

WRSOS - ANIMAL CARE NOTES

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We have been raising baby hares for several years with varying results - very good to poor success. Generally speaking baby Snow-shoe Hares are much easier to raise than baby Jack Rabbits. On the other hand adult Jack Rabbits are extremely easy to keep in captivity while we have found adult Snow-shoe Hares are next to impossible to keep. We will talk about adults later on.

Losses of baby hares falls in four categories: diarrhea, bloating, refusing to eat, and unknown.

This year has been a banner year as we have been able to control diarrhea and our success in raising baby bunnies in the future will increase significantly.

Diarrhea

This has been the greatest cause of babies dying. Until very recently any hare that got diarrhea was generally dead within 6 or 8 hours. We happened upon some notes from a woman on the internet the other day that changed all of that. This is the treatment. As soon as you see that the hare has diarrhea you place it in a small kennel over a heating pad. I put the pad on high to start then reduce to medium.

I also put some very good timothy hay. The best I have found is at Early's. Seed & Feed. Very expensive \$32 for a small bag.

The woman suggested taking the bunny off any greens except the roughage of good timothy hay. She then said to feed it liquid unflavoured *Kaopectate* 1 mg/kg. That works out to about 3/10th to 4/10th of a mg. for a 350 g bunny which I find is about the weight that I usually have problems. This is when they are converting from milk only to significant greens and milk. The re-hydration formulation she is a homemade version of the commercial "Ringers Solution) which you can get through a veterinarian. The way use

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extract it from the bag is to put as permanent needle in the bag and leave it. To get solution out just twist a syringe into the needle. If the solution starts to get cloudy don't use. The formulate that she gave is below. We put it in a sterile jar and keep it in the freezer. We warm it up to use. It can be fed orally or put under the skin. Essentially you can't put too much under the skin. Start with 10 to 20 cc.

- 1 CUP OF CLEAN WATER (WE USE BOILING WATER)
- 2 TEASPOON OF WHITE SUGAR
- 1/4 TEASPOON OF BAKING SODA
- 3/16 TEASPOON OF TABLE SALT (ROUNDED 1/8 TSP.)

I wait a short time before feeding after feeding the *Kaopectate* to feed the solution orally. Of two bunnies that contracted diarrhea in the last while I hydrated one with 20 cc under the skin using the Ringers solution I got from Dr. Harvey. The other bunny was not as far gone so I gave the solution orally. Dr. Harvey says the formula above is a homemade version of Ringers solution and does the same thing, rehydrating and changing the stomach PH from acid to base. He gave me two formulations. for re-hydrating the bunnies. One to be used initially for diarrhoea (Ringers) and the second (Standard saline formulation for dehydration) was to be used later if dehydration persisted. I found the *Kaopectate* stopped the diarrhea in both cases within one hour and by evening the pellets were normal. The paper with the hydration formula indicated that the baking soda (a base) was to neutralize the acidic condition of the digestive system caused by the diarrhea to allow bacteria to reform in the system. In the milk I also added a formulation of probiotics that Dr. Harvey had given me. It was used for kittens.

It is very important to keep them quiet and warm. Another cause of diarrhoea is feeding cold milk. I feed milk that is very very warm - feels almost too warm on your wrist. They like very warm milk. **It is important that you pick up and check the baby bunnies every day as long as you can pick them up. Diarrhea kills very quickly and you must detect AS SOON AS POSSIBLE. Older young can also get diarrhea if they are changing foods, stressed, put outside for the first few times. If they refuse food or look at all sluggish make sure you check!**

Bloating

When we initially started raising the bunnies we had a lot of trouble with bloating. They do not survive if they bloat. Bloat appears when they first start eating a significant amount of greens. The mother feeds the bunnies special faeces called cecotropes which inoculate the stomach with the proper bacteria to allow for the digestion of the green materials. Dr. Harvey tipped me off to the idea that they do not need to be fed these if they are not available. If they are placed in an area that has had or does have wild hares they seem to pick up enough bacterial. Once the hares go in the pen WE DO NOT CLEAN THE PEN UNTIL THEY LEAVE. If you are a cleanliness nut don't raise baby hares! This appears to work and I generally have a wild hare due to car accidents etc. in the pen over winter. We also had three waves of Jack Rabbits this year so I simply put the babies into the same pen with the older ones during the day. The adults do not bother the babies at all. This has all but eliminated bloating as a problem. Out of about 24 hares I lost only one to bloat this year. **Remember do not, however, put baby wild hares in with domestic rabbits. The domestic rabbits can be very mean and kill or severely damage the wild baby hares!**

Refusing to eat.

We do lose several each year to this. Generally when we first get a baby it drinks very poorly. We hold the bunny in such a way that we are able to feel the jaw moving and if it does not suck we use a 1-3 ml syringe with a nipple or an eye dropper to squirt some milk down the throat. We can feel when it is swallowing. What generally happens within two feedings it is starting weakly to suck a bit and the next feeding it suckles fairly well. We do get the odd one that just will not eat, grows thin and dies. We had more trouble this year and part of it may have been the food. Some did not like the USA Kitten Milk Replacement plus from Early's. Plus the acidophilus that we get from Dr. Harvey.

We are very fussy what we buy - the Goats Milk must have a long "before" date and the milk replacement date must extend into the next year. We also waste some milk as we always mix a bit more than we need and we do not put it in the fridge and reuse. Surplus goes to the outside cats. You have enough obstacles raising these very finicky animals so we do not add obstacles if we can help it!

Die for some unknown reason

We still lose some bunnies for no apparent reason. This is generally at the 2 - 3 week stage and is likely related to changes in their diet. We lose very few bunnies when they are very young. Very very young bunnies we feed several feedings of goat colostrum which Donna was able to find dried colostrum. She kindly gave me a bag of powder colostrum which I keep frozen. The label suggests that you **do not feed** this after the mother has begun to feed milk so we are talking very young bunnies.

GENERAL BUNNY COMMENTS

The bunnies generally come to use quite fat and in good shape so this buys us a bit of time. We weight them when this initially come in but this is just for a reference. To start we use the recommended feeding amounts, 10% of their body weight per day. We do not weigh them again as this simply stresses the hare. I have found that feeling along the top of the back bone gives me a much better indication how well they are putting on weight. Our feeding regime generally is a much high intact per day then recommended. I read one note from a woman whole raised baby wild bunnies and her conclusion was the same as mine. Because the replacement milk we use is likely less nutrias than the real thing we should compensate. The other reasoning is one I have learned overtime. Other animals generally know when they have had enough. Unless you have a real binge eater and they are few and far between, I let them decide when they are full.

Under this section I should also talk a little bit about how each bunny eats. EACH BUNNY EATS DIFFERENTLY and you must adjust accordingly. Some suck normally, some like to lick the food off the nipple. Some very quickly want to drink it out of a small lid. Don't expect them to all just suck the nipple, it will not happen.

How much to feed - The rule of thumb is about 10% of their body weight per day. I follow this very loosely and use that as a starting minimum. Unless the hare is a real pig and a few are, I let them decide when they are full. I feel each one's stomach as I am feeding to make sure they are not too full. One paper I read at one time suggest that massaging the stomach for a bit after feeding. I don't know if this helps but I always do it anyway.

How often do I feed - I generally try to feed them initially every 6 hours. At least one feeding in the middle of the night as they do feed best then. After the first week I go to 3 feedings and at about 3-4 weeks 2 feedings. I read a note one person had written that stuck me as quite likely the case. She said

that in the wild the mother likely feeds only 2 times a day. BUT as she pointed out the food we are feeding is not as nutritious as the real mothers milk and we should expect to feed more to get in the same amount of calories. If you are feeding too often they will tell you by not being hungry similarly if you are feeding too little they will be too hungry. One feeding at night I try to maintain for up to 4 weeks.

How long do I feed milk - Both this and how long I keep the bunnies are not the norm. I feed until they do not want milk. I do try to taper them off by going to 2 feedings eventually and then eventually one but I am not in a hurry to wean them. In a similar way I am not in a hurry to release them. They are 1/2 to 3/4 grown and usually the latter when we release them. We have very good success releasing young hares at good sites. Last year all that we released survived the winter. It is really rather futile going to all the trouble we do to raise them if we do not go to the same effort to ensure the likelihood of survival in the wild when we release them.

What greens etc. do we feed them - We feed a wide variety of food. The milk mixture is either the mixture from Fox Valley or 1/2 kitten milk plus 1/2 goats milk and some acidophilus (from Dr. Harvey). I prefer the latter milk formula I think. I also feed a protein boost from Fox Valley the first 2 weeks. I discontinue this after two weeks. Too much protein can cause leg deformities.

We put good timothy hay in the tub from day one and we start to introduce greens such as dandelions very early on allowing them to decide when they want them. Almost all of the bunnies are very fond of fresh dandelion greens. The next green is Kale. We gradually add bananas - peeled, apples cut in half, carrots and rabbit pellets. They also like corn on the cob. For other wild greens we put in alfalfa in limited amounts, alsike or red clover (not the tall sweet clover) and willow branches with leaves on.

Other tips -

- If feeding while sitting on a chair it is good idea to put a blanket on the floor to cushion them if they jump off. They are often very hard to hold. Do not forget it is very easy to damage their back if you hold on to tightly or try to restrain them. They can break their back by pushing against you.
- Never put them in an open cage. They are not tame rabbits and may kill or injure themselves trying to escape.
- They stress very easily so always be very quiet.
- Temperaments vary greatly from very aggressive - often males to very quiet and shy.

The last thing I would like to talk about is the keeping adult jack rabbits for a time in captivity. Often when they are recuperating from an injury. We catch a number with broken legs usually one hind leg as a compound fracture. We have had fair success when Dr. Harvey amputates the leg and gives pain medication and a long term antibiotic. We keep them for 2 to 3 weeks till they recover fully. They tend to do well on three legs. What kills them is the infection. If we get them before it is too advanced and they are not too badly battered up, they often do fine. Adults netted and put in a kennel do very well. In a large room they would go nuts but in the kennel they will often eat within less than one hour and will allow you to open the kennel and place the food in the kennel. Adult Snow-shoe hares on the other hand, rarely last the first night. They do very poorly in captivity. It should be remembered that when you are handling adult rabbits you do not want them to struggle where they exert extreme pressure with their hind legs. This can result in a broken back. When we are catching them we try to have the kennel very close and quickly get them out of the net and into the kennel. They don't often but if stressed can give you a pretty good bite as well when you are

holding them. To catch adult Jack Rabbits you want at least two people. You at one side with the net and have a person slowly advancing from the other direction. You try to anticipate which way they will go. It is relatively easy to catch them if you succeed on the first try and not very easy after that. We generally will try for a few minutes and if unsuccessful leave them for another day so we don't stress the too much.

FEEDING HABITS

I thought I would show a sequences of events from when I get a baby bunny until it is eating well.

Jack Rabbit

- Receive the bunny. Check how fat it is - Weight it. Try to get some history on it. How long the people had it? How was it obtained.? Did it get wet, chilled? Cat caught?
- If cat caught it needs immediate attention through Jan or the Vet.
- Try to feed it. One in 5 or 8 will eat right away. Remainder will not. I start with 1 to 3 ml syringe and feel along the jaw line will pumping in a bit of milk. It generally swallows. Feed part of 3 ml syringe and leave 4 or 5 hours.
- Try again. As soon as it sucks a little bit it will likely suck well by next feeding.
- As it starts to feed well you can change to a 10 ml syringe.

- Now feeding 4 times a day. When it eats 2 syringes, or by about 8th day change to 3 times per day. Hopefully it will be eating 2-3 syringes per feeding therefore 60 to 90 ml grams of milk per day.
- All young bunnies go over a heating pad when they come. The tub make-up is dirt at one end with timothy hay and some soft cloth. A layer of very soft cloth at the end that the heating pad is under. Heating pad on medium. They stay in this situation till they no longer want the heat. This will vary greatly.
- The dirt provides some bacteria and nutrients.
- By day five add some fresh dandelions into the kennel. Good dried green timothy hay is in from day one.
- As soon as they are off the heating pad they go into our down stairs bathroom no longer used for such. It consists of a concrete floor with an ample coating of dirt, one pile of dirt as well as they like to climb up it and roll down it. They can often be seen rolling in the dirt and dusting themselves. Also on the floor are piles of fresh dried, green timothy hay. There is a bowl of fresh clean water and whatever other solid food they are being introduced to at the time. I pick up any unused food each day and replace with new fresh food. The toilet is still in place and a tub that they can hid behind. I use the empty tub with a soft cloth on the bottom to put the "fed" rabbits in when I am feeding them all. I drape a towel over the tub to keep them calm. Once all are fed, I take them all out and put them back on the floor. Oh, there is also have a chair for me to sit in. I have soft towels that I throw down on the floor each time I am feeding them in case one jumps. This cushions the fall. I pick it up after each feeding. I generally sit and watch them for a while after they are fed. It is fun to see
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- their actions and also tells me something about how each one is doing and reacting.
- Once they are a week or so old I take them outside in a kennel and put them in our large outdoor pen for short periods. This pen has not been cleaned and may or may not have older wild rabbits in it. They are able to absorb proper bacteria and it prepares them for the addition of more solid foods. They are left for several hours during the warmest part of the day.
- This may sound like we are really babying them up far and above the wild situation. We are. There is plenty of time to prepare them for the release in the future. We are only interested in survival at the start. The rest will come later. Some stay on heating pad for 3 weeks or so. WE ALWAYS LET THEM MAKE THE DECISIONS WHERE THEY WILL STAY AND WHAT THEY WILL EAT. WE ARE NOT HARES! WE DO NOT KNOW A LOT ABOUT THEIR CARE!

Snow shoe Hares.

- Similar but use 3 ml syringe with short nipple.
- They are smaller so expect them to eat less than Jack Rabbits.
- They are often older than you think when you get them and often are eating some greens already when you receive them. They appear to advance more rapidly than the Jack Rabbits although they grow more slowly.
- They do not appear to have as many problems as the Jack Rabbits - less likely to bloat or have diarrhea - although they do get diarrhea and should be checked daily in a similar manner to the Jack Rabbits.
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- Do not expect the baby bunnies to all eat alike or in the stereotypic manner of nicely sucking the nipple. This will not be the case. Each bunny must be treated individually. Some will suck the nipple normally, some will like at the nipple. Some very quickly will want to drink out of a small lid. Some will be reluctant to drink orators will come running towards you begging for the milk. One thing is common with all of the bunnies - THEY LIKE VERY WARM MILK. Cold milk will cause diarrhea but it is surprising how warm they want the milk. I mix the dry in hot water, add the goats milk out of the refrigerator, mix and they microwave for 10 seconds and then add the acidophilus. I place the jar of mixture in a bowl with boiler water to keep warm. I I am down stair too long I come up a reheat or make more. If I have a lot of bunnies to feed I know it will take time so I mix half up feed and come up an mix a send batch. Feeding takes A LOT OF TIME. For those odd ones that want to drink it out of a lid, I pour a small amount into a sterilized pot bottle lid. Once they accept this well I have some small shallow bowls (2 inches across) that I hold up for them to drink. Eventually, I can put warm milk into a larger shallow bowl and put it on the ground. Those that like it that way will come and drink while I am feeding others. I do not leave the milk down after it cools. Much later when they are 5 or 6 weeks old I may leave some milk down that cools off. I use the longer nipples for the Jack Rabbits and the shot ones for the Snow-shoe Hares.

One important note is that we sterilize all of the feeding equipment EACH TIME WE FEED. We do NOT RE-USE MILK TWICE. We check for diarrhea ALL OF THE TIME and are prepared to treat it immediately. Treatment is: 1) immediately on to a heating pad, 2) Immediately Kaopectate, and 3) likely some form of hydration (see the section on diarrhea) 4) As little stress as possible and 5) if the bunny had been in a tub we immediately clean and sterilize the tub.

Just a further note. I apologize for any typos we missed, but I do not apologize if I repeated myself in a few areas. If I did it was important and should be repeated often. Also, only so much can be put down on paper regarding ones experiences. The bunnies are difficult to raise and just when you think things are going well - well they are not and you are losing baby bunnies. One thing I have discovered which has helped a bit reconciling to this fact is that in several populations in the City that I have been observing regularly the mortality in young bunnies must be very high. From populations of 5 or 6 Jack Rabbits only one or two yearling are seen in the fall where I suspect there are two or three breeding age females present. As I stated, mortality of young is like very high possibly 80 to 90% in most areas. Why are they so abundant in the City you may ask? First, they are very hardy and I suspect live close to their maximum life span. Not sure what that is but it would not surprise me if it is up to 5 or more years. In addition, they have a low mortality after they reach adulthood. They are very vehicle savvy and few are hit by vehicles and they have few predators.

If I can answer any questions or offer helpful suggestions, please do not hesitate to call direct on my cell phone or Email me. John Polson
306-221-4569 johnpolson@shaw.ca *We can all learn from each other.*

RAISE THEM TAME OR RAISE THEM WILD?

I decided to add this section because I think it is one of the most important questions when we look at the survival of the baby bunnies down the road, after we release them. All this work, I have described is futile IF THEY DO NOT SURVIVE IN THE WILD. Luckily, we have good proof over the last couple of years that what we are doing does end in GOOD SURVIVAL. As I think I mentioned previously, all of the baby bunnies we released last year

as well as several injured adults, all survived at least till the spring. This was likely due to the type of care regime they received and a very good choice of release Sites. The development of the care regime was likely more luck at times than smarts but the choice of Release Sites certainly had some input from my knowledge of Wildlife.

Now should we keep the baby Jack Rabbits and Snow-shoe Hares as tame as possible or should be try to keep them wild. From our experience the answer is quite simple. **We should keep them as tame as possible.** We are going to keep them in captivity until they are 2/3 to 3/4 grown before we release them. As you will see there is plenty of time for THEM TO GET WILD. And believe me they all do. The philosophy behind this thinking is the same as I use for feeding. My aim in feeding is quite different than much of the literature. Our aim is to get them on a milk regime as soon as possible and to ensure they drink as much milk as they want barring the very odd pig where you have to control their intake. Don't forget the milk replacement tries to simulate the mothers milk but likely comes short of the real thing. It is unlikely as rich as the mother's milk and so it does not hurt to compensate with additional calories. The same goes for solid food, yes I feed natural foods: timothy hay right away; fresh green dandelions very soon; red and alsike clover and some fresh green alfalfa. Also, along with the other foods freshly cut willows with leaves on. However, I also offer them fresh kale early on, carrots, apples, peeled bananas and corn on the cob. I encourage them to eat all of this and I don't restrict what they eat in any way - although I do introduce many of these foods gradually, one at a time. My aim is for them to eat all they want. I know that I have plenty of time to gradually move their food preferences towards the wild end and I also know that I am going to release them on Site that have an abundance of foods and cover that they will relish.

This is getting a bit off the track but not really. In a similar manner I know that I have plenty of time to "WILD UP" the bunnies. In fact I now know from experience that they will automatically do this on their own, over the long period of time that they will be with us - 1.5 to 2 months before release. My aim is for maximum survival prior to release and I know they will have good survival after they are released because I have chosen VERY GOOD RELEASE SITES. Good care in captivity means leaving the baby bunnies on heating pads as long as they want, often 2-3 weeks, lots of food fed often, 4 - 6x/ day to start, depending upon the bunny. Remember EACH ONE IS AN INDIVIDUAL! Continuing to feed milk as long as they want, supplying a broad variety of foods so each one gets to chose what they eat.

Now finally to the tame versus wild debate. The biggest threat to raising the baby bunnies is diarrhea! I want to pick up each bunny, every time I feed it and inspect it for diarrhea. I know if I catch the diarrhea within a few hours I have a very good chance of successfully treating it. If I miss by say 6 or 8 hours the chances are slim. Diarrhea is the greatest cause of mortality in the bunnies we have raised over the last two years. In year one it was bloating, now that very seldom occurs. Keeping the rabbits fairly tame makes the process of feeding and checking for diarrhea manageable. We will likely have up to 20 or 25 babies at a time to feed. That takes a long time and a much longer time if I have trouble catching them - not to forget increased stress. We do other rescue work and feed the bunnies at least once in the middle of the night. Streamlining the feeding process is fairly high on our agenda. The feeding process involves feeding each individual and placing it in a holding tub until they are all fed, then putting them back in their respective tubs or when they go into the indoor bathroom downstairs or the big kennel outside - dumping them out in the room or outdoor kennel until the next feeding. Each bunny is inspected to make sure there is no evidence of diarrhea.

When the bunnies come to us - some are very shy, some very aggressive and some quite tame. As they get older, and it varies somewhat with each individual, one day a bunny is relatively tame and the next it is wild as a March hare. By the time they are released THEY ALL HAVE BECOME WILD JACK RABBITS AND SNOW-SHOW HARES - just as we want them to be!