

1. "When Rocky's Down for the Count!"

Squirrel Ailments



by **Linda Bergman-Althouse,**

lbergmanx@gmail.com

MS EdPsy, EDS, DDI, NVTI

NC State Certified Wildlife Rehabilitator
 Current WRNC Board Member
 Wildlife Rehabilitators of
 North Carolina, Inc. (WRNC)
 OWLS Alumna, Newport, NC

2. Knowing the Squirrel. The squirrel is a misunderstood mammal. They are rodents and some people's first impression is, they are vermin. We, as wildlife rehabilitators, know that is not the case. However, the squirrel is still a wild and capable animal that can do you harm if precautions are not taken when treating them. **Safety to the rehabilitator** is a primary concern along with **minimizing stress to the squirrel.**

Squirrel Ailments:

Infant: (common)

Fleas, Aspiration, Over-feeding, Hypothermia, Ant Bites, Sucking, Dehydration, Emaciation

Adult:

Injury / Attack, Bot Fly, Mange, Poisoning, Malocclusion, Metabolic Bone Disease, Squirrel Pox, Burns



3. Infant Squirrel Ailments

A. Fleas: A bath in warm water with baby shampoo usually is enough to kill fleas on baby squirrels. Keep the baby's head above the water and gently trickle the shampoo bath water on the face making sure you cover all areas. It is not recommended to use flea dips. Fleas in quantity can make a baby squirrel anemic, hurting chances of survival.

B. Aspiration:

Occurs when feeding too much too fast. Formula gets into the lungs causing swelling, inflammation, and bacterial growth. Ultimately, you will hear a clicking sound when the baby breathes. This can be fatal. Stop feeding regular formula and go to Pedialyte® for at least 12 hours and put the baby on an antibiotic for 7 days. Hopefully, he/she will pull through. Try to be careful when feeding, if baby is snorting formula through the nose, you are feeding too fast. Aspiration is usually a human caused affliction.



C. Over-Feeding:

It takes about 5 minutes for the brain of a baby squirrel to register the food in the stomach. During this time, he will act like he is starved even though you have fed the correct amount. Most people overfeed because of this. Overfeeding will lead to bloating and diarrheal problems. You can usually tell by the color of the stool. It will be runny and light yellow or light orange. If you keep overfeeding, you will kill the baby. Reduce to half of what you were feeding. It usually takes 24 hours for diarrhea to stop. After the diarrhea stops, increase 1/10th of 1 cc as the feeding amount. Continue for 24 hours.

Proposed Formula Feeding Schedule:

To ensure you do not create a Squirrel Ailment (i.e., emaciation, diarrhea, obesity, etc.) please go by a schedule and try to stick to it. There will be some unique squirrels who are “free spirits” or who have injuries that will require a few adjustments, but most will thrive with a set feeding plan.

- Up to 2 weeks: every **2 hours from dawn to dusk-.5 cc**
1 to 2 weeks: every **2 hours** -.75 to 1 cc
2 to 3 weeks: approx. every **3 hrs** – usually # of cc's in weeks of age
3 to 4 weeks: every **3 hrs** - 3 or 4 cc's
4 to 7 weeks: every **2.5 - 3 hours**
7 to 9 weeks: approx. every **3 hours** with introduction to solid foods
9 - 10 weeks: all they want - **3 times a day**, reducing gradually to none
10 - 12 weeks: should start rejecting formula



Consider FV Ultraboost addition for “failure to thrive.”



“The Squirrel in me recognizes the squirrel in you!”

3. Infant Squirrel Ailments (cont.)

D. Hypothermia: Their body temperature has dropped due to exposure to cold weather. Internal organs start to shut down if low body temperature is prolonged. The baby must be warmed slowly back to normal temperatures.

Do not attempt to feed a cold baby!

E. Ant Bites: If your squirrel has ant bites, wash off with warm water and put salve on. You can give vitamin C (25 mg.--4 times a day) before each feeding for several days. If you suspect or see fly eggs or maggots, remove those immediately before they hatch into maggots. Use a flea comb, dry toothbrush, or fingernails to remove eggs. Bathing these areas in warm water may inactivate any missed eggs. Soaking clumps of fly eggs in baby oil for a few seconds helps with flea-comb removal. Remove maggots with tweezers (if only a few). If there are larger areas, use Adam's Flea Mist on cotton ball and press onto area to kill maggots. Wash wound with warm water on cotton ball and apply antibiotic to area two or three times a day until wound has healed.



F. Hurricane Babies



Notes:

Notes:

She is there – watching you!

After checking to see if they are not injured, step away from the babies, and Momma will move them to an alternate nest.

3. Infant Squirrel Ailments cont.

G. Suckling: Sometimes there will be a baby that wants to suckle on their brother or sister or themselves. When baby squirrels are with their mother, they can nurse all day. When they are fed with a syringe, there is not as much time to quell the urge to suckle. If you encounter this problem, try allowing the baby to suckle on the syringe even though you are done feeding. Eventually, the baby will tire and go to sleep. Coat penis with aversive deterrent. (i.e. Bitter Apple or YUK, anti-lick barrier)

H. Only Child: Baby Squirrels need to be raised with other baby squirrels. Make every effort to search out a buddy. Young squirrels readily accept other baby squirrels, even if their ages are not exactly matched. Baby squirrels raised with other baby squirrels bond to each other, learn from each other, and rely on each other for warmth, play and companionship not only during rehabilitation but after release as well. Please understand that it is vitally important to the squirrel's proper socialization and eventual release into the wild that it be raised with other squirrels. It must learn the social "etiquette", the "language" of being a squirrel. A baby squirrel raised alone without other baby squirrels has a greatly reduced chance of a successful release.

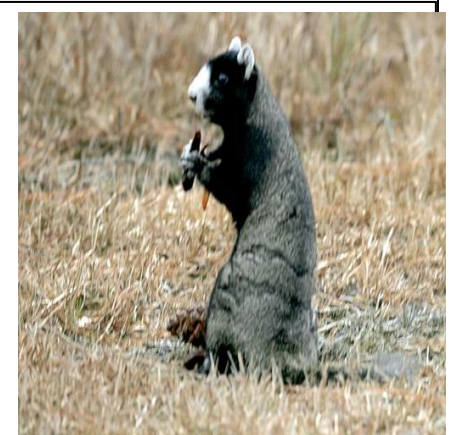


I. Dehydration: Very common when animals first arrive. To test for dehydration, lightly pinch the skin over the shoulders. If it stays tented for a couple of seconds then the animal is dehydrated and fluids must be replenished. It is always best to assume that any orphan baby is dehydrated to some degree. Pedialyte is a very good hydrating solution to use. Find it in pharmacies or grocery stores in the baby aisle. Don't use a solution with more than 2.5% dextrose for initial hydration. (Lactated ringers solution also good). Before feeding formula, feed it a few meals of Pedialyte. Don't be in a hurry to feed other foods. Squirrels that are dehydrated can't digest foods well and may become very sick or die if food is given too soon.

J. Emaciation: Very common with squirrels that have been orphaned for a full day or two. The Squirrel will be very thin and weak. Hydrate with Pedialyte every fifteen minutes for the first hour. Transition slowly to ½ esbilac Formula and ½ Pedialyte mix. (Some use ensure and Pedialyte ½ mix), which is easy for baby to digest. Then gradually introduce full formula. Don't rush the process. **DO NOT OVERFEED an emaciated squirrel**, even if they want more. They will be in a feeding frenzy to replace all they have missed, but you must use restraint and cut them off. It will be a death sentence if you don't.

4. ADULT - Squirrel Trauma:

A. Injury and /or Attack Injury (falls, hit by car, shot) If trauma has occurred within 24 hours, an anti-inflammatory nonsteroidal med (i.e. metacam) is recommended to reduce spinal and brain swelling. Following a severe head injury, conscious squirrels may have to be hand-fed because their limbs don't function well; muscle coordination is poor. If a squirrel is clipped by a car and thrown, he will have road rash. If it is severe, use lidocaine 10 mg/ml before cleaning wound. Flush wound with sterile saline, then iodine to remove dirt & road debris. Administer antibiotics. Use triple antibiotic ointment with pain reliever on wound. If eyes are also injured, you can use Terramycin ointment. Apply with a q-tip gently and directly to eye. Due to the stress of captive care, some lose their appetite temporarily, so you need to carefully feed them a liquid supplement with a syringe. They can regain their strength through this procedure.



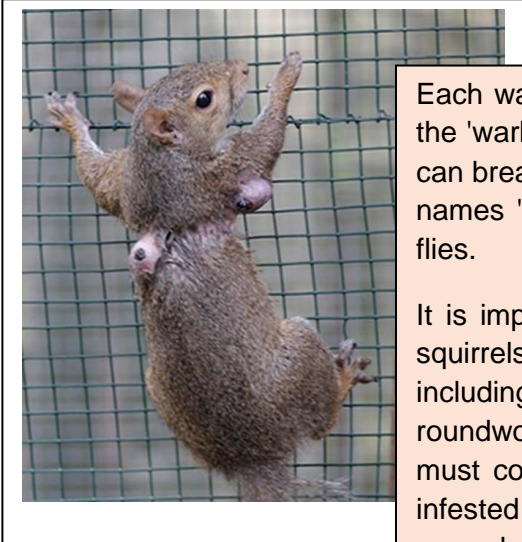


If Squirrel has been caught by a cat, dog or hawk:

It must receive antibiotic treatment (i.e. Baytril) within a few hours or the bacteria on a cats teeth may cause it to develop fatal septicaemia. Attack wounds can develop abscesses requiring surgical opening and draining, along with antibiotic therapy. These wounds have to be kept open & flushed to facilitate healing. You may find jaws that need wiring, broken limbs, and comatose patients. **Don't give up on them! Look for maggots in old wounds. Properly assess for injuries. Treat for shock (Dark,Warm & Quiet). AND DEFINITELY keep squirrel patient away from cats, dogs, ferrets, parrots, pet skunks, raccoons, fox, coyote, bear cubs, pelicans, mountain lions - so on.**

B. Bot Fly (Cuterebra emasculator) -

"Lumpy squirrels" are a common sight during mid and late summer in Eastern and Midwestern North America (from Canada to Florida). The Bot Fly, a natural parasite of eastern gray, red squirrels and fox squirrels (flying squirrels very rarely), live under the squirrels skin and produce these nasty swellings or "warbles."



Each warble typically **contains only one larva** and at its tip is an opening, the 'warble pore', which is cut through a squirrel's hide by the larva so that it can breathe and excrete liquid. The terms 'bots' and 'warbles' give rise to the names 'bot flies' and 'warble flies' for these and closely related species of flies.

It is important to realize that bot flies are a natural part of the ecology of squirrels, along with many other parasites that are not so readily apparent, including fleas, mites, and internally living species such as tapeworms and roundworms. Parasites are one of many natural factors with which a squirrel must cope. We should generally "let nature take its course" with squirrels infested with bots. After the larvae exit, the skin shrinks and returns to normal.

However, if an injured adult squirrel is admitted that also has bots, the best approach would be to extract the larvae. This would remove one source of stress on the squirrel so it can better cope with its other injury. Bots in orphaned infant and juvenile squirrels in the care of a rehabilitator should also be removed, because the stress of the larvae could hamper the growth of the baby or prove fatal.



C. Mange (Notoedres douglasi Sarcoptes scabiei)

Mange is a term commonly used to describe the obvious signs of a burrowing mite infestation on an animal host. Mites are tiny, 8-legged arthropods, related to ticks and spiders. Mange starts on the ears and around the eyes, usually, and the skin in squirrels' balding spots will be raw and look rough. Mange mites burrow into the skin of animals and feed on subcutaneous tissues. The site of the infestation becomes irritated, itchy and results in scratching by the host animal and ultimately, hair loss. Very little can be done to help them, unless you can catch the squirrel and apply repeated applications of an insecticide (i.e. Adams Flea & Tick).



Mange (Notoedres douglasi Sarcoptes scabiei) cont.

Like other natural afflictions, mange has been said to be nature's way of eliminating weak individuals, thinning populations so only the healthiest survive. Most animals can tolerate 'some' mites, but when they become severely infested it causes anemia and the animal may die. So a high protein, high fat diet may be his only salvation unless someone can trap and treat him. Administer liquid Ivermectin to infestees. It can be given on a pecan or walnut and the squirrels don't seem to mind the taste.

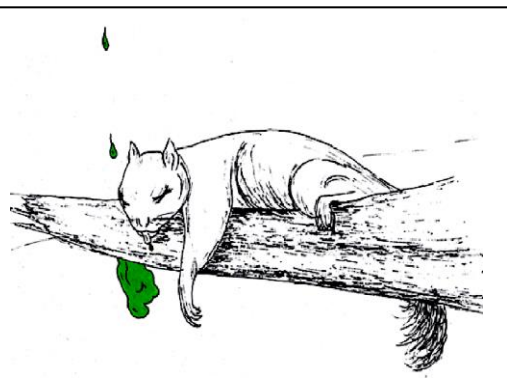
Severely infested squirrels show distinct signs of poor health, and mange has proven fatal to wild animals in numerous instances. Mange appears to be a contributing factor, if not a primary one, in squirrel mortalities in cold weather. Sarcoptic mange mites are known to transfer from animal hosts to people, so persons handling any mangy animals should take reasonable precautions: wear rubber gloves if possible, and always wash promptly after handling a diseased animal. Freezing kills the mites; therefore it is best to freeze carcasses that are collected for examination. Notoedric mites are not transmissible to humans.



“A wildlife rehabilitator helped me recover from mange!”

They can and do recover frequently when treated.

D. Poisoning



Toxicity, such as a hypersensitivity to pesticides (lawn sprays), due to chemicals or intentionally placed rodent poisons cause:

- Weakness; upper limbs; hands
- Generalities: pain; intolerable
- Hemorrhage (use Materia Medica (Kent) or Phosphorus)
- Mind: restlessness, nervousness; general
- Mind: anxiety

Treatment: Administer Vitamin K (shot initially) and fluids. 2 mg/kg at least once or twice daily orally for at least four days to thirty days (Or homeopathic medicines such as Arsenicum album)

Factors influencing treatment success:

- There is a short window to be able to successfully treat toxins – effective help must be made available quickly.
- Appropriate medicine and dosage must be administered.
- The animals were still in good enough condition to enable recovery.

E. Malocclusion

The length and quality of life a squirrel will enjoy is hugely dependent on the health of its teeth. The prominent characteristic of rodents is the presence of upper and lower incisors that grow continuously throughout their lifetime. As a result, a squirrel must gnaw on hard objects such as nuts, bone or wood to keep their teeth worn down. If this is not done, a condition called malocclusion occurs. Squirrels cannot eat or drink properly because teeth (usually incisors) are not properly aligned. The teeth over grow because they do not meet and can not be ground down through normal wear. The teeth grow so long, they can grow through the cheek or roof of the mouth.

Without treatment, the result is death due to starvation, because overgrown incisors prevent the squirrel from chewing, swallowing or closing their mouth properly. Malocclusion can also be caused by a cleft palate or a falling injury when young. Sneezing and sniffing are indications of malocclusion.



Squirrels' teeth do not have nerves just like human hair and fingernails, so they do not feel pain when you trim their teeth properly.

Treatment plan: Incisors should be trimmed and filed biweekly as needed. If squirrel is still unable to grind down teeth on his/her own, incisors could be removed. (not if released to wild)

Trimming Squirrel Teeth

Ready your tools: (sharp, straight edge clippers, Dremel tool or emery board, wooden dowel or orange stick, towel wrap, Safety glasses (for you, not the squirrel), leather gloves & anesthesia such as Sevoflourine if Necessary. Wrap your squirrel like a burrito (velcro closures work very well) and cover his/her eyes.

**Don your safety glasses before you begin to trim teeth.
(Pieces of teeth will fly)**

Notes:



Malocclusion (cont.)

Insert wooden dowel into mouth as shown to protect tongue and mouth. (behind the teeth and on top of the tongue with dowel protruding out both sides of mouth)

Upper incisors: should be 1/8 to 3/16" below gumline. (Infants-white, Adults-Orange)

Lower teeth: should be 1/2 to 3/4" above gumline.

Trim one tooth at a time with a quick snapping motion and be careful **not to create a vertical fracture** when using your clippers.

File teeth: When you use straight edge clippers and clip cleanly, there should be little filing needed. A dremel tool with a mild filing bit can be used,

but I prefer an emery board. **Safer** for the squirrel is no anesthesia and use of emery board.

Give squirrel lots of things to chew (sterilized dog bones, cuttle bone, unshelled nuts, pieces of wood, nutritional rodent blocks, pumice stone or deer antlers). Ensure proper nutrition with lots of calcium.



F. Metabolic Bone Disease

Metabolic Bone Disease (MBD) is a deficiency of calcium in a squirrel's diet, so it's most often caused by improper diet where too many of the wrong nuts (hazelnuts, almonds, brazil nuts) which are low in calcium, were provided. Vitamin D, which under normal circumstances the body produces on its own (needing sunlight to do so), is vital to the body's ability to absorb calcium. Sun received through windows and window screens is not adequate because these filter the important UV rays necessary for this to take place. Calcium is also needed for all organic functions, including heart, respiration, blood circulation, muscle and eyesight. So – ignorance, diet and not enough sunlight cause Metabolic Bone Disease. Educate the public – **squirrels should not be kept as pets.**

Some of the signs of MSD are excessive sleeping, not wanting to move around or jump and climb, activity levels decline, lethargy, sometimes a drop in appetite, sometimes labored breathing, increasing in severity to seizures and or paralysis, then death if not treated. MBD is painful. The bones and muscles become weak and the squirrel is in pain. Swollen joints and improper bone growth (legs splayed in or out) are signs of MBD's progression. In more drastic cases there are seizures and lack of use of the back legs.



Metabolic Bone Disease can be PREVENTED with proper diet / nutrition & sunlight.

G. Squirrel Pox



Squirrel pox, or squirrel fibroma is a viral disease that produces multiple tumors on the skin of gray and fox squirrels. It belongs to the pox group of viruses which produce rabbit fibromatosis, rabbit myxomatosis, hare fibromatosis and some deer fibromas.

These **tumors are presumably all caused by a virus**. Although the natural history of the virus is not known, mosquitoes have transmitted it from squirrel to squirrel in the laboratory. It is probably transmitted by insects in nature as well. The tumors develop at the site where the insects feed. Tumors may be scattered over all the body and range in size from a few mm to 25mm in diameter. Metastasis to the lungs, liver, kidney, and lymph nodes has been reported. Can spread through animal-to-animal contact, contaminated feeders, mosquitoes. In general, there are no obvious signs of illness in naturally infected squirrels except for the presence of the tumors over the skin. In severe cases, when vision is obstructed or the skin becomes secondarily infected, the animal may be less active, weak, and eventually die.

Note: The disease is of no public health significance. The virus is not transmissible to humans.

Grey squirrels rarely die from this disease because the population has developed immunity having been exposed to the virus for many years; however, they are still carriers of the infection and can spread the disease to **red squirrels**. Pox in red squirrels causes skin ulcers, lesions and scabs with swelling and discharge around the eyes, mouth, feet and genitalia. The squirrels become increasingly lethargic, largely due to a failure to feed, as the virus progresses further resulting in death generally within 15 days.

Notes: Conversation with a Wisconsin Wildlife Rehabber: "Yes, it looks awful, but it can get cleared up, go away and they will be back to their little squirrel selves. For cases that aren't too bad, I use manuka honey, colloid silver and coconut oil mixed together and massage all over the affected area 2 times a day for the first 3 days, then I switch to silver sulfadiazine and as it continues to clear up, I'll go back to the honey, silver & coconut mix. For really bad cases, I'll start with some Baytril. While the Pox is clearing up, I build their immune system with a full dietary plan. Load them up with everything nutritionally sound. Remember, Pox is viral, so make them healthy from the inside out!!"

SQUIRREL POX cont.



American Red



British Red



Treatment: Isolation

Zovirax is a treatment for pox.

Acyclovir is the generic name for "Zovirax" which is a trade name. It's available in liquid suspension, capsules, tablets, ointment and a dermal cream. Suspension is available only in a 200mg/5ml strength and is administered orally.

Zovirax is an antiviral drug. It slows the growth and spread of the herpes virus so that the body can fight off the infection.

Or you can opt not to medicate and **isolate squirrel** to minimize the spread of pox to squirrel population, and let the pox run its course. (wild squirrels – gold seameal & almond butter to boost immune system)

H. BURNS: Burn depth determines the degree and severity.

1st degree: outer layer of skin, skin is red and painful, no blisters, dry in appearance, heals in 3-5 days

2nd degree: blisters, upper layers of skin, wound is pink, painful and wet. Healing 10-21 days

3rd degree: All layers of skin destroyed, very little pain, scarring present, surface leathery texture



Treatment: minor burns (neosporin, antibiotic cream kills germs/bacteria, pain relief & minimizes scarring.) **3rd degree:** treat for shock, clean & warm environment, Silver Sulfadiazine Cream USP 1%, do not cover burned area with anything other than cream.

Questions?

**Thank You For
Caring
&
Keep In Touch!**



Linda Bergman-Althouse
WRNC Board Member
lbergmanx@gmail.com Jacksonville, North Carolina