



Successful Hand-rearing and Rehabilitation of North American River Otter (*Lontra canadensis*)

Section 1 – When to rehabilitate, young pup care, formula feeding, and weaning.

M. Haire
2011

Published by:

IUCN/SSC Otter Specialist Group, Otters in Zoos, Aquaria, Rehabilitation, and Wildlife Sanctuaries (OZ) Task Force

<http://www.otterspecialistgroup.org/Library/TaskForces/OCT.html>

Contributions from: Tanya Thibodeaux; Editor: Jan Reed-Smith

Photos by: Tanya Thibodeaux, Melanie Haire;

Reviewed by: Tanya Thibodeaux, Jan Reed-Smith, Nicole Duplaix



This document, a compilation of advice from multiple individuals with otter rehabilitation experience, is designed to provide guidelines and techniques of river otter care for licensed wildlife rehabilitators or wildlife care centers that may be unfamiliar with this species. Due to its length it has been divided into 3 Sections.

Thanks to the following contributors for content, personal communications, edits, etc., Sally Beckwith, Suzanne McBride, Susan Gerros, Brian Helton, Katie Jeffrey, Gwen Myers, and Grace Yoxon.



OTTER PUPS – FIRST ARRIVAL

- North American river otter's give birth once annually, or biennially, usually between the months of January and June with the earlier part of the range being in the southernmost latitudes.
- Otter pups tend to come into rehabilitation facilities most often when they are old enough to begin venturing out of the den on their own (8 - 12 weeks of age) and get separated from mom due to predators, flooding, construction, injury to or death of mom, etc.
- Orphaned or lost pups may approach people or wander into sheds, roadways, golf courses, garages, or other areas of human habitation in search of mom and food. At this point they may appear "tame" or already "imprinted" on people but usually that is not the case. Once they are taken into proper care and treated appropriately they typically revert to normal behavior.
- Most pups arrive hypothermic and dehydrated. It is vital to attend to these issues before attempting to feed or treat minor injuries. Hypoglycemia often closely follows the previous two conditions. At this stage experienced veterinarians should be consulted.

ATTEMPTS TO REUNITE WITH MOTHER

- In some situations the pups may get separated from mom when their dens flood with rapidly rising river water, often due to heavy spring rains. In these cases they most often float out and down river not yet being strong enough to swim against the current. This typically prevents them from returning to the den area. Another reason for separation is den relocation. When the mother is moving pups to another den site she sometimes gets interrupted by unknown causes causing her to lose track of pups, **or their discovery before she returns.**
- If the mother is known or believed to be alive and the pup appears healthy, an attempt to reunite a lost pup with its mother should be tried by first attempting to locate the entrance hole to the den.
- Many otter dens are in or on the banks of rivers or ponds. The den may have several connecting tunnels and holes, sometimes with tree roots exposed in and surrounding the opening. The soil is usually worn down smooth around the entrance with paths leading to the water. Often times the entrance is best spotted by searching the bank from the opposite side of the river. Also search for signs of daily activity such as sand/soil diggings, foot tracks, scat, or scent mark mounds mixed with vegetation and soil nearby.
- Place the pup near the entrance and hide nearby, upwind, to observe. Often times the pup will chirp when it gets cold, hungry, or restless. This loud, high pitched distress call should attract the mother if she is able to respond. In some cases the mother may be



the one doing the chirping in hopes of persuading the pup to chirp back so she can better locate it.

- Otters can see movement quite a long distance away so be sure to hide carefully and refrain from any quick movements. If the pup is in danger of rolling down the bank or wondering off, it can be placed inside a box or kennel with the top off. This will keep the pup in place but allow the mother access to it by hopping inside or knocking over the container.
- If the mother is thought or known to be dead, the baby is cold, dehydrated, weak, or the den location is unknown the decision to rehabilitate should be made.

WHO SHOULD REHABILITATE OTTERS

To maximize the chance of successful rearing and potential release of rehabilitated otters these questions should be asked first:

- Does the rehabilitator have adequate facilities and time to raise the animal properly?
- Does the rehabilitator have adequate funds to supply formula and weaning diets to, and perhaps after, release?
- Is there an appropriate release area available? What is the current state of the otter population in the area?
- Are facilities and resources available to support and monitor release?
- Is another rehabilitator more qualified and/or does someone else already have an orphan(s)? If so, it is better for the orphans to be raised together. There is a lower risk of imprinting and they learn from one another.
- Does the rehabilitator have access daily to large amounts of whole fresh fish?
- Does the rehabilitator have access to live fish and a pool with a fresh water source for the animal to fish and swim in?
- Does the rehabilitator have an established relationship with an experienced otter veterinarian?
- Does the rehabilitator already have an otter diet, husbandry, medical, and release plan established?
- Does the rehabilitator have a suitably isolated, natural pen (no dogs and limited human presence) where the orphans can be placed as they become more independent?
- Does the rehabilitator have facilities to hold the otter for at least 9 months?
- If release is not an option, rehabilitators should begin researching good placement options early.



ONCE THE DECISION TO REHABILITATE IS MADE

If the pup is indeed an orphan and the decision to hand rear is made, the following rules apply.

- Know the animal's natural history and development time line.
- Have as few care takers as possible (ideally just one). **Keep human contact to a minimum.** The animal will not be releasable if it becomes imprinted, tame, or too accustomed to humans. This becomes even more critical in the case of single pups.
- Few otter pups are suitable for release. Before this is attempted experienced professionals should be consulted and a plan put in place.
- **Do not** house these animals near human or pet trafficked areas.
- There **must not** be any positive exposure to dogs.
- Be prepared ahead of time for the next stage of the animal's growth so he/she need not face undue delays when reaching the next point in development.
- If you receive a single pup, network with regional rehabilitators in an attempt to locate another orphan(s) so pups can be raised together. Otters are very social, active and playful and do much better in groups than when raised alone. The development of normal social behavior skills, natural companionship, healthy competition, added body heat, and physiological comforts are just a few of the benefits of rearing otter pups together.
- Introducing unfamiliar otter pups to one another is easier the younger they are. Expect a rough and tumble introduction (lots of vocalizations and perhaps some play biting and wrestling) if the pups are over 3 months old when they first meet. Introduce new animals slowly and with a barrier initially.
- Pups 6 - 12 months of age may take longer to introduce, however, typically introductions before sexual maturity are successful unless either animal is excessively imprinted.
- Always use caution and careful observation when introducing otter pups of different ages/sizes. Injuries may occur to the smaller of the two. Offer pups multiple hiding places to provide 'safe zones'.
- Raising a single otter pup to successful release can be challenging but is possible. **This is not the preferred method.**





HANDLING

- Young pups tend to settle down and accept captivity quickly. Typically, all that may be needed to handle them is a pair of leather gloves and/or a towel for wrapping them in.
- After the age of about 10 - 12 weeks of age, otters can become quite difficult to handle and nearly impossible to restrain by hand. Otters can roll around in their hide while being held by the nape of the neck and are quite capable of biting your “scruffing” hand in mid restraint.
- Older juveniles and adults become quite desperate to escape and can harm themselves in their attempts. They will chew, dig, and/or climb which may result in injuries or death if the caging is not appropriate. Handling these otters should only be done if absolutely necessary and requires wearing heavy leather gloves, long pants, and heavy boots.
- If utilizing a rabies or snare pole to restrain an otter be sure the loop goes behind one front leg as well as the neck otherwise the loop will slip right off the head since their neck is the same circumference.
- Nets are useful for quickly moving an animal from one secured spot to another as long as the net is heavy duty. It also must be long enough to properly contain the body and have room to “flip” the net on itself to temporarily keep the otter closed inside while being lifted. Nets also have been used for securing an animal to the ground long enough to allow administration of an IM or SQ injection through the netting. Padding the net rim is advisable to help prevent injury to the otter’s teeth or mouth in the event he bites it.
- Squeeze cages (available from many sources) are generally the safest method (for both animal and handler) of restraint for injections as they allow the handler access to many body parts of the otter. They also offer quick and reliable immobility of the animal. This method also tends to be the least stressful as it offers less room for struggling reducing the potential of otters harming themselves.





OTTER DIET AND FEEDING – NURSING ORPHANS

Formula:

- Stomach capacity is 50 - 60 ml/kg; begin with 50 ml/kg to reduce chances of diarrhea. Use the formula $0.05 \times \text{B.W. (in grams)} = \text{_____ ml.}$ to calculate the amount to be fed. There are 30 ml. / fluid ounce.
- 20 - 40% (30% is a good starting point) B.W. (body weight) per day should be fed. This should be divided by the number of feedings and given over a 24 hour period.
- When evening feedings are no longer necessary, stagger the remaining meals so that the otter never goes more than 8 hours without eating (ideally no more than 6 hours for the pre-weaned). Do not overfeed in volume in order to eliminate a feeding or make up for a missed session.
- Prepare and date each day's formula and discard any unused refrigerated formula after 24 hours.
- Warm measured formula to body temperature prior to feeding and discard any uneaten portions.
- Do not refrigerate formula after it has been heated.
- If milk has recently been mixed in a blender or rigorously shaken, allow time for the bubbles to settle out before offering bottle to the animal. Too many bubbles may cause gas and G.I. upset.

Hand-rearing:

It is important that the artificial milk formula matches the maternal milk in protein, fat, and carbohydrate composition as closely as possible. Table 1 provides information on the nutritional content of otter milk, and Table 2 provides information on the nutritional composition of selected substitute milk formulas. Table 3 provides sample formulas from Pet Ag™. Nutritional breakdown data excerpted from Reed-Smith 2006 and Reed-Smith et al. 2009.

Table1: Otter (*Lutra spp.*) Milk Nutrition Composition on As Fed (AFB) and Dry Matter Basis (DMB) (Ben Shaul 1962; Jenness & Sloan 1970)

Species	Solids %	Kcal (ml)	Fat %	Protein %	Carb. %
Otter	38.0	2.6 (AFB)	24.0 (AFB)	11.0 (AFB)	0.1 (AFB)
			63.2(DMB)	28.9(DMB)	0.3 (DMB)

Esbilac® (or Milk-Matrix® 33/40) is preferred as the base for milk formulas offered to otters and provides good pup growth. The addition of Multi-Milk® (or Milk-Matrix® 30/55) increases the total fat and protein content without adding substantially to the carbohydrate content of the formula. The maternal milk composition of otter milk only has a trace amount of milk sugars, so this component of the substitute formula must be kept as low as possible to prevent gastric upset and diarrhea. See Table 2

Table 2: Nutritional analysis of commercial animal milk replacers



Product	Solids %	Fat %	Protein %	Carbohydrates %	Ash %	Energy (KCAL/ML)
Esbilac						
Undiluted powder	95.00	40.00	33.00	15.80	6.00	6.20
Diluted 1:3*	15.00	6.00	4.95	2.38	0.90	0.93
Diluted 1:1.5*	30.00	12.00	9.90	4.76	1.80	1.86
Liquid product	15.00	6.00	4.95	2.38	0.90	0.93
KMR						
Undiluted powder	95.00	25.00	42.00	26.00	7.00	5.77
Diluted 1:3*	18.00	4.50	7.56	4.68	1.26	1.04
Diluted 1:1.5*	36.00	9.00	15.12	9.36	2.52	2.07
Liquid product	18.00	4.50	7.56	4.68	1.26	1.04
Multi-Milk						
Undiluted powder	97.50	53.00	34.50	0	6.63	6.85
Diluted 1:1*	22.70	12.00	7.83	0	1.51	1.55
Diluted 1.5:1*	36.00	19.59	12.75	0	2.54	2.47
Evaporated Milk						
Undiluted product	22.00	7.00	7.90	9.70	0.70	1.49
Multi-Milk:KMR+						
1:1*	22.81	8.93	8.71	3.20	1.55	1.45
3:1*	22.90	10.97	8.63	1.54	1.59	1.57
4:1*	22.90	10.90	8.27	1.17	1.50	1.51
1:3*	22.70	7.28	9.10	4.39	2.30	1.37
1:4*	22.60	6.95	9.16	4.68	1.57	1.36
Multi-Milk:KMR++						
1:1*	34.22	13.40	13.07	4.80	2.33	2.18
3:1*	34.55	16.46	13.03	2.31	2.39	2.36
4:1*	34.55	16.35	12.41	1.76	2.25	2.28
1:3*	34.05	10.92	13.65	6.59	3.45	2.06
1:4*	33.90	10.43	13.74	7.02	2.36	2.04
Multi-Milk:Esbilac+						
1:1*	22.81	10.63	7.70	1.78	1.44	1.49
3:1*	22.93	11.63	8.00	0.89	1.52	1.56
4:1*	22.90	11.60	7.86	0.71	1.49	1.55
1:3*	22.70	9.81	8.75	2.67	2.13	1.51
1:4*	22.60	9.65	7.54	2.84	1.39	1.43
Multi-Milk:Esbilac++						
1:1*	34.22	15.95	11.55	2.67	2.16	2.24
3:1*	34.40	17.45	12.00	1.34	2.28	2.33
4:1*	34.35	17.40	11.79	1.07	2.24	2.33
1:3*	34.05	14.72	13.13	4.01	3.20	2.28
1:4*	33.90	14.48	11.31	4.26	2.09	2.15

* Ratio of powder to water

+ Ratio of powder-to-powder, diluted 1 part powder to 1 part water;

++ Ratio of powder-to-powder, diluted 1.5 parts powder to 1 part water (Evans 1985)



The addition of an anti-gas build-up product to the formula should be considered (milk sugars can cause the build-up of gas). Lact-aid[®] is an enzyme that has been used successfully with many species. Add two drops of Lact-aid[®] to 100ml of mixed formula. The formula then must be refrigerated for 24 hours prior to feeding for the enzyme to perform correctly (Grant 2005). *Lactobacillus* spp., in Bene-bac[®] or Probios[®], is a group of beneficial gut bacteria that also break down milk sugars in the digestive tract. Follow label instructions for these products.

***Formula Note**

Recent change (2009) in the manufacturing process of Esbilac powder has been causing some growth and digestibility problems in squirrels, opossums and raccoons for some wildlife rehabilitators using this milk replacer. Problems regarding this product with other wildlife species have not yet been reported or published to author’s knowledge.

Pet Ag[®], manufacturer of Esbilac and the Zoologic Milk Matrix line of milk replacers, reminds wildlife rehabilitators that using Esbilac on wildlife is “off label” usage and they recommend that instead rehabilitators use the Zoologic Milk Matrix products such as Zoologic 33/40 since it is manufactured and labeled for use in wild orphan mammals.

Wildlife rehabilitators are advised to know about these issues in order to make informed decisions on the formulas we choose to feed. Current updates on milk replacers, feeding practices, and information on gastrointestinal conditions in wildlife are available at www.ewildagain.org.

Table 3: Substitute milk formulas for otters. Values taken from product composition documents available from PetAg™ (K.Grant, personal communication)

Formula	% Solids	% Fat	% Protein	% Carb	Kcal/ml
Formula #1 1 part Esbilac [®] or Milk Matrix [®] 33/40 1 part Multi-Milk [®] or Milk Matrix [®] 30/55 2 parts water	30.9	15.6	10.5	2.7	1.78
Formula #2 1 part Multi-Milk [®] or Milk Matrix 30/55 [®] 1 part water	31.3	17.8	10.4	1.1	1.91

At this time (2004), the preferred formula is canned Esbilac[®] due to palatability and good pup growth. Milk Matrix[®] based formulas also are nutritionally suitable but some facilities have had pups refuse this formula (Blum 2004) while others have had good success.

Formulas:



The following are examples of formulas successfully used to raise N. A. river otter.

- 1 part powdered Esbilac® + 2 parts water + Lactobacillus (Avian Benebac™) powder (1t/cup of formula) (provided by M. Haire)
- 1 part powdered Esbilac® + 2 parts water + 1 part heavy whipping cream + 1 part Multi-Milk® (provided by M. Caine-Stage)
- 2 part liquid Esbilac® + 1 part whipping cream
- Multi-Milk® 30/55 until eyes open, than;
2 parts liquid Esbilac + 1 part Multi-Milk® (Provided by S. Beckwith)
- Canned Esbilac® (as is)
- 1 part powdered Esbilac® or Milk Matrix® 33/40 + 1 part powdered Multi-Milk® or Milk Matrix® 30/55 + 2 parts water
- Multi-Milk® 30/55 until eyes open then transition to Esbilac® (Zoologic milk substitute 30/55 has low level of lactose)
- Esbilac® 2 T/4 oz BW divided into 5 - 7 feedings every 2 - 3 hours until 10:00pm
4 weeks old consume 1 oz/feeding 4 - 6 x/day
6 weeks old consume 2.5 oz/feeding 4 x/day (provided by Blasidell)



Table 4: Care Timeline (birth to 10 weeks)

North American River Otter (<i>Lontra canadensis</i>) Care Sheet					
Age (Weeks)	Weights (g)	Age Determinates	Diet	Amount	Frequency
birth	110 - 170	Dark brown-grayish black fur, eyes closed, 25 - 30 cm long, toothless, needs stimulation, auditory canals open and able to chirp at birth.	Formula plus Probiotic	Volume by B.W. (body weight)	Every 2 - 3 hours 24/7
1	266 - 333				Every 2 - 3 hours 24/7
2	428 - 671				Every 3 hrs. Min. 5 - 6 feedings. No PM feedings.
3	566 - 912	Can growl; developed olfactory senses. Tooth eruption begins.			Every 3 hrs. Min. 5 - 6 feedings. No PM feedings.
4	721 - 1180	Able to toddle & thermoregulate; housing 75°F w/ lamp. Muzzle hairs begin to lighten; whiskers still undeveloped, body 11 - 13 inches			Every 3 hrs. Min. 5 - 6 feedings. No PM feedings.
5	997 - 1562	Crawling on belly. Eyes open-bluish in color (day35 - 40).			Every 3 hrs. Min. 5 feedings. No PM feedings.
6	1200 - 1428	Eyes focused and tracking, localized latrine use. Able to walk holding head up.			Every 3 - 4 hrs. Min. 5 feedings. No PM feedings.
7	1161 - 2072	Urogenital stimulation can be discontinued should be defecating on own.			Every 3 - 4 hrs. 4 - 5 feedings. No PM feedings.



North American River Otter (<i>Lontra canadensis</i>) Care Sheet					
Age (Weeks)	Weights (g)	Age Determinates	Diet	Amount	Frequency
8	1656 - 1907	Introduce to water dish.	Add Canned Food	Solids- Ad Lib.	Every 4 hrs. 4 feedings. No PM feedings.
9	1914 - 2247				Feed 4 times /day
10	1678 - 2419		Add Fish	Fish- Ad Lib.	Feed 4 times /day

Weights- from North American River Otter Husbandry Manual (Reed Smith 2001)



Feeding Nursing Pups:

- Weigh pups at the same time each day (preferably before first AM feeding) to calculate feeding volume.
- For bottle feeding, place infant in a sternal recumbent (belly down) position with the head straight out and slightly up.
- Due to their competitive and sometimes aggressive nature, multiple pups may need to be offered bottles simultaneously or physically separated to feed one at a time to avoid injury to the other otters or the care giver.



- Newborns have been successfully fed by syringes with a cut off portion of a rubber catheter attached to needle hub for a nipple.
- Another option is a Cat-tac® nipple attached to syringe tip than switching to a Pet AG™ Pet nurser with a nipple (size F or LD) from Wombaroo™ as they get a little older. The nipple size depends on the individual otter's preference. (McBride, personal communication)
- Juveniles (4 - 12 weeks of age) are often fed with human baby bottles and soft preemie nipples.
- Otters may get frustrated if the nipple hole does not suit the suckling reflex or if the nipple is too hard.
- Avoid the temptation to enlarge the nipple's hole size. If the otter is outgrowing the nipple, it is safer to go up one nipple size rather than to widen the hole.
- Playtex brand silicone, preemie nipples (hole size 1) generally work well for very young pups as they are soft and PBA free. These nipples are often available at many large chain drug stores and Walmart. (S. Beckwith personal communication)
- Two other brands of nipples that often work well are Similac™ Special Care Nipple and Enfamil™ Neonatal Nipple. Both offer a tip smaller than most other preemie nipples.
- New intakes may take several days to become accustomed to the new diet and feeding equipment.
- One method used to get infants to adjust to nursing from an artificial nipple is to cover the pup's eyes and hold the mouth firmly closed over the nipple until pup stops chewing and resisting and calms down enough to attempt suckling. Squeeze the bottle gently to allow a small amount of milk to flow into the mouth to encourage them to swallow and get used to the taste of the unfamiliar formula.

Clamping jaws over nipple to encourage nursing.





- Line up the nipple/bottle with the center of the mouth (equal distance between canine teeth) because if the nipple is offset to one side of the mouth the pup tends to want to chew and tug on the nipple instead of suckle.
- Otters are obligate nose breathers so they cannot breathe from their mouth and nurse at the same time. This may create a difficult nursing session if the pup has a respiratory infection and is congested. In this case, hopefully the pup is old enough and will eat enough from a bowl. In severe cases, a nasogastric feeding tube may need to be placed by a veterinarian.

Nasogastric tube sutured in place for stomach tube feeding a young otter unable to eat normally due to neurological issues.



- Bottle aged pups that will not suckle can be successfully transitioned by feeding formula and blended solids (fish and kitten chow) with a **large tipped (gastric) irrigation syringe** (as shown) until they are able to feed from a bowl.



- Once otter pups get the hang of bottle nursing, the rest of the feeding times are spent trying to slow them down. They tend to drink very fast and you may have to pull the empty bottle away quickly to prevent them from swallowing air or chewing the nipple in half due to excitement.
- Unfortunately, not all bottle-aged pups will learn to suckle from the bottle and some choose to just chew on the nipple and force the milk out instead. Although this “drinking” method works well enough, close attention must be paid to the condition of



the nipple throughout the entire feeding because they can (and probably will) suddenly puncture and tear the nipple spilling the formula out in a rush.

- Aggressive bottle drinkers can become quite fractious at the end of the feeding sessions so be prepared for possible scratches/bites. Wear leather gloves and keep fingers and face away from the “bite zone” when pulling the empty bottle away.
- Baby otter’s abdomens should be nicely rounded after mealtime but never tight or doughy. A healthy well fed otter pup should never show shoulder, hip, or rib bones.



Healthy well fed baby river otter

- After a bottle feeding, attempt to burp the pup by patting firmly between the shoulder blades and down the infant's back as otter pups tend to accumulate air in their stomachs while nursing. This may cause them to stop feeding before they have ingested the entire meal.

FEEDING VERY YOUNG PUPS THAT WILL NOT NURSE

If very young pups will not nurse they can be tube fed. Prior to attempting for the first time, the tube feeding procedure should be demonstrated by a veterinarian or experienced person. This should only be tried on pups without teeth. The procedure below has been used successfully on N. A. river otter pups.

- Typically, a size 5 Fr. feeding tube (such as a red rubber catheter) is sufficient for feeding most young pups but size is dependent on the individual. The next size down (3.5 Fr.) and next size up (8 Fr.) should be available in case they are needed.
- Pre-load the catheter with formula before passing it into the stomach to avoid injecting a large bubble of air ahead of the meal. This is accomplished by filling the syringe with formula, attaching to catheter, depressing plunger slowly until formula is coming out the end of the catheter. Using this method, you will have an accurate amount of fluid entering the pup, without air bubbles being pumped through first.
- Measure to the last rib and mark the spot on the catheter with a sharpie. Passing the tube is similar to tube-feeding almost any other neonatal carnivore.



- Generally start the first feeding with just Pedialyte® to make sure they are hydrated before putting any actual formula in them.
- Second feeding +/- third feeding is 50% Pedialyte®/50% formula, then 25%/75%, then full strength formula. This is a dynamic process, though, and changes are made based on the neonate – constipation/diarrhea will require adjusting the strength and amount.
- Typically aim to feed 20 - 40% of the pup's body weight daily, divided evenly over a 24 hour period. It is important for the caretaker/keeper to be in touch with their veterinarian during this process so that concerns can be discussed and addressed right away (diarrhea, constipation, aspiration of formula, dehydration, weakness, etc).
- It helps to soak the catheter in warm water before using it. This softens the rubber a little and is gentler on the pup.

STIMULATION TO URINATE/DEFECATE

- Stimulate for urination and defecation with a damp cloth before feeding. This should be done until eyes open and self-elimination is evident (~ 7 weeks).
- Otters on formula have a variety of stool types and consistencies but their feces generally should be soft, but formed, and yellow in color (See photo).
- When the pups begin to eat solid food their feces tend to take on the look and texture of what they ate last (See photo). Anywhere from light tan to almost black feces are typically normal.
- Otters have a mucous lined intestinal tract to protect themselves from fish bones, crayfish shells, and other ingested sharp food items. It is normal for them to occasionally pass mucous in/on their stool.
- Due to their high metabolism otters may urinate/defecate every 2 - 3 hours and they usually do both functions at the same time.
- Generally they defecate in a place away from the food and sleeping quarters but often in a water bowl or pool.
- Occasionally otter pups will use a litter box, with shredded paper or pelleted paper litter, if a shallow pan is provided in their favorite latrine corner or spot.
- Some rehabilitators offer a separate kennel for the pup to use as a latrine.



Providing a litter box may help with cage cleaning.

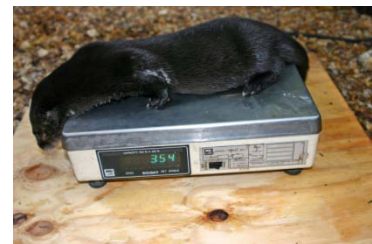


Bowl Feeding:

- Juveniles (6 weeks and older) may prefer to take formula out of a bowl and should be encouraged to do so as early as possible.
- Early lappers tend to be easier to wean, form less of a bond with the care giver, and have less chance of aspirating milk than those individuals that are being bottle fed.
- One challenge of bowl feeding the formula is the mess. Be prepared to rinse and dry off the baby (and enclosure) after each feeding.
- **Note:** Offering formula in a bowl makes it more difficult to measure actual formula consumption vs. wasted “milk splatter.”
- It is usually best to feed multiple pups separately so they are less likely to fight and to help ensure that each animal is getting the measured volume that he needs.
- **Feeding Tip:** A stainless steel puppy bowl with a cone in the middle helps to reduce face to face contact with other pups and reduces the likelihood of the pups submerging their entire heads into the food bowl.
- When a new pup is introduced to one already familiar with the feeding routine the food competitiveness that often develops may be helpful in stimulating the new animal into defending (and therefore to begin eating) his new and unfamiliar diet.
- Bowl feeding mess clean-up may be easier if pups are first moved to a cleanable “feeding station,” such as a stock tank, plastic baby pool, deep sink, or bath tub, away from bedding and sleeping quarters during the meal time.
- Clean and dry the pups immediately following the feeding sessions so as not to allow the pups to chill or the food to dry onto the skin and fur.
- Regardless of the feeding technique used, the true measure of how the individuals are doing is by careful observation of body condition, fur quality, and daily weight gain.



Introduce a scale to the pups when they are young in order to improve your chances of getting routine weights up to release age.



Weaning

- At weeks 6 - 8, gradually begin introducing solid foods such as blended fish or small soft-boned fish (e.g. minnow, smelt), chicken baby food, canned or moistened kitten food into the bottle or formula bowl.
- Only introduce one new weaning food component to the diet every few days until they have adjusted well to solids.
- Gradually decrease the number of formula feedings until weaned (usually by 16 weeks).



- Once they have a taste for the kitten food in the formula, start offering it dry ad lib. Some otters will eat the dry cat food in between meals.
- **Weaning tip:** Remove the nipple and put fish parts, solids, shrimp in the bottle. They will play with the bottle while retrieving the bits. Also stimulates their intellect.
- **Weaning tip:** Weaning off formula can happen over night or sometimes takes months. Offer small fish/canned kitten food before each formula feeding, while they are still very hungry, to encourage them to begin eating on their own.
- **Weaning tip:** If pups show no interest in kitten chow try tossing it in the pool, they may forage for it naturally.
- Do not skip a bottle feeding in order to make the pups “extra hungry” in an attempt to coax them to eat solid food.
- When weaning an overly excited/anxious pup from bottle to bowl you may try to offer half of the formula from the bottle first, than present a bowl containing the remainder. When the pups are really hungry (and familiar only with a bottle) they may need some food in their bellies first to calm them down enough to allow them to concentrate on the rest of the meal presented in an unfamiliar object (bowl).
- **Weaning tip:** With bottle nursers that are resistant to trying solid food on their own, try slipping small pieces of fish in their mouths along with the nipple to “trick” them into chewing and swallowing the fish.
- If a pup starts to nurse on its’, or its sibling’s, tail tip or toes, an extra formula feeding may need to be added back in for a few days. This behavior should be dealt with immediately to prevent it from becoming permanent.



Tail tip after being self nursed on.

- Putting orange oil on the genitals to discourage sucking has worked well with *Lutra lutra* and is not harmful to the otter (G. Yoxon, personal communication)
- Some otter pups choose to go from formula straight to fish and are not interested in the baby or kitten food. While feeding a strictly fish diet in captivity may seem to be more natural, be aware that in the wild they would be getting a broad variety of fresh fish species, amphibians, crayfish, invertebrates, birds, small mammals, and other food types that make up a nutritional balance which is often difficult to replicate in captivity. Frozen fish, while easier for the care giver to acquire, is deficient in thiamine and therefore not nutritionally complete so fresh whole fish, vitamin/mineral supplementation, and/or other commercial diets may also be required.



- If weaning pups from formula straight onto adult diet, substitute a single feeding at first with small fish or fish pieces and then gradually replace the number of bottles with fish until they are weaned.
- Begin to offer drinking water in a shallow bowl when otters can walk and begin to eat solid foods but plan to refill the water bowl several times a day because they will climb repeatedly in and out of the bowl.
- Young otters tend to defecate in the water and often soil their water bowls and pools multiple times a day. These should be regularly cleaned and refilled.
- When first introducing live food, start with small harmless prey such as minnows, goldfish, tadpoles, and frogs. Once the otters develop the skill and taste to capture and eat these easy targets then progress to the prey that may fight back such as crayfish, catfish, mice, etc.

Novel way to introduce live prey.



- Some rehabilitators have reported seeing otters regurgitate bones and scales shortly after a meal. This is probably a natural process and should be ruled out before considering a health condition involving vomiting.
- A variety of whole carcass fish plus a balanced good quality dry and canned kitten food should constitute 90% of the post-weaning diet.
- Every effort should be made to feed live fish and other native prey items daily. Natural diets vary by location and season but mainly consist of fish, crayfish, frogs, water invertebrates, small mammals, and birds.
- Some captive otters eagerly consume mice and chicks as part of their diet.
- Wild adult otters eat 15 - 20 % of their body weight per day.
- Captive weaned pups and adult river otters should be fed at least 3 to 4 times a day due to their high metabolism and caloric needs with 4 daily feedings being ideal.



SOURCES/SUPPLIES:

Enfamil™ Neonatal Nipple Latex-Free by Mead Johnson Nutritionals #4202-02.

Esbilac, Multimilk, Benebac, Pet Nurser bottle: Pet Ag™, 255 keys Ave., Hampshire, Illinois, 60140, 1-800-323-6878

Milk Matrix: Pet Ag™, 255 keys Ave., Hampshire, Illinois, 60140, 1-800-323-6878

SnuggleSafe™ microwavable heating pad (www.snugglesafe.co.uk).

Similac™ Special Care™ Nipple by Ross Pediatrics- Ross Production Division Abbott Laboratories Item # 00095. Special on line order.

Syringes, feeding tubes/catheters, Catac nipples, etc.: Most of these products are available on-line at Chris's Squirrels and More: www.squirrelsandmore.com

Wombaroo™ formula nipples (Size F or LD)- www.wombaroo.com or www.perfectpets.com

Zoologic milk replacer: Pet Ag™, 255 keys Ave., Hampshire, Illinois, 60140, 1-800-323-6878

CONTACTS AND RESOURCES

Melanie Haire – mahaire@comcast.net (Georgia)

Tanya Thibodeaux – TanyaThibodeaux@aol.com (Arc For Wildlife, East Texas)

Suzanne McBride – suezoo52@aol.com

Sally Beckwith- starthrower rehab@shoreham.net (Vermont)

IWRC- <http://theiwrc.org/>

Jan Reed-Smith, AZA Otter SSP & IUCN/SSC Otter Specialist Group – jrsotter@gmail.com

AZA Otter SSP- Dusty.Lombardi@columbuszoo.org

David Hamilton, AZA N.A. river otter studbook keeper, DHamilton@monroecounty.gov

Otterspotter, <http://otterspotter.com/>

IUCN/SSC Otter Specialist Group, <http://www.otterspecialistgroup.org/>



OTTER REHABILITATION LITERATURE REFERENCES AND RECOMMENDED READING

Beckwith, S. 2003. Rehabilitation of Orphan River Otters. Pp. 51-60 in *Wildlife Rehabilitation*, vol 21 (Bea Orendorff, ed.). National Wildlife Rehabilitators Association: St. Cloud, MN.

Blaisdell, F. D.V.M. 1999. Rehabilitation of River Otters. *NWRA Quarterly Journal* 17(2): 1-5. (Bea Orendorff, ed.). National Wildlife Rehabilitators Association: St. Cloud, MN.

Cain-Stage, M. 1990. Rehabilitation Notes: American River Otter *Lutra canadensis*. *IWRC Wildlife Journal*. 13(1): 7-10.

Evans, Richard H. 1986. Care and Feeding of Orphaned Mammals and Birds. In *Current Veterinary Therapy IX*. Philadelphia: W.B. Saunders Co. pp 775-787.

Green, J. & R. Green. 1992. Release Techniques for Otters: Theory and Practice. *Wildlife Rehabilitators Today* 3 (4): 26-31. Coconut Creek, FL.

Reed-Smith, J. 2006. North American River Otter Husbandry Notebook, 2nd Edition. 2006. Available on IUCN Otter Specialist Group website (<http://www.otterspecialistgroup.org/>) in library section, OZ Task Force.



Successful Hand-rearing and Rehabilitation of North American River Otter (*Lontra canadensis*): Hand-rearing and Release Techniques to Maximize Chance of Success.

Section 2 – Otter Housing, Vocalizations, and Health Care.

M. Haire

2011

Published by:

IUCN/SSC Otter Specialist Group, Otters in Zoos, Aquaria, Rehabilitation, and Wildlife
Sanctuaries (OZ) Task Force

<http://www.otterspecialistgroup.org/Library/TaskForces/OCT.html>

Contributions from: Tanya Thibodeaux; Editor: Jan Reed-Smith

Reviewed by: Gwen Myers, DVM; Christine Fiorello, DVM, PhD; Nicole Duplaix

Photographs: Tanya Thibodeaux, Melanie Haire



This document, a compilation of advice from multiple individuals with otter rehabilitation experience, is designed to provide guidelines and techniques of river otter care for licensed wildlife rehabilitators or wildlife care centers that may be unfamiliar with this species. Due to its length it has been divided into 3 Sections.

Thanks to the following contributors for content, personal communications, edits, etc.

Sally Beckwith, Suzanne McBride, Susan Gerros, Brian Helton, Katie Jeffrey, Gwen Myers, and Grace Yoxon.



OTTER HOUSING

This information addresses care of very young otter pups ranging in age from new born to weanlings.

- If an incubator is used for very young pups it should be kept at 85 - 90° F and 50 - 60% humidity. Gradually reduce to room temperature over 3 weeks.
 - If an incubator is not available an aquarium with a heating pad underneath can be used. The heating pad should be set on low and the aquarium should include adequate ventilation and a thermometer.
 - Pups from 0 - 3 weeks of age should be housed in an incubator or aquarium set up as outlined above.
- At 3 - 6 weeks of age, if the infant is healthy, transfer pup to a pet carrier with bedding piled in the back. A heating pad should be placed underneath the back ½ of the kennel which allows for temperature choice. The front ½ may start to serve as a latrine area as the animal develops.
- Healthy pups usually can thermoregulate by week 5.
- All bedding should be ravel-free cotton or fleece type bedding with no holes or strings. Baby blankets, t-shirts, sweatshirts, flannel, and fleece all work well. Avoid terry cloth, towels, and any material with holes or tears as the pups' claws and toes may become entangled.
- A SnuggleSafe™ microwavable heat source or hot water bottles tucked in with blankets can be temporarily used for transport.
- At 6 - 10 weeks of age: Minimum 6 x 6 ft indoor enclosure should be provided as it offers more room to exercise. A heating pad or heat lamp continues to provide gradient heat in sleeping area. Use a small heavy no-tip water bowl and clean daily, or more frequently if required. Once otters pick their latrine area a litter box with shredded paper can sometimes be used to facilitate cleaning. The number of animals housed together also influences the size of pen and how soon they can go without supplemental heat.
- Children's baby pools make good play pens and temporary housing while their cages, kennels, etc. are being cleaned
- Do not use cat litter or rodent bedding in litter boxes as these items tend to stick to wet otters and can clog nostrils, rectums, and get in their eyes.



- Drinking water can be introduced at about 9 weeks of age but care must be taken that otters are not allowed to get too wet because they can chill easily and develop pneumonia. Towel-dry them if they get soaked and replace water bowl with smaller one.
- Continue to provide supplemental heat in a dry sleeping area at least until they are 10 - 12 weeks old depending on ambient temperature (i.e. if above 80° F not required).
- 10 - 12 weeks of age: First outdoor cage should include natural substrate, heated nest box with dry towels, hollow logs, latrine area, and feeding area. A large water bowl or small tub that provides drinking water and introduction to face submerging also should be offered. Start 24/7 access to outdoors when the temperatures are at or above 55 - 60°F. **Do not remove heated nest box or heat lamp until the outside temperatures are consistently above 70°F and the pups are 3 - 4 months old.**
- Author uses a wooden nest box (24" L X 24" W X 30" H) with a ceramic heat lamp built into the roof. A hole drilled into the roof allows the electric cord to pass into the box up and above the otter's reach. The box has a rubber swinging "pet door" so the animals can go in and out and have the door flap close behind them.
- Although the mother may introduce her pups to swimming as early as 8 weeks, the author has a personal preference to wait until they are closer to 10 - 12 weeks of age due to the risk of chilling. In captivity, otter pups tend to first explore the underwater world by submerging their faces up to their ears in their water bowls and looking around with their feet dry and safely on the ground.
- In the wild, the mother may actually have to carry her pups out into the water and let them swim back to the shore many times before the pups begin to feel comfortable enough to try swimming on their own. In captivity, there is less pressure to hurry along the development process so the swimming lessons can be less dramatic and simply done at the comfort level and schedule of the individual pup and care giver. Gradually increasing the pool sizes from a large water bowl to a baby pool will allow the pups to venture in at their own comfort level. Be sure the pups have a ramp or stepping stones going into and out of the pools, especially during this learning period to prevent drowning. It is important that otters are exposed to water and taught how to swim when young. Failure to teach young otters how to swim has resulted in adult otters afraid to go in the water.
- Beginner swimming lessons should be supervised to make sure the animals can get out of the pool quickly and safely in the event that they panic. **Make sure to towel dry the animals after their swims to prevent chilling and always provide dry towels on the cage floor for them to continue to**





rub dry on. Continue to manually dry off pups until they are 12 - 14 weeks old and are beginning to get their adult fur.

- At 12 weeks of age, a large prerelease cage of a minimum size of 20 ft X 20 ft (ideally much larger) filled with lots of natural items (i.e. hollow logs, rocks, live plants, dirt for digging, water bowls, pine cones, pool, dry off area with dirt or sand, etc.) should be provided. This helps them develop natural skills, stimulates their natural curiosity, introduces them to changing environmental elements, and offers opportunities for rubbing to dry their coats as well as marking.



Otter enjoying a dry-off on sand pile

- The larger the pen and the more play items you can rotate in and out, the better. Providing enrichment items such as water toys, balls, float logs, pinecones, frozen fish in ice blocks and even hiding food items around the cage helps to alleviate boredom and helps to prevent self mutilation (e.g. tail sucking) and excessive pacing.

Enrichment items in enclosure should be numerous, varied, and changed frequently to introduce them to novel items and situations.



- Since otters can climb, at least the bottom 4 ft of the cage walls should be constructed or lined with a solid, smooth material so they are unable to get a toe hold (such as sanded plywood, plastic tarp, or a corrugated plastic such as Coroplast®). Make sure the cage “furniture” does not offer a type of climbable structure/ladder that would allow them access to lamps, cords, hardware, etc. suspended from walls or roofs.



- The enclosure should have a top (or overhang) to prevent escapes and to protect pups from predators.
- Otters also dig so the floor should be escape proof. If cement is used, several inches of natural substrate should be placed on top so the pups don't abrade their foot pads.
- Otters also may attempt to chew out. If wood sides or doors are used be sure the material is smooth and solid without gaps (no wood slats) that otters can get teeth, muzzle, or feet through. Doors must be secured within their frames leaving no gaps or latches that can be reached from the inside.
- Again, all pens should include natural substrate and enrichment items to keep them active and allow them to explore and discover.
- Otters can easily climb chain link so these enclosures must have a top and either be lined with a smooth material to prevent foot holds or should be no taller than 4 ft to prevent injury from higher falls.
- Outdoor acclimation usually starts at 6 - 8 weeks of age and finishes by 10 - 12 weeks of age, depending on climate.

VOCALIZATIONS and COMMUNICATION

- River otter pups can make a high pitched chirping sound when they are scared or upset and are calling for mom or other siblings. Initially single pups tend to chirp more often than multiple pups but they generally tend to quiet down after a short adjustment period to their new living quarters.
- When frightened or hurt the pups can make an open mouthed "scream" that usually is best handled by offering the comfort of peace and quiet. Dimming lights, covering kennel, lowering voices, providing secure private hiding area and/or giving the animal space will help quiet him down.
- Otters also make a closed mouth buzzing or humming sound when they are wary of something or someone unfamiliar.
- An open mouthed "hissing/snorting" sound is sometimes made as a warning/threat and may be followed by a bite if not heeded.
- The "warning" vocalization "eh eh eh eh eh" is usually associated with agitation, anger, or fright and often announces a bite will soon follow.
- A loud squeaking sound may be made when a cage mate gets too rough and bites too hard.
- Sometimes the otter pups will mix all these vocalizations together when they are play wrestling with each other.
- Otters have a pair of anal glands that secrete a pungent substance when the animal is afraid or highly stressed. This glandular substance is white in very young pups and darkens as they become older. Secretions from an agitated otter's anal glands should be considered an indication of stress and a precursor to attack due to fright or anger.



OTTER HEALTH CARE

Also see the otter veterinary care document and/or husbandry manuals (available on the OSG OZ Task Force website) for individual species for more detailed information.

BASIC GUIDELINES and COMMON CONDITIONS

Normal body temperature: 99.5° - 102°F.

Normal heart rate: 130 - 189 beats/min

Normal respiratory rate: range = 10 – 61; baseline = 31

*All rates measured under anesthesia

- If the otter comes in sick or injured it should receive immediate veterinary care from a doctor with otter experience. Only vets should make decisions on the medications, drug dosages, diagnostic plan, and sedation plans.
- Otters can be difficult to safely anesthetize and recover so the decision to do so should not be taken lightly. The use of anesthetic reversal drugs is often necessary to bring the otter out of sedation smoothly. If anesthesia is required it should only be attempted when the animal is calm. If the procedure will take longer than 15 - 30 minutes they should be intubated. If the animal needs treatment, treat it; make the procedure as short and quick as possible. Ketamine is associated with hyperthermia, so use only when necessary and monitor body temperature carefully.
- Otters are dangerous and can cause significant injury to people. Be cautious when handling and anesthetizing... experience is crucial.
- Due to their tendency to become overly excited in stressful situations river otters tend to overheat and become hyperthermic during examination or treatment procedures. This also is true if long transports are required.
- Most common medical conditions observed in rescued otters include trauma, hypothermia, and hypoglycemia.
- They also are susceptible to pneumonia, tick borne blood parasites, heartworm, distemper, rabies, clostridial enteritis, and intestinal parasites. May be susceptible to all canine and/or feline viral diseases.
- Dehydration should be treated immediately upon consultation with a veterinarian.
- Bloat can occur due to: imbalances of normal GI tract flora, if fed too much, if wrong formula is used, if the formula is too concentrated, and due to certain diseases. This condition must be addressed early. If you see this contact a rehabilitator or veterinarian with otter experience.
- Trauma – basic wound care procedures should be applied.
- Pain management should be discussed with a veterinarian prior to use; especially if animal is dehydrated, has kidney issues, etc. Drugs that have been used include:
 - Meloxicam – 0.1mg/kg 1x/day oral or injectable subcutaneously.
 - Carprofen – 1mg/lb. orally or injectable subcutaneously 1-2x/day



- In the event an otter dies in rehab it is always good practice to perform a post mortem examination. Much can be learned about the animal from this procedure and often the cause of death may be discovered. In these cases contact jrsotter@iserv.net to submit results to the zoo association data base to assist in the creation of a central database.

BASIC PREVENTATIVE CARE AND TREATMENT OF PARASITES, ETC.

Medications and dosages are offered as a guideline. Treatment should always be carried out by a qualified veterinarian and based on the individual case, location, and condition of the animal.

- Wildlife centers that utilize a preventative medicine program under the direction of a wildlife veterinarian have used the following vaccines with otters:
 - Rabies – killed products only, such as Imrab 3™ (Merial) at 16 weeks.
 - Distemper- PureVax™ Ferret Distemper Vaccine (Merial) 2 - 3 injections given at 3 week intervals.
 - Parvovirus – killed products only at 8, 12, & 16 wks.
 - Fecal exams – every 3 months
 - Heart Worm preventative- can start at 16 weeks. Ivermectin at .012mg/kg orally 1xmonth. Preventative should be given year around after 6 months of age
 - Monthly heartworm prevention should be given **after a negative test.****
 - AZA Otter SSP veterinary advisor recommends canine viral combos and feline viral combos at 8, 12, and 16 weeks instead of individual vaccines listed above.

** Caution if an otter tests positive for filarid nematodes experienced veterinarians should be consulted before any treatment is attempted. Neiffer et al. (Journal of Zoo and Wildlife Medicine; 2002/33(3)) reported deaths of two N. A. river otters when treated with melarsomine dihydrochloride; one had a suspected *Dirofilaria immitis* infection, the other had a confirmed *D. lutrae* infection. Their article abstract follows.

"Two adult North American river otters (Lontra canadensis) and an adult red panda (Ailurus fulgens fulgens) at three separate institutions died within 22 hrs after receiving single 2.5- to 2.7-mg/kg doses of melarsomine dihydrochloride administered in the epaxial musculature as a treatment for filarid nematodes. One otter had a suspected Dirofilaria immitis infection, the other had a confirmed D. lutrae infection, and the red panda had a confirmed Dirofilaria sp. infection, presumably with D. immitis. Postmortem examinations revealed similar gross lesions, although they were less severe in the red panda. The trachea and primary bronchi contained abundant foamy fluid, the lungs were mottled with areas of consolidation, and the pulmonary parenchyma exuded abundant fluid at the cut section. Histologic evaluation revealed acute pulmonary edema, which resulted in respiratory failure and death. There may have been direct pulmonary cellular toxicity of melarsomine dihydrochloride or a severe systemic anaphylactic reaction to antigens released after parasite death. An idiosyncratic drug reaction or a low therapeutic index of melarsomine probably caused the death of the three individuals. Melarsomine dihydrochloride use should be avoided in North American river otters and red pandas."



- Dewormers that have been used on otters (the vast majority of dewormers and antibiotic doses are extrapolated from domestic animals such as dogs and cats) and specific doses are as follows:
 - Pyrantel pamoate
 - Ivermectin – 0.2 mg/kg SC once (for treating mange)
 - Fenbenazole – 50 mg/kg sid PO for 3 days (typically used for protozoal parasites like *Giardia*)
 - Praziquantel

- Ectoparasite treatments:
 - Fipronil (Frontline); keep animal dry for overnight do not use if under 8 weeks
 - Ivermectin
 - Flea powder safe for puppies and kittens (this is pyrethrin-based, if have an alternative it is better to bathe and use flea comb on young animals)
 - Selamectin (Revolution™)

- Antibiotics:
 - Baytril®- 5 mg/kg bid IM, PO or SC. When possible, avoid use on growing animals because of cartilage issues seen in domestic dogs.
 - Amoxicillin/clavulanate – 10 - 20 mg/kg (Clavamox®); used more for deep tissue infections, tooth root abscesses, etc.
 - Amoxicillin – 15 - 20 mg/kg SID or BID, PO (used for simple wounds or infections if not working try antibiotic/dose listed above).
 - Penicillin G – 40,000 - 44,000 *iu*/kg SID IM

- The use of vaccines and prophylactic dewormers are often controversial for many animal species being rehabilitated for release. Several reasons are listed below;
 - The efficacies of vaccines have not been proven in wild carnivore species.
 - There is no rabies vaccine approved for wildlife so any wild animal vaccinated with an “off label” product is still considered non-vaccinated by any human health official in the event of a bite.
 - Some animals may have a negative or allergic reaction to vaccinations and some medications.
 - Some modified live vaccines have been known to produce disease outbreaks in zoo animals.

- That being said, potential zoonotic issues, spread of contagious diseases, and health care of long term captive animals also must be considered.
- Ideally, the preventative care plan for all your animal species should be discussed with your wildlife veterinarian prior to intake.



Anemic 7 month old river otter.



River otter with head/facial wounds.





SEXING OTTER PUPS

Many people have reported sexing young otter pups to be difficult. The male's perineal opening is located about 5 - 6 inches above the rectum as a slight depression. If the area is rubbed you can feel the baculum (bone) as a short ridge under the fur; females lack this. (personal communication N. Duplaix)

Below are photos of 6 week old otter pups to use as a guide.

Young male N. A. river otter at 6 weeks of age.





Young female N. A. river otter at 6 weeks of age.





**Successful Hand-rearing and Rehabilitation of North American River Otter
(*Lontra canadensis*): Hand-rearing and Release Techniques to Maximize Chance
of Success.**

Section 3 – Otter Release, Resources, and Suggested Reading

M. Haire

2011

Published by:

IUCN/SSC Otter Specialist Group, Otters in Zoos, Aquaria, Rehabilitation, and Wildlife
Sanctuaries (OZ) Task Force

<http://www.otterspecialistgroup.org/Library/TaskForces/OCT.html>

Editor: Jan Reed-Smith; Photographs: Tanya Thibodeaux, Melanie Haire
Reviewed by: Nicole Duplaix, Sally Beckwith



This document, a compilation of advice from multiple individuals with otter rehabilitation experience, is designed to provide guidelines and techniques of river otter care for licensed wildlife rehabilitators or wildlife care centers that may be unfamiliar with this species. Due to its length it has been divided into 3 Sections.

Thanks to the following contributors for content, personal communications, edits, etc.

Tanya Thibodeaux, Sally Beckwith, Suzanne McBride, Susan Gerros, Brian Helton, Katie Jeffrey, Grace Yoxon.



Otter Release

OTTER RELEASE PREPARATION

- Generally the release age is at 8 - 12 months which is their average normal dispersal age.
- Release criteria includes: demonstration of efficient fishing, swimming, and prey recognition skills; proper hunting response to natural food items; appropriate fear response to the appearance of humans; appropriate caution, and avoidance of perceived dangers.
- Pups should be healthy, in good body condition, have waterproof coats, at a sufficient weight (6.8 - 9.0 kg), and free from external and internal parasites.
- Prepare otters by offering food items (such as crayfish, minnows, carp, brim, catfish, trout, frogs, worms, grubs, freshwater clams) that would be found in the proposed release site to help facilitate prey recognition.
- Multiple pups generally can be released slightly younger (8 - 10 months old) than single pups (10 - 12 months old). Because of their social nature, they tend to remain together after release and are less likely to get lonely, frightened, or bored prompting them to seek out the rehabilitator. Also there is safety in numbers as a potential predator may hesitate before going after multiple river otters.
- Although the hunting instinct is naturally strong for these animals and does not have to be taught, the actual act of successfully and consistently catching a live swimming fish in open water must be practiced extensively.
- A major consideration for releasing towards the earlier end of the age range is that the confines of a prerelease pen poses severe limitations on what the otters might otherwise discover, learn, and perfect in their natural environment. The slow release from a feeding station should provide backup care for as long as it takes the individual to master these life skills. Their fishing skills require speed, conditioning, and accuracy as well as the ability to identify and capture a variety of prey items.
- Although these skills are mastered to some degree in the confines of a pool, it does not compare to the challenges found in an unpredictable river. However, the experience does provide some assurance that the pup could acquire food in the unlikely event that it chooses not to use or inadvertently gets separated from the feeding station.

RELEASE SITE CRITERIA

- One of the difficulties of release with any species is finding an appropriate release site that meets optimal criteria. The foremost criterion is that the site must be an environment that is appropriate for the target species providing proper habitat, food, water, shelter, and a viable population of conspecifics (see next point).
- Ideal site criteria for otters include good water quality, no serious pollution, isolation from humans, safe distance from roadways, and current suboptimal otter population.



- Whether or not an area has a viable population can be difficult to determine. Although the released animals need to be in an area with conspecifics, too many may pose a risk for overcrowding and/or territorial disputes resulting in aggression that may result in injury, death, or the need for rescue again.
- Releasing rehabilitated animals back to the same geographical area from which they came is a good practice unless the area is suboptimal (e.g. recent increase in human presence, new road, etc.). Adult otters should almost always be returned to their established home range.
- If the otter originated from an unknown location and needs to be translocated, seek advice from local and state wildlife population biologists as to the current status and ranges to help determine potential quality release sites.
- Although the welfare of the individual animal is a wildlife rehabilitator's primary goal, consideration of the possible impact these translocations pose to the health of the current population also must be considered.
- When selecting release sites be sure to have the landowners permission when you are considering crossing over or releasing on private land.
- If using a slow release (or hacking technique) with a hand-reared animal the site also must be close enough to allow a care taker to maintain daily checks and a consistent feeding schedule as needed.



Release days at the river

BEST TIME FOR RELEASE

- Critical factors such as time of day, season, migration patterns (from one water source to another), weather, potential predators, and proximity of territorial individuals should be considered as they may have an effect on the immediate outcome.
- Release in the early morning, which corresponds with their natural period of activity, on a day with good weather and little or no chance of rain or storms for several days. This provides the animal with the optimal amount of daylight hours in calmer water to explore before nightfall.
- The best time of the year to release depends on geographic climate (release before water ways freeze over), legal trapping season (afterwards or "months before" to allow



otters time to acclimate) and before otter whelping season (maternal adult females can be extremely territorial).

- Even in the cold northern latitudes, a fall release is often preferred to waiting until the following spring as the otters tend to do quite well with the colder temperatures and procuring food in partially frozen water may actually be easier due to the slower movement of frogs and fish.
- Keeping the pup over the winter may seem well meaning but in fact could lead to otherwise avoidable problems (self induced injury from escape attempts, taming of animal, injury from a protective wild female with weaning or weanling pups of her own).

RELEASE PROCESSES

- Regardless of the timing and location of the animal(s) release, a soft release is the preferred method for hand-reared river otters.
- There are nearly as many release techniques as there are rehabilitators and published river otter methods range from the strict hands off (otters are raised, housed and released wild) to extensive hands on approaches (rehabilitator takes on maternal role).
- Below are a few summarized methods (references included for further reading).
- Some rehabilitators utilize **hack cages** at the release site. This method involves building a temporary enclosure at the release site and housing and feeding the otter there for 1 to 3 weeks prior to release. Once the door is open, food is provided daily in the cage until no longer needed. Some otters only return for several days while some will take longer. (Blaisdell, Green)
- Others provide **daily back up food at the release site** until no longer necessary. Some otters move on rather quickly while others may linger for months or even take up a permanent territory near the release area. The author has had otters return to the hack site when they became sick or injured so daily visits by the caretaker to the release site serves as an important opportunity to observe the animal's condition as well as to provide food. Otters can be trained to respond to a whistle call (by whistling prior to every feeding starting with formula) that they learn to associate with feeding time and the feeding station location in order to assure that the released otters are the animals to actually receive the food. This also allows for visual inspection of the animals in order to assist with post release monitoring. Utilizing an audible feeding signal, such as a whistle, also serves as a safety factor for the otter since it establishes an association with food to a very particular cue rather than to the mere sight or sound of a human. This can reduce or eliminate instances in which an otter may approach a stranger in search of food after release. (Haire)
- Introducing the otter to the release site multiple times prior to release can give the animal the advantage of becoming familiar with the area and its waterways thus locating safe hiding places, sleeping dens, food and hunting spots as well as providing them with chances to practice fishing prior to being left on its own. To accomplish this, it is best to start when the animal is young enough (less than 5 months old) to still be trusting of, and dependent on the care giver. This increases the chance that the animal



will remain with the rehabilitator as they explore the outside world and then later return home together. (Beckwith, Blaisdell, Caine-Stage)



Left: Feeding/hack station at release site



Right: Well used otter slide/path at release site leading from river to feeding station.

NON-RELEASABLE OTTERS

If multiple attempts to release an individual fail or the otter has a health condition, injury, or handicap that deems him non-releasable, permanent placement in captivity can be attempted. It may be possible to place a non-releasable otter in a zoo or nature center as they attempt to accommodate these animals by integrating them into the zoo-bred population. As with many animal species, non-releasable hand-raised otters tend to adjust better in long term zoo, aquarium, or wildlife centers than wild caught adults.

Contacting potential non-releasable otter facilities should be done as early as possible to allow for the best possible placement. Remember to contact your regulating state wildlife agency in regards to the policies of wildlife transport across state borders.

SOURCES/SUPPLIES:

Enfamil™ Neonatal Nipple Latex-Free by Mead Johnson Nutritionals #4202-02.

Esbilac, Multi-Milk®, Benebac, Pet Nurser bottle: Pet Ag™, 255 Keyes Ave., Hampshire, Illinois, 60140, 1-800-323-6878

Milk Matrix: Pet Ag™, 255 Keyes Ave., Hampshire, Illinois, 60140, 1-800-323-6878

SnuggleSafe™ microwavable heating pad (www.snugglesafe.co.uk).

Similac™ Special Care™ Nipple by Ross Pediatrics- Ross Production Division Abbott Laboratories Item # 00095. Special on line order.

Syringes, feeding tubes/catheters, Catac nipples, etc.: Most of these products are available on-line at Chris's Squirrels and More: www.squirrelsandmore.com



Wombaroo™ formula nipples (Size F or LD)- www.wombaroo.com or www.perfectpets.com

Zoologic milk replacer: Pet Ag™, 255 Keyes Ave., Hampshire, Illinois, 60140, 1-800-323-6878

CONTACTS AND RESOURCES

Melanie Haire – mahaire@comcast.net

Tanya Thibodeaux – TanyaThibodeaux@aol.com (Arc For Wildlife, East Texas)

Suzanne McBride – suezoo52@aol.com

Sally Beckwith- starthrowerrehab@shoreham.net

IWRC- www.iwrc-online.org/placement

Jan Reed-Smith, AZA Otter SSP & IUCN/SSC Otter Specialist Group – jrsotter@gmail.com

AZA Otter SSP- Dusty.Lombardi@columbuszoo.org

David Hamilton, AZA N.A. river otter studbook keeper, DHamilton@monroecounty.gov

Otterspotter, <http://otterspotter.com/>

IUCN/SSC Otter Specialist Group, <http://www.otterspecialistgroup.org/>

Click on OZ Task Force link located within the Library

OTTER REHABILITATION LITERATURE REFERENCES AND RECOMMENDED READING

Beckwith, S. 2003. Rehabilitation of Orphan River Otters. Pp. 51-60 in *Wildlife Rehabilitation*, Vol. 21 (Bea Orendorff, ed.). National Wildlife Rehabilitators Association: St. Cloud, MN.

Blaisdell, F. D.V.M. 1999. Rehabilitation of River Otters. *NWRA Quarterly Journal* 17(2): 1-5. (Bea Orendorff, ed.). National Wildlife Rehabilitators Association: St. Cloud, MN.

Cain-Stage, M. 1990. Rehabilitation Notes: American River Otter *Lutra canadensis*. *IWRC Wildlife Journal*. 13(1): 7-10.

Evans, Richard H. 1986. Care and Feeding of Orphaned Mammals and Birds. In *Current Veterinary Therapy IX*. Philadelphia: W.B. Saunders Co. pp 775-787.

Green, J & R. Green. 1992. Release Techniques for Otters: Theory and Practice. *Wildlife Rehabilitators Today* 3 (4): 26-31. Coconut Creek, FL.

Haire, Melanie. 2009. Study of Post- Release Data in the North American River Otter (*Lutra canadensis*) *NWRA Wildlife Rehabilitation Bulletin* Volume 27 no. 1 Spring 2009. pgs 3-14 St. Cloud, MN.



Reed-Smith, J. 2006. North American River Otter Husbandry Notebook, 2nd Edition. 2006. Available on IUCN Otter Specialist Group website (<http://www.otterspecialistgroup.org/>) in library section, OZ Task Force.

NATURAL HISTORY LITERATURE REFERENCES AND RECOMMENDED READING

Chanin, P. 1995. The Natural History of Otters. Facts on File Publications: New York, NY.

Duplaix-Hall, N. 1975. River Otters in Captivity: A Review. R.D. Martin, editor. Academic Press, New York.

Fowler, M. E., 1986. Zoo and Wild Animal Medicine 2nd edition. W.B. Saunders Co.

Kruuk, H. 1995. Wild otters: Predation and Populations. London: Academic Press, Oxford.

Kruuk, H. 2006. Otters, Ecology, Behaviour, and Conservation. Oxford University Press: Oxford, England.

Liers, E. E. 1951. Notes on the River Otter (*Lutra canadensis*). Journal of Mammalogy Vol. 32(1):1-9.

Mason and Macdonald, 1986. Otters Ecology and Conservation. Cambridge Univ. Press. New York & Cambridge.

Reed-Smith, J. 2006. North American River Otter Husbandry Notebook, 2nd Edition. 2006. Available on IUCN Otter Specialist Group website (<http://www.otterspecialistgroup.org/>) in library section, OZ Task Force.