

RAISING INFANT TREE SQUIRRELS



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In California we have quite a few different types of squirrels including ground squirrels, flying squirrels and tree squirrels. We have two main types of tree squirrels and this manual will deal with these two types. The first is the Fox squirrel (*sciurus niger*) which originated on the east coast and was brought to the west coast. It is now legally considered a native squirrel by Fish & Game. The second is a true native squirrel the Western Grey squirrel (*Sciurus griseus*).

Description

The Fox Squirrel is a large tree squirrel with a light blonde to dark red underbelly and a brownish, greyish upper body. There are also black and blonde color phases of Fox squirrels. The tail is a little less than half of the squirrels total length and has banded hair of black and red. They have lighter colored fur around their eyes and cinnamon colored feet. External measurements (average): total length 522 mm (20-21"); tail 245 mm (9-10"). Weight 600-1300 gms (1.75 - 3 lbs) (Davis 1978)

The Western Grey Squirrel is a large tree squirrel with a white underbelly and a dark grey, silver upper body. The tail has banded hair of black and grey tipped with silver/white. They have white colored fur around their eyes and dark grey feet. External measurements (average); total length 460-580 mm (18-23"); tail 250 mm (9-12"); Weight 340-960 gms (.75 lb - 2.12) (Hartson 1999) I personally have found our local Grey squirrels to be larger than our local Fox squirrels.



Fox Squirrel



Western Grey Squirrel

Habitat

Fox squirrels are found all over California. They do well in all types of trees including palm trees. They have even been known to live in people's attics and bird houses. They have no problem living right alongside mankind near busy streets and in backyards. Western Grey Squirrels are also found throughout California but generally in the less populated foothill areas in larger trees.

Breeding

Fox squirrels generally breed twice a year. The peak breeding seasons are May through July then again December through February. Gestation is about 40-45 days. The average litter is 3-4. They open their eyes around 5 weeks of age, begin to climb around the nest tree around 7-8 weeks and venture onto the ground

around 12 weeks of age with mom by their side. They are generally on their own in the world around 4 months of age. Sexual maturity is reached from 10-12 months of age.

Western grey squirrels can also breed twice a year but seem to breed just once a year especially in colder parts of California. They mature at about the same rate.

Aging characteristics

The following can be used as a guideline for estimating the age of infant squirrels for the purpose of feeding and care.



0 - 1 week



1 - 2 week



2 - 3 week



3 - 4 week



4 - 5 week



5 - 6 week



6 - 7 week



7 - 8 week



10 - 12 week

Newborn - 1 week

Fur: None. Bodies are pink and hairless for first week. By the end of the first week there may be progressive darkening of the pigmentation on the head. The underside will remain pink.

Eyes: Tightly shut, bulgy black eyes which can be seen through almost transparent lids. Eye slit is not discernible.

Ears: Tightly pinned to side of head, hairless and pink.

Umbilical cord: Cord will be present as a small black dot on their belly up to the 10th day when it sloughs off.

Weight: Approximately 10-15 gm at birth.

1-2 weeks

Fur: Pigmentation starting to turn dark starting at the head and spreading down their back to their tail.

Eyes: Eye slit becoming more defined.

Ears: Begin to unpin from side of head by end of second week.

2-3 weeks

Fur: Furring is evident, hairs stick out on tail. Increased peach fuzz furring down back and tail. Blonde fur begins to appear on underside.

Eyes: Eyelids turning a brown color. Eye slits well developed. Eyeballs less bulgy.

Ears: Unpinned, may look floppy, developing hair.

3-4 weeks

Fur: Richness of coat all the way down from the top of the head to the tail; long silky blonde hairs on abdomen. Underside of tail is not furred. More active.

Eyes: Well developed eyes showing more natural appearance. Eye slit is relaxed and look ready to open. Eyes open around 4-5 weeks average.

Ears: Ears well developed and normal looking

Teeth: End of third week, lower incisors have emerged.

4-5 weeks

Fur: Thicker fur all over, tail begins to get a little bushy

Eyes: Open but sleepy looking. Generally open one at a time.

Teeth: Upper incisors evident around 5-6 weeks. Adult squirrels will have 22 teeth, 4 incisors and 18 molars.

Activity: Begin to walk awkwardly, still sleeping a lot.

5-6 weeks

Wide eyed look, very active, can grasp food. 5th week may try to sit up on its haunches very clumsily. By 6th week may be able to sit and walk more coordinated, can curl tail over it's back, begins to clumsily dart and hop around.

6-7 weeks

Starts to climb, upper teeth more evident, may start to shred hard food, stands easily, will attempt to hold food.

7-8 weeks

Coat is fuller, full eyesight and hearing, able to chew and swallow foods, very active, walking, darting, climbing around the cage, sits up to hold food.

10-12 weeks

Coat should be well developed with a bushy tail though the fur on the underside of the base of it's tail will be bare. Can hang upside down, grooms more, playing, wrestling, pouncing on cagemates. The tail should be fully furred by 12 weeks. Dislikes handling, will refuse formula, time to move to the larger pre-release cage.

Baby squirrels size and weight vary greatly so place more weight on characteristics.

Sexing baby squirrels

The photo below shows the differences between female and male baby squirrels. The vulva of the female is located low near the anus. The penis of the male is located higher up below the umbilical cord.



Substitute baby Diet

There is no greater subject of controversy among squirrel rehabilitators than diet. What one rehabber thinks is the best diet another will call lethal poison. Therefore I will offer up a few well known and widely accepted substitute diets. I suggest you use the best diet for your individual squirrel as some squirrels may be allergic to some ingredients while others may thrive on that same ingredient. If your otherwise healthy baby is not gaining weight, has diarrhea, is extremely bloated, gags or vomits, you might want to try another diet. If he is urinating, defecating, growing properly, you are doing the right thing. I still recommend Esbilac unless your baby is not thriving, then use another formula from the formula section in the back.

Below is a chart of some milk analysis just to give you an idea of the variation

Type of milk	Solids	Fat	Protein	Carbohydrates	Kcal/cc
Eastern gray					
Ben Shaul	28	13	9	3	1.64
Jeness & Sloan	40	25	7	4	2.67
Nixon & Harper	25	12	9	3	1.57
Milk 3.3% fat	12	3	3	5	0.61
Goats milk, fresh	13	4	4	5	0.7
Evap. milk can	12	4	4	5	1.06
KMR liquid	18	5	8	5	0.8
Esbilac 1:2	15	7	5	2	0.9
Esbilac 1:1	30	14	10	4	1.8

There are many other brands of formulas and recipes. Some mix hydrating fluids with formulas instead of water, some add collustrum powder, organic egg yolks, honey, glucose, vitamin and mineral powders, calcium powder, rodent block dust or whipping cream. I personally use Esbilac puppy milk by PetAg just because it's widely accepted by rehabilitators, easily available and comes in a powdered formula for easy storing and mixing.

Some rehabbers suggest using rodent blocks for 80-90% of the post weaning diet supplemented with fruits, vegetables and small amounts of nuts and seeds (Hanes, 1998). Some also suggest monkey chow or Zupreem biscuits. These processed food items which have the precise nutrients that squirrels need make feeding large numbers of babies easier but some believe natural diets are better. Please speak with other rehabbers, share your ideas politely and find the diet that's best for you and your squirrels.

Dehydration and fluid therapy

Always allow a newly arrived squirrel to reach a normal body temperature before giving any fluids or food. The squirrels organs cannot process food or fluids until they are warmed. If food or fluids are given to a very cold squirrel, they will not have the energy to process it and may die.

Assume all squirrels are dehydrated upon arrival. These are some signs of dehydration: pale, grayish gums, dry mouth, sunken eyes, whites around eyes showing, rough, spiky fur, dry scaly skin.

Some rehabbers use the "tent test" to check for dehydration. Gently pinch a small amount of skin between two fingers to form a tent. If the skin quickly goes back down, the squirrel is hydrated. If the "tent" is still evident after a second or two, the squirrel is dehydrated. This is not always reliable with baby squirrels because they go through a wrinkly stage where they look like Sharpei puppies. Be sure to look at all indicators and don't rely on any one indicator to test for dehydration.

Oral administration of fluids is the easiest and fastest way to re-hydrate. Subcutaneous (Subq) injections of fluids should generally only be done if the animal is unable to swallow. Subq can cause additional stress to an already stressed animal. Legally you must consult a veterinarian for guidelines on the amounts of fluids to be injected and the frequency. Do not tube-feed or gavage an infant squirrel. You can introduce fluids orally even in an unconscious squirrel with proper technique. Place one drop at a time on the tongue of the squirrel and wait for the swallow reflex action.

I personally believe the best hydrating fluid to give to a warmed baby is Lactated Ringer's Solution for the first few feedings. You can get Ringers from your local veterinarian. Pedialyte, Gatorade and other over the counter hydrating solutions can have too much sugar or dextrose which will actually cause more dehydration. Do not use a solution with more than 2.5% dextrose for initial hydration. You can use these fluids for hydration maintenance after they are fully hydrated. Make sure all hydrating fluids and formulas are first warmed so they feel warm to the touch but never hot, about 100-102 deg. F.

Introduction of formula

A baby should never instantly be fed full strength formula. This can cause digestive problems because it is not exactly the same as mothers milk or the baby may not have eaten in quite a while and not yet able to process foods. After he is warmed and hydrated you should slowly introduce formula mixed with the hydrating formula over a days time gradually increasing the ratio of formula to hydrating solution until the baby is on full formula. I suggest the following ratios for a warm and hydrated baby.

Feeding 1 100% hydrating fluid

Feeding 2 75% hydrating fluid 25% formula

Feeding 3 50% hydrating fluid 50% formula

Feeding 4 25% hydrating fluid 75% formula

Feeding 5 100% formula

If the squirrel develops bloat, diarrhea or constipation, go back to hydrating fluid only then slowly try to introduce the formula again, this time more gradually. The stools when feeding Esbilac formula should be golden-yellow, firm and well formed. If they become whiter or loose, cut back on the amount of formula until the stools are well formed again. If the baby has diarrhea for over 24 hours, consult a veterinarian. Initially the stools of a baby may be dark which is the normal stool color if fed mothers milk or the goats milk recipe.

Feeding instruments

You can use an oral syringe (without a needle) to give fluids orally to a squirrel. I suggest a 1/2 cc syringe for pinkies (with or without a nipple depending upon your preference and the squirrels), 1 cc syringe for squirrels 2-4 weeks of age and 3 cc syringe for all other squirrels for initial hydrating purposes. You can use up to a 5 cc syringe to feed larger older babies. I do not recommend any larger as it's easy to aspirate babies especially with larger syringes if they're real hard sucklers. It's better to fill up a few 3 cc syringes at a time then one 5 cc or larger syringe.

If using a nipple, I suggest the catac nipple. If feeding a very small newborn pinkie squirrel, one can use a tom cat catheter attached to the end of the syringe to control the amount of formula better. I do not suggest using pet nursers/bottles because it's more difficult to control the amount of formula. Everyone should use what works best for them and their squirrels. See appendix for where to find these supplies. Below are photos of various feeding instruments.



Feeding technique

While holding the baby upright but leaning slightly forward with the oral syringe angled slightly upward and forward to form a 90 degree angle with the baby, you can place the tip of the oral syringe right to the babies lips then gently and slowly squeeze one drop for them to taste. (Photo below) When babies are 4 weeks of age and older they may prefer to lie prone on their stomachs while grasping the syringe in their paws. They may start to make suckling, licking or lapping motions with their mouths and tongue then you can slowly squeeze out more drops of fluid. Do not squeeze out a regular stream, instead squeeze a tiny bit then allow them to swallow that amount before squeezing more. With pinkies I go drop by drop because they are so easy to aspirate, i.e. to take fluids into the lungs by suction. If they become aspirated, they can die of pneumonia without proper treatment. Proper treatment is the use of antibiotics, generally Clavamox liquid. With older babies I will squeeze fluid slowly for one second, let them swallow that, then squeeze more. If fluids dribble out the mouth or come out the nose, you are going too fast. If fluids come out the nose, stop feeding immediately, hold them upside down for a few seconds, blot their nose with dry tissue paper then let them wait a few minutes before resuming feeding.

If the baby does not immediately suck, lick or lap the fluid, you can gently place the tip of the syringe into their mouth. It's sometimes easier to enter from the side of the mouth especially if they already have teeth. Then gently squeeze out a drop of fluid into their mouth for them to taste. It sometimes takes a feeding or two for them to catch onto the new feeding method.



Feeding amount and frequency

The following chart should be used as a guide for feeding baby squirrels. A good rule of thumb for maximum volume amount to feed per feeding session is 5% of the squirrel's body weight in grams (Sedgwick et al. 1988). This is approximate maximum stomach capacity. One half to 3/4 of the maximum is a safe amount to feed. Be sure to weigh your squirrel frequently to be able to adjust the amount of food needed and make sure that it is

gaining weight. You can weigh them using a postal scale.

Age	# daily feedings	Frequency	Type
0-2 weeks	6-8	2-2.5 hrs + 1 at night	Formula
3-4 weeks	6	3-4 hrs + 1 at night	Formula
4-5 weeks	5	4-5 hrs night optional	Formula
5-6 weeks	5	4-5 hrs no night	Formula and food
7-8 weeks	4	5 hrs no night	Formula and food
9-10 weeks	1	once a day	Formula and food

Besides maximum stomach capacity you need to consider their total daily caloric needs. One way to figure this out is by using the Minimum Energy Cost (MEC) formula which is $K \times W$ (in Kg) to the .075 power, where K is kilocalories utilized in one day by a hypothetical 1 kg specimen. Squirrels are considered placental mammals and their K factor is 70. All of this is multiplied by a factor to get their total daily caloric needs. A growing baby squirrel has a Base Metabolic Rate (BMR) of 3, sometimes 4. If they are injured or overcoming illness it will probably be 4. As this is a basic class, no need to pay attention to the math. In the back of this manual are charts which figure everything out for you based on the weight of the baby using Esbilac formula mixed 1:2 and 1:1. As you can see Esbilac mixed 1:2 with water by itself does not have as many calories per cc as squirrel mothers milk. You would have to feed almost twice as many times a day as the schedule above. Mixed 1:1 feeding the baby the maximum stomach capacity will make the number of feedings be more in line with the chart above. I don't suggest this as it may be too rich and may not provide enough fluid. This is why some people like to add whipping cream, rodent block dust and other things to the basic formula. All of these numbers, charts, recipes are merely guidelines. If your baby is urinating, defecating and growing normally, you are feeding him properly.

For proper development squirrels need the proper Calcium to Phosphorus ratio. It must be 2:1 for infants, 1:1 for adults. If the baby does not get enough calcium or not in the proper ratio, they can develop Metabolic Bone Disease (MBD). It's easy to add the necessary Calcium by grinding up Calcium tablets into dust and adding it to their food.

As soon as their eyes open and they're moving around at 5-6 weeks or so I introduce 1/2 inch square pieces of soft food such as avocado, apples and grapes. If you give them grapes, you must peel it for the little babies or the skin will get stuck in their throat and they'll gag. If you get big Globe grapes, they're real easy to peel and cheaper.

They will generally just chew on and play with their food in the beginning which is fine. If they are having a problem adjusting to regular foods you can slowly add apple sauce, pulverized rodent blocks or baby cereal to their formula to make it thicker. If using the rodent blocks, put them in a coffee grinder to turn it into dust so it doesn't stick in a syringe.

When they are around 7-8 weeks of age I start to introduce harder foods such as bits of carrot and small pieces of rodent blocks. I will also give them some shelled almonds so they can learn how to chew on things. They will generally just chew some of the food up and not eat it which is fine. When the formula feedings decrease, I increase the amount of soft and harder foods until they are totally weaned around 10 weeks or so. Then I give them breakfast and dinner of hard and soft foods. Get them used to normal squirrel feeding times by feeding them within a couple of hours after sun up and within a couple of hours before sun down. Some squirrels may refuse formula at 7-8 weeks of age, some will still beg for it at 12 weeks of age which is within the realm of normal.

Below is a list of some acceptable foods for squirrels. As with everything be sure to introduce new foods gradually and give them a varied diet. Some squirrels can get bloody diarrhea if they eat an entire walnut for the first time while others can get green soft stool from eating too much avocado. I always try to make sure that there is a little food left over so I know that they're all eating enough. Use nuts and seeds as treats only or they will get fat.

Fruits and veggies: grapes, cherries, apple, melon, tomato, avocado, butternut squash, orange, broccoli, endive, turnip greens, cucumber, okra, green bell pepper, raw corn on the cob, pear, green bean, sugar pea, sweet potato, spinach, mustard greens, carrot, carrot tops, raw soy bean, plum, banana, kiwi, mango, strawberry, strawberry tops, buck eye, blueberry, blackberry, raisin, pineapple, fig, date, peach, nectarine, apricot to name a few. Nuts and seeds: pine nuts, acorns, pine cones, sunflower seeds, peanuts, walnuts, pecans, hazelnuts; sun dried watermelon, cantaloupe, squash and pumpkin seeds. They also like fresh rosemary, fresh lavender and rose petal clippings.

Feeding tips and tricks

- Mix the powdered formulas with a fork and not a blender. The blender will get too many bubbles in the formula and they can get gas.
- Mix only the amount you will use that day. Warm only the amount you will feed that feeding session.
- Always make sure your hands are warm before handling babies.
- If the plunger of the syringe should stick, use a tiny bit of olive or mineral oil to keep it moving smoothly.
- Always clean the syringe out with hot water after each use to sterilize. I also use a pipe cleaner to clean out the hole if any formula accumulates. Let the syringe dry with the plunger out to make sure the syringe dries completely.
- When babies are eating solid foods and drinking from water bowls, use thick glass or ceramic ashtrays or crockery. Do not use plastic dishes which they will chew up.
- When feeding large numbers of babies, you can place the formula in a coffee cup on a heating cup warmer. Just be sure to keep babies away from the warmer.
- To keep track of large numbers of babies, after feeding and stimulating each baby, place it into a new container so you can be sure to feed all babies without feeding some babies twice.
- I like to put the baby on a piece of fake fur to feed so it feels more natural. I also put a little fabric under the middle of the fake fur piece so it will feel more like the natural nursing position if he were nursing on his mother. They feed similar to kittens with mom rolling over half on her back. It also makes it easier to get the syringe to his mouth properly.
- If you are feeding a lot of babies, try not to hunch down and over. Raise the feeding platform if necessary or you will get a bad neck ache.
- Learn how to refill and use a syringe with just one hand so you can always have your other hand on the baby. Never leave a baby unattended, even for a second. They can roll or crawl off the table just like human babies.

Urination and defecation

Always stimulate baby squirrels after each feeding. Some may require stimulation before feeding. If a squirrel stops eating in the middle of feeding, it may need to be stimulated before continuing to feed. Use a warm, damp cotton ball, tissue or q-tip and gently pat the genitals until urine or stool is produced. You can use a slight downward stroke above their genitals to help them produce urine. You can gently press directly around the anus to help them produce stool. Be sure they are urinating and defecating at least every other feeding. Initially they

may not produce much urine if they are dehydrated. They may not produce much stool if they were not fed for a while. Don't be alarmed if they do not produce stool the first day if they were separated from their mother for a while. Generally babies will urinate and defecate on their own soon after their eyes open. If baby does not, continue to stimulate.

Body part suckling

It's fairly common for baby squirrels to suck on the penises, vulvas, heels, knees, elbows, noses, stomachs of their litter mates. The urge to suckle is very strong. In nature mother squirrel probably lets them suckle longer than we nurse them. If you see red and inflamed body parts, they are probably suckling each other. Try to feed them more often, more slowly and longer to satisfy their natural suckling instinct. If they are older, give them some harder foods to chew and suck on. If it's just one baby which is doing all the suckling, remove that squirrel to another area. If he is suckling himself, treat his penis with petroleum jelly or neosporin. You can also spray some bitter apple on his penis which may reduce the suckling. Extreme cases of suckling may result in scabbing and blockage of the urethra. If the scab blocks the flow of urine, it must be removed. This can be accomplished by soaking the scab for 15-20 minutes with a wet cotton ball until the scab turns white and slides off easily. If the penis is just very swollen, an antibiotic ointment containing steroids such as Panalog or Animax will help reduce the swelling, so will preparation H. If the baby still cannot urinate after trying these suggestions, consult your local veterinarian for other solutions.

Caging

Minimum Fish & Game requirements for tree squirrels as per minimum standards third edition 2000 are below. Talk to your local Fish & Game warden for approval for other size or type cages.

Infant care (Litter) 10-20 Gallon	Nursing/preweaned (Litter) 20 Gallon	Juvie or adult outside (L) 4'wide x4'long x8' tall	Init. injured adult inside (1) 4'wide x6'long x4' tall
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Below are some guidelines on caging for tree squirrels. Be sure to isolate new arrivals for a few days to make sure they have no communicable diseases. This is also a good time to treat for possible parasite infestation. I use Advantage. Using the kitten formula to calculate dosage I put about two drops on the back of the neck of healthy furred baby squirrels 8 weeks of age or older. If they are younger, injured or not furred, I place two drops on their bedding instead.

Infant squirrels of the same age from different litters may be raised together. Groups of no more than four can be raised together. You should never raise a solo squirrel as they need to learn how to socialize, play and can bond too strongly to their caretaker. Call around and find someone with other squirrels of a similar age for companionship.

Keep your caging away from the sight and sound of humans and pets so they do not become too accustomed. Limit handling of the squirrels to the bare minimum for feeding and examination only. Do not talk to your squirrels. You do not want them to become bonded with you, the caretaker. You do not want them to seek out human contact when they are released. If they come up to a human after release and that human thinks the squirrel is trying to attack them, they may kill the squirrel.

Newborn - 4 weeks, until eyes open

Covered box, aquarium, tupperware container with cutout in lid for air, with a heating pad set on low underneath half of the container on the nesting side. Inside temperature should be 80-85 deg F. You can buy a

stick on reptile cage thermometer to measure the inside temperature. You can further control the interior heat by covering the top of the container with a towel and uncovering part if it becomes too warm. Also use the towel to keep the nest darkened. Use soft ravel-free, snag free, hole-free bedding. Do not use towels as their nails can get stuck in the loops. Place newspaper on the bottom of container. Change as it becomes soiled, probably every day if not twice if you have a few young babies which will urinate and defecate frequently in bed. You can layer the bedding into a donut shape and place the babies at the center of the donut.

4-6 weeks eyes open and starting to move around

Everything the same but you can also use a small wire mesh cage. When they approach six weeks they should start trying to climb the cage as they explore. Use a small open box as a nest that they can climb in and out of. They will probably start to defecate outside of their nest so make sure there is a nest area, defecation area and an eating area.

6-10 weeks or until weaned, moving around, playing and climbing

A small wire mesh cage 1/2" x 1" mesh or smaller so they don't get their feet stuck, about 2'x2'x2'. Newspaper on the bottom, wooden squirrel nesting box, hanging toys and perches to climb on. I use natural wooden bird perches attached to the sides of the cage or you can use natural wood and just wire it to the sides of the cage. Start introducing things for them to chew on such as small pieces of wood, cuttlebone, sterilized dog bones and mineral licks.

Weaned until release

Outdoor 4'x4'x8' tall cage or larger per litter. Perches, natural branches wired to the cage, hammock, platforms, walkways, toys, wooden squirrel nest boxes, food and water bowls. Top must be covered for protection from rain.



Eyes closed babies



Eyes open and crawling



Weaned juveniles

If using water bottles, make sure they are metal and glass or have "chew guards" so they can't chew plastic bottles. I use water bottles and bowls.

Be sure to check on the condition of every squirrel every day to make sure they are not being injured and are continuing to gain weight. If introducing weaned squirrels to an outdoor cage, introduce them all at once so they do not have territory issues. Make sure the squirrels are familiar with each other before introducing into a group cage.

Soon after introducing them to the outdoor cage start introducing them to natural foods which they will find where they will be released, such as acorns, pine cones, palm dates, fruits, nuts, seeds and flowers. You can just go for a walk in their neighborhood and pick up what you find or go to a local natural park and find things for them. Take this time to introduce them to fresh tree branches with leaves and attached fruit and pinecones. Leave their natural food around their cage so they can find it on their own. Give them natural bedding material such as dry grasses, leaves and palm fronds.

Release

Don't be tied to the actual chronological age of the squirrel when it comes to release. Each squirrel progresses at its own rate but they must meet a few criteria. They must be fully furred, have a bushy tail, be healthy, able to build their own nest above ground, know how to forage and compete for food, be able to defend themselves and avoid predators. They should be outside in the large outdoor cage for at least three to four weeks to become accustomed to the weather, outdoor noises, sights and sounds. Before placing them in the outdoor cage take their indoor cage out daily for a few hours so they can gradually acclimate.

As per Fish & Game regulations they must be released within two miles of where they were found. I generally ask the original finder if I can release them back where they found them. This is for genetic, disease and territory reasons. Make sure there is suitable natural food and water, trees for nesting and limited predators or nearby busy streets. Do not release them into a site where there are many squirrels or someone has been feeding many squirrels because they will probably be attacked by the native territorial squirrels. Do not release them where there are no squirrels because it may not be a suitable area.

Cut a piece of 1/2 x 1/2 inch wire mesh. Place this over the front of their nest box with the squirrels inside, overlapping the two lateral sides by one inch. Bend this mesh back along the sides. (Photo below) Wire this mesh to the nest box to keep them in their box while you transport them back to their home. Place their nest box with their bedding inside at least 10' feet up a suitable tree and secure with wire. (Photo below) Try to hide their box so they will not be disturbed. Remove the mesh covering the front of the nest box. Place a couple of days worth of non-perishable food into their box or nearby until they can find their own food supply. Try to make sure there will be a few days of good weather when you release them. Release them early in the day.



How to reunite baby squirrels:

A squirrel's real mom is the best mom. We should try to do anything we can to reunite the baby with its natural mom. That is first priority if possible in orphan wildlife rehabilitation.

We find babies on the ground after high winds and storms have knocked the nest out, after tree trimmers have

cut the nest down, if one sibling has kicked the other out because of limited milk supply, if one just fell out while playing, if one is sick or injured or if mom has died and the babies are trying to look for food on their own. If there is a chance that mom is still alive and healthy, she will most definitely try to retrieve her baby if her baby is warm and healthy.

If her baby is not warm but healthy, we must warm the baby up before trying to reunite. Mom won't take back a cold baby. She will think it is sick or dying. If her baby is injured or disabled, we must take it to our rehab facility as quickly as possible. Mom won't take back an injured or disabled baby. Be sure to thoroughly inspect the babies. Mom won't mind if your scent is on them but you could also rub dirt on your gloves from the local area before touching them just to be safe. If you have two healthy squirrels and one dead squirrel, remove the dead baby and try to reunite the other two. I've found that mom probably won't take the other two but it's worth a shot. Perhaps she can smell the scent of the other dead baby on the healthy ones?

1. Make a nest. I use small cardboard boxes a foot or so square and maybe six to 12 inches deep. I keep them in my car at all times. It's also good to have a ladder, wire, wire cutters, gloves besides your paramedic kit. I then gather some natural nest materials from the area where the baby is found. I will put leaves in the box built up in the shape of a donut with the babies in the middle. Make sure they can't climb out. If it's very sunny, put a few leaves over the babies to protect them. If they're old enough, they will pull some leaves over themselves.

2. Put nest up a tree. We must put the nest back up into the tree where the babies fell. I try to go up 8-10 feet which should be high enough to protect the baby from dogs and cats. If there are birds of prey in the area, try to hide the box in the branches. I just use wire which I wrap around the main trunk and run through the box. I don't want to put nails in the tree and damage it. If you can wedge it in the crotch of two branches, even better. It doesn't have to be perfect because unlike birds, squirrels can carry their babies in their mouths and move them. They will take the babies one by one to one of their backup nests. I've seen a mom carry an 8 week old squirrel partly in her mouth. The baby will wrap it's legs around her neck to hang on. If their tree has been cut down completely, put them in the closest tree, on a nearby tall post, on top of anything 8-10 feet tall.

3. Call mom. We must get the baby to call to its mom. I use a squirrel hunting call. I got one for \$5 online. Follow the instructions and blow it four to five times in quick succession just like a baby's high pitched peeping sound. When they call to their mom they sound like little birds going "peep peep peep peep." I also will tickle the babies under their chin until they peep. You will see most of the squirrels in the immediate area come out to see what's up. Hopefully one of them will be mom.

4. Leave immediate area. Get away from the area but stay close enough to keep an eye on them. I generally wait 2-3 hours in good weather or until dark, whichever comes first. If the baby is found late at night or in hard rain, you can take the baby to your facility, get it warm, hydrated then try to reunite it in the morning when it's clear. Mom won't approach her babies if there are people or animals around. Keep people away. Put up a perimeter with stakes, rope and a sign if it's a high traffic area.

5. Mom doesn't show. If mom doesn't show up, it's time to take action. Perhaps mom was killed, sick or there is something wrong with the baby that you just can't see. A few times I had a mom come and look at her babies and still reject them. It wasn't until the next day that I could see the problem with the babies. One had a neurological injury, the other had a knee injury.

We need to try everything we can to reunite the babies with their mom. For each one reunited, there's one less mouth to feed every 3 hours around the clock. There's also more room to care for more squirrels. As I'm sure all of us get full pretty quickly there's also one less squirrel to turn away.

Acknowledgments: I would like to thank the ultimate squirrel rehabber Anna Dresdon for her caring help with squirrels, Fish & Game warden Joseph Baima and rehabber Janet Mackenroth for their help in getting my license, and my husband for putting up with all of this.

Alternate squirrel formula recipes:

1 part Esbilac

1 part water

1 part whipping cream (for added calories and fat)

Mix Esbilac and water first, then add whipping cream slowly so it won't get bubbles and get the baby bloated

1 part Esbilac

2 part water

1/8 part rodent block dust

extra 1/8 part water

1 part Esbilac

2 part water

1/8 part MultiMilk

1 cup goats milk

1 raw organic free range egg yolk

1 tsp raw honey

1 tsp powdered colostrum

Where to buy supplies:

The Squirrel Store - Chris is a wonderful woman and also a great squirrel rehabber

Just about everything you need to do squirrel rehab

<http://www.thesquirrelstore.com>

Affordable Fish & Game size legal caging and cage making supplies

California Cageworks in Burbank

<http://www.californiacageworks.com>

Petco-Esbilac formula, nest boxes, cages, rodent block

<http://www.petco.com>

PetsMart-Esbilac formula, nest boxes, cages, rodent block

<http://www.petsmart.com>

Good reference material and material cited:

Casey, Shirley and Allan, **Squirrel Rehabilitation Handbook**

<http://www.ewildagain.com>

Hanes, PC. 2003. **Hand-rearing infant tree squirrels, Illness and injury in tree squirrels, Tunnel rats**

Can be purchased at The Squirrel Store

Hartson, Tamara. 1999. **Squirrels of the West**

Long, Kim. 1995. **Squirrels, A Wildlife Handbook**

A few local squirrel vets in Southern California

If you aren't close to these veterinarians, try to find a vet that treats pet rabbits and rats which are somewhat similar.

Dr. Kerry Beeder, Wildlife Vet
Pet Vet
Canoga Park, CA (818) 346-2455
<http://www.hotdiggedy.com/petvet/petvet.html>

Dr. Debbie Oliver, Wildlife Vet
Blue Cross Animal Hospital
Pacific Palisades (310) 454-2633

Dr. David Ridgeway, Wildlife Vet
Long Beach Animal Hospital (562) 434-9966
<http://www.lbah.com>

Wilshire Animal Hospital, Wildlife Vets
Santa Monica
(310) 828-4587

How to become a licensed wildlife rehabilitator in Southern California, Region 5

- Contact Fish & Game warden Joseph Baima jbaima@dfg.ca.gov
- Two years experience as a licensed satellite for another licensed rehabber, or a letter from a licensed rehabber stating that you've worked with them for two years
- Two Fish & Game certified classes, one being the basic 1AB class and one being in your field of study.
- Legal caging for babies and adults for the species you want to rehabilitate
- Letter from closest rehabber stating they have no problem with you having a facility near them
- Letter from city and county stating it's legally okay to rehab in your area
- (Not mandatory but good to include) Letters of recommendation, Resume, Photos of your caging

*Disclaimer: This manual is to be used merely as a guide for raising infant tree squirrels. There is no one correct way to raise baby squirrels. This manual is not meant to give veterinary advice. If you have any medical questions, please contact a licensed veterinarian. If you have any questions about whether or not it's legal for you to care for wildlife, please consult you local Fish & Game or Fish & Wildlife Department. Do not do anything suggested in this manual unless you are able to do so.

SQUIRREL FEEDING CHART
BMR x 3, Esbilac 1:2 water

Body Wgt Gms	BMR Kcal/day	BMRx3 Kcal/da	Max cc's feeding	Kcal/feeding	Feedings/day
15	3	9	0.8	0.72	12.5
20	3.7	11.2	1	0.9	12.4
25	4.4	13.2	1.3	1.17	11.2
30	5	15.1	1.5	1.35	11.1
40	6.3	18.8	2	1.8	10.4
45	6.8	20.5	2.3	2.07	9.9
50	7.4	22.2	2.5	2.25	9.8
55	8	23.9	2.8	2.52	9.48
60	8.5	25.5	3	2.7	9.4
65	9	27	3.3	2.97	9
70	9.5	28.6	3.5	3.15	9
75	10	30.1	3.8	3.42	8.8
80	10.5	31.6	4	3.6	8.78
85	11	33.1	4.3	3.87	8.55
90	11.5	34.5	4.5	4.05	8.52
95	12	35.9	4.8	4.32	8.31
100	12.4	37.3	5	4.5	8.29
105	12.9	38.7	5.2	4.68	8.27
110	13.4	40.1	5.5	4.95	8.1
115	13.8	41.5	5.8	5.22	7.95
120	14.3	42.8	6	5.4	7.93
125	14.7	44.2	6.3	5.67	7.8
130	15.2	45.5	6.5	5.85	7.78
135	15.6	46.8	6.8	6.12	7.65
140	16	48	7	6.3	7.62
145	16.5	49.5	7.2	6.48	7.6
150	16.9	50.6	7.5	6.75	7.5
155	17.3	51.9	7.8	7.02	7.39
160	17.7	53.1	8	7.2	7.38
165	18.1	54.3	8.3	7.47	7.27
170	18.5	56.6	8.5	7.65	7.4
175	19	57	8.8	7.92	7.2
180	19.3	58	9	8.1	7.16
185	19.8	59.2	9.2	8.28	7.15
190	20.1	60.3	9.5	8.55	7.05
195	20.5	61.6	9.8	8.82	7
200	21	63	10	9	7

SQUIRREL FEEDING CHART
BMR x 4, Esbilac mixed 1:2

Body Wgt Gms	BMR Kcal/day	BMRx4 Kcal/da	Max cc's feeding	Kcal/feeding	Feedings/day
15	3	12	0.8	0.72	17.1
20	3.7	14.8	1	0.9	16.44
25	4.4	17.6	1.3	1.17	15.04
30	5	20	1.5	1.35	14.81
40	6.3	25.2	2	1.8	14
45	6.8	27.2	2.3	2.07	13.14
50	7.4	29.6	2.5	2.25	13.12
55	8	32	2.8	2.52	12.7
60	8.5	34	3	2.7	12.59
65	9	36	3.3	2.97	12.12
70	9.5	38	3.5	3.15	12.06
75	10	40	3.8	3.42	11.7
80	10.5	42	4	3.6	11.67
85	11	44	4.3	3.87	11.37
90	11.5	46	4.5	4.05	11.36
95	12	48	4.8	4.32	11.11
100	12.4	49.6	5	4.5	11.02
105	12.9	51.6	5.2	4.68	11
110	13.4	53.6	5.5	4.95	10.83
115	13.8	55.28	5.8	5.22	10.59
120	14.3	57.2	6	5.4	10.5
125	14.7	58.8	6.3	5.67	10.37
130	15.2	60.8	6.5	5.85	10.3
135	15.6	62.4	6.8	6.12	10.2
140	16	64	7	6.3	10.16
145	16.5	66	7.2	6.48	10.1
150	16.9	67.6	7.5	6.75	10.01
155	17.3	69.2	7.8	7.02	9.86
160	17.7	70.8	8	7.2	9.83
165	18.1	72.4	8.3	7.47	9.69
170	18.5	74	8.5	7.65	9.67
175	19	76	8.8	7.92	9.6
180	19.3	77.2	9	8.1	9.53
185	19.8	79.2	9.2	8.28	9.4
190	20.1	80.4	9.5	8.55	9.4
195	20.5	82	9.8	8.82	9.3
200	21	84	10	9	9.33

SQUIRREL FEEDING CHART
BMR x 4, Esbilac mixed 1:1

Body Wgt Gms	BMR Kcal/day	BMRx4 Kcal/da	Max cc's feeding	Kcal/feeding	Feedings/day
15	3	12	0.8	1.4	8.57
20	3.7	14.8	1	1.8	8.22
25	4.4	17.6	1.3	2.34	7.52
30	5	20	1.5	2.7	7.41
40	6.3	25.2	2	3.6	7
45	6.8	27.2	2.3	4.14	6.57
50	7.4	29.6	2.5	4.5	6.58
55	8	32	2.8	5.04	6.35
60	8.5	34	3	5.4	6.3
65	9	36	3.3	5.94	6.06
70	9.5	38	3.5	6.3	6.03
75	10	40	3.8	6.84	5.85
80	10.5	42	4	7.2	5.83
85	11	44	4.3	7.74	5.68
90	11.5	46	4.5	8.1	5.68
95	12	48	4.8	8.64	5.56
100	12.4	49.6	5	9	5.51
105	12.9	51.6	5.2	9.36	5.51
110	13.4	53.6	5.5	9.9	5.41
115	13.8	55.28	5.8	10.44	5.3
120	14.3	57.2	6	10.8	5.3
125	14.7	58.8	6.3	11.34	5.19
130	15.2	60.8	6.5	11.7	5.2
135	15.6	62.4	6.8	12.24	5.1
140	16	64	7	12.6	5.08
145	16.5	66	7.2	12.96	5.07
150	16.9	67.6	7.5	13.5	5.01
155	17.3	69.2	7.8	14.04	4.93
160	17.7	70.8	8	14.4	4.92
165	18.1	72.4	8.3	14.94	4.84
170	18.5	74	8.5	15.3	4.82
175	19	76	8.8	15.84	4.8
180	19.3	77.2	9	16.2	4.77
185	19.8	79.2	9.2	16.56	4.7
190	20.1	80.4	9.5	17.1	4.7
195	20.5	82	9.8	17.64	4.65
200	21	84	10	18	4.67

