Mexican Wolf Blue Range Reintroduction Project
Adaptive Management Oversight Committee
Standard Operating Procedure

Title: Handling, Immobilizing, and Processing Live Mexican Wolves
Number: 21.0
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Purpose: This SOP describes the standard procedure by which approved personnel are allowed to handle, immobilize, and process a Mexican wolf using USFWS pharmaceuticals and operating under USFWS permit. Adherence to this procedure will: (1) help ensure safety of both the wolf and handling personnel; (2) provide for safe recovery of the wolf; (3) ensure that released wolves can be monitored and/or identified after release into the wild or within the captive population; (4) provide a standard procedure for immobilizing, processing, and collecting data on Mexican wolves; and (5) ensure data entry into the Mexican wolf program database, thereby facilitating access for Mexican wolf recovery. This SOP supersedes relevant sections of the 1998 Mexican Wolf Interagency Management Plan (USFWS 1998), and therefore represents, in part, the "Service Approved Management Plan" referenced in the Mexican Wolf Final Rule (50 CFR 17.84(k)).

Exceptions: None. Per SOP 2.0, AMOC must approve any exceptions to this SOP.

Background: Mexican wolves are routinely captured and handled for a variety of reasons. Handling is essential to success of the Mexican wolf reintroduction project. Mexican wolves are trapped, darted, or netted in the wild to resolve depredation problems, other management issues, affix radio-collars, or to collect data to ensure accurate monitoring of the free-ranging wolf population. Wolves are also captured in captive facilities (in pens) to prepare them for release, perform health checks, collect data, or move them to a different location. When wolves are handled, all appropriate vaccinations or medicines are re-administered, in accordance with this SOP. Ensuring the safety of wolves during immobilization and associated processing, and ensuring the safety of individuals involved in capture and handling, are essential elements of Mexican wolf recovery.

Procedures:

> **Note:** Your personal safety is the most important consideration, followed by the wolf's safety. Do not compromise the safety or health of a wolf to collect data. Before capturing or handling a wolf: 1) Make sure you have all necessary equipment, 2) All necessary equipment is in good working order, and 3) You are knowledgeable about use of the equipment, and handling and capture procedures. If at any time you are concerned about the wolf's health, or unsure of what to do in a particular situation, kennel the wolf and get help from a senior crew member or veterinarian.

This SOP also applies to coyotes, wolf-dogs (i.e. not of Mexican wolf origin), and potential Mexican wolf hybrids (i.e. hybrid of Mexican wolf and another canid) that are taken while

attempting to capture Mexican wolves. However, vaccines may not be administered to, and radio-collars may not be affixed to, wolf-dogs or potential Mexican wolf hybrids.

Captured wolf-dogs should be taken to a local animal shelter. Potential Mexican wolf hybrids must be held in captivity at the Sevilleta or Ladder Ranch captive wolf facilities for genetic testing.

If non-target wildlife are captured, assess their condition and released them on site. It may be necessary to use immobilizing drugs on some non-target animals (i.e. bear or mountain lion).

When a wolf is captured or handled, the following steps should be followed in the order given:

> **Note:** No one shall use USFWS-issued immobilizing drugs or handle Mexican wolves under the USFWS permit for drug use until they have attended an approved USFWS wolf immobilizing course and have signed the USFWS Mexican Wolf Recovery Protocol for Drug Tracking and Handling, indicating they understand the Procedure. IFT members must also adhere to their own agency's policies on use of immobilizing drugs.

1. During processing, record any drug or medicine administrations, data collected, and other pertinent information on a processing sheet (Appendix A). However, do not risk the health or safety of a wolf by taking time to write something down.

2. Subdue the wolf as quickly as possible to decrease the likelihood of escape, injury, hypothermia, or other stress related conditions.
    a. A Y-pole or pin stick can be used to restrain the wolf by placing the "Y" of the pole to the neck of the wolf and pinning it to the ground without the potential problems associated with a catchpole. A Y-pole is very effective to restrain a wolf that is in a trap, cornered in a pen, or after the wolf has been netted.
        i. Caution should be used because the animal may slip out if not held correctly.
    b. Snare or catchpoles are effective in subduing a wolf that has restricted movement and they also provide a fair amount of safety to the handler. They can be dangerous to the wolf when used improperly for the following reasons:
        i. If the cable on a catchpole is worn or not maintained it may not release properly after being tightened around the neck of the animal. Test the catchpole each time before using it. Keep a good pair of wire cutters on hand in case it doesn't release properly.
        ii. Once tightened around the neck of an animal there is the potential to restrict its breathing. If there is any reason to suspect this, including a panicked, open-mouth response, pawing at its mouth, gasping and lack of breathing, pale or bluish gums and tongue, or unconsciousness, immediately relax the cable.
        iii. Damage to the neck muscles and/or vertebrae may occur if the animal is thrashing or if the pole is used to drag the animal or subdue it when it has a wide or extensive range of movement. If this is the case, use another method described below to subdue it.

c. Large salmon nets are effective in subduing a wolf that has a wide range of movement, or when there exists a higher possibility of escape before it can be subdued and immobilized. Nets should be used in combination. A Y-pole should be used when using nets. A netted wolf often maintains control and movement of its head and mouth, so care should be taken when removing it from the net when only physical restraint is being used to immobilize the animal.
d. Only in cases where the wolf cannot be subdued physically should darting be considered. Refer to SOP 22.0.

3. Once a wolf is restrained, assess the condition of the animal (i.e. temperature). After the stress of the initial capture event you may want to place the animal in a kennel to allow it cool and settle down before anesthetizing the wolf. This allows the wolf to calm down and allows the handler to properly prepare for the processing event.

4. Chemical immobilization is the preferred method when doing a complete processing of a wolf. However, a judgment call may be made whether to use physical or chemical immobilization under certain circumstances.
   a. Chemical immobilization should not be used, or used with extreme care, in the following situations:
      i. Avoid using any drugs to immobilize pregnant or lactating females.
      ii. Avoid using chemical immobilization on wolves that are completely or partially paralyzed, or that you suspect for any reason to be sick. Sedation will make it more difficult for a veterinarian to diagnose any problems.
      iii. Avoid using any drugs on wolves that you suspect to be hypothermic (body temp. $<96^{o}$F), especially if in shock (see Step 5). Administering chemical immobilization drugs can lead to hypothermia, so would compound the problem (see Step 5 on dealing with hypothermia).

5. Physical restraint can effectively be used by applying a muzzle and restraining all four legs with hobbles or rope. Do not leave a wolf in a trap, or with a catchpole attached, and never leave a wolf unattended. An apparently subdued wolf could suddenly break free and run off, with a muzzle or catchpole, and sustain injury.
   a. Make sure the wolf can breathe easily. Continue to monitor the animal's respiration during entire handling event. If respiration or cardiac rate slow dramatically or stop refer to Step 5c.
   b. Check for shock. Though rare, shock is potentially life threatening to a wolf.
   c. Signs of shock:
      i. Rapid Heart Rate
      ii. Hyperventilation, Respiratory rate is typically rapid (panting)
      iii. Low Blood Pressure, Capillary refill time more than 2 seconds. Check this by pressing on gums or tongue and noting the time it takes to refill with blood, turning pinkish.
      iv. Mucous membranes are typically pale, cold, and dry.
      v. Cool extremities.
   d. Treatment for shock:

i. Administer 500-1000 ml lactated ringers intravenously (IV), and run fluids full open. If you cannot hit a vein, administer subcutaneous (SQ), under the skin. Avoid over hydration (could lead to fluid in lungs) - check gums or tongue for capillary refill time and moisture and listen to lungs if possible (fluid in lungs may produce crackles).

ii. Administer Dexamethasone sodium phosphate IV (can be administered through IV line already established) 5mg/kg. Apply slowly (approximately 30 seconds [Kreeger 1996]).

iii. Ensure a clear airway.

iv. Any wolf recovering from shock should be contained, minimally, overnight. Consult a veterinarian.

e. Obtain a body temperature. If it is within normal range (100^{o}F-103^{o}F) recheck in five minutes to determine if it has decreased or increased to hyper- or hypothermia. Watch for a trend in body temperature and continue monitoring throughout the handling process.

i. If hyperthermic (>103^{o}F) or you notice a rapid increase in body temperature leading to hyperthermia, cool the wolf in one or more of the following ways: (Kreeger 1996).

(1) Cease all further administration of immobilizing drugs

(2) Cool the animal using the following methods:

(a) Pouring water or an alcohol-water mixture over the animal is a quick way to reduce body temperature. Avoid submersing an animal in water, because it makes it difficult to restrain the animal.

(b) Apply water to ventral surface, particularly under legs and in the groin.

(c) Apply alcohol to footpads and inside surface of ear.

(d) Place the animal in the shade

(e) Use of icepacks should also be used to reduce body temperature

(f) Administer lactated ringers solution intravenously. This will rapidly cool temperature and is helpful in shock prevention and/or management.

(3) Administer appropriate antagonist IV.

ii. If a wolf becomes hypothermic (< 99^{o}F) or you notice a rapid decrease in body temperature leading to hypothermia, warm the wolf using one or more of the following methods; use heat packs under the legs against the body and/or wrap with a blanket or something similar. You can also hold the wolf inside a truck with the heater running if handling permits. Finishing the handling event as soon as possible and releasing the wolf will allow it to produce more heat and recover. Be sure to check for shock. It is better to stabilize the wolf's body temperature first and prevent further cooling (provide blanket, but not heat packs).

(1) Apply heat packs under the legs against the body to heat the core body area where it will affect the animal's temperature most.

(2) Wrap the wolf in a blanket, a sleeping bag, or something similar to conserve body heat.

6. Chemical immobilization is a very effective means of restraining a wolf for extended periods of time and allows for a greater degree of safety for the handler, and a lower level of

stress for the wolf during processing. DO NOT LEAVE A SEDATED WOLF UNATTENDED AT ANY TIME! It is also very important when using chemical immobilization that you understand what the particular drugs are used for, how they work, and the proper dosages (see Appendix B). Have the necessary drugs on hand for reversing the effects of chemical immobilization and handling emergencies. Ensure that the drugs are not expired. *See procedure on using drugs or vaccinations on pregnant or lactating females and pups* (Appendix C). *Assume that all wild adult (and yearling) females captured after February 1 and before June 1 to be pregnant or lactating.*

Note: Obtaining a body weight before sedating will facilitate administering more accurate dosages. It is not necessary and should not be done at the risk of injury to the handler or the wolf, or in cases where it would take an extended length of time to obtain. Estimate the body weight to determine dose if a precise weight cannot be obtained.

a. Administer initial dose intramuscular (IM) to immobilize the wolf.
    i. The preferred chemical immobilization method for a Mexican wolf is a mixture of Medetomidine (Med) and Butorphanol (But). For field captures where the wolf is processed and released on site, both of these drugs should be reversed using Atipamezole (Ati) and Naloxone (Nal), respectively. When wolves will be transported after capture, it may be desirable to reverse only the Medetomidine using Atipamezole. Leaving Butorphanol "on board" serves to mildly sedate the animal and provide some analgesic effect, to calm the animal during transport. After administering Med/But draw up the reversal (Ati/Nal), in a labeled syringe while waiting for the wolf to become sedated. That will ensure it is accessible quickly during an emergency. If after 15 minutes the wolf does not become sedated, inject 50 percent of the original Med/But dose. Doses of these drugs (volume) injected intramuscularly are displayed in Appendix B.
    ii. Unless necessary, avoid using Ketamine/Xylazine if you do not have enough Yohimbine on hand for reversal. If using Ketamine/Xylazine draw up the reversal, (Yohimbine), into a labeled syringe while waiting for the wolf to become immobilized. That way it will be accessible quickly during an emergency.
    iii. If Ketamine/Xylazine is used and wolf is not immobilized within ten minutes, or it recovers from sedation before you are finished processing it, administer additional Ketamine only. Administer 50 mg IV or 100 mg IM. Record the time and repeat after 10 minutes if necessary. It is preferable to repeat administering Ketamine only once. Do not administer additional Xylazine or Ketamine/Xylazine in combination.
    iv. If Telazol is used and wolf is not immobilized within 15 minutes, administer additional Telazol IM at 50 percent of the original dose, or Ketamine IM at 25 percent of original dose.
b. Continuously monitor the airway during handling event and ensure that the airway is kept clear.

Note: When assessing vital signs, including respiratory and heart rates, body temperature, and capillary refill time monitor trends over time, not just the initial assessment. Vital signs should be monitored every 5-10 minutes during the processing event.

c. Determine if the wolf is in respiratory arrest or distress. The normal rate is 10-30 breaths/minute. If distressed perform the following until breathing is restored and/or back to a normal rate:
    i. Administer appropriate antagonist.
    ii. Administer Dopram IV.
    iii. Lay wolf on side and compress the chest. If the handler is proficient in using an intubation tube and ambu bag this technique can be used to provide artificial respirations.
d. Determine if the wolf is in cardiac depression, or has a decreased heart rate. Normal is 60-120 beats/min. If so, perform the following until heart rate is stable:
    i. Administer appropriate antagonist.
    ii. Administer Atropine IV or IM.
e. Check for shock. (see Step 4.c. above)
f. Check body temperature and treat hyper- or hypothermia (see Steps 4.b.i and ii).
g. Apply Paralube or similar eye lubricant to both eyes. A muzzle with a head cover should be left on the wolf for the entire processing to cover the eye to keep debris out of open eyes; it will also keep the animal calmer as it recovers from sedation.
h. When you are finished processing and handling the wolf, if using Med/But administer Ati/Nal IM at least 15 minutes after last administration of Med/But, even if you are not releasing it. If the animal will be transported, you may reverse only the Medetomidine (See step 5.a.i). If you are releasing the wolf, whether in a pen or the wild, wait until you are confident it is alert and coordinated.

7. Check the wolf thoroughly for any leg fractures or dislocations, or any other medical condition requiring veterinary care. If veterinary attention is required, kennel the wolf immediately and transport it for treatment. Note the general condition, including coat, body fat, tooth wear, etc.

8. Obtain a body weight.

9. Identify the wolf's studbook number, if it is not yet known, by checking for a transponder chip or radio collar. Identifying the individual wolf will help determine if vaccinations should be administered, or if the collar needs to be replaced.

10. Look inside the mouth for any lodged sticks or other debris. If there is anything lodged or stuck, it will need to be removed on-site or by a veterinarian. Look all the way to the epiglottis to ensure a clear airway.

11. Draw blood into two purple tops and two red tops.
    a. Label the tubes with the sex of the animal, wolf number (if known), and date.
    b. Store the tubes in a cooler. See SOP 23.0 on handling blood samples.

12. Administer vaccinations IM:
    a. Administer rabies vaccination if more than 90 days have elapsed since the last administration.
    b. If less than four 5-way vaccinations have been administered to date, repeat only if more than 13 days have elapsed since the last administration. Otherwise administer only if more than 90 days have elapsed.

13. Administer Ivermectin SQ only if greater than 30 days have elapsed since the last administration.

14. If you have not attempted to read a transponder chip yet, do so at this time. If one cannot be read, then inject a transponder chip between the shoulder blades. Read the transponder ship prior to injecting and record the number. Once the chip is inserted and positioned correctly, then test it with the reader. Be sure to double-check the number on the processing sheet.

15. Place a radio collar on the wolf at this time if applicable.
    a. Test the collar to be sure it is working. This will also ensure that the magnet is removed.
    b. Be sure to record the frequency and serial number of the collar on the capture and handling form (Appendix A).
    c. If the wolf weighs more than 45 pounds place a model 500 collar on it. If it is weighs between 25 and 45 pounds place a model 400 collar on it.
        i. When collaring pups, fit the collar at the recommended size for an adult (17 inches for females and 18 inches for males). Line the collar with foam and use a moderate amount of electrical tape. Error on the side of caution when fitting pups with collars. We would rather lose the collar than injure an animal.
        ii. Make sure the collar is secure enough that it cannot be pulled over the wolf's head, but loose enough not to restrict breathing. With younger animals a judgment call will need to be made to allow for growth and a winter coat.
        iii. Tighten the collar nuts securely without over tightening and breaking the bolts.
        iv. Cut off the extra belt but do not cut through the antenna.

    Note: When capturing radio-collared wolves in the wild, record the fit and condition of the old collar while processing the wolf before fitting it with a new collar.

16. Obtain body measurements and record them on the processing sheet (Appendix A).

17. Check the entire body for ectoparasites. Spend one minute on the body and one minute on the head. Collect specimens and record the type and number found on the processing sheet.

18. Collect a fecal sample in a plastic bag for checking endoparasites. Label the bag with wolf number (if known) and date.

19. Take pictures as indicated on processing sheet (Appendix A).

20. Before releasing a wolf, check the processing sheet for anything that may have been missed.

21. Administer the appropriate antagonist and observe the animal from a safe distance until the drug has worn off and the wolf moves away from the area.
    a. When releasing a wolf back into a pen, hold the animal in a kennel or quarantine area away from other wolves until it has fully recovered.

22. Fill out the processing sheet (Appendix A) as soon as possible. Preferably, the handler should fill in the form during the processing of the wolf.
    a. Within 24 hours (ideally the same day), make a copy of the processing sheet and place in the folder in the file cabinet in the Alpine Field Office. Send the original to the Assistant Mexican Wolf Recovery Coordinator in Albuquerque for data entry.

Approval:

The Mexican Wolf Blue Range Reintroduction Project Adaptive Management Oversight Committee approved this SOP on November 23, 2004.

References:

Kreeger, T.J. 1996. Handbook of Wildlife Chemical Immobilization. International Wildlife Veterinary Services.

Appendix A

MEXICAN WOLF CAPTURE AND HANDLING DATA FORM FORM B

DATE (M/D/Y) ___/___/___ **TIME** (Military) _____ **RECENT RECAPTURE** Y□N□
SPECIES _____ **STUDBOOK #** _____ **SEX** M □ F □ ADULT □ SUB □ PUP □
LOCATION (GPS) _____(Desc.) _____
PURPOSE _____
METHOD _____ Foothold trap: Front □ Rear □ Left □ Right □ (note foot damage below) **PERSONNEL** _____

TIME	**TEMP**	**PULSE**	**RESP**	**DRUG**	**DOSE**	**COMMENTS** (signs, procedure, vial #'s)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

SAMPLES: Fecal □ Ectoparasites □ Vaginal swab □ Urine □ Skin scraping □ Ear swab □ Hair □
Other _____ Blood Red tops (# of tubes) _____ Purple tops _____
TREATMENTS: Fluids Y□N□ _____ ml IV□SQ□
Vaccines DHPPC (1ml, IM) Y□N□ Rabies (1ml, IM) Y□N□ Ivermectin (0.1ml/10lbs, SQ) Y□N□

vaccine serial # exp. Date	vaccine serial # exp. Date	vaccine serial # exp. date

MARKINGS: PIT tag inserted Y□N□ Verified Signal Y□N□Location _____PIT #_____
Radio Collared Y□N□ Verified Signal Y□N□Frequency _____ Serial # _____
Model _____ Mortality delay _____ hrs. Circumference _____ in. Color _____
Collar fit, neck condition: _____
EXAMINED MOUTH: Y□N□ Photo Y□N□ Dentition (staining/wear) _____
Canine measurements UL _____ mm UR _____ mm LL _____ mm LR _____ mm
Upper spread _____ mm Lower spread _____ mm
BODY MEASURMENTS: Est./Act. Weight _____ lbs Body Condition (poor to excellent) 1 2 3 4 5
Body length _____ cm Tail length _____ cm Shoulder height _____ cm Ear length _____ cm
Testicles (adults) Length _____ mm Width _____ mm Vulva (adults) L _____ mm W _____ mm turgid □ Inguinal teats L _____ mm W _____ mm color _____ flaccid □
FOOT MEASUREMENTS: Front pad length L□R□_____ cm Front pad width L□R□_____ cm
Rear pad length L□R□_____ cm Rear pad width L□R□_____ cm Total rear foot length L□R□_____ cm
PHOTOS: Y□N□, head frontal / full body lateral
DISPENSATION OF ANIMAL: released on site □ relocated □ other _____
Relocation date ___/___/___ time _____ location (GPS, desc.) _____
COMMENTS: _____
_____
_____
_____
_____
_____
_____

Appendix B.

Drug Dose using Medetomidine/Butorphanol combination (for animals under 40 lbs, consult with a veterinarian):

	Anesthesia (ml or cc; and given IM)		***Reversal (ml or cc; and given IM)***	
Wolf Weight (lbs)	Medetomidine 1 mg/ml	Butorphanol 10 mg/ml	Atipamezole 5 mg/ml	Naloxone .4 mg/ml
40	0.7	0.7	0.7	0.9
45	0.8	0.8	0.8	1.0
50	0.9	0.9	0.9	1.1
55	1.0	1.0	1.0	1.3
60	1.1	1.1	1.1	1.4
65	1.2	1.2	1.2	1.5
70	1.3	1.3	1.3	1.6
75	1.4	1.4	1.4	1.7
80	1.5	1.5	1.5	1.8

Alternative Drugs for Mexican wolves:

Ketamine/Xylazine 5:1 Mix: 100 mg/ml Ket.+ 20 mg/ml Xyl.
Administer 10 mg:2 mg/kg body weight
Antagonist: Yohimbine Administer .15mg/kg body weight

Drug Dose using Ketamine/Xylazine combination:

	Anesthesia	***Antagonist***
Wolf Weight (lbs)	Ket/Xyl (ml or cc and given IM)	Yohimbine (ml or cc and given IM)
40	1.8	1.4
45	2	1.5
50	2.3	1.7
55	2.5	1.9
60	2.7	2.0
65	3.0	2.2
70	3.2	2.4
75	3.4	2.6
80	3.6	2.7

Yohimbine: (.15 mg/kg) IV if needed to reverse quickly in an emergency
If additional Ketamine is needed administer 100-150 mg after initial dose (1-1½ ml)
Administer Yohimbine 40 minutes after last administration of Ketamine
Telazol: 10 mg/kg body weight - dosage depends on concentration
Suggested for darting: 100 mg/ml = 3 ml in a 3 cc dart

Drugs used for emergency treatment (ml or cc and given IV):

Body Weight (lbs)	*Dexamethasone (shock)5mg/kg*	***Atropine (bradycardia)*	*Dopram (resp. arrest) 2mg/kg*	**Epinephrine (cardiac arrest)*	*Diazepam (seizures) 10mg/animal*
40	30	2	1.8	1-2	2
45	34	2.25	2.0	1-2	2
50	38	2.5	2.3	1-2	2
55	42	2.75	2.5	1-2	2
60	45	3	2.7	1-2	2
65	49	3.25	3.0	1-2	2
70	53	3.5	3.2	1-2	2
75	57	3.75	3.4	1-2	2
80	61	4	3.6	1-2	2

* can be given intracardially (IC), dose is using 1:10,000 concentration
** do not use with MED/BUT, it may kill the wolf

Table of Reference:

Drug	*Conc. (mg/ml)*	*Dosage (mg/kg)*	*Method Admin.*	*Use/Application*
Medetomidine	1	.04	IM	Immobilization
Butorphanol	10	.4	IM	Immobilization
Atipamezole	5	.2	IM	Antagonist
Naloxone	.4	.02	IM	Antagonist
Ketamine	100	10	IM	Immobilization
Xylazine	20	2	IM	Immobilization
Yohimbine	2	.15	IM	Antagonist
Telazol	100	10	IM	Immobilization
Atropine	.54	.06	IV	Reduced Heart Rate/Salivation
Dexamethasone	3	5	IV	Shock
Diazepam	5	10mg/wolf	IV	Seizures/Salivation
Dopram	20	1-2	IV	Respiratory Arrest
Epinephrine	1	.2	IV/IC	Cardiac Arrest

Appendix C.

Drug Procedure for Females and Pups			
	Pregnant Females	Lactating Females	Pups
Ivermectin	NO	NO	≥ 6 weeks
Corticosteroids (Dexamethasone)	NO	OK	na
Meditomidine/ Butorphanol	NO**	OK	> 12 weeks
Telazol & Ket/Xyl	NO**	NO**	> 12 weeks
Antibiotics	OK*	OK*	na
5 way	NO	NO	≥ 6 weeks
Rabies	OK	OK	≥ 16 weeks

***** Don't use tetracyclines

****** Best if it can be avoided; only use when wolf can be given time to metabolize drugs before returning to pups

Justification:

Young pups don't have the ability to handle ivermectin well, so avoid administering to pregnant/lactating females and pups less than 6 weeks old.

Corticosteroids (dexamethasone) administering to pregnant females may cause an abortion.

Any immobilizing drugs administered, particularly to pregnant females, could kill the pups by depressing physiological systems so avoid if possible; with lactating females, if you have to administer drugs, try to give the wolf time to metabolize the drugs before returning her to the pups. Medetomidine and Butorphanol have been used on pregnant females. Free flowing oxygen should be used when a pregnant female is immobilized.