EXAMINATION AND INTAKE PROTOCOL

EXAMINATION and INTAKE PROTOCOL

It is extremely important to take note of a bat's general condition before initiating treatment. Begin by checking the eyes and respiration as they are good indicators of a bat's overall condition. The eyes should be round, clear, and alert. Partially-closed eyes can be an indication of dehydration and/or illness. A dazed expression might indicate shock. Normal respiration is visible in the pelvic region. Labored breathing that is visible in the chest area is often a sign of respiratory distress, which may indicate injury, pesticide poisoning, or other illnesses (e.g., rabies or pneumonia). If this is the case, follow the recommended treatments given in the Diagnostic Chart (see Section V). Bats should be restrained for examination in a manner that does not place undue stress on the animal. Nitrile gloves allow good tactile sensitivity while providing a protective barrier against potentially infected body fluids. Crevice-dwelling species can be restrained in a soft cloth or a gloved hand. Foliage-roosting species will struggle incessantly if tucked in a cloth, so simply hold them in a gloved hand for examination. Use your thumb and one finger of a gloved hand to gently hold the mouth closed if necessary.

Although the majority of bats that arrive at rehab facilities are dehydrated, treatment of life-threatening injuries will take priority. On the other hand, bats trapped in houses or downed for any length of time due to injury or illness will not have had access to water, and are likely to die from dehydration before minor injuries can be treated. Therefore, bats that are not suffering from life-threatening injuries should be treated for dehydration first (see Dehydration in Section V).

A bat that is grounded due to illness or injury is often more heavily parasitized than others. Severe endoparasitic infection (e.g., roundworms, tapeworms, flukes) can cause a bat to become grounded. Severe endoparasitic infection (e.g., roundworms, tapeworms, flukes) can cause a bat to become grounded. Selamectin is effective against tapeworms, roundworms, whipworms and hookworms, but is not effective against flukes. Therefore, bats that will remain in captivity for 8 days or more should also be treated for flukes with Albon, followed by Valbazen® (see Medication Chart). If the bat is debilitated, wait until it has stabilized before administering Revolution topically or before treating for flukes.

Unless they are in hibernation, bats should be given daily physical examinations during the entire time they are in captivity. Insectivorous bats can contract a variety of ailments, and if treatment is not initiated immediately, some of these conditions can result in death in as little as 24 hours or less. Daily exams will allow the detection of potentially serious conditions in early stages, thereby increasing the likelihood of successful treatment. Daily exams should be given at approximately the same time each day. Examine the eyes, respiration, and condition of the fur. Take note of the bat's behavior, including the way it does or doesn't grip the roosting surface (i.e., your gloved hand) with its toes and thumbs. Any change in its usual condition, grooming habits, or demeanor may indicate early stages of disease.

Note: We encourage the vaccination of all insectivorous bats in captivity. Bat World Sanctuary has been routinely vaccinating all insectivorous bats against rabies since 1990. To date, we have had no known rabies transmission from bat to bat at the sanctuary. We currently administer 0.1ml of Imrab 3 rabies vaccine subcutaneously for insectivorous bats weighing between 2 to 35 grams. Non-releasable bats are vaccinated annually. Releasable bats are vaccinated prior to release.

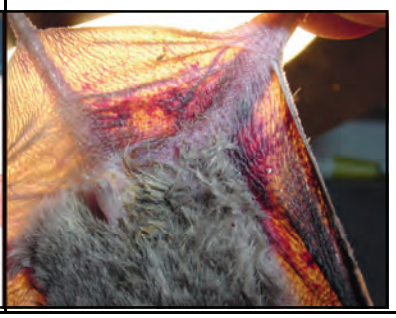
We have submitted serum samples from some of our vaccinated bats for rabies titer checks. Although the bats developed rabies antibody titers, it should be noted that use of the rabies vaccine on bats is extra label use. Exposure to potentially infected bats should be treated as recommended by the CDC (www.cdc.gov)

Section V
Diagnosis and Treatment

AILMENT	CLINICAL SIGNS	TREATMENT
ABSCESS Also see: Bite Wounds Dental Disorders Misc. Wounds	A puss-filled wound or cavity sometimes surrounded by inflamed tissue.	Administer **BAYTRIL®** injections and **CLAVAMOX®** orally**.** Administer **METACAM®** for pain. **Aged bats or bats that appear shocky should receive the oral CLAVAMOX/BAYTRIL mixture.** Lance and drain the abscess. Flush with warm tap water. Keep the wound puss free thereafter by re-lancing, draining and flushing when necessary. Abscesses heal from the inside out. Use discretion with topical antibiotics. Do not apply Manuka honey to abscesses.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
ABDOMINAL BLOCKAGE/BLOAT ADULTS: Can be caused by impaction, overfeeding, torsion and tumors in wild adults. PUPS: Commonly caused by overfeeding or by using kitten formula or cows milk. Also see: Appetite Changes Blunt Force Trauma Dental Disorders Respiratory Distress	**ADULTS**: Loss of appetite; swollen or hard abdomen; labored breathing; vomiting; constipation; sustained erection in males. **PUPS**: Swollen or hard abdomen; labored breathing; crying; whitish stools; may include ravenous appetite.	**ADULTS**: Administer 1 drop (.05ml) of reconstituted **LA 200**. Administer 1 drop (.05ml) of mineral oil and 2 drops (.10ml) of **SIMETHICONE** every two hours. Also **rehydrate** and provide supportive care. If veterinary help is not available bats exhibiting further abdominal swelling or no improvement after 48 hours should be humanely euthanized. **PUPS**: Administer 1 drop (.05ml) of **SIMETHICONE** every two hours until abdominal swelling is gone. Also **Rehydrate** and add .05ml. of reconstituted **LA 200** or **BENE-BAC™** to every 5ml reconstituted milk formula. Begin offering small amounts of milk formula as soon as abdominal swelling begins to subside. Pups often improve within 24 hours. NOTE: **A single drop** (.01ml) of **LASIX** has been used successfully in the treatment of ascites (abnormal accumulation of fluid in the abdomen) in infant red bats.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
APPETITE CHANGES INCREASE: Pregnancy and pre-hibernation/migration. DECREASE: Commonly due to dehydration and/or hepatic lipidosis in captive bats. Also see: Dental Disorders Dehydration Liver Disease Yeast Infection Parasites	**Pregnancy** - see Pregnancy. **Hibernation/migration:** Sudden increase in appetite in late summer or fall.	**Pregnancy** - see Pregnancy. **Hibernation/migration:** Obese or overweight bats can be artificially hibernated following the method described in *Captive Care and Medical Reference for the Rehabilitation of Insectivorous Bats*. Overweight bats that aren't being over-wintered in hibernation, should be exercised throughout the winter. Training bats to chase mealworms and hand flying them will help to combat obesity.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
BAND INJURIES Result from tagging with numbered metal bands or plastic leg bands made for birds.	Swelling, inflammation, oozing, bruising, bleeding, scabbing or other damage to soft membrane tissue (see photos); fracture at the forearm (may not be detectable until the band is removed). Colored tapes are sometimes applied to bands. Bats will sometimes chew on these tapes, leaving jagged edges that can cause irritation to the eye. NOTE: Bats frequently chew on bands in an attempt to remove them and destroy the ID number in the process.	Bands should be carefully removed to prevent further injury. Treat wounds with topical applications of Neosporin. Administer **CLAVAMOX®** orally. Administer **METACAM®** for pain. Treat irritated eyes with topical applications of a triple antibiotic ophthalmic ointment. See treatment for [illegible]  
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
BITE WOUNDS From cats or other bats. Also see: Punctured lung	**Cat**: Puncture marks on the torso; tears in the wing membrane; arm, finger, and/or leg fractures; abscesses. **Bat:** Small infected or scabbed wounds and/or abscesses on the wings, tail, legs or head; finger fractures.	Administer **BAYTRIL®** injections and **CLAVAMOX®** orally**.** Administer **METACAM®** for pain. **Aged bats or bats that appear shocky should receive the oral CLAVAMOX/BAYTRIL mixture only.** Some infections due to cat bites require treatment with **TETRACYCLINE.** Open wounds should be cleaned and treated with a topical application of triple antibiotic ointment or **MANUKA HONEY** twice daily until healed. **Band-Aid Liquid Bandage™** can be used to cover large wounds resistant to healing.

AILMENT	CLINICAL SIGNS	TREATMENT
BLUNT FORCE TRAUMA Often results from being swatted or hit with an object such as a broom. May result in back and/or internal injury. Also see:	May appear dazed although the eyes are clear; rapid, shallow or labored breathing; ataxia (inability to coordinate muscular movements); lays to one side; drags or favors one or both legs; abdominal swelling; hematomas (bruising). Use a light source behind the bat to detect pooled areas of blood.	Treat wounds and fractures (see Misc. Wounds and Wing Fractures below), rehydrate and administer **KETOPROPHEN®**. Provide supportive care and monitor urine and stools for signs of blood. Bats with abdominal swelling that have shown no sign of improvement and have not passed normal stools or urine for 48 hours should be humanely euthanized.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
BURNS (FIRE/ELECTRICAL) Caused by fire while roosting in chimneys or contact with electrical wires. Also see: Respiratory Distress	**Chimney burns:** Bright red skin; blisters; swelling; respiratory distress due to smoke inhalation. **Electrical burns:** Bright red skin; blisters; hard, black tissue (see photo). One or both wings may be affected. Sometimes appendages on opposite sides of the body are affected, for example, the right wing and the left foot or ear are burned.  © Deana Kina-	**Rehydrate** and administer **BAYTRIL®**. Administer **CLAVAMOX®** orally. **Aged bats should receive the oral CLAVAMOX/BAYTRIL mixture.** Administer **BUPRENEX**. Apply Manuka honey topically to affected areas. Provide supportive care. Severely damaged wings may need to be amputated (see Wing Fractures below). Bats that are burned over 50% of their body should be humanely euthanized.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
DEHYDRATION Can result from being grounded due to injury or illness in general; being trapped indoors; heat exhaustion; orphaned status; low humidity; lack of an adequate water supply. Also see: Emaciation Heat Exhaustion Rabies	Loss of appetite, dull and/or dry eyes (not matted or glassy eyes); flaky skin; droopy eyelids**;** dry or discolored wings (see photos); feces stuck to the tail membrane; vomiting. In severe dehydration ataxia (inability to coordinate muscular movements) may be present. Fluids may not be absorbed when organ failure is eminent. In these cases the bat may go into shock and die within moments of being injected.   © Cindy Myers	**Rehydrate**. Humidifiers will help increase humidity. Humidity levels should be between 60%-80%. **ALSO SEE DEHYDRATION AT THE BACK OF THIS CHART**

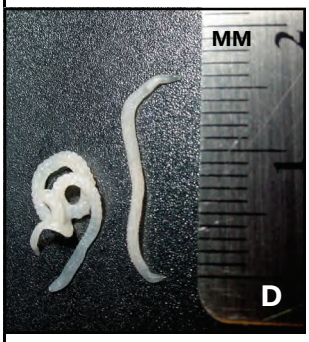
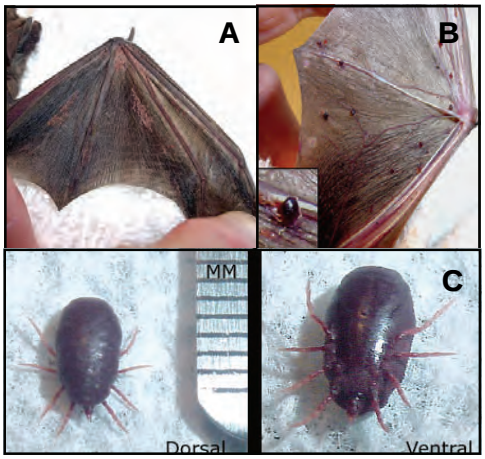
AILMENT	CLINICAL SIGNS	TREATMENT
DENTAL DISORDERS (plaque; gum infections; abscessed teeth) Captive: Can result from captive diets that do not include the hard exoskeleton, wing or leg parts if insects that may act as a natural dentifrice for bats in the wild. Wild: Dental disorders are occasionally observed in wild bats.	Plaque can accumulate on the teeth and harden to tarter. Tarter turns black as it becomes stained by mealworms. Gum infections are first visible as a thin red line along the gum line. Excessive salivation, lethargy, anorexia, a watering or protruding eye, a swollen area on the head, behind the ear, on the jaw or near the eye and/or a cabbage-like odor are signs of an abscess. Left untreated infections associated with dental disorders can be deadly. Antibiotic treatment is critical.	**Note**: Many captive dental problems can be avoided by using the tarter control method recommended by Bat World for insectivorous bats. See section II. Bats that are hand fed will have less dental problems if they are given a few drops of water immediately after being fed blended food (water helps to rinse the food from the teeth). **SEE DENTAL DISORDERS AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
DIARRHEA Also see: Endoparasites Heat exhaustion Systemic infections Pesticide poisoning	Loose or runny stools. Can be life threatening if the underlying cause is not established and treated.	**Rehydrate.** Short term relief may be given by administering 0.05ml of an over-the-counter anti-diarrhea medication. Further treatment should be directed to the source of the problem.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
EMACIATION Wild: Can result from being trapped indoors; hibernation; migration; inability to feed due to injury, old age, orphaned status, or dental disorders. Captive: Dental disorders, territorial cage mate, inability to feed due to old age, liver disease (Hepatic Lipidosis). Also see: Appetite Change Parasites Liver Disease	Underweight; protruding shoulder blades; concave abdomen; weakness; dehydration; uncoordinated movements.	**Rehydrate**. Immediately after administering subcutaneous fluids, offer pups **Zoologic** 33/40 milk replacement formula. Offer adult bats **small amounts** of blended food or **VITAL** at 4 to 6 hour intervals during the first 24 hours. Gradually increase the amount of food offered at each feeding. Offer normal amounts of blended food the following day. Do not give an adult bat solid food until it is fully hydrated.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
FACIAL GLAND SECRETIONS Infections may cause overproduction of glandular secretions and impacted facial glands.	Excessive yellow/orange secretions on the face (see photo); impacted facial glands. 	Gently clean affected areas twice daily with warm water and gauze pads. Impacted or infected glands will need to be lanced with a sterile needle and the area gently pressed to expel the puss (always apply pressure away from the eye). Warm compresses applied beforehand will aid in the removal of hardened cellular debris. If infected, apply Neosporin or **MANUKA HONEY** twice daily until healed. Administer **CLAVAMOX** orally.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
FROST BITE May occur when bats found inside buildings are placed outdoors during cold weather.	The areas most likely to be first affected are wrists, elbows, thumbs, ears, and feet.	**SEE FROSTBITE AND HYPOTHERMIA AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
FUR LOSS/SKIN CONDITIONS Can result from nutritional deficiencies, fungal or bacterial infections, injury, low humidity, poor hygiene or improper caging. Also see: Dental Disorders Liver Disease Miscellaneous Wounds Ringworm, Parasites Wing Depigmentation	Balding patches on the torso, around the neck and the head; flaky skin; depigmentation of the wing membrane. **Note:** Fur loss under the neck can occur when blended food is allowed to drip under the chin of bats being hand fed. To prevent this happening, thoroughly clean any food from fur.	Nutritional supplements listed on the product update page will encourage new fur growth. Maintain proper caging, including appropriate humidity levels. Humidity should be maintained at 60-80%. Use good hygiene practices. Apply Neosporin to chapped or irritated skin. Obtain tissue culture to determine any fungal/bacterial infections and treat accordingly.

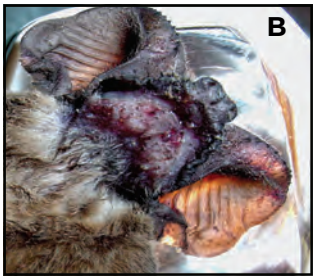
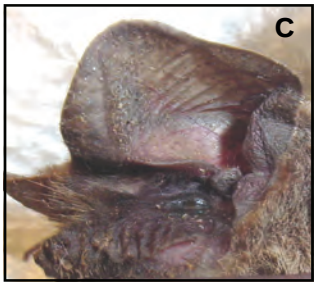
AILMENT	CLINICAL SIGNS	TREATMENT
GLUE TRAPS & OTHER ADHESIVES Sometimes purposely set to trap bats exiting roosts. Occasionally bats become caught in fly paper hanging in open barns or stables.	Substance coating the fur and/or membranes.	**SEE ADHESIVE AND CONTAMINANTS AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
HEAD INJURY Also see: Blunt Force Trauma	Often no outward signs of injury. May appear dazed although the eyes are clear; ataxia (an inability to coordinated muscular movements); laying to one side or favoring one side of the body.	Administer **DEXAMETHASONE.** If present, treat open wounds (see Misc. Wounds). House the bat in a warm, quiet environment. Provide supportive care.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
HEAD TORSION (TWISTING) Torticollis May result from endoparasites or bacterial infection. Also see: West Nile Virus Parasites	Torticollis (extreme twisting of the head as if the bat is attempting to look over its shoulder); ataxia (an inability to coordinate muscular movements); black tarry stools; clear eyes; labored breathing.	**SEE POSSIBLE CHLAMYDOPHILA INFECTION AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
HEAT EXHAUSTION / STROKE Captive: Heat exhaustion can result if a bat is unable to get away from a heating source placed in or under a cage. Wild: Can result when bats are trapped in confined areas with no ventilation or when grounded bats are exposed to extreme temperatures from hot pavement.	Prostration (collapse); clear eyes; shallow, rapid respiration; tremors of the wings and feet; seizures that include wing flapping; diarrhea; vomiting; petechial hemorrhaging of the wings and legs (see photo); nasal, rectal and vaginal bleeding. 	Move the bat into a cooler environment (e.g., into the stream of an air conditioner). Administer lactated Ringers solution. Keep bat calm as exertion will result in increased oxygen consumption. Provide supportive care and maintain room temperature caging (no heat) until the bat has recovered.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
HEMATOMA A bruise or contusion. Often accompanies a fracture or other injury due to blunt force trauma. <u>Also see:</u> Blunt Force Trauma Wing Fractures Leg Fractures	Bruising (a localized collection of blood, usually clotted, in a tissue or organ) visible when a light is held behind the bat. Often seen in the wings or legs.  	Treat any fractures (see Wing and Leg Fractures below). Provide supportive care. If the injury resulted from blunt force trauma, monitor urine and stools for signs of blood. **METACAM** can be given for pain. Minor bruises do not require treatment. Bats with abdominal swelling that have shown no improvement for 48 hours should be humanely euthanized. 

AILMENT	CLINICAL SIGNS	TREATMENT
HYPOCALCEMIA A low blood calcium level sometimes seen in lactating bats.	Muscle tremors and twitches in early stages. Convulsions occur in later stages. Species that normally carry their young may be found roosting away from the pups. **NOTE: This condition progresses rapidly and is fatal if not treated in early stages.**	Administer **CALSORB** orally once a day until symptoms subside. Also add **Osteo-form SA** to the blended food; add 1 gram (1/4 tsp) to 3ml's of blended food. The supplements should be given simultaneously. Remove nursing pups and hand feed them until the mother recovers.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
INSECT STINGS Fire Ant bites: Can occur when bats become grounded. Wasps, bees and spiders: Can occur when bats roost behind window shutters, crawlspaces and in trees.	Clear eyes; panting; wincing; anorexia; fur may stand on ends; rapid respiration; lethargy and anorexia.	**SEE INSECT STINGS AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
JOINT SWELLING Swelling of the thumbs, toes and finger joints can result from fractures, infection, or contact with inappropriate caging surfaces. Migratory joint swelling of the wrists, knees, and elbows may indicate a bacterial infection. <u>Also see:</u> MBD Yeast Infection Misc. Injuries Wing Fractures	Swollen, abraded fingers, toes or thumbs (often result from inappropriate caging materials-this is particularly true of foliage-roosting species). Swelling at the knee, wrist, or elbow (can be associated with fractures). Sudden onset of swelling at the knee, wrist, or elbow which diminishes only to reoccur in a different knee, wrist, or elbow (migratory joint swelling). The condition causes severe pain when palpated.	Administer **CLAVAMOX** orally. For migratory joint swelling, administer **TETRACYCLINE** orally. Thumb, finger, and toe injuries can be prevented by providing proper caging. Antibacterial ointment or **MANUKA HONEY** should be applied to any wounds twice daily.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
KIDNEY DISEASE	Excessive thirst; pale gums; dehydration despite fluid intake; weight loss despite good appetite.	There is no known treatment for kidney disease in bats. Bats generally die within a week of the onset of clinical signs. When quality of life declines, the bat should be humanely euthanized.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
LEG FRACTURE <u>Also see:</u> Blunt Force Trauma	Swelling; hematomas; dragging the leg; holding the leg close to the body; or refusal to use the leg or foot to hang. (Open fractures are easily visible. While closed, displaced fractures may be visible, closed non-displaced fractures are not.)	Trim the toe claws of the affected leg only. Displaced fractures, either open or closed, should be carefully realigned and then splinted. A splint can be made from high density foam such as a make up pad (see photo). Cut the splint to the appropriate size and secure it to the body using skin adhesive or Crazy Glue™. Avoid getting glue into open wounds. See Misc. Wounds for treatment of open fracture injuries. Other than supportive care, no medical intervention is required in most non-displaced closed fractures. Administer **METACAM®** for pain. Administer **BAYTRIL** injections and **CLAVAMOX** orally if open wounds are present. **Old bats should receive the oral CLAVAMOX/ BAYTRIL mixture only.**

AILMENT	CLINICAL SIGNS	TREATMENT
LEG PARALYSIS Leg paralysis can result from rabies, back injuries, and leg fractures. Here we refer to flaccid leg paralysis associated with pregnancy due to bacterial infection (possibly Chlamydophila or Coxiella. <u>Also see:</u> Leg Fracture Blunt Force Trauma Rabies	Dragging one or both legs. Chlamydophila or Coxiella should be suspected particularly in pregnant females when one or both legs are limp (flaccid paralysis).	**SEE POSSIBLE CHLAMYDOPHILA INFECTION AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
LIVER DISEASE (Hepatic Lipidosis)	Vomiting; anorexia; excessive salivation; foul smelling stools. Jaundice (yellowing) where the wing membrane attaches to the body (visible first ventrally then dorsally). Jaundice may also be visible at the base of the ears.	**Rehydrate** and provide supportive care. Administer **DENOSYL.** If the bat refuses to accept food, be persistent. Encourage it to eat by gently placing **blended food** in the mouth. Patiently wait for the bat to swallow each bite, then offer more. Continue feeding in this manner several times a day until appetite returns to normal.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
MBD (Metabolic Bone Disease) Can result from nutritional deficiency in pups, i.e., orphans that have been without food for a prolonged period. Can also result in captivity, when pups are fed inappropriate milk replacement formulas.	Curvature of the long bones of the wing, swelling of the wrists and/or finger joints; muscular weakness. A pup will hold its wings out to the side, partially open, and cry when handled. In severe cases, tremors and seizures can occur, leading to death.  © Deana Kina-	Administer **CALSORB** orally once a day until symptoms subside. Also add 1 gram (1/4 tsp) **Osteoform SA** to each tbsp of dry milk replacement formula. For juveniles, add 1 gram (1/4 tsp) to 3ml of **blended food**. Administer **METACAM®** for pain.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
MASTITIS Swelling and inflammation of the breast during nursing.	Abnormal swelling of the breast (see photo), a pus-like, or bloody discharge; appetite loss; lethargy.  © Deana Kinamon	Administer **BAYTRIL** injections and **CLAVAMOX** orally. **Aged bats should receive the oral CLAVAMOX/BAYTRIL mixture.** Give **BUPRENEX** or **METACAM®** for pain. Hot compresses may also help alleviate pain. Remove nursing pups and hand feed them until the mother is stable.

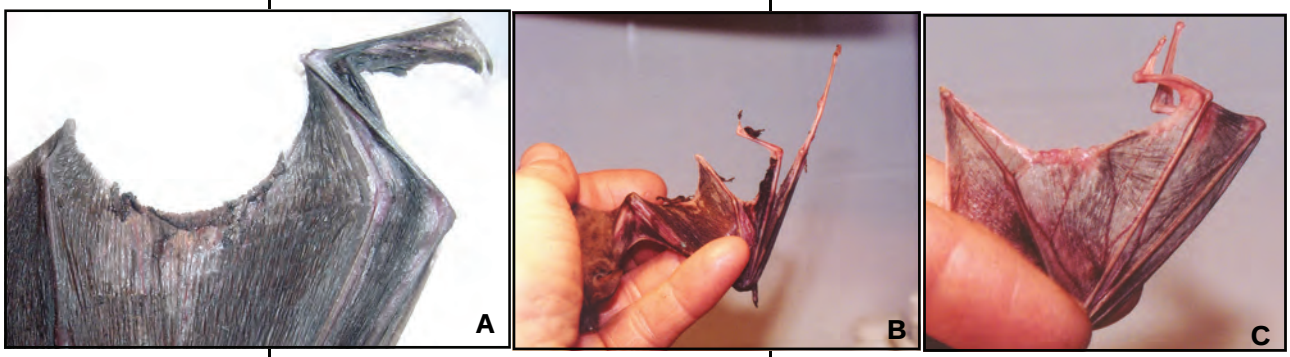
AILMENT	CLINICAL SIGNS	TREATMENT
MISC. WOUNDS Also see: Bite Wounds Wing Fractures Yeast Infection	Wounds; abrasions; and swelling of the thumbs, toes, elbow, or wrist, knee or ankle.	Open wounds should be cleaned and treated with a topical application of triple antibiotic ointment or **MANUKA HONEY** twice daily until healed. Healed. Administer **CLAVAMOX** orally. Administer **METACAM** for pain. **Band-Aid Liquid Bandage™** can be used to cover large wounds resistant to healing.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
MEMBRANE TEARS Often occurs during cat and bird attacks.  	Holes and tears to the wing membrane, sometimes involving the trailing edge.  	Membrane tears and holes, even those that are significant and extending through the trailing edge, will heal without any intervention other than initial cleaning and application of a triple antibiotic ointment. However, it is important to note that these tears may take several months to a year to completely mend. Antibiotics typically are not needed for membrane tears. Exposed finger bones can be spot glued with skin adhesive. Cephalexin or Clavamox should be used if wounds such as exposed finger bones accompany membrane tears.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
OIL CONTAMINATION Bats can accidentally come into contact with oil in garages or factories or by acts of cruelty. Also see: Glue Traps	Partially or totally covered in oil.	**SEE ADHESIVES AND CONTAMINATS AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
OSTEOMYELITIS (Bone infection) Results from bacterial infection. Also see: Bite Wounds Wing Fractures	Pain, tenderness, swelling and warmth in the infected area.	Administer **BAYTRIL** injections and oral **CLAVAMOX** if open wounds are present. **Aged bats should receive the oral CLAVAMOX/BAYTRIL mixture only.** If no improvement within a week, change antibiotic treatment to injectable **CLINDAMYCIN.** Some infections due to cat bites require treatment with **TETRACYCLINE**. Administer **METACAM** for pain.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
PESTICIDE POISONING	Gasping; excessive salivation; abnormal vocalization; diarrhea; vomiting; diarrhea; tremors; convulsions.	If veterinary assistance is not available, the bat should be humanely euthanized.

AILMENT	CLINICAL SIGNS	TREATMENT
PARASITES A bat that is grounded due to illness or injury is often more heavily parasitized than others. Heavy parasite loads are also often found on orphaned pups or old bats. **Ectoparasites:** Fleas, ticks, mites, bugs, and parasitic flies. **Endoparasites:** Trematodes (flatworms), Nematodes (roundworms), and Cestodes (tapeworms). <u>Also see:</u> Blunt Force Trauma Burns Dehydration Emaciation Glue Traps Head Torsion Leg Fractures Leg Paralysis Misc. Wounds Pesticide Poisoning Rabies Wing Fractures   	**ECTOPARASITES:** Mites (A), ticks (B), fleas, bugs, and parasitic flies can cause debilitation. Large bird ticks (C) take numerous blood meals that may result in death to the bat. Mites have a spider or crab-like appearance and may be red or white. Bat fleas resemble those on cats or dogs and are typically brown or tan. Bugs, such as bed-bugs, are larger than most mites or fleas found on bats, although they are also brown in color. Bat flies look like tiny yellow or white flies.  **ENDOPARASITES:** **Roundworms (Nematodes):** Lethargy; dull or thin coat; loss of appetite; vomiting; slow growth rate or "pot belly" in pups; pale gums; torticollis (head torsion); head tilts; circling; ataxia (inability to control muscular movements); paralysis; Roundworms can be found in the intestine, gallbladder, liver, lungs, bladder, and bloodstream. **Coccidia (Protozoa).** Loss of appetite; vomiting; dehydration; diarrhea; tremors; and ataxia (inability to control muscular movements). **Tapeworms (Cestodes):** Fur loss or dull, thin coat; excessive appetite; diarrhea; and lethargy. Tapeworms are found in the intestine (E) **Flukes (Trematodes).** Weakness; emaciation; loss of appetite; pale gums; and excessive thirst. Signs of severe infestation also include heaving respiration; stiff torso; hunched back (F); wings crossed in front of the chest; stiffening of the fingers so they don't fold (G). Flukes (Trematodes) can be found in the intestine, gallbladder, liver, and lungs.	**ECTOPARASITES:** For severe infestations, dip a cotton swab into 70% Isopropyl alcohol and use it to dampen the fur of the head and neck first. This will force parasites away from the face and onto the torso. Shield the bat's face with a soft cloth during this process. Then dip a gauze pad into the alcohol and swab the wings. After most of the mites have been killed or removed, rinse each wing with gauze pads soaked in warm water. Keep the bat warm during this process and dry the fur if needed. Administer **REVOLUTION** topically to eliminate any remaining parasites. (If the bat is debilitated, wait until it has stabilized before administering Revolution.) **ENDOPARASITES:** **Roundworms (Nematodes):** Administer **PANACUR** orally. **Coccidia (Protozoa).** Administer **Albon** orally. **Tapeworms (Cestodes):** Administer **PANACUR** orally. **Flukes (Trematodes):** Administer **VALBAZEN®.** Bats that recover should also be treated with **DENOSYL.** **NOTE: Bats with signs of severe fluke infestation should be humanely euthanized as the condition is exceptionally painful and they do not generally respond to treatment.** 

AILMENT	CLINICAL SIGNS	TREATMENT
PREGNANCY	**Pregnancy**: Early stages - sudden increase in appetite. Abdomen feels hard when gently palpated, (rather than soft or mushy as it is when full of food). In later stages, the abdominal region is grossly distended and whitish milk can be seen beneath the skin in the mammary glands when the fur is parted. Captive bats occasionally loose fur on the abdomen.	**Pregnancy**: Allow a pregnant bat to eat as much as it wants. If hand fed, feed a minimum of twice daily and allow bat to consume as much as it wants at each feeding. For bats that self feed, supplemental calcium should be provided by sprinkling a milk replacement formula ontoto mealworms. For hand fed bats, adding .05 ml of reconstituted milk formula to every 1ml of blended food. **Do not make changes to the bats housing or add new roostmates**. Heat should be provided on at least two side walls of the cage.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
PUNCTURED LUNG Caused by rib fractures or a foreign object entering the chest and puncturing the lung. <u>Also see:</u> Blunt Force Trauma Bite Wounds	Respiratory distress; crackling sound when palpating the chest area; bleeding from an external wound; bat appears "puffed up" from two to three times its normal size.	**SEE PUNCTURED LUNG AT THE BACK OF THIS CHART**
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
RABIES Seen more frequently in summer through fall. Rabies can be passed in-utero to pups. **Rabies should be assumed if a bat has either two primary or three secondary clinical signs.** **NOTE:** If anyone has been bitten, scratched, or had direct contact with the bat's saliva, contact your local health department immediately.	**Primary signs:** Disoriented flight; spastic paralysis of one or both legs; ataxia (inability to coordinate muscular movements); one or both legs clamped tightly against the abdomen (A - free-tailed bats in particular); seizures; attacks/chews on inanimate objects; infants with rabies will sometimes attack and bite/chew aggressively on other infants; chews food/formula when offered, but does not swallow; inability to swallow water (or aspirates upon swallowing); abrasions around the mouth/chin (B); abraded gums; blisters under the upper lip; dirt in the mouth; abnormal vocalization; hypersensitivity to sound and light; exhibits anger (body jerking) rather than fear; falls asleep while being examined/held in the hand; agonal respiration (high in the chest). **Secondary signs:** Hanging in an exposed area (crevice dwelling-species); emaciated; glassy, watery eyes (C); heavy parasite load; bites aggressively; petechial hemorrhage around the ears. **NOTE:** Healthy foliage-roosting bats sometimes exhibit aggressive behavior that should not be confused with rabies.	Humanely euthanize with **ISOFLURANE** (check respiration or heart beat to ensure bat is dead) and submit it for rabies testing or dispose of it in accordance with your state regulations.   

AILMENT	CLINICAL SIGNS	TREATMENT
RESPIRATORY DISTRESS Respiratory distress can be associated with a variety of causes, including a punctured lung and bacterial, fungal, or viral infections. Also see: Punctured Lung Systemic Infection	**Infections:** Stuffy or runny nose; matted eyes; wheezing or squeaking sounds during respiration; mouth breathing (bloat from swallowing air). Breathing visible externally in the upper chest region (normal respiration is visible in the pelvic area).	**Rehydrate.** Administer **DEXAMETHASONE** and **BAYTRIL** injections. If the bat is not mouth breathing, also administer **CLAVAMOX** orally. If the bat only has a runny nose, substitute **CHILDRENS BENADRYL LIQUID** for **DEXAMETHASONE**. Provide supportive care, including warm housing. Care must be taken while hand-feeding blended food to the bat. The bat will need to eat very slowly to avoid aspirating food into the lungs. Bats with agonal respiration (gasping) should be humanely euthanized.
AILMENT	CLINICAL SIGNS	TREATMENT
RINGWORM Fungal infection	Pale iridescent areas on the wings, ears, face or body, or bald circular patches within the fur. There may also be scaly or yellowish crusted lesions on the skin**.**	**SEE RINGWORM AT THE BACK OF THIS CHART**
AILMENT	CLINICAL SIGNS	TREATMENT
SYSTEMIC INFECTIONS Also see: Parasites Rabies	Glassy eyes; anorexia; unkempt fur; lethargy; diarrhea.	Administer **BAYTRIL** injections and oral **CLAVAMOX** orally. Keep the bat **rehydrated** and provide supportive care. **VITAL** should be given to bats that are anorexic. **NOTE: Aged bats or bats that appear shocky should receive the oral CLAVAMOX/BAYTRIL mixture only.**
AILMENT	CLINICAL SIGNS	TREATMENT
TAIL SHAFT INFECTION Inflammation of the tail of unknown etiology.	Inflammation in the shaft of the tail. The infection usually starts at the base of the tail and moves towards the tip until the entire shaft is inflamed. These infections are very painful.	Administer **BAYTRIL** injections and **CLAVAMOX** orally. Lance and clean puss-filled areas. Administer **BUPRENEX** or **METACAM** for pain. **NOTE: Aged bats or overly stressed bats should receive the CLAVAMOX/BAYTRIL mixture orally.**
AILMENT	CLINICAL SIGNS	TREATMENT
URINARY TRACT DISORDERS Also see: Blunt Force Trauma Systemic Infection	Straining to urinate or a pink tinge to the urine may indicate cystitis, a stone blockage or internal injury from blunt force trauma. In pregnant females, foul smelling urine often indicates fetal death.	Administer **BAYTRIL** injections and oral **CLAVAMOX.** Administer **METACAM** for pain. **Rehydrate**. Minor blockages can sometimes be cleared by massaging the end of the penis or vagina while applying gentle pressure on the bladder. **NOTE: If a serious blockage or fetal death is suspected**
AILMENT	CLINICAL SIGNS	TREATMENT
WEST NILE DISEASE NOTE: Clinical signs of West Nile infection have not been thoroughly described in most mammalian species, including bats. Also see: Head Torsion	Clinical signs for other mammals include weakness; stumbling; uncoordinated movements; paralysis; stiff neck; tremors; twitching of the ears and face; head shaking; dazed expression; droopy eyelids; sleepiness; abnormal head posture and anorexia. Symptoms of mild disease may only last a few days; symptoms of severe disease may last several weeks. Neurological effects may be permanent.	As yet no treatment exists for West Nile infection in bats. Provide supportive care and hydrate as needed. Bats may need to be fed small amounts of blended food several times daily. To date, bats that have recovered from *suspected* cases of West Nile infection did so within 3 weeks.
AILMENT	CLINICAL SIGNS	TREATMENT
WING FRACTURES	Closed fractures do not involve protrusion of a bone. Hematomas may be present and swelling may occur, particularly with closed fractures of the wrist. Open fractures involve protrusion of a bone through the skin. Open fractures to the elbow or humerus are difficult to stabilize and may require amputation. Bats will occasionally chew on necrotic or dying tissue.	**NOTE: Do not put casts on bats as further injury and infection will result.** Many bats will self mutilate in attempts to remove the cast. **SEE WING FRACTURES AT THE BACK OF THIS CHART**

AILMENT	CLINICAL SIGNS	TREATMENT
WING DEPIGMENTATION **Captive:** Typically due to low humidity or lack of essential fatty acids in the diet.	Depigmentation of the wing membrane. Sometimes accompanied by flaky skin and balding patches on the torso, around the neck and on the head. Depigmentation in conjunction with inflamed finger joints may be indicative of skin mites.  	Humidifiers should be used to increase humidity if needed. Humidity should be maintained at 60-80%. If skin mites are present the bat should be treated topically with **REVOLUTION**.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
WING INFECTION (GOOPY WING) A fungal and/or bacterial infection that primarily occurs in captivity.	Membranes between the fingers, close to the wrist, or wing tips look slimy or gooey and/or discolored.	Apply **NOVALSAN** suspension to the effected areas once daily. If the infection does not improve or becomes worse after two days of treatment, administer **CLAVAMOX.** Continue to apply Novalsan once weekly to bats prone to infection due to injuries that prevent opening of the wing. To prevent the condition, do daily checks of wing membranes, particularly on pups. Keep wing membrane dry and free of food and debris.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
WING - NECROTIC Necrotic tissue can result from a variety of causes including fractures and burns. Here we refer to wing membrane necrosis of unknown etiology.	The bat is unable to fly and layers of the membrane around the fingers begin sloughing off (A). The skin becomes red and irritated, slowly dries, turns black, and then breaks or falls off (B). Exposed fingers then also dry and break off. Damaged skin does not grow back (C). Bats will occasionally chew on necrotic or dying tissue.	Treatment in early stages limits damage. Bath the membrane in **NOVALSAN** suspension and administer **CLAVAMOX**. Trim back desiccated/necrotic portions of the wing membranes. Provide supportive care. Damaged skin does not grow back.
AILMENT	**CLINICAL SIGNS**	**TREATMENT**
YEAST INFECTION Changes in the normal gut flora due to a variety of causes, including long-term antibiotic treatment, can result in yeast overgrowth in the oral cavity, sinuses and gastrointestinal tract.	Voracious appetite suddenly diminishes, leading to anexoria and debilitation. Bats also develop swollen thumbs and wing joints. Wing tips may curl under and the tail membrane may flip up. Wings appear rigid when extended manually. Diarrhea also develops. **NOTE: Yeast infections can be deadly and should be treated before diarrhea develops.**	Yeast infections can be successfully treated with **NYSTATIN** oral suspension.



ADHESIVES AND CONTAMINANTS

Bats occasionally become stuck in "No Roost," a petroleum product used to prevent birds from nesting in chimneys and buildings. Bat can also come in contact with fly paper, roofing tar, oil, paint, caulk or similar substances. It is important to keep the bat warm before, during, and after the contaminant has been removed. A bat covered with contaminants can be stressed and physically unstable; do not bath or administer injectable medications until it appears alert and responsive.

1. First remove contaminants and debris from the nose, mouth, and eyes. Use magnification and a plastic dental pick to gently remove substances from the nostrils. Use gauze or a cotton swab to remove debris from the mouth, and clean the eyes with a soft cloth.

2. Next, for oil-based contaminants, administer 0.05ml of activated charcoal solution orally.

3. Then, feed the bat as much of the blended mealworm mixture as it will consume (see Section II) . Encourage the bat to eat by gently placing small amounts of blended food in its mouth. Wait for the bat to swallow before offering another bite. (Food will help to absorb oil or adhesive that may be in the digestive tract.)

4. After feeding, administer 0.05 ml of Pepto-Bismol® orally.

5. Use cotton swabs soaked in mineral oil or cooking oil to detach bats from fly paper or sticky traps. To remove adhesives such as tar, paint, or caulk, clip the fur in the affected area with surgical or manicure scissors, being careful not to cut the skin. Much of the contaminant can be removed in this way.

6. Next, bath the bat in a small bowl of warm water with a mild detergent, such as Dawn® dishwashing liquid, as described in the bathing and grooming section of *Captive Care and Medical Reference for the Rehabilitation of Insectivorous Bats.* Be careful not to get water in the bat's mouth or nose. If necessary, the bat can be held under a gentle stream (trickle) of warm faucet water to speed the bathing process. Several washes may be needed to completely remove the substance from the fur and wing membranes. The bat should be thoroughly rinsed and dried after each washing and allowed to rest between washings. After bathing, the bat should be wrapped in a soft cloth and kept free from drafts.

7. After the bat has been bathed and appears responsive, it should be rehydrated. **Do not give injections to a bat that appears "shocky" or otherwise unstable.**

Bats that have had contact with contaminates should remain in captivity for at least two weeks prior to release.

NOTE: Because they frequently ingest these substances as they attempt to groom them from their bodies, bats sometimes die from poisoning or intestinal blockage even after the contaminate has been removed.

DEHYDRATION

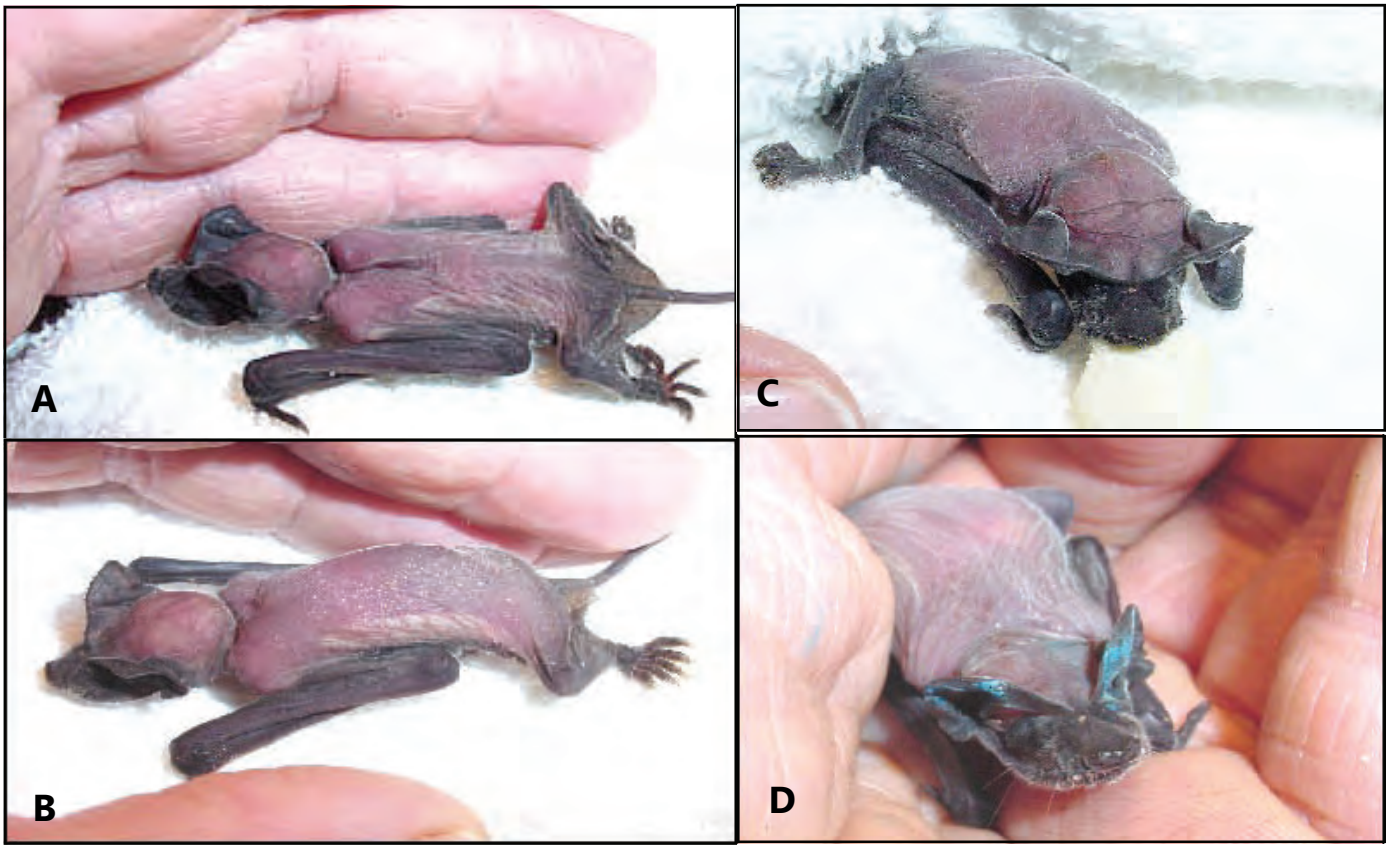
Bats quickly dehydrate without access to food and water. Therefore, any bat that is weak and unable to fly due to illness or injury will be dehydrated. Bats trapped indoors will also become dehydrated, as will orphaned pups. Bats in captivity can become dehydrated if the humidity is too low or they don't have access to fresh water at all times. The average daily water budget for a bat is determined by what they take in (food and water), and what is lost in feces and urine, as well as evaporative loss that occurs during flight and normal activities. The average daily water budget is 24.5% and 15.8% of the body weight for a big brown bat (*E. fuscus*) and Mexican free-tailed bat (*T. brasiliensis*) respectively. Without sufficient intake, a 10 to 20g bat can have a daily water loss of as much as 1 to 3mls! Bats are unlikely to be sufficiently rehydrated with oral fluids alone and therefore must be given subcutaneous injections of electrolytes (e.g., lactated Ringers solution).

SYMPTOMS

Clinical signs of dehydration include loss of appetite, dull eyes, (not matted or glassy), dry or flaky skin, droopy eyelids, dry or papery wings, vomiting, or feces stuck to the tail membrane. In severe cases, inability to coordinate muscular movements will result. Also, fluids may not be absorbed if organ failure is eminent. **NOTE:** Adult bats **must** be adequately hydrated before being fed. However, pups should be offered liquid milk replacement formula **immediately** after receiving SQ injections of electrolytes, as described below.

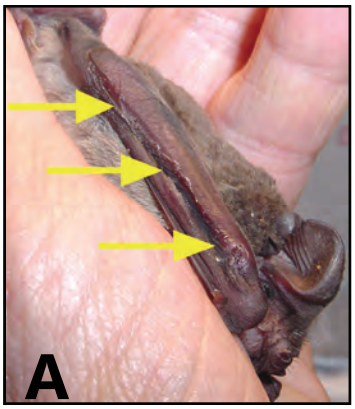
TREATMENT

Rehydration is best achieved by administering one to two large doses of LRS (hydration will not be achieved as quickly by administering several smaller injections over a longer period of time). Severely dehydrated adult bats should be given an immediate injection of at least 1.5 to 3ml's of lactated Ringers solution. Additional hydration is frequently not required when fluids are administered SQ in sufficiently large doses; often only one to two injections are necessary.



A. A severely dehydrated and emaciated Mexican free-tailed pup (*Tadarida brasiliensis*).
B. 1.0ml warmed LRS was administered SQ, creating a large bleb that extended across the back.
C. Immediately after receiving the injection of fluids, the orphan was fed.
D. Fifteen minutes after receiving fluids, the orphan was fully hydrated (blue cattle marker was used to mark the pup's ears, indicating it was a new arrival).

WINGS: STABILIZING RADIAL FRACTURES (Forearm)



CLOSED FRACTURES

Before beginning, first note how the uninjured wing folds against the body of the bat. Align the injured wing as close to this natural position as possible. Apply a very thin line of skin adhesive or Crazy Glue Gel™ along the length of the forearm of the injured wing as indicated by the arrows in Figure A. Then, fold the wing against the body, pressing finger three against the adhesive on the forearm. Rehydrate and administer Metacam® for pain. To prevent further injury to the wing while the fracture heals, clip the thumb claw short on the injured wing; clip only the tip of the claw. Check the wing each day and remove loose pieces of glue, then reapply adhesive to those areas. Closed fractures generally heal in three to four weeks. Bats with closed fractures that have healed in a natural position are good candidates for release after flight exercise. NOTE: Crazy Glue™ and Krazy Glue™ are preferred over other instant household glues.

OPEN FRACTURES

Note: Bats with open fractures are rarely releasable.

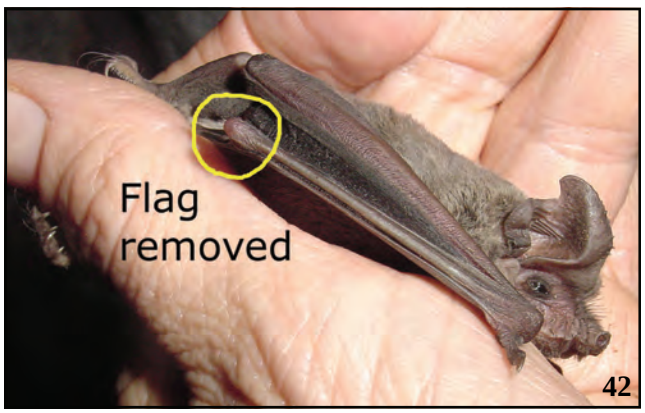
OPEN FRACTURES (fresh injury):

Rehydrate and administer Metacam® for pain. Then flush the wound with 10% Novalsan solution. Align the wing as described above for closed fractures. Next, apply triple antibiotic ointment or Manuka honey to the open wound. Administer an initial injection of Baytril®. Give the oral Clavamox®/Baytril® mixture thereafter.

OPEN FRACTURES (involving dried bone):

Note: Dried bone should be trimmed off. This will shorten the forearm and prevent the fingers from folding in a natural position against the body as described in “Closed Fractures.” Instead, stabilize the wing as follows:

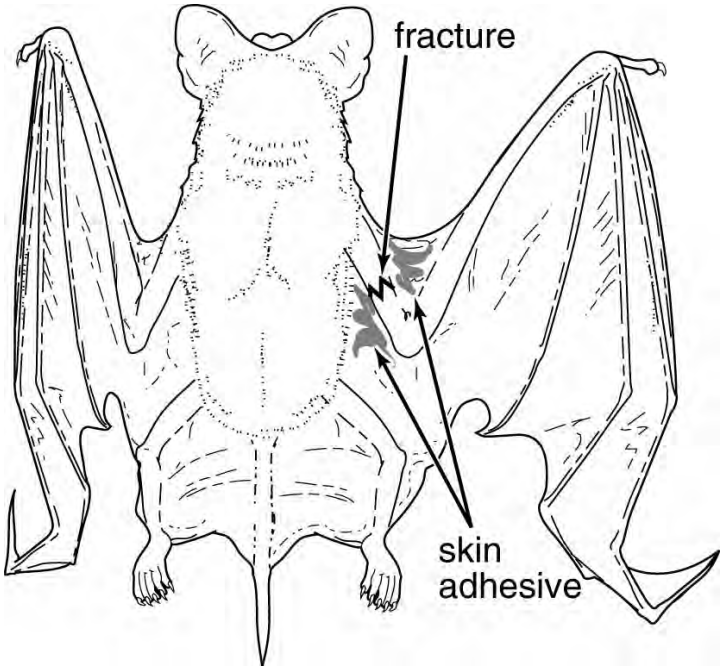
1. Anesthetize the bat (see Anesthesia in section IV).
2. Clip away the dried bone, realign the break, then flush the wound with 10% Novalsan solution.
3. Remove the bat from anesthesia.
4. Press finger three against the forearm while extending the tips of fingers three and four behind the elbow (see Figure C). Make sure the membrane is tucked between the fingers in a natural position. The thumb should be in the same position as it is on the uninjured wing.
5. Apply adhesive to the forearm (see Figure B) and press finger three against the adhesive (see Figure C).
6. Apply antibiotic ointment or Manuka honey to the open wound. Administer an initial injection of Baytril®. Give the oral Clavamox®/Baytril® mixture thereafter. Give Buprenex or Metacam® for pain.
7. After the bone has healed, the tips of fingers three and four may need to be removed because they will "flag" up in an unnatural position, injuring easily and causing discomfort. The bat will need to be anesthetized for this procedure. The fingertips should be amputated at the yellow line shown in Figure C. Deglove and apply skin adhesive as instructed in "Amputations of the Humerus". Rehydrate and administer Buprenex or Metacam® for pain. Administer Clavamox®.



WINGS: STABILIZING HUMERAL FRACTURES (Upper Arm)

NOTE: Open fractures of the humerus and elbow are extremely hard to stabilize and often necessitate amputation. If the method described below does not successfully stabilize the fracture, the wing may need to be amputated (see Amputation at the Humerus in Section V).

1.To stabilize open or closed fractures of the upper arm (i.e., humerus), gently immobilize the bat in a soft-cloth on a padded surface, exposing only the injured wing. Before beginning, first note how the uninjured wing folds against the body of the bat. Align the injured wing as close to this natural position as possible.



2. Flush the wound of with 10% Novalsan® solution and gently dab dry with a sterile gauze pad. Unless it is a fresh break, the ends of the exposed bones are likely to appear dry and will need to be clipped off with sterile surgical scissors before the bone is realigned. Carefully realign the ends of the broken bone.

3. Once the bone has been repositioned, apply a small amount of Crazy Glue Gel™ to the dorsal surface of the wing membrane in two places, below the elbow in the propatagium and between the torso and the humerus, as indicated by the arrows in the diagram to the left. Do not apply adhesive to exposed bone. Then fold the wing against the body and hold it in position until the glue dries.

4. Rehydrate and administer Buprenex or Metacam® for pain. For open fractures, apply triple antibiotic ointment or Manuka honey to the open wound twice daily. Administer an initial injection of Baytril®. Give the oral Clavamox®/Baytril® mixture thereafter.

To prevent further injure to the wing while the fracture heals, clip the thumb claw short on the injured wing; clip only the tip of the claw. Check the wing each day and remove loose pieces of glue, then reapply adhesive to those areas. While closed fractures generally heal in three to four weeks, open fractures may take five to six weeks to heal completely.

NOTE: Crazy Glue™ and Krazy Glue™ are preferred over other instant household glues.

Section VI
Quality of Life

ENRICHMENT

Crevice-dwelling Mexican free-tail bat

The psychological needs of bats in captivity — both temporarily and permanently— must be met to ensure their well-being and overall health. Behavioral changes and deterioration in physical condition can occur if psychological needs are neglected.

The two primary problems captive animals face in captivity is fear and boredom. Both stimulation and emotional security can be provided for captive bats by creating an environment that is similar to their natural habitat.

Foliage-roosting red bat

Many crevice-dwelling bats are gregarious, colonial species. The most valuable thing that can be done to enrich the life of a colonial bat in captivity is to provide it with roostmates. Therefore, crevice-dwelling bats should not be housed alone if at all possible. In circumstances where crevice-dwelling bats must be housed alone, providing enrichment and simulated natural habitat may greatly enhance the emotional security of the bat.

Foliage-roosting bats (i.e., Lasiurus) are solitary species. Except when rearing young, these bats typically prefer to roost alone. Environmental enrichment can be provided for solitary bats by providing items in the cage with which they can interact (see

The cage described on page two is recommended for bats in rehabilitation, including orphaned bats. Cages described on pages four and five are recommended for permanently disabled crevice-dwelling and foliage-roosting bats. Rubbermaid netting should be applied to the walls of Reptariums (pictured on pages four and five). A preferred alternative to the Reptarium cage is the PetGear Jeep cage #JP5526GG which has netted walls and a ceiling safe for use with bats.

WARNING: Critter keepers and similar hard-sided containers or cages are not recommended for bats, even for short periods, as they can cause injury to toes, thumbs, wrists, forearms and fingers.

ENRICHMENT

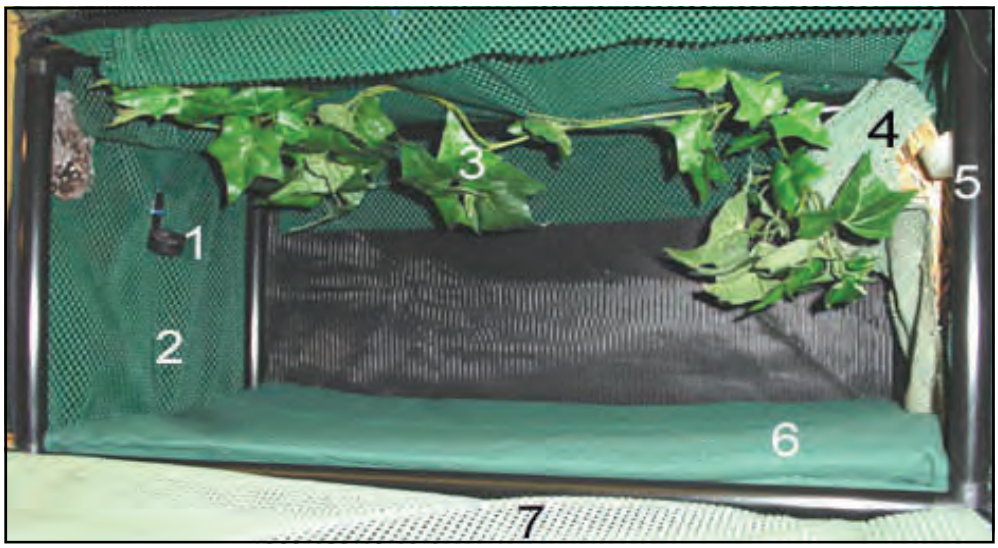
Enrichment for Disabled Crevice-Dwelling Bats

1. Water dishes should hang within easy reach against walls.
2. Cloths (e.g., cotton or waffle-weave napkins) provide folds for bats to roost in.
3. Stainless steel freeze plugs can be used as water dishes and placed on the floor.
4. Rubbermaid netting extends from one side of the cage to the other, creating a bridge for bats to climb on. Fabric roosting pouches can be placed on the bridge.
5. A fabric pouch hanging in close proximity to dish of mealworms provides a hiding place for self-feeding bats.
6. Diversity items such as cone-shaped roosts can be made with Rubbermaid netting.
7. Fabric roosting pouches or cloth drapes should be placed on all walls, but not on the door of the cage.
8. Light-colored pouches and pouches placed horizontally provide additional diversity.

Cages should be draped with a towel or other cover for additional warmth and security. During the day, partially lift the cover to allow daylight to enter (see photo B).

ENRICHMENT

Enrichment for Disabled Foliage-Roosting Bats



Above: Seasonal diversity (fall-colored leaves) provides enrich-

1. A water dish should hang within easy reach of the bat's daytime roosting place.

2. Rubbermaid netting lines the interior walls, providing protection for toes and thumbs which are prone to injury in other cages.

3. Silk foliage is attached to the ceiling (also see example of seasonal diversity in the photo above).

4. A small basket turned upside down provides an additional roosting area. The interior of the basket should be lined with

Rubbermaid netting to protect toes and thumbs.

5. Another water dish should be hung on the opposite wall.

6. The entire floor of the cage should be covered with a foam pad. The pad can be covered with a pillow case.