FAMILY: Mustelidae Also M. (Putorius) nigripes (Black-footed Ferret)	**Least Weasel** *Mustela nivalis* (Previously *M. rixosa*)	**Short-tailed Weasel** *Mustela erminea*	**Long-tailed Weasel** *Mustela frenata*	**American Mink** *Neovison vison* (Previously *M. (Lutreola) vison*)
Length, total Length, head+body Length, tail tail, relative to body Weight (smaller in northern parts of range)	6 ¾ – 9 ¾" 5 ⅞–7 ¼ "[1]; 5–10"[2] ⅞– 1 ¼" 10– 15% 28 – 84 g ♂ (<9.8") larger than ♀ (<8.8")	7 ½ – 13 ½ " 5 ⅞–11"[1]; 7–13"[2] 1 ⅝– 3 ½ " ~ 25% 45 – 182 g ♂ 2x size of ♀	11 – 22 " 7 ⅞–15 ⅝ "[1]; 9–10"[2] 3 ⅛ – 6 ⅜ " 50 – 100% 85 – 267 g ♂ 2x size of ♀ $\bar{x}$ = ♀ 111g; ♂ 195g; juv ♂ 162 g	19 ⅜ – 22" 13 ⅛–14 ⅜ "[1]; 14–22"[2] 6 ¼ – 7 ⅝ " 38 - 50% 700 – 1,600 g Weight varies with season ♂ 2x larger than ♀
Physical Description	Tiny. Dark brown above, white below. Tail very short and all brown. Feet white. Turns white in winter in the northern part of range. Often has an individually distinct brown spot on chest at 18 days which disappears after 4 months of age.	Dark brown above, white below; brown tail with black tip. Feet white. Turns white in winter w/black tail tip in the northern part of range. No chest markings.	Brown above, white to deep yellow below. Brown tail with black tip. Feet brown-ish. Tail often equal to head+body length. Turns white in winter w/black tail tip in northern part of range. Some individuals have spot/s on chest developing at 35 days. SW US and FL may have lt facial markings.	Lustrous chocolate brown to black fur, white spotting on chin and throat. Tail long and somewhat bushy. (note: no white underparts) No color change to white. Semi-aquatic; incompletely adapted to aquatic life (between marten and otter)
Breeding	Mates year round *with no delayed implantation*; young born after $\bar{x}$=35-day gestation. ♂ and ♀ are sexually mature at 3-4 months although they seldom breed until > 10 mo	Mates in June-July *with delayed implantation*. Young are born following April after 27-day active gestation ♂ are sexually mature at 14 mo and ♀ at 2-5 mo; ♀ is often bred by same male breeding with her mother, giving birth the following spring.	Mates mid-summer *with delayed implantation*; young are born the following spring after 23-24 day active gestation. ♂ mature during 2nd summer; ♀ at 3-4 months.	Mates January – April, *with a short delayed (8-45d) implantation*. *shorter gestation in warmer months*Mink are not monogamous, and littermates may have different fathers. ♂ mature @ 18 mo; ♀ at 1 year
Litter, size & description Larger litters are more common in the northern part of range.	Up to 3 litters per year of 1-6+ young ($\bar{x}$=4-5); usually born in early spring and mid-summer, often in abandoned burrows of another animal. Documented births (in the wild) in every month.	1 litter of 4-9 young ($\bar{x}$ =6); born in late spring; blind with fine hair. Mane present at birth and continues to develop as fur comes in (14 days). Male and female may care for the young.	Litter size $\bar{x}$=6-7 but wide range (<4 to >9). Born blind and nearly naked in late spring.	Litter of 1 – 10 ($\bar{x}$ =3-5) born blind and [nearly] naked in fur-lined nest in April or May. A male often eventually lives with one female and helps with the young.
Weight at birth	$\bar{x}$ =1.4 g	$\bar{x}$ =1.7 g	~3 g	6 or 8-10 g

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Hair appears	@ 4 days covered with fine white hair.[4]	Fine white hair within first day.	Born with a few sparse long white hairs on back and head. >1 day covered with fine white hair.[4]	Fine, silver-white hair within first day.
Begins to crawl	4 days	"early"	14 days (♂), 14-21 days (♀)	3 weeks
Brown dorsal fur appears	18 days Hair comes in fast; at 18 days has brown/white coloring.	21 days @7 days demarcation apparent; @14-21 days heavy mane contrasts with "scantily white furred animal"[4]	28-35 days @ 3 weeks dark line of demarcation and tail tip is black. @ 5 weeks brown top and bottom light (white – yellow/tan)	Brown by 2-3 weeks; water-proofing present @ ~8 weeks
Ears open Often concurrent with eyes opening	21-28 days[4]	35 days[4]	28 days[4]	25-35 days Quiets down after ears open :-)
Eyes open	26-30 days[4]	35 days (blue at first) [4] 36-41 day, ♀ before ♂[5]	35-37 days[4]	25-35 days
Black tail tip appears	N/A	45 days (in England)[4]	21 days[4]	N/A
Weaning Continues limited nursing until dispersal	@14 days begins to suck and chew on pieces of mouse; Eating solid food > 18 days[4] Weaning Initiated at 32 days and continues until 42-56 days[4]. Disperse at 4 mo.	Consumes meat at 21-28 days and by 35 days is eating >50% BW in meat (continues to nurse until dispersion)[4] Juveniles begin hunting at 10-12 weeks.	Consumes meat at 21 days and by 36 days are eating ½ to nearly their own weight in meat/day.[4] At 7-8 weeks the ♂ are already larger than their mother.	35-45 days, after eyes and ears open and concurrent with increased mobility. Weaning is gradual. Young remain with their mother until the family disperses in early fall.
First kills prey	6-7 weeks At 40 d mother begins training, and young are adept at 42-45d. Orphans 1st become adept at killing at 50-60 days.[1]	80 days (Europe)		> 56 days
Growth complete Disperses at 13-18 weeks	Reaches adult length at 8-12 weeks and adult weight at 12-15 weeks. Adult male consumes >40% BW/day		♀ slows growth ≥ 8 wks.; both sexes at adult size ≥ 12 wks. Consuming 28-38% BW/day	1 year? Weights vary with sex and season. Max heaviness occurs in autumn. Domestic mink are much larger (4-6+ lbs)

FAMILY: Mustelidae Also M. (Putorius) nigripes (Black-footed Ferret)	**Least Weasel** *Mustela nivalis* (Previously *M. rixosa*)	**Short-tailed Weasel** *Mustela erminea*	**Long-tailed Weasel** *Mustela frenata*	**[Mink]** *Neovison vison* (Previously *M. (Lutreola) vison*)
Kills prey by =========> Killing move is instinctive but efficiency improves with training/experience.	Grabs prey by the nape then bites through the base of the skull and/or throat area, often wrapping body and legs around the prey. Eats the entire animal (skin, intestines, bones, etc.). Prefers head/brains, then inner organs and muscles, and will eat those first (which is useful to know for medicating purposes – inject the brain of the prey food).			Biting back of the neck. Marks hunting territory with fetid musk > skunk but short-lived.
Activity Killing technique is instinctive but hunting is a learned behavior.	Day and/or night, all seasons. Very rarely seen as they stay undercover.	Active both day and night. Hunts mainly on the ground but can climb and even pursues prey into the water.	Most wide-spread carnivore in the Western Hemisphere. Active both day and night. Hunts mainly on the ground but can climb.	Able to dive to depth > 16 feet, the mink is an accomplished swimmer and spends much time hunting in ponds and streams. Adapts activity to prey. Also climbs.
Vocalization	Murmurs, chirps, purrs. When disturbed may give a shrill squeaking call, and may also hiss when threatened.	Grunts, murmurs, hisses, chatters, shrill (and very loud) alarm call. Purrs when content	Screech and squeal, rapid trill, and purr when content.	If angered or alarmed (or trapped) may hiss, snarl, or scream, and discharge its anal glands. Purrs when content.
Habitat The range of the male is generally larger than the range of the female; larger ranges in wooded environment vs open. All require fresh water within their home range.	Grassy and brushy fields, marsh areas. Known to climb trees/brush/logs but active primarily underground and under vegetation following mouse/vole burrows. - Unlikely to dig their own tunnels unless soft substrate but will take abandoned burrow of another small mammal, adding mouse hair to the dried grass lining the nest. - Solitary as adults. - Home range 7-24 acres[2] - Home range < 2 acres[1] - Usually found ≤ 60 yards from burrow	Varies: open woodland, brushy areas, grasslands, wetlands, and farmland. Dens may be appropriated from chipmunks, often found in or beneath a log, stump, roots, brush pile, or stone wall. Readily climbs trees and other objects; will swim if necessary. Also known to inhabit human residences. - Known to live both solitary and in a group. - 2-5 favorite denning sites and 3-10 daytime resting places. - Home range 2.5-12 acres in open grassland; ♂: 17-37 acres in woods, and ♀: 2.5-10 acres in woods[2]	Varies: forested, brushy, and open including farm land, preferably near water. Dens in abandoned burrows, making a nest lined with hair from prey. Will climb trees when chasing prey. - Solitary except males *may* assist with providing food for young (probably in exchange for breeding rights). - 2-5 favorite denning sites and 3-10 daytime resting places. - Home range 2.5-12 acres in open grassland; ♂: 17-37 acres in woods and ♀: 2.5-10 acres in woods[2] - Presence of water primary factor $\bar{x}$ distance from den: 100yds, max distance from den: 220 yds	Males have large home ranges that extend for a half mile or more along waterways and overlap with the smaller home ranges of several females. Mink dens typically consist of long burrows along river banks, creeks, lakes, ponds, and marshes; holes under logs, tree stumps, or roots; and hollow trees. Dens in openings in stream banks, 4" wide, usually appropriated from muskrats; also beaver lodges, hollow log, or digs own. It may continue along for 10–12 feet and at a depth of 2–3 feet Moves often.

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Prey The size of the weasel heavily influences ability to take different prey. Largest males take the largest prey.	Almost exclusively prey on voles/mice. Males esp. will occasionally eat shrews, moles, birds, and insects if mice are scarce. Consumes ~40% BW/d over 5-10 meals.	Mice and voles are preferred prey but diet may also include rats, chipmunks, shrews, baby rabbits, birds, frogs, lizards, and insects.	Mice and voles are preferred prey but diet may also include rabbits, shrews, chipmunks, rats, birds & poultry, and occasional insect or worm.	Muskrat, rats, and fish are preferred prey but will also take other rodents, birds & eggs, crustaceans, amphibians, and young snapping turtles
Predators	Cats, hawks, owls, fox – anything that kills mice.	Hawks, owls, cats; also other carnivores. Cars.	Hawks, owls, cats, foxes. Cars.	Foxes, bobcats, lynx, alligators, and great horned owls. Cars.

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Misc Notes	- Smallest living carnivore; does not appear to be common in any part of its range. Considered a "species of concern" in MN. - May have at most few black hairs on the extreme tip of tail. - So. ranges may have delayed or incomplete molt. - Can run very fast, up to 6 mph. - After four weeks of age becomes more difficult to handle (once eyes open). - European LW 2-2.5x larger than American LW - *BW can fluctuate 5-10 g/day depending on timing and amount of last meal.* - At 4 weeks ♂ gradually gain weight faster than ♀ & by 6 wks. 2x size of ♀; @ 8 wks. ♀ have a growth spurt. - Juveniles unable to kill prior to 38-42 days old.[4] - High mortality in first year; #1: predators, #2: starvation. - frozen prey is carried into fur-lined den to thaw, and fresh killed brought in to prevent freezing. - skulls in midwest frequently showed signs of nematode (roundworm) infestation in lesions of frontal sinuses[3]	- Often called ermine (white phase) or stoat (brown phase). - May release strong musk when alarmed, enraged, or excited by mating urge. - Defensive behavior includes loud screeching and holding their ground/charging adversary. - *>4 ½ weeks mother would no longer retrieve if out of the nest.* - Did not play outside the nest until > 7 wks. - STW has the greatest size variation between subspecies of the three weasels (location matters!). Smallest subspecies are found in the northwest mountain ranges; smallest females in WA, smallest males (m. erminea muricus) in CA, CO, ID, MT - Seems to have a fatal fascination for attacking spinning wheels (car tires), perhaps the motion triggers a prey response. -Hunts under the snow in winter. -Dens in ground burrows, under stumps, and in and under rock piles and old buildings -I had three male short tailed weasels (mane as infants, tail ~50% body length) that were 250-300g at release. Littermates were much smaller.	- Color change seems to be triggered by length of daylight but is also genetic. A northern weasel captured and taken south turned white during winter while a southern weasel taken north stayed brown. - May release powerful malodorous musk when alarmed, enraged, or excited by mating urge. - **Immobilization** using IM injection (25G x 16mm needle) of ketamine HCl (25 mg/kg) + xylanzine HCl (2 mg/kg), as recommended for ferrets. - ear tags used for tracking study were size 1 Monel tag, National Band and Tag Company, Newport, KY - Winter white weasel of either sex is sexually inactive. - distance traveled (♂): 3-4 mi, $\bar{x}$=2mi Tracking studies of 11 ♂ and 10 ♀: ♂, $\bar{x}$ = 704 ft (60-2535 ft) ♀, $\bar{x}$ = 346 ft (20-1420 ft) - those in open timber traveled much greater distances than those in brushland and dense stands of trees. - Prey: ♂ - small mammals up to rabbit size; ♀ - mice and chipmunks. Rabbits are pursued and nipped, with bites both weakening the animal and allowing a blood trail which facilitates tracking. Known to hunt in preferred coverts but rarely the same one on consecutive nights	- Both sexes are hostile to same-sex intruders and fight viciously with one another. In good habitat, density may be 9-22 per sq. mile - Mink require water depth >1.2', allowing them swimming room. Highly susceptible to methylmercury toxicity (increasing acidity increases methylation of Hg). - Can swim >3 hr. in warmer water but may die in <30 min in cold water. - Farmed mink have 20% smaller brain, 28% smaller spleen (=> immune system and bodily fluids balance), and 8% smaller heart than wild American. They are much larger, come in a variety of colors, and the fur is short and very dense (like plush velvet). - European mink are much smaller (1-1½ lbs, 12"-15") and more closely related to the polecat than the American Mink - Vocalizations of kits are suggested to play a role in the maternal care and kit survival. Kits begin to vocalize immediately after birth. When a young mink kit is isolated from its mother it starts vocalizing loudly and almost continuously. Vocalizing decreased dramatically from 100% for newborns to only 15 % as eyes opened. >6.5 wks., none of the kits being studied produced any sound, when isolated from the mothers.

General Notes:

Research has centered on three major areas of study: (a) physiology of delayed implantation; (b) physiology of coat color changes; and (c) economic importance as fur bearers.

Mustela as a rule show little or no avoidance behavior although they become more alert in the presence of predators. Weasels in particular are the epitome ADD in the animal kingdom: high energy, very curious, easily distracted, and unintimidated by larger creatures (including humans).

Defensive behavior follows set vocal and movement patterns which begin when the eyes open. If caught in the open follows similar pattern to skunks: stamp feet and charge. Size of adversary is irrelevant. Curious and unafraid, including of humans.

They are remarkable for their length and slenderness. As a comparison, the length of a raccoon spine = length of the hind leg; for weasels the spine = 1.75x hind leg. Mink are chunkier but still slender enough to follow prey (especially muskrat) into burrows.

Delayed implantation: Most are northern animals, high in the ecological food chain, and not a rapid turnover (i.e., short life expectancy) so no need for multiple litters in a year. Mating in spring/summer is beneficial to the adults while an early spring birth benefits the young (longer time to grow up before winter sets in). There is evidence that at least sometimes the male is around to help raise the young because the female weasel goes into estrus soon after giving birth. It also serves as a means of population control for such an efficient predator. In the case of Least Weasels, the need to have more offspring out trumps the climate pressure for delay due to the shorter life expectancy. Mink mate in the early spring with a short-delayed implantation (8-45d) depending on the conditions, and young are born 30-32d after implanting, in May or June.

Exposure to natural light and natural light cycles is important as it has been shown to regulate behaviors, hormones, and molt cycles.

The young mustelids are called “kits”. At birth the front limbs are much stronger and better coordinated than the rear limbs. Newborns are surprisingly strong, lifting their heads high and briefly supporting on fore legs. They react with loud(!) vocalization when disturbed or separated from the mother. This diminishes rapidly as they get older and generally ends by the time their ears open. It takes quite a while for the back limbs to become strong and coordinated.

Depending on the information source, neonates should be kept at a temperature between 80 – 85°F; young animals die very quickly if they are kept at too high a temperature or set incubators at 85-90°F and 50-60% humidity. The temperature should be gradually reduced to room temperature (70-75°F) over the course of about 3 weeks (unless the neonate becomes ill). If the ambient temperature is too high it may cause hair loss. Most will feel more secure if burrowed in layers of towels, flannel, or fleece; this also aids in keeping them warm. Singles will do much better with a heartbeat/Snuggle Pet.

Important to successful rearing: 1) **Keeping kits warm and offering them a choice of temperature** (heating pad; or incubator for neonates); 2) **provide hiding places** (layers of small fleece or flannel pieces, pieces of pvc pipe, paper tubes, etc.); 3) **consistent staff, limited to the fewest individuals** (kits with their eyes closed can react aggressively to strange smells, and unfamiliar caregivers considerably stress the animals); and 4) **frequent feedings (**10 – 14x/24 hrs. until supplementing with solids then gradually reducing frequency to 8-10x/24hrs but maintaining regular intervals with night feedings). Remember they require 50-100% BW/day. After the eyes open formula can be offered in a shallow dish.

Mustelid Adult Maintenance Energy Requirement (MER), kcal/day: 70 x body wt. $(kg)^{0.75}$ x a factor of 4 (mink) – 8 (least weasel) depending on size. Smaller => Faster metabolism

Weasels and mink are obligate carnivores. Their baby teeth, as well as the permanent teeth, are specialized for meat. The least weasel rarely eats anything other than small mice and voles and will often starve if the rodent population crashes. The long-tailed weasel has the most varied diet of the weasels, and the mink is even more opportunistic. Evidence indicates they imprint on their food while young. This is important for rehab because older juveniles and adults may not recognize unfamiliar food (such as commercial pet food) as food, and it also indicates the young weasels should be exposed to multiple appropriate natural food, including insects, in part to minimize starvation if the mouse population is unavailable. Feeding cat food may encourage them to forage at feral and outdoor cat feeding stations, leaving the weasel more susceptible to predation.

If feeding "people" meats, fish, and eggs, raw is better than cooked, because the cooking may cause key nutrients to be less available. They are evolved to eat their proteins raw. All supplements/ commercial products should be animal-based, not plant-based, as they cannot absorb or metabolize the plant-based forms. If not fed whole prey then the diet should mimic whole prey, including skin, organs, and bones.

Because of their high metabolism they require 5-10 small meals per day spaced 2 - 3 hours apart. They cannot consume more quantity/meal (i.e., gorging) or eat more frequently even if underfed. Smaller animals require more food relative to size than larger ones. LW > STW > LTW; ♀ > ♂; young>old. Mink are born with <1% body fat but will bulk up in the fall; weasels do not have body fat => very little reserves if food is unavailable.

Young LTW must eat 50-100% BW/day while adults require 25-30%/day. STW and LW require more, and adult male LW require 40% BW/day.

Mustelid Maternal Milk Composition: High protein, high fat, low carbohydrate, low fiber. Of the documented mustelid maternal milks, the range for proteins is 26-40%, for fat it is 31-45%, and for carbohydrates it is 8-21%. Mink is 33% fat, 26% protein, 21% carbs on a dry weight basis and contains 3.8% lipids, 6.2% protein, 4.6% lactose and 10.66% mineral salts as is. Zoologic states mink milk is 26% protein, 33% fat, 21% lactose, 21.7% solids. Weasels appear to need higher fats and proteins (and less carbs) than mink. Mink require a fish oil supplement.

>>> Goat milk: 27.7% protein, 31.5% fat, 34.6% carbs

I have used KMR: Multi Milk:H_20, 3:1:6; I am currently using 4 parts FV 32/45 (skunk) : 1-part KMR : ½ -part MultiMilk : 8 parts water for weasels. The mink should have the multi-milk eliminated and be supplemented with fish oil once a day. I prefer KMR and FV Kitten over the non-cat equivalent because it is more likely to have adequate taurine. Larger species of weasels may require less of a fat boost.

Re: taurine: All mustelids, like felids, are required to get taurine (an essential amino acid) from their food, as their body cannot produce it. Muscle meat is high in taurine, as are spiders, many insects, and (apparently) brains and eyeballs. Chicken baby food, chicken dark meat, clams/clam juice, tongue, and heart are good sources of taurine. Kitten formula is recommended because of the need for taurine (note: Nick said he now adds taurine to each of his FV formulas). Taurine is present in the colostrum and milk of many mammals, and is present at particularly high levels in the milk of obligate carnivores. The recommended taurine supplementation for [adult] *felids* is 250 mg/animal/day. I have not been able to find a minimum daily requirement for any mustelid species.

Formulas based on goat's milk may be beneficial because small carnivores cannot efficiently absorb the fat globules in cow's milk. Straight up goat's milk is too high in carbs and too low in fat and protein for mustelids. So far I have not found a GM KMR (GM Esbilac is too high in carbs).

It is important to offer moist solids (cut up or pureed whole mouse, fresh raw feline diet, or high quality [no grains, veg, or fruits!] soaked kitten kibble) from a very early age (2 weeks) and to continue offering formula on the 2/2.5/3 hr., 24/7 feeding schedule as they begin eating solids. Once their eyes open it often

becomes difficult to hand feed with a syringe. Formula should then be offered in a dish for as long as the animal will take it. This will help to ensure the young animal is receiving adequate nutrition, esp. calcium and fluids, and also sufficient calories. It is hard for them to eat enough calories in a day without the formula. Kibble, if used, should be fed moist, as they need the water to digest the food. Body weights can vary by as much as 20% depending on how recently they last ate.

Syringe feed only if the kit is warm and vigorous. Weak kits may be hypothermic, dehydrated, and/or hypoglycemic. Do not offer anything by mouth until the body temperature is within the normal range for its age. Offer carnivore critical care food or baby food chicken if it will accept, or give oral or subQ fluids if weak or dehydrated. Be very cautious about administering sub-Q fluids, as it easy to overwhelm their system. Oral fluids are preferred. Rub Karo syrup, maple syrup, or molasses on gums or offer 2.5% or 5% dextrose to raise glucose level, if necessary. Be extremely cautious about tube feeding, as the danger of over-feeding is high.

Housing:

The Mustela are all escape artists! If a mouse can get in or out, so can a weasel. Mink are very strong and clever at finding (or creating) escape routes. Adult mink are capable of biting through hardware cloth, and critter/ferret nation cages should have all sections/walls zip tied together; the doors should be secured with a carbineer and zip tie system. Do not house mustelids with other species, including/especially other mustelids, with the possible exception of skunks and smaller weasels.

Maintain in a cool environment (<70 °F) and use heat lamps, heating pads, hot rocks, etc. to provide warm areas.

The mustelids are all scent markers. Clean or replace 25% bedding and enrichment at a time rather than “clean sweep”, to minimize stress. They tend to have corner “latrine” areas which facilitates spot cleaning. Also, be aware they cache food, often in a tunnel system (toilet paper tubes, pvc pipes, etc.). They are very sensitive to essential oils and many essential oils are toxic at low levels (including ones like tea tree and eucalyptus). Avoid using or wearing scented products in their area.

Use natural substrates such as dry sphagnum moss, hay, soil, pine needles, leaves, sand, etc. with good cover and abundant climbing, foraging, and resting sites. Chopped grass forage (Triple Crown Grass Forage) with a tunnel system of paper tubes (indoor caging) or narrow (1-3”) pvc pipe (outdoor caging) is nice base for small weasels, with branches, logs, rocky screes, nest boxes, and hiding spots. Hammocks, cat trees, and wall hangings are popular. Dense furnishings are necessary for psychological well-being.[2] Mink need a pool they can easily climb in and out of with enough space to swim and dive. Weasels will extensively use a large exercise wheel (e.g., Stealth Wheel) and larger animals (long-tailed weasel and mink) will use a cat wheel; this is an excellent outlet for energy and stress, and to help meet the need for exploration and ranging.

Natural photoperiods should be maintained when housed indoors. Mustelids are sensitive to photoperiods. This is especially important for adult animals as photoperiods are known to indirectly control both molt and some changes in the sexual cycle.

Survival after release greatly enhanced if housed in a simulated natural environment (lots of cover and tunnels) and opportunity to track and hunt prey. Sufficient space is necessary to facilitate and encourage predator avoidance tactics (run fast; hide). Optimal release window is late summer/early fall; the lowest survival is when release is from late fall to early spring.

Large litters (more than 6 weasels, more than 4 mink) may be divided after weaning by size. Even with ad lib food available the larger animals may prevent the smaller ones from getting sufficient nutrition. There may also be increased aggression, especially with mink. Watch for pair bonds and try to respect their "favorite buddy" choice.

Wild Mink vs Domestic (Farmed) Mink

Domestic mink should not be released back into the wild – after 100s of generations of selective breeding for coat and temperament they are no longer equipped to survive well in the wild, and by interbreeding with wild mink they diminish the wild mink population. They also compete directly with the wild mink for resources, may introduce disease to the wild population, and with their larger size drive the wild mink out. There is a rescue organization for rehoming escaped farm mink called M.I.R.R. (Mink International Rescue and Recovery, minkrecoveryteam@gmail.com or minkinternationalrescueandrecovery.com) which will offer advice and assistance for domestic mink. Some key distinguishing features are 1) color – anything other than dark brown is probably a farm mink or hybrid; 2) size – domestic mink are often as much as 2x larger, more if overfed (unlike wild mink, domestic mink do not portion control their eating, and will overeat); tail is often thicker on the domestic mink; and the fur of the domestic mink is short and velvet smooth while the wild mink has the long guard hairs and may have a shaggier, unkempt appearance. Domestic mink are less territorial. Escaped farm mink may react with violent aggression to the sight of leather gloves while being calm, curious, and even friendly othewise.

Vaccines (AZA recommendations):

Canine Distemper: recommended to use the canarypox vectored CDV vaccine (PUREVAX Ferret Distemper Vaccine, Merial Inc., Athens, Georgia). Vaccinate every 3-4 weeks beginning at two weeks of age.

Least Weasel case study: vaccinated for canine distemper and hepatitis with two 0.2 mL sub-Q injections at two-week intervals.

Rabies: *Only a killed rabies vaccine product should be used*. The most commonly used is ImRab3 (Merial). Vaccinate at 16 weeks.

Adverse reactions: Animals experiencing an adverse reaction to a vaccine should be administered an antihistamine (e.g., diphenhydramine hydrochloride, 0.5-2mg/Kg IV or IM) or for severe reactions, epinephrine (20 µg/Kg IV, IM, subQ, or intra-tracheally), and supportive care.

Medications (inject oral medications into the brains of food mice):

- Panacur (50 mg/kg PO sid) can be used for treatment of hookworms
- Carafate (sucralfate suspension) 0.1 mL of 1g/100mL solution via food mice used to treat stress-induced ulcers until stool returned to normal.
- Fleas treated with feline/kitten Advantage (single application, 0.05 mL)
- Possible Pasteurella infection treated with Clavamox orally 2x/day (25 mg/kg PO bid) via food mice

Primary references:
[1]*National Audubon Society Field Guide to Mammals*, 1996 rev;
[2]*Mustelid (Mustelidae) Care Manual*, Association of Zoos and Aquariums, July 2008, revised January 2010;
[3]*American Weasels*, E. Raymond Hall, August 2015 (written over the past 25 yrs.);
[4]"The Least Weasel *Mustela nivalis* Linnaeus, Developmental Biology in Comparison with Other North American *Mustela*," Biological Series Volume 4, Number 7, Publications of the Museum, Michigan State University, Gary A Heidt, April 1970
[5]East and Lockie, Edinburgh

Appendix L: Mustelid Enrichment Ideas – AZA Member Institutions

The following lists provide examples of mustelid enrichment items. All items should be approved by facility management, including the appropriate curator, veterinarian, nutritionist, and horticultural staff.

Ferret/polecat Ferrets are very prone to eating small pieces of things & having intestinal blockages (rapidly kills if not cleared)

Sensory

- Crickets in escape-proof container
- Snake shed
- ~~Spices and scents~~
- Urine/trapping lures
- ~~Bath & Body Works lotions & sprays~~
- Diluted extracts
- ~~Perfume pages from magazines~~
- Paper, paint, stickers on outside of window
- Sun catcher outside enclosure
- ~~Diluted Eucalyptus oil (5 drops/gal. water)~~
- ~~Diluted essential oils~~
- Mirror mobile outside exhibit
- Audio tapes
- Baby mirrors (unbreakable)
- Hooves (monitor)
- Feathers (frozen for 30 days)
- Non-toxic bubbles
- Herbs, ~~spices~~
- Camel hair/wool (frozen for 30 days)
- Squirrel call
- Hand held or box fan (outside of exhibit)
- Pinwheels outside exhibit
- Disco ball outside exhibit

no essential oils !! (toxic)

Foods and feeding

- Cardboard box with
- Food inside
- Buster food cube
- Pinecone
- Egg carton puzzle feeder
- Small bones
- Wax worms in a feeder
- Bones (monitor)
- Crazy ball feeder
- Feed bag with diet (remove liners)
- Hay or leaves
- Boomer ball puzzle feeder
- PVC bug feeder
- Piñatas
- ~~Frozen fruit pops~~
- Nyla bones/Healthy edibles
- Kong toy with diet
- Carved pumpkin with diet ← pumpkin used for blockage protocol
- Burlap bag with insects
- Live fish in water tub
- ~~Applesauce smears~~
- ~~Coconut feeder~~
- ~~Peanut butter smears~~) no!

no fruit! (mustela)

Manipulative items/toys

- Balls with/without bells inside
- Kong toy
- Antlers
- Seashells
- Paper materials to shred
- Cardboard boxes/tubes
- Tennis ball
- Small boomer ball
- Pine cones
- Burlap pillows
- Phone books
- Wiggly giggly ball
- Fire hose
- Furry mouse cat toy - supervised
- Small stuffed animals with detachable parts ? no.
- Ferret ball

Physical environment

- Exercise inside/outside with supervision
- Straw bedding
- Large cardboard tubes to crawl through
- Exercise ball to crawl through
- 5" PVC pipe to crawl through
- Articles of clothing (sleeves, pant leg)
- Pool with small amount of water (supervised)
- Shredded paper
- Ferret hammock
- Varied substrate, soil
- mulch, etc.
- Snow, sod, sand
- Large hamster ball
- Linen bed sheets
- Frisbee swing suspended with twine

Behavioral/social

- Training programs
- View of decoy animals
- Taken around the zoo to see other animals
- Shredded paper for bedding

salt lamps can be toxic to many animals

Fisher

Sensory
- Bison fur
- Scents
- Feathers
- Sheep wool

Foods and feeding
- Tuna-sicles
- HB eggs
- Mice
- Cylinder feeder
- Quail

Manipulative items/toys
- Pumpkins
- Cardboard boxes
- Paper leaf bags
- Rope toys

Physical environment
- Pine trees
- Antlers
- Box of straw
- PVC tubes

Skunk

Sensory
- Crickets in escape proof container
- Snake sheds
- Scents
- Urine/trapping lures
- ~~Bath & Body Works lotions & sprays~~
- ~~Diluted extracts~~
- ~~Perfume pages from magazines~~
- Audio tapes
- Mirror (unbreakable)
- Hooves (monitor)
- Feathers (frozen 30 days)
- Squirrel call
- Sun catcher outside enclosure
- ~~Diluted essential oils~~
- Hand-held or box fan outside of exhibit
- Pinwheels outside exhibit
- Bird calls
- Mirror mobile outside exhibit
- Non-toxic bubbles
- Herbs, spices
- Camel hair/wool (frozen 30 days)

no fragrances or essential oils (toxic)!

Foods and feeding
- Cardboard box, ball, feeders with diet
- Buster food cube
- Pinecone
- Egg carton puzzle feeder
- Crazy ball feeder
- Feed bag with diet (liner removed)
- Peanut butter smears
- PVC insect feeder
- Piñatas
- Nyla bones/healthy edibles ← does not seem like a good idea
- Kong toy with diet ← no! eats.
- Carved pumpkins with diet ← blockage potocol
- Burlap bags with insects
- Live fish in tub
- Applesauce smears ← watch sugar intake
- Coconut feeder

Manipulative items/toys
- Kong toy
- Small stuffed animals with detachable parts
- Antlers
- Paper bags, paper to shred
- Tennis balls
- Small boomer ball
- Ferret ball
- Pine cones
- Burlap pillows
- Cardboard boxes/tubes
- Phone books
- Wiggle giggly ball
- Fire hose
- Klinker ball

Physical environment
- Exercised inside/outside with supervision
- Large drain pipe to crawl through
- Pool with small amount of water (supervised)
- Varied substrate – sand, shredded paper, sod, etc.
- Visual barrier
- Hammock

Behavioral/social
- Training programs
- View of decoy animals
- Taken around the zoo to see other animals

Wolverine

Sensory

- ~~Bengay ointment in a boomer ball~~
- Logs from other exhibits
- Urine scents, lures
- Spices ~~and extracts~~
- Burlap bags with scented straw
- Bison, pronghorn, moose, elephant feces
- ~~Deodorant spray~~
- Feathers
- Pig ears, cow hooves
- Reindeer antlers
- Pronghorn sheaths
- Hair from other species
- Education animals allowed to use exhibit while wolverines are in holding, then allowed back into exhibit after the animals has been removed

Foods and feeding

- Frozen mice, rats, fish hidden around exhibit
- Liver
- Rats and mice (dead)
- Rabbit (dead)
- Knuckle, shank & rib bones
- Super worms & crickets
- Live crayfish & fish
- ~~Pumpkins, apples, grapes, HB eggs~~
- Rat/Mouse sickles
- Blood popsicles
- Anchovy (fish) paste
- Tuna fish
- Beef heart
- Clams and krill
- ~~Hot dogs and chunk meat~~

Manipulative items/toys

- Paper towel/toilet paper rolls with food inside
- Paper bags with food inside
- Cardboard boxes with food inside
- Burlap bags with straw or treats
- Cornstalks
- Sod
- Snow piles
- Ice cubes
- Sleeping platforms
- Logs to climb on
- Wood box filled with stones/sod/straw to search for treats in
- Yellow pages, paper to shred
- Shredded paper, wood wool for bedding
- Hay from hoofstock exhibits
- Water tubs

Physical environment

- Sleeping platforms with bedding
- Digging boxes/pits
- Climbing structures
- Rock piles
- Deep dirt to tunnel in
- Hollow logs
- Stone piles
- Mud wallows

Behavioral/social

- Training programs
- Visual access to other species
- Climbing and digging opportunities

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1. Fernandez-Moran J. 2003. Mustelidae. 5th: 501 - 515.
2. Kimber KR, Kollias GV. 2000. Infectious and parasitic diseases and contaminant-related problems of North American river otters (*Lontra canadensis*). Journal of Zoo and Wildlife Medicine 31: 452 - 472.
3. Klopfleisch R, Wolf PU, Wolf C, Harder T, Starick E, Niebuhr M, Mettenleitern TC, and Teifke JP. 2007. Encephalitis in a stone marten (*Martes foina*) after natural infection with highly pathogenic avian influenza virus subtype H5N1. Journal of Comparative Pathology 137: 155 - 159.
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7. Torres J, Modrý D, Fernández J, Slapeta JR, Koudela B. 2000. *Isospora lutrae n. sp.* (Apicomplexa: Eimeriidae), a new coccidium from the European otter *Lutra lutra* (L.) (Carnivora: Mustelidae) from Spain. Systematic Parasitology 47: 59 - 63.

Appendix M: Common Diseases Affecting Mustelids

This table is intended as a list of diseases observed in mustelids and associated clinical signs; it is not intended as a comprehensive table. For proper treatment and management the reader is referred to more extensive medicine texts such as: Fernandez-Moran (2003),[1] Lewington (2007),[4] and Oglesbee (2006).[6] For an extensive review on the infectious disease agents that affect NARO and may affect other mustelids refer to Kimber and Kollias (2000).[2]
The last column lists the species in which the disease has been reported; other species may also be susceptible. Adapted from Fernandez Moran (2003).[1]

Viral Diseases	Transmission	Clinical signs	Diagnosis	Species reported
Rabies	Contact of infected saliva with mucosal surface or open wound	In ferrets signs are usually mild and non-specific: anxiety, lethargy and posterior paresis. Should be considered in any animal with outdoor access with neurologic signs.	Can only be diagnosed definitively post mortem. Histopath on brain.	All warm blooded animals are susceptible
Canine Distemper	Aerosol exposure or direct contact with conjunctiva, nasal exudates, urine or feces	Anorexia, vomiting, diarrhea, weight loss, hyperemia of face and ears, hyperkeratosis of nasal planum and footpads, oculonasal discharge, neurologic signs	Immunofluorescent antibody test or PCR of conjunctival swab. Histopath exam of affected tissue. 100% fatal to ferrets	Domestic ferret, BFF, badgers, weasels, skunks minks, martens, Eurasian otter
Influenza (type A)	Inhalation of aerosolized droplets	Sneezing, conjunctivitis, otitis (unilateral), fever, photophobia, naso-ocular discharge	Clinical signs and presence of HI antibodies (hemo-agglutination inhibition test)	Domestic ferret and mink. Also one Stone marten reported to have been infected with H5N1.[3]
Aleutian Disease (*Parvoviridae*)	Infected	Weight loss, hypergamma-globulinemia, reproductive failure, hemorrhagic enteritis and immune mediated glomeruloeohritis.	Gammaglobulin >20% serum total protein, IFA test.	Mink, ferret, striped skunk (typically of farmed mink)
Ferret kit disease (*Rotavirus*)	Affects kits. Can become enzootic at a facility.	Watery diarrhea, anorexia and lethargy.	Identification of viral particles in fresh feces	Ferret
Infectious peritonitis (*Coronavirus*)	Unknown, recently reported disease	Diarrhea, granulomatous lesions	Biopsy, immunohistochemistry	Ferret[5]

Bacterial Disease	Transmission	Clinical Signs	Diagnosis	Species reported
Salmonellosis (*Salmonella spp*)	Associated with feeding uncooked meat. Can be found in some clinically normal animals	Hemorrhagic enteritis, dehydration, weight loss, fever, lethargy	Culture of fresh feces	Many species
Tuberculosis *(M. tuberculosis)*	Inhalation of aerosolized particles, ingestion of contaminated tissues	Weight loss, enlarged lymph nodes, chronic respiratory disease.	PCR, direct examination of tissue and culture	Usually only a problem in free-ranging badgers from the UK and in from free ranging ferrets in New Zealand.
Campylobacteriosis (*Campylobacter jejuni, C. coli*)	Raw meat diets carry some risk of infection, ferrets may be asymptomatic carriers	Diarrhea, tenesmus, fever anorexia vomiting, leukocytosis, abortion	Fecal culture	Ferret and mink
Botulism (*C. botulinum*)	Ingestion of contaminated food. Associated with capture stress in wild otters	Death, paralysis and dyspnea before dying. Enerotoxemia, acute gastric distension, cyanosis	Fecal Gram stain and toxin assay	Otter and black footed ferret.
Pneumonia (*various agents*)	Due to a number of organisms, concurrent infection with calici and picornavirus can predispose.	Thick yellowish nasal discharge, labored breathing, dyspea, cyanosis, fever, lethargy, anorexia	Increased lung sounds, complete blood count results, culture, cytology.	Most mustelids

Fungal Disease	Transmission	Clinical Signs	Diagnosis	Species reported
Dermatomycosis	Direct contact or fomite transmission. Exposure to cats	Lesions resemble those seen in other species (Young animals most at risk. Skin is thickened itchy and scaly). Ferrets are not prone to skin mycotic disease, but some species of dermatophytes could present a zoonotic risk.	Definitive diagnosis is done by culture.	Most species

Parasitic Disease	Transmission	Clinical Signs	Diagnosis	Species reported
Toxoplasmosis	Exposure to sporulated oocysts, ingestion of intermediate host or ingestion of uncooked infected meat.	Anorexia, lethargy, fever, lymphadenitis, spenomegaly, corneal edema, myocarditis, hepatitis, pneumonitis	Antibody titers	BFF highly susceptible. NARO reported to have had titers.
Coccidiosis (*Isospora, Eimeria spp*)	Fecal oral	Often asymptomatic. If affected lethargy, diarrhea, dehaydration, weight loss	Fecal examination	European otter,[7] Ferret, mink.[4]
Lungworm	Transmission can be direct, by ingestion of L1 in feces or sputum of infected animals or indirect by ingestion of the intermediate host depending on the species of lungworm involved.	Cachexia, anemia, coughing, dyspnea, hyperpnea, nasal discharge, neurological signs.	First stage infective larva in fecal exam	Mink, skunk, sable, Eurasian badger, otter, ermine.
Kidney worm	Lifecycle is complex and not completely known. Involves annelids as first intermediate host and freshwater crustaceans, mollusks and fish as second intermediate hosts.	Weight loss hematuria, polyuria and other signs associated with renal failure	Necropsy finding- usually in the right kidney	Mink, otter, weasel, ermine, marten, fisher, and grison.
Tapeworms and roundworms.	Mustelids may be susceptible to them, usually not a problem in *ex situ* situations with a regular endoparasite control program in place.		Fecal exams (sedimentation and floatation)	
Microfliaria spp	Bite from infected mosquito	Respiratory and cardiac signs. Not all microfilaria infections develop into clinical disease	Clinical signs, finding microfilaria in blood smears.	River otters
Sarcoptic mange	Exposure to infected animals	Scabs around head and neck, tail, feet.	Finding the mites in skin scrapings or biopsy	Most mustelids
Fleas	Fleas can transfer from other animals. Although fleas tend to prefer their specific host.	Signs may vary from asymptomatic to flea bite allergy. Pruritus, inflammation. In young or sick animals with heavy infestation also anemia. May what?	Finding fleas or flea dirt in the coat,	Most mustelids
Ticks	As with other mammals	Itching, May transmit other diseases.	Finding ticks on animals. Others in group may be affected	Many

Non-infectious Disease	Risk factors	Clinical Signs	Diagnosis	Species reported
Excertional myopathy	Recent stressful, capture,immobilization, transport of wild animals	May vary. Elevated temperature, dark colored urine (myoglobinuria), ataxia, weakness, depression, elevated muscle enzymes in serum.	Urinalysis, blood chemistry, physical exam.	Badger, otter, black footed ferret.
Teeth abscesses	Cage trauma (biting), tartar and calculus build-up	Decreased appetite, facial swelling, weight loss,	Radiographs, physical examination	Otters
Urolithiasis	Diet and genetics may play a role. Sterile urolithiasis, more common in domestic ferret, but UTI may predispose. Most common: struvite, cystine.	Signs depend on location, number, and size of urolith and may include asymptomatic, polakyuria, dysuria, hematuria, staining of perineal area, urine dribbling, signs of pain when obstructed	Abdominal radiographs, urinalysis (pyuria, hematuria, changes in pH),	Small-clawed otter is particularly susceptible. Also reported in mink, ferret, Eurasian otter, domestic ferrets
Amyloidosis	Was reported in a relatively large number of black footed ferrets and may point toward a genetic predisposition.	Relate to specific site of amyloidosis accumulation. Can include anorexia, lethargy, sign of renal disease	Histologic evaluation of tissues submitted	Black-footed ferrets
Thiamine (Vit B1) deficiency	Thiaminase present in some fish	Anorexia, salivation, ataxia, papillary dilation, sluggish reflexes	Response to treatment	Piscivorous species (mink on raw fish diet)
Post-estrous anemia	Estrus that persists for over one month	Non-regenerative anemia, ecchimoses, bleeding,	CBC- aplastic anemia, vulvar discharge	Ferrets
Pancreatic cancer (insulinoma)	High incidence in domestic ferrets.	Hind leg weakness, blank look, staring drooling, nausea, as the disease progresses seizures as well	Blood tests for fasting low blood sugar. See texts referenced above for test details and risks	Ferrets
Adrenal neoplasia (adrenocortical carcinoma).	High incidence in America ferrets	Alopecia, pruritus, vulvar swelling in sterilized jills, sexual behavior (aggression in males), weight loss,	Clinical signs, ultrasound, sometimes palpation is possible, abdominal exploratory surgery. Dexamethasone suppression test ACTH stimulation test not reliable in ferrets.	Ferrets
Lymphoma	Unknown, potentially viral origin	Lymphadenopathy, respiratory distress (if ay organs in the chest cavity are involved)	Histopathology of enlarged lymph nodes or other affected organs biopsied, cytology of fine needle aspirate of enlarged organs may be of limited value.	Ferrets

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Evidence of disease – Mink and Weasels (also see the AZA chart handout)

- **Canine distemper-**
    - Abnormal mentation (often reported as "friendly" by finders), dehydration, diarrhea, ocular/nasal discharge (often so severe the eyes are crusted shut and finders report that animal is missing one or both eyes), seizures, self-mutilation. There is also a pretty distinct smell (Nicki Rosenhagen, DVM, personal communication)
    - Abnormal neuro signs (ataxia, tremors, seizures) (Renee Schott, DVM, personal communication)
    - In Ferrets: Ferrets are highly susceptible to infection with canine distemper virus, a member of the Paramyxoviridae family. Early signs of infection include lesions in the skin, lips, and footpads, respiratory system, and gastrointestinal tract. Ferrets may recover from the acute phase only to develop neurologic signs at a later date. Affected ferrets can develop tremors, seizures, and coma. *The disease is nearly invariably fatal* in ferrets. Diagnosis can be made through fluorescent antibody testing of blood smears and conjunctival scrapings and by PCR on whole blood. Euthanasia should be considered for seriously ill ferrets. *Vaccination is protective, but the availability of vaccines licensed for use in domestic ferrets is unpredictable at best. There is currently one canine distemper virus vaccine licensed by the USDA for use in domestic ferrets (PUREVAX Ferret Distemper Vaccine [recombinant canarypox vector vaccine], Merial, Duluth, GA), but it has limited and sporadic availability*. Some clinicians are using vaccines licensed for use in dogs in off-label fashion in ferrets (e.g., Nobivac Puppy-DPv [modified-live virus vaccine against canine distemper virus and parvovirus], Merck Animal Health, Madison, NJ). The benefits for the off-label use of vaccines, particularly modified live virus vaccines, must outweigh the risks for adverse reactions.

      From: Neurologic Diseases of Exotic Companion Mammals, Pacific Veterinary Conference 2016, Lauren V. Powers, DVM, DABVP (Avian Practice), DABVP (Exotic Companion Mammal Practice), Avian and Exotic Pet Service, Carolina Veterinary Specialists, Huntersville, NC, USA
    - Animals from the Canidae, Procyonidae, and Mustelidae families are reservoirs for this disease.

      In Ferrets: The respiratory system is the preferred location for viral replication. Virus spreads via aerosolization, direct contact with urine, feces, skin, discharge from the conjunctiva or nasal cavity, or via contact with exposed fomites such as gloves and other tools.

      Shedding typically begins 7 days after exposure. *Expect that all body secretions likely contain viral particles. The incubation period is 7–10 days but may be as long as 7 weeks* in some individuals.

      Papular dermatitis of the chin is usually the first sign seen. The inguinal area and anus may also be affected. Swollen and crusty lips may develop along with hyperkeratosis of the nasal planum and footpads. Other generalized signs include fever, anorexia, lethargy, pruritis, blepharospasm, photophobia, mucopurulent oculonasal discharge, and neurologic signs during prolonged illness. In ferrets, vomiting and diarrhea are uncommon presentations of this disease.

      From: Common Infectious and Parasitic Diseases of the Exotic Companion Mammal in the Shelter Setting, ABVP 2017, Tarah L. Hadley, DVM, DABVP (Avian Practice)

- **Canine distemper (continued)**
    - Distemper:

      Mink of all ages are susceptible to canine distemper virus (see Canine Distemper*). The incubation period is 9-14 days. The virus may be recovered from infected mink 5 days before clinical signs appear.* Recovered mink may continue to shed the virus for several weeks. Transmission may be direct (through contact or aerosol) or indirect.

      Clinical signs include nasal and ocular discharge; hyperemia, thickening, and crustiness of the skin on the muzzle, feet, and ventral abdominal wall; neurologic signs (convulsions and "screaming fits"); or a combination of these. Histologic ELISA, immunohistochemistry, or fluorescent antibody examination may reveal intracytoplasmic or intranuclear inclusions or distemper antigen in epithelial cells of the bladder, kidneys, bile ducts, intestine, lungs, trachea, and occasionally brain. Recent outbreaks have required PCR confirmation, because immunohistochemistry testing was negative.

      Swollen hyperkeratotic footpads, mink

      Viral Diseases of Mink – Exotic and Laboratory Animals – Veterinary Manual, by Hugh Hildebrandt, DVM, MSD (Merck Sharp & Dohme), 2018

    - In Ferrets: On a worldwide scale canine distemper, caused by a paramyxovirus, is considered the most serious viral infection of ferrets in which *the outcome is almost always fatal*. Classical symptoms, in unvaccinated ferrets, *often start with dermatitis on the lips, chin and around the inguinal region 7-9 days after infection. Mucopurulent ocular and nasal discharge, pyrexia (over 40°C), sneezing, coughing and anorexia are other common signs*. Just as in dogs, ferrets can develop hyperkeratosis of the footpads (hardpad).

      From: What Every Veterinarian Should Know About Ferret Medicine, British Small Animal Veterinary Congress 2008, Nico J. Schoemaker, DVM, PhD, DECAMS, DABVP(Avian), Division of Avian and Exotic Animal Medicine, Utrecht University, Utrecht, Netherlands

- **Toxoplasmosis**
    - Toxoplasmosis can have a huge range of symptoms, including none (Nicki Rosenhagen, DVM, personal communication)
- **Leptospirosis**
    - a sick animal with a fever who has increased kidney +/- liver values (Nicki Rosenhagen, DVM, personal communication)

- **Leptospirosis (continued)**

    - Leptospira interrogans is a spiral-shaped bacteria species. There are 180 serovars in 18 serogroups. There are a large number of reservoir hosts, including rats, cattle, dogs, horses, swine, deer, squirrels, foxes, skunks, raccoons, opossums, reptiles, frogs, mice, voles, shrews, and hedgehogs.

      Infection occurs by direct contact with infected animals and their urine, contact with contaminated soil, or ingestion of contaminated water. Contact may be through skin or mucosal surfaces. The incubation period is 2 days to 4 weeks.

      Symptoms in humans can range from asymptomatic to severe disease, including high fever, severe headache, chills, muscle aches, vomiting, jaundice, red eyes, abdominal pain, diarrhea, or a rash. If the disease is not treated, kidney damage, meningitis, liver failure, and respiratory distress may develop. In rare cases death can occur. Illness usually begins acutely with fever, chills, headache, muscle aches, vomiting, or diarrhea. The person may recover for a time but become ill again. If the second phase occurs, it is more severe - kidney or liver failure or meningitis (Weil's disease).

      Leptospirosis is treated with antibiotics, such as doxycycline or penicillin.

      From: Zoonotic Diseases of Wildlife, Wild West Veterinary Conference 2011, Kristian Krause, DVM, ABVP (Feline), Serrano Animal and Bird Hospital, Lake Forest, CA, USA

- **Canine heartworm**

    - In Ferrets: Ferrets are susceptible to Dirofilaria immitis infection and develop clinical disease similar to that in cats and dogs (Morrisey, Kraus 2012; Sasai et al. 2000; Schaper et al. 2007). Ferrets can be experimentally and naturally infected with Dirofilaria immitis, the causative agent of heartworm disease (Bradbury et al. 2010; Sasai et al. 2000; Schaper et al. 2007; Supakorndej et al. 1995; Wagner 2014). Ferrets living in endemic areas are most susceptible to infection (Morrisey, Kraus 2012).

      Clinical signs are similar to those in cats and dogs, although the clinical presentation more often resembles that of cats (Morrisey, Kraus 2012). Clinical signs include sneezing, anorexia, lethargy, and dyspnea (Sasai et al. 2000). Supportive evidence can be found on thoracic radiographs. In

      the author's practice, pleural effusion is a common finding. Angiography has been reported but can be technically challenging to perform (Di Girolamo et al. 2012). A tentative diagnosis can be made through echocardiography (Sasai et al. 2000). Microfilaremia is not a consistent finding and is only present in about 50% of cases (Sasai et al. 2000). Antigen testing (e.g., ELISA) is advised but is often negative as worm burdens are often low (Morrisey, Kraus 2012; Sasai et al. 2000).

      The prognosis for ferrets with heartworm disease is guarded to poor. The current recommended treatment is ivermectin at 0.05 mg/kg SQ q30d until clinical signs resolve and microfilaremia is absent (Morrisey, Kraus 2012; Wagner 2014). Prednisolone can be considered during the treatment period for its anti-inflammatory effects. Successful transvenous heartworm extraction of three worms was described in a ten-month-old ferret to caval syndrome (Bradbury et al.

- **Canine heartworm (continued)**

  2010). Ivermectin is frequently used as a preventative treatment at 0.02 to 0.05 mg/kg PO or SQ monthly (Morrisey, Kraus 2012; Wagner 2014). Topical selamectin and oral milbemycin oxime are also effective preventative therapies (Morrisey, Kraus 2012). A commercial preparation of imidacloprid 100 mg/ml and moxidectin 10 mg/ml (Advocate for Cats, Bayer, Pymble, NSW) is labeled for the prevention of heartworm disease in ferrets. A similar product (Advocate, AdvantageMulti, Bayer, Leverkusen, Germany) was demonstrated as 100% effective against experimental infection in 12 ferrets when administered once at a target dose of 0.40 ml 30 days post infection (Schaper et al. 2007).

  From: Ferret Cardiology, AAVAC-UPAV 2018, Lauren V. Powers, DVM, DABVP, Avian and Exotic Pet Service, Carolina Veterinary Specialists, Huntersville, NC, USA

- **Canine parvovirus**
  - Young animals with vomiting/diarrhea and lethargy, weight loss/absent gain, depressed mentation, dehydration and of course an unusually low white blood cell if bloodwork is involved would indicate parvovirus. (Nicki Rosenhagen, DVM, personal communication)
  - abnormal neuro signs (ataxia, tremors, seizures) (Renee Schott, DVM, personal communication)
- **Pneumonia, other respiratory**
- **Tick-borne illnesses** as prevalent in the area (e.g., Lyme)
- **ADV (Aleutian disease virus) –** usually spread from area captive mink farms/ranches and highly contagious (and fatal) to other mustelid species.
  - In Ferrets: Aleutian disease is caused by a parvovirus, unrelated to the one causing bloody diarrhoea in dogs. *Of the Mustelidae the mink is most susceptible*, but ferret specific strains have been found. Aleutian disease is an immune complex-mediated disease, resulting in multiple organ failure. *Clinical signs in mink include wasting, hepato- and splenomegaly, melaena, recurrent fevers and, eventually, hindleg paralysis and other neurological signs. Most mink eventually die within 5 months.* Fortunately ferrets seldom develop such severe symptoms.

    Although serum countercurrent immunoelectrophoresis is necessary to confirm the diagnosis, a hypergammaglobulinaemia together with chronic wasting signs is suggestive of Aleutian disease. As with almost all viral infections there is no specific therapy, but antibiotics and steroids have been reported to give some relief.

    From: What Every Veterinarian Should Know About Ferret Medicine, British Small Animal Veterinary Congress 2008, Nico J. Schoemaker, DVM, PhD, DECAMS, DABVP(Avian), Division of Avian and Exotic Animal Medicine, Utrecht University, Utrecht, Netherlands

  - In Ferrets: Aleutian disease is a parvovirus of ferrets that causes immune complex deposition of organs and hypergammaglobulinemia. Transmission of the virus is by aerosolization, contact with fomites, or direct contact with infected urine, blood, feces, and saliva.

    Clinical signs include a chronic wasting disease and central nervous system signs.

    From: Common Infectious and Parasitic Diseases of the Exotic Companion Mammal in the Shelter Setting, ABVP 2017, Tarah L. Hadley, DVM, DABVP (Avian Practice)

- **ADV (continued)**
    - In Ferrets: Aleutian disease is caused by infection with Aleutian disease virus (ADV), a parvovirus that also infects mink (Neovison vison). Infection is associated with lymphocytic plasmacytic perivascular cuffing in the brain and spinal cord, disseminated nonsuppurative meningitis, astrocytosis, and focal malacia.

      Clinical signs range from mild incoordination to ataxia, ascending paresis, tremors, and quadriplegia. A hypergammaglobulinemia is common but not always present. Diagnostics include counterimmunoelectrophoresis (CIEP), PCR, and ELISA. *The prognosis is poor, and ferrets with confirmed or suspected infection should be isolated. There is no recommended treatment, and no licensed vaccine is available.* There appears to be no cross-antigenicity between ADV and other parvovirus vaccines.

      From: Neurologic Diseases of Exotic Companion Mammals, Pacific Veterinary Conference 2016, Lauren V. Powers, DVM, DABVP (Avian Practice), DABVP (Exotic Companion Mammal Practice), Avian and Exotic Pet Service, Carolina Veterinary Specialists, Huntersville, NC, USA

- **SARS-CoV-2**
    - Domestic mink are known to be susceptible to COVID-19 infections, and able to transmit the virus to other animals (and possibly back to humans). The mortality rate on fur farms can be rapid and very high, although fur farm conditions have absolutely nothing in common with wildlife in the wild (and should not have anything in common with a rehabilitation setting). Research is on-going for the impact of SARS-CoV-2 on wild mustelids but at a minimum standard Covid precautions should be followed while the animal is in care.

*** Note: all italics are mine ***

Re: Vaccine Protocols for Weasels and Mink

These are recommendations from a veterinarian experienced in ferret and domestic mink veterinary care, and can be applied to wild mink and weasels with precautions. Keep in mind the metabolism of wild mink is faster than the domestic mink or ferrets, and the weasel metabolism is about 2-4 times faster than the wild mink.

Always work with your veterinarian for treatment and protocols; it may be helpful to share this document with them.

* note: these are comments and recommendations from the wildlife veterinarian – not me! *

Only use the ferret-specific vac, or the puppy vac "Nobivac DPV". That said, apparently the Novibac has few reactions but there is the slight possibility they could get actual distemper from them (I think this is true with the ferret specific one too, although I could be wrong). I think the benefit outweighs the risk though.

Availability of the ferret vac can be problematic. Currently a 10 pack of the ferret-specific vac can be purchased for about $180.

Do NOT pre-medicate with benedryl. This can mask the symptoms of a reaction, cause a delayed reaction, and some animals may possibly even react to the benedryl. If there's a reaction you want to be able to see it immediately and treat it. A reaction being masked is dangerous- you need to be able to see if there is ANY reaction, so that you can never administer that vac again.

Most vets are using Dex-SP at 2 mg/kg IM 30 minutes prior to vaccination in ferrets. It’s a steroid.

Stay at the vet for at least 30 min after the shot. Make sure your vet is aware of the risks and ready to reverse a reaction, should one happen.

Continue monitoring closely for 24 hours, and watch for swelling, redness, vomiting, etc.

A note about rabies vaccines in the USA. It only counts in domestic cats, dogs, and ferrets. That’s it. Not mink, not fox, not wolf, etc. The reason is there are no studies in that exact species so it doesn’t count. If they ever bite someone it is off with their heads for rabies testing, vaccinated or not. Theoretically it should work, but since no studies, doesn’t matter much. However, it may well protect the animal should they be attacked by a rabid animal after release.

Specifically for domestic mink or ferrets, but also applies to wild in rehab or education animals: Distemper is an absolute must. Especially if you do any rescue. If older a series of 2 three-four weeks apart, or if as a baby a series of 3. Then one yearly until they are 3-4. At that point they should not need boosters and you can titer the vaccine though it would be based on info for ferrets and who knows what a safe titer is in a mink? But since distemper is such a horrible and preventable disease, people should vaccinate for it. I gave up trying to reason with anti-vac people. they haven’t seen what I have. I can only give them the facts and it’s up to them. I’d rather have a vaccine reaction than a dead mink or ferret.

I always give steroids before any vaccination in ferrets or mink, I use the ferret dose of 2 mg/kg IM Dexamethasone SP in case anyone else's vet wants to do this. Wait 20-30 minutes before the vaccine and monitor closely for reactions. Never give rabies and distemper on the same day. I’ve treated 3 vaccination antiphylaxis... all in ferrets. Two rabies and one distemper vaccine. All three survived and were fine within 30 minutes. Protocol as follows:

Vaccine reaction protocol for anaphylaxis in ferrets (would use the same for mink):

Have protocol handy with dosages calculated prior to administering the vaccine, just in case.

Epinephrine: 0.1 ml of 1:1,000 solution SQ and many need second dose. If a larger ferret or mink I would do 0.2 or even 0.3 ml.
Diphenhydramine 2 mg/kg SQ, IM, or IV
Dexamethasone-SP 2 mg/kg SQ, IM, or IV

Warm SQ fluids or if able IV usually start with 1/4 shock dose (25 ml/kg) and can give more if needed. Give flow by oxygen mask or intubation. Most ferrets turn around within 10-20 minutes and are ok with prompt care. Getting an IV line in is usually not possible, but if you can all the better.

Symptoms of anaphylaxis include: vomiting, grey/white gums, coma/extreme lethargy/unresponsive, diarrhea and usually happen within minutes of vaccination. There can be delayed vaccine reactions which can happen hours to days later that are not as severe, nor need this protocol.

One other thing. One time I had two ferrets get anaphylaxis from rabies shots at the same time. Unrelated and different ages. I did some research and some batches of the IMRAB-3 can do this. If this happens do not use the same batch. Switched batches and no problem. Just something I found out by searching the forums with someone who had a similar problem. And always report any reactions to the USDA and company

Orphan Weasel Care, Key Points

Feeding:
Weasels are strict carnivores, with an extremely high metabolism rate and little or no body fat. **Formula must be high in protein, high in fat, low in carbohydrates, and contain taurine**. They require **frequent feedings** (neonates every 60-90 minutes, infants every 2 hrs.) very gradually reducing frequency as they begin eating on their own. **Be alert for hypoglycemia** (cold, lethargic). Feed as much as they want (usually 3-5% BW/feeding but varies widely); they will not overeat. A weasel cannot gorge or over-eat, while underfeeding is a significant concern and can be fatal. They will begin eating solid foods as soon as their teeth appear, long before their eyes open, but weaning does not begin for another few weeks. Offer small amounts of whole mouse purée or chopped whole mice supplemented with feline commercial raw (or moist high-quality kitten) in the cage at all times, changing out with each formula feeding. Continue to formula feed 10-12 times per day at evenly spaced intervals until the eyes are open, with supplemental food (chopped mouse or feline raw) always available, gradually tapering off to 3 hr. intervals as dictated by the young weasel. Formula (and water) can be offered in a small shallow dish once the eyes are open and they become difficult to hand feed. Water bottles *may* work.

My formula; I am using 4-parts FV 32/45 (skunk) powder: 1-part KMR powder: ½ part MultiMilk powder: 8 parts water. I have also successfully used Zoologic KMR: MultiMilk: water, 3:1:6. I prefer KMR and FV Kitten over the non-cat equivalent because it is more likely to have adequate taurine. Zoologic has slightly more protein and fat than Fox Valley equivalents.

The best weaning diet is 100% whole mice, wild caught when possible (various life stages of the mouse to suit the various species and ages, and puréed, chopped, or slit open as necessary; also small rats for LTW), and a high-quality moist kitten food (e.g., frozen Primal Nuggets feline beef and salmon or similar frozen raw cat food) is a practical supplemental food. Also offer insects (mealworms and crickets, misc. local worms and insects, etc.) and occasional raw egg, small birds, fish, etc. for exposure to other natural food sources. Try to source prey items from the wild and from different providers.

Housing:
Provide **supplemental heat** for as long as they are interested, **nest areas** (stacks of fleece squares work well), and **cover**. As they become more mobile space needs increase rapidly(!) along with their need for tunnel systems and the ability to stay under cover when moving around. I found an initial layer of absorbent material, then a thick layer of dried grass bedding or similar, or fleece, along with many tubes and tunnels made of cardboard or pvc and several fleece stacks for sleeping areas worked well. They also like hammocks and things to climb and jump on; ferret housing supplies (beds, hammocks, hide-aways); dog hide-a-pet toys, etc. Hanging hammocks, fleece, or gunny sacks on the cage sides provides both cover and something to climb. It is important for a successful release that the instinct to hide and stay under cover is not conditioned out, as well as being less stressful for the animal if they feel hidden and thus safe. They are escape artists, as fluid as liquid mercury, and lightning fast. Anything that will not hold a mouse will not contain a weasel for long. Expose to natural light cycles. Do not house different mustelid species together as they are all in a predator/prey relationship.

Weasels are scent markers. Avoid an entire cage cleaning in favor of no more than 25% at a time, including furnishings and enrichment items. Shake items out and return to the cage (unwashed) when possible.

They are high energy and very smart, so frequent changes and additions of cage enrichment is critical. New soft toys are always fun, and small dog, cat (including glitter balls and small “mice”), and ferret items; teenie beanies; and dangling toys, along with tents, tunnels, old mittens, and other hide-aways are often suitable. Toys will be cached. A large exercise wheel is excellent enrichment as an outlet for energy and also stress relief (flight).

Pre-release Conditioning:
It is critical that the instinct to hide is not conditioned out of the young weasel, as they are a prey species for most predators that eat mice (cats, hawks and owls, fox, coyote, larger weasel species). **Always offer an extensive network of tunnels and hiding spaces**. They are active day and night, along with their prey, with frequent alternating rest and activity cycles throughout a 24-hr. period.

At 8 weeks they may be able to kill live prey. Begin with small young mice; they will quickly master the technique. They are not ready for release at this point! **They must know how to hunt and kill wild mice prior to release**, unless it is a very well supported soft release. Hunting is a learned skill, and they have a very narrow window of opportunity to learn before starving to death without extensive support. Release near water. In the wild the young stay with their mother until 4-5 mo. old, dispersing in late summer. Juvenile least weasels released in late fall, winter, or early spring are unlikely to survive unless it is a very well supported soft release.

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Keeping your fuzzy ferret entertained doesn't have to cost you an arm and a leg. You can make a lot of toys yourself that are much cheaper than what you find at the pet store. She needs toys to stimulate her instincts to tunnel, dig and chase. These toys will keep Twiggy and your wallet happy.

Dig Box

One of Twiggy's favorite pastimes is to dig. Making her a box for that express purpose will provide hours of entertainment. Take a large plastic storage bin and cut a hole in the lid big enough for your fuzzy to climb through. Fill the tub three-quarters of the way with sand, rice or dried beans. (Make sure you don't use instant rice as this could be dangerous if Twiggy decided to eat it.) You'll want to use a clear tub so you can watch your pal dive in and dig around. If you have more than one fuzzy, make sure it's big enough for all your pals to play in.

Sock Balls

Twiggy will love to chase and bat around old, smelly socks. If they jingle, that's even better. Take an old sock and put a large jingle bell inside. (Make sure the jingle bell is not made of plastic she could chew up, and that it's big enough that she can't swallow it.) Ball the sock or tie a knot in it and toss it on the floor. Then watch her bat her jingly sock ball around the house with gusto.

Cardboard Boxes

Don't throw away that pile of moving boxes you've got in the garage. Cutting holes in the sides of a cardboard box will give Twiggy a dark place she can climb inside and explore. Connect some boxes together with tape to form a tunnel for Twiggy and her pals to run through. You can create a maze out of boxes for them to navigate.

Tube Maze

PVC pipe or clear dryer hose can be fashioned into a maze of tunnels for Twiggy to explore. Make sure the pipes are clean before letting your fuzzy go wild. You can get connectors for PVC pipe at the hardware store to connect the pipes together in as crazy a maze as your imagination can conjure. Paper towel tubes can be fun for Twiggy to tunnel through too, but they pose a danger: make sure you cut a slit down one side of the tube so Twiggy doesn't get her head stuck inside.

Considerations

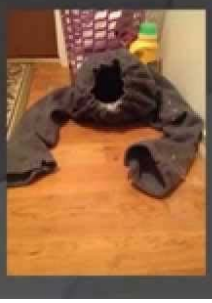
Ferrets are excellent at chewing pieces off their toys, so be sure any toys you make have no small parts she could swallow. Check her toys frequently to make sure they're in good shape. Always supervise her when she's playing outside her cage. If you see her getting into something she's not supposed to, you need to be able to take it away quickly. If your new toys turn up missing, don't worry. Twiggy will likely hoard her toys in her favorite hidey-hole. She will love playing with her exciting new toys, and you'll appreciate saving a few bucks in the process.

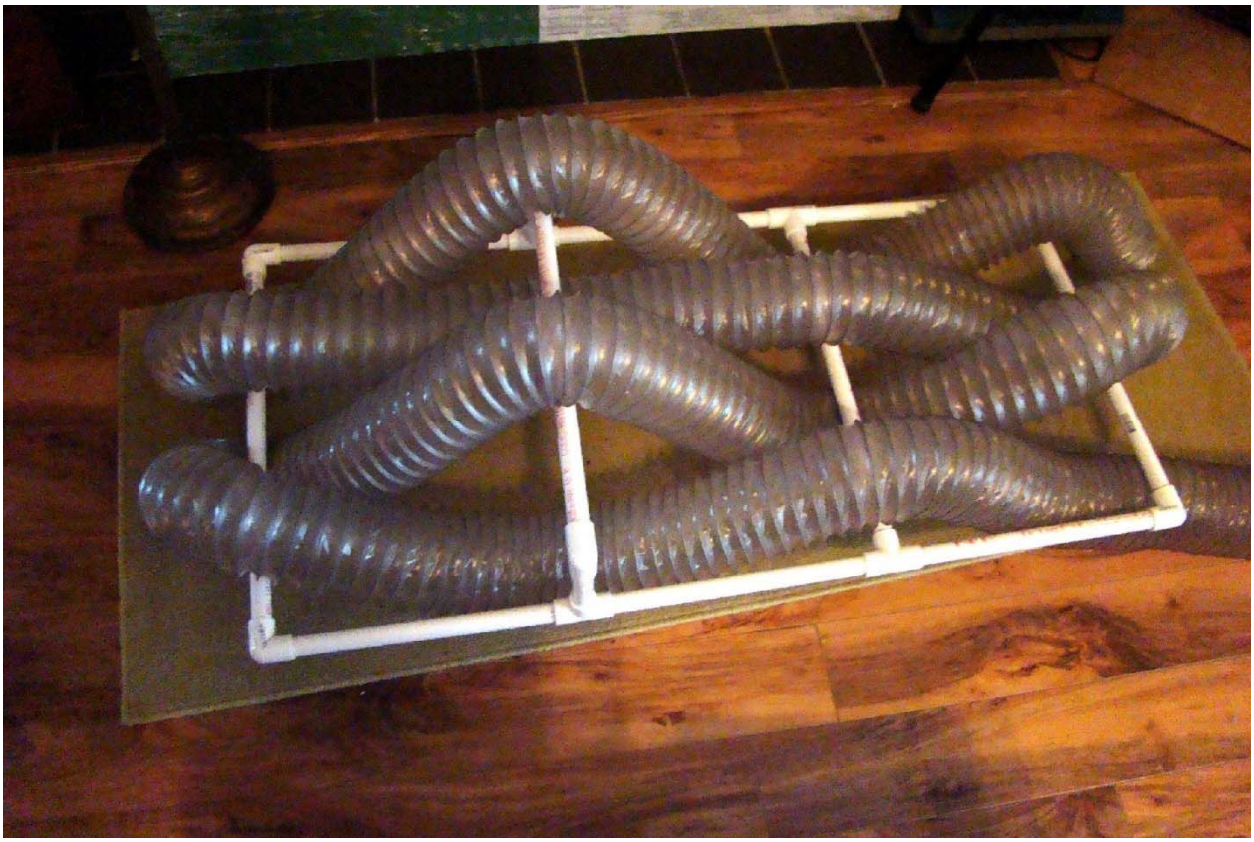
SAFE
TOYS
14/11/2014 12:35

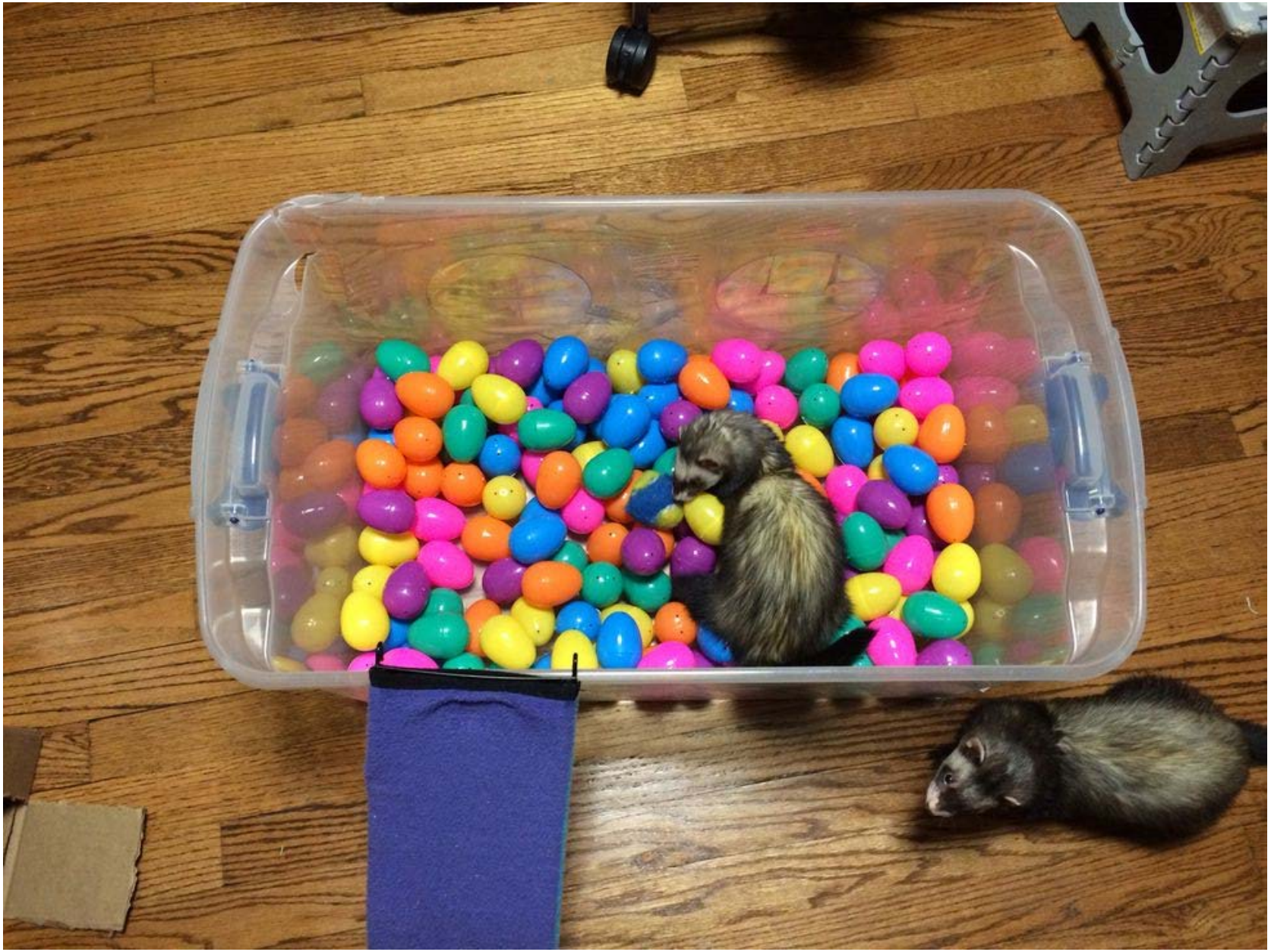
BAD
ToyS
14/11/2014 09:38

#5 basketball play

- Using an old basketball and sweat pants this is a crafty little invention.
- Step 1- cut 3 holes in old basketball one in middle and 2 on each sides.
- Step 2-place old sweat pants on basket ball opening facing middle.
- Step 3-pull draw strings tight leaving middle open.
- Step 4-postion legs facing both sides openings.
- Step 5- ENJOY!!







PREMIUM

Homemade ferret toys are a great alternative to the toys you can buy at stores. These can help you to save a bit of money.

Toys are very important to keep your fuzzy stimulated when out playing. However, all ferrets are different and will find different things interesting (just like humans). Each ferret has its own individual personality and with that come their own individual likes and dislikes.

So if you have a lot of ferrets, then sometimes it can be hard to cater to all their needs. The more time you spend with them and the more you bond, the more you will know about your ferrets and what they want to play with.

Ferrets are great because most of the time they will create their own homemade ferret toys. For example, they can take a liking to your clothing and tunnel through it or steal it.

Homemade ferret toys come in many shapes and forms but always remember to supervise you fuzzbutts during play. You don't want them swallowing something that their not supposed to (it can get stuck in their tiny intestines).

Some examples of homemade ferret toys and games are:

- **Put some sheets or a blanket on the floor** – they will tunnel through it…too easy!
- **Put them in a pillow case and lightly shake it -** it's a funny sight.
- **Roll up some socks into a ball** – you can put a bell or a treat in the middle, this will occupy a lot of their time…
- **Old smelly shoes (preferably with holes in them)** – not only will they revel in the smell (the smellier the better) but it's nice and dark in there too.
- **Pipes and tubes (make sure they are clean)** – they will run through it over and over and over again…don't they ever get dizzy?!

- **Make your bed** – not only will your room look cleaner, but I have found that mine love the sheets being fluffed over their heads…now you see me, now you don't…oh what joy!

- **Plastic bags** – you hardly need to do anything with this homemade ferret toy…just rattle it!

- **Stuffed toys** – you can play tug a war with them…and some ferrets love to hoard them (its fun taking them out of their hiding spot and throwing them all over the room, after a rather angry look at you – "Why the hell would you do that for?!" – they will pick them up again and take them back to their hidey hole)

- **Cardboard boxes (preferably with holes cut out)** – just another great dark spot for them to explore.

- **A tunnel made up of cardboard boxes** – they will be jumping out of their skins with joy!

- **Cardboard box maze** – read a book, paint your nails or read some more of my website (while supervising them)…they will be amused for hours!

- **Peacock feathers** – "What's that tickling my face? I'm gonna get YOU! No…but this time…no…but NOW! No, but NOW…ok, this time for sure…GOT YOU!!! HEY…were did it go again???"

- **Attach a ball or a piece of material to some string** – Same concept as above…a very easy homemade ferret toy to make.

- **Play tug a war with a sock** – it's funny how far you can drag them before they let go…stubborn little buggers!

- **Your pants** – on the ground or when you're putting them on…either way their fair game.

- **An old empty handbag** - Oh yes….the darkness and the tight spot…soooo much fun.

- **A sealed plastic container with a treat hidden inside** – They will spend hours trying to get to it!

- **Your car and house keys** – jingle them above their heads and watch them try to get them (just watch out that they don't steel them from you, we have spent a lot of time searching for our keys only to find them in a little ferret hidey hole!)

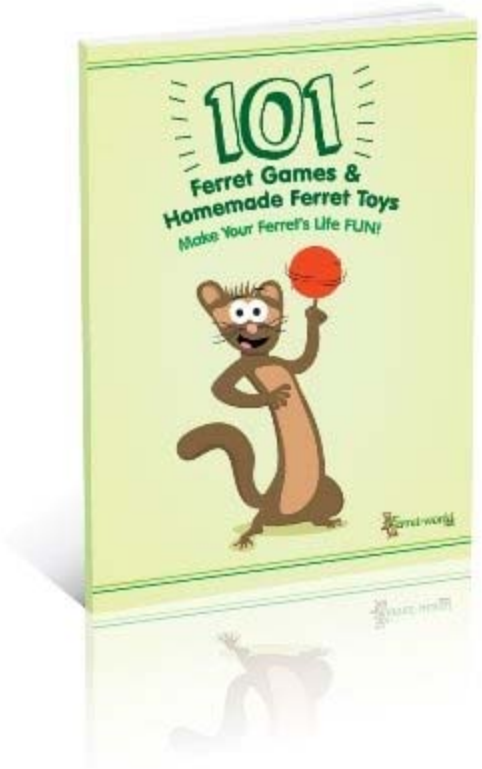
- **Put a bell or some rice in a tightly sealed empty medicine bottle or jar** – make sure they can't get to what's inside.

- **Ping pong balls** – I like to call this game ferret football, it's so very amusing!

- **Another ferret** – not only entertaining for the ferret but also for you (however, some ferrets don't like other ferrets)

- **YOU** – You're the best toy they can have (and the cheapest!)

- **Need more ideas?** - if you want these ideas and a whole heap more then check out the ' 101 Ferret Games & Homemade Ferret Toys ' ebook! All you need in one handy spot :)



Make Your Own
PVC
Cat Tree!

DIY ADJUSTABLE PET BED
FULL TUTORIAL | LAPTOPSTOLULLABIES.COM
INEXPENSIVE + MACHINE WASHABLE!
DIY ADJUSTABLE PET BED
FULL TUTORIAL | LAPTOPSTOLULLABIES.COM
DIY ADJUSTABLE PET BED
FULL TUTORIAL | LAPTOPSTOLULLABIES.COM
FLAT BED
DIY ADJUSTABLE PET BED
FULL TUTORIAL | LAPTOPSTOLULLABIES.COM
TIGHTEN STRINGS TO ADJUST
DIY ADJUSTABLE PET BED
FULL TUTORIAL | LAPTOPSTOLULLABIES.COM
SUPER SNUG

Notes from the designer (thank you Greg!):

the whole thing will come out of a 5' 2X8 except for the door.

The numbers work - my 2X8 was actually 2X7, but I cut the sliding channel deep enough it worked fine.

==========

Weasel Nesting Box Plans

Tools needed: table saw, miter saw, hammer, screwgun/drill (a ratchet clamp is handy)

Materials - a 4 1/2 foot 2X8, a 15" piece of 1X6, 3" screws, and a pin/construction nail for the door
(I used plywood for the door on this - would recommend actual wood for a used -vs demo - box)

Cut three 12" pieces, one 9" piece, and one 7" pieces from the 2X8.

Two of the 12" pieces need to be run through a table saw to get slots for the door - slots need to be wide enough to accommodate your 3/4" door material. I have the front edge of my slot 3/4" from the edge of the boards. Multiple passes or a dado blade - I made multiple passes and used a 3/4" chisel.

I drilled a hole from the inside of the top board centered in the slot 3" from the right hand side (left side if you have the board upside down)

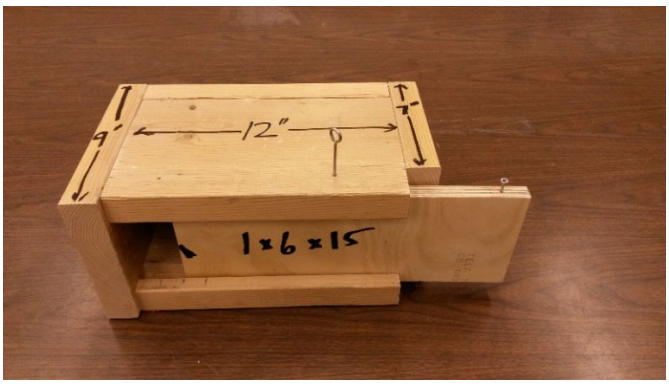
I assembled with screws - nails would work fine.

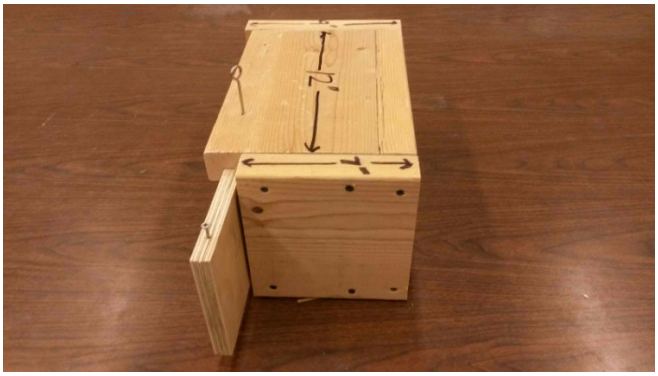
I slide the door in after assembly, and with the door closed I used a nail and a hammer to tap it for a mark to know where to drill the hole for the "closed position locking pin". I made a stainless steel one - most anything will work.

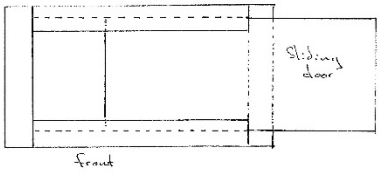
I drilled three more holes one inch apart to lock the door open farther. Space one for a 1 1/2" opening if desired.

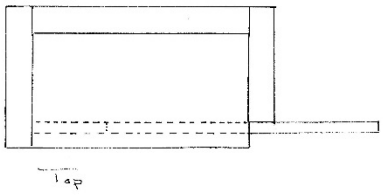
I added a screw on top of the end of the door so one can twist tie the door closed.

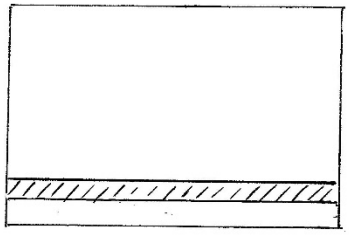
I did size my holes so that a screw could be used to "lock" the door open or closed. A screw or dual headed nail would also work well in place of the pin.









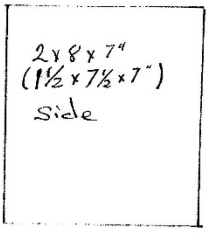


2 x 8 x 12"
(1½ x 7½ x 12)

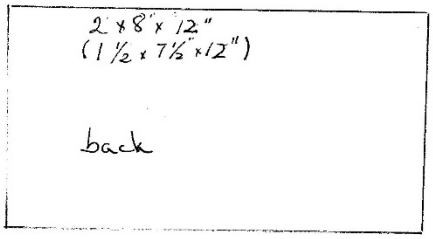
Need 2 (top & bottom)

¾" deep groove for sliding door

2 x 8 x 9"
(1½ x 7½ x 9")
one side

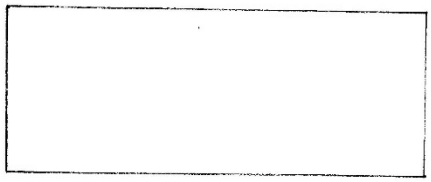


2 x 8 x 7"
(1½ x 7½ x 7")
side



2 x 8" x 12"
(1½ x 7½" x 12")

back



1 x 6 x 15"
(¾ x 5½ x 15")

sliding door

Modifications

An opening large enough for a piece of PVC pipe on one end is drilled into the end furthest from the door opening. A short piece of PVC fitted with a screw cap is inserted into the hole and caulked into place. This proved an alternate exit route for the weasel, and additional pieces of pipe can be added once the nest box is in place at the release site to allow for a second exit sufficiently far enough away from the box to facilitate escape should a predator attack the box. The pipe is capped if used for transporting the animal.

A sturdy handle, on the top or on the end opposite the tunnel, makes it easier to carry, and another sturdy handle on the door make it much(!) easier to slide the door open.

A small, incomplete barrier wall can be installed at about the midway point of the box to foil grabby raccoon hands and inquisitive opossum noses. Be certain the weasel can readily go both over and around the barrier.

Painting the box would help it hold up to the elements and reduce swelling from moisture.

This size is just large enough for a least or STW weasel. A larger box would be needed for a LTW or mink. The 2" thick boards give it enough weight to make it sturdy and keep it secure, but makes the interior dimensions much smaller than it seems.

Resources and References for Weasels, Mink, Marten, and Fisher

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