - all fruits contain carbs/sugar

KIWI	1.0:1	
MANGO	0.9:1	beta-carotene
PEAR	0.8:1	cyanide
RASPBERRIES	0.8:1	
STRAWBERRIES	0.7:1	
CHERRIES - SOUR RED	0.6:1	cyanide
CRANBERRIES	0.6:1	
WATERMELON	0.6:1	
CANTELOUPE	0.6:1	beta-carotene
APPLE - NO SKIN	0.5:1	cyanide
APRICOT	0.5:1	beta-carotene cyanide
HONEYDEW MELON	0.5:1	
BLUEBERRIES	0.5:1	
GRAPES	0.5:1	

### RISKY FRUITS - all fruits contain carbs/sugar

PERSIMMON - JAPANESE	0.4:1	
GUAVA	0.4:1	
POMEGRANITE	0.3:1	
PEACHES	0.3:1	cyanide
AVOCADO	0.2:1	high fat content persin
PASSIONFRUIT	0.1:1	

### EVIL FRUITS

BANANAS	-	sticky food carbs - NO!!
RHUBARB LEAVES	-	toxic levels of oxalic acid - NO!!

### GOOD NUTS/SEEDS/OTHER

SESAME SEEDS - WHOLE	1.4:1	
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### FAIR NUTS/SEEDS/OTHER

ALMONDS	0.5:1	
HAZELNUTS	0.4:1	
MACADAMIA	0.4:1	
WALNUTS	0.3:1	
PECANS	0.2:1	
BRAZIL NUTS	0.2:1	selenium

### EVIL NUTS/SEEDS/OTHER

BITTER ALMONDS - RAW	0.5:1	cyanide - NO!!
PEANUTS (legumes)	0.1:1	phosphorus aflatoxin
SUNFLOWER SEEDS	0.06:1	phosphorus
CASHEWS/PISTACHIOS - RAW	0.06:1	phosphorus urushiol - NO!!
PUMPKIN SEEDS	0.03:1	phosphorus
PINE NUTS	0.02:1	phosphorus pine mouth
CHESTNUTS	-	aflatoxin
ACORNS	-	aflatoxin
PEANUT BUTTER	-	sticky food phosphorus NO!!

**Cyanide** - Seeds/pits of some fruits contain a compound called amygdalin, which breaks down into hydrogen cyanide when metabolized. A dose as low as 1/3 of a milligram could be enough to kill a small squirrel. Don't take chances, always remove seeds and pits. Raw bitter almonds also contain cyanide, but it is destroyed during the heating process, so buy roasted if you aren't sure.

**Aflatoxin** - Some nuts like acorns and chestnuts have a permeable shell and they can take in moisture. This causes a mycotoxin to build up (aflatoxin). Babies raised in captivity will not have the instinct to pick out a tainted one, so take measures to ensure they are safe.

**Persin** - a deadly toxin found in avocado pits, leaves, skin and bark.

**Urushiol** - a toxic resin found in raw cashews/pistachios. The process to eliminate this toxin is rigorous and not always successful, so even the roasted ones carry a risk.

**Selenium** - Brazil nuts are high in selenium and a build up can cause a toxicity called selenosis which can cause cardiac failure.

**Pine mouth** - an unknown compound in pine nuts may cause a metallic taste in the mouth affecting taste buds for up to 3 weeks. Other side effects include loss of appetite, diarrhea and discomfort.

**Rhubarb** - an unknown toxin along with oxalic acid levels so high as to make rhubarb leaves toxic, even to humans. NO!!

**Sticky foods** - sticky foods such as peanut butter and bananas, as well as foods that compact such as bread and crackers, can cause obstructions, and are serious choking hazards for squirrels.