

Cochrane Ecological Institute  
P.O. Box 484  
Cochrane, Alberta  
Canada T0L 0W0  
Phone (403) 932-5632 FAX (403) 932-6303  
Email - [cei@cadvision.com](mailto:cei@cadvision.com) Web Site - [www.ceinst.org](http://www.ceinst.org)

---

## Otter Management at the Cochrane Ecological Institute

Clio Smeeton, President, CEI

### Description of Facility:

The Cochrane Ecological Institute (CEI), established in 1971, is a registered charity, a non-profit, non-government organization established as a center for the captive-breeding for re-introduction of extirpated or endangered indigenous species into their historic range, and the rescue, rehabilitation and release of injured and orphaned wildlife. In addition, the CEI provides Field Station facilities for individuals interested in undertaking behavioural research on the species maintained and managed at the Institute.

Although the CEI operates under a zoo permit (2986GP, Alberta Environment) all species held there are intended for re-introduction and release, not for exhibit, trade or sale. As none of the animals held at the CEI are on exhibit, some of the management constraints that influence the way animals are kept within the zoo community are not applicable at the Institute. For example, enclosure size varies from a minimum of 60 meters by 90 meters, 2 1/2 acres, 20 acres up to a maximum of 130 acres, and no enclosure is designed to facilitate public observation of the animals housed within it.

The CEI is set at 4,700 ft above sea level in the foothills of the Rocky Mountains, and consists of 160 acres of natural prairie/montane habitat, enclosed by an 8ft game fence with 4ft. ground-wire mesh along its base and surmounted by a 4ft. wire-mesh overhang. Within the enclosed 160 acres are three spring-fed bodies of water, a large bog, aspen bluffs and spruce groves.

Situated at the center of the CEI is a fenced off 30 acre enclosure containing the three CEI buildings (main building containing office facilities, staff housing, and library, Animal Health center, Interpretive center), the swift fox, *Vulpes velox-V.v.hebes*, captive-breeding facility, Mews and raptor flight pens, as well as enclosures designed to house other orphaned species destined for rehabilitation and release.

The CEI has been working with the North American river otter, *Lutra Canadensis*, since 1983 and over that period has both successfully raised orphaned otter cubs for release into the wild, and undertaken the capture, translocated, and release into suitable habitat of adult and juvenile “nuisance” individuals.

## **Captive otter management at the CEI.**

### **CEI facility designed to house orphaned otters.**

The otters housed at the CEI have all been orphaned animals and, in general, arrive at the Institute severely dehydrated and often close to death. It is vital that otter cubs, of any age, should be kept in a quiet, dim area that is warm, dry, free of draughts and where the animals are easily, non-intrusively, observable over 24 hours.

The area set aside, at the CEI, for newly arrived otter cubs is 10ft by 12ft in size, within the CEI main building and referred to as the “otter room”. The otter room is heavily insulated to reduce any noise disturbance, and to keep it at a warm and an even temperature. The floor is linoleum, while the walls have stainless steel sheeting up to a height of 18 in., above which they are of painted wood. A thermostatically controlled infra red lamp, set 5ft above the floor, ensures that the animals are never chilled. Both hot and cold water is provided within the otter room. Two sets of three ft. deep wood shelves are set on two sides of the room up to a height of five feet. If the room is occupied, these shelves are covered with towelling. Set along one wall there is an 8in. deep, 8ft. by 4ft. fiberglass bath, with a steel grid covered drain, adjacent to that is a 2ft. by 4ft. by 8 inches deep “drying” area containing sawdust or fine sand. The bathing and drying area is divided from the main body of the room by a four ft. high wall and door. It is essential that the bathing area can be closed to very young cubs, and also, when the area is made available to the animals, that there is a large space where the otters can dry off.

Within the otter room, a 6 inch deep, 4ft. by 6ft. box of dry powdered peat covered by a layer of hay is set against one wall, under the shelving. We have found well-cured fine hay to be more suitable than the coarser oat or wheat straw more commonly used as bedding, as hay is equally absorbent and holds together better than straw when the cubs burrow into it. The peat and hay “nest” gives the otter cubs shelter and privacy while still making it possible for the keeper to keep them under observation. Also, while the room is in use by otter cubs, the linoleum floor is thickly covered with newspaper. The otter room is entered, from the CEI library, through an horizontally divided “stable” or “dutch” door.

The whole area can be observed, through plexi-glass windows, from the CEI main library and also from outside through double paned insulated glass windows. The CEI library has an alternative access giving directly onto the CEI’s, fenced, 130 acres. When the animals become old enough to leave the otter room and go outside they then have free access to 130 acres of land through a specially constructed, insulated, “otter exit”, in the CEI library wall built next to the library’s outside door.

The “otter exit” consists of a 2ft by 2ft by 8ft insulated, lidded wooden box containing 3 baffles set at 2 ft intervals along the inside of the box. The baffles are designed to reduce the amount of winter draught and cold that would otherwise whistle into the library. Entry, exit, and passage past the 3 interior baffles is through holes that are 7 inch in diameter.

Immediately outside the CEI library are three specially constructed ponds linked by a shallow creek. Initially, the young otters will make use of these ponds only when in the company of their keeper and spend the rest of their time, voluntarily, in the “otter room”. When the animals are 6

months of age, the keeper will spend a great deal of time taking them for walks all over the CEI's 130 acres and introducing them to the CEI's three large water bodies. These ponds contain, as well as amphibians native to the area, introduced rainbow trout (*Oncorhynchus mykiss*). The natural prairie habitat of the CEI's 130 acres also houses wildlife indigenous to the area, large mammals such as moose, elk, white-tail and mule deer, small predators such as coyotes, red foxes, and bobcats as well as a wide range of prey species.

The largest, seven-acre, pond has a purpose built otter Holt, a six ft by three ft insulated box with direct access to the pond, set within a section of the machine room at base of a windmill. The pump operated by the windmill keeps the water open and ice-free all winter, enabling the adolescent animals to use the water throughout that period. By midwinter of their first year, most young otters will be living in the windmill Holt, and will spend little time in the otter room. By the time of release, September, they will spend no time at all in the otter room

### **Handling and hand-rearing North American otter cubs**

Otters are an active, lively, vocal, and intensely social species. Work undertaken at the CEI has demonstrated that it is essential both for the well-being of the orphaned animals and for success in re-introduction and release, that the orphaned animals have significant interaction with their keepers, that they be taken, from the age of five months on walks with the keeper and introduced to natural water bodies. This exercise cannot, and must not, be hurried. As the animals get older, it is important that they are introduced to fishing and to the other indigenous species that occupy their native habitat. Although otter cubs are as dependent upon their Keeper for reassurance as any dog is to its master, at the age of 18 months, most hand raised otter cubs will exhibit a large measure of independence and will cease to be reliant upon their Keeper.

On Arrival: otter cubs have been brought to the CEI from within 24 hours of their birth to four months of age, one thing is in common for all new arrivals; they are dehydrated and severely stressed. The skin of the new arrival should be pinched between forefinger and thumb to check for "tenting". Ideally, the pinched skin should slide smoothly back into position and not stay peaked. The animal's gums should be examined for colour (rose pink, not white), while doing this, the body temperature can be estimated by sticking your little finger into the animal's mouth (it should not feel cold to the touch). If possible, little other veterinary action should be taken until the animals are accustomed to their new accommodation and feeding well

The newly arrived otter cubs should be kept isolated from other animals for 2 weeks, or until it is certain that they are disease-free.

All handling of otter cubs should be done without gloves\*, and should be undertaken quickly, firmly, but gently. North American otter cubs do not open their eyes until the 34<sup>th</sup> to 36<sup>th</sup> day after birth (Liers E.E., 1958, Early breeding in the river otter. *J.Mammal.* 39:438-439, Liers, E.E.,1960, Notes on the breeding of the Canadian otter. *Int. Zoo Yb.* 2: 84-85, C.J.Harris (1968) Otters, A study of the recent Luterinae, Weidenfeld & Nicholson, 5 Winsley St, London, W1.UK) and handling them without gloves at that age is of no risk to the keeper. Older otter cubs also offer no threat if properly and confidently handled.

The handler, no matter how idiotic it seems, should speak continuously and reassuringly to the animal. Otters are a vocal species and respond well to vocalization, even of a human sort.

The first essential, after it's arrival, is to re-hydrate the animal. Using electrolytes, we have found that injection, rather than the use of an I.V. drip, is more efficient and less stressful to the cubs.

If the animal is caked and filthy with dried faeces, (this is more likely if it is single, because a group of cubs will suckle each other clean) it is essential to clean the animal up, using a moist, blood heat, cloth and a slow rhythmic motion to remove detritus. This gentle rhythmic cleaning action is generally reassuring to the young animal being treated.

### **Formula and Diet**

At the CEI we give otter cubs, that come in toothless and with their eyes still shut, a formula consisting of Esbilac ( PetAg, Hampshire,IL,USA [www.petag.com](http://www.petag.com)) mixed as recommended by the company, plus 4ml of cod liver or halibut oil per 240ml of formula. This formula is fed, at blood heat, every hour during the day, every 2 hours during the night. At approx 2 ½ weeks after arrival, or when the milk teeth erupt, one tablespoon of infant's Rice or Oatmeal Cereal (Heinz, H.J.Heinz Company of Canada Ltd.5700 Yonge St, North York, Toronto Ontario M2M 4K6, Canada ), included is 40ml of liquidized raw meat (beef or chicken heart) per 240 ml of formula, plus one raw egg per day. Any un-used formula should be disposed of and not kept, even under refrigeration.

We use very soft nipples (Gerber; 0 to 3 months), with the nipple hole enlarged, for feeding young cubs. As the animals increase their formula intake, the number of feedings can be reduced, but there must never be a gap of more than 3 hours between feedings until the animals are eating solid food. Usually, by six weeks of age young otters will be eating solid food, and taking milk formula on demand. At the CEI we wean otter cubs at five months old, unless an animal has been ill or is noticeably undersized, in which case we will continue to provide formula in order to enhance weight gain.

When the animals are eating solid food, they should be provided with an ample supply of food at regular intervals, in individual bowls, at a minimum four times a day in the summer months. We have found that an adult North American river otter will easily eat an average of 3 to 5lbs of meat per day, although rarely more than 1lb per meal.

Because the animals maintained at the CEI are intended for release, once on solid food, they are fed raw trout, herring, smelts, anchovies, chicken necks, whole chicken hearts, chopped beef heart or liver, day-old chicks, and mice. The daily composition of the feed must vary, as otters get easily bored. The otters are also given access to limited amounts of fresh berries and fruit. As five-month old otters kept at the CEI also have free access to 130 acres, they are also supplementing their feed (with varying levels of success) by hunting.

Any animal that is looking slightly "off-colour" is given mice. In Europe, where eels are readily available, they are fed eels as a pick-me-up in preference to mice (C.J.Harris. Otters, A Study of the Recent Luterinae, Weidenfeld & Nicholson, 1968).

Prior to release, captive-raised rainbow trout (*Oncorhynchus mykiss*) are released into the CEI ponds, so that the juvenile otters can hunt them. The young otters also take the indigenous species naturally occurring on CEI land: amphibians, Richardson's ground squirrels *Spermophilus richardsonii*, pocket gophers *Thomomys talpoides* and other small mammals.

**Estimating age:** It is the experience of the CEI personnel that it is practically impossible to estimate the age of orphaned North American otter cubs, once their eyes are open. Size varies in direct ratio to the amount of feed available to the lactating female and the number of cubs in a litter. If the animal has been abandoned for some time, it will be smaller than a normal cub of similar age.

We have noted the size and weight of four blind and toothless cubs at 24 hours old (the otter bitch was observed whelping) to be 4in. to 6in in length, and weighing between 5 – 6 oz. At 16 days of age their size and weight had increased substantially to between 7 – 9 inches in length and 12 to 16 oz in weight. Their eyes opened at 35 to 36 days, by which time they each weighed in at 2 1/2 to 3 1/2 lbs. In contrast, we have had otter cubs brought in whose eyes have been open and whose milk teeth are all in place, (meaning that they must have been older than 39 days), that have weighed less than 20 oz and measured 12in. in total length.

**Scat:** After each feeding, the otter cub's stomach, abdomen and anus should be massaged with a damp finger (the finger will inevitably become damper) to ensure a bowel movement. This action takes the place of the licking a mother would naturally give her cub and contributes significantly to the animal's well-being. The procedure should be following each feed until the cubs' eyes are open and they are able to leave their "nest" by themselves. Otters, even little cubs, are naturally clean, and, as soon as their eyes are open will leave their "bed" to defecate on the paper provided. Once they have decided upon a suitable site within the inner enclosure, it will become a "latrine" and will be used by all the otter cubs contained in the enclosure. If the otter's bed gets damp or dirty from faeces it is a warning sign of potential ill health.

A milk-fed otter's scat should look like a row of small amber beads in a translucent jelly. As they begin to eat solid food the colour and size of the "beads" will change to reflect the changes in the animal's feed, for example, chicken hearts can result in dark red "beads", and some insect chiton will pass unchanged right through the otter.

Otters are very formal in the use of latrines, and once they are using a larger enclosure, or in the case of the CEI, 130 acres, they will continue to use the same areas as latrines. These are generally distinctive sites; prominent rocks or fallen logs, a site where two trails cross, the end of a rocky promontory in a lake, or sometimes a site, which to the human eye, has nothing distinctive to recommend it. The regular use of latrine sites by otters is a useful trait, and makes it easier to monitor the animals over a large area.

### **Singles versus Groups,**

North American river otter cubs are seldom alone in the wild and they are intensely dependent upon their family group. If the cubs brought in are in a group, the level of stress is greatly lessened. Single cubs are sometimes reduced to a coma-like behaviour by prolonged anxiety. This coma-like condition will be alleviated by the keeper putting the cub inside his/her shirt until

the animal has warmed-up and revived. Once the single cub has revived and is feeding well, it is possible to put it in the hay bed in the otter room, if the keeper takes off his/her worn T-shirt, wraps it around a ticking clock and provides a stuffed animal for company. If the intention is to produce a healthy well- balanced individual, is essential to spend at least an hour with the single cub at each feeding, handling it, massaging it, and talking to it.

### **Introduction to other otters**

At the CEI we have had success introducing otter cubs, of any age up to and including 8 month old animals, to each other. If their milk teeth have not yet erupted, cubs can easily be put together, and will accept each other, without any obvious stress or aggression. In the case of older animals (6 to 8 months of age), as otter cubs will follow their keepers anywhere, our policy has always been to take the litter-mates for long (4 km) walks and to introduce newcomers during these walks. We have experienced no aggression between newly introduced animals.

We have, once, introduced a single cub to an adult female ( as our aim is to introduce singles to groups as soon as possible,) because at that time we did not have a group of cubs of a similar age to introduce it to. Initially the female rejected the cub, but after one month she accepted the animal. We have not introduced adult animals to each other as we have not had the occasion to do so.

**Introduction to other species.** Juvenile otters, hand-reared at the CEI come in contact with most of the species native to the eastern slopes of the Rocky Mountains. Moose *Alces alces*, elk *Cervus elaphus*, mule deer *Odocoileus hemionus*, and white-tailed deer *Odocoileus virginianus*, occur on the 130 acres in use by the otters, as do coyotes *Canis latrans*, red fox *Vulpes vulpes*, swift fox *Vulpes velox*, bobcat *Felis rufus*, skunk *Mephitis mephitis*, porcupine *Erethizon dorsatum* , and black bear *Ursus americanus*. Although the otters have been observed near to these animals there has been no observed adverse reaction between the species.

**Health:** North American river otters are capable of survival on an insufficient diet in improper housing, but they will not do well. If maintained as a zoological exhibit they will prove unsatisfactory and unappealing to the public. They will be in poor condition, solitary, lethargic, depressed, a wasteful exhibit in a Zoo, and unlikely to survive if released. Their coats will be patchy when wet and dull when dry.. A healthy otter is active, curious, and extremely lively. It's coat is slick when wet, and, as soon as it comes out of the water and shakes will form into paintbrush tips, before drying to a shiny evenness.

Otters are susceptible to both canine and feline distemper, parvo virus and its mutations, feline panleucopenia, human jaundice and hepatitis. Pneumonia, abscesses, and perforated ulcers can be caused by improper management and housing. Death from over-heating and stress can occur very rapidly if the animal is improperly confined, or transported in an unsuitable travel crate. At the CEI we have lost one animal to intestinal torsion, “twisted gut”. We have had five adult otters (four of them dead) brought in to us with mercury poisoning, and one cub.

**Release methodology:** The CEI works with the Canadian Provincial government, the Environmental Agencies of British Columbia and Alberta, in order to identify potential release sites for otters. It is also necessary to obtain import, export, and transport permits from the

relevant government jurisdictions prior to the animals' release into the wild. After review of the information provided by provincial government agencies, CEI personnel will examine potential release sites for prey availability, existence of other otters, and possibility of adverse human/otter interface. The policy is to release animals into areas on coastal rivers where there is no human occupancy of the land.

CEI hand-reared otters are prepared for release in their second year and are released onto suitable, previously identified, coastal rivers when the salmon (*Oncorhynchus nerka*, *Oncorhynchus keta*, *Oncorhynchus tshawytscha*, *Oncorhynchus kisutch*), are running in September. We have noted groups of two-year old otters wintering together along the seacoast of British Columbia, and also that if there is sufficient feed available there is a marked increase of otter use in estuarine habitat. The choice of the Fall of the year for the release of juvenile otters at the time of their natural dispersal, and when there is an ample supply of readily obtainable fish, appears to enhance survival.

**Transport:** Crates are best constructed of heavy gauge, fine mesh, welded wire with a solid metal or wood roof and floor. The crate should be large enough to comfortably contain the animal when divided in half, one half being dark and draught-proof, and the other half open to the air on three sides, with a 8 in diameter entrance hole giving the animal access to both halves. A heavy metal water-bowl should be bolted to the floor. The crate and all its fastenings should be made extremely stoutly, and the enormous strength of adult otters constantly considered while the crate is under construction. Crated animals should never be exposed to heat, direct sun, wind and rain. Otters have little heat tolerance and will die rapidly from being over-heated (Best, A. (1962), The Canadian otter, *Lutra canadensis*, in captivity. *Int. Zoo. Yb.* 4: 42- 44)

#### **Capture of adults for translocation:**

The CEI has most frequently been requested to remove adult animals from the crawl-space under the main building of sea-side cottages in early Fall or over the Winter. In general, these animals are either single, or very small groups of juveniles. After checking that the otter is in occupation and discovering which entrance to the cottage's crawl-space is most used by the animals, an unbaited drop-trap ( Pied Piper, Model 301, 15" x 15" x 46"), covered with plywood, is set in the otter's entryway. All other entrances to the crawl-space stopped up (again, the enormous strength and power of the otter must be taken into consideration). Like many mustilids, otters seem to be attracted to tunnels, and, if the drop trap is properly covered by a fitted wooden box, will willingly explore it. The trap should be unobtrusively checked, using binoculars, every hour. Once the animal has been removed, the entryway should be firmly and permanently blocked. Any adult animals intended for translocation are not maintained at the CEI facility but translocated to a suitable site, not less than 15 miles away, as soon as possible after being trapped.

#### **Design of permanent otter facility.**

For the successful management of otters in captivity it is essential to provide them with sufficient food, clean running water, and a ratio of 2/3rd dry land to 1/3<sup>rd</sup> water. Water is essential for otters, both for their health and also to provide the public with entrancing and educational sight of healthy happy otters behaving in a natural fashion. If the pool is an artificial one, the drain outlet should be designed in such a way that the otters cannot stop it up. Sufficient land, not a

cement pit, is equally essential for the animal's well-being. Provided with the enrichment of sufficient land, running water, and ample food otters will repay their care, by providing a fascinating exhibit.

\*I appreciate that handling without gloves is a difficult requirement within an accredited Zoo, but there are no gloves that can withstand the bite of a determined otter, but the contact or bond formed between keeper and animal, between bare hand and fur, is beyond price.

#### References

- Best, A. (1962), The Canadian otter, *Lutra canadensis*, in captivity. *Int. Zoo. Yb.* 4: 42- 44  
C.J.Harris (1968) otters, a study of the recent Luterinae, Weidenfeld & Nicholson, 5 Winsley St, London, W1.UK  
Liers E.E., 1958, Early breeding in the river otter. *J.Mammal.* 39:438-439, Liers, E.E.,1960, Notes on the breeding of the Canadian otter. *Int. Zoo Yb.* 2: 84-85.