



WRNC Training

Basic Wildlife Rehabilitation Course



Eastern Cottontails





Cottontails

General Information

- Prey species
- Herbivores
- Seen feeding at dusk & dawn, active at twilight
- Scent glands under chin for marking territories
- Lagomorphs: 4 upper & 2 lower incisors
- Teeth grow throughout life – open ended incisors|

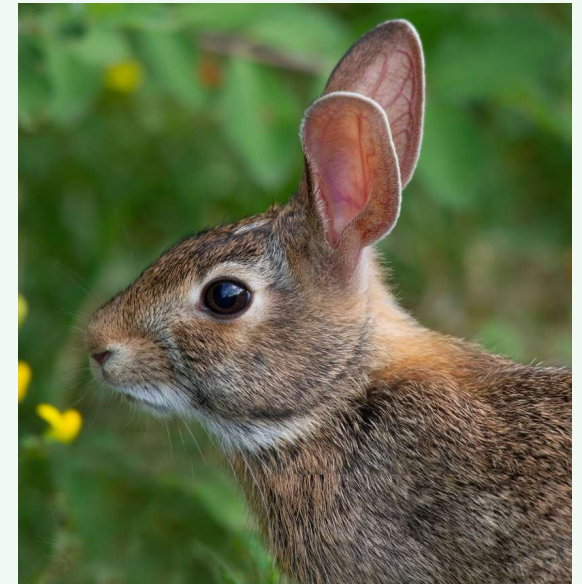


Cottontails



General Information

- Ears help control thermoregulatory system
- Defense: biting & kicking with hind feet, growling or emitting high-pitched scream
- Practice Cecotrophy
- Temperature is 101-103 degrees (warm to touch)



Cottontails



What are Cecotropes?!

- Cecotropes: nutrient rich, soft, mucosal coated, grape like fecal pellets produces by small herbivores.
- Re-digested from the anal region to maximize nutrients absorption.
- Essential for digestive health, providing vital amino acids, vitamin B and electrolytes.
- Produced by the Cecum; a large, blind-ended pouch located at the junction of the small and large intestines in rabbits. It is the largest organ in a rabbit's abdomen.





Nest Building & Nursing

- Mom only feeds at dusk and dawn to nurse for about 5 to 10 minutes.
- They do not nest with their Kits or dig a burrow.
- They dig an indentation anywhere, put a layer of their fur down, give birth, cover with dead dry grass and leaves.



Nest Building & Nursing

- She does not go into the nest to nurse.
- She hovers over them straddling the nest, the babies roll on their backs and pop their heads up through the dead grass and nurse.
- At 4 weeks Mom stops coming back and babies are on their own.
- Average 4 litters per season with an average of 3-6 young per litter (varies regionally).





Cottontails

Nest Building & Nursing





Cottontails

Nest Building & Nursing



Cottontails

Stages of Development



One to Two Days

A newborn cottontail is naked at birth, with greyish skin and pink nose and feet. Their tiny ears look like they are pinned back, and their eyes are closed. They resemble miniature piglets. Even at this stage, cottontails can produce an ear-piercing scream with mouths wide open when scared.

- Born 3 inches long and naked, eyes and ears closed, ears tiny and flat against head, tail very small, can crawl and jump



Weigh 20 to 35 grams

Cottontails

Stages of Development



Three to Four Days

Covered with a velvety black fur and usually have a tiny white spot (blaze) on their foreheads. Eyes are closed and ears are still flat to the head.



Five to Six Days

Typical mottled dark brown/tan/grey/white topcoat emerges on the head and neck, ears are longer, and although eyes are still shut, the babies are reacting to light and shadows.

Cottontails

Stages of Development



Seven to Ten Days

Eyes open, covered with slick fur, and ears are still back, but looking more like typical rabbit ears.

Babies are more active, jumping when surprised and burrowing into the bedding.



- Fully furred in a week, eyes and ears open by 8 days, one eye before other
- In the wild weaned and on own at 4 weeks of age





Cottontails

Did you know that I'm one of the most kidnapped mammals!?



I'm NOT too little to be by myself. I explore alone from between 3 to 4 weeks. If you see me alone, don't worry, I know how to get back to my nest.



Cottontails Protecting the Nest

1. A laundry basket with 2 holes big enough for Mom, is an easy way to help protect a rabbit nest.



2. Put temporary fencing around the nest until the babies leave the nest. Make sure the holes are large enough for Mom to get through.



3. Place a pallet over the nest on concrete blocks. Be sure Mom has room underneath to feed.



4. Temporarily leash your dog. The buns should leave the nest in 4 weeks.





Various Information on Cottontails

- Do not handle them, except for feeding or medicating .
- No loud noises!!
- Keep them partially covered and quiet until release.
- They stress very easily.
- Stress can cause:
 - GI stasis
 - Diarrhea
 - Bloat
 - Capture Myopathy
 - Heart Attack
 - Death



Information Continued

- Body temperature is between 101-103 F
- Gestation 23-31 days
- Birth weight 20g to 30g
- They start to get fuzzy at 4 days
- Fur forms at 5 days
- Their eyes open at 7-10 days old
- Ears erect at 9 to 13 days
- Emerge from nest 14 days old
- Weaning between 16-21 days
- Life span 6 months to 3 years
- Independent at 28 days
- Breeding age at 125 days



Cottontails

Housing & Care



Enclosure Examples





Cottontails

Minimum Standards

| | <u>Infant care</u> | <u>Nursing/Pre-weaned</u> |
|-----------------|--------------------|---------------------------|
| <u>Juvenile</u> | | |
| 10 GAL | | 20 Gal |
| 6x6x4 | | |



Cottontail

S Hairless/Eyes Closed Babies

- Provide warm secure space either lots of hides.
- Use a small container with ventilated lid
- Stimulate to urinate, urine is straw colored to clear (brown when it hasn't urinated for a while due to an empty stomach)
- Usually defecate on own, yellow to dark olive green flakes.
- Can squeeze through a 1x1 space.





Cottontails

Eyes open, well furred

- Prefer Timothy hay and grass nests to cloth nests, provide these with small house to hide in.
- Don't cuddle bunnies.
- Talk softly – no loud noises!
- Provide separate area for urination, food and nest.





Cottontails

Weaned

- Use a big enough container for them to spread out.
- If container is too small they get stressed causing diarrhea or fights, 4 bunnies max in large kennel or plastic tub.
- Provide room for nests & hides.
- Monitor stress levels – jumping up, bumping head,





Cottontails



Do not pick bunny up by the ears (or tail!)

Pick up carefully. They are fragile and they jump unexpectedly, even when eyes are still closed.

They startle and bolt, and could get dropped.



Cottontails

Support hind quarters

When holding use two hands, one to support hind quarters to prevent fracture of the spine that can occur if their legs dangle or they kick with hind legs.



Kennels that open only from the front do not work well as it's hard to pick up bunny with two hands.



Cottontails

Intake Protocols

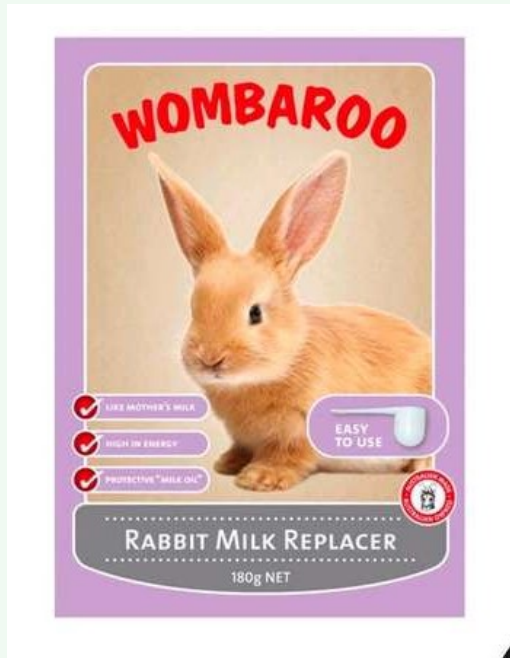
- Warm the baby in the incubator.
- Weigh the baby in grams.
- Hydrate with warm electrolytes sub q at 5% of weight in grams.
- Give oral electrolytes at 8% of weight in grams.
- Hydrate with electrolytes for 3x feedings.
- Check for injuries and treatment, if needed.
- Weigh daily, they should gain 3g to 4g per day.
- Keep babies at 80° and 30% to 40% humidity.



Cottontails



Formulas



+ H₂O +



★ The only formula really made for bunnies and matches Mother's milk.

- Mix 1 part Wombaroo
- 1/8 to 1/4 tsp Lacto bac 200 by Fox Valley
- 1 part formula to 2.5 parts water
- Add 3 Tbsp of Fox Valley Ultraboost (especially if no weight gain)

Optional:

- Add 1/3 capsule of Vitamin B Complex
- Add 1/2 capsule of Bee Pollen/Royal Jelly/Propolis

Formula

s

+ H₂O +



Option #2: Zoologic 33/40 with Esbilac (or Wombaroo)

- 1 part formula (1/2 & 1/2) to 2 parts water
- 1/8 to 1/4 tsp Lacto bac 200 by Fox Valley
- Add 3 Tbsp of Fox Valley Ultraboost
- 1/3 capsule of Vitamin B Complex
- 1/2 capsule of Bee Pollen/Royal Jelly/Propolis

Formula

S

+ H₂O +



Option #3: Fox Valley Skunk or Fox Valley Moose

- 1 part formula to 2 parts water
- 1/8 to 1/4 tsp Lacto bac 200 by Fox Valley
- Add 3 Tbsp of Fox Valley Ultraboost
- 1/3 capsule of Vitamin B Complex
- 1/2 capsule of Bee Pollen/Royal Jelly/Propolis



Cottontails

★ We put probiotics in their formula to help with their gut flora.



★ Cottontails are high-vitamin B animals. Vitamin B Complex contains over 7 types of vitamin B.



★ Bee pollen is a nutrient powerhouse of 18 vitamins, all the essential amino acids, and enzymes. The richest source of vitamins in a single food.



Cottontails

Formula Preparation & Storage

- Mix fresh every 36 hours.
- Refrigerate between feeding.
- Heat only amount used per feeding.
- Discard unused warm formula.
- Use bottled water especially if your water quality is poor or if you have mineralized well water.
- Heat by immersing syringe in warm water or placing cup in warm water, don't boil or heat in microwave.
- Test temperature – won't eat if cold or warm – **HOT!**



Feeding Amounts

★ Feed at 8% to 10% of weight, in grams.

★ **Newborn under 64g, eyes closed** Feed 3x per day.
• AM weight gain 3g to 4g Feed 8% 3x per day.
• If only gained 1g to 2g Feed 10% 3x per day.
• If no gain Feed 12% 3x per day.

★ **10 Days: 65g to 80g, eyes opened** Feed 2x a day.
• AM weight gain 3g to 4g Feed 8% 2x per day.
• If only gained 1g to 2g Feed 10% 2x per day.
• If no gain Feed 12% 2x per day.

★ **3 weeks: 80g to 95g** Feed 1x to 2x per day.

➤ Eyes wide, ears open and erect. They can hop well and can lap formula from a shallow dish.

★ Never feed over 12%, overfeeding can cause bloat, diarrhea, or death.



Cottontails



- Use feeding syringe alone or with Catac nipple or larger pointed version of pet nurser nipple, need fairly large hole.
- Can use Miracle Nipples, short or long length.
- The Original Bunny Nips are great, too.

Cottontails

Feeding problems & techniques

- They might not suckle - patience needed
- Place small drop on lips.
- Temperature of formula important, must be **HOT!**
- Won't eat if dehydrated.
- Bunnies can be tube fed.



Weaning

★ Cottontails have specific stomach acids and bacteria for milk and then for vegetation. Both cannot exist at the same time. That's why there is such a fast-weaning process.

★ Start by using Timothy Hay as bedding.

★ Tip on weaning: start with Oats mix, and spring mix and washed clover. The reason is because since babies don't get the microbes antimicrobial milk oil that is unique to bunnies. So until their gut is fully functioning on greens well they are susceptible to coccidia.

★ By 4 weeks (21 days old), they should be weaned completely. Mom leaves them at this age and does not allow bunnies to wean themselves.

★ Do not release until they have been on solids with no issues for no less than a week.

★ Do not release under 125g. Ideal release weight is 150g, and close to 5 weeks old. At 28 days old they are fully independent, and they produce their own Cecotropes to eat.

Oats Mixture

The Oats Mix nutritional information

☆ We use this from weaning until release. ☆

Recipe *Nothing cooked! All dry ingredients. *

- 1 cup Oatmeal: Steel cut or Quick cook
- 1 tablespoon Fox Valley Ultraboost
- 1 teaspoon probiotics or 1/4 teaspoon LA 200
- 1/3 capsule Vitamin B Complex
- 1 teaspoon Bee pollen granules



Cottontail Diet

They only eat high fibrous vegetation. Their diet is 80% grass and hay. Rabbit pellets are too high in calories. and carbs. If you use pellets use 100% timothy hay pellets. **No Guinea Pig Pellets!!!**

★ Hays and grasses:

- Oat hay
- Bran hay
- Orchard grass
- Timothy hay



Grass hay, cereal hay, timothy hay are lower in calcium, carbs, and vitamin A, making them ideal.

Adult diet

2 good-sized handfuls of grass/greens twice a day.



Dandelion



Plantain



Chickweed



Clover



Wild Plants



| | | | | | | |
|---|---|---|--|---|---|---|
|  |  |  |  |  |  |  |
| Common Mallow | Herb Robert | Hoary Plantain | Marigold Flowers | Cleavers | Chickweeds | Groundsel |
|  |  |  |  |  |  |  |
| Coltsfoot | Burnet | Avens | Nipplewort | Clover (white) | Dandelion | Hawkweed |
|  |  |  |  |  |  |  |
| Birdsfoot Trefoil | Meadow Cranesbill | Wild Chamomile | Pineapple Mayweed | Yarrow | Shepherds Purse | Greater Plantain |
|  |  |  |  |  |  |  |
| Fields Penny Cress | Ladys Bedstraw | Ribwort Plantain | White deadnettle | Musk Mallow | Yarrow | Smooth Sow Thistle |
|  |  |  |  |  |  |  |
| Agrimony | Knapweed | Hawthorn | Bramble | Birch | Apple Leaves / Twigs | Dog Rose Petals/Leave |

Cottontail Diet Continued

★ The main component of a rabbit's diet should always be: Hay and grass fresh or dried roots, buds, bark on trees (especially in the winter).

★ Veggies you can buy:

- Spring mix
- Collard greens
- Beet greens
- Arugula
- Lettuce (Romaine, Red leaf) NEVER ICEBURG!!!
- Parsley
- Mint
- Bok Choy
- Mustard greens
- Pea pods
- Swiss Chard
- Broccoli
- Basil
- Cilantro
- Carrot (tops only)
- Dill
- Strawberry tops

★ NO Fruits, NO Carrots!!

- They are too high in sugar and carbs.
- To not upset stomach only try 1-2 vegetables at a time!!



Cottontails

Releas

e

- Fully weaned, eating natural foods, no diarrhea.
- Wary of people, they do not want to be picked up.
- Weights vary between 125g to 150g, use behavior and developmental status as guide.
- At signs of stress – release! Keeping longer = death.
- Injuries completely healed, in top condition.
- Acclimated to outdoors: dirt & natural materials on bottom of cage, temperature matching outdoor conditions, hearing natural sounds, open window in rehab room.



Release considerations

- Weather conditions (clear for at least 3 days).
- Site selection
- Release in evening
- Do not overwinter, too high strung



Release Videos



Diarrhea: The silent killer

Conditions that cause diarrhea

- Frequent loud noises causing stress.
- Excessive handling causing stress.
- Exposure to predators leading to stress.
- Seeing people, no privacy barriers/cage screens.
- Exposure to pesticides from fruits or vegetables.
- Exposure to other chemicals (chlorine in water, perfumes, cigarette smoke, cosmetics, etc.).

Treatment for Diarrhea

- Take away all solids except Timothy hay.
- Feed 1:1 ratio of lactated ringers and lactobacillus acidophilus (the bunnies usual feeding amount) for first feeding.
- Feed a smaller amount of formula for next meal.
- If stool firms up, resume feeding normal portion of formula and begin gradual reintroduction of other food stuff.
- If stool hasn't firmed up continue ringers and lactobacillus acidophilus; consider dose of Imodium or Biosol Liquid.



Medications

➤ Cottontails are sensitive to medications.

Antibiotics:

- Baytril- a MUST for cat bites.
- Smz (Sulfamethoxazole) - Wet Tail
- Bactrim- Enteritis, UTI, bladder infection
- Ciprofloxacin- skin, UTI, Respiratory infections, ear or eye infections
- Albon- GI or deep tissue infections, respiratory, and coccidia
- Keflex- skin, bone, kidney, UTI, bacterial infections

Pain:

- Metacam
- Tramadol
- Gabapentin
- Arnica- shock, head trauma, stress, inflammation



Medications Continued

Wound treatment:

- Silver Honey
- Medi Honey
- Medical Manuka
- Vetericyn
- SSD
- Bactine with Lidocaine
- Armor Gel



Diarrhea:

- Metronidazole
- Dia Stat by Fox Valley
- Bio Sponge
- Children's Imodium
- Toltrazuril
- Albon

Gas & Bloat:

- Simethicone drops
- Activated charcoal
- Caprylic acid
- Nutri-Rescue



Degloving

➤ A degloving injury happens when the skin and subcutaneous tissues are torn away from the underlying structures, and exposed muscle tissue underneath.



Degloving Treatment

- Remove the debris in the wound with Saline or Lactated Ringers, clean well. Using Saline or Lactated Ringers, cleans the wound and helps rehydrate the “meat” and skin.
- Cut away fur and any dead skin.
- If possible use Vetbond, Dermabond or Surgical glue it back together, but leave a place for drainage.
- DO NOT SUTURE Rabbits!!
- They will tear the stitches out and make the injury worse.

Unable to Glue Shut?: *On degloving that cannot be glued.

- Keep clean and hydrated.
- Use good topical medication, like Medihoney, Medical Manuka Honey. Silver Honey or Vettricyn.
- Use a good oral antibiotic, like Albon, Baytril or Keflex.
- These work well on open wounds, deep tissue infections and help aid the healing skin.

Flystrike



- Flystrike: use cornstarch to brush out. **DO NOT GET WET!!**
- Capstar orally and diluted topically.

LAGOMORPHS OF THE UNITED STATES & CANADA



Baby Jack Rabbit

- Born fully furred & eyes open.

Marsh Rabbits are the only rabbits that can swim.



Cottontails

WRNC Training

