Alaska Department of Fish and Game
Division of Wildlife Conservation

Wildlife Capture and Chemical Restraint Manual

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BISON

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Bison are captured by darting from a helicopter or from a highway vehicle.

Chemical Immobilization:

Ground darting:

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Carfentanil	3.5 – 4.5mg	4.0 – 5.0mg
Xylazine	35 – 65mg	45 – 75mg

Helicopter darting:

	Adult female
Carfentanil	4.5 – 6.0mg
Xylazine	60 – 80mg

Reversal: For the carfentanil component use naltrexone dosed at 100mg/mg of carfentanil and, if needed to reverse the xylazine component, give tolazoline dosed at 1mg/lb. Both can be injected intramuscular.

Additional Information:
Bison may go down in lateral recumbency, so capture crews should be prepared to get to the animal quickly and prop it up into sternal recumbency with legs folded under it in a natural position.

Bison, as well as most members of the bovid family, are very susceptible to the effects of the alpha-2 sedatives such as xylazine. Therefore, doses should be carefully measured.

Domesticated bison have been successfully handled with the use of tiletamine/zolazepam (Telazol®) dosed at 1 – 2mg/lb. Attempts to use Telazol to capture wild bison in Alaska have not been successful.

BLACK, BROWN AND POLAR BEARS

Capture Methods:
Most bear captures are done by helicopter darting. In heavily timbered coastal areas Aldrich foot snares are often employed. Barrel or culvert traps are utilized to capture black bears and occasionally brown bears when access permits their employment. Black bears are also recaptured by locating and immobilizing them in their dens. Soon after coming out of their dens, newborn cubs of all three species are caught by hand.

Chemical Immobilization:

1. Tiletamine/zolazepam (Telazol®): 3 - 5mg/lb.
The lower dose is used on large bears, older bears, bears in poor condition, or bears just out of their dens. The higher dose is recommended on small bears, young bears, bears in good condition, or bears prior to denning. This is the drug combination of choice for helicopter darting and most other bear handling situations. The above dosage range provides 45 - 75 minutes of safe handling time. Supplemental doses of 1.5 - 2.0mg/lb will provide an additional 45 - 60 minutes of light anesthesia. Behavioral responses observed during induction in the order they appear are: disoriented gait, high stepping, loss of use of hind legs, licking lips, loss of use of forelegs, loss of head and neck movement, nystagmus, and loss of tongue movement. Bears with only tongue and minor head movements are safe to approach and work on. Those with excessive head and neck or any foreleg movement are not safe and should be given more time or a supplemental dose. Most bears recover in 1.5 - 2.5 hours, but an occasional bear may be immobilized for up to 4 hours. There is no reversal agent for this drug combination.

2. Ketamine 3.0 - 5.5mg/lb and xylazine 1.5 - 3.0mg/lb.
This drug combination works well in bears ≤ 100 lbs., but its use in larger bears is limited to the commercially available drug concentration of each and the resulting volume of drug required. Ketamine is very short acting reaching peak effect in 20 - 25 minutes and then is rapidly metabolized within 30 - 45 minutes post injection. Xylazine provides approximately 2 hours of sedation but the analgesia diminishes after 30 minutes. Therefore, any handling time with this drug combination beyond 30 minutes will likely require supplemental dosing of ketamine at 1- 2mg/lb.

Additional Information:

1. Most bear capture work is done in late spring or early summer when bears are thin and ¾ to 1½ inch needles are used depending on species and age of bears being darted. Occasionally bears are captured in the fall when they may have 2½ to 4 inches of subcutaneous fat located over the lower back, rump, and upper hind legs. Instead of using a longer needle that could penetrate the thorax or abdomen inflicting trauma to the lungs or other internal organs, when darting fall bears I recommend using 1½ inch needles and targeting the shoulder/base of neck area.

2. If needed for safe or efficient handling, cubs of the year can be given either of the above drug combinations at the higher mg/lb. dosages listed above.

3. The ultra-potent narcotics (carfentanil and etorphine) have been used in the past on bears but due to their adverse effects on respiration and thermoregulation and the availability of better drugs, I do not recommend their use.

4. Although bears immobilized with tiletamine/zolazepam are usually able to thermoregulate, capture teams should attempt to cool any bears with body temperatures > 105°F (41°C) with cold water or snow placed on their pads and groin area.

5. Radiocollars must fit properly so they do not adversely affect the behavior or survivability of the bear. The best fit is usually achieved when the collar can, with effort, be tightly slipped over the bear's head. Some form of expandable or breakaway collar should be used on juvenile or growing bears.

CARIBOU

Capture methods:
Caribou are captured by a variety of methods depending on time of year, climatic conditions, terrain and vegetation, age class of animals, and/or highway accessibility. These methods include darting from a helicopter, the use of a skid-mounted or hand-held net gun fired from a helicopter, darting from a snowmachine, the use of a drop net, and the capture of swimming caribou from a riverboat. Each method has advantages and disadvantages depending on the objectives for the capture and the variables listed above.

Chemical Immobilization:

1. Adults:
   a) Carfentanil 1.5 - 4.5 mg/xylazine 75 - 150mg.
   The dose varies with condition, weight, sex, and age of the caribou and the amount of stress or excitement placed on the animal.

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil is the recommended antagonist for carfentanil. Tolazoline is a good antagonist for xylazine when needed. It should be dosed at 1 – 2mg/lb. In caribou yohimbine has also worked relatively well to reverse the effects of xylazine. It should be dosed at 0.05mg/lb, which is 10mg for a 200lb animal. All of these reversal agents can be given intramuscularly.

   b) Etorphine 4 - 8mg/xylazine 75 - 100mg.
   The same comments under carfentanil/xylazine apply to this dosage range for these drugs.

   Reversal: Naltrexone dosed at 50mg/mg of etorphine is recommended as the narcotic antagonist. If needed for the xylazine component, use tolazoline dosed at 1 – 2mg/lb. or yohimbine dosed at 0.05mg/lb.

2. Calves or short yearlings (75 - 150lbs):
   Carfentanil 1 – 2mg/xylazine 50 – 100mg.

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil and, if needed, tolazoline dosed at 1mg/lb. or yohimbine dosed at 0.05mg/lb.

Sedation/Immobilization from Hand Injection:

1. Xylazine

	Fall	Late winter
Adult females:	125 - 200mg	80 - 150mg
Adult males:	150 - 250mg	100 - 200mg
Yearlings:	75 - 150mg	50 - 100mg

   Reversal: If needed, tolazoline dosed at 1mg/lb. or yohimbine dosed at 0.05mg/lb.

2. Ketamine/xylazine

Adults: 400mg ketamine and 100mg xylazine

Reversal: No antagonist is available for ketamine but its effects are short acting and begin to diminish in 30 - 40 minutes. If needed, tolazoline dosed at 1mg/lb. or yohimbine dosed at 0.05mg/lb can be used for the xylazine component but should not be given before most of the ketamine has worn off (≥40 min.).

Additional Information:

1. Dart and needle size and location: Caribou are very thin skinned and dart size and placement are critical. Two or 3cc darts with 3/4 inch needles and brown charges are recommended. Darts should be placed in a large muscle mass of the rump/hind leg area or base of neck/shoulder area. One cc darts, even with brown charges may penetrate the skin. It is best to test your equipment before attempting to dart an animal.

2. Caribou are also very susceptible to stress that can result in capture myopathy and eventually death. Whenever caribou are captured by use of a helicopter, chase times on individuals should be minimized and groups allowed to recover before they are chased again.

3. Because of the concerns addressed in items 1 and 2, ADF&G caribou researchers have modified their helicopter capture technique to using a Palmer CO_2 pistol with a 1 or 2cc dart to reduce the impact and stress on the animal. This technique is often combined with the use of a Robinson R-22 helicopter, which is quieter and less threatening.

4. Helicopter netting of caribou is best done in open terrain with soft ground or a foot or more of soft snow to slow animals down and pad their fall. Hard or frozen ground will result in broken legs and heavy brush or small trees can cause broken necks.

5. Use of a drop net requires a large number of support personnel so that each animal under the net can be attended to quickly to prevent injuries.

6. Mature caribou bulls undergo substantial physiological changes that greatly reduce their ability to process drugs during the rut. Therefore, I strongly recommend against using any form of chemical immobilization or sedation on adult bull caribou during the breeding season.

7. Caribou often carry a high parasite load and it is beneficial to treat captured animals with an antiparasitic drug. Ivermectin in a 1% solution dosed at 1mL/100lbs is recommended. It should be injected subcutaneously.

DALL SHEEP

Capture Methods:
Several methods have been tried in the capture of Dall sheep, including: helicopter darting, ground darting, helicopter net gunning (both shoulder-fired and skid-mounted), drop netting, cannon netting, rocket netting and snaring. In the late 1970's at a mineral lick, rocket netting proved successful but quite labor intensive. With the appropriate chemical agents and dosages, helicopter daring is effective, but moralities associated with wounding, injuries, or capture stress have been high in the past. More recently helicopter net guns, both shoulder-fired and skid-mounted, have proved successful with fewer mortalities. Lambs are captured by hand with use of a helicopter.

Chemical Immobilization:

Adult female and yearling males:

1. Carfentanil 2.5 – 3.3mg with 15 – 25mg of xylazine

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil; it is not necessary to reverse this small amount of xylazine.

2. Etorphine 5 – 7mg with 10mg of xylazine

   Reversal: Naltrexone dosed at 50mg/mg of etorphine; xylazine reversal is not necessary.

Additional Information:

1. Sheep captures with the use of a helicopter are dangerous work requiring a very experienced pilot with a thorough knowledge of the capture methods to be used.

2. Some biologists have reported lower mortality with helicopter net gun captures versus helicopter darting. I believe the success of the capture operation is directly proportional to the experience of the capture teams with the technique being applied. In other words, biologists usually have the best success and lowest mortality using proven methods with which they are familiar.

3. When blindfolded and hobbled sheep are very calm and minor procedures (collaring, ear tags, blood samples) can be done without chemical restraint.

4. Immobilized or restrained sheep should not be pulled around by the horns, which could result in cervical trauma and possible damage to the spinal cord.

5. Sheep are thin skinned and subject to dart penetration, therefore care should be taken in selecting dart size and external charges.

6. There appears to be a greater incidence of capture stress/capture myopathy in Dall sheep when compared to other Alaskan big game species. To prevent this some wildlife veterinarians recommend giving 3.0mg of selenium and 150mg of vitamin E (Myosel-B® or Bo-Se®). Others believe hypomagnesemia (grass tetany) may be a contributing factor and recommend giving 50mL of a 10% magnesium sulfate solution subcutaneously.

ELK

Capture Methods:
Helicopter darting has been used exclusively for all recent captures of elk in Alaska. Helicopter net gunning has been successfully employed in other states and Canada.

Chemical Immobilization:

Carfentanil 4.5 – 6.0mg and xylazine 100 – 150mg

Reversal: Naltrexone dosed at 100mg/mg of carfentanil. We have not seen any need to reverse the xylazine component when dosed in the above range.

This is the recommended adult female mid-summer dose. This dose is higher than is recommended for wild elk in the rest of the U.S. and Canada; however, the elk on Afognak Island are Roosevelt elk that attain much higher body weights than is obtained in other places in the wild. At this time of year adult cows average 700 lbs. and range up to 850 lbs. Adult males may get up to 1300 lbs.

Additional Information:
1. When dosed as above, these animals usually go down in lateral recumbency but are okay as long as their head is lying uphill or is slightly elevated. Capture crews should quickly get to any elk in a compromising position and reposition it.

2. Elk have relatively thin skin and a 3/4-inch dart needle is adequate.

FURBEARERS

General Comments:
Ketamine in combination with an alpha-2 sedative (xylazine) or a tranquilizer (acepromazine, diazepam) are often the drug combinations of choice for chemical restraint of furbearers. Ketamine is short acting and its effects begin to decrease after 30 minutes. Sedation by xylazine lasts 1 to 2 hours. If needed, only the xylazine component can be reversed with yohimbine dosed at 0.05mg/lb. Yohimbine should not be used prior to 30 minutes post induction.

Tiletamine/zolazepam (Telazol®) at the recommended doses should provide 45 to 90 minutes of good anesthesia. However, there is no reversal agent currently available for this drug combination.

CANINES & FELINES

COYOTE

Adults usually weigh between 20 to 35 pounds.

Capture Methods:
Coyotes are most commonly captured with padded leg-hold traps:

1. Victor Softcatch #3N (double coil spring with padded jaws)
2. No. 3 1/2 E-Z Grip made by Livestock Protection Co. (padded double long spring)

Helicopter darting is also used.

Short Immobilization:
Ketamine 4 - 6mg/lb. and xylazine 0.5 - 1mg/lb.

Moderate Immobilization: (includes helicopter darting)
Tiletamine/zolazepam (Telazol®) 5 - 7mg/lb.

FOX

Adult red fox usually weigh between 8 - 13 pounds, arctic fox between 5 - 10 pounds.

Capture Methods:
Fox are successfully captured using both leg-hold and live traps. Padded leg-hold traps (No. 1 1/2 or 2 coil-spring) are moderately priced and easily transportable, but must be frequently checked to prevent injury. Live traps (Havahart or Tomahawk) are bulky and expensive, but less likely to cause injury.

Short Immobilization:
Ketamine 7 - 10mg/lb. and xylazine 0.5 - 1.0mg/lb.

Moderate Immobilization:
Tiletamine/zolazepam (Telazol®) 8 - 10mg/lb.

LYNX
Adult lynx weigh 15 - 30 pounds.

Capture Methods:
Live traps (Havahart or Tomahawk) have been used with limited success. Padded leg-hold traps have been more effective.

Short Immobilization:

Ketamine 5 - 7mg/lb. and xylazine 0.5 - 1.0mg/lb. or acepromazine 0.2mg/lb. (not to exceed 5mg).

Moderate Immobilization:

Tiletamine/zolazepam (Telazol®) 5 - 8mg/lb. (lower dose for routine handling, higher dose for invasive procedures)

RODENTS

BEAVER
Adults usually weigh between 30 and 55 pounds with no difference between sexes.

Capture Methods:
Beavers are captured with Bailey or Hancock live traps or with a modified version of either trap.

Chemical Immobilization:

Ketamine 4.5 - 5.5mg/lb. and xylazine 0.5mg/lb. or acepromazine 0.1mg/lb. (not to exceed 4mg)

MUSKRAT
Adults usually weigh between 2 and 3 pounds.

Capture Methods:
Muskrats are live trapped using a single door mesh wire trap 6 x 6 x 18 inches (Tomahawk Live Trap Co.) baited and set on houses or feeding platforms.

Non-chemical Restraint:
Many non-invasive procedures can be done using a wire restraining cone or canvas cloth bag.

Chemical Immobilization:

Ketamine 10 - 20mg/lb. and xylazine 1.0 - 0.5mg/lb.

The lower dose should provide 15 minutes of handling time before arousal begins with full recovery in 1 hour. The higher dose should nearly double the handling time but also lengthens the recovery and increases the chance of anesthetic complications.

MUSTELIDS

RIVER OTTER
Adults normally weigh 15 to 25 pounds, but in SE Alaska males may reach 30 pounds.

Capture Methods:
River otters are live-trapped using modified Hancock traps or with padded leg-hold traps. A recent study was quite successful using a padded double longspring (#11 Sleepy Creek).

Short Immobilization:
Ketamine 5 - 6mg/lb. and xylazine 0.5mg/lb or diazepam 0.2mg/lb.

Moderate Immobilization:
Tiletamine/zolazepam (Telazol®) 6mg/lb.

MINK
Adults weigh 1.1 to 3.0 pounds with males much larger than females.

Capture Methods:
Mink are easily trapped in small rectangular wire mesh live traps baited with fish.

Short Immobilization:
Ketamine 20mg/lb. and xylazine 0.5mg/lb.

Moderate Immobilization:
Tiletamine/zolazepam (Telazol®) 7 - 10mg/lb.

MARTEN
Adults usually weigh 1.5 to 3.0 pounds. Males are larger than females.

Capture Methods:
Marten are easily caught in live traps (Tomahawk Live Trap Co.) baited with strawberry or raspberry jam in the summer and sardines at other times.

Chemical Immobilization:
Ketamine 7 - 10mg/lb. and xylazine 0.5mg/lb. or diazepam 0.25mg/lb.

SHORT-TAILED WEASEL
Adults weigh 2 to 13 ounces with males much larger than females.

Capture Methods:
Weasels are captured in baited rectangular live traps (National, Havahart, Tomahawk).

Chemical Immobilization:
Ketamine 15 - 20mg/lb. (1mg/oz.) and xylazine 0.75mg/lb. (0.05mg/oz.)

MOOSE

Capture Methods:
In Alaska the capture of moose, other than newborn calves, is exclusively done by darting with an immobilizing drug. Most of the darting is done by helicopter, but in selected situations animals have been successfully darted from the ground or from highway vehicles, ATV's, or snowmobiles. In other states moose have been successfully captured using a shoulder-fired net gun employed from a helicopter.

Chemical Immobilization:
1. Adults:

a) Carfentanil 2.5 - 6 mg and xylazine 75 - 200 mg.
The lower doses apply to calm individuals, those in poor condition, use in late winter, or use on small individuals. Higher doses apply to stressed or excited individuals, those in excellent condition, use in the fall, or use on larger individuals.

Reversal: Naltrexone dosed at 100 mg/mg of carfentanil is the antagonist of choice. Naloxone dosed at 150 mg/mg of carfentanil will reverse these moose, but due to naloxone's short half-life, some moose may later show signs of narcotic recycling (renarcotization). Reversal of xylazine dosed at 75 - 200 mg/adult moose is usually unnecessary and recoveries are smoother without using any alpha-2 antagonist. If total reversal is necessary, the xylazine component can be reversed with tolazoline dosed at 0.5mg/lb. give intramuscularly.

b) Etorphine 5.5 - 8.5mg and xylazine 150 - 300mg.
The same comments under carfentanil with respect to the dosage also apply to etorphine.

Reversal: Naltrexone dosed at 50mg/mg of etorphine. If needed for xylazine sedation, give tolazoline dosed at 0.5mg/lb. IM.

c) Xylazine 700 - 1200mg.
Xylazine used alone is only recommended for moose caught in snares or in confined areas. It is not recommended for free ranging moose. The depth of sedation/immobilization varies significantly with the amount of stress or excitement the moose is exposed to.

Reversal: Tolazoline dosed at 0.5mg/lb. given IM has been shown to adequately reverse xylazine sedation in moose. Yohimbine has not proved to be an effective antagonist of xylazine in moose.

2. Yearlings or short-yearling calves:
   Carfentanil 1.2 - 2.5mg and xylazine 120 - 150mg

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil and, if needed, tolazoline dosed at 0.5 mg/lb. given IM.

3. Calves (fall and early winter):

   a) Etorphine 3.5 - 4.5mg and xylazine 75mg.

   Reversal: Naltrexone dosed at 50mg/mg of etorphine.

   b) Carfentanil 1.0 - 2.0mg and xylazine 50 - 75mg.

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil.

Additional Information:

1. Dart and needle size and placement:
Moose should be darted in a large muscle mass (rump, hind leg, shoulder, or base of neck). Avoid hitting the flank. Darting with carfentanil allows the use of 2 or 3 cc darts, which are fired under most situations with Palmer equipment using green charges. For adults, 1 to 1 and 1/2 inch needles are usually adequate. Fall moose in good condition can have ≥ 3 inches of rump fat. Dart placement in these moose should be lower in the hind leg or in the shoulder. Switching to a 2 inch needle may help, but necessitates careful dart placement to prevent injections into internal organs.

2. When immobilized with a narcotic, moose usually lie down in a sternal recumbent position. If the moose is in a lateral or worse position, especially with their head below the body level, it should be repositioned prior to processing.

3. The few moose that die during the chemical capture and handling process, usually do so well into the handling period. One individual in each capture crew should be routinely monitoring the animals vital signs and be ready to give the antagonists if conditions warrant.

4. ADF&G researchers have found giving 50mg of tolazoline IV to a moose immobilized with carfentanil and xylazine, that is very deep and showing signs of respiratory depression, will increase its breathing and allow the capture team to complete their work. Naltrexone should only be given as a full dose when total reversal is indicated. Never give a partial dose of naltrexone.

MOUNTAIN GOAT

Capture Methods:
In the 1950's, a few mountain goats were caught with leghold snares or nets, but neither method was very successful and resulted in excessive injury or mortality. All recent mountain goat captures in Alaska have been done by helicopter darting.

Chemical Immobilization

1. Carfentanil:
   - Adult females: 2.4 - 2.7mg
   - Adult males: 2.7 - 3.0mg
   - Yearlings: 1.8 - 2.1mg

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil

2. Etorphine:
   - Adult females: 3.5 - 4.5mg
   - Adult males: 4.5 - 5.5mg
   - Yearlings: 3.0 - 3.5mg

   Reversal: Naltrexone dosed at 50mg/mg of etorphine

Mountain goats are usually found in very steep terrain. Because of the possible adverse effects of residual tranquilization on the animal's ability to navigate in this terrain, currently I do not recommend the use of a tranquilizer or sedative with the narcotic.

Sedation:

Adult female dose:
1. Xylazine 50 - 75mg
2. Diazepam 30 - 40mg

These dosages are for use in transporting or temporarily holding goats. I currently have no information on the use of yohimbine or other alpha-2 antagonist action on reversing xylazine sedation in goats.

Additional Information:

1. The skill of the helicopter pilot makes a big difference in the amount of stress mountain goats are subjected to in capture operations and the dangers both the goat and capture crews are subjected to, making it imperative only experienced pilots be used.

2. Capture crews should carry climbing ropes and gear to get to an occasional goat that may go down in a dangerous location. The helicopter should be equipped with a sling and cable to move goats from an unsafe location to a safer area for processing.

3. Mountain goats use their horns as daggers. If animals are only sedated, going to be moved, or temporarily confined with other goats, short pieces of garden hose should be placed over their horns to prevent injuries.

4. A blindfold usually helps calm and control any goats sedated or lightly immobilized.

MUSKOX

Capture Methods:
Currently muskoxen are darted from a helicopter or gently herded to high ground with a snowmobile or 4-wheeler and then approached and darted from the ground. The later method is far less stressful. In the past, muskoxen have been captured using a trained cattle herding breed of dog (blue heeler or border collie) to force the muskoxen into their defense formation and hold them until a member of the capture team can approach and dart one or more animals. This method met with limited success as muskoxen are more aggressive than cattle and it takes a very well trained dog and handler to be successful.

Chemical Immobilization:
Adults:

Carfentanil 5.0 - 6.5mg/xylazine 15 - 25mg.

Reversal: Naltrexone dosed at 100mg/mg of carfentanil. The low dose of xylazine does not require reversal.

Prior to the availability carfentanil, etorphine was used to immobilize muskoxen with or without xylazine. However, doses were high which required a large volume of drug and results were variable with some mortality. Therefore, as long as carfentanil is available, use of etorphine is not recommended.

Additional Information:
1. Muskoxen are also very sensitive to xylazine and should be dosed carefully.

2. Muskoxen are almost always found in a cohesive group. To minimize stress on the individual muskox being handled as well as the group, it is recommended only 1 or 2 individuals are immobilized from a group at one time.

SITKA BLACK-TAILED DEER

Capture Methods:
Numerous methods have been employed in the capture of deer. Box traps, clover traps, snares, drive nets, and drop nets have been effective in certain seasons in other states with extensive road systems. In Alaska, snaring, helicopter net gunning in the Alpine in summer, and nets fired from a blind on a beach in winter have met with limited success. Helicopter darting or ground darting from a blind or in combination with a boat has been more successful. Recently biologists in Southeast working from vehicles on logging roads have captured deer by darting and by use of a Coda shoulder-fired net gun, but have been most successful with ground darting in combination with an experienced individual using a fawn call.

Chemical Immobilization:
Adult females (70-100 lbs.):

1. Carfentanil 1.5 - 2.5mg and 30 - 40mg xylazine

   Reversal: Naltrexone dosed at 100mg/mg of carfentanil

2. Etorphine 2.8 - 4.5mg and 20 - 50mg xylazine

   Reversal: Naltrexone dosed at 50mg/mg of etorphine

3. Ketamine 250 - 350mg and xylazine 70 - 100mg (ketamine is freeze-dried and reconstituted at a 200mg/mL concentration)

   Reversal: Yohimbine 0.1mg/lb. IV or IM (wait 30-min. post induction before administering)

Sedation:
Xylazine 0.7 - 1.2mg/lb.

Reversal: Yohimbine 0.1mg/lb. IV or IM

Additional Information:
1. Deer are thin skinned with light muscle mass; therefore, use 3cc or smaller darts with light charges.

2. A deer's body condition can vary significantly with seasons and weather conditions, which then effect the amount of chemical agent needed to immobilize or sedate the animal. Late winter doses may be half what fall doses would be for the same animal.

3. Deer confined to beaches in late winter due to snow depths maybe easier to capture, but due to poor body condition, the additional stress of capture and handling could result in high mortality.

WOLF

Capture Methods:
Most wolves are captured by helicopter darting. Leg hold traps with padded or offset jaws and metal locking snares are also used where darting is not practical.

Chemical Immobilization:

1. Tiletamine/zolazepam (Telazol®) 5 - 6 mg/lb.
This dosage provides rapid induction (3 - 5 minutes) with approximately 45 minutes of safe handling. Telazol can be supplemented at 2mg/lb.

2. Ketamine 3 - 4 mg/lb. and xylazine 0.5 - 1.0mg/lb.
Rapid induction but only 20 - 30 minutes of safe handling.

Reversal: Yohimbine dosed at 0.1mg/lb. for the xylazine component.

3. Etorphine 2.0 - 2.5mg and xylazine 25 - 50mg/adult wolf

Reversal: Naltrexone dose at 50mg/mg of etorphine.

Additional Information:
1. Adults usually weigh between 65 - 130 lbs.

2. For animals lightly immobilized, a muzzle can provide additional safety for capture crews precluding the need for additional chemical restraint.

WOLVERINE

Capture Methods:
Wolverines are either darted from a helicopter or live trapped.

Chemical Immobilization:

1. Tiletamine/zolazepam (Telazol®) 5 - 8mg/lb. This dosage range will provide a 3 to 4 minute induction and approximately 45 minutes of good anesthesia.

2. Ketamine 5 - 6mg/lb and xylazine 0.5 - 1.0 mg/lb. This drug combination also provides a quick induction but only 20 to 30 minutes of good anesthesia.

Reversal: Yohimbine dosed at 0.1mg/lb. for the xylazine component.

Additional Information:

1. Wolverine can have large differences in body weights between sexes with adult males usually weighing 30 - 40 lbs. and adult females 20 - 25 lbs.

2. Both of the above drug combinations have a wide margin of safety and it is better to err on the high dosage side. Therefore, due to the weight differences between sexes, when darting wolverine of unknown sex dose for males.

3. For surgical implants, I recommend using Telazol dosed at 10mg/lb. but monitor respirations closely for rate and tidal volume.

GENERAL INFORMATION

1. Dart placement - To get the maximum effect in the minimum time, the immobilizing drug should be injected into a muscle mass with good circulation. Therefore, dart placement should be in a large muscle mass, usually the rump/hind leg or shoulder/base of neck. Avoid hitting the flank or over the ribs. One consideration is the time of year and condition of animals to be captured. In the fall many animals have excessive fat (up to 3 or 4 inches) over the lower back and rump. Drug injected into fat is very poorly absorbed.

2. Water hazards - When immobilizing animals in the wild any open water in the area must be cause for concern. Darted animals must be monitored closely and prevented from "going down" where their head may be in water. Animals that are hot from being chased will often seek water to cool themselves.

3. Positioning animals - Immobilized animals should be placed in a natural position with their head level or slightly above their body level. Positioning is most critical in ruminants, which should be in sternal recumbency with their legs folded under them in a natural position. Ruminants lying on their side may regurgitate and inhale rumen contents. Legs left too long in an unnatural position may become temporarily dysfunctional preventing the animal from standing or causing it to stumble.

4. Blindfold - A blindfold is useful in calming a lightly immobilized or sedated animal, and works especially well with ruminants. A blindfold is most useful when transporting or holding a sedated animal. A disadvantage is it prevents monitoring the eyes for palpebral reflex and pupillary response. Blindfolds should be constructed so they do not rub against the cornea and used with an ophthalmic ointment.

5. Pregnant females - Most of the capture drugs we use are not recommended for use on pregnant females. However, I currently have no information of any problems when they are used in the dosages we use them. Therefore, I recommend avoiding their use in late pregnancy when possible.

6. Radiocollar and visual collar fit - Collars should fit so they do not affect the behavior or survival of the animal wearing it. Collars should fit tightly enough so they are not easily shed or caught on vegetation, but loosely enough to allow for weight gain and do not impede normal movement or cause abrasions. Juveniles or rapidly growing animals should be fitted with expanding or breakaway collars. Only experienced personnel should be fitting collars to animals.

7. Ear tags - Ear tags put on incorrectly or in the wrong place can cause infection and eventual loss of the tag. Plastic roto or duflex tags appear to cause fewer infections and last longer than metal tags. The tag should be located in the distal part of the ear lobe, but the tag should not extend beyond the edge of the ear lobe. All hair should be removed from a nickel-sized area on both surfaces of the ear lobe, a hole punched through all layers, and the ear tag clamped into place with the proper ear tag tool. Then examine the tag to see it is snapped together, rotates freely (i.e., is not too tight), and no hair was forced through the hole with the tag.

MONITORING IMMOBILIZED/ANESTHETIZED ANIMALS

Vital Signs:

1. Temperature - For most animals the normal rectal body temperature range is 99 - 102 °F (37.2 - 40 °C). If the temperature increases to ≥ 106 °F (41 °C) the animal is mildly hyperthermic and action should be taken to cool the animal. If it is ≥ 108 °F (42.3 °C) immediate action should be taken to cool the animal and if possible reverse the chemical restraint. Temperatures ≥ 110 °F (43.4 °C) are life threatening. Concerns of hypothermia begin at 95 °F (35 °C) and efforts should be made to warm the animal. Body temperatures of ≤ 90 °F (32.1 °C) are life threatening and require immediate action.

2. Heart rate - For most Alaskan big game species normal pulse ranges between 40 and 120 beats/minute. Pulses persisting below 30 indicate bradycardia or above 150 indicate tachycardia. In either case efforts should be made to correct the problem by reducing the stress, reversing the chemical restraint, or treating the problem. The characteristics of the pulse can also be important. It should be firm and even instead of "thready" or erratic.

3. Respiratory rate - Breathing should be monitored for both frequency and volume (referred to as tidal volume). Panting is a normal response and usually indicates an attempt by the animal to cool itself. Concerns arise if respirations fall below 3/minute. Often mechanical stimulation or moving the animal will increase the rate. If respirations remain depressed and its color begins to pale (see below) the chemical restraint should be reversed and/or the animal given a respiratory stimulant. The respiratory rate may be normal but so shallow that the tidal volume is inadequate to insure proper oxygenation of the blood and the animal slowly becomes pale. Usually mechanical stimulation or moving the animal will cause it to breathe more deeply.

4.Color/capillary refill - If the blood pressure and circulation are near normal the mucous membranes are pink in color. In many species the lining of the mouth, gums, or corner of the eye are convenient places to look at these membranes. Species with pigmented gums may require observations of membranes inside the nostril, rectum or vagina. With inadequate oxygen to these tissues they turn from bright pink to pale to ashen gray to blue. As membranes begin to pale efforts should be make to correct the problem (see above). Capillary refill time (CRT) should also be checked. Normal CRT is 1 - 2 seconds. A CRT greater than 2 seconds indicates low blood pressure and, therefore, poor tissue perfusion.

SUPPLEMENTAL AND EMERGENCY DRUGS

Injectable Antibiotics:

1. Benzathine and procaine penicillin 7,000 - 10,000 units/lb.
This antibiotic is most effective against skin bacteria and used to treat wounds or skin infections. Penicillin must be refrigerated, shake well before using.

2. Oxytetracycline 5 - 8mg/lb.
A broad-spectrum antibiotic used for respiratory or gastrointestinal infections or other systemic infections.

Topical Medications:

1. Panolog® ointment or cream - Used to treat deep puncture wounds, dart wounds, or ear infections.

2. Nitrofurazone powder or dressing - For the prevention or treatment of surface bacterial infections of wounds, burns and skin ulcers.

3. Betadine® ointment or solution (10% providone-iodine) - Used to prevent bacterial infections in minor burns, superficial cuts and abrasions, or to flush wounds.

Deep puncture wounds should be flushed with hydrogen peroxide, medicated topically, and the lesion left to heal from the inside out. It may be necessary to establish bottom drainage so the wound will properly drain. The animal should also be given systemic antibiotics.

Antiparasitic Drugs:

1. Ivermectin 1% solution (Ivomec®) – 1mL/100 lbs.
Effective on most internal and external parasites except for tapeworms.

2. Levamisole phosphate – 2mL/100 lbs.
Effective on ascarids (roundworms and pinworms).

3. Praziquantel (Droncit®) - Less than 100 lbs. dose at 2mg/lb; greater than 100 lbs. dose at 1mg/lb. Used for the treatment of tapeworm infections.

Eye Medication:

Ophthalmic ointment or base - Used to protect the cornea from drying out or becoming scratched.

Emergency Drugs:

1. Doxapram 0.2 - 0.5mg/lb intravenously or sublingually
Doxopram is a CNS respiratory stimulant used in emergency situations for apnea or very depressed respirations. It is short acting and, if necessary, this dosage should be repeated in 10 - 15 minutes.

2. Atropine 0.1 - 0.2mg/lb
Atropine is used to stimulate heart rate for an animal that is bradycardic and to reduce secretions. It is also used preventatively with immobilization drugs known to cause bradycardia or that cause hypersecretions.

3. Dexamethasone 5 - 20mg
Dexamethasone is an injectable steroid used to treat shock or animals showing signs of capture myopathy.

4. Intravenous fluids (Ringer's or lactated Ringer's®)
Fluids are used in shock therapy or in the treatment of capture myopathy.

5. Preventive treatments for capture myopathy:
Animals highly susceptible to capture myopathy can be treated with the following drugs as a preventative:
   a. Selenium/vitamin E (Bo-Se®) 2.5mL/100 lbs.
   b. 10% magnesium sulfate 50mL/100 lbs. subcutaneously

HUMAN SAFETY CONCERNS WHEN USING CHEMICAL IMMOBILIZERS

I. General Safety Procedures:

1. Work in pairs.
2. Use rubber gloves when handling the drug and loading darts.
3. Store loaded darts and used darts in nonbreakable, leakproof containers.
4. Personnel should be familiar with and qualified to administer CPR and first aid.
5. Water should be available to flush any spilled drug from skin.

II. Ultra-potent Narcotics (carfentanil and etorphine)

A. Emergency:

1. Narcotic splashed or spilled on skin:
Thoroughly flush the skin with water and observe individual for symptoms of poisoning. Usually no additional treatment is necessary.

2. Accidental injection of narcotic:
Usually results in one or more symptoms of narcotic poisoning, which can be life threatening and requires treatment.

3. Symptoms of narcotic poisoning:
   a. Severe respiratory depression
   b. Severe drop in blood pressure
   c. Dizziness and disorientation
   d. Loss of consciousness
   e. Muscle rigidity
   f. Vomiting
   g. Pin-point pupils

B. Treatment (if symptoms warrant):

1. Maintain airway - CPR, if necessary
2. Administer antagonist - Naloxone or Naltrexone.
   a. Naloxone or Naltrexone - Give 25 mg for every mg or the narcotic that was accidentally injected. The preferred route of administration for either drug is by slow intravenous injection, but they can also be given intramuscularly.
   b. If no response in five minutes, give additional dose.
   c. Also give additional naloxone if effects from it begin to wear off and individual again displays symptoms of narcotic poisoning.

Wolverine Drug Dosages

Amount (ml) = est. weight * dose / concentration

Ketamine & Medetomidine

Ketamine: *dose* = 8 mg / kg ; *concentration* = 200 mg / ml
Medetomidine: *dose* = 0.3 mg / kg ; *concentration* = 20 mg / ml

Body Weight (kg)	Ketamine (ml)	Medetomidine (ml)	Total Volume (ml)	Atipamezole (ml)
3	0.12	0.045	0.165	0.1
5	0.20	0.075	0.275	0.2
10	0.40	0.150	0.550	0.4
15	0.60	0.225	0.825	0.6
20	0.80	0.300	1.100	0.8
25	1.00	0.375	1.375	1.0

NOTE: Ketamine loses clinical effectiveness after 20-40 min; animal could spontaneously recover. If not done processing by 40 min, re-dose with Ketamine.

Telezol *Dose* = 13 mg / kg; *Concentration* = 190.7 mg / ml
Telazol bottle + 1.8 ml sterile water = 2.5 cc Telazol at 229 mg / ml
maximum solubility – probably not good for cold lemps.
Telazol bottle + 2.3 ml sterile water = 3.0 ml at 190.7 mg / ml
Capture International recommended concentration
Telazol bottle + 5.0 ml sterile water = 5.7 ml at 100 mg / ml
Golden et al. recommended concentration

$= \frac{500mg}{} = 2.63\ mL$

Body Weight (kg)	Telazol at 190.7 mg/ml (ml)
5	0.34
10	0.68
15	1.02
20	1.36
25	1.70

For seizure: give Diazepam

Other Animals:
Wolf: 500 mg Telazol

Lynx: 0.15 ml medetomidine + 0.25 ml ketamine

3. Get to a medical facility as soon as possible and make sure the physician is told what narcotic the individual was exposed to and if any antidote was given.

III. Cyclohexamines (tiletamine and ketamine):

A. Initially, this group produces symptoms of excitability. Large doses can result in severe respiratory depression, hypertension, and eventually coma.

B. In the case of accidental human exposure, the most important field first aid treatment is for someone to remain with the exposure victim, keep them quiet, monitor respirations, and be prepared to provide CPR if necessary. The individual should be transported to a hospital as soon as possible. No antagonist is currently available.

C. The hospital physician should be told what drug or drug combination and the approximate dose the individual was exposed to. If the patient was exposed to Telazol® (tiletamine/zolazepam) the physician should be told the effects are similar to ketamine and diazepam.

IV. Alpha-2 Agonists (xylazine, detomidine, medetomidine):

A. These are a unique group of drugs currently used only in veterinary medicine. Effects are dose dependent, but at higher doses cause: respiratory depression, hypotension, and profound depression. These drugs can be absorbed through mucous membranes as well as by injection. One documented case resulted in unconsciousness and eventual respiratory failure but no hypotension.

B. Treatment in the field should consist of monitoring respirations, provide CPR if necessary, and transport to a hospital as soon as possible.

C. Alpha-2 antagonists include yohimbine, tolazoline and atipamezole; but none of these drugs have been tested in humans. Therefore, their use in the field is not recommended but the attending physician should be made aware of their use in animals.

GLOSSARY

Analgesia - loss of sensibility to pain

Anesthesia (general) - total loss of consciousness and sensation

Apnea - a cessation of the breathing impulse

Ataxia - failure of muscular coordination for voluntary movement

Bradycardia - abnormal slowing of the heart beat

Catalepsy - a state in which the limbs are in waxy rigidity (will maintain a position for a time), but the subject is unresponsive to stimuli

Convulsion - violent involuntary contractions of the voluntary muscles

Cyanosis - bluish discoloration of the skin due to lack of oxygen in the blood

Dyspnea - difficult or labored breathing

Emesis - vomiting

Hepatic - pertaining to the liver

Hyperthermia - an increase in body temperature above physiologic normal

Hypothermia - a decrease in body temperature below physiologic normal

Immobilize - to cause an animal to lose its ability to make coordinated, purposeful movements

Induction time - elapsed time from drug injection to immobilization

Narcotic - an agent that produces insensibility or stupor

Palpebral reflex - eyelid or blink reflex

Renal - pertaining to the kidneys

Sedation - act of calming usually accompanied by a mild degree of central depression (used interchangeably with tranquilization)

Tachycardia - excessively rapid heart beat

Tranquilizer - drug that brings tranquillity by calming, quieting or pacifying, and a lack of concern with surroundings

Pharmaceuticals used by Alaska Department of Fish and Game staff on wildlife species.

Generic name	Brand name	Manufacturer
acepromazine	PromAce®	Fort Dodge
	Aceproject®	Vetus
	Acepromazine Maleate (generic)	Butler
		Vedco
		Western Veterinary Supply
		Boehringer Ingelheim Vetmedica
atipamezole	Antisedan®	Pfizer
~~carfentanil~~	~~Wildnil™~~	~~Wildlife Pharmaceuticals~~
diazepam	No veterinary approved product	
	Valium®	Roche
	Dizac®	Ohmeda
	Diazepam Inj. (generic)	Henry Schein
		Elkins-Sinn
		Others
doxapram	Dopram®-V	Fort Dodge
etorphine	M-99™	Wildlife Pharmaceuticals
isoflurane	AErrane®	Fort Dodge
	IsoFlo®	Abbott Labs
	Iso-Thesia	Vetus
	IsoVet®	Schering-Plough
ivermectin	Ivomec®	Merial
ketamine	Ketaset®	Fort Dodge
	Ketaject®	Phoenix
	KetaVed™	Vedco
	Keta-Sthetic™	Western Veterinary Supply
	VetaKet®	Lloyd Labs
	Vetamine™	Schering-Plough
	Ketamine HCl (generic)	Boehringer Ingelheim Vetmedica
		VetTek

lidocaine	Lidocaine HCl 2% (generic)	Aspen Butler Phoenix Pro Labs VetTek Western Veterinary Supply Others
medetomidine	Domitor®	Pfizer
methoxyflurane	Metofane®	Schering-Plough
naltrexone	Trexonil™	Wildlife Pharmaceuticals
propofol	Propoflo™ Rapinovet™	Abbott Labs Schering-Plough
tiletamine/zolazepam	Telazol®	Fort Dodge
tolazoline	Tolazine™	Lloyd Labs
xylazine	AnaSed® Cervizine® Rompun® Sedazine™ Xyla-Ject® Xylazine HCl (generic)	Lloyd Labs Wildlife Pharmaceuticals Bayer Fort Dodge Phoenix Boehringer Ingelheim Vetmedica Butler VetTek Others
yohimbine	Antagonil™ Yobine™	Wildlife Pharmaceuticals Lloyd Labs

Manufacturers

Abbott Laboratories
North Chicago, IL 60064

Aspen Veterinary Resources, LTD
N. Kansas City, MO 64116

Bayer Corporation
Shawnee Mission, KS 66201

Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506

The Butler Company
Dublin, OH 43017

Elkins-Sinn, Inc.
Cherry Hill, NJ 08003

Fort Dodge Animal Health
Overland Park, KS 66210

Henry Schein
Melville, NY 11747

Lloyd Laboratories
Shenandoah, IA 51601

Merial
Iselin, NJ 08830

Ohmeda Pharmaceutical
Liberty Corner, NJ 07938

Pfizer Animal Health
Exton, PA 19341

Phoenix Pharmaceutical, Inc.
St. Joseph, MO 64503

Pro Labs, LTD
St. Joseph, MO 64505

Roche Products, Inc.
Manati, Puerto Rico 00674

Schering-Plough Animal Health Corp.
Union, NJ 07033

Vedco, Inc.
St. Joseph, MO 64504

VetTek, Inc.
Blue Springs, MO 64014

Vetus Animal Health
Farmers Branch, TX 75234

Western Veterinary Supply
Kansas City, MO 64120

Wildlife Pharmaceuticals, Inc.
Ft. Collins, CO 80524

UPDATE ON PHARMACEUTICALS

Current Prices on Commonly Used Immobilizing Drugs:

Tiletamine/zolazepam (Telazol®) – 50mg vial: $19.10/vial (volume price for 100 or more vials), otherwise $23-25/vial.

Ketamine – 100mg/mL concentration in 10mL vial: $9-15/vial.

Carfentanil (Wildnil®) – 3mg/mL concentration in 10mL vial: $360-375/vial (may soon be an increase).

Naltrexone (Trexonil®) – 50mg/mL concentration in 20mL vial: $160-170/vial.

Xylazine – 100mg/mL concentration in 50mL bottle: $20-24/btl.

Yohimbine (Antagonil®) – 5mg/mL concentration in 20mL vial: $45/vial.

Tolazoline (Tolazine®) – 100mg/mL concentration in 100mL bottle: $49.50/btl.

Diazepam – 5mg/mL concentration in 10mL vial: $3-4/vial.

Isoflurane – Gas anesthetic 100% solution requiring anesthesia machine with appropriate vaporizer; available in 100mL ($12-16ea) and 250mL ($25-33ea) bottles.

Antibiotics:

Benzathine and procaine (long acting) penicillin – 300,000 units/mL concentration in 100mL bottle: $8.50/btll.

Oxytetracycline – 200mg/mL concentration in 250mL bottle: $25/btl.

Panalog® ointment – Nystatin, neomycin sulfate, thiostrepton, and triamcinolone acetonide ointment available in 7.5mL ($4.25) and 15mL ($12) tubes.

Parasiticides:

Ivermectin (Ivomec®) – 10mg/mL concentration (1% solution) in 50mL bottle: $50/btl.

Levamisole phosphate – 136.5mg/mL concentration (13.65% solution) in 100mL bottle: $14/btl.

These are current prices. Where I have listed a price range, the lower figure reflects a sale or large volume price.

New Products Now Available:

Doramectin (Dectomax®) – This is a new Pfizer parasiticide that is very similar to ivermectin. In cattle, plasma concentrations of doramectin rise slightly higher and last a few days longer then ivermectin. It supposedly has slightly greater efficacy for certain internal parasites, but should work about the same as ivermectin on external parasites. It is also formulated in a 1% solution and dosed the same as ivermectin. It is supplied in 100mL and 250mL bottles that costs $73.70 and $157.90, respectively.

Ivermectin – A generic brand of ivermectin in the 1% injectable form will be available in 1 or 2 months which should drop the price down considerably.

Medetomidine (Domitor®) – This is a potent alpha2-adrenergic agonist in the same family of drugs as xylazine, with 10 times the selectivity for alpha-2 sites as xylazine. As with xylazine, it works best on calm animals. In a highly excited animal the sedative effects may be diminished or temporarily non-existent. Medetomidine has significant cardiovascular effects, including bradycardia (decreased cardiac output), an increase in vascular resistance, and often some change in the conductivity of the cardiac muscle. It also causes a decrease in respiration, both in rate and tidal volume. I have done some limited testing in caribou and Steller sea lions and have not seen any significant advantage over xylazine. The 2 major disadvantages are the concentration and cost. Unfortunately medetomidine is currently only available in the Pfizer product Domitor in a 1mg/mL concentration that costs about $75 for a 10mL vial and, therefore, is not practical for our use.

Atipamezole (Antisedan®) – This is a more potent alpha-2 antagonist that has 200 times the site selectivity as yohimbine. Pfizer marketed Antisedan specifically as an antagonist for their medetomidine product Domitor, but it will work on all alpha-2 agonists. Like Domitor, Antisedan also is a very expensive small animal product. It is only available in a 5mg/mL concentration costing $85 for a 10mL vial.

Compounding Pharmacies:

Compounding pharmacies have been around for some time but recently their numbers have exploded and many are now proving products in the veterinary field. The FDA does not regulate compounding pharmacies; that is, their formulated products are <u>not</u> tested for quality control, shelf life or sterility. There is usually nothing added to adjust pH or to prevent microbial growth. As with any growth industry there is a wide spectrum of companies providing products that range in quality from excellent to poor. However, several well-established and reputable companies are proving good quality products. These companies can acquire certain raw chemicals (pure drug in powdered form) and formulate concentrations that are more appropriate for some of our needs.

Two drugs that we commonly use that fit into this scenario are ketamine and xylazine. Some of the compounding pharmacies will formulate ketamine to a 200mg/mL

concentration and xylazine to a 300mg/mL concentration. I have contacted 5 pharmacies that can provide these products and the best price I can find for each is:

Ketamine – 200mg/mL concentration in a 100mL bottle: $120.
Xylazine – 300mg/mL concentration in a 100ml bottle: $255.

These prices sound high but are actually pretty good. In the case of ketamine, this is 20 times the amount of drug that is provided in a vial of the standard FDA approved product and it costs only .006 cents/mg versus .01 cents/mg for the standard product. Xylazine in this form is more expensive then the standard product (.0085 cents/mg versus .005 cents/mg), but is still relatively inexpensive as far as immobilization drug prices go.

Since these products are not tested they are labeled with a 6-month shelf life instead of the 2 to 5-year shelf life on FDA tested and approved products. However, they should maintain their potency for a couple of years if carefully protected from heat, light and contamination.

Based on the above information, my recommendations are you should only consider trying these products if you are using large quantities in situations where higher concentrations are necessary. Otherwise, it is better to make do with the available FDA approved products.

Wildlife Pharmaceuticals still hopes to have a FDA approved 300mg/mL concentration of xylazine available soon (6 months?).

Investigational New Animal Drugs:

Etorpine (M99®) – 1mg/mL concentration in 20mL vial: $155/vial. Only available for projects where detailed records on individual animals can be maintained and submitted to the supplier.

Long acting neuroleptics (haloperidol and fluphenazine) – These are human antipsycotic drugs that control symptoms of anxiety, dysphoria (restlessness), agitation, and aggressiveness by producing a prolonged calming effect without sedation. This group of drugs may have some applicability in animal translocations or for research animals in holding facilities.

Request for Information:

Please keep me informed of any adverse drug reactions you encounter and recommended changes to the Capture Manual.

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