



Minnesota State Zoological Board.
Zoo-Related Organizations Files.

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Vet Care

IMMOBILIZATION DRUG SAFETY POLICY

MINNESOTA ZOOLOGICAL GARDEN--Revised September 1999

GUIDELINES FOR HANDLING ETORPHINE, CARFENTANIL, AND MEDETOMIDINE

I. GENERAL

These agents will be handled only by the veterinarians. All legal restrictions and requirements regarding ordering, storage, use, inventory, record keeping, and disposal of these drugs will be strictly observed.

The veterinarians and the health and safety team will regularly review and rehearse safety and emergency procedures with animal care staff every twelve months.

The protocol for accidental exposure to narcotics will be kept with the immobilization and emergency kits at all times.

The emergency kit and oxygen tank must be readily accessible whenever these drugs are used. Never handle these drugs unless there is another person with you who is trained in CPR, is familiar with the narcotic treatment protocol, and has had experience giving IV injections. ***This includes cleaning darts!***

Plan immobilizations whenever possible to occur when health and safety personnel are on duty and the public is not present. If public is present, barricade and secure the area around the animal to be immobilized.

II. BEFORE AN IMMOBILIZATION

Before beginning an immobilization using these agents, the veterinarian will contact the health and safety officer on duty and inform him or her when and where the procedure will take place.

All personnel involved in an immobilization must be made aware of the potential danger of the drugs. No unnecessary personnel will be allowed in the immediate vicinity.

Immobilizations should be done in an area with running water. If this is not possible, a bucket or jug of fresh water must be readily available.

When handling these agents, **always** wear goggles or safety glasses and a mask, or a face shield. **Always** wear gloves, preferably two pair. A long sleeved shirt or coveralls and long pants should be worn.

The drugs are to be drawn up into labeled syringes just prior to use. Syringes filled with potent immobilization agents should never be left unattended. Always draw up the animal's reversal agent and label it before handling the immobilization agent. Record the name and amount of the immobilization agent on the anesthesia worksheet before vials are opened. Capture darts should be labeled to designate contents. The emergency kit and oxygen tank must be in working order.

Dart loading should be done slowly and methodically. **Interruptions should be avoided.** There should be no unnecessary talking or distractions. Stand well away from other people. Never over-pressurize the bottles containing these drugs. Keep the bevel of the syringe or dart needle facing away from you at all

times. Use pliers or a hemostat to replace or remove needle caps.

Loaded darts that are transported must be capped and placed in a secure, impenetrable, unbreakable, leak-proof container that is clearly marked "carfentanil, etorphine, medetomidine". Place all materials contaminated with these drugs in a similar container, until they can be properly rinsed and disposed of in a sharps container.

Avoid using etorphine, carfentanil, or medetomidine in blowpipe syringes if at all possible. If you do use them in blowpipe syringes, always place a needle guard or syringe case over the needle when pressurizing the dart. Stand well away from other people and face away from them in case the dart flies off of the pressurizing syringe, or the syringe is dropped. A full face shield must be worn during loading and firing blowdarts when potent immobilization agents are being used. Use a hand held pump rather than a blow pipe.

III. DURING AN IMMOBILIZATION

TREAT ALL GUNS, DARTS, SYRINGES AS IF THEY WERE LOADED FIREARMS.
i.e. **DON'T POINT THEM AT ANYTHING YOU CAN'T AFFORD TO SHOOT.**

All personnel must be out of the path of the projectile and out of range of a possible ricochet or spray.

Goggles and a mask or a face shield should be worn when darts are fired.

A staff member trained to use darting equipment would do so only after the dart is made up and loaded into the equipment by the veterinarian. The veterinarian must ensure safe handling of the equipment and will remain in direct supervision during this time. When loading darts into the projector, double check to make sure the dart diameter is the correct size for the projector. Hold projector parallel to the ground (with barrel pointed in a safe direction) until you can ascertain that the dart fits securely in the projector and will not fall out.

The location of any darts in an animal or its pen must be monitored. All persons involved in handling the immobilized animal near the injection site must wear gloves. Identify the area of patient which has had contact with the drug and warn everyone to avoid touching this area. Rinse the area with water after the dart has been removed.

The veterinarian who is wearing gloves and eye protection will remove the dart from the animal. All other personnel should stand well away when the dart is removed. It is preferable to cover the dart with a towel as it is removed in case there is residual drug left in the syringe under pressure. The towel should then be disposed of in a labeled plastic bag for transport back to the hospital and washing.

Hand injecting with narcotic agents and medetomidine can pose considerable risk and should be avoided if possible. All personnel restraining the animal should wear full face protection and gloves. Use a luer-lock syringe and prepare for the animal's response.

Used darts and syringes shall be stored in an impenetrable, non-breakable, leak-proof container labeled "carfentanil, etorphine, medetomidine".

IV. AFTER AN IMMOBILIZATION

Following an immobilization all narcotic agents must be immediately returned to a class five safe. Make certain their use has been properly recorded.

Cleanup should be done immediately after an immobilization. Two trained staff members must be present and the emergency kit readily accessible. Contaminated syringes, needles, darts, and other materials will be handled only by qualified staff. Pressure should be released from all darts before cleaning takes place. Use pliers to remove needles. All contaminated reusable equipment should be triple rinsed while wearing gloves, goggles, and a face mask or face shield. Disposable equipment should be placed directly in the sharps container in the pharmacy. All empty drug bottles will be triple rinsed by the veterinarian and disposed of in the same sharps container.

First aide personnel should be informed when the procedure is over, the darts have been cleaned, and the drugs have been returned to the safe. Any potential drug exposure or safety violations should be reported immediately to the health and safety officer on duty.

EMERGENCY PROTOCOL FOR ACCIDENTAL NARCOTIC EXPOSURE

Carfentanil, etorphine

Minnesota Zoological Garden--revised September 1999

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Introduction:

Carfentanil (Wildnil™) and Etorphine (M99™) are synthetic opiates with a clinical potency 10,000 times that of morphine. They have a morphine like analgesic mode of action and produce a rapid immobilization following intramuscular injection. Carfentanil or etorphine are to be used only by a licensed veterinarian for the immobilization of exotic animals.

Assuming that a naloxone dose of 0.53-2.0 mg/kg will be needed to reverse the effects of carfentanil in humans, the dose of naloxone for a 70 kg person could be as much as 37.1-140.0 mg depending on the amount of narcotic received. Naloxone is supplied for human use in 10 ml, 1 mg/ml, multiple dose vials, Thus, up to 14 vials may be required to reverse narcotic toxicity. Naloxone has a rapid onset (IV--one minute, IM--15 minutes) and short duration of action (20-60 minutes). There is no known toxic dose of naloxone in humans and it has been used in doses up to 4 mg/kg intravenously.

Clinical Effects of Carfentanil/Etorphine:

CNS: Sedation, lethargy, miosis, syncope, seizures, coma respiratory depression and arrest. RAPID LOSS OF CONSCIOUSNESS LEADS TO CESSATION OF BREATHING.

CV: Hypotension

GI: Nausea, vomiting

Carfentanil/etorphine emergency kit:

Whenever carfentanil/etorphine is used the antidote should be readily accessible. This kit will contain the following:

- 10 Naloxone 1 mg/ml, 10 ml multi-dose vials. Five additional bottles will be kept in the immobilization kit.
- 3 23 ga. IV butterfly
- 2 35 ml syringe
- 2 10 ml syringe
- 4 20 ga. needle
- 2 Heparin-Lock 100 unit/ml, 30 ml

Tourniquet (used to help establish IV access), alcohol swabs, gauze pads, tape, carfentanil/etorphine protocol, Hennepin County Poison Center sticker, injection cap.

In addition, the portable oxygen tank (orange case) complete with human mask, demand valve resuscitator, and nasal airway will be available whenever narcotics are being used. The oxygen tank should be at least half full.

Treatment of human exposure to carfentanil or etorphine:

DO NOT LEAVE THE PATIENT UNATTENDED! The veterinarian or animal health technician shall be in charge until the health and safety officer or paramedics arrive.

1. Designate people by name to:

a. **Call for help.** This individual will immediately call 911. Tell them there has been an narcotic overdose involving a fast acting, extremely lethal agent and request immediate emergency medical transport. Give them the exact location of the victim and tell them to which entrance the ambulance should respond. Then proceed to meet the ambulance at the requested entrance and escort them to the patient location.

b. **Radio the health and safety officer and the switchboard** giving them the same information as indicated above. All extraneous radio communications should cease.

c. **Get emergency kit and oxygen case.** This person will:

1. Draw up 30 ml (three bottles, 30 mg total) of naloxone into a 35 ml syringe using a 20 ga. (pink) needle.
2. Draw up 10 ml (one bottle, 10 mg) of naloxone into a 12 ml syringe using a 20 ga. needle.
3. Ready oxygen for use.

d. **Monitor the victim's pulse and respiration rate.**

e. **Get water--cool or room temperature, not hot.**

2. Place victim on side to prevent aspiration and obstruction of airway by tongue. Elevate legs.

3. Wash off any drug residue. If the exposure was via the oral, ocular, or dermal routes, flush the narcotic exposed area with copious amounts of water. Do not use hot water. Avoid self-contamination.

4. Initiate respiratory support as needed. Tilt the head back and pull the jaw forward. Remove any foreign material. Give 1 breath every 5 seconds. Use mouth to mouth resuscitation until the oxygen tank with the face mask and a demand valve resuscitator can be applied. Oxygen flow rate should be set at 6-10 liters/min. Begin cardiac massage if arrest occurs, two ventilations/15 compressions.

5. Establish IV access, place one 23 ga. IV butterfly, tape in place.

a. If the patient is awake and talking:

1. Attach injection cap and flush with 1-2 ml of heparin lock solution.
2. Observe and monitor patient closely.

b. If the patient is unconscious, losing consciousness, unable to walk or follow commands:

1. Administer up to 30 ml of naloxone IV (titrate slowly, to effect) utilizing the prefilled syringe and butterfly.
2. **If IV access is not immediately available** and the patient is symptomatic, give 10 ml naloxone into any visible vein or IM into

the shoulder or thigh. (If IM, divide dose and give 5 ml in each of two sites.) Then proceed again with attempts to place the catheter. Flush catheter with 1-2 ml of heparin lock after the injection.

3. Continue to repeat naloxone doses (1-30 ml) until the patient wakes up and is able to talk. Multiple doses may be required. Flush catheter with 1-2 ml of heparin lock after each injection.

6. Make sure 911 has been called and immediately transport to the emergency room according to the protocol established by ALF ambulance.

7. Send this protocol and all unopened vials of naloxone with the patient to the emergency room. Accompany victim to the hospital if possible.

8. Designate someone to call the Hennepin Regional Poison Center (612-347-3141) to phone or page Dr. Ling (phone, 612-347-3418, pager 612-336-0716), Dr. Keyler (phone 612-347-8760 or 612-347-4051, pager 612-530-8674), and the Medical Toxicologist on call.

EMERGENCY PROTOCOL FOR ACCIDENTAL ALPHA₂-AGONIST EXPOSURE

Xylazine, detomidine, medetomidine
Minnesota Zoological Garden--revised September 1999

Introduction:

XYLAZINE (ROMPUNTM/ANASEDTM)

Xylazine is a non-narcotic tranquilizer with sedative, analgesic and muscle relaxant properties. Xylazine is structurally related to the phenothiazines and therefore will produce phenothiazine like effects in humans. Xylazine has been tested in humans but is not used due to a profound decrease in blood pressure. Xylazine also is pharmacologically related to the alpha₂-agonist, leading to the above blood pressure changes.

It has been reported that doses as low as 0.73 mg/kg IM may produce symptoms in humans. As little as 7 mg IV has caused significant bradycardia and 1000 mg resulted in coma and respiratory arrest.

DETOMIDINE HYDROCHLORIDE (DORMOSEDANTM)

Detomidine is a non-narcotic alpha₂-agonist used for sedation and analgesia. Human studies have shown that detomidine is readily absorbed orally and has effects similar to other alpha₂-agonists.

MEDETOMIDINE HYDROCHLORIDE

Medetomidine is a very potent and highly concentrated alpha₂-agonist. It is available in an injectable liquid in a concentration of 1.0 mg/ml and 10 mg/ml. *Because of its highly concentrated nature and lack of information regarding its effect on humans, this drug should be handled using the same precautions as the narcotic agents.* Effects of human exposure could include decreased heart rate and blood pressure with very small doses e.g. 10 mcg (0.001 ml of the 10 mg/ml product), but may cause the opposite effect with higher doses. Small doses cause tiredness and larger doses will cause sedation and hypnosis. These effects can be antagonized with a specific alpha₂-antagonist, yohimbine, but the injectable form of this drug is not approved for human use.

Clinical Effects:

CNS: Sedation, lethargy, slurred speech, miosis, syncope, coma, hypothermia, respiratory depression and arrest.

CV: Severe hypotension, bradycardia, cardiac arrhythmias

Treatment of human exposure to alpha₂-agonists:

1. SUPPORT VITAL FUNCTIONS. Initiate respiratory (with an ambu bag or mouth to mouth) and cardiovascular support as needed.
2. Notify Zoo personnel and the Health and Safety officer to call 911. DO NOT LEAVE THE PATIENT UNATTENDED.
3. The patient should lie flat with feet elevated.
4. Make sure 911 has been called and immediately transport to an emergency room.
5. Send this protocol with the patient to the emergency room.

6. Designate someone to call the Hennepin Regional Poison Center (612-347-3141) to phone or page Dr. Ling (phone, 612-347-3418, pager 612-336-0716), Dr. Keyler (phone 612-347-8760 or 612-347-4051, pager 612-530-8674), and the Medical Toxicologist on call.

Animal Escape Immobilization Protocol

Minnesota Zoological Gardens, Feb 2001

Equipment for Recapture

Immobilization Kit

Carfentanil, Telazol, from safe/refrigerator – place in immobilization kit
747

Emergency Kit

O₂

Capture Rifle(s)

Polesyringe Kit

Blow Dart Kit with darts and needles

Pneudarts 2 ml, 4 ml and 6 ml (Keep 3 of each in immobilization kit)

Capture Net

Rabies Pole

Extra Radios

If time permits: Medical record of escaped animal
Immobilization Records for Species

Drug List (check to make sure all are in Immobilization Kit)

| | | |
|-------------|-----------|----------------|
| Telazol | 100 mg/ml | Need 2 bottles |
| Butorphanol | 10 mg/ml | |
| Ketamine | 100 mg/ml | Need 6 bottles |
| Detomidine | 10 mg/ml | |
| Xylazine | 100 mg/ml | |
| Carfentanil | 3 mg/ml | |

Approximate IM doses for adult animals for recapture

Carnivores:

Fisher Telazol 5 – 6 mg/kg

Total dose: **Telazol** 20 – 30 mg = **0.2 – 0.3 ml**

Fishing Cat Ketamine 12 – 15 mg/kg
 Xylazine 0.4 mg/kg

Total dose: **Ketamine** 100 – 170 mg = **1.0 – 1.7 ml**
Xylazine 3 – 5 mg = **0.03 – 0.05 ml**

Amur Leopard Ketamine 10 mg/kg
 Xylazine 0.5 mg/kg

Total dose: **Ketamine** 350 – 500 mg = **3.5 – 5.0 ml**
Xylazine 15 – 30 mg = **0.15 – 0.30 ml**

Clouded Leopard Ketamine 10 mg/kg
 Xylazine 1 mg/kg

Total dose: **Ketamine** 150 – 200 mg = **1.5 – 2.0 ml**
Xylazine 12 – 18 mg = **0.12 – 0.18 ml**

Lynx Ketamine 17 mg/kg
 Xylazine 0.25 mg/kg

Total dose: **Ketamine** 200 mg = **2.0 ml**
Xylazine 2.5 mg = **0.025 ml**

North American River Otter Telazol 8 mg/kg

Total dose: **Telazol** 45 - 70 mg = **0.45 - 0.70 ml**

Puma Ketamine 10 - 12 mg/kg
 Xylazine 1 - 1.5 mg/kg

Total dose: **Ketamine** 450 - 650 mg = **4.5 - 6.5 ml**
Xylazine 35 - 70 mg = **0.35 - 0.70 ml**

Sun Bear Ketamine 1.8 mg/kg
 Xylazine 0.4 mg/kg
 Telazol 2 mg/kg

Total dose: **Ketamine** 60 mg - 140 mg = **0.6 - 1.4 ml**
Xylazine 15 mg - 35 mg = **0.15 - 0.35 ml**
Telazol 75 mg - 180 mg = **0.75 - 1.8 ml**

Mexican Wolf Ketamine 6 mg/kg
 Xylazine 1 mg/kg

Total dose: **Ketamine** 160 mg = **1.6 ml**
Xylazine 30 mg = **0.3 ml**

Wolverine Telazol 6 mg/kg

Total dose: **Telazol** 75 mg/adult = **0.75 ml**

Tiger Xylazine 0.6 mg/kg
 Ketamine 6 mg/kg

Total dose: **Xylazine** 100 mg = **1 ml**
Ketamine 1000 mg = **10 ml**

Primates:

Japanese Macaque Ketamine 18 mg/kg

Total dose: **Ketamine** 150 – 250 mg = **1.5 – 2.5 ml**

Gibbon Ketamine 10 – 15 mg/kg

Total dose: **Ketamine** 80 mg – 150 mg = **0.80 – 1.5 ml**

Hoofstock:

Bison Carfentanil 0.003 – 0.005 mg/kg
Xylazine 0.1 mg/kg

Total dose: **Carfentanil** 1.0 – 2.0 mg = **0.33 – 0.67 ml**
Xylazine 30 – 60 mg = **0.30 – 0.60 ml**

Bull - Domestic Xylazine 0.1 – 0.3 mg/kg

Total dose: **Xylazine** 75-300 mg = **0.75-3.0 ml**

Moose Carfentanil 0.006 mg/kg
Xylazine 0.15 mg/kg

Total dose: **Carfentanil** 2.0 mg = **0.67 ml**
Xylazine 50 mg = **0.5 ml**

Musk Ox Carfentanil 0.005 mg/kg
Xylazine 0.25 mg/kg

Total dose: **Carfentanil** 1.2 – 1.6 mg = **0.4 – 0.53 ml**
Xylazine 50 – 65 mg = **0.50 – 0.65 ml**

Takin Carfentanil 0.006 mg/kg
Xylazine 0.050 mg/kg

Total dose: Male Female
Carfentanil 2.5 mg = **0.83 ml** 1.5 - 2.0 mg = **0.5 - 0.67 ml**
Xylazine 20 mg = **0.2 ml** 10 - 15 mg = **0.1 - 0.15 ml**

Tapir Butorphanol 0.13 mg/kg initial
Detomidine 0.04 mg/kg initial
Ketamine 0.3 mg/kg IV, 25 min later if needed

Total dose: **Butorphanol** 45 mg = **4.5 ml** initial
Detomidine 12 mg = **1.2 ml** initial
Ketamine 100-150 mg = **1.0 - 1.5 ml** IV, if needed

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Preventive Health Schedule--Northern Trail
Minnesota Zoological Gardens, Revised Feb 2001

Carnivores

Meerkats—January

Immobilized for annual exam, VX (parvo, rabies, univalent recombinant distemper), HWT elisa, CBC, chems, dental.

Wolves—October or November

Immobilized for annual exam, VX, (Galaxy D, canine parvo, killed rabies), HWT, ivermectin, CBC's, serum bank, (or chemistries), weights.

Red pandas--September

Immobilized for annual exam, VX, (Recombinant univalent distemper vaccine, killed rabies), HWT, ivermectin, CBC's, serum bank, chemistries, distemper titer, dental care, weights.

Siberian Tigers--Exams as needed

VX (Felovax PCT, killed rabies) in December

Hoofstock

Bison—Exams every other year in April.

Restrained in chute for VX (clos, tet, rabies, lept), serum bank, ivomec, vit E, CBC's and chems as needed.

Asian Wild Horses—Yearly exams in April

Immobilized for annual exam, VX (EEE, WEE, Tet, rabies), hoof trim, dental care, ivermectin paste, vit E, CBC's and serum bank and EIA. Chems as needed.

Camels--Exams as needed.

VX (clos, tet, lept, rabies) in February.

Caribou--Annual exam and hoof trim in September. Ivomec in November via blowdart, polesyringe or hand injection while restrained in tamer.

September exam includes hoof trim, antler care, ivermectin, vit E, VX (clos, lept, tet, rabies), CBC's, chems, serum bank, hormone implants for castrated males.

Moose--Exams as needed, avoid rut whenever possible!

VX (clos, tet, lept, rabies) in February.

Musk ox--November

Immobilized for annual exams every other year. Hoof trim, pregnancy check, ivermectin, vit E, VX (clos, tet, lept, rabies), CBC's, chems, serum bank.

Takin--Exam as needed.

VX (clos, tet, lept, rabies) in April. Hoof trims as needed.

Pronghorn--Exam as needed

VX (clos, tet, lept, rabies) if possible in May. (Those animals that can be easily restrained.)

Pregnant does:

VX (clos C & D and tet) blowdart (1 injection) in May, if cannot be manually restrained for above vaccination. Blowdart doe only if this can be done with minimal stress.

Miscellaneous

Prairie dogs—Exams as needed. No routine vaccinations.

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Preventative Health Schedule--Tropics

Minnesota Zoological Gardens, Revised Feb 2001

Carnivores

Clouded leopards--Exams as needed.
VX (Felovax PCT) in August

Amur leopards--Exams as needed.
VX (Felovax PCT) in August

Fishing cat--Exams as needed.
VX (Felovax PCT) in August

Binturong--Exams as needed.
VX (Galaxy DA2PL, canine parvovirus) opportunistically.

Small clawed otter--November
Immobilize for annual exam, rads of abdomen (calculi check), CBC, serum bank, chems as needed, U/A when possible, VX (Galaxy DA2PL, canine parvovirus), dental.

Sunbear--January
Immobilize for annual exam, CBC, chems, serum bank, dental. Dentals usually required every 3-6 months depending on condition of teeth.

Primates

Gibbons--January
Immobilize for annual exam and TB test, CBC, chems, serum bank. VX for tet every 5 years.

Japanese macaques--October
Immobilize for annual exam, TB test, Serum banking, CBC and chems every other year on select individuals, Tattoo of young animals, hormone implants and castration of non-breeding animals, tetanus VX every 5 years. Periodic screening of Herpes B and other viruses.

Slow loris--February
Exam annually to check for dental condition. Vx for tet every 5 years.

Hoofstock

Tapir--February
Immobilize or manual restraint for exam every other year. CBC, chems, serum

bank; U/A when possible, VX (tetanus).

Tahr--January, May, September

Immobilize for hoof trims. Annual exam, CBC, serum bank, (chems as needed), VX (clos, tet, lepto), vit E in January.

Chevrotain--January, July

Immobilize for exam, and dentistry twice yearly. CBC and chems as needed. Pregnant chevrotain should be treated twice during their pregnancy with Vit E tocopherol (50 IU/kg B.W) and Vit A/D (500,000 IU vit A/ml and 75,000 IU vitD/ml) (0.06 ml/kg B.W.).

Muntjac--Exams as needed.

Vx when handled with tetanus.

MISCELLANEOUS

Flying fox fruit bats--September

Annual exam, CBCs, chems as needed. Vit E serum levels on all or subset of troupe. Place transponders in animals born over last year.

Tree shrew--Exams as needed.

No routine vx or treatments

Burmese Tortoise--January, May, September

Beak trims. Annual exams, CBC, chems in January.

Komodo Monitor--Feb, Aug

Exam, CBC, chems, wgt, Vit D3

Tree Kangaroo--December

Immobilize for annual exam (when not pregnant), CBC, chems, chest rads.

Prevost's Squirrel--March

Immobilize for annual exam, and dental, CBC, chems. Dental work often required on select individuals more frequently.

Reptiles/amphibians

All species--Exams as needed.

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Preventive Health Schedule--Minnesota Trail
Minnesota Zoological Gardens, Revised Feb 2001

Carnivores

Pumas--Exam as needed
VX (Felovax PCT, rabies) in December

Lynx--Exam as needed
VX (Felovax PCT, rabies) in December

Fox--Exam as needed
VX (Galaxy DA2PL, canine parvo, rabies) in November

Fisher--Exam as needed
VX (Galaxy DA2PL, canine parvo, rabies) in November

Ermine--Exam as needed
VX (Galaxy DA2PL, canine parvo) in November

Wolverine--Exam as needed
VX (Galaxy DA2PL, canine parvo, rabies) in Oct/Nov. Receive heartworm
preventive montly

Spotted skunk--Exam as needed
VX (Galaxy DA2PL, canine parvo,) in November

North American otter--Exam every other year in October.
Exam, abdominal rads (urinary calculi check), HWT (elisa), VX (Galaxy DA2PL,
canine parvovirus, rabies), CBC, chems, serum bank, weights.

Rodents/Lagomorphs-- Exam as needed.
No routine vaccines.

Bats-- Exam as needed.

Reptiles-- Exam as needed.

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Preventive Health Schedule--Dolphins

Minnesota Zoological Gardens, Feb 2001

Blood

Voluntary blood collections, CBC, Hgb, ESR, chems--quarterly

Blowhole cultures (exhalation collection)

Fungal cultures--Jan, Apr, July, Oct. All animals done at same time.

Bacterial cultures--Jan, July. Stagger cultures, one animal per week.

Fecal

Float, sedimentation, direct--May

Gastric cytology

Voluntary stomach tubing and collection of stomach contents monthly. Visual inspection of contents done by marine mammal staff. Quarterly sample brought to animal health lab for dipstick analysis and assessment of color. Sedimentation and cytology will be done on samples that appear unusual or if an animal is ill.

Veterinary examinations—Jan, Apr, July, Oct

Physical exams are done periodically on all animals, but not less than quarterly. Exams include inspection of skin, oral cavity, blowhole, eyes, and, anogenital area.

Length/Girth

Trainers take and record these measurements monthly.

Ultrasound examinations

Done on pregnant females monthly.

Weight and Urinalysis

Trainers are working on these husbandry behaviors and they will be included in protocol once training is complete.

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Preventive Health Schedule—Birds
Minnesota Zoological Gardens, Feb, 2001

Bald Eagles

Zookeepers weigh animals and check feet every 3-6 wks. Talons trimmed and beaks coped as needed.

Trumpeter Swans—October/November

Weighed in fall. Blood lead collected yearly. CBC and chems every other year.

Flamingos

Winged clipped twice yearly. CBC, chems every other year.

Owls

Zookeepers trim talons and cope beaks as needed about every six months. Animals weighed at this time.

Hornbills

CBC and chems every other year.

Other tropics birds

Nails and beaks trimmed as needed by zookeepers. Weighed opportunistically. Exams done as needed.

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Preventive Health Schedule--Zoolab

June 1996 (prevzlab.prt)

Raptors--as needed

Zoolab staff will coordinate beak coping and talon trim with biological program staff when needed

Snakes, glass lizards--Nov, Dec, or Jan

Immobilized for annual exam and radiographs of spine every other year to check for spinal disease, CBC, chems

Iguanas--Nov

Immobilized for annual exam, CBC, chems, and radiographs

Hedgehogs--Jan

Immobilized for annual exam, skin scrapings, dental care, CBC, chems

Armadillos--Dec

Immobilized for annual exam, dental care, CBC, chems

Others

Exams as needed.

VACCINATION PROGRAM--Minnesota Zoo June 1996 (vaccine.prt)

Primates: Tetanus.

Canidae: Canine distemper, canine infectious hepatitis, leptospirosis, parvovirus, parainfluenza..
Rabies, if exposed.

Felidae: Panleukopenia, calicivirus, rhinotracheitis. Rabies, if exposed.

Mustelidae: Canine distemper, leptospirosis, canine infectious hepatitis, parvovirus, parainfluenza.
Rabies, if exposed.

Procyonidae: Killed canine distemper (special vaccine for red pandas). Rabies, if exposed, but
check with SSP first.

Artiodactyla: Tetanus, Clostridium 7 way, leptospirosis. Rabies, if exposed.

Equidae: Tetanus, EEE, WEE. Rabies, if exposed.

QUARANTINE GUIDELINES

Minnesota Zoological Garden, February 2001

Preventing spread of disease:

Follow quarantine guidelines:

1. Whenever possible quarantine animals should be taken care of only after resident animals are serviced. Once keepers have taken care of quarantine animals they should not return to resident animals of the same taxonomic order.
2. Use footbaths. This includes using a foot brush when necessary.
3. Wash hands thoroughly when entering and leaving quarantine.
4. Clothing/Footwear:
 - a. Hoofstock
Hoofstock care will require a separate pair of shoes or boots and coveralls, or a change of clothes. These items should be worn only while in quarantine. If you prefer you may cover your shoes/boots with rubber overboots while in quarantine, then leave these boots at animal health.
 - b. Large mammals (except hoofstock), large birds of prey, waterfowl, turkeys, peafowl (large or messy birds), and primates
Wear coveralls. These should be left at animal health and worn only for this purpose. Wear gloves and mask for all primate work.
 - c. Reptiles
Wear latex gloves when caring for any reptile in quarantine. Do not allow animals to crawl on you or touch your body or clothing. Wash hands between servicing each animal in the room. Clean and disinfect any tools that are used between reptiles.
 - d. Small birds, small mammals (rabbits, rodents, etc)
No special clothing required.

Note: Latex gloves and masks are located in the SAH kitchen on the shelf above the counter and in each quarantine room.

Length of stay:

Psittacines-- 95 days

Primates--60-90, depending on origin.

Snakes--60 days

Length of stay for all other species shall be 30 days, unless otherwise instructed by veterinarians.

Length of stay is computed from date of arrival; however, if another animal is moved into a room, both must stay 30 days from date of arrival of the newcomer unless it is an unrelated species, i.e., a bird and a mammal, or a rodent and a carnivore.

Housing guidelines:

1. All incoming animals must be quarantined in either small or large animal holding unless other arrangements have been previously made with the veterinarians. When exceptions are made and animals are housed in other areas for quarantine, all the usual quarantine protocols must be followed.
2. Avoid placing animals of same or related species in same room unless they arrive together from one source. If available space forces mixing of similar animals, all must stay until the last to arrive clears quarantine. (May be over 30 days.) Wash hands and disinfect tools between servicing each quarantine animal (unless they arrived together).
3. Make sure room temperature and light cycle is appropriate for species in quarantine. Fill out high/low temperature chart daily.
4. Animals clear at end of 30-day period only if they have three negative fecals, are normal on physical exam and all tests performed are normal. If medical problems or parasites are noted, animal stays as long as it takes to resolve problem.

Feeding:

It is the responsibility of the zoologist to make sure that food is available for quarantine animals. Every effort should be made to obtain a supply of the feed that the animal is currently eating (if it is different from ours) so that a gradual change in feed can be made to avoid gastrointestinal upsets and reduce quarantine stress. This is especially true with animals that are on commercially prepared feed, especially young ones. Rabbits and hoofstock seem to be particularly sensitive to abrupt food changes. Zoologists or keepers should request a supply of the animal's current feed to be shipped with animal when making shipping arrangements.

Parasite Control:

All animals passing through quarantine shall have three fecal samples submitted, collected 7 days apart each **Friday**. Some exceptions will be made for animals that defecate less frequently, i.e. reptiles. Check with technician if you would like to submit a fecal on a day other than Friday. **Three consecutive samples must be negative** for parasites before an animal is allowed to leave quarantine. Some exceptions may be made for certain organisms such as coccidia. Samples collected from each individual animal are preferred, but in the case of group-housed animals a composite sample will suffice.

- All fecal samples will be examined using sedimentation, flotation and direct smear techniques.
- All reptiles, hoofstock and primates will have feces examined twice for Cryptosporidia sp.
- Any quarantined animals having blood collected for complete blood counts (CBC) will be screened for hemoparasites as part of the CBC.
- Species susceptible to heartworm infections (canids, mustelids, procyonids, viverrids) will have serum submitted for heartworm ELISA testing. If the animal is younger than six months, a Knotts test will be performed, as there could be microfilaremia without harboring adult worms.
- During quarantine examinations animals will be checked for external parasites by close visual exam of the skin and fur and otoscopic exam of the ear canal. Skin scrapings will be performed on all animals with a skin condition. Appropriate testing and treatments are instituted when needed.

- All sheep and goats will be dusted with 5% carbaryl three times at weekly intervals while in quarantine due to the high incidence of ectoparasitism in this species.
- All hedgehogs will be skin-scraped for mites and treated with 5% carbaryl or ivermectin if infected.
- All pigs will be treated with ivermectin (0.3 mg/kg sc) twice at 2 wk intervals while in quarantine.

Cleaning and Sanitation

Cleaning: All cages are thoroughly cleaned daily.

Disinfection:

Mammals:

Disinfect daily if animal has a high parasite infestation or other infectious disease.

Disinfect weekly on Monday if animal has negative fecals.

Note: Exceptions may be made if animals show particular sensitivity to disinfectants.

Birds:

Do not disinfect cage while animal is occupying space due to sensitivity to chemical disinfecting agents. Room should be dry and aired out before new animals are placed in rooms.

- ▶ All areas should be thoroughly disinfected upon completion of quarantine and transfer out.
- ▶ Fill out quarantine check in/out/disinfection chart in on door of each room with information requested.
- ▶ Food dishes are changed and disinfected daily.
- ▶ Water should be changed daily and dishes should be disinfected weekly.
- ▶ Shipping crates should be disinfected upon arrival after animal has been moved into quarantine space.
- ▶ Change air filter if room is dusty.

Disinfection Procedure:

1. Remove all feces and hose area.
2. Spray Unicide 256 (dilution is 1 TBSP / Gallon H₂O) on all surfaces animal has contact with. Let set for 10 or 15 minutes.
3. Rinse thoroughly and let dry before shifting animal back.

Note: In addition to the above procedure, it will sometimes be necessary to use Emulso degreaser (diluted 1:4 with water) to scrub all surfaces, walls, floor, sleeping boards in order to get things clean. This is usually done prior to disinfecting.

Footbath maintenance:

Footbaths will be maintained in all rooms that are in use (including necropsy). Footbaths should be changed weekly on Monday, or more often if necessary. A boot brush should be placed next to the footbath.

Directions:

1. Fill tub ½ full with water
2. Add 1 squirt of Unicide 256 (= .5 oz. Or 1 TBSP)
3. Add sponge or filter.

Housekeeping:

Put things back where you found them. Do not use SAH and LAH equipment in other areas of the zoo.

Please clean up after yourselves. Wash dishes, empty garbage, etc.

Lock all animal doors behind you.

Notification of arrival:

Please notify both veterinarians by voice mail and radio when a new animal arrives in quarantine. If possible the veterinarian will observe or exam the animal immediately.

Records:

Shipping papers:

Person acquiring animal should:

1. Fill out bottom of USDA form 7020 (Acquisition, disposition, transport).
2. Place all shipping papers on registrar's desk. Keep one copy of the keeper data transfer form for yourself. Indicate what records you would like copies of, if any.
3. Registrar will place MZG accession number on each sheet, then copy the records and send those that are needed to the zoologists. One copy of all the records (except USDA form 7020 and air bills) will be made for each animal's medical record (when practical) and placed in the "New Files" basket in the front office.
4. Veterinarian will review information after they have been notified of the animal's arrival and return the papers to the "New Files" basket. Animal health secretary will create a new medical file.

Quarantine records:

Zookeepers are required to maintain the following animal records on quarantine animals:

Keeper / Daily Records: These records are to be maintained daily. Record changes in animal behavior, health, food consumption, and transfers. These records are entered into the trail's daily report.

Consumption Charts: Are kept on all animals in quarantine or in holding. Amount of food offered and amount of food consumed is recorded daily. These records are sent with animal when leaving quarantine or if trail does not want, they are stored at A.H. for three months, and then discarded. Any diet changes are recorded on these charts.

Weight Charts: Keepers must **weigh all animals upon arrival**. Animals that are easily handled without sedation and under stress should be weighed weekly by keepers while in quarantine. Animals will also be weighed during quarantine exam. Please record these weights on the animal's quarantine sheet.

Medical Treatment Forms: Are completed daily if an animal is being treated. Medication, amount, method of administration, time of treatment, and dosage success are recorded. These charts are maintained for the duration of treatment and then returned to the lab for entry into

MEDARKS. Please check with animal health staff if you cannot administer the medications on schedule or need assistance.

Daily Animal Care Log: Zookeepers should sign daily logbook in kitchen to show that animal has been cared for.

Medical Examination:

All animals should be observed (and examined, if this is possible without anesthesia) by a veterinarian within 24-hrs of arrival in quarantine. The veterinarian will review the medical records from the zoo of origin and fill out a quarantine sheet for the animal indicating the appropriate tests that need to be done on the animal before it can be released from quarantine. The vet should also indicate when the quarantine examination should occur. The zoologist is responsible for scheduling this exam during the next animal health meeting.

Quarantine exam will include the following on most species:

- Thorough physical examination, body weight, dental exam, coat condition, external parasites, ear and eye exam, etc
- Survey radiographs - in most cases
- Clinical pathology - CBC, chems, serum bank, serology tests, urinalysis, cultures, HWT, skin scrapings, etc.
- Permanent ID (Tattoo, transponder, ear tag)
- Special tests - TB test (multiple tests in primates,) EKG, ultrasound
- Treatments administration as needed
- Vaccinations (see vaccination protocol)
- Vitamin supplements
- Parasite control
- Beak, hoof, nail trim, dental care, etc.

Quarantine testing, general recommendations:

Most animals will have CBC, chemistries, and serum banking done at least once during quarantine. (Exceptions include small birds, lagomorphs, and rodents.) Unanalysis will be done whenever a sample can be obtained. Baseline radiographs will be taken when needed.

Primates: 2-3 TB tests at 2-4 wk intervals. Serology tests for diseases appropriate to species, e.g., Herpes B, retro viruses, parainfluenza, measles, cytomegalovirus, hepatitis B. Fecal cultures for Salmonella, Shigella, Campylobacter, and Yersinia. Two Cryptosporidia tests.

Artiodactyla: TB, Brucellosis. Other serology tests might include MCF, Bluetongue, Leptospirosis, IBR, BVD, anaplasmosis, Johne's, CAE, OPPV, etc. Two Cryptosporidia tests.

Perissodactyla: EIA.

Felidae: FIV, FeLV. Baermann fecal tests for 3 days.

Canidae, mustelidae, procyonidae, viverridae: Elisa HWT. Reptiles: Skeletal radiographs. Two Cryptosporidia tests. Paramyxovirus titers on viperids.

Birds:

Psittacines: Cloacal and choanal cultures. Chlamydia, Beak and Feather Disease, polyomavirus. Radiographs. Cloacal exam for papillomas.

Columbiformes: Chlamydia test

Galliformes: Chlamydia and pullorum test

Anseriformes: Pullorum test

Other tests as indicated, e.g. aspergillosis titer, blood lead, etc.

QUARANTINE RESPONSIBILITIES

Minnesota Zoological Garden , Feb 2001

In the absence of an animal health zookeeper, the following will help clarify job duties. The QUARANTINE GUIDELINES should be referred to for more detail.

Zookeepers from individual trails will care for their animals. This involves:

- ▶ Identifying quarantine space. This will be done at the animal health meeting prior to the shipment of the animal. Animal health technicians will keep a list of space reserved for animals.
- ▶ Setting up cages. Making sure room temperature and lighting is appropriate.
- ▶ Ordering food.
- ▶ Weighing animal when it comes into quarantine and setting up a new quarantine record.
- ▶ Observing all quarantine procedures--see QUARANTINE GUIDELINES
- ▶ Cleaning, disinfecting cages, and maintaining foot bath--see QUARANTINE GUIDELINES
- ▶ Feeding animals and keeping track of food intake.
- ▶ Administering medication prescribed by veterinarians--see QUARANTINE GUIDELINES
- ▶ Collecting and submitting quarantine fecal exam--see QUARANTINE GUIDELINES
- ▶ Scheduling quarantine entry and exit examinations.
- ▶ Recording all relevant information regarding the quarantine animal in the keeper daily log for the trail. There will no longer be a separate quarantine report generated.
- ▶ Keeper should sign daily logbook in kitchen to show that animal has been cared for.
- ▶ Any animal health problems should be reported immediately to the veterinary on duty.
- ▶ Cleaning all tools, dishes, and utensils used at the animal health building. Cleaning kitchen up after used. Removing garbage as needed.

- ▶ Preparing work-service orders on equipment that breaks or malfunctions. This needs to be signed by the area supervisor and a copy of the work service order placed in the appropriate three ring binders in the laboratory.
- ▶ Cleaning, dismantling, and disinfecting cage when animal leaves quarantine.
- ▶ When Northern Trail Keepers have animals in quarantine:
 - ▶ Northern trail zookeeper "outers" staff should do a.m. check on any animals at large animal holding. They can also feed the A.M. diet as long as they do not come in contact with the animal or feces. A.M. diets should be prepared the day before and non-perishable food left outside the stall, or covered and placed in the LAH kitchen. The appropriate person should be instructed as to who and what to feed and where to find it. "Outers" keepers should be sure to wash hands thoroughly if handling food dishes, and always scrub boots/shoes in the footbath when entering and before leaving quarantine.

When Farm Keepers have animals in quarantine:

- ▶ Northern trail staff servicing animals in large animal holding is responsible for securing building at end of the day and notifying security.

Animal health technicians will be responsible for:

- ▶ A.M. animals check on all animals in "A" building.
- ▶ In some instances, technicians may offer a.m. diet to animals in SAH when prepared and requested by zookeeper staff. This should be discussed and cleared with veterinary staff at animal health meeting ahead of time.
- ▶ Assisting with treatments when needed--see QUARANTINE GUIDELINES
- ▶ Overseeing cleanliness and upkeep of quarantine facilities and small animal kitchen. This includes a bi-weekly check of the large animal holding facilities.
- ▶ Overseeing that quarantine records are filled out and maintained on each animal.
- ▶ Overseeing that all quarantine fecals are submitted in a timely fashion.
- ▶ Final check on all animals in "A" building, making sure all animals have been cared for and doors are locked. Technician calls security to notify them that the building is secure at the end of the day.

QUARANTINE RECORD - PRIMATES, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: 60 days 90 days Arrival Date: _____ Entry Exam Date: _____

Comments: _____

| <u>Fecal Record</u> | Crypto <input type="checkbox"/> <input type="checkbox"/> | | | <u>Weight Record</u> | |
|---------------------|--|----------------|------------------|----------------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|-----------------|-------------|--------------------------|---------------------|--------------------------|--------------------------|---------------------------|-------------|--------------------------|
| TB Test #1 | Y/N | <input type="checkbox"/> | Tetanus | Y/N | <input type="checkbox"/> | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| TB Test #2 | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | CBC | Y/N | <input type="checkbox"/> |
| TB Test #3 | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | Chems | Y/N | <input type="checkbox"/> |
| TB Test #4 | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | Rads | Y/N | <input type="checkbox"/> |
| Herpes B | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | U/A | Y/N | <input type="checkbox"/> |
| Retrovirus | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | Fecal culture | | |
| Parainfluenza | Y/N | <input type="checkbox"/> | | | | Salmonella | Y/N | <input type="checkbox"/> |
| Measles | Y/N | <input type="checkbox"/> | <u>Treatments</u> | | | Shigella | Y/N | <input type="checkbox"/> |
| Cytomegalovirus | Y/N | <input type="checkbox"/> | Dental care | <input type="checkbox"/> | | Campylobacter | Y/N | <input type="checkbox"/> |
| Hepatitis B | Y/N | <input type="checkbox"/> | | | | Yersinia | Y/N | <input type="checkbox"/> |
| _____ | Y/N | <input type="checkbox"/> | | | | | | |

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y/N | _____ / _____ / _____ |
| Tattoo | Y/N | _____ / _____ / _____ |
| Ear tag | Y/N | _____ / _____ / _____ |
| Other | Y/N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD -RODENTS, LAGOMORPHS, INSECTIVORES, ETC.;
MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: 30 days Arrival Date: _____ Entry Exam Date: _____

Comments: _____

| <u>Fecal Record</u> | | | | <u>Weight Record</u> | |
|---------------------|-------------|----------------|------------------|----------------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|-------------|-------------|--------------------------|---------------------|-------------|--------------------------|---------------------------|-------------|--------------------------|
| | | | | | | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| _____ | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | CBC | Y/N | <input type="checkbox"/> |
| _____ | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | Chems | Y/N | <input type="checkbox"/> |
| _____ | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | Skin Scraping | Y/N | <input type="checkbox"/> |
| _____ | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | Fecal culture | Y/N | <input type="checkbox"/> |
| _____ | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | | | |

Treatments
 Dental care

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y/N | _____ / _____ / _____ |
| Tattoo | Y/N | _____ / _____ / _____ |
| Ear tag | Y/N | _____ / _____ / _____ |
| Other | Y/N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD - CARNIVORES, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: 30 days Arrival Date: _____ Entry Exam Date: _____

Comments: _____

Baermann Test

| <u>Fecal Record</u> | | | <u>Weight Record</u> | | |
|---------------------|-------------|----------------|----------------------|-------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|--------------|-------------|--------------------------|---------------------------|-------------|--------------------------|---------------------------|-------------|--------------------------|
| HWT (elisa) | Y / N | <input type="checkbox"/> | Galaxy DA ₂ PL | Y / N | <input type="checkbox"/> | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| HWT(Knott's) | Y / N | <input type="checkbox"/> | Parvo | Y / N | <input type="checkbox"/> | CBC | Y / N | <input type="checkbox"/> |
| Feleuk | Y / N | <input type="checkbox"/> | Felovax | Y / N | <input type="checkbox"/> | Chems | Y / N | <input type="checkbox"/> |
| FIV | Y / N | <input type="checkbox"/> | Rabies | Y / N | <input type="checkbox"/> | U/A | Y / N | <input type="checkbox"/> |
| FIP | Y / N | <input type="checkbox"/> | Killed distemper | Y / N | <input type="checkbox"/> | Rads | Y / N | <input type="checkbox"/> |
| _____ | Y / N | <input type="checkbox"/> | _____ | Y / N | <input type="checkbox"/> | _____ | Y / N | <input type="checkbox"/> |
| _____ | Y / N | <input type="checkbox"/> | _____ | Y / N | <input type="checkbox"/> | _____ | Y / N | <input type="checkbox"/> |

Treatments
 Dental care
 Nail trim
 Anal sacs

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y / N | _____ / _____ / _____ |
| Tattoo | Y / N | _____ / _____ / _____ |
| Ear tag | Y / N | _____ / _____ / _____ |
| Other | Y / N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD -PERRISODACTYLA, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: 30 days Arrival Date: _____ Entry Exam Date: _____

Comments: _____

| <u>Fecal Record</u> | | | | <u>Weight Record</u> | |
|---------------------|-------------|----------------|------------------|----------------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|-------------|-------------|--------------------------|---------------------|-------------|--------------------------|---------------------------|-------------|--------------------------|
| EIA | Y / N | <input type="checkbox"/> | EEE/WEE/TET | Y / N | <input type="checkbox"/> | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| _____ | Y / N | <input type="checkbox"/> | Rabies | Y / N | <input type="checkbox"/> | CBC | Y / N | <input type="checkbox"/> |
| _____ | Y / N | <input type="checkbox"/> | Rhinopneum. | Y / N | <input type="checkbox"/> | Chems | Y / N | <input type="checkbox"/> |
| _____ | Y / N | <input type="checkbox"/> | Influenza | Y / N | <input type="checkbox"/> | SDH | Y / N | <input type="checkbox"/> |
| | | | _____ | Y / N | <input type="checkbox"/> | Rads | Y / N | <input type="checkbox"/> |
| | | | _____ | Y / N | <input type="checkbox"/> | | | |

- Treatments
- Dental care
 - Hoof trim
 - Vitamin E

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y / N | _____ / _____ / _____ |
| Tattoo | Y / N | _____ / _____ / _____ |
| Ear tag | Y / N | _____ / _____ / _____ |
| Other | Y / N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD - REPTILES, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: Snakes - 60 days Arrival Date: _____ Entry Exam Date: _____
Others - 30 days

Comments: _____

| <u>Fecal Record</u> | Crypto <input type="checkbox"/> <input type="checkbox"/> | | | <u>Weight Record</u> | |
|---------------------|--|----------------|------------------|----------------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|--------------------|-------------|--------------------------|---------------------|-------------|--------------------------|---------------------------|-------------|--------------------------|
| Paramyxovirus | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| Salmonella culture | Y/N | <input type="checkbox"/> | | | | CBC | Y/N | <input type="checkbox"/> |
| Crypto. Serology | Y/N | <input type="checkbox"/> | | | | Chems | Y/N | <input type="checkbox"/> |
| _____ | Y/N | <input type="checkbox"/> | | | | Fecal culture | Y/N | <input type="checkbox"/> |
| | | | | | | Rads | Y/N | <input type="checkbox"/> |
| | | | | | | _____ | Y/N | <input type="checkbox"/> |

Treatments

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y/N | _____ / _____ / _____ |
| Tattoo | Y/N | _____ / _____ / _____ |
| Ear tag | Y/N | _____ / _____ / _____ |
| Other | Y/N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD - BIRDS, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: Psittacines - 90 days Arrival Date: _____ Entry Exam Date: _____
Others - 30 days

Comments: _____

| <u>Fecal Record</u> | <u>Crypto</u> <input type="checkbox"/> <input type="checkbox"/> | | | <u>Weight Record</u> | |
|---------------------|---|----------------|------------------|----------------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|-----------------|-------------|--------------------------|---------------------|-------------|--------------------------|---------------------------|-------------|--------------------------|
| | Y / N | <input type="checkbox"/> | _____ | Y / N | <input type="checkbox"/> | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| Chlamydia | Y / N | <input type="checkbox"/> | | | | CBC | Y / N | <input type="checkbox"/> |
| PBFD | Y / N | <input type="checkbox"/> | | | | Chems | Y / N | <input type="checkbox"/> |
| Polyoma | Y / N | <input type="checkbox"/> | | | | Choanal culture | Y / N | <input type="checkbox"/> |
| Salmonella ser. | Y / N | <input type="checkbox"/> | | | | Fecal culture | Y / N | <input type="checkbox"/> |
| Mycoplasma ser. | Y / N | <input type="checkbox"/> | | | | Rads | Y / N | <input type="checkbox"/> |
| | | | | | | Salmonella culture | Y / N | <input type="checkbox"/> |

Treatments
 Vitamins
 Beak/ nail trim

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y / N | _____ / _____ / _____ |
| Band | Y / N | _____ / _____ / _____ |
| Other | Y / N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD - ARTIODACTYLA, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: 30 days Arrival Date: _____ Entry Exam Date: _____

Comments: _____

| | | | | | |
|---------------------|--|---|------------------|----------------------|---------------|
| <u>Fecal Record</u> | Crypto <input type="checkbox"/> <input type="checkbox"/> | Baermann <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | <u>Weight Record</u> | |
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |
| _____ | F / D / S | _____ | _____ | _____ | _____ |

| | | | | | | | | |
|--------------|-------------|--------------------------|---------------------|--------------------------|--------------------------|---------------------------|-------------|--------------------------|
| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
| TB | Y / N | <input type="checkbox"/> | Clos C & D | Y / N | <input type="checkbox"/> | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| Brucellosis | Y / N | <input type="checkbox"/> | Clos 7 way | Y / N | <input type="checkbox"/> | CBC | Y / N | <input type="checkbox"/> |
| Anaplasmosis | Y / N | <input type="checkbox"/> | Tet | Y / N | <input type="checkbox"/> | Chems | Y / N | <input type="checkbox"/> |
| MCF | Y / N | <input type="checkbox"/> | Lepto | Y / N | <input type="checkbox"/> | SDH | Y / N | <input type="checkbox"/> |
| Lepto | Y / N | <input type="checkbox"/> | RB | Y / N | <input type="checkbox"/> | U/A | Y / N | <input type="checkbox"/> |
| BVD | Y / N | <input type="checkbox"/> | _____ | Y / N | <input type="checkbox"/> | Rads | Y / N | <input type="checkbox"/> |
| IBR | Y / N | <input type="checkbox"/> | | | | Fecal culture | Y / N | <input type="checkbox"/> |
| BT | Y / N | <input type="checkbox"/> | <u>Treatments</u> | | | Johnes culture | Y / N | <input type="checkbox"/> |
| Johnes ser. | Y / N | <input type="checkbox"/> | Vitamin E | <input type="checkbox"/> | | _____ | Y / N | <input type="checkbox"/> |
| CAE | Y / N | <input type="checkbox"/> | Hoof trim | <input type="checkbox"/> | | | | |
| OPPV | Y / N | <input type="checkbox"/> | Carbaryl dust | <input type="checkbox"/> | | | | |
| _____ | Y / N | <input type="checkbox"/> | | | | | | |

| | | |
|-----------------------|-----------------|---------------------------------|
| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
| Transponder | Y / N | _____ / _____ / _____ |
| Tattoo | Y / N | _____ / _____ / _____ |
| Ear tag | Y / N | _____ / _____ / _____ |
| Other | Y / N | _____ / _____ / _____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE RECORD - BIRDS, MINNESOTA ZOOLOGICAL GARDEN

(Please record all dates DD/MM/YY.)

Species: _____ MZG ID# _____ Sex: M F Age: _____

Quarantine Length: Psittacines - 90 days Arrival Date: _____ Entry Exam Date: _____
Others - 30 days

Comments: _____

| <u>Fecal Record</u> | Crypto <input type="checkbox"/> <input type="checkbox"/> | | | <u>Weight Record</u> | |
|---------------------|--|----------------|------------------|----------------------|---------------|
| <u>Date</u> | <u>Type</u> | <u>Results</u> | <u>Treatment</u> | <u>Date</u> | <u>Weight</u> |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |
| _____ | F/D/S | _____ | _____ | _____ | _____ |

| <u>Test</u> | <u>Req.</u> | <u>Test Done</u> | <u>Vaccinations</u> | <u>Req.</u> | <u>Done</u> | <u>Clinical Pathology</u> | | |
|-----------------|-------------|--------------------------|---------------------|-------------|--------------------------|---------------------------|-------------|--------------------------|
| | | | | | | <u>Test</u> | <u>Req.</u> | <u>Done</u> |
| Chlamydia | Y/N | <input type="checkbox"/> | _____ | Y/N | <input type="checkbox"/> | CBC | Y/N | <input type="checkbox"/> |
| PBFD | Y/N | <input type="checkbox"/> | | | | Chems | Y/N | <input type="checkbox"/> |
| Polyoma | Y/N | <input type="checkbox"/> | | | | Choanal culture | Y/N | <input type="checkbox"/> |
| Salmonella ser. | Y/N | <input type="checkbox"/> | | | | Fecal culture | Y/N | <input type="checkbox"/> |
| Mycoplasma ser. | Y/N | <input type="checkbox"/> | | | | Rads | Y/N | <input type="checkbox"/> |
| Blood lead | Y/N | <input type="checkbox"/> | | | | Salmonella culture | Y/N | <input type="checkbox"/> |
| Asper. Titer | Y/N | <input type="checkbox"/> | | | | | | |
| Pullorum test | Y/N | <input type="checkbox"/> | | | | | | |

Treatments
 Vitamins
 Beak/ nail trim

| <u>Identification</u> | <u>Required</u> | <u>Date / Number / Location</u> |
|-----------------------|-----------------|---------------------------------|
| Transponder | Y/N | _____/_____/_____ |
| Band | Y/N | _____/_____/_____ |
| Other | Y/N | _____/_____/_____ |

Exit Exam Date: _____ Comments: _____

OK for Release: Date _____ Veterinarian's Initials: _____

QUARANTINE PARASITE PROTOCOL

| SPECIES | TEST |
|---|--|
| ALL | Three negative- fecal float, direct, sedimentation. Look for hemoparasites during CBC. Observe for external parasites. |
| HOOFSTOCK | + Two negative cryptosporidium. |
| REPTILES | + Two negative cryptosporidium. |
| PRIMATES | + Two negative cryptosporidium. |
| PIGS | + Treat 2X at 2 week interval with ivermectin. |
| CANIDS, MUSTELIDS, PROCYONIDS, VIVERRIDS | + Heartworm ELISA. |
| HEDGEHOGS | + Skin scraping to look for mites. |
| GOATS | +Treat 3X at weekly intervals with Carbaryl. |

kris c:\my documents\protocols\quarantine parasite table.doc

Fish Quarantine

Minnesota Zoological Gardens, Feb 2001

The following quarantine recommendations are based on information from several other institutions including SeaWorld, Texas Aquarium, Shedd Aquarium, etc.

Osteichthyes

Ideal scenario:

All fish are quarantined for 6 wk before entering the exhibit tank. During quarantine the following treatments should be administered.

Begin Copper bath after newly quarantined animals are acclimated and eating, about 1 wk. CuSo₄ bath at 0.15 ppm for 3 wk. (Levels raised gradually over 3 days, maintained at 0.15 ppm for 3 wk, then removed over 3 days). Since this treatment is immunosuppressive, fish should be held in quarantine at least 1 wk. **after** all copper is removed from system before moved to new environment.

Fish should receive a fresh water dip for approximately 5 min (time will vary depending on species) before being placed in exhibit.

2% of fish should be examined (including gill and fin biopsies and fecal checks) while in quarantine and additional treatments given if necessary.

If nematodes are a problem, fish can be treated with fenbendazole in food for 3 days at 200mg/100g of food. (Some sources recommend 1000 mg/100g of food.)

Less than ideal

I have been told that we do not have adequate space to quarantine some of the larger species of fish.

Minimally all fish should receive a formalin dip (approx. 200 ppm for 1 hr) before being placed in exhibit tank. An alternative to this for fish that stress easily, such as Tarpon, would be a 5 min fresh water dip. This may remove some of the ectoparasites, but will not kill internal parasites or parasites that may be encysted. One particular concern is Cryptokaryon. This organism has been responsible for some major die-offs at other aquaria and cannot be adequately treated once the exhibit tank is infested. Perhaps we should continue to try to identify space for quarantine for all fish to avoid this problem.

Chondrichthyes

Ideal scenario:

All sharks and rays should be quarantined for 30 days before entering the exhibit.

All sharks and rays should receive oral praziquantel (25-50 mg/kg) po twice at 2 wk intervals while in quarantine. (It is acceptable to use the injectable product orally for this purpose.) They should also receive fenbendazole (Panacur susp) (50-100 mg/kg) po twice at 2 wk intervals. Sharks and rays should also be given a praziquantel bath while in quarantine. A dose of 1-2 ppm for 24 hr is probably the most effective. Larger sharks should be weighed upon entry and when leaving quarantine, and also identified with a transponder.

See attached handout on shark quarantine for more details, and other scenarios.

kris c:\my documents\fish quar

PROTOCOL FOR SHARK MOVE

Minnesota Zoological Gardens

- Match pH, salinity, and temperature in holding and main pool before transport. pH is the most critical.
- Obtain weight
- Transport to new facility
- Remove all visible copepods manually. Nose and leading edge of pectorals seem to be the favorite spots.
- Record any unusual findings and any identifying marks on medical sheet.
- Place transponder along side of dorsal fin. Read transponder and record number on sheet.
- Perform 5-7 minute fresh water dip (or until animal is stressed) poolside at MEC-10 before being placed in new tank.
- Place in new tank!

kris c:\my documents\protocol\shark move

SHARK QUARANTINE PROTOCOL

(1 April 1997)

In order to be able to observe animals for disease conditions or medical problem as well as to help prevent introduction of disease organisms into our stable aquarium population, all fish coming into the zoo will be isolated for a minimum 30-day quarantine period. During this period the animals will be routinely observed by aquariums and veterinary staff and treated accordingly should signs of disease arise. Additionally, certain diagnostic tests and routine treatments will be carried out while the animals are in quarantine.

There will be some variation in our ability to treat sharks based on size as there are certain logistical problems involved in dealing with large individuals as well as trying to medicate the volume of water present in our large holding pool. Below is outlined the optimal treatment regimen with notation of some compromises which may be necessary in dealing with large individuals due to tank limitations.

1. Veterinary staff will be informed at least 24 hours prior to arrival of all shipments.
2. Upon arrival all animals will be visually inspected by aquariums personnel and if possible veterinary staff and any gross abnormalities or potential disease problems noted. If copopods or trematodes are noted at this time they should be manually removed. If animals are going to be placed into "small" (<1000 gallon) holding tanks, they will be placed into these tanks at this point and allowed to acclimate. Medical problems will be dealt with on an as needed basis. Large sharks will be implanted with transponders at the left base of their dorsal fins and given individual accession numbers prior to being placed into the holding pool. Weights and lengths should also be obtained at this time.
3. After the animals seem stable, a representative number will be anesthetized and examined and samples such as gill biopsies, blood, skin scrapings obtained if deemed necessary.
4. Because of the likelihood, particularly with stingrays, of digenetic trematode infestations all animals will undergo a 24-48 hour, 2ppm praziquantel treatment in their holding tank water. Following the treatment, after the animals again appear stable, representatives will be placed in a fresh water bath for several minutes and the sediment examined for evidence of trematodes. Because of the impracticality of treating the large volumes of water in the large holding pools for larger sharks and rays a different approach is necessitated. All stingrays will be treated with praziquantel at 10 ppm in their shipping crates for 2 hours prior to being placed into the holding tank. It is advisable sharks receive similar treatment if they appear stable at the time of arrival; otherwise, sharks will be placed directly into the holding pool.
5. Large sharks will again be examined by veterinary personnel at the end of quarantine and at this time the animals will undergo a 2 hour treatment of praziquantel at 10 ppm in their transport crates. The animals should also be reweighed and measured at this point, transponders should be checked and blood or other samples may be obtained.

Addendum: Certain species of sharks (lemons, black-tipped and sawfish) very typically have infestations of monogenetic trematodes and require 2-3 month treatments with 0.25 ppm copper sulfate.

Frog Protocol, Quarantine and Postmortem submission
Minnesota Zoological Gardens

1. All new quarantine frogs will be treated with 100 mg/kg of fenbendazole orally twice at 10 day intervals. Please submit weights on all new frogs upon entry so we can get meds. set up for you. One fecal from each frog enclosure will be checked on the Friday following the second treatment.
2. Any frog with prolapsed rectum should be treated with 100 mg/kg metronidazole orally twice at 14 day intervals. Please submit weight ASAP and replace prolapse.
3. Return all treatment sheets to the lab promptly after the treatment is completed and notify vet if there is any adverse reactions the the meds. When treating a new group of frogs, it is always wise to treat one first, then observe for several days for any adverse effects before administering the treatment to the remainder of the group.
4. Please continue to submit your weekly animal health meeting report and attend the meeting, even if only for a short time.
5. When filling out postmortem history sheets, please include the following:
 - Dates should be entered in the following format: 30 May 98 (i.e. day first, month abbreviated next).
 - Necropsy number needs to be written on post mortem history form (even if carcass is not submitted)
 - Record whether animal is preserved in formalyn.
 - Record where animal has been housed.
 - Any other pertinent history.
 - Make sure necropsy # is clearly and legibly written on formalyn jar with a permanent marker.
 - Leave all frogs specimens that have been placed in formalyn jars on the small refrigerator in the lab. We will move them to the necropsy room once we reviewed the post mortem history sheet.

kris c:\my documents\protocol\frogs

STRATEGIC PARASITE CONTROL PROGRAM

Minnesota Zoological Gardens, Feb 2001

Background/Significance:

Parasites can pose a significant disease problem to captive animal populations. Some species may be at higher risk to developing clinical disease than others. Additionally, captive animals generally have smaller living spaces in comparison to free ranging animals, which can result in higher parasite concentrations in the animals' living environment. In turn, this can lead to higher parasite burdens in individual animals and thus a greater chance of clinical disease.

Factors that may play a role in the establishment of parasites in the collection include:

- Introductions of new animals harboring parasites,
- "Wild" free roaming animals or their feces entering into outdoor and occasionally indoor animal holding areas and/or feed rooms,
- Certain insects or arthropods serving as vectors or intermediate hosts.

As a result, parasite control measures are used at the Minnesota Zoo to limit/eliminate parasitic disease within the collection.

Quarantine Procedures:

The quarantine period is used as the first line of defense against introductions of new diseases into the collection as well as a time to assess the overall health of new animals. Differences exist in the quarantine requirements for different species (see quarantine protocols); however, parasitological evaluation remains relatively constant between species.

Intestinal parasites

All quarantine animals shall have three fecal samples tested for parasites, preferably a week apart, prior to leaving quarantine. Three consecutive samples must be negative for parasites before an animal is allowed to leave quarantine. Some exceptions may be made for certain organisms such as coccidia. Samples collected from each individual animal are preferred, but in the case of group-housed animals a composite sample will suffice.

- All fecal samples will be examined using the following techniques:
 - flotation using zinc sulfate (identifies most parasites, lungworms, and about 1/2 of the trematodes)
 - direct smear (identifies protozoan parasites)
 - sedimentation using gravity technique in water (identifies many trematodes, spirurids, Capillaria and Balantidium)
- Additionally, all reptiles, hoofstock, and primates will have feces examined twice for *Cryptosporidium* sp.

Blood parasites

- Quarantined animals having blood collected for complete blood counts (CBC) will be screened for hemoparasites.
- Species susceptible to heartworm infections (canids, mustelids, procyonids, and viverrids) will also have serum submitted for heartworm ELISA testing.
- Animals younger than six months born to a dam not on heartworm prevention will have a Knotts test performed. In this case the animal could be microfilaremic without harboring adult worms.

External parasites

- Animals will be observed for external parasites during quarantine examinations and appropriate testing and treatments instituted when needed. Ears will be examined for parasites.
- All goats will be dusted with 5% carbaryl three times at weekly intervals while in quarantine due to the high incidence of ectoparasitism in this species.
- All hedgehogs should be skin scraped for mites and treated with 5% carbaryl or ivermectin if infected.
- All pigs will be treated with ivermectin.

Husbandry and environmental control of parasites in the general collection:

- Animal wastes are cleaned from animal holding areas and most exhibit areas on a daily basis.
- Vermin control programs exist for individual areas of the zoo.
- Cold weather conditions make control of certain parasites more attainable by killing many parasite forms shed into the environment.
- Any animal showing clinical evidence of parasitism (i.e. weight loss, diarrhea, pruritis, poor hair coat) is brought to the attention of veterinary care staff to provide recommendations for diagnosis and/or treatment.

Specific control programs for specific animal groups

Mammalian carnivores

- 1) These species shall have feces examined biannually for evidence of parasites. Examination shall consist of fecal flotation unless otherwise indicated. Roundworm species may become dormant and not produce ova in adult hosts. However, offspring may be infected in utero or through milk, thus both dam and offspring should be checked six to eight weeks after parturition. Nonpregnant animals should have samples submitted to the lab according to the attached schedule.
- 2) If parasites are detected appropriate therapy will be instituted and feces reexamined 1 and 2 weeks post treatment.

3) Canid, procyonid, viverrid, and mustelid species exposed to outdoor environments shall have a serum heartworm test during routine annual exams. Wolves and wolverines shall be maintained on a monthly prophylactic program utilizing ivermectin (Heartguard) throughout the year.

4) Wolves will have PRO-TIC-ALL insecticide applied topically by northern trail personnel regularly (approximately once a month) during the fly season to control fly bites on ears. DO NOT APPLY MORE FREQUENTLY THAN ONCE A WEEK AND FOLLOW PACKAGE RECOMMENDATIONS FOR METHOD OF APPLICATION AND DOSAGE.

Ungulates

Background:

Ungulate species are generally the most difficult to establish effective endoparasite control programs for in zoos or pasture environments. Reasons for this include:

- Pasture contamination and continual reingestion/reexposure to parasitic organisms.
- Difficulty in assessing parasite burden/unthriftiness.
- Difficulty in administering antiparasitics to individual animals.
- Parasite resistance to certain drugs has become a problem at some institutions.

Although hemoparasites can be significant pathogens in ungulates, they are uncommon at this institution and will be screened for during routine CBC's or if clinical symptoms warrant specific testing.

One goal of a strategic control program is to treat animals at critical times. Carefully timed parasite treatment will be far more effective at reducing parasite burdens and environmental contamination than random treatments. Times to consider treatments include periods of stress to the animals, which may include physical (e.g. pregnancy, injury), social (e.g. movement between herds) or environmental (e.g. heat or cold) stresses. Both cold and hot weather conditions may increase efficacy of treatment by reducing the viability of organisms shed into the environment thus reducing pasture contamination.

A second goal of a strategic program is to identify and treat only those animals infected, or an entire group if the animal is group-housed and there is a possibility of transmission to other group members. Limiting treatment in this way reduces cost, the amount of labor involved, as well as the likelihood of parasites becoming resistant as a result of empirical use of antiparasitics.

Finally, it is important to be able assess the efficacy of the control program. This may be accomplished by quantifying egg counts prior to and following antiparasite treatments.

Specific Recommendations for Northern Trail/Farm animals with access to outdoor pastures/pens:

Warm weather is the most important time for parasite transmission on pasture. It is therefore important to limit the number of parasites being shed during this period. Also, certain nematode parasites undergo hypobiosis during winter (encysting in the animal until warmer weather, when they complete their life cycle) causing a "spring rise" in parasite shedding. Therefore, fecal samples should be assessed for parasites via floatation during April-May using the "Eggs Plus" technique. If parasites are identified, anthelmintic therapy should then be instituted and the same diagnostic procedure repeated 2 and 5 weeks post treatment.

Fecal samples should be submitted twice yearly according to the attached schedule.

To reduce the chance of parasite anthelmintic resistance, routine wormers should be rotated on a seasonal basis. Benzimidazole (i.e. fenbendazole, thiabendazole, oxfendazole) or pyrimidine (i.e. pyrantel pamoate, morantel tartrate) anthelmintics should be used in the Spring. Ivermectin treatments should be scheduled during the fall, about a month after the first frost.

Historically protozoal endoparasites have not been a significant problem at MZG, other than coccidiosis in young animals. Coccidiosis generally does not produce clinical disease in adult animals and therefore treatment is usually not warranted. If however, coccidiosis is suspected of causing clinical disease, especially in young animals, treatment is indicated. Due to our past experience with coccidiosis at MZG, routine coccidiostat treatment should be administered to musk ox calves in fall/winter after it freezes, and also to the goat herd in May (using Albon) and October (using Corid).

Llamas should be treated with monthly ivermectin during the spring and summer to control *P. tenuis* (brain worm).

Caribou should be treated with Ivermectin in November to control nasal bots.

Indoor Ungulates:

Ungulate species housed exclusively indoors are at a much lower risk of acquiring parasitic infections and therefore do not require being placed on a routine deworming program. They should however have fecal examinations once a year as outlined on the attached schedule.

Avian species

Because of the nature of most avian species and because many of our birds are housed in large flight exhibits, obtaining individual fecal samples is unrealistic. However, group samples, and where possible individual samples, should be submitted on an annual basis according to the attached schedule to help monitor parasite burden in the bird collection. Treatments will be

instituted based upon type of parasite and most feasible method of treatment. Hemoparasites are screened for during routine or diagnostic CBC's.

Reptilian species

Wild and captive reptiles are hosts to a wide variety of protozoal and metazoan organisms. While some of these organisms are clearly pathogenic to their reptilian hosts, many seem to be of little consequence to the health of the animal unless it is debilitated for other reasons. However, some organisms may pose serious health risks to their handlers. As with the other species in the collection we attempt to diagnose and clear any of these potential pathogens or zoonotic agents prior to the animals leaving quarantine. As part of an ongoing effort to keep the collection free of these pathogens, fecal samples shall be submitted on an annual basis according to the attached schedule for parasite testing. Animals with parasites will be treated as needed.

Primates

Because of the zoonotic potential of primate diseases our collection will be tested for fecal parasites on an annual basis. Fecal samples should be submitted according to the attached schedule.

Rodentia/lagomorpha/marsupialia/insectivora/chiroptera/edentata

Although these species do not generally have a great parasite problem, they should be checked for endoparasites on an annual basis. See the attached schedule for timing these fecal submissions.

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EGGS PLUS

(A "Quick and Dirty" Semi-Quantitative
Fecal Egg Count Method)

Here is an easy procedure for estimating fecal egg concentrations and for generalizing animal worm burdens from the results.

The advantage of incorporating a ^{quantitative} qualitative element into routine clinical practice is that changes in worm burdens due to treatment and prevention protocols can be measured and monitored. Progress made in the therapeutic decrease of worm burdens is often overlooked if results are limited to "infected" vs. "not infected". This leaves both client and practitioner frustrated. However, if egg counts appear to vary among different therapies the clinician is given another clue for attacking the problem.

The disadvantages of this approach are:

1. Lab procedures must be followed consistently;
2. Results are not comparable among veterinary clinics; and
3. Assumptions that fecal concentrations reflect true worm burdens may not be accurate.

Procedures:

1. Use a consistent amount of fecal matter (i.e., an amount equivalent to the size of one's thumb from the last joint).
2. Follow routine floatation or sedimentation method of choice (described elsewhere in this packet).
3. Examine entire area under cover slip and count eggs as follows:

| EGGS | CONCENTRATION |
|---------------------|---------------|
| 1 - 10 / cover slip | + |
| 1 - 10 / field | ++ |
| 11 - 100 / field | +++ |
| > 100 / field | ++++ |

4. Record +'s along with identifications for future reference.

QUARANTINE PARASITE PROTOCOL

| SPECIES | TEST |
|---|--|
| ALL | Three negative- fecal float, direct, sedimentation. Look for hemoparasites during CBC. Observe for external parasites. |
| HOOFSOCK | + Two negative cryptosporidium. |
| REPTILES | + Two negative cryptosporidium. |
| PRIMATES | + Two negative cryptosporidium. |
| PIGS | + Treat 2X at 2 week interval with ivermectin. |
| CANIDS, MUSTELIDS, PROCYONIDS, VIVERRIDS | + Heartworm ELISA. |
| HEDGEHOGS | + Skin scraping to look for mites. |
| GOATS | +Treat 3X at weekly intervals with Carbaryl. |

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ROUTINE PARASITOLOGY PROTOCOL

Feb 2001

- Bring samples to lab before noon Tuesday through Thursday (except reptiles which will be accepted as samples become available).
- Limit to 5 routine samples per day.
- Animals testing positive for parasites should be treated and then rechecked 2 and 5 wks post treatment.
- All fecal samples should be checked by direct smear examination and fecal floatation in zinc sulfite using "Eggs Plus" technique (see attached protocol), if sample size is large enough.
- Dam and offspring should have fecals done at 2, 4, and 8 wks postpartum
- Cryptosporidia tests are done on all neonatal farm hoofstock at 2, 4, and 8 wk postpartum

| Month | Trail/Species/Procedure |
|--------------|---|
| January | Tropics fecals Farm horse fecals and deworm with fenbendazole |
| February | Tropics Birds fecals Goats dusted with carbaryl and treated with ivermectin |
| March | Zoolab fecals |
| April | Pigeon roundup/ Ivomec and Albon Farm fecals Llamas begin monthly ivomec Farm horse fecals and deworm with fenbendazole |
| May | Northern Trail Hoofstock fecals Northern Trail herd fenbendazole wormings as indicated Goats treated with Albon Dolphin fecals |
| June | Northern Trail Carnivore/Misc.species fecals Begin wolf fly control measures Farm pig fecals |
| July | Minnesota Trail Fecals Farm horse fecals and deworm with ivermectin |

September

Northern Trail Hoofstock fecal rechecks
Bird Show Corid treatment

October

Goats treated with Corid
Goat fecal rechecks
Musk ox calves coccidiostat
Northern Trail Hoofstock ivermectin wormings as needed
Farm horse fecals and deworm with ivermectin

November

Caribou ivermectin

December

Bird show fecals

kris c:\my documents\protocols\parasite control schedule

Guideline for Scheduling Fecal Exams for Carnivores

- Fecal exams should be performed on fresh feces whenever possible.
- Fecal exams should be performed on the parents whenever possible, in order to reduce the risk of parasitic infection of the neonate.
- Routine deworming at 2, 4, and 8 weeks of age should be done in addition to regularly scheduled fecal exams for canines.

1st exam: 2 weeks old

Canine parasites which could be present at 2 weeks:

Helminth parasites

Toxocara canis (canine roundworm)

Ancylostoma caninum (canine hookworm)

Strongyloides stercoralis (intestinal threadworm)

Protozoal parasites

Giardia spp.

Isospora canis

Feline parasites which could be present at 2 weeks:

Helminth parasites

Strongyloides stercoralis (intestinal threadworm)

Ancylostoma tubaeforme (feline hookworm)

Protozoal parasites

Isospora felis

Toxoplasma gondii

2nd exam: 4 weeks old

Canine parasites which could be present at 4 weeks:

Helminth parasites

Toxocara canis (canine roundworm)

Toxascaris leonina (roundworm of canids and felids)

Ancylostoma caninum (canine hookworm)

Strongyloides stercoralis (intestinal threadworm)

Capillaria aerophila (the fox lungworm)

Protozoal parasites

Giardia spp.

Isospora canis

Feline parasites which could be present at 4 weeks:

Helminth parasites

Strongyloides stercoralis (intestinal threadworm)

Ancylostoma tubaeforme (feline hookworm)

Capillaria aerophila (the fox lungworm)

Toxocara cati (feline roundworm)

Toxascaris leonina (roundworm of canids and felids)

Protozoal parasites

Isospora felis

Toxoplasma gondii

3rd exam: 8 weeks old

Canine parasites which could be present at 8 weeks:

Helminth parasites

Toxocara canis (canine roundworm)

Toxascaris leonina (roundworm of canids and felids)

Ancylostoma caninum (canine hookworm)

Strongyloides stercoralis (intestinal threadworm)

Capillaria aerophila (the fox lungworm)

Trichuris vulpis (canine whipworm)

Protozoal parasites

Giardia spp.

Isospora canis

Feline parasites which could be present at 8 weeks:

Helminth parasites

Strongyloides stercoralis (intestinal threadworm)

Ancylostoma tubaeforme (feline hookworm)

Capillaria aerophila (the fox lungworm)

Toxocara cati (feline roundworm)

Toxascaris leonina (roundworm of canids and felids)

Protozoal parasites

Isospora felis

Toxoplasma gondii

Guideline for Scheduling Fecal Exams for Equines

- Fecal exams should be performed on fresh feces whenever possible.
- Fecal exams should be performed on the parents whenever possible, in order to reduce the risk of parasitic infection of the neonate.
- Clinical note: The large strongyles of horses (*S. Vulgaris*, *S. Edentatus*, *S. Equinus*) can cause serious health problems in the neonate before eggs are seen in feces (**6 months old**). As a result, foals should be routinely dewormed at 6-8 week intervals.

1st exam: 2 weeks old

Equine parasites which could be present at 2 weeks:

Helminth parasites

Strongyloides westeri (intestinal threadworm)

Protozoal parasites

Eimeria leuckarti

Cryptosporidium parvum

2nd exam: 4 weeks old

Equine parasites which could be present at 4 weeks:

Helminth parasites

Strongyloides westeri (intestinal threadworm)

Dictyocaulus arnfieldi (horse lungworm)

Trichostrongylus axei

Small *Strongyle* spp.

Protozoal parasites

Eimeria leuckarti

Cryptosporidium parvum

Cestodes

Anoplocephala magna

Anoplocephala perfoliata

Paranoplocephala mamillana

3rd exam: 8 weeks old

Equine parasites which could be present at 8 weeks:

Helminth parasites

Strongyloides westeri (intestinal threadworm)

Dictyocaulus arnfieldi (horse lungworm)

Trichostrongylus axei

Small *Strongyle* spp.

Habronema muscae (stomach worm)

Habronema majus (stomach worm)

Drachia megastomata (stomach worm)

Parascaris equorum (roundworm of horses)

Protozoal parasites

Eimeria leuckarti

Cryptosporidium parvum

Cestodes

Anoplocephala magna

Anoplocephala perfoliata

Paranoplocephala mamillana

Guideline for Scheduling Fecal Exams for Ruminants and Cervids

- Fecal exams should be performed on fresh feces whenever possible.
- Fecal exams should be performed on the parents whenever possible, in order to reduce the risk of parasitic infection of the neonate.

1st exam: 2 weeks old

Ruminant parasites which could be present at 2 weeks:

Helminth parasites

Haemonchus contortus (barber pole worm)

Nematodirus spp. (thread necked strongyles)

Strongyloides papillosus (intestinal threadworms)

Protozoal parasites

Cryptosporidium parvum

2nd exam: 4 weeks old

Ruminant parasites which could be present at 4 weeks:

Helminth parasites

Haemonchus contortus (barber pole worm)

Nematodirus spp. (thread necked strongyles)

Strongyloides papillosus (intestinal threadworms)

Dictyocaulus spp. (cattle and sheep lungworms)

Ostertagia spp. (brown stomach worm)

Trichostrongylus axei (stomach hairworm)

Cooperia spp. (intestinal trichostrongyles)

Trichostrongylus spp. (black scours or bankrupt worm)

Toxocara vitulorum (large roundworm of cattle)

Bunostomum spp. (hookworm of ruminants)

Protozoal parasites

Cryptosporidium parvum

Eimeria spp. (bovine and ovine coccidia)

3rd exam: 8 weeks old

Ruminant parasites which could be present at 8 weeks:

Helminth parasites

Haemonchus contortus (barber pole worm)

Nematodirus spp. (thread necked strongyles)

Strongyloides papillosus (intestinal threadworms)

Dictyocaulus spp. (cattle and sheep lungworms)

Ostertagia spp. (brown stomach worm)

Trichostrongylus axei (stomach hairworm)

Cooperia spp. (intestinal trichostrongyles)

Trichostrongylus spp. (black scours or bankrupt worm)

Toxocara vitulorum (large roundworm of cattle)

Bunostomum spp. (hookworm of ruminants)

***Protostrongylus rufesens* (red lungworm)**

***Oesophagostomum* spp. (nodular worms of ruminants)**

***Trichuris* spp. (whipworms of ruminants)**

***Capillaria* spp.** *non-pathogenic. Eggs often mistaken for
Trichuris spp.

Protozoal parasites

Cryptosporidium parvum

Eimeria spp. (bovine and ovine coccidia)

Cestodes

***Monezia* spp. (tapeworms of ruminants)**

NEONATAL PROTOCOL--Minnesota Zoological Garden--June 1996 (neonat2.int)

An important aspect of preventative health care for any zoological collection is a comprehensive neonatal protocol. Proper care and attention to animals shortly after birth can prevent disease and reduce overall costs for veterinary care.

Three separate protocols are in place for the MZG neonates most commonly encountered. These are:

1. Ungulates (except sheep and goats)
2. Sheep and goats
3. Carnivores
4. Equids

Neonatal care for other species are instituted at, or preferably, **prior to**, the time of birth through discussions among the curator, zoologists, keepers, and veterinary staff.

NEONATAL PROTOCOL FOR UNGULATES (EXCEPT GOATS AND SHEEP)

June 1996 (neonung.prt)

Approximately 24 hrs. postpartum each animal should be examined and treated as follows:

1. Physical examination. Check carefully for cardiac abnormalities, congenital defects (including cleft palate), suckling reflex, umbilical stalk, joint swelling, external genitalia, ocular problems, etc. Observe locomotion and coordination.
2. Collect 12 ml (chevrotain 1 ml) blood. Using a 19 or 21 ga. butterfly catheter may facilitate collection in struggling animals. 0.5 ml of blood should be placed in a micro-EDTA tube and the remainder placed in a red-topped tube. A CBC, lufkin chemistry profile (or in house Neonatal Profile, if short sample), and ZTT will be performed. Remaining serum should be banked.
3. Weight and sex will be determined.
4. The animal will be injected with: Vit E 500: 50 IU/kg (0.1 ml/kg) SC
5. The umbilicus will be dipped in tincture of iodine. The administrator should wear latex gloves and care should be taken to avoid getting iodine on animal's skin.
6. An identifying mark should be placed in each animal, e.g. ear tag, transponder, etc.
7. A neonatal care sheet should be started on each animal. This sheet will be kept with the animal until it is completed, then returned to the veterinarian and will become part of the permanent medical record. Keepers are responsible for submitting fecal samples and for scheduling vaccinations with the veterinary staff. The vaccination schedule will be determined by the veterinarian at the time of the neonatal exam based on its immune status. (Guidelines are attached.) Vaccinations should be scheduled at the animal health meeting whenever possible.
8. The health status of the animal should be assessed once the results of the examination and lab tests are available. Animals whose birth weights are below normal (see attached), or that have ZTT results below normal (also attached), that are not nursing well, or have other physical problems are considered high risk. A determination should be made at this time as to how much extra time and resources will be given to the neonate. This decision is jointly made with curator, zoologists, keepers, and veterinary staff. The value of the individual, the effect on the herd (both short and long term), the availability of resources, the prognosis for survival, and the well being of the individual must all be taken into consideration.
9. Animals being hand-raised should follow the bottle feeding protocol for that species which has been previously agreed to and recorded.
10. All animals being bottle raised must be manually stimulated to urinate and defecate after each feeding. Keepers must observe that all meconium is passed within 21-24 hrs. Constipation, diarrhea, or anorexia should be brought to the attention of the veterinary staff immediately.

Note: Because of past problems, we will not perform neonatal exams on musk ox and caribou..

NEONATAL EQUID PROTOCOL

1. The umbilicus will usually break spontaneously about 2 inches (5 cm) from the body wall. If it does not break, put one hand on the body wall around the umbilicus and use the other hand 2 inches down the cord to break it with a sharp, swift motion. Dip the navel in 0.5% chlorhexidine (best) or tincture of iodine. Umbilical infection is usually seen in the first 2 weeks of life.
2. The foal should nurse effectively (drink adequate colostrum) by 2-3 hours of age. If the foal has not adequately nursed by 3-4 hours, 20ml/kg of good quality colostrum should be administered by bottle or gavage. The foal should receive colostrum by 6 hours of age. Some guidelines for colostrum quality: (a) it is usually thick and sticky, (b) specific gravity >1.080 is the best. Colostrum substitutes: (a) if the foal is <12 hours old, freeze dried or fresh plasma, (b) bovine colostrum- has a shorter half life, may occasionally cause hemolysis, doesn't provide antibodies against equine-specific pathogens. Adequacy of colostrum intake can be measured by serum IgG levels. Serum IgG measurement is most important in sick foals. IgG>800mg/dl is ideal. 400-800mg/dl is okay in a healthy unstressed foal. <400mg/dl is risky unless the foal is carefully managed.
3. The foal should pass its first feces, the meconium, within 48 hours. It is dark brown to black in a pelleted or paste form. If the foal fails to pass it he/she will need to be treated (fluids, enema). The most common cause of colic in an otherwise healthy neonate is meconium impaction. The foal should urinate within 6-9 hours after birth.
4. A physical exam should be performed within 24-48 hours (try not to interfere with maternal bonding). Determine weight and sex. It is important to look for congenital defects (cleft palate, jaw malalignment, heart murmurs, hernias, etc.). It is normal to hear a left sided murmur since the ductus arteriosus is still patent. It usually closes by 48-96 hours of life but can remain patent for up to 3 months. Listen to the heart again at 5-7 days of age. The foal's behavior should be watched and any abnormalities noted (depression, etc.).

| | |
|------------------|--|
| temperature | 99-102 F |
| heart rate | 1-5min. post foaling = >60 beats/min., then 80-130 beats/min. |
| respiratory rate | up to 30min. post delivery = 60-80 breaths/min., then 30-40 breaths/min. |
5. Inject 500 IU Vitamin E subcutaneously. This can be done during the physical exam.
6. Restraint of the foal: (a) The foal can be held by the base of the ears. This is useful for jugular venipuncture. (b) The foal can be restrained while standing by placing one arm around the chest and holding the base of the tail with the other arm. (c) The foal can be gently placed in lateral recumbency.

Vaccination Program for neonatal equids:

| | |
|-------------------|--|
| Tetaus toxoid | 3 months, 4 months, +/- 5 months, 1 year. |
| Tetanus antitoxin | give 1500 U if mare not vaccinated for tetanus within last 6 weeks of gestation or if foal doesn't get adequate colostrum. |
| EEE/WEE | 3 months, 4 months, +/- 5 months, 1 year. |
| Influenza | 3 months, 4 months, +/- 5 months, 1 year. |
| Rabies | 3 months, 1 year. |

After this initial series booster all vaccinations annually, preferably in the spring. Springtime is the best time to vaccinate for EEE/WEE as these diseases are contracted primarily during the warmer months.

References:

Smith, Bradford P. 1996. Large animal internal medicine, 2nd ed. Mosby-Year Book Inc. St. Louis, MO.

Wilson, Julie, DVM, DACVIM. 1996, fall quarter. Lecture Notes, Equine neonatology. University of Minnesota College of Veterinary Medicine. St. Paul, MN.

Wilson, Julie, DVM, DACVIM. 1997. Lecture Notes, Equine vaccinations. University of Minnesota College of Veterinary Medicine. St. Paul, MN.

NEONATAL CARE FOR GOATS

June 1996 (neongoat.prt)

1 day of age-Keeper will perform the following:

1. Determine sex and obtain accession number
2. Weigh
3. Dip navel in strong iodine
4. Check for cleft palate
5. Administer 300 IU of Vit. E SQ or IM
6. Add to vaccination schedule
7. Schedule appt. for disbudding (& neutering if desired) at animal health mtg.
8. Notify vet if any health problems

Between 3 and 10 days of age when horn bud first becomes palpable-Vet will exam, tattoo, and disbud the kid. Neutering will also be done at this time when requested by CZ staff.

Note: Keepers administering vaccines and vitamins should record all treatments on a Treatment Log sheet and submit this to the Animal Health Technicians.

NEONATAL PROTOCOL FOR CARNIVORES

June 1996 (neoncarn.prt)

Carnivores should be examined as soon as possible after birth. The time that this is safe and practical is extremely variable from species to species and will be determined by the curator, zoologist, keepers, and veterinarians.

1. Physical examination. Check carefully for cardiac abnormalities, congenital defects (including cleft palate), suckling reflex, umbilical stalk, joint swelling, external genitalia, ocular problems, etc. Observe locomotion and coordination. Identify neonates using transponders, shaved areas, fingernail polish or other distinguishing mark if necessary.
2. Weight and sex will be determined.
3. Blood may be collected for CBC, chemistries, or serum banking depending on species, age, and size of animal. No more than 0.6% of the body weight should be collected, e.g. an animal weighing 100 gm. should have no more than 0.6 ml of blood taken.
4. A neonatal care sheet should be started on each animal. These sheets will be kept with the animals until they are completed, then returned to the veterinarian and will become part of the permanent medical record. Keepers are responsible for submitting fecal samples and for scheduling vaccinations with the veterinary staff. The vaccination schedule will be determined by the veterinarian at the time of the neonatal exam based on its immune status. Vaccinations should be scheduled at the animal health meeting whenever possible.

NEONATAL ARTIODACTYLA VACCINATION GUIDELINES
(Schedule may be altered by veterinarian based on immune status of neonate.)
26 June 1996 (artiodac.vac)

Pronghorn, Moose, Bactrian camel, Llama, Musk ox - Hand reared

1. Good Passive Transfer

| | |
|---------------------|-----------------------------|
| Clostridium C & D | 1 and 2 months of age |
| Clostridium - 7 way | 3 and 4 months of age |
| Tetanus | 1, 2, 3 and 4 months of age |
| Leptospirosis | 3 and 4 months of age |
| Imrab | 3 months of age |

2. Poor Passive Transfer

| | |
|---------------------|-------------------------------------|
| Clostridium C & D | 1 week, 1 and 2 months of age |
| Clostridium - 7 way | 3 and 4 months of age |
| Tetanus | 1 week, 1, 2, 3 and 4 months of age |
| Leptospirosis | 3 and 4 months of age |
| Imrab | 3 months of age |

Bactrian camels and Llamas

1. Hand Reared - see above.

2. Dam Reared

| | |
|---------------------|--------------------------|
| Clostridium C & D | 2 months of age |
| Clostridium - 7 way | 3 and 4 months of age |
| Tetanus | 2, 3 and 4 months of age |
| Leptospirosis | 3 and 4 months of age |
| Imrab | 3 months of age |

Musk ox

1. Hand Reared - see above.

2. Dam Reared, calves separated from dams in September, at approximately three months of age for routine worming and coccidiostat.

| | |
|---------------------|---------------------------------------|
| Clostridium - 7 way | 3 and 4 months of age (approximately) |
| Tetanus | 3 and 4 months of age |
| Leptospirosis | 3 and 4 months of age |
| Imrab | 3 months of age |

Caribou

1. Hand Reared

A. Good Passive Transfer

| | |
|---------------------|--------------------------|
| Clostridium C & D | 1 month of age |
| Clostridium - 7 way | 2 and 3 months of age |
| Tetanus | 1, 2 and 3 months of age |
| Leptospirosis | 2 and 3 months of age |
| Imrab | 3 months of age |

B. Poor Passive Transfer

| | |
|---------------------|----------------------------------|
| Clostridium C & D | 1 week, 1 month of age |
| Clostridium - 7 way | 2 and 3 months of age |
| Tetanus | 1 week, 1, 2 and 3 months of age |
| Leptospirosis | 2 and 3 months of age |
| Imrab | 3 months of age |

2. Dam Reared

| | |
|---------------|-----------------------|
| Clostridium | 2 and 3 months of age |
| Tetanus | 2 and 3 months of age |
| Leptospirosis | 2 and 3 months of age |
| Imrab | 3 months of age |

COLOSTRUM FEEDING AND PASTEURIZATION

June 1996 (colostrm.prt)

Goat Medicine, pp 78-79, 89

Large Animal Medicine, pp 380, 1604

Pasteurization at high temperatures for short periods can denature immunoglobulins and cause the colostrum to gel, making it impossible to feed. Lower temperatures for longer time periods is recommended.

Colostrum should be given as soon as possible, preferably within the first 6 hours. Bottle feed at a rate of 25 ml/kg five times a day the first day after birth. Thereafter colostrum should be fed as 10% of the formula for 3 weeks to provide local gut immunity.

Recommended procedure:

Heat at 132.8 F (56 C) for 30 minutes.

Colostrum should be prepared in 90-120 ml volumes in clean baby bottles. Do not place the colostrum in the water until the temperature has reached 56 C. Start the timer and DO NOT overcook. The colostrum can be frozen for one year.

Zoonotic diseases killed:

Brucellosis, Caseous lymphadenitis, Cryptococcosis, Leptospirosis, Listeriosis, Louping Ill, Melioidosis, Q Fever, Staphylococcal Food Poisoning, Toxoplasmosis, Tuberculosis, Mycoplasma and Caprine arthritis.

Fecal contaminants destroyed:

Campylobacteriosis, Cryptosporidiosis, E. Coli, Listeriosis, Salmonellosis, Yesiniosis.

Toxins etc. NOT affected by pasteurization:

Plant Alkaloids, Tremetols, and Mycotoxins, Antibiotics and Anthelmintics.

NOTE: Colostrum should be obtained only from Brucellosis and TB-free certified herds and should be first-milk colostrum. You will need to ask to be sure you are getting first-milk colostrum!

FARM PROTOCOLS

Preshipment Requirements for Minnesota cattle from Johnes level 3 herd, Minnesota Zoological Garden

- Physical examination and Health Certificate issued by accredited veterinarian within 30 days of shipment. Animals should be carefully examined for ringworm, foot rot, and other skin, foot, and udder problems. Any medical problems should be brought to the attention of the zoo veterinarians. The zoo requests that the attending veterinarian perform a CBC, a BVD PI test, and collect enough blood so they can send the zoo 10 ml of serum for various serological testing. Serum should be sent on ice packs overnight to:

Animal Health Dept
Attn: Kris Petrini, DVM
Minnesota Zoological Garden
13000 Zoo Blvd
Apple Valley, MN 55124

- Fresh feces should be collected rectally from the cow for a Johnes fecal culture (\$16.00). This should be sent by overnight mail on ice packs to the University of Minnesota Diagnostic Laboratory. Animal can be shipped to zoo before fecal test results are returned since the test takes 4-8 wks to complete. If the test is positive, it will not enter the zoo collection.
- The animal should be wormed with injectable ivermectin and given a booster vaccination for IBR, BVD, PI3 and BRSV. Only a *killed* product should be used on pregnant animals.
- The zoo will reimburse the producer the actual costs of the veterinary exam, health certificate, vaccination, worming, Johnes fecal culture, BVD-PI, and CBC, up to \$120. This charge should be added onto the invoice given to the zoo for the purchase of the animal and must include a copy of the veterinary charges.
- Obtain herd history regarding Bovine Viral Diarrhea and infectious causes of foot rot. Find out vaccination status of herd and individual animal, including Brucellosis vaccination.
- Obtain individual lactation records for cow and history of mastitis.

If you have any questions or concerns please contact:
Kristine Petrini, DVM at 612-431-9261
or Jim Rasmussen, DVM at 612-431-9371

Preshipment Requirements for cattle:

- Physical examination and Health Certificate issued by accredited veterinarian within 30 days of shipment. Animals should be carefully examined for ringworm, foot rot, and other skin, foot, and udder problems. The zoo requests that the attending veterinarian perform a CBC and collect enough blood so they can send the zoo 10 ml of serum for various serological testing. Johnes fecal culture (\$16.00) should be sent by the attending vet directly to University of Wisconsin for testing. Animal can be shipped to zoo before fecal test results are returned since the test takes 4-8 wks to complete. If the test is positive, it will not enter the collection. Arrangements should be made with the seller as to what is to be done with the animal if she is positive for Johnes and who pays what.
- The animal should be wormed with injectable ivermectin and given a booster vaccination for IBR, BVD, PI3 and BRSV if needed. Only a *killed* product should be used on pregnant animals. The zoo will pay for the preshipment exam, health certificate, vaccination, worming, Johnes's fecal culture and CBC. Estimated cost to zoo is \$80-100.
- Obtain herd history regarding Johnes disease. Has the herd been tested for Johnes. If not, are they willing to test herd for Johnes? Strongly encourage testing of at least 30 animals. Zoo is willing to pay up to \$? for having these animals tested. If all neg, 85% probability that herd is Johnes free. Are they running a closed herd? Has there been any animal from the herd diagnosed with Johnes or animals with unexplained diarrhea.
- Obtain herd history regarding Bovine Viral Diarrhea (BVD), and foot rot. Find out brucellosis vaccination status of herd.
- Obtain individual lactation records for cow and history of mastitis. Obtain vaccination history of animal.

Serological test: (Done through the zoo)

Johnes ELISA \$6.00

Bovine leukosis (ELISA) \$4.00

BVD Type 1 and 2 (SN) \$8.00

Neospora ELISA \$10.00

Brucellosis (RAP) \$4.00

Anaplasmosis. \$4.00

Bluetongue ELISA \$5.00

Malignant catarrhal fever (MCF) VN \$7.75 (Run at NVSL)

Total

A chemistry profile will be done at the zoo. (\$13.75)

Quarantine Tests:

Additional tests to be done at zoo in quarantine:

A second set of serological tests will be done once the animal is in quarantine.

BVD-PI, viral isolation \$20.00 (need EDTA blood) Monday, Thursday and Friday), 7-10 days turn around time.

Johnes tests, additional cultures and elisa test. Number will depend on individual cow history.

Preshipment Requirements for "Infigen" cattle, Minnesota Zoological Garden

- Physical examination, **TB test**, and Health Certificate issued by accredited veterinarian within 30 days of shipment. Animals should be carefully examined for ringworm, foot rot, and other skin, foot, and udder problems. Any medical problems should be brought to the attention of the zoo veterinarians. The zoo requests that the attending veterinarian perform a **CBC, chemistry profile and BVD PI test**. Please collect enough blood so that **10 ml of serum** can be sent to the Minnesota Zoological Garden for various serological testing. Serum should be sent on ice packs overnight to:

Animal Health Dept
Attn: Kris Petrini, DVM
Minnesota Zoological Garden
13000 Zoo Blvd
Apple Valley, MN 55124

- Fresh feces should be collected rectally from the cow for a **Johnes fecal culture**. This should be sent by overnight mail on ice packs (see attached submission sheet and mailing instructions) by the attending vet directly to University of Wisconsin for testing. Animal can be shipped to zoo before fecal test results are returned since the test takes 4-8 wks to complete. If the test is positive, it will not enter the zoo collection.
- The animal should be wormed with injectable ivermectin and given a booster vaccination for IBR, BVD, PI3 and BRSV. Only a *killed* product should be used on pregnant animals.
- Obtain herd history regarding Johnes disease. Has there been any animal from the herd diagnosed with Johnes or animals with unexplained diarrhea? Has any of the herd been previously tested for Johnes? Obtain herd history regarding Bovine Viral Diarrhea and infectious causes of foot rot. Find out vaccination status of herd and individual animal, including Brucellosis vaccination.

Any questions, please contact the zoo veterinarians:

Kristine Petrini, DVM at 612-431-9261
or Jim Rasmussen, DVM at 612-431-9371.

Quarantine Plan for Farm Animals

DAIRY CATTLE

Quarantine guidelines:

All animals will have a minimum of 3 fecal examinations during quarantine. Each animal will be examined by a veterinarian at the beginning and end of quarantine and a CBC, and chemistry screen will be done at that time as well.

Quarantine will last from 4-8 wk depending on health and status of Johnes testing. All animals will be housed in LAH individually with at least one stall separating animals.

Disease control:

Johnes:

Whenever possible, animals will be acquired from herds that have tested negative for Johnes *and* have no herd history of Johnes. Closed herds are preferred. In addition, individual cows will be tested three times by elisa blood test and once or twice by fecal culture for Johnes before clearing quarantine. Preshipment testing is encouraged in addition to testing while in quarantine.

Dermatophilosis (Strawberry Footrot)

Check for herd history of this disease. In addition, animals will be checked while in quarantine and treated if necessary.

Mastitis

Check record for individual cow. If milking, culture all 4 quarters for Strep. agalactia and Staph. aureus.

BVD

Check for herd history of BVD. Check all animals in quarantine for BVD using viral isolation test to check for persistently infected (PI) animals.

Leukosis

All animals will be tested for Leukosis at the beginning and end of quarantine.

Neospora

Check all animals in quarantine for Neospora.

Tuberculosis

All animals in quarantine will be skin tested for TB.

Brucellosis

All animals in quarantine will be tested for Brucellosis.

Ringworm

All animals should be checked before shipment and during quarantine for skin lesions suggestive of ringworm.

MCF

All animal will be tested while in quarantine for MCF.

Bluetongue

All animal will be tested while in quarantine for bluetongue.

Vaccinations:

Check vaccination history of herd of origin before purchase.

Vaccines to be given in quarantine:

IBR, BVD, PI3, BRSV (4-way)

Lepto 5 way

Clostridium 7 or 8 way

Tetanus

Rabies

Note: Brucellosis vaccines will not be given

Ideal Timeline:

Jan15-Feb 1:

Acquire first 4 cows/heifers.

Mar 15-April 1:

First 4 cows/heifers move to Children's Zoo. Snow geese will have to be moved out.

April 1:

Second group of 4 cows/heifers arrive for quarantine.

May 1:

First set of cows/heifers move to Farm.

Bull arrives for quarantine. Second group of cows/heifers will have to be moved to adjacent stalls at this time to free up several stalls for bull. Alternatively second group of cows/heifers can be moved to Childrens Zoo and finish quarantine there.

June 1:

Second set of cows to Farm

July 1:

Bull to Farm

Given dates:

Animals must be on display and ready for guest viewing on 4th July weekend.

Can move animals into farm buildings on 1 May.

Farm Vaccine Protocol for Cattle

Keepers are to administer all vaccines except for:

1. Animals in quarantine. The animal health staff will schedule and administer all vaccines to these animals.
2. Rabies vaccines. The rabies vaccine must be given by a veterinarian or veterinary technician. Keepers, however, are responsible for notifying the animal health staff at the animal health meetings when farm animals are due. They can then schedule such animals for rabies vaccination at that time.
3. DO NOT administer any vaccines within 21 days of slaughter.

Other notes:

1. Annual Rabies vaccines will be given to adult cattle in December.
2. The Lepto-5 vaccine is to be given twice yearly to adult cattle in April and October.
3. **NEVER** give Bovis-Shield 4+L5 to pregnant cattle or to nursing calves as it may cause abortions.
4. All vaccines should be stored in the refrigerator and expiration dates checked regularly.
5. Shake vaccines well before drawing up for administration. 18 (green) and 16 (white) gauge needles should be sufficient for vaccine administration.

Vaccine Names:

1. *Bovi-Shield 4 + L5* = Bovine Rhinotracheitis, Bovine Viral Diarrhea, Parainfluenza 3, Bovine Respiratory Syncytial Virus (all MLV) + Leptospira Canicola-Grippotyphosa-Hardjo-Icterohaemorrhagiae-Pomona Bacterin.
2. *Vision 7 with Spur* = Clostridium Chauvoei-Septicum-Novyi-Sordelli-Perfringens Types C and D.
3. *Imrab 3* = Killed rabies vaccine
4. *Lepto 5* = Leptospira Canicola-Grippotyphosa-Hardjo-Icterhaemorrhagiae-Pomona
5. *E. coli J5* = Escherichia coli Bacterin J-5 strain
6. *Vira Shield 5* = Bovine Rhinotracheitis, BVD types 1 and 2, Parainfluenza3, Respiratory Syncytial Virus (all killed).
7. *ScarGuard 3 (k)/c* = Bovine Rota-Coronavirus (killed), Clostridium Perfringens Type C, E. coli, bacterin toxoid
8. *Tetanus Toxoid* = Fort Dodge product

Vaccine Log Form for Farm Keepers

Please turn in sheets weekly at animal health meeting

| Date | Accession Number & Species | Vaccine Given (Trade name) | Serial Number On Bottle | Dose (mls) | Site Given (i.e., neck) | Route (IM or SQ) |
|------|----------------------------|----------------------------|-------------------------|------------|-------------------------|------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Table 1. Recommendations for basic vaccination program of a commercial dairy herd
 Note: this is not necessarily an exhaustive program. It should be reviewed and, if necessary, modified to fit the requirements of individual producers (e.g. herds using natural breeding may consider vaccinating bulls and cows against Vibriosis (*Campylobacter fetus*)).

| Class of Animal | Age / Stage of Life Cycle | Vaccine |
|--|--|--|
| Pre-breeding youngstock | 4 months of age | IBR, BVD, PI3, BRSV, Leptospirosis - 5 way Clostridium - 7 way + tetanus |
| | 5 months of age | Repeat '4 month' vaccines Brucellosis |
| | 12 months of age | Repeat '4 month' vaccines |
| Pre-fresh heifers with above history | 35 days prior to due date | J5 E. coli Scourguard 3K/C (K99 E. coli, Rotavirus, Coronavirus) |
| | 21 days prior to due date | Repeat '35 day pre-fresh' vaccines |
| Pre-fresh older animals with above history | 35 days prior to due date | J5 e. coli |
| | 21 days prior to due date | J5 E. coli Scourguard 3K/C (K99 E. coli, Rotavirus, Coronavirus) |
| Lactating heifers and older animals with above history | 14 DIM | J5 e. coli |
| | 30 DIM | IBR, BVD, PI3, BRSV Leptospirosis - 5 way |
| | At Pregnancy confirmation (or twice/year or April/October) | Leptospirosis - 5 way J5 e. coli (optional) |
| Additional if Purchased pregnant with unknown/questionable history | 60 days prior to due date (or upon arrival) | IBR, BVD (Killed), PI3, BRSV Leptospirosis - 5 way Clostridium - 7 way + tetanus |
| | 30 days prior to due date (or 21-30 days post-arrival) | Repeat '60-days prior to due date' vaccines |

General Considerations:

Pseudorabies

- If pigs are obtained from a pseudorabies free qualified herd, they don't require PR testing. If they are not obtained from a qualified herd they need to be tested within 30 days of acquisition.
- Having a feeder pig operation will require us to annually test breeders.
- If animals leaving here are not going to slaughter, they need to be tested within 30 days of shipment.
- Pigs need to be identified with an eartag- tattoo top side of ear with our herd number (MNZOO). This can be done at same time teeth are clipped and they're given iron injections.

Brucellosis

- Not a problem except if bringing pigs from southern states such as TX, LA and AR. Need to check with Board of Animal Health if animals are being obtained from southern states.

Tuberculosis

- Not a problem in the United States.
- No testing required.

Cytomegalovirus

- 90% of pigs carry
- A herpesvirus
- Similar to human cytomegalovirus.
- Zoonotic?

-Third to fifth parity sows will have the lowest incidence of dystocias and will likely have better immunity to common diseases.

-Steam cleaning of farrowing area will eliminate viable ascarid ova, chemical cleaning is generally ineffective.

-Breeding animals should be checked for parasites twice a year and treated accordingly.

PRESHIPMENT TESTING

- Need to find out interval of health monitoring (serological testing and postmortem exams) in herd of origin. Obtain name and number of farm veterinarian.
- Previous health problems in the herd.
- Vaccines used and vaccination intervals.
- History of parasite problems and control.

- We may want to run a serological survey of six animals in the herd on an annual basis.
- Check herd for Cryptosporidium and Salmonella.
- Notify us of any disease outbreaks in the herd.
- Use a pseudorabies, PRRS, Mycoplasma free closed herd as our supplier.

QUARANTINE

- 30 day quarantine period
- Fecal culture for Salmonella
- Fecal exam for cryptosporidiosis
- Examine on entry and on exit paying particular attention for external parasites.
- 3 negative fecal exams one week apart. If not negative treat with Ivermectin at 0.3mg/kg SQ (depending on parasite susceptibility).

Testing:

Serology- pseudorabies, brucellosis, Mycoplasma hyopneumonia, Leptospirosis, Encephalomyocarditis, Porcine Reproductive and Respiratory Syndrome (PRRS), cytomegalovirus

VACCINATIONS

FARROWSURE (Porcine parvovirus, L. canicola, L. Pomona, L. icterohaemorrhagiae, L. grippotyphosa, L. hardjo, Erysipelothrix rhusiopathiae)

Sows- one dose two to four weeks before breeding. Vaccinate with just Lepto vaccine 3-6 weeks later. Revaccinate before each breeding or semiannual if not bred.

Gilts- one dose 6-8 weeks before breeding. 2nd dose 2-4 weeks before breeding.

Boars- Semiannual. In unvaccinated animals use same 2 dose regimen as in gilts.

PLEUROGUARD 4 (Actinobacillus, pleuropneumoniae, Bordetella bronchiseptica, Erysipelothrix rhusiopathiae, Pasteurella multocida)

Sows- 2 doses 2 weeks apart with last dose 2 weeks before farrowing. Revaccinate before each farrowing or semiannual if not bred.

Boars- Semiannual. Unvaccinated animals should initially be vaccinated twice, 3-4 weeks apart.

Piglets- One dose at weaning. Second dose 2-3 weeks later. (Can use the same regimen for Lepto vaccine.)

LITTERGUARD LT-C (E.coli + Labile toxin, Clostridium perfringens)

Sows- 2 doses (2 weeks apart with last dose 2 weeks before farrowing). Revaccinate before each farrowing.

NEONATAL PIG PROCESSING

- Done at day 2 or 3.

- Dip umbilicus in tincture of iodine.
- May not need to dock tails or clip teeth.
- Castrate males.
- 1cc (300IU) vitamin E I.M. in neck.
- 1cc (100mg) iron dextran I.M. in neck.
- Ear tattoo.

SWINE PROTOCOLS (1 June 1, 2000)

VACCINATIONS

| DISEASE/ VACCINE | SOWS/GILTS | BOARS | PIGLETS |
|---------------------|---|---|--|
| Farrowisure | 2 weeks prebreeding | Semiannual. If unvaccinated a 2 nd dose 4 weeks later. | One dose at weaning. 2 nd dose 2-3 weeks later. |
| Pleuroguard 4 | 4 weeks and 2 weeks prefarrowing. Semiannual if not bred. | Semiannual. If unvaccinated a 2 nd dose 4 weeks later. | One dose at weaning. 2 nd dose 2-3 weeks later. |
| Litterguard LT-C | 4 weeks and 2 weeks prefarrowing. | | |
| Lepto (5-way) | 2 weeks postbreeding. | | |

QUARANTINE

- 30 days.
- 3 negative fecals.
- 2 negative cryptos.
- Ivomec (0.3mg/kg SQ) on entry exam.
- CBC
- Serology- pseudorabies not required if from pseudorabies free qualified herd (otherwise need test within 30 days). Serum bank.

NEONATAL PIG PROCESSING

Day 1

- Weigh.
- Dip umbilicus in tincture of iodine.
- Check sex.
- Clip teeth.
- 1cc (300IU) vitamin E I.M. in neck.
- 1cc (100 mg) iron dextran I.M. in neck.

Day 2-3

- Castrate
- Ear tattoo if not being sold at South St. Paul.

MISCELLANEOUS

- We will be a monitored herd and our herd number is "ZOO".
- Need to check pseudorabies serology yearly in breeders.
- Any adult pigs going to sale need to be pseudorabies tested within 30 days prior to sale
- If not sold at South St. Paul will require ear tattoos.

PREVENTATIVE HEALTH CARE PROTOCOL FOR DOMESTIC HORSES (Jan. 2009)

| DISEASE/ VACCINE | FOALS/ WEANLINGS | ADULTS | BROODMARES | COMMENTS |
|---------------------------------------|---|--|--|---|
| Tetanus toxoid | 1 st dose: 3 months 2 nd dose: 5 months | Annual- April or May | 4-6 weeks prepartum. Annual | Booster at time of injury or surgery if has not received vaccine within 2 months. |
| Encephalomyelitis (EEE, WEE) | 1 st dose: 3 months 2 nd dose: 5 months | Annual- April or May | 4-6 weeks prepartum. Annual in Spring | Foals born in late spring to vaccinated mares are usually protected through their first summer. |
| Influenza | 1 st dose: 4 months 2 nd dose: 5 months 3 rd dose: 6 months Then at 3 month intervals until 1 year. | Annual- April or May with boosters prior to likely exposure. | Biannually with one booster 4-6 weeks prepartum. | The serological response of foals may be blocked up till 6 months of age. |
| Rhinopneumonitis (EHV-1&4) | Same as for influenza | Annual- April or May | 5 th , 7 th , 9 th month of gestation | |
| Rabies | 1 st dose: 3 months 2 nd dose: 5 months 3 rd dose: 1 year | Annual- April or May | | |
| Potomac horse fever | 1 st dose: 4 months 2 nd dose: 5 months | Biannual- May and November | One dose 4-6 weeks prepartum | Can cause local reaction. About 50% effective |

PARASITE CONTROL

As cold weather is our friend when it comes to parasite control, we will attempt to use a seasonal control program in conjunction with rotation of dewormers. This will hopefully reduce the number of treatments required for effective control as well as reduce the likelihood of parasites developing resistance to the anthelmintics.

As a baseline control program, we will use a quarterly schedule for both checking fecal samples for parasites as well as for worming. Depending on parasite burdens and/or resistance to dewormers, we may need to implement more frequent dewormings or use different anthelmintics. As foals are more sensitive to parasitic disease, they will need to be dewormed at two month intervals until 2 years old.

January- Fecal parasitology. Deworm with Fenbendazole.

April- Fecal parasitology. Deworm with Fenbendazole.

July- Fecal parasitology. Deworm with Ivermectin.

October- Fecal parasitology. Deworm with Ivermectin.

Preshipment Requirements for goat, Minnesota Zoological Garden

Physical examination and Health Certificate issued by accredited veterinarian within 30 days of shipment. Animals should be carefully examined for mastitis, foot rot, contagious ecthyma, caseous lymphadenitis, and other infectious diseases. The zoo requests that the attending veterinarian perform a CBC and collect enough blood so they can send the zoo 10 ml of serum for various serological testing. Any medical problems should be brought to the attention of the zoo veterinarians. Serum should be sent ASAP on ice packs overnight to:

Animal Health Dept
Attn: Kris Petrini, DVM
Minnesota Zoological Garden
13000 Zoo Blvd
Apple Valley, MN 55124

Fresh feces should be collected from the goat for a Johnes fecal culture (\$16.00). This should be sent by overnight mail on ice packs (see attached submission sheet and mailing instructions) by the attending vet directly to University of Wisconsin for testing. Animal can be shipped to zoo before fecal test results are returned since the test takes 4-8 wks to complete. If the test is positive, it will not enter the zoo collection.

All animals in the herd over 1 year of age should be tested for Johne's disease by elisa test, (unless this has been done in the last 6-12 months). These samples should be sent by overnight mail on ice packs (see attached submission sheet and mailing instructions) by the attending vet directly to University of Wisconsin for testing. The Minnesota Zoo will pay the veterinarian for collecting and submitting the samples, as well as for the preshipment exam, health certificate, vaccination, worming, Johnes fecal culture and CBC. Estimated cost to zoo for preshipment exam and testing is \$150-\$250. If the charges will be more please contact:

Kristine Petrini, DVM at 612-431-9261
or Jim Rasmussen, DVM at 612-431-9371 for approval.

The animal should be wormed with injectable ivermectin and booster vaccines for Clostridium C, D and T given if indicated.

Obtain herd and individual mastitis history.

The remainder of the herd should be visualized for evidence of infectious disease and a herd history should be taken, asking specifically about abortion problems, mastitis, caseous lymphadenitis, contagious ecthyma, foot rot, keratoconjunctivitis, Johne's disease, and CAE. Find out vaccination status of herd and individual animal.

Any questions, please contact the zoo veterinarians at the above phone numbers.

Quarantine tests for goats, Aug 00

| | | |
|----------------------------|----------------------|-----------------------------|
| Brucellosis abortus, CF | MN VDL | \$4.00 |
| Brucellosis abortus RAP | MN VDL | n/c |
| OPPV, AGID | MN VDL | \$3.50 |
| CAE, AGID | MN VDL | \$4.00 |
| Bluetongue, elisa | MN VDL | \$5.00 |
| BVD Type 1 and 2 | MN VDL | \$8.00 |
| Chlamydia, CF | MN, VDL | \$5.00 |
| MCF, elisa | Tim Crawford, | n/c |
| MCF, PCR | Tim Crawford, | n/c |
| (need fresh EDTA blood) | | |
| Johne's, elisa | Wisconsin Johnes lab | \$10.00 + \$4.00 set up fee |
| Johnes fecal culture | Wisconsin Johnes lab | \$16.00 |
| CAE, elisa | Washington | \$6.00 + \$10.00 set up fee |
| Caseous lymphadenitis, SHI | Davis | \$7.50 or Texas \$6.00 |
| Q-fever, IFA | Texas | \$12.00 |
| Large animal profile | Marshfield | \$13.75 |

Total \$91.75

Also 2 cryptosporidia fecal tests

Preshipment Requirements for sheep, Minnesota Zoological Garden

- Physical examination and Health Certificate issued by accredited veterinarian within 30 days of shipment. The animal should be skin tested for tuberculosis. Animals should be carefully examined for foot rot, contagious ecthyma, caseous lymphadenitis, or other infectious diseases. The zoo requests that the attending veterinarian perform a CBC and collect enough blood so they can send the zoo 10 ml of serum for various serological testing. Any medical problems should be brought to the attention of the zoo veterinarians. Serum should be sent ASAP on ice packs overnight to:

Animal Health Dept
Attn: Kris Petrini, DVM
Minnesota Zoological Garden
13000 Zoo Blvd
Apple Valley, MN 55124

- Fresh feces should be collected from the sheep for a Johnes fecal culture (\$16.00). This should be sent by overnight mail on ice packs (see attached submission sheet and mailing instructions) by the attending vet directly to University of Wisconsin for testing. Be sure to indicate that the sample is from a sheep. Animal can be shipped to zoo before fecal test results are returned since the test takes 8-12 wks to complete. If the test is positive, it will not enter the zoo collection.
- The animal should be wormed with injectable ivermectin and booster vaccines for Clostridium C, D and T given if indicated.
- The remainder of the flock should be visualized for evidence of infectious disease and a flock history should be taken, asking specifically about abortion problems, caseous lymphadenitis, contagious ecthyma, foot rot, keratoconjunctivitis, Johnes's disease, Scrapie, Border Disease, OPPV, and CAE. Find out vaccination status of herd and individual animal.
- The Minnesota Zoo will pay the veterinarian for collecting and submitting the samples, as well as for the preshipment exam, health certificate, TB test, vaccination, worming, Johnes fecal culture and CBC. Estimated cost to zoo for preshipment exam and testing is \$80-100. If the charges will be more please contact:

Kristine Petrini, DVM at 612-431-9261 or Jim Rasmussen,
DVM at 612-431-9371 for approval.

Any questions, please contact the zoo veterinarians at the above phone numbers.

Preshipment tests for sheep, submitted by MZG

Brucellosis melitensis

MN VDL, (\$4.00) check with them to make sure they run this test, otherwise send to NVSL

| | | |
|----------------------------|------------|-----------------------------|
| OPPV, AGID | MN VDL | \$3.50 |
| Bluetongue, elisa | MN VDL | \$5.00 |
| BVD type 1 and 2 | MN VDL | \$8.00 |
| MCF, IPT and SN | NVSL | \$9.75 + 7.75 |
| Chlamydia CF | NVSL | \$9.00 |
| Johne's, elisa | Wisconsin | \$10.00 + \$4.00 set up fee |
| CAE, elisa | Washington | \$6.00 + \$10.00 set up fee |
| Caseous lymphadenitis, SHI | Davis | \$7.50 or Texas \$6.00 |
| Brucellosis ovis, elisa | Davis | \$11.00 |
| Large animal profile | Marshfield | \$13.75 |

Total \$109.25

Note: add \$56.00 if MCF PCR is necessary.

Preventative health care sheep/goats
Minnesota Zoological Gardens
Revised Feb 2001

VACCINATIONS

Farm keepers are responsible for administering all vaccines with the exception of those listed below which will be given by veterinarians or vet techs.

- rabies and vaccines given simultaneously
- vaccines given at the time of disbudding
- quarantine vaccines

All goats/sheep

Vaccinate for Leptospirosis (Lepto), Rabies, and Case-Bac in **December**. (Schedule this with the vet staff at the animal health meeting.) Goats receiving Lepto and Case-bac for the first time (young of year) should get two injections 3-4 weeks apart. (Keepers responsible for administering 2nd dose).

Note: Case-Bac vaccine can cause painful swelling at the injection site and sometimes in the local lymph nodes. This may be accompanied by lethargy, fever, poor appetite, and/or lameness for 1-3 days post injection. This is generally self limiting. All adverse reactions to vaccines such as this should be reported to the veterinary staff. Reactions can be minimized by paying careful attention to administration of vaccine. Give Case-Bac subcutaneously (not intramuscularly or intradermally) in the mid neck area (not in the axillary space as directed on the bottle). Make sure to record location of all vaccines on the treatment sheet

Bred does/ewes

Vaccinate 4 weeks **before kidding** with Clostridium 7-way (Vison 7 with spur) and Tetanus. Administer vit E/selenium (0.06 mg selenium/kg body weight) at that time as well.

Note: Clostridium 7-way vaccine is notorious for causing abscesses at the injection site. This is generally just a cosmetic problem and does not affect the animal's appetite or attitude. By recording the injection site and being consistent on location of this vaccine from animal to animal you can usually tell if an abscess is due to a vaccine, and if so, which vaccine. Be sure to administer Clostridium vaccine subcutaneously, not intramuscularly or intradermally.

Open does/ewes and bucks/rams

Vaccinate in **February** for Clostridium 7-way and Tetanus.

Lambs/Kids raised by vaccinated does

1. At time of disbudding-Clos C & D and Tet. (vet. or tech will administer)
2. 2 months of age-Clos C & D and Tet.
3. 3 months of age-Clos 7 way and Tet, and Rabies. (Vet. or tech. should administer)
4. 4 months of age-Clos 7 way and tet.

Kids/lambs born to unvaccinated doe or being bottle raised.

1. Less than 1 week-Clos C & D and Tet.
2. 1 month of age-Clos C & D and Tet.
3. 2 months of age-Clos C & D and Tet.
4. 3 months of age-Clos 7 way, Tet, and Rabies. (Vet. or tech. should administer.)
5. 4 months of age-Clos 7 way, tet.

In addition, kids born to unvaccinated does should receive 150 IU of tetanus antitoxin at time of disbudding. **(Vet will do, but please notify vet. staff which kids fall into this category)**

PARASITE CONTROL

Keepers please make sure you obtain the necessary products for these treatments from the animal health technicians and administer them at the appropriate times.

All goats should be treated with Ivomec (0.2 mg/kg SQ) and dusted with 5% Carbaryl in early **February**.

All goats should be treated with Albon in **May** and with Corid in **October** each year.

NEONATAL CARE

1 day of age-Keeper will perform the following:

1. Determine sex and obtain accession number
2. Weigh
3. Dip navel in strong iodine
4. Check for cleft palate
5. Administer 300 IU of Vit.E SQ or IM **and** 0.06 mg selenium/kg body weight SC or IM
6. Add to vaccination schedule

7. Schedule appt. for disbudding (& neutering if desired) at animal health mtg.
8. Notify vet if any health problems

Between 3 and 10 days of age when horn bud first becomes palpable-Vet will exam, tatoo, and disbud goat kids. Neutering will also be done at this time when requested by farm staff.

Between 2 and 4 wks of age kids and lambs should get another injection of selenium (0.06 mg selenium/kg body weight SC or IM).

PREGNANT DOES/EWES

Administer selenium (0.06 mg selenium/kg body weight) IM or SC before breeding season and again 4-6 wks before kidding.

Make sure animal is not obese before breeding and maintain in good body condition throughout pregnancy.

Vaccinate 4 wks before giving birth according to above schedule.

Note: Keepers administering vaccines and vitamins should record all treatments on a Treatment Log sheet and submit this to the Animal Health Technicians. Make sure to record location of all vaccines on the treatment sheet.

kris c:\my documents\protocols\prevgoat.doc

Pathology Program Review

Minnesota Zoological Gardens, Feb 2001

| Year | Total dead | # Necropsy exams | # Not necropsied | Comments |
|------|------------|------------------|------------------|---|
| 1996 | 149 | 129 | 20 | |
| 1997 | 238 | 168 | 70 | Addition of Frogs! exhibit in Sept 1997 |
| 1998 | 384 | 109 | 275 | Frogs! exhibit throughout year. 29 fish euth. from exhibit that closed, none necropsied. NorthWest Zoopath Pathology Report Available. |
| 1999 | 213 | 113 | 100 | Many of the specimens that were not necropsied were fish or frogs. NorthWest Zoopath Pathology Report Available. |
| 2000 | 203 | 144 | 59 | See below for details on animals not necropsied. Began using Medarks for Pathology records. NorthWest Zoopath Pathology Report Pending. |

Detail of animals that did *not* have necropsy done in 2000

Mammals = 18

Rats = 2

Prairie dogs = 6

Minnesota fruit bat = 4

opossum = 2

rabbit = 1

piglets = 3

Reptiles = 4

Gliding geckos = 4

Fish = 19

Frogs = 2

Invertebrates = 2

Birds = 14 (many were chicks)

Detail of Necropsy Exams done in 2000

Gross exams

Minnesota Zoo = 125

Minnesota Diagnostic Lab = 15

Submitted intact to NWZP = 2

Terry Norton = 2

Total 144

Histopathology

NWZP = 66

Minnesota Diag. Lab = 15

Terry Norton = 2

WZP = 1

Total = 84

Nutrition Program

Minnesota Zoological Gardens, Feb 2001

Food Ordering

- Storeroom staff orders food items based on past needs and trail weekly orders.
- Individual trails place food order to storeroom 1-2 times per week
- Items used in small amounts are sometimes ordered by individual trails.

Storage

- Main food storage is in commissary.
- Northern trail stores 1 week's worth of food in the Isolation Barn or Tiger Barn Kitchen.
- Approximately 1 month's supply of rodents, fish, browse, knucklebones, frozen meat products are stored in the Main Tropics freezer.
- One to two weeks' supply of dry food items is stored in the Tropics or MN Kitchen.
- Hay is stored in hay barn.
- Frozen fish for Marine Mammals is stored in the commissary and in the Marine Education Center freezer (see attached marine mammal nutrition program for details).
- All frozen and refrigerated items should be covered in some fashion (i.e. box, bag, wrapped) to reduce moisture loss.
- Frozen food items should be maintained at or below -10°C . Food transfer between areas should not exceed 30 minutes.
- Refrigerated food should be kept at no more than 5°C . Once removed from refrigerator it should not be kept at room temperature for more than 3 hours.

Rotation

Incoming food items are rotated regularly when new shipments arrive.

Shelf life

- Frozen meat and fish should not be stored for more than 6 months. High-fat fish have a shorter shelf life and should be stored for no more than 4 months.
- Thawed or fresh-refrigerated meat is suitable for feeding for only 1-3 days.
- All frozen food products must be thawed under refrigeration.
- Most canned food and commercial dry foods have a shelf life of 6-12 months. Expiration dates for supplements (in particular products with vitamins) should be stated on the product, but are generally 1 year from date of manufacture.
- Dry forages can be adequately stored for 6-12 months (or longer) and are best stored covered from the elements with adequate ventilation.

Deliveries

Storeroom delivers 1-2 times per week. All food items are delivered in their original bags.

Diets for zoo animals

Diets for individual species are based on recommendations of zoologists with approval of veterinary staff. Diet components and amounts are listed on a diet form and kept in the Nutrition Notebook in animal health (form attached).

Diet changes

- Diet change requests must be submitted by the zoologist to the veterinary staff for approval (form attached).
 - The addition or deletion of any food item not listed on the original Diet Form constitutes a diet change.
 - The veterinary staff should approve addition of novel enrichment items.
 - Altering dietary proportions outside of the ranges listed on the original Diet Form also constitutes a change requiring prior approval.
- A copy of the diet change request form should be sent to the storeroom. The original is kept in the Nutrition Notebook.

Kitchen maintenance/hygiene

- All food preparation areas are cleaned daily.
- Floors are washed and disinfected once weekly.
- Walk-in cooler in main Tropics kitchen is cleaned weekly.
- Tropics freezer is cleaned 1-2 times per year.

Diet preparation

Zookeepers prepare diets fresh daily. Frozen food products are thawed under refrigeration. Ingredients are weighed or measured by volume before being fed.

Feed charts

Feed charts indicating amount fed and amount consumed are kept for animals in quarantine and for select species in the permanent collection.

For most species not in quarantine, unusual changes in food consumption are noted on the zookeeper's daily report. If food consumption changes significantly for any animal, the veterinary staff is alerted and a food consumption chart may be started.

Diet analysis

Major food items are analyzed on a regular basis to assure they comply with manufacturers' specifications and animals' nutritional needs. Schedule and protocol for food item analysis is attached. The zoologists and veterinary staff review results of these analyses. A copy of each report is filed in the Nutrition Notebook.

Diet Analysis Program

Minnesota Zoological Gardens, Feb 2001

Commonly used feeds will be regular analyzed to assure they meet the requirements for our collection. The following is the schedule and tests to be performed. If other diets need to be checked, please bring this request to the animal health meeting. Kathy Anderson will take care of submitting hay, ADF 16, ADF 25, Moose pellets, and Toronto diets to the lab. The area supervisor or zoologist should submit other feeds that need to be sampled. The technicians will prepare paperwork and mail samples.

All samples will be sent to Midwest Laboratories in Omaha, Nebraska. Samples should be identified by sample name and product number, date sampled, and lot number. Hay should be identified as to type (timothy grass, Bermuda grass, mixed grass, alfalfa, etc.), bale size/shape, location in hay barn, date it was delivered to zoo, date sampled, vendor, location where grown, and which cutting (if known).

| <u>Item</u> | <u>When</u> | <u>Tests</u> |
|------------------------|--|--|
| Grass (mixed) hay | about 4 times per year (with each large delivery) | Rel. feed value (F10) Minerals (F3) Selenium |
| Alfalfa hay | About 4 times per year (with each large delivery) | Rel. feed value (F10) Minerals (F3) Selenium |
| ADF-16 Mazuri | Twice per year | Comp. prox. w/ minerals(F9) Selenium |
| ADF-25 Mazuri | Twice per year | Comp. prox. w/ minerals(F9) Selenium |
| Maz. Moose Breed | Once per year | Comp. prox. w/ minerals(F9) Selenium |
| Maz. Moose Maint | Once per year | Comp. prox. w/ minerals (F9) Selenium |
| Leaf-eater biscuit | Once per year | Comp. prox. w/ minerals (F9) |
| Toronto meat diet | Twice per year | Comp. prox. w/ minerals (F9) |
| Softbill diet | Once per year | Comp. prox. w/ minerals (F9) Vitamin E (Send to Michigan State) |
| Flying Fox Bat | Once per year | Comp. prox. w/ minerals (F9) Vitamin E (Send to Michigan State) |
| Burmese/Star Tort Diet | Once per year | Comp. prox. w/ minerals (F9) Vitamin E (Send to Michigan State) |

Minnesota Zoological Garden, Animal Diet

Trail _____ Zoologist _____

Species _____ Enclosure _____

Number in group (if group fed) _____

How is diet fed? Once a day _____ Divided and fed in equal parts twice daily _____

Other (describe) _____

Diet Preparation Notes _____

| Ingredient | Amount fed | Days offered | | | | | | |
|------------|-------------------------|--------------|-----|-----|-----|-----|-----|-----|
| | Kg per day (as fed) | | | | | | | |
| | Include range if varies | Su | M | T | W | Th | F | Sa |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |
| _____ | _____ | --- | --- | --- | --- | --- | --- | --- |

Enrichment food items/dietary supplements _____

Frequency of supplements/enrichment items _____

Marine Mammal Nutrition

Minnesota Zoological Gardens, Feb 2001

General Information

Marine mammals are opportunistic feeders and consume a wide variety of organisms. In general, the principal diet of most marine mammals consists of crustaceans, squid and fishes. In captivity, they receive a consistently higher quality but much more restricted diet. The dolphins at the Minnesota Zoo are fed herring (Clupeidae), capelin (*Mallotus villosus*) and smelts (Osmeridae). This food mix is a zoo and aquarium industry standard. These particular species are chosen because they are of high quality nutritionally and are commercially available at a relatively low cost. Each species of fish has a different nutritional profile, and even within a species there are marked seasonal changes within that profile.

USDA regulations state that "food for marine mammals shall be wholesome, palatable and free from contamination, and shall be of sufficient quality and nutritive value to maintain all of the marine mammals in a state of good health" (9CFR 3.105).

Consumption of fish that are contaminated with high levels of bacteria is a serious health problem for animals as well as for food handlers.

A variety of fish types are offered to our dolphins to avoid an animal from becoming imprinted on a specific type of food and ensures a complementary nutrient profile in the diet. Typically the ratio for composition of the diets is as follows, however these ratios may be changed to accommodate individual animal needs.

40% herring

50% capelin

10% smelt

Diets will be based on target weights and on the caloric value of each fish type being fed.

Diets for individual animals are based on target weights based on their age, gender, morphometrics, individual traits; environmental conditions, developmental stages e.g. lactating female; behavior and appearance. Decisions to alter any diet must meet with the approval of the area zoologist and the veterinarian.

Individual animal diets are recorded on the master diet board in the kitchen and is to be checked daily for any changes.

Cutting fish causes a greater nutrient loss, only whole fish is fed

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A diet of good quality mixed fishes provides a balanced source of fat, protein, moisture, vitamins and minerals.

Fat

in fish are primarily unsaturated and vary in concentration with respect to where the fish was collected, time of year, reproductive activity and the overall health status of the fish. Herring is a high-calorie fish, yet the caloric value can range from 1500 to 2500 kcal/kg depending on the season. Smelts are generally a low calorie food. It is important to look at the kilocalorie analysis of a fish, not just the weight, when designing a well balanced diet. A 20 pound herring diet can provide nearly four times as much energy as the same quantity of a lean fish.

Carbohydrate

Fish is low in carbohydrates. In contrast, invertebrates have nutritionally significant amounts of carbohydrates.

Moisture

Fish and invertebrates contain between 65% and 80% moisture. Although water is generated as a metabolic byproduct of digestion, marine mammals depend on the moisture in their food as a source for water. Poorly preserved, dehydrated fish jeopardize this natural source of water. When selecting food species, it is important to keep in mind that moisture in fish varies inversely with the amount of fat.

Vitamins and Minerals

Vitamins and minerals are abundant in whole fishes, but their concentrations can be affected by storage and handling procedures of the product. Vitamin concentrations vary within and between fish species. Some vitamins are so sensitive to decomposition, their levels during storage cannot be easily assured month by month. Generally, fish is a good source of water-soluble vitamins. (When buying vitamins from the store, the water soluble vitamins usually come in tablet form and the fat soluble ones come in the oil filled capsules). The fat soluble vitamins A, D and E are abundant in most aquatic organisms, with the fish liver and other organs usually containing more than the flesh. This is especially true in lean species such as smelt and capelin. Mineral content varies between and within species and also depends on season, collection location and stage of development. For example, calcium and phosphorus are concentrated in the scales and skeleton.

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In particular, thiamin (vitamin B1) and Vitamin E are nutrients which, if present in too small of a quantity, are known to be problematic when feeding fish. Both of these vitamins are relatively quickly degraded in killed fish even when the fish are frozen under ideal conditions. Vitamin E is destroyed during fat breakdown. This necessitates supplementation for fish eating animals.

Supplementing

To compensate for any possible vitamin or mineral deficiencies in the diets for the dolphins we supplement their diets daily to provide the following:

1 tab of multi-vitamin per 70kg of body weight

25-30mg of thiamin (B1) per kg of fish fed

100 IU of Vitamin E per kg of fish fed

See master diet board in kitchen for correct daily supplements.

Vitamins are to be stored in a cool, dry place.

Vitamin and supplement expiration dates are to be current.

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ORDERING FOOD FISH FOR DOLPHINS

- Food fish items intended for consumption by the dolphins will be purchased by the marine mammal area zoologist. A Purchase Order request is necessary. This will need a signature from the appropriate management staff.
- The zoologist will monitor the inventory to assure there is sufficient quantity to meet predicted needs.
- Food fish will be bought in quantities that assure a reasonable balance between product freshness and product availability.
- The zoologist will contact suppliers several times a year to check on trends and predictions of product availability.
- All food fish will be purchased from reputable suppliers. McRoberts, Inc., Shoreside and/or Atlantic Pacific are suppliers typically used by the Minnesota Zoo.
- Fish purchased must be of the same quality as that intended for human use (9 CFR, Subpart E 3.105).
- All food fish must be packed frozen in poly-wrap and placed inside plastic/wax lined cardboard boxes. Package size should be determined by the usage and type of fish. Fish may be block frozen, individually quick frozen (IQF), or in a shatter pack.
- When possible each box should be stamped with the catch date, at the very least each box must be stamped with a lot number.
- Schedule delivery for a weekday, preferably between 9am and 2pm.
- Notify Kevin Henderson (Grounds Crew) of impending delivery for assistance in off loading.

PRODUCT INSPECTION

Before the fish is off loaded from the truck a thorough inspection must be made.

- Check supplier's documents to ensure that the fish shipment corresponds to what was ordered.
- Observe the shipping vehicle. There should be no nonfood items shipped with the fish.
- Check the temperature of the storage area.
- Visually inspect the contents of random packages to ensure the load is suitable. At a minimum examine 3 packages-one from the front, middle and end of load.
- Visually inspect the fish to make sure the product is the species and size, as well as the size and type of packaging ordered.
- Check for evidence that the fish have been frozen, thawed and then frozen again; water or ice buildup on the boxes or floor beneath the boxes; wrappings that are moist or slimy; fish with soft, flabby flesh, a sour odor and an off color.
- When thawed, fresh fish have bright red gills, prominent clear eyes, and firm, elastic flesh.
- Random sample boxes must be thawed ASAP and fish inspected again before product is deemed satisfactory for acceptance.
- If the fish is unacceptable for any reason, refuse to take receipt. Do not sign any documents. It may be necessary to contact vendor. It should be noted on the original

Marine Mammal Nutrition

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purchase order that the Minnesota Zoo reserves the right of refusal if the product is unacceptable.

- If product is accepted at delivery, but the product proves to be unsatisfactory for any reason during its use, contact the vendor and notify them of problem.

STORAGE

Once fish is accepted, it is immediately placed in the Discovery Bay Freezer. If absolutely necessary, fish may also be stored in the storeroom freezer and/or the freezer in the Tropics building.

- These freezers will maintain a temperature of -10 F or lower. Temperatures will be recorded by marine mammal staff first thing in the morning and before leaving at night.
- Freezer stock may have to be rotated so that the older stock will be used before the new. The zoologist will record on the freezer inventory sheet located on the whiteboard outside of the kitchen fish types, dates.
- The freezer is designated for fish storage only.
- There should be no items stored without lids.
- Check to be sure air ducts and fans are not blocked that provide the circulation needed to maintain the proper temperature. Allow a two foot gap between the top of the stacks and the fans.
- Freezer is to be cleaned weekly according to schedule or as needed.

FOOD FISH TESTING

- A blanket purchase order is usually requested at the beginning of the fiscal year to cover expenses for fish analysis tests.
- All fish fed to the dolphins will have samples sent to an independent laboratory to be tested for the following qualities: moisture, protein, fat, ash, carbohydrate and caloric value. These samples must be submitted as soon as possible after the fish has been delivered. It also might be necessary to test fish that remains in the inventory for more than six months.
- Obtain a sample from each new product. Place sample in a freezer lock storage bag. Assign sample a code and label on bag for tracing purposes. Store in freezer if samples cannot be mailed immediately.
- Place samples in Styrofoam mailing container, surround with ice.
- Fill out appropriate mailing labels and take to vendor.
- Be sure test results are received by the zoologist.
- Record and file test results.

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THAWING

- **Incorrect thawing of fish products increases the potential for nutrient loss, rancidity, microbial growth and loss of palatability. USDA regulations state "thawing of frozen foods shall be conducted in a manner that will minimize contamination and which will assure food retains nutritive value and wholesome quality (9 CFR 3.105).**
- Only food fish is to be stored in walk-in-cooler.
- Appropriate number of boxes of products will be removed from the freezer and placed in the walk-in-cooler for the thawing process. Remove poly wrapped blocks of fish from boxes and place fish on individual thaw trays. If any of the fish quality is suspect, discard box and breakout another box. Discard cardboard boxes to recycling dumpster.
- The number and types to be broken out are recorded on the master diet board in the kitchen and the whiteboard outside of the kitchen.
- Walk-in-cooler will maintain a temperature of 34 and 40 degrees. Temperatures will be recorded by marine mammal staff first thing in the morning and before leaving in the afternoon. Temperature of the fish itself should not exceed 40 F.
- Refrigerator thaw time depends on amount, packaging of product. Product is typically moved to walk-in-cooler at 230pm.
- Product will thaw in walk-in-cooler for no more than 24 hours and no less than 12 hours. All food must be fed within 12 hours after thawing or be discarded. After thawing, fish is covered in ice in stainless steel buckets and kept in the walk-in-cooler until being fed.
- To insure that proper thawing, handling and feeding procedures are being maintained weekly food fish temperature validations are conducted on Mondays. Insert stick thermometer into the body cavity of a herring, place herring with thermometer in plastic zip bag and place in one of the dolphin's last of the days feeding. Temperature readings should be done before fish is initially rinsed, before placing in walk-in-cooler, when removed from the cooler and just before feeding. Record temperature results on chart hanging on freezer door.

PROPER HANDLING AND FISH PREP PROTOCOL

All handling of fish is to be done as to minimize bacterial contamination and assuring wholesomeness and nutritive value.

- Record freezer and walk-in-cooler temperatures.
- Wear gloves for sanitary practices. Set up daily vitamins for each animal.
- Rinse sinks. Remove fish from walk-in-cooler. Break up 1/2 block sections into sink and rinse with cold water. Do not immerse fish in standing water. Temperature of fish should not exceed 40 F.
- Inspect each fish for freezer burn, tears, punctures, disagreeable odor etc. These fish are to be discarded and not placed in buckets. Also be alert to any foreign object e.g. hooks, monofilament line etc. that may be in the fish.
- Discarded fish should be discarded and ground in disposal.
- Check diet board. Weigh proper amounts and fish types and place in individual animal's stainless steel buckets. Fish can be malleable but not flaccid.

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- Keep fish refrigerated in walk-in-cooler until feeding. Buckets should be covered with ice to prevent fish from drying out.
- Buckets are covered with ice, transferred to the coolers poolside prior to feeding.

CLEANING AND SANITATION

(USDA CFR 3.107).

“Equipment and utensils used in food preparation must be cleaned and sanitized after each use. Kitchens and other food handling areas where animal food is prepared must be cleaned at least once daily and sanitized at least once every week. Sanitizing must be accomplished by washing with hot water and soap or detergent in a mechanical dishwasher, or by washing all soiled surfaces with a detergent solution followed by a safe and effective disinfectant, or by cleaning all soiled surfaces with live steam. Substances such as cleansing and sanitizing agents, pesticides, and other potentially toxic agents must be stored in properly labeled containers in secured cabinets designed and located to prevent contamination of food storage preparation surfaces.”

Kitchen Cleaning Protocol

- When fish prep is completed, before placing buckets in walk-in-cooler rinse floor and shelves with hot water. Apply Brulin to floors and shelves, scrub floor with deck brush and shelves with sponge/scrubby. Rinse well, squeegee floor dry. Once refrigerator is clean, place diet buckets onto shelves.
- Rinse counter tops, sinks, faucets, handles, walls, refrigerator doors and handles, thawing trays and any utensils used in food prep. Spray surface areas with cleansing agent (Dawn). Using steel scrubbers or sponge/scrubby scrub all items and areas. Rinse well, leaving no chemicals on surface. Squeegee water into drains. Return thawing trays to refrigerator shelves, scales and dishes to kitchen shelves.
- Clean floor using deck brush. Rinse with hot water, apply Brulin, scrub, rinse well with hot water. Squeegee water into drains.
- Be sure discarded fish is ground in disposal. Always grind fish immediately after placing in disposal.
- Change plastic liner in garbage pail. Take out garbage to dumpster.
- Ice coolers should be rinsed and cleaned with disinfectant and rinsed well before replacing new ice.
- After dolphin feedings, buckets are to be scrubbed with Dawn detergent, rinsed well and placed to dry.
- At the end of the day the cleaning process is to be repeated. In addition, after scrubbing counters, sinks refrigerator doors etc. Brulin is to be sprayed on surface areas, areas swiped with sponge and must have contact with surfaces for 10 minutes. Floors of kitchen and refrigerator should be rinsed, sprayed with Brulin, scrubbed and not be rinsed before 10 minutes. Feed buckets are to be sprayed with Brulin, wiped with a sponge and sit for 10 minutes. All surface areas, items and buckets must be rinsed thoroughly following contact time with the disinfectant.
- Change plastic liner in garbage pail, empty all garbage and take to dumpster.

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- Before securing kitchen at the end of the day, be sure there is no fish sitting in disposal.
- Check that all lights, freezer, refrigerator and kitchen lights are turned off before leaving.

Conservation

The Minnesota Zoo's Masterplan for Conservation

The Minnesota Zoo Conservation Plan is designed to foster integration of responsible conservation action throughout all aspects of zoo operations. The Conservation Plan embodies a strongly felt and shared value of Zoo Staff with respect to conservation, and sets expectations that all other zoo plans such as the Animal Collection Plan, Annual Work Plans, and Long Range Plans should follow. The Conservation Plan has three general goals and six objectives to assist in meeting those goals. If these goals are met the Minnesota Zoo will indeed be a recognized leader in conservation at the local, national and international levels. In addition to providing a philosophical framework for decision-making, the Conservation Plan also lays out specific activities to be initiated. The process to develop a comprehensive Conservation Plan for the Minnesota Zoo was initiated in June 1998, facilitated by staff from the Conservation Breeding Specialist Group (CBSG), and completed in 1999 (see doc A in separate Conservation notebook).

AZA Commitments of the Minnesota Zoo

The Minnesota Zoo's conservation programs include participation in and coordination of various AZA SSPs[®], TAGs, CAPs, and other committees. The Minnesota Zoo currently participates in 13 AZA Species Survival Plans[®] (see below) as well as every Taxon Advisory Group, Population Management Plan and Studbook for covered species in the collection. Because of the Minnesota Zoo's long-term commitment to tiger conservation, we have used this involvement to expand and increase our commitments to other programs and countries in Southeast Asia. Many of these efforts are published as scientific or popular articles (see doc B in separate Conservation notebook).

The AZA Tiger SSP: The Minnesota Zoo coordinates the AZA Tiger Species Survival Plan (SSP), which currently manages three of the five remaining tiger subspecies: Amur (*Panthera tigris altaica*), Sumatran (*P.t. sumatrae*), and Indochinese (*P.t. corbetti*) tigers. As of October 2000 there are 100 SSP member institutions holding 296 tigers: 154 Amur, tigers (52%); 57 Sumatran tigers (19%); 32 Indochinese tigers (11%); and about 53 generic tigers (18%). The AZA SPMAG advisor to the AZA Tiger SSP is from the Minnesota Zoo, as is the AZA Amur Tiger Regional Studbook Keeper.

The Amur tiger SSP population, managed by the Minnesota Zoo, is a relatively stable and mature population with known lineages currently retaining 96.6% gene diversity and experiencing only low levels of inbreeding. The SSP population has been maintained at about 150-160 animals over the past 15 years, with about one-third designated as surplus to the managed population.

A major responsibility of coordinating the AZA Tiger SSP is making sure that there is an update of the Tiger SSP Master Plan and Tiger SSP 5-Year Plan every two years, communicating to the 100-plus tiger institutional representatives on a regular basis, and responding to queries from the press on nearly a daily basis (see doc C in separate Conservation notebook).

The Tiger SSP in Action: The AZA Tiger SSP, its 100 North American zoo constituents, and its management, education and research colleagues, have accumulated a modest list of accomplishments and are presented here in chronological order:

- *Indochinese Tiger Masterplan for Thailand* (1995);
- Evaluation of the captive South China tiger population in the *South China Tiger Studbook Analysis and Masterplan Report* (1995) and *Medical, Reproductive and Management Evaluation of South China Tigers in China* (1995);
- Reproductive evaluation for the captive South China tiger population (1997);
- South China tiger nutrition training workshop (1999);
- Creation of the Tiger Information Center (1995), a web site at <http://www.5tigers.org>;
- PKBSI Sumatran Tiger Masterplan--*Masterplan Harimau Sumatera Indonesia* (1997);
- Coordination of the *Year of the Tiger Conference* in Dallas, TX (1998);
- Revised *AZA Tiger SSP Master Plan* (1998 and again in 2000);
- Analysis of regional and global captive Sumatran tiger populations (1998);
- Coordination of the Javan Tiger Symposium, Jogakarta, November (1999).

Conservation Partnerships: In the course of our work the AZA Tiger SSP has been fortunate to link up with a number of organizations, government agencies and other groups. These include the American Zoo and Aquarium Association (AZA); Conservation Breeding Specialist Group of the IUCN; *Save The Tiger Fund*, a special project of the National Fish and Wildlife Foundation with ExxonMobil Corporation (USA); US Fish and Wildlife Service (USFWS) *Rhinoceros and Tiger Conservation Fund*; Discovery Channel's Animal Planet and Tremendous Productions;

The Tiger Foundation (Canada); South Lakes Wild Animal Park and the Sumatran Tiger Trust (UK); Fauna and Flora International (UK); Zoological Society of London (UK); 21st Century Tiger Fund at the London Zoo (UK); Australian Regional Association of Zoological Parks and Aquariums (ARAZPA); the Zoological Parks Board of NSW; the Australian Commonwealth EPA; Dreamworld (Australia); Discovery Asia (Singapore); Auckland Zoo (New Zealand); IUCN Cat Specialist Group (Switzerland); and the Environmental Investigation Agency (UK).

In Indonesia, the Department of Forest Protection and Nature Conservation (PKA), State Ministry of Forestry; Indonesian Zoological Parks Association (PKBSI); Taman Safari Indonesia (TSI); Esso Indonesia; World Wildlife Fund-Indonesia Program; European Union Forest Inventory and Mapping Project (Indonesia); Regional Department of Education and Culture, Lampung; Kantor Inspeksi Pendidikan Kecamatan Way Jepara; Lembaga Ilmu Pengetahuan Indonesia (LIPI); Fakultas Pertanian (Jurusan Sosial Ekonomi Pertanian), Fakultas MIPA (Jurusan Biologi) and Fakultas Sosial dan Ilmu Politik (Jurusan Sosiologi) at Universitas Lampung (UNILA); Research & Development Center for Biology (LIPI); Ministry of State for Population and the Environment (Jakarta).

Tiger Newsflash Communiqué: A new vehicle for communicating what is occurring with programs, activities, announcements, and other events affecting primarily the Tiger SSP was created and is now e-mailed to all of the Tiger SSP diverse constituents. This includes the nine-member management group, four advisors, about 100 institutional representatives, 120 funders and other interested groups, and probably more as interest grows. We believe we will reach a

wider audience, in a quicker way, and at a more economical rate with this effort. This file is sent via e-mail as a .pdf file with a link to a site that provides a free download of the program to read .pdf files. Four reports have been drafted and mailed: A report to the AZA Felid TAG, A profile of The Tiger Information website (www.5tigers.org), the annual report of the AZA Tiger SSP, and a four-year summary of the Sumatran Tiger Project.

Tiger Information Center: Conservation is the highest priority of the American Zoo and Aquarium Association (AZA) and the organization recognizes the importance of knowledge, awareness, appreciation and active involvement in the conservation of endangered species. In recognition of this, the Tiger Information Center was created to provide the public, scientific and conservation communities with an international forum for exchanging information relevant to the preservation of wild tigers (*Panthera tigris*) across Asia and in zoos worldwide. It provides multiple levels of information and educational concepts ranging from scientific to general, from complex to simple. The site is designed to inform everyone from wildlife conservationists to the zoo community, from the professional to the curious, from adults to children (see doc D in separate Conservation notebook).

The National Fish and Wildlife Foundation's *Save the Tiger Fund* has awarded the Minnesota Zoo operation grants for six straight years to support The Tiger Information Center (www.5tigers.org). The 5Tigers web site went on-line on 28 September 1995, the day Exxon Corporation (now ExxonMobil) and the National Fish and Wildlife Foundation publicly launched the *Save the Tiger Fund*. The web site comprises 1,700 web pages navigated by some 76,800 internal links and about 700 external links to other web sites.

| Event | For the Year 2000 | September | October | November |
|------------------|-------------------------------------|-----------|-----------|-----------|
| Hits | EntireSite (Successful) | 3,028,260 | 4,543,544 | 4,056,316 |
| | Average Per Day | 100,942 | 146,565 | 162,252 |
| | Home Page | 48,219 | 71,576 | 60,031 |
| Page Views | Page Views (Impressions) | 360,469 | 553,063 | 503,958 |
| | Average Per Day | 12,015 | 17,840 | 20,158 |
| | Document Views | 357,050 | 549,058 | 499,620 |
| Visitor Sessions | Visitor Sessions | 83,509 | 120,223 | 108,769 |
| | Average Per Day | 2,783 | 3,878 | 4,350 |
| | Average Visitor Session Length | 00:11:40 | 00:11:29 | 00:12:12 |
| | International Visitor Sessions | 1.59% | 12.51% | 12.68% |
| | Visitor Sessions of Unknown Origin | 90.56% | 20.26% | 19.6% |
| | Visitor Sessions from United States | 7.84% | 67.21% | 67.71% |
| Visitors | Unique Visitors | 34,714 | 45,261 | 39,689 |
| | Visitors Who Visited Once | 28,688 | 37,321 | 32,501 |
| | Visitors Who Visited More Than Once | 6,026 | 7,940 | 7,188 |

Traffic on the web site has steadily increased from its inception to its current level. The site passed its one millionth hit in 1995 after six months; now there are about 4 million hits on pages every month. There is a growing international recognition of the site, reflected by receipt of numerous top educational awards and honors and visitors. On any single day, a global audience representing over 90 countries visits the site.

The Tiger Information Center was notified in 1999 that a component of the web site is being used in an on-line course entitled Natural Resources 358/558: Biodiversity and Conservation Biology offered through the University of Wisconsin-Stevens Point (UWSP). This course is a cooperative effort between UWSP, the Wisconsin Center for Environmental Education, World Wildlife Fund, UWSP College of Natural Resources and UWSP Office of Credit Outreach that is designed to aid in educating others about tiger biodiversity. The URL for the introductory pages to the course is <http://wcee1.uwsp.edu/biodiversity/>.

AZA Committee Involvement (Note: Staff of the Minnesota Zoo participate as institutional representatives to all Taxon Advisory Groups and Species Survival Plans relevant to our collection. Further, a number of staff members serve on TAG and SSP Management Groups as well as serve as members on Scientific Advisory Groups. That entire list is lengthy; therefore, below are listed only those staff members that are members of AZA Board Level Committees or have leadership roles on Conservation and Science Committees including SSPs, TAGs, CAPs and SAGs)

Vice President/ Conservation (Ron Tilson)

- 1995 – Present Co-chair, AZA Southeast Asia Conservation Action Partnership (CAP)
- 1993 – Present Member, AZA Field Conservation Committee
- 1992 – Present Coordinator, AZA Tiger Species Survival Plan (SSP) and AZA Amur Tiger SSP
- 1980 - Variable Book Reviews Editor, *Journal of Zoo Biology* (1987-93)
Co-coordinator, AZA Tiger SSP for Amur tigers (1987-92)
Co-coordinator, AZA Gibbon Species Survival Plan (SSP) (1990-1996)
Coordinator, AZA Southeast Asia Fauna Interest Group (FIG) (1990-95)

Conservation Manager (Kevin Willis)

- 2000 – Present Wildlife Conservation Management Committee (WCMC)
- 2000- Present Animal Data Information Systems Committee (ADISC)
- 2000 – Present Strategic Software Task Force (SST)
- 1998 – Present Contributing Editor, *Zoo Biology*
- 1995- Present Administrator, AZA Studbook Course
- 1992 – Present Secretary, AZA Small Population Management Advisory Group.
- 1992 – Present Instructor, AZA Courses including Studbook, Population Management, Institutional Records Keeping, and Institutional Collection Planning.

Studbooks

Staff of the Minnesota Zoo are the AZA WCMC-approved studbook keepers for the following species: Nilgiri tahr, Asian brown tortoise, impressed tortoise, takin, goral, pronghorn, Amur tiger and Canadian lynx. The Minnesota Zoo currently maintains 41 studbook species.

AZA Species Survival Plan Participation: 1995-2001

| <u>Common Name</u> | <u>Latin Name</u> |
|-------------------------------|--------------------------------------|
| Bali/Rothschild's mynah | <i>Leucopsar rothschildi</i> |
| Victoria crowned pigeon | <i>Goura victoria</i> |
| Great hornbill | <i>Buceros bicornis</i> |
| Matschie's tree kangaroo | <i>Dendrolagus matschiei</i> |
| Pygmy loris | <i>Nycticebus pygmaeus</i> |
| Clouded leopard | <i>Neofelis nebulosa</i> |
| Malayan sunbear | <i>Helarctos malayanus</i> |
| Oriental small-clawed otter | <i>Aonyx cinerea</i> |
| Przewalski's/Asian wild horse | <i>Equus przewalskii</i> |
| Red panda | <i>Ailurus fulgens</i> |
| Amur tiger | <i>Panthera tigris altaica</i> |
| White-cheeked gibbon | <i>Hylobates concolor leucogenys</i> |
| Mexican wolf | <i>Canis lupus baileyi</i> |

AZA and Other Conservation Awards

In 1995 the Minnesota Zoo was awarded the AZA Conservation Award for the Adopt-A-Park Program in Ujung Kulon National Park, Indonesia, and the zoo was honored again in 1998 with the AZA's Significant Achievement Award in Conservation for the Sumatran Tiger Project. The Sumatran Tiger Project was also recognized in 1999 with a CITES Tiger Task Team Commendation for outstanding project design, presented at the COP CITES meeting in Portugal and again by being awarded the 21st Century Tiger (UK) Conservation Prize for outstanding field work in tiger conservation.

At the 2000 AZA Annual Conference the Minnesota Zoo was awarded the AZA Bean Award for its long-term breeding program for pronghorn antelope.

Energy Conservation:

1. Electrical loads are "demand" limited.
2. HVAC Units to public areas are "duty" cycled (on as-needed basis).
3. Boilers are tuned up annually.
4. Use interior (ambient) light level to step on/off roof lights; installed 3M reflectors.
5. Actively monitor utility usages for unexpected changes.
6. Use high efficiency motors an unit replacement.
7. Preventive maintenance program on equipment.
8. Active and passive heat recovery systems in use.
9. Ongoing expansion of the EMS (BAS) as funding will allow.

Note: 1,2,4, and 8 are controlled via the Energy Management System (EMS or BAS).

1. Cleaning products have all been switched to "Non-toxic" and "Biodegradable".
2. Recycling.
3. All refrigerants are reclaimed (as required by law).
4. All ponds/streams have been retrofitted for automatic level controls.
5. All paper products are post consumer recycled products.
6. Only purchasing expected usage quantities.
7. Paints are typically latex vs. oil-based.

Attached are:

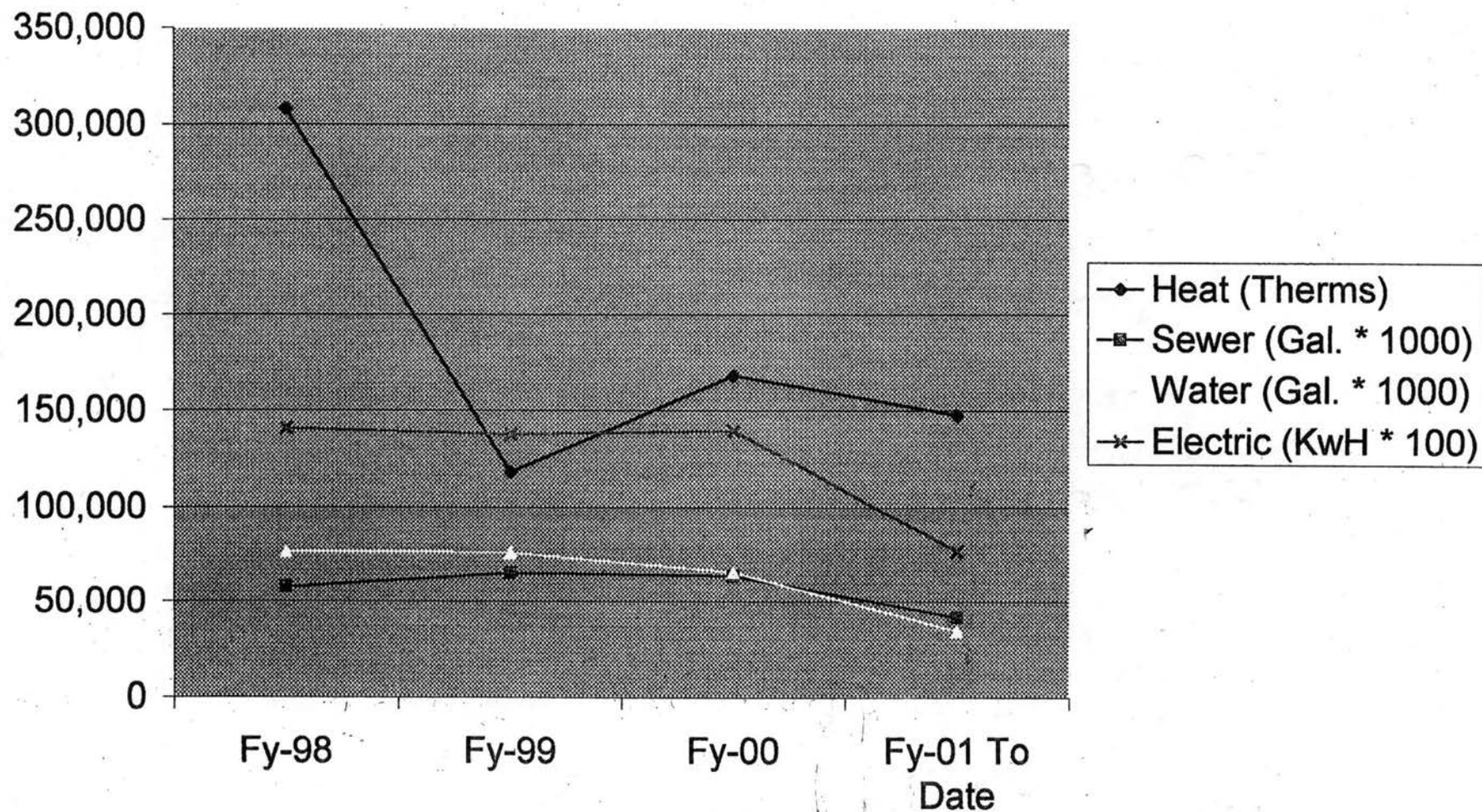
- A. Description of Minnesota Zoo Recycling Program.
- B. Fiscal Year Comparison of Energy / Utility usage.
- C. Annual Hazardous Waste Report.

Minnesota Zoological Garden

Materials Recovered in Fy-2000

| <u>Type of Recycleable</u> | <u>Unit of Measure</u> | |
|----------------------------|------------------------|------------|
| Batteries - Auto | 2,600 lbs. | Fy-93 |
| Batteries -Appliance | 500 lbs. | |
| Beverage Cans | | 2400 |
| Compost | | 100 ton |
| Bulbs (Vapor) | 681 each | |
| Glass | | 500 lbs |
| Grease, Bone, Tallow | | 5365 lbs. |
| Laser Toner Cartridges | Refilled | |
| Metal and Aluminum | | 13,520 lbs |
| Automotive Oil (used) | 480 gallons | |
| Paper and Cardboard | | 203 ton |
| Plastic | | 500 lbs- |
| Solvent | 44 gallons | |
| Tires | 2,000 lbs. | |
| Water water | 63,356,000 gallons | |

Zoo Site Utilities (aggregated)



Department of Environmental Management
 Hazardous Waste Regulation
 14955 Galaxie Avenue
 Apple Valley, MN 55124
 (952) 891-7557 Fax (952) 891-7588
 www.co.dakota.mn.us



2000 Hazardous Waste Generator Annual Report and License Renewal Application

Minnesota Zoo

| | | | |
|---------------------------|---------------------------|-----------------------|-----------------------|
| Generator No.: 224 | Phone No.: (952) 431-9238 | Site Address: | Mail Address: |
| EPA ID No.: MND102273539 | Fax No.: (612) 431-9201 | Minnesota Zoo | Minnesota Zoo |
| Contact Person: Don Appel | | 13000 Zoo Blvd | 13000 Zoo Blvd |
| Email: | | Apple Valley MN 55124 | Apple Valley MN 55124 |

Complete the "Amount of Waste Generated in 2000", mark the appropriate units, complete all blank areas, and make any necessary changes. (See Instruction Sheet for details)

| ID # | Waste Name | Waste Code(s) and EPA ID Number(s) | Transporter Name(s) | Facility Name(s) and EPA ID Number(s) | Management Method | Amount of Waste Generated in 2000. Include the units. |
|------|------------------------|------------------------------------|------------------------------|---------------------------------------|--------------------------------|--|
| 444 | H Parts Washer Solvent | D001 | Safety Kleen ILD051060408 | Safety Kleen MND981097884 | Recycle/Beneficial Use | 44 <input checked="" type="checkbox"/> Gallons [] Pounds [] Items |
| 445 | H Carb Cleaner | F002 | Safety Kleen ILD051060408 | Safety Kleen MND981097884 | Recycle/Beneficial Use | 0 <input type="checkbox"/> Gallons [] Pounds [] Items |
| 446 | N Lead Acid Batteries | D002 D008 | Bauer Bilt | GNB | Recycle/Beneficial Use | 65 <input type="checkbox"/> Gallons [] Pounds [] Items |
| 447 | N Used Oil | M100 | OSI MNR000034488 | OSI MNR000034488 | Oil Hauler or Service Station | 480 <input checked="" type="checkbox"/> Gallons [] Pounds [] Items |
| 1558 | H Paint | F005 | Safety Kleen ILD051060408 | Safety Kleen MND981097884 | Incineration/Thermal Treatment | 55 <input checked="" type="checkbox"/> Gallons [] Pounds [] Items |

| | | | | | | |
|----------------------------------|------|---|---|-------------------------|------------|--|
| 1559 H Pain iner | F005 | Safety Kleen ILD051060408 | Safet an MND 97884 | Burning for Fuel | <u>24</u> | <input checked="" type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |
| 2094 N Oil Filters | M200 | Safety Kleen MND981097884 | Safety Kleen MND981097884 | Oil Filters Recycled | <u>35</u> | <input checked="" type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |
| 2095 N Antifreeze | D008 | Safety Kleen ILD051060408 | Safety Kleen MND981097884 | Recycle/Beneficial Use | <u>0</u> | <input type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |
| 2905 N Fluorescent/Mercury Lamps | D009 | Mercury Waste Solutions MND985759315 | Mercury Waste Solutions MND985759315 | Recycle/Beneficial Use | <u>681</u> | <input type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input checked="" type="checkbox"/> Items |
| 4950 H Lab Packs | MN02 | Laidlaw SCD987574647 | Laidlaw ILD980502744 | Recycle/Beneficial Use | <u>0</u> | <input type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |
| 5734 A Fixer Solution | D011 | Environchem Unknown | Environchem Unknown | Sewered after Treatment | <u>0</u> | <input type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |
| 5735 A Scrap Film | D011 | Environchem Unknown | Environchem Unknown | Recycle/Beneficial Use | <u>0</u> | <input type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |
| 6005 N PCB Ballasts | MN03 | Laidlaw ILD987574647 | Laidlaw ILD987574647 | Recycle/Beneficial Use | <u>0</u> | <input type="checkbox"/> Gallons <input type="checkbox"/> Pounds <input type="checkbox"/> Items |

Minnesota Department of Administration
 State Government Resource Recovery Program
 1999 Recycling Recovery Rates of Metropolitan Offices and Operations

| Agency and Location | Recycling Rate Percentage | Recovered Materials |
|--|---------------------------------|--|
| Transportation Department | | |
| 1900 County Road I, Arden Hills | 46 | P, BC |
| 1959 Sloan Place, Maplewood | ** | ** |
| 2055 North Lilac Drive, Golden Valley | 73 | P, B, M, AL, TI |
| 222 Plato Boulevard, Saint Paul ++ | 63 | P, BC, G, PL, LT |
| 2229 Pilot Knob Road, Mendota Heights | 34 | P, LT |
| 3485 Hadley Avenue North, Oakdale ++ | 96 | P, M, AL, B, TI |
| 6000 Minnehaha Avenue, Fort Snelling ++ | 91 | P, M |
| 616 Pierce Butler Route, Saint Paul | 74 | P |
| Ford Building, Saint Paul | 83 | P, BC, G, PL |
| Transportation Building, Saint Paul | 53 | P, BC, G, PL |
| Veterans Affairs | | |
| Veterans Service Building, Saint Paul | 50 | P, BC, G, PL, LT |
| Veterans Home | | |
| 1200 East 18th Street, Hastings ++ | * | * |
| 5101 Minnehaha Avenue South, Minneapolis | * | * |
| Veterans Homes Board | | |
| Veterans Service Building, Saint Paul ++ | 50 | P, BC, G, PL, LT |
| Veterans of Foreign Wars | | |
| Veterans Service Building, Saint Paul | 50 | P, BC, G, PL |
| Veterans of Foreign Wars, Ladies Auxilliary | | |
| Veterans Service Building, Saint Paul | 50 | P, BC, G, PL |
| Veterinary Medicine Board | | |
| 2829 University Avenue Southeast, Minneapolis | ** | ** |
| Water and Soil Resources Board | | |
| One West Water Street, Saint Paul | 63 | P, BC, G, PL |
| Workers' Compensation, Court of Appeals | | |
| Judicial Center, Saint Paul | 69 | P, BC, G, PL, LT |
| Zoological Garden | | |
| 13000 Zoo Boulevard, Apple Valley | 69 | P, BC, G, PL, M, B, FL, O, TI, PC, C, PA, AF |

Legend

| | | | | |
|-------------------------|--------------------------|---------------------------|------------------|-----------------------|
| AF-Antifreeze | C-Compost | GBT-Grease, Bones, Tallow | PA-Paint | TI-Tires |
| AL-Aluminum | CM-Construction Material | LT-Laser Toner Cartridges | PC-Parts Cleaner | TY-Typewriter Ribbons |
| B-Batteries, Auto | FL-Fluorescents | M-Metal | PL-Plastic | TX-Textiles |
| BA-Batteries, Appliance | FW-Food Waste | O-Oil, Automotive | S-Solvent | WO-Wood Waste |
| BC-Beverage Cans | G-Glass | P-Paper | RF-Refrigerant | WW-Waste Water |

- * No response
- ** Data unavailable due to collection arrangements
- + Metropolitan regional government
- ++ Waste reduction plan implemented

The Minnesota Zoo's conservation programs include participation in and coordination of various programs on a local, national and international level. Minnesota Zoo staff serve on a number of committees or related groups to achieve our conservation goals. Some of our more notable achievements include the coordination of various programs in cooperation with the IUCN/SSC Conservation Breeding Specialist Group, (see below), the creation and continual support of the Adopt-A-Park Program for Ujung Kulon National Park in Java, and Way Kambas National Park in Sumatra, Indonesia (see below), and the initiation of both *in situ* and *ex situ* tiger conservation programs in Southeast Asia, most notable the Sumatran Tiger Project in Indonesia and the South China Tiger Conservation Program in China.

The Minnesota Zoo Conservation Office works very closely with the IUCN/SSC Conservation Breeding Specialist Group (which is located in the same building). The Minnesota Zoo continues to coordinate global tiger conservation programs through the IUCN/SSC CBSG Tiger Global Conservation Strategy (GCS), integration of the world's regional captive tiger programs that also links *in situ* and *ex situ* tiger conservation programs. This involves working closely with other tiger regional programs, particularly the Indonesian PKBSI, the Southeast Asian SEAZA, the Australasian ASMP, the European EEP, the Thai ZPO, the Indian IESBP and the Chinese CAZG.

The Minnesota Zoo's Biological Programs Division has been a partner with the Minnesota Department of Natural Resources on the restoration of the trumpeter swan in Minnesota. The captive breeding aspect of the program is coordinated by Minnesota zoo staff and involves coordinating breeding at two other AZA member institutions and a handful of private breeders. Over 100 swans, over half of all swans released to date in Minnesota, have either been hatched and/or held at the Minnesota Zoo before release.

Committees

The Vice President of Conservation serves as an Associate Member of the IUCN/SSC Conservation Breeding Specialist Group (CBSG), chairs the CBSG Southeast Asia Program, coordinates the CBSG Tiger Global Conservation Strategy (GCS), coordinates the CBSG 'Adopt-A-Park' Program, and is a member of the IUCN/SSC Asian Primate Specialist Group, the Hyena Specialist Group and the Southeast Asian Zoo Association (SEAZA).

Cooperative Minnesota Zoo and CBSG Projects

Cooperative Minnesota Zoo and CBSG projects include coordination of the following PHVA, CAMP and Masterplan workshops, including facilitating and/or editing, publishing and distributing the final reports:

- Indonesian PKBSI Sumatran Tiger Masterplan, Bogor, Indonesia, Jan-Feb 1995
- IUCN/SSC CBSG Saigon Zoo Masterplan, Ho Chi Minh City, Vietnam, April 1995
- CAZG South China Tiger Studbook Analysis and Masterplan, Suzhou, China, April 1995
- CAZG South China Tiger Evaluation and Masterplan, Chongqing, China, November 1995
- Thai ZPO Indochinese Tiger Masterplan, Khao Kheow Open Zoo, Thailand, July 1995
- Thai ZPO Wild Cattle Conservation Assessment Management Plan (CAMP), Thailand, July 1995

- Thai ZPO Stork, Ibis and Spoonbill CAMP, Thailand, July 1995
- Indonesian PKBSI Sumatran Tiger Masterplan, Bogor, Indonesia, April 1997
- CAZG South China Tiger Evaluation and Masterplan, Guangzhou, China, November 1997
- CBSG Tree Kangaroo Population and Habitat Viability Assessment (PHVA) and CAMP Workshop, Lae, Papua New Guinea, September 1998
- CAZG South China Tiger Nutrition Workshop, Suzhou, China, February 1999
- CBSG Red Wolf PHVA Workshop, Virginia Beach, VA, April 1999
- Indonesian PKA Javan Tiger Symposium, Yogyakarta, November 1999
- CBSG Algonquin Wolf PHVA Workshop, Minden, Ontario, Canada, February 2000
- CBSG Southern Rockies Wolf PHVA Workshop, Vermejo, NM, August 2000

The IUCN/SSC CBSG Tiger Global Conservation Strategy

The AZA Tiger SSP supports the mission of the IUCN/SSC CBSG *Tiger Global Conservation Strategy* (formerly called the *Tiger Global Animal Survival Plan*), a strategy for the management of tigers at the international level that links *in situ* and *ex situ* conservation activities for the recovery and long-term maintenance of wild and captive populations. A primary focus of the CBSG Tiger GCS by necessity is on captive management programs that can serve as genetic and demographic reservoirs to support the survival or the recovery of wild populations in the future, but it is not limited to captive programs only. In fact, an increased emphasis on supporting wild populations is necessary if we want to become true stewards of tigers, both captive and wild. Another focus is to identify where and how the transfer of captive management information and technology can assist the survival or recovery of wild populations. A third is to develop priorities for limited financial support for *in situ* conservation programs.

The CBSG Tiger GCS has been recognized as a strategic document by the world zoo community managing tigers. With the unanimous consensus of recognition for this document from all involved regional programs – Australasian Regional Association of Zoological Parks and Aquariums (ARAZPA), Perhimpunan Kebun Binatang se Indonesia (PKBSI), Southeast Asian Zoo Association (SEAZA), Indian Zoo Association, Chinese Association of Zoological Gardens (CAZG), Japanese Association of Zoological Gardens and Aquariums (JAZGA), American Zoo and Aquarium Association (AZA), National Federation of Zoological Gardens of Great Britain and Ireland, and European Association of Zoos and Aquaria (EAZA) – the CBSG Tiger GCS, with the assistance of the AZA Tiger SSP, is working to secure the future for wild tigers.

The CBSG Saigon Zoo Masterplan

The Director of Conservation at the Minnesota Zoo served as Project Coordinator for the CBSG's assessment of the Saigon Zoo, Vietnam and development of the *Saigon Zoo Masterplan for Conservation* (see doc E in separate Conservation notebook).

Academia

The Vice President of Conservation is an adjunct associate professor in the faculty of Conservation Biology, and an adjunct Professor in the faculty of Fish and Wildlife Conservation

at the University of Minnesota. He also serves as a technical reviewer for the following journals: Science, Evolution, American Naturalist, Journal of Mammalogy, Journal of Zoo Biology, Animal Behavior, Brain and Biology, American Journal of Primatology, National Geographic, and Natural History.

In Situ Conservation Programs or Activities

Sumatran Tiger Project: A long-term (now in its 6th year) field study of wild tigers at Way Kambas National Park (Sumatra) using camera traps and other censusing techniques to assess the status of status of tigers and their prey. This project is now being extended to two additional national parks in central Sumatra, Bukit Tigapuluh and Berbak (see doc F in separate Conservation notebook).

The Sumatran Tiger Project was designed to provide a holistic approach to conserving the tigers of Sumatra. In the first three years the project focused on defining the conservation requirements of wild Sumatran tigers in lowland rain forest habitat. The field study began at Way Kambas National Park in southern Sumatra, using remote infrared cameras and global positioning system (GPS) technology to establish tiger population densities in the park. A primary goal was to develop a technique to rapidly census tiger and tiger prey populations across all of Sumatra. Field information on habitat requirements, prey selection, and behavioral responses to disturbances further refined the conservation needs of wild tigers.

Over the last three years the goal of the Sumatran Tiger Project was to identify where the remaining tiger populations are in Sumatra and to assess the threats to these populations. With this information, forestry staff can decide how many tiger populations will form the future for the tiger's survival in Sumatra. A cost-benefit analysis will be necessary because not all tiger populations can be secured. Some tiger populations may be too small, the threats may be too large, the costs of absolutely protecting these tigers and their habitat may be too high, or a combination of these factors. As a result, tiger populations will need to be prioritized from the most valuable to the least securable.

Once forestry staff make these decisions, the tigers and their habitat will need to be protected by inserting anti-poaching patrols, by developing forestry staff capacity to monitor these populations and habitats through time, and by working with forest-edge communities to reduce tiger-human conflict. Ways to reduce conflict are to rapidly deal with problem tigers, provide clear communication that these forests are inviolate, and by working with community groups to find alternatives to their dependence on local forest resources. Integration of these responses will significantly help to secure the tiger's future in Sumatra.

Since 1995, the Minnesota Zoo and its conservation partners have raised over \$1,800,000 for tiger and rhino conservation efforts.

Community Conservation: A component of the Sumatran Tiger Project that focuses on attitudes toward wildlife, use of forest resources and human-wildlife conflicts of villages adjacent to Way Kambas National Park, Indonesia. The community component used rapid assessments of villagers and detailed surveys to study land use patterns, human-wildlife conflicts, and attitudes of nearly 1,000 households in 25 villages living adjacent to the park

Mobile Conservation Teams: Part of the Sumatran Tiger Project, three mobile teams census tigers, evaluate their habitat and document their threats across Sumatra.

GIS Database: Another component of the Sumatran Tiger project, a Geographic Information system database of wild tiger populations, tiger habitat, tiger prey and relevant human parameters is being compiled.

Undercover Investigation of Tiger and Rhino Parts: This 12-month long undercover investigation of trafficking in tiger parts in Sumatra was completed in 2000 and the results are being prepared for publication. It focused on how tiger parts enter commercial markets in Indonesia, who supplies these parts and why, and who buys these parts and why. Unfortunately, the preliminary results are truly discouraging, as tigers in Sumatra are being killed and processed at an all-time high.

Long-term Monitoring of Wild Tigers: A component of the Sumatran Tiger Project, this critically significant field project is staffed solely by Indonesian park rangers and is currently underway. It is a long-term monitoring of a known population of wild Sumatran tigers in Way Kambas National Park using infrared cameras. Tigers are still being photographed, and our long-term profiles on individual tigers are increasing in knowledge.

South China Tiger Conservation Program: Grants from the US Fish and Wildlife Service's *Rhinoceros and Tiger Conservation Fund*, and from The Tiger Foundation and its partners were awarded in 2001. This program is to support the Chinese State Forestry Administration (SFA) to train, equip and advise five Chinese field survey teams how to census wild South China tigers distributed in 11 protected areas in the provinces of Guangdong, Hunan, Jiangxi and Fujian in south central China. The US advisory team (coordinated by the Zoo's VP of Conservation) will first conduct a training workshop in field methodology, including how to conduct scientifically based local people interviews, techniques for tiger, prey, habitat quality and threat evaluations, use of infrared camera technology and how to develop a GIS map-linked database of all observations. The objective is to find and photograph as many South China tigers as possible, and to combine these photos with the field-based tiger related database so that the SFA can establish where and how many South China tigers still remain in the wild, what is their probability of surviving, and what needs to be implemented to secure their future (see doc G in separate Conservation notebook).

Javan Tigers in Meru Betiri National Park: A 12-month survey of Javan tigers and their prey in Meru Betiri National Park in eastern Java was completed in 2000 by PKA authorities. Meru Betiri represents habitat in which some of the last reports of the supposedly extinct Javan tiger have emanated. More recent sightings by park staff and local people have led to the reemergence of the possibility that the Javan tiger still exists. Twelve national park personnel were trained in 1999, and 20 cameras purchased in order to facilitate future census efforts. The most appropriate contribution that the project could make was identified as training in relevant tiger monitoring and census techniques to the park staff. Since remote camera monitoring was considered to be the most appropriate method available, considerable attention was paid to developing technical knowledge in this discipline, as well as other essential field tools as the GPS receiver and computer based mapping of field observations. Activities include class-based theoretical workshops, field application and a final field orientation to install remote cameras at preliminary sites.

Adopt-A-Park Program: In 1990 the Minnesota Zoo created an *in situ* conservation program in line with its Conservation Policy, which states, "The Zoo will continue to support the preservation and restoration of endangered species' natural habitats." We decided to design a program that would allow us to reach beyond our 'own fences' to protect wild animals where they live naturally, an *in situ* conservation initiative we termed the Adopt-A-Park Program. We launched the program by 'adopting' Ujung Kulon National Park in Java, Indonesia in 1990 and in 1996 we adopted Way Kambas National Park in southern Sumatra. In 2001 we will partner with South Lakes Wild Animal Park (UK) to adopt a third park in central Sumatra, Bukit Tigapuluh National Park (see doc H in separate Conservation notebook).

This *in situ* (on location) conservation initiative operates at the invitation of the Directorate General of Protection and Nature Conservation (PKA), under the Ministry of Forestry and Estate Crops, Indonesia, and is implemented locally with the director of the park. The goal of the program is to provide assistance directly to park guards to enable them to be more effective in their primary role as the conservation stewards of the park. This action validates the Zoo's commitment to conservation by linking our captive programs to the preservation of wild lands and wild animals, allowing us to create and experience our own conservation storyline, rather than borrowing one.

Since its inception, the Minnesota Zoo Foundation and AAZK have contributed nearly \$200,000 over a 10-year period to this unique conservation initiative.

Adopt-A-Warden Program: This program, initiated by the Minnesota Conservation Officers Association (Department of Natural Resources), was developed in cooperation with the Adopt-A-Park program. The aim was to provide law enforcement training and equipment for park guards in Ujung Kulon and Way Kambas Parks in Indonesia, by professional law enforcement officers.

Coastal Anti-poaching Patrols for Ujung Kulon National Park: The American Association of Zoo Keepers (AAZK) *Bowling for Rhinos* funds this program as part of the Minnesota Zoo's Adopt-A-Park program, now entering its eleventh year in Ujung Kulon. The funds support the annual operations of coastal patrol boats in their efforts to reduce poaching pressure on Javan rhinos and to better protect the rhino's habitat. This project is in addition to the AAZK's support of the photo census using remote infrared cameras to assess the size and status of the current Javan rhino population.

Ex Situ Conservation Programs or Activities

Tiger Global Strategy: A project of the IUCN Conservation Breeding Specialist Group, the tiger GCS is responsible for the integration of tiger regional captive management programs and the linking of tiger *ex situ* and *in situ* conservation programs.

Saigon Zoo Masterplan: A team of international zoo specialists evaluated exhibits and programs at the Saigon Zoo in Ho Chi Minh City in Vietnam, and created a zoo-wide masterplan.

ZPO Indochinese Tiger Masterplan for Thailand: A masterplanning workshop brought together representatives from all Southeast Asian countries to assess the Southeast Asian captive tiger

population and to produce the Zoological Parks Organization (ZPO) Indochinese Tiger Masterplan.

PKBSI Sumatran Tiger Masterplan: Onsite training and evaluation sessions were held at nine Indonesian zoos, followed by a masterplanning workshop resulting in the development of a regional studbook and production of the Indonesian Zoological Parks Association (PKBSI) Sumatran Tiger Masterplan.

CAZG South China Tiger Masterplan: Three onsite training and evaluation sessions were held at four Chinese zoos in combination with masterplanning sessions, resulting in the development of a regional studbook and production of the Chinese Association of Zoological Gardens (CAZG) South China Tiger Masterplan. A subsequent nutrition training workshop was held, and Zoo staff continue to provide population management analytical and advisory services to the CAZG South China Tiger Conservation Committee.

Translation of Tiger Husbandry Manual: The Tiger SSP's husbandry manual, *Management and Conservation of Captive Tigers*, was translated into Vietnamese and Chinese, and then distributed to zoos in those countries. It was previously translated into Bahasa Indonesia, Thai and Russian. It is also posted on the 5tigers web site and distributed by ISIS on the Studbook CD-ROM.

Local Conservation Activities

Trumpeter Swan Restoration Project: The Minnesota Zoo has produced more than half of more than 200 swans released by the Minnesota Department of Natural Resources.

Common Loon Study: A study of the causes of common loon mortality in Minnesota, including the examination of mercury and lead levels.

Bluebird Recovery: Minnesota Zoo volunteers have installed more than 85 bluebird nest boxes along eight trails on the Zoo campus. Each summer they monitor the boxes and document nesting success.

Educational programs that increase public awareness of preserving ecosystems

- The Tiger Information Center
- The Community Education Program of the Sumatran Tiger Project
- The Adopt-A-Park/Minnesota Conservation Officer's Community Education Program

Training programs that provide field experiences

- The Sumatran Tiger Project: In Situ Component
- The South China Tiger Conservation Program
- The Javan Tiger Census

Programs that aid the transfer of technology for use in the field

- The Sumatran Tiger Project: In Situ Component
- The South China Tiger Conservation Program
- The Javan Tiger Census

- The Adopt-A-Park/AAZK/WWF-IP Javan Rhino Census in Ujung Kulon National Park, Indonesia

Programs that purchase land or contribute funds to establish reserves

- The Adopt-A-Park Program in Ujung Kulon and Way Kambas National Parks, Indonesia

Field research programs

- The Sumatran Tiger Project: In Situ Component in Way Kambas, Bukit Tigapuluh and Berbak National Parks, Sumatra, Indonesia
- The South China Tiger Conservation Program
- The Adopt-A-Park/AAZK/WWF-IP Javan Rhino Census in Ujung Kulon National Park, Indonesia
- The Undercover Investigation of Trafficking in Tigers, Sumatra, Indonesia
- The Javan Tiger Census, Meru Betiri national park, Java, Indonesia
- The Community Education Program of the Sumatran Tiger Project

Development of economic incentives to preserve the ecosystem

- The Community Education Program of the Sumatran Tiger Project

Education

Description of classes and programs

- ZooCamp 2000 brochure
- School Programs 2000-2001 brochure

Minnesota Zoo

SCHOOL PROGRAMS
2000-2001



Strengthening the bond between
people and the living Earth

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Contact Numbers

| | |
|-------------------|-----------------|
| School Scheduler | 952-431-9218 |
| Zoo Switchboard | 952-431-9200 |
| Minnesota Zoo FAX | 952-431-9367 |
| Zoo Website | www.mnzoo.org |
| Zoo-To-Do Hotline | 952-432-9000 |
| MN TTY Number | 1-800-627-3529 |
| Tiger Information | 1-800-5TIGERS |
| Tiger Website | www.5tigers.com |
| IMAX Information | 952-431-4629 |
| IMAX Website | www.imax3d.com |
| IMAX Reservations | 952-997-9701 |

ZooHours:

The Minnesota Zoo is open from 9:00 AM to 4:00 PM on weekdays from Labor Day to Memorial Day. After Memorial Day zoo hours are 9:00 AM to 6:00 PM. The zoo will be closed on November 23 and December 25. Please Note: Prices, times and program offerings are subject to change.

The Minnesota Zoo is accredited by the America Zoo and Aquarium Association (AZA). The Education Department is accredited by the North Central Association of Colleges and Schools (NCA) as a Special Function School (Sciences) for the purpose of development and maintenance of high standards of excellence in programming and staffing.

Scheduling

RESERVE EARLY FOR BEST OPTIONS.

CALL: (952) 431-9218
Monday-Thursday 8:00 AM to 4:00 PM
Space is limited.
Teachers who register at least two weeks in advance of their field trip enjoy school discount rates.



ADMISSION FEES

Zoo admission fees are payable by check, cash, credit card or money order at the time of arrival.

Preschool Student Fees:

For children age three to kindergarten, \$2.50 per student. For every five preschool students, one adult is admitted free. Additional adults: \$5 each. Out-Of-State: \$2.50 per student; \$5 per adult.

Grades K-6 Fees:

Free Minnesota student admission. Limited space is available per day. For every five kindergarten students, one adult is admitted free. For every ten students in grades 1-6, one adult is admitted free. Additional adults: \$5 each. Out-Of-State: \$2.50 per student, \$5 per adult.

Grades 7-12 and College students:

\$5 per student. For every ten 7-12 grade Minnesota students, one adult is admitted free. Additional adults: \$5 each. Out-Of-State: \$5 per student or adult.

Home Schools

Home schools that are registered with their local school district are eligible to enjoy the school admission rates Monday through Friday when they register at least two weeks in advance.

CHAPERONE POLICY

School groups are required to bring at least one adult for every fifteen students. Failure to provide the proper ratio of chaperones to students will result in denial of admittance to the zoo. Chaperones are required to stay with the students at all times and to enforce the following rules:

1. Do not feed the animals.
2. Do not knock on the exhibit glass or harass the animals in any way.
3. Discard trash in the proper containers.
4. Respect the rights of other zoo goers; keep voices down, no radios or in-line skates.
5. Emergency phones are to be used only in case of a *real* emergency.

Daily Activities

Please check the Daily Schedule in your confirmation packet for show times. Show times and locations vary depending on the season. No reservations are necessary.

Mercedes-Benz Dolphin Show

Experience an exciting performance by our Atlantic bottlenose dolphins. Discover the unique behaviors and adaptations that help dolphins survive in the wild. Shows are held year-round in the dolphin amphitheater, located in Discovery Bay. FREE



Northwest Airlines World of Birds Show

Free flying hawks, noisy parrots, wide-eyed owls and other unique birds will entertain and educate you during this exciting show. The importance of birds in our environment and conservation of wildlife will be conveyed. FREE

Coral Reef Shark Feeding

Observe how sharks swallow their food whole! An Aquarist will be available to answer questions. Feedings are held daily at 3:00 PM at the Coral Reef Exhibit in the Tropics Trail. FREE

Shark Talk

Discover the variety of tropical fish in our Shark Reef in Discovery Bay, participants can interact with our Aquarist staff and other experts. Shark talks are held on Mondays, Wednesdays and Saturdays. FREE

Live Animal Demos

Live animal demonstrations are presented regularly during the day in the ZooTheater. Interpreters offer visitors a close-up look at unique creatures that will amaze you. FREE

Coral Reef Dive Show

Submerge yourself in an underwater world with the magnificent colors and shapes of tropical fish. Watch as they scurry to get their lunch from a diver. During the show a diver answers your questions from under the water. Held daily at 10:30 AM. FREE



Monorail

Live from the treetops!

Enjoy a 25-minute trip over the Northern Trail! Each naturalist-led trip is personal, focusing on animal activity, conservation, and seasonal change. Specific departure times need to be scheduled and payment is made upon arrival at the zoo.

FEE: \$2 per person scheduled in advance, otherwise \$2.50 per person. Children two and younger are free. Scheduled rides are offered Sept. to June.



ZooLab

The place where kids and animals can see eye to eye!

ZooLab encourages students to touch and interact with a variety of live animals while learning about concepts of biodiversity, classification, adaptation, and conservation.

ADMISSION BY RESERVATION ONLY

School groups can schedule a 15 minute visit to ZooLab when you make your trip reservation by calling (952) 431-9218.



ZooClasses

These 45-minute classes for 25-30 students are offered on Tuesdays, Wednesdays and Thursdays.
AVAILABLE: October to May 18.
FEE: \$2 per student, chaperones free
CALL: (952) 431-9218 to register

Farm "Fresh" at the Wells Fargo Family Farm

Where does cheese come from? How is it made? Where does wool come from? Be amazed at how many products we use come from farms! Students will gain a better understanding of the importance of the farm in their daily lives. Additionally, older students will explore how farms use new and emerging technologies to produce more food that is safer, more long-lasting and healthier.



K-3
What products come from farms? Students explore the answers to this question as they make the connection between farms, the foods they eat, and the clothes they wear.
Characteristics, Basic Needs, Cycles, Human Interaction

4-6
What is domestication and how is it related to farm products? Students will gain understanding of how people have bred particular animal traits to better produce what they need.
Characteristics, Basic Needs, Cycles, Diversity, Heredity, Human Interaction

7-12
This class investigates the technology of cloning and selective breeding. It shows how farms already use biotechnology to make farms more efficient. Students will look at the potential benefits and concerns surrounding genetically modified organisms in agriculture.
Diversity, Heredity, Human Interaction



Animal Colors and Patterns

Reptiles are red, birds are blue; these colorful creatures will amaze you! We'll explore why animals have different colors and patterns.

K-3
How do animals use colors and patterns to help them survive? What factors influence the colors and patterns on their bodies? How do other animals react to their colors and patterns?
Cycles, Basic Needs



Tropical Rain Forests

Discover the diversity of a rain forest ecosystem and how vital it is for the survival of many different plant and animal species.

K-3
How do plants and animals depend on each other to live in a rain forest? How does the rain forest provide for the needs of the plants and animals? How is the cycle of life played out in this extraordinary habitat?
Characteristics, Basic Needs

4-6
What are the different characteristics of the plants and animals that call this biome home? How has human behavior impacted this environment?
Characteristics, Diversity, Basic Needs, Human Interaction

Coral Reefs

Who's ever heard of fish swimming through a tropical rain forest? Coral reefs are the tropical rain forests of the ocean and we will help your students explore this very diverse and dynamic habitat.

K-3
How do these small animals build such amazing homes? What are the basic needs of these animals? How do the structures they build help other animals?
Characteristics, Basic Needs, Human Interaction

4-6
What makes a coral reef unique? What are the characteristics of corals? What animals depend on the reefs for their survival? How has human behavior impacted this fragile environment?
Characteristics, Basic Needs, Human Interaction

GRADUATION STANDARDS

All of our programs have been aligned to support the following Life Science Minnesota graduation requirements:

- * Provide a direct science experience
- * Characteristic properties of organisms
- * Cycles and patterns
- * Basic needs of organisms
- * Diversity and adaptations
- * Sorting and classification of animals
- * Responses of organisms to changes in the environment
- * Personal behaviors and impact on environment
- * Human interaction with the environment
- * Populations and ecosystems

Shark Mania

Come and meet our sharks to unlock some of the mysteries of these fascinating fish and their relatives, the rays.

K-3

A shark is a fish. What does it mean to be a fish? What basic things do sharks and rays need to survive?

Characteristics, Basic Needs

4-6

What are the basic characteristics of sharks and rays? How have humans impacted their lives and their environment?

Characteristics, Basic Needs, Human Interaction

7-12

What adaptations do sharks have to find their prey? What reproductive methods do they use to ensure the survival of their species? How do humans impact their populations?

Diversity, Population, Human Interaction

Dolphins and Whales

Dive into the fascinating underwater world of dolphins and whales. We will highlight the unique and unbelievable characteristics of these marine mammals.

K-3

What does it mean to be a mammal? What characteristics do mammals have? What basic needs do these animals have to survive in the ocean?

Characteristics, Basic Needs

4-6

Why do scientists group animals together? What are the dynamics that occur in the social lives of marine mammals? What impact have humans had on these animals?

Characteristics, Basic Needs, Human Interaction

7-12

How do marine mammals fit into the ocean ecosystem? What sort of adaptations do they have for ocean survival?

Diversity, Population, Human Interaction

Animal Communities

Join us to explore the dynamics of different animals and what makes up their neighborhood. We'll discover how all living things are connected.

K-3

How are the needs of animals met in different communities? What are the characteristics of these habitats and how do these animals respond to changes in their environment?

Characteristics, Basic Needs



www.mnzoo.org

Take a virtual tour of the Minnesota Zoo. Explore the sights and sounds of the Minnesota, Tropics, Northern Trails, the Wells Fargo Family Farm and Discovery Bay. Our website includes tigercam, fact sheets, special events, quizzes, activities and information about classes and internships.

Special Events

OFFERED: 9:00 AM-1:00 PM

DATES: Check event listings.

FEES: \$2 per student, plus applicable admission, Chaperones free

CALL: (952) 431-9218



World Language Days

French Day: Tuesday, February 6

German Day: Wednesday, February 7

Spanish Day: Tuesday, February 13

Spanish Day: Wednesday, February 14

Do your students know how to say "flamingo" in Spanish? What about "shark" in German or French? Your students will discover fascinating facts about zoo animals in the language of the day.

Upper level language students interpret at 40 different

interpretive stations throughout the zoo. Presentations include use of music, costumes and props to encourage students to practice their language skills. Zoo passports are distributed to each student so they can receive a stamp at each station. All days are geared toward 7-12 grade language students.

Coordinating Curriculum: World Language Packets, Animal Kingdom

Math Days

Tuesday, March 20

Wednesday, March 21

It's true! People use math every day, and the staff at the Minnesota Zoo is no exception! Minnesota Zoo Math Days have been designed to inspire students in grades 4-12 to learn more about math applications in the workplace. At over 20 stations (developed and run by students from the School of Environmental Studies), your students will answer grade-appropriate math problems related to a wide variety of animal issues such as animal weights, diets and conservation. Math Magicians will entertain you with math-oriented illusions as you take this safari by the numbers.

Coordinating Math Packet: 2 + 2 = ZOO

EarthFest

Tuesday, April 24

Come join us for an action-packed festival of music, animal shows and costumed characters. Participatory stations sponsored by environmental agencies and citizen groups will inform students and encourage earth resource stewardship.

COORDINATING RESOURCES

To enhance your special event experience we recommend purchasing the coordinating curriculum, World Language Units in French, Spanish, and German; and 2 + 2 = Zoo: Math Activity Packet. See the Curriculum page for a description.

ZooQuest

These are 90-minute classes for up to 30 students. This class combines a classroom presentation with a Monorail ride.

OFFERED: Tuesdays, Wednesdays and Thursdays.

AVAILABLE: October to March 31

FEE: \$4 per student, \$2 for chaperones to ride monorail.

CALL: (952) 431-9218



Animal Almanac – Seasonal Adaptations

Discover nature's dynamic calendar (phenology) by exploring how animals adapt and react to seasonal changes. Class highlights the current season. **Includes a Monorail ride.**

K-3

What are some signs of autumn? Why do animals need more food in winter? Why do animals shed their heavy winter coats in the spring? Students will learn to recognize the signs of seasonal changes and discover how animals adapt to those changes.

Cycles, Diversity

4-6

What signals animals to start growing a thick coat in autumn? Why are most wild animals born in the spring? Students will discover that seasonal change is continuous and that animal behavior is triggered by this change.

Cycles, Diversity

7-12

How do birds know when berries are ripe and ready to eat? How do bison deal with the snow? What triggers antler growth in the spring? Interrelationships between seasonal events will be investigated as students develop their observational skills.

Cycles, Diversity

Bouncing Back

Bison, bluebird, pronghorn, wild turkey, wood duck, and trumpeter swan numbers once plummeted, edging these species toward extinction. Meet these Northern Trail animals that have made a dramatic comeback. **Includes a Monorail ride.**

K-3

What is an endangered species? How have Northern Trail animals made a comeback? What are the basic needs of endangered species? How have humans affected their numbers?

Basic Needs, Human Interaction

4-6

What are some endangered species on the Northern Trail? Why are they in trouble? How have humans positively and negatively impacted these animals?

Basic Needs, Human Interaction, Population

7-12

What are Species Survival plans? Students will learn how humans have affected endangered species and their populations, and how zoos play an important role in their conservation.

Basic Needs, Human Interaction, Population

Furry History of Minnesota

The historical impact of animals on our culture will be explored with a naturalist in costume. This class will give you hands-on experience of the fur trade and help you explore the impact that animals, like the beaver, had on Minnesota history! **Includes a Monorail ride.**

K-3

What was it like to be a "voyageur" in Minnesota 200 years ago? This class presents an introduction to the relationships between animals and humans as students go back in time.

Human Interaction

4-6

Interacting with a "voyageur" in Minnesota in the year 1800, students will study the historical impact of humans on the environment.

Human Interaction, Population

7-12

Through the life of a "voyageur", students will begin to understand both animal and human roles and relationships within Minnesota ecosystems.

Human Interaction, Population

Animal Sponsor

SPONSOR AN ANIMAL

How would you pay a \$250,000 grocery bill? That's what it costs the Minnesota Zoo each year to feed the wild and wonderful animals here! By sponsoring an animal, your school can help us purchase the crickets, mice, mealworms fish, and lots of fruits and vegetables that are on our grocery list.

With a contribution of \$25, your class will receive a personalized certificate, a fact sheet about your sponsored animal, an Animal Sponsor magnet, and your school's name displayed on the Donor Recognition Board.

Depending on your level of sponsorship, you may receive an attractive wood plaque to display at your school, name recognition on the Zoo's School Honor Roll plaque, posters, photo, an animal ornament, the Zoo newsletter and your school's name listed on your animals exhibit.

This is a wild community service project for student councils or classrooms. For a brochure, fund raising ideas or more information, call (952) 431-9216.



ZooTours

BEHIND THE SCENES TOURS

These 90-minute tours are for 20 participants, grades four and up.

OFFERED: Every day.

AVAILABLE: Throughout the year.

FEE: \$75 per group, plus applicable admission

CALL: (952) 431-9218

Join a naturalist on a tour of the Tropics or Northern Trail. A naturalist will provide insight into animal behavior, animal management and conservation.

One hour will be spent on the public walkway and a half hour will be spent behind the scenes looking at the kitchens where diets are prepared or in the holding areas where the animals are kept at night.



FARM TOURS

These 60-minute tours are for up to 30 students.

Offered: Tuesdays, Wednesdays and Thursdays

AVAILABLE: October through May
FEE: \$2 per student
(\$25 minimum), chaperones free

Explore our new Wells Fargo Family Farm with a naturalist and discover farming in the past, present and possible future. Gain insight into managed animal care and life on a farm. You'll have a chance to have close contact with some of our farmyard friends.



GUIDED TOURS

These 45-minute tours are for 15 students (headsets are provided).

OFFERED: Monday-Friday

AVAILABLE: October 5 - April 14

FEE: \$2 per student, chaperones free (\$25 minimum)

Schedule six weeks in advance

CALL: (952) 431-9218

Predators of the Sea K-12

What do a shark and a sea anemone have in common? Learn how predators like dolphins, sharks and sea anemones play a crucial role in keeping ecosystems in balance. Meet interesting creatures and explore their unique adaptations for survival. During this wonderfully wild tour, your students may get to touch sharks, rays and invertebrates in Discovery Bay.



Exploring Minnesota K-3, 4-6, 7-12

Minnesota lies at the junction of North America's three major biomes: the prairie, the hardwood forest and the coniferous forest. Valuable plants and animals live in these rich environments. Learn about the silent flight of the owl, the antics of the otter and the construction of a beaver dam on this tour of the Minnesota Trail.

Coordinating Curriculum: Exploring Minnesota

Animal Cover-Ups K-3

All forms of hair, such as fur, spines, wool and whiskers, are trademarks of mammals. Scales protect reptiles; feathers protect birds; and stripes and spots protect mammals in different ways. Come discover how the outerwear of animals helps them to survive.

Curriculum: Animal Cover-Ups

Visiting the Tropics K-6

Tour the exotic Asian Tropics Trail. Students will be introduced to plants like the orchid, reptiles like the elusive Burmese python, and the largest lizard in the world, the Komodo dragon. They will also learn fascinating facts about birds and mammals.

Coordinating Curriculum: Animal Groups

The Wolf 4-12

How do wolves survive in their rugged wilderness environment? Discover the numerous specializations this predator has to keep its position at the top of the food chain. Explore wolf ecology and its importance in the ecosystem. A visit to our endangered Mexican gray wolves will highlight the efforts to save this valuable species.

Coordinating Curriculum: Eastern Timber Wolf

COORDINATING CURRICULUM

We highly recommend purchasing the coordinating curriculum that has been designed to prepare your students for your Zoo adventure. The units are 30-60 pages and include:

- * Background information
- * Identifying concepts
- * Vocabulary
- * Action-oriented activities
- * Bibliography
- * Plus: additional activity sources.

For brief descriptions of available curricula see page 22.

ZooArena

These 45-minute large-group presentations are for 100-300 students and are held in the Dolphin Amphitheater. OFFERED: Fridays at 10:30 AM (directly after the 10:00 Dolphin Show) AVAILABLE: October through May 18 FEE: \$2 per student, chaperones free CALL: (952) 431-9218



Dolphin Adventure

Our Atlantic Bottlenose dolphins will help us as we take a closer look at marine mammals and explore their unique underwater adaptations.

K-3

What does it mean to be a mammal? What characteristics do mammals have? What basic needs do these animals have to survive in the ocean?

Characteristics, Basic Needs

4-6

Why do scientists group animals together? What characteristics occur in the social lives of marine mammals? How have humans impacted these animals?

Characteristics, Basic Needs, Human Interaction

7-12

How do marine mammals fit into the ocean ecosystem? What sort of adaptations do they have for ocean survival?

Human Interaction, Diversity, Population

Sharks Down Under

Unlock some of the mysteries of these fascinating fish by learning about their unbelievable adaptations. We will also highlight their close relatives, the rays.

K-3

Is a shark a fish? What does it mean to be a fish? What basic things do sharks and rays need to survive?

Characteristics, Basic Needs

4-6

What are the basic characteristics of sharks and rays? How have humans impacted their lives and their environment?

Characteristics, Basic Needs, Human Interaction

7-12

What adaptations do sharks have to find their prey? What reproductive methods do they use to ensure the survival of their species? What impact have the humans had on their populations?

Diversity, Populations, Human Interaction

ZooMobile

BRINGING THE ZOO TO YOU!



FEES

A mileage fee of \$50 is added for programs outside of a 100-mile radius, and \$75 outside of a 150-mile radius.

Assemblies/Formal Programs
\$250 for the first program
\$125 for additional programs (same day and same location)

Max. of three programs per day.

Classroom Seminars
\$85 each
(Minimum of 3 per day if not booked with an assembly)
\$75 each for 10 or more

Informal Booth Program
\$250 for the first hour
\$125 for the second consecutive hour.

Zoo Rendezvous
\$2 per student plus applicable admission.

The goal of all our ZooMobile programs is to inspire respect and a sense of stewardship towards all life on earth

ZooMobile naturalists travel throughout Minnesota providing an educational and entertaining experience to a variety of audiences. Using live animals, biological artifacts, storytelling and audience participation, they create a dynamic, personal and fun program. Our programs are designed for grade levels K-8.

To schedule a program with us, simply call the ZooMobile office at (952) 431-9228 or 1-800-366-7811 ext. 228. Any of our naturalists can answer your questions and schedule a presentation for your group. Please leave a message if a naturalist cannot be reached. Reservations may be made up to a year in advance. If you would like to book a spring program, we recommend that you call early (several months in advance) in order to ensure your first choice of dates.

ZooMobile

ASSEMBLIES AND FORMAL PROGRAMS

Our assemblies are designed for audiences up to 300 people, last approximately 45 minutes, and typically include 4-5 species of animals. These programs are an interactive, educational and fun way to teach your students about animals, ecology and the environment. They are also an entertaining addition to Science Fairs, Scout banquets and Family Fun Nights. Presentations can be adapted to all ages/grade levels.



You may choose from the following topics:

All Things Connected

In this program, we lead our audiences through a process of discovery to recognize the interrelationships that connect all life on earth. Why are bugs so important to an ecosystem? What would happen if snakes suddenly disappeared? Your students will learn about the different 'jobs' animals have and how we can help each other.

Cool Animals of the North

What do animals do when it's -40 F? In this popular program, students will meet some very cool animals indeed! Students will learn about a variety of animals native to Minnesota and parts north. The focus here is on the unique adaptations and behaviors of these hardy animals.

Tropical Rain Forests

Students in this program will learn about the different layers of the rain forest, meet some of the critters that thrive there, and begin to comprehend the importance of this complex ecosystem. They will discover why rain forests are so crucial to life on our planet and what factors threaten their survival, as well as what steps we can take to ensure their continued existence.

GRADUATION STANDARDS

All of our programs have been aligned to support the following Life Science Minnesota graduation requirements:

- * Provide a direct science experience
- * Characteristic properties of organisms
- * Cycles and patterns
- * Basic needs of organisms
- * Diversity and adaptations
- * Sorting and classification of animals
- * Responses of organisms to changes in the environment
- * Personal behaviors and impact on environment
- * Human interaction with the environment
- * Populations and ecosystems

CLASSROOM SEMINARS

Designed for a classroom setting (up to 30 students), our 45-minute seminars are a fantastic way to get your students up close and personal with some amazing animals! A ZooMobile naturalist will bring 3-4 species of animals as well as artifacts. Pre and post materials are available by request to teachers who book our classroom programs.

Choose from the following Classroom Seminar options:

BIRDS, BUGS, REPTILES, or MAMMALS

(Grades 3 and up)

What makes each of these animal groups unique? You choose one of the topics listed above and we go in-depth to discover some of the identifying characteristics of that particular group of critters. Each seminar will include live animals, biological artifacts, and opportunities for students to ask questions.



WINTER ANIMALS

(Grades K-3)

You and I have coats, hats, and snowsuits to get us through the winter, but how do the animals survive the harsh northern climate? We'll look at birds, mammals, and reptiles and see what tricks they have for dealing with winter. In addition to seeing live animals and artifacts, students will learn about adaptations, migration, and hibernation.

INFORMAL BOOTH PROGRAM

Great for Community Events!

This program offers informal interaction with a naturalist and animals, making it perfect for fairs, festivals and other community gatherings. We'll bring 6 or 7 species of animals and rotate through them, with at least a few animals that people can touch. Interesting animal artifacts are also included.

ZOO RENDEZVOUS

Your own private show at the zoo

You can now schedule ZooMobile's popular road program during your visit to the zoo. This 45-minute program is designed for groups of 30-150. It is offered on Thursdays at 10:00 AM, 11:00 AM and 1:00 PM in the Zoo Theater. Program topics include All Things Connected, Cool Animals of the North and Tropical Rain forest.

To schedule a ZooRendezvous program please call the Scheduling Office at (952) 431-9218

Overnights

OFFERED: selected Tuesday, Wednesday and Thursday evenings, October through May.

AVAILABLE: 4:30 PM to 8:00 AM (the next day)

PROVIDED: Dinner, snack and breakfast are all included

FEE: \$40 per student, \$22 per chaperone
CALL: (952) 431-9229 for more information and available schedule



Mooonlighting with the Animals at the Wells Fargo Family Farm

Come explore the wonders of the farm in a fun-filled overnight adventure. A farmkeeper and a naturalist will provide a private tour of the farm including milking the cows, feeding the animals, riding the tram and hands-on participation in many other learning experiences.

Aquatic Encounters

Dream with the dolphins, sleep with the fish. With over seven years of experience, this overnight program is a must for any classes who are interested in marine education and conservation. Education naturalists lead a fun-filled night focusing on sharks, marine life and what we can do to help save endangered marine species. Students take part in a range of experiential experiences such as behind the scenes tours and making their own commemorative shirt to remember their overnight at the Minnesota Zoo.



IMATION IMAX THEATRE

FEE: Students \$4 to \$5,
1 free chaperone for every 10 students.
Additional adults \$6-\$8.
CALL: (952) 997-9701 for reservations



Broaden your students' educational experience this year with a trip to the Imaation IMAX Theatre. Breathtaking images are shown on a giant 65-86 foot IMAX screen, the largest screen in the Midwest! Your students can explore places like "Galapagos", "Africa's Elephant Kingdom", "Into the Deep", and even travel back in time of "T-Rex". Some films use special polarized 3D glasses that will make the images appear to magically leap off the screen and into the minds of your students. Our films run 40-90 minutes and are appropriate for all ages. Special shows and times can be arranged with a minimum booking of 100 students.

Free Teachers Resource Guide

With each classroom reservation, educators receive a free resource guide, which includes a synopsis of the film, teaching strategies, discussion questions, student activities, and a list of educational resources. It will help you plan your classroom activities around a field trip to the theatre.

Educators Corner

Be on the top of all our new releases and special events plus save 10% on all gift shop merchandise by joining our Educator's Corner.

OPEN HOUSE FOR EDUCATORS

Tuesday, October 3

Join fellow teachers from around the area for a special evening at the Imaation IMAX Theatre. You will have the opportunity to see first hand what the Imaation IMAX theatre can do for your class. Enjoy complimentary refreshments, watch a film and register to win some fabulous door prizes. The Zoo's Education Department and the IMAX sales staff will be on hand to answer questions, display curriculum and resource materials and register your class for a field trip.

Schedule:

5:00-6:00 PM Hors d'oeuvres
6:00-8:00 PM Film Showing

Career Day

OFFERED: 9:00 AM-4:00 PM
AVAILABLE: November 4 2000,
March 7, 2001,
April 7, 2001
FEE: \$25 per participant
CALL: (952) 431-9466

Join Minnesota Zoo professionals in these exciting seminars to learn about science careers and receive practical advice on how to prepare for the future. Career Seminars are designed for students in grades 7-12. Professionals will recommend college programs, how volunteering and related work experience can make an impact, and explain what they do in their day-to-day activities. Careers to be covered include veterinary medicine, zoo keeping, education, fish management, dolphin training, and animal handling. Naturalists will provide behind-the-scenes tours of the tropics area for all participants. Participants can attend each seminar, or choose only the ones that are of interest to them.



Volunteer!



The Minnesota Zoo offers one-time and short-term volunteer opportunities for students. Depending on the age, availability and interest level, activities range from stuffing projects, horticulture, and special events assistance. Chaperones are required for group activities larger than five students. Long-term opportunities also exist for adults and students. Adult volunteers assist visitors year-round. Staffing information stations, leading tours, and assisting with special events are just a few of the available opportunities. ZooTeens are students (aged 13 and older) who are available weekdays during the summer and act as ZooCamp aides. They assist naturalists and young campers during art projects, snack times and tours of the zoo. For more information, call (952) 431-9241.

www.mn zoo.org

Curriculum

Add a wild element to your classroom with the Minnesota Zoo's Coordinated Curricula!

Minnesota Zoo curriculum units include concepts, learner outcomes, instructional activities, field trip ideas, vocabulary lists and bibliographies.

FEE: Curriculum units are \$12 each, unless otherwise noted; postage is included in the cost. Please allow two weeks for delivery.

To order, use the form on page 23.



Investigating Sea Life K-3

Immerse your students in amazing facts about life in a coral reef. What is the difference between fresh and saltwater fish? How are animals interdependent on each other in a coral reef? What are the similarities and differences between sharks and dolphins? What are some threats affecting bodies of water today?

Eastern Timber Wolf 4-12

This award-winning 52-page curriculum unit contains nine student activities designed to provide a better understanding of the traditionally misunderstood wolf. Activities explore the complex social structure of the pack. Communication, protection and literary perception of wolves are covered. This unit was developed in cooperation with the Science Museum of Minnesota.

Studying Animals: Tropics 7-12

Explore behaviors of Southeast Asian tropical animals. How are investigations performed dealing with animal behaviors? How can different types of behaviors specific to nocturnal and diurnal animals be recognized? What are environmental or structural factors that influence behavior? How are the behaviors of humans and tropical animals similar?

CD-ROM: Professor Fernleaf from the Tropics

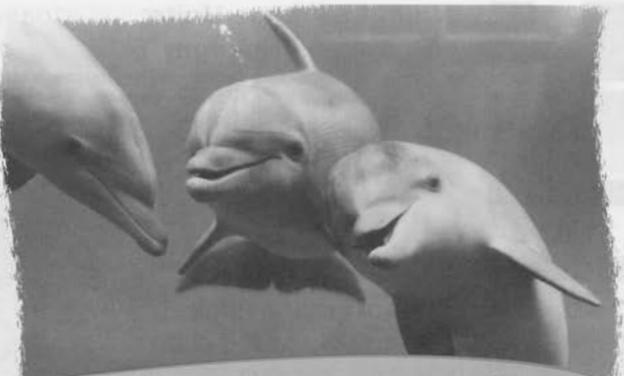


Professor Fernleaf takes visitors to the tropical forests to discover exotic plants and animals and the wonderful relationships between all living things. This interactive CD-ROM provides learning and entertainment for ages 8 and older. Designed for Windows 95 or NT and Macintosh. Use form on page 22 to order. FEE: \$15

www.mn zoo.org



Visit all your
animal
friends at the
Minnesota
Zoo!



Come See Us!



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(952) 431-9200
1-800-366-7811
www.mnzoo.org

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ZooCamp

www.mnzoo.com

2000



Strengthening the bond between
people and the living Earth

On-Site Registration

Saturday, March 18th, 2000

Register in person at the Zoo from 8:00 AM - 2:00 PM on Saturday, March 18th, 2000. On-site registration is the first day that ZooCamp registrations will be accepted.



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**For information call (952) 431-9320 or
email: ZooCamp@mail.mnzoo.state.mn.us**

Important!

For your convenience, ZooCamps that contain this logo will have a separate drop-off and pick-up location at the Zoo's new Wells Fargo Family Farm site. This will give our campers the maximum time to enjoy their ZooCamp. Please read your confirmation letter carefully. Thanks.

Welcome to ZooCamp!



Royalty arrives at the Zoo!

Meet Prince and Duke - our American Cream Draft horses. With the opening of the **NEW Wells Fargo Family Farm** exhibit, we have taken on a farm theme for our ZooCamp this year. But not to worry, all your favorites can still be enjoyed with our wildest ZooCamp ever!

This will be the tenth year of ZooCamp and we continue to grow. It is our intention to offer the most educational and entertaining animal learning programs possible and we look forward to your comments and suggestions. It is only with the continued support of our members that we can continue to offer this amazing program.

What's New!

The Wells Fargo Family Farm will provide an opportunity for Zoo visitors to experience life on a family farm. Visitors will be able to get up-close and personal with chickens, horses, pigs, dairy cows, sheep and goats. The farm buildings will include interactive play-learning areas to help children and families better understand animal care, cycles of life and life on a farm. The Wells Fargo Family Farm will be a great place for kids and their families.



View from Orchard Hill

Preschool - Ages 4 & 5

Single-Day Classes

All AM sessions: 9:30 – Noon
All PM sessions: 1:00 – 3:30 PM

Leaping Lizards

Do dragons really exist? Let's unlock the mystery and take a peek at many likable lizards. A lizard will visit our class.

Mon AM, June 5
Mon PM, June 5
Wed AM, August 23
Wed PM, August 23

Dynamic Dolphins

Why do dolphins leap out of the water? We will explore the dynamic life of dolphins and learn about their natural behaviors.

Tues AM, June 6
Tues PM, June 6
Fri AM, July 7
Fri PM, July 7

Waddle, Slither, & Slide

Peter Pan and Tinker Bell would love to fly into this class. On a Zoo journey, we'll discover animals that fly, float, swim, slither, slide, climb, creep, crawl, hop, drop, waddle, walk, trot, run and gallop.

Wed AM, June 7
Wed PM, June 7
Thurs AM, August 24
Thurs PM, August 24

Sharks!

Discover why sharks are so important to the ocean environment. Do all sharks have sharp teeth? We will have a chance to touch shark's skin and teeth.

Thurs AM, June 8
Thurs PM, June 8
Mon AM, August 21
Mon PM, August 21

Under the Sea

Explore the underwater world of colorful coral, bright fishes and mysterious sharks. Discover how animals live and survive in this underwater habitat.

Fri AM, June 9
Fri PM, June 9
Fri AM, July 7
Fri PM, July 7

Flutter By

Unwrap the mysteries of the wonderful, winged insect we call the butterfly. We will explore our butterfly exhibit and have a six-legged critter visit our classroom.

Thurs AM, July 6
Thurs PM, July 6
Tues AM, August 22
Tues PM, August 22

Animal Architects

Spiders, turtles and beavers live in special houses. We'll take a closer look at their homes and how they are built. An animal that carries its home with it will visit our class.

Thurs AM, July 6
Thurs PM, July 6
Fri AM, August 25
Fri PM, August 25

Preschool - Ages 4 & 5

Weeklong Classes

All AM sessions: 9:30 - Noon

All PM sessions: 1:00 - 3:30 PM

Fins, Flukes and Flippers

What sea creature has fins, flukes and flippers? Come discover how fins, flukes and flippers help animals live in aquatic environments. Along the way we will encounter dynamic dolphins, touchable sharks and countless unique underwater animals.

June 5-9
June 26-30
July 17-21
July 31- August 4
August 7-11

All Sessions: 9:30 - Noon

Rain Forest Explorers

Safari through the tropical rain forest! We'll visit special animals and learn about what is happening to their fragile home. As a Rain Forest Explorer, you'll find out how we can all protect these animals and the places they live. Crafts, stories and animals will be part of the fun each day.

June 5-9
June 12-16
July 10-14
July 17-21
July 24-28
August 21-25

All Sessions: 1:00 - 3:30 PM

Barnyard Buddies

New!

Explore our farm exhibit with a different barnyard buddy each day! Puppet characters will introduce children to cows, chickens, rabbits, sheep, goats, pigs and horses. Children will discover how we take care of the animals through hands-on activities and demonstrations.



Special
Drop-off
& Pick-up
Location

AM Session: 9:30 - Noon
PM Session: 1:00 - 3:30 PM

August 21-25 AM
August 21-25 PM

Home Sweet Habitat

Travel with a different animal friend each day and tour its home. Explore the tropics with a snake, the ocean with a shark, the forest with a raccoon and more. Through games, stories, crafts, live animal visitors, activities and tours, we'll learn why home is where the habitat is.

June 19-23
June 26-30
July 31- August 4
August 7-11
August 14-18

All Sessions: 1:00 - 3:30 PM

Crazy Critter Coats

Amazing animal adventures will take us on an unforgettable journey into the animal kingdom. With playful puppets and colorful creatures, children will discover why animals have feather, fur or scaly coats. Special animal visits, stories, crafts and music all play a part of this crazy class.

June 12-16
June 19-23
July 10-14
July 24-28
August 14-18
August 21-25

All Sessions: 9:30 - Noon

Grades 1 and 2

Weeklong Classes

Ocean Odyssey

Dive into the underwater world with the help of our bottlenose dolphins, sharks and sea turtles. Each day we will explore a different undersea habitat including coral reefs, tide pools and estuaries. We will create works of art that show our knowledge of this fascinating environment.

June 12-16
June 19-23
July 17-21
July 24-28
July 31- August 4
August 14-18

All Sessions: 8:00 - Noon

Wolves & Dogs, Tigers & Cats

People depend on domestic animals and they depend on us too. Take a close look at tigers and wolves (the ancestors of domestic cats and dogs). Learn how they hunt, eat and communicate. Find out why wolves howl and even learn how to howl like a wolf! We will feed goats and interact with other domestic animals too!

June 12-16
June 19-23
June 26-30
July 10-14
July 17-21
August 7-11
August 14-18

All Sessions: 8:00 - Noon

Down on the Farm

New!

Feeding animals, grooming animals and making dairy products will be part of our unforgettable adventures as we explore our new farm exhibit. Students will explore how people and animals depend on each other.



Special
Drop-off
& Pick-up
Location

July 10-14
July 17-21
July 24-July 28
July 31-August 4
August 7-11
August 14-18

All Sessions: 1:00 - 5:00 PM

Trailblazers

As a Trailblazer, you will safari through a tropical jungle, discover woodland animals and view underwater critters collected from our ponds. Meet some of the people who care for animals at the Zoo. Participate in stories, games, songs and fun activities about animal survival. We'll discuss coloration, antlers and horns, animal calls and social behavior.

June 12-16
June 19-23
June 26-30
July 24-28
July 31- August 4
August 7-11
August 14-18

All Sessions: 1:00 - 5:00 PM

Native Trails

Explore cultures of the world through award-winning children's literature and the Zoo's animals. Each day focuses on a specific region of the world with animal stories from that culture, craft projects and of course, a visit to see those very same animals here at the Minnesota Zoo!

June 12-16
June 19-23
July 10-14
July 17-21
July 31- August 4

All Sessions: 1:00 - 5:00 PM

Membership

Receive discounts on registration fees for Education Programs (including ZooCamp)

Membership benefits include:

- Free admission to the Zoo for one year
- Admission to over 90 zoos across the US
- Newsletter mailed to your home
- Discount on Zoo Gift Store purchases (on regularly priced merchandise)
- Discount on Zoo classes
- ½ price Monorail tickets
- Discount on birthday parties
- \$2 off Imation IMAX tickets

To become a Minnesota Zoo member:

Just complete the form and mail it with a separate check for "Minnesota Zoo Membership" to the address below OR bring the form to the Zoo when you come for on-site ZooCamp registration, March 18th, 2000.

If you have any questions, please call the Membership Office:
(952) 431-9304 or (952) 431-9339.

Minnesota Zoo Membership Form

Name: _____
Second Adult Name: _____
of children under 18: _____
Daytime phone: _____
E-Mail (if applicable): _____
Address: _____
City: _____ State: _____ Zip: _____

Check one:

\$60 Household - Maximum of two named adults residing at the same address and their dependant children under the age of 18

\$75 Household Plus - Same as Household Membership PLUS one free guest each visit

Please allow two weeks for processing.

Mail to:
Minnesota Zoo,
Membership Office
13000 Zoo Boulevard,
Apple Valley, MN 55124
Or:

Bring this completed form on March 18, when you come to register for ZooCamp.

Family Zoo Adventures



Family Zoo Adventures are designed for young people (ages 4 - 10) and their favorite adults. These afternoon classes are playful, fun-filled family times focusing on the animals we love, and those we don't love - yet. Our activities, excursions, crafts and games will make learning fun for all. The whole Zoo is our classroom and visits to "behind-the-scenes" areas with zookeepers and trainers will make each class special. Class size is limited. Before mailing your registration form, please call (952) 431-9320 to hear the latest availability information.

Please include a 2nd choice on your registration form.



Family Zoo Adventure Fees

Zoo Member: \$24 per 1 adult & 1 child (\$12 additional person)
Non-Member: \$34 per 1 adult & 1 child (\$17 per additional person)

Family Zoo Adventures : 1:00 - 3:30 PM

Family Zoo Adventures

Shark Alert

Sunday, March 19

Sharks scare and fascinate us at the same time. Come to the zoo and learn more about this misunderstood predator of the ocean. One of our aquarists will give us a "behind-the-scenes" look at our Shark Reef and talk about how we care for the sharks at our zoo. Back in the classroom, we will dress a child as a shark to help us discover all the unique ways that sharks have adapted to hunting in the deep. Each child will receive a fossilized shark tooth to take home as a souvenir.

Tiger Tales

Saturday, April 8

Sunday, April 9

Do you know which cats "meow", and which "roar"? Why do cats have such long whiskers? What do we feed our "big cats"? We will answer all of these questions and more in this celebration of stripes and spots. Visiting our Siberian tiger exhibit and holding areas will be a special highlight of this class. Our snack will be Tony the Tiger's favorite cereal.

Los Lobos (The Wolves)

Saturday, May 6

Sunday, May 7

Do you know what really happened before the wolf "huffed and puffed and blew the house down"? We will get the truth about that story and other myths that gave the wolf its bad reputation. We will then hike out to the Northern Trail kitchen to make wolf meatballs for our Mexican wolves. Come to this class and we promise you a howling good time.

**All Family Zoo Adventure
Sessions: 1:00 - 3:30 PM**

Family Zoo Adventures

Pouch Pals

Saturday, June 10

Sunday, June 11

Saturday, July 22

Sunday, July 23

Celebrating the arrival of our new tree kangaroos, this class explores the strange world of marsupials. First we will be visited in the classroom by the only marsupial that lives in North America. We will then make a kangaroo dinner with a tropics zookeeper who will explain how we care for our tree 'roos. Our craft, of course, will come in it's own pouch.

Farming Frenzy

Saturday, June 24

Sunday, June 25

Saturday, July 8

Sunday, July 9

Saturday, Aug 12

Sunday, Aug 13

New!

Farmers are busy people, and the farmkeepers at our new Wells Fargo Family Farm are no exception. We will visit the horses, cows, goats, sheep and pigs that live here and help our keepers feed and care for them. Kids will perform daily farm tasks (feeding and grooming animals, etc...) as they learn about what it takes to be a modern day farmer. We will then make a farm-fresh snack. So come on down to the Minnesota Moosoo ... whoops ... Zoo!

Wild Connections

Saturday, Aug 26

Sunday, Aug 27

How is a poodle like a wolf? A tiger like a housecat? In this class, we will explore the concept of domestication. With the help of our new Farm exhibit, we will examine some domestic species like horses and chickens and meet their wild ancestors. A Northern Trail keeper will show us a very unusual domestic animal, the Bactrian camel. We will finish in the classroom by discussing the issue of wild animals as pets. *This class is designed for older children, ages 7-12.*

**All Family Zoo Adventure
Sessions: 1:00 - 3:30 PM**

Grades 3 and 4

Weeklong Classes

SciQuest

How do tadpoles become frogs? Where do tornadoes come from? How do you make ice cream? How are volcanoes formed? Each day we'll look at a particular science and through experiments, games and activities, we'll explore some of the mysteries of the natural world?

June 19-23
July 17-21
July 24-28
July 31- August 4

All Sessions: 8:00 - Noon

Crittersleuths

Become a detective to help solve mysteries on the Zoo's major trails. Watch waterfowl through binoculars, examine the microscopic animals in our pond and learn about the classification of vertebrates (animals with backbones). Investigate the relationship between animals and their habitats and reasons that some animals are endangered.

June 12-16
July 17-21
July 24-28
July 31- August 4
August 7-11
August 14-18

All Sessions: 1:00 - 5:00 PM

Sharks, Mermaids & Pop-Up Books

Discover the fascinating world of sharks, colorful fish and exotic sea creatures that inhabit the Zoo's Coral Reef exhibit. Explore the ocean world close-up and find out about the people who train dolphins and care for the sharks. You'll make your own pop-up book - to take home on Friday!

June 12-16
June 26-30
July 10-14
August 7-11
August 14-18

All Sessions: 8:00 - Noon

Dirt Diggers

Did dinosaurs ever live in Minnesota? What animal fossils might we find here? Join us to learn about some of the techniques used by archaeologists and paleontologists as they try to unlock the mysteries of the past. We will recreate a dig-site on Zoo grounds for a truly "hands-on" experience! Only those willing to get their hands dirty need apply! (Or better yet, bring a pair of gloves!)

June 19-23
June 26-30
July 10-14
July 17-21
July 31- August 4

All Sessions: 1:00 - 5:00 PM

Farmyard Connection

New!

Make glue from milk! Transform wool into clothing! Explore the amazing connections that people have with farm animals. Through "chores" and close-up animal encounters we will meet cows, chickens, pigs, goats and more! Learn about the various ways animal products help us in our everyday lives.

July 10-14
July 17-21
July 24-28
July 31- August 4



Special
Drop-off
& Pick-up
Location

All Sessions: 8:00 - Noon

Grades 5 and 6

Weeklong Classes

Farm-ology!

At the new Wells Fargo Family Farm, we'll explore how farms are using science and technology to produce more and better food (with taste testing of course!). Chemistry experiments, role-playing, and lots of hands-on contact with our farm animals will help students discover the "farm" of the new millennium.



Special
Drop-off
& Pick-up
Location

All Sessions: 8:00 - Noon

New!

August 7-11
August 14-18

Animals at the Farm



Dutch Belted Cow

The Wells Fargo Family farm features rare and unusual breeds. Many of these breeds were vital in the development of today's familiar farm animals and have important roles in the future of modern farming. As you visit the farm, look for animals such as: American Cream Draft horses, Gloucester Old Spots pigs, Oberhasli dairy goats, Shetland sheep and lots of poultry and cows!

Animals at the Farm



Gloucester Old Spots pigs

Sure to be a favorite at the Zoo Farm, the Gloucester Old Spots pig came from England. Known for its intelligence and friendliness, these pigs are able to thrive on agricultural by-products such as windfall apples in orchards. They became known as "orchard pigs".

The "Zoo" Files!

Your mission is to help us solve a plethora of perplexing problems here at the Zoo! Each day a new mission will be assigned to your investigative team. Follow Mystery Tracks in the backwoods. Discover the identity of the Tunnel Phantom. See how Zoo veterinarians use investigative techniques to help sick animals.

June 26-30
July 10-14
July 24-28
August 7-11

All Sessions: 8:00 - Noon

Biome Blast

From caribou on the tundra to Komodo dragons in the steaming rain forest, our earth is full of amazing places. Discover how animals are connected to the places they live. Learn what a "biome" is. Get your feet wet investigating Minnesota biomes such as wetlands, prairies and forests!

June 26-30
July 10-14
July 24-28
August 7-11
August 14-18

All Sessions: 1:00 - 5:00 PM

Grades 7 and 8

Weeklong Classes

Marine Matters

Marine ecosystems matter. Spend time observing dolphins in Discovery Bay with their trainers. Learn about what life is like at the Zoo and under the sea. Discover what's happening to marine environments and how Minnesota is connected. Throughout the week, we'll get close to spectacular creatures from the oceans and learn how people impact marine ecosystems — in both good and bad ways. There's a whole new living world waiting to be discovered in the seas.

June 26-30
July 10-14
July 17-21
July 24-28
July 31- August 4
August 7-11

All Sessions: 8:00 - Noon

The Secret Lives of Animals

Why do tiger cubs play? Why do wolves howl? Do dolphins really fight? Unlock the secrets of animal behavior with this challenging and exciting class. Take a peek at the lives of famous researchers such as Jacques Coustau and Jane Goodall. Using their methods, solve some of the puzzles behind tiger behavior. Discover the truth behind animal aggression, communication, parenting and predation as we explore deep into the behind-the-scenes areas of the Minnesota Zoo.

June 26-30
July 10-14
July 17-21
July 24-28
July 31- August 4
August 7-11

All Sessions: 1:00 - 5:00 PM

ZooCareer Day

ZooCareer Seminars for ages 13-18

Date: Saturday, April 15, 2000

Time: 9:00 AM - 4:00 PM

Fee: \$25 per participant
(includes Zoo admission)

Learn about science careers and receive practical advice on how to prepare for your future career in the zoo field.

Professionals will recommend college programs, how volunteering and related work experience can make an impact and reveal what it's really like to work at a major zoological institution. Zoo staff will provide behind-the-scenes tours.

Careers include:

- * Veterinary medicine
- * Zookeeping
- * Aquarium management
- * Dolphin training
- * Animal handling
- * Zoo Education

For more information call:
(952) 431-9466.

Or register during ZooCamp on-site registration day, March 18th, 2000 at the Public Programs desk. Space is limited.



ZooCamp Fees

Household Members receive up to 15% discount on ZooCamp registrations. Membership number required to receive member rate.

Preschool

Ages 4 & 5

Single Day Class

\$20 (\$15 for Zoo members)

Week-Long Class

\$95 (\$75 for Zoo members)

Grades 1-8

Register for grade in school *next* fall

Week-Long Class (half-day)

\$115 (\$100 for Zoo members)

Week-Long Class (full-day)

\$240 (\$210 for Zoo members)

Late Pick-Up Supervision

5:00 - 5:30 PM

\$15/Week

How to register

- Complete separate registration forms for each camper. Photocopies of the form on the next page are acceptable.
- For a full-day camp experience, register for both morning and afternoon camp sessions during the same week. Lunch supervision is provided.
- Full-Day campers must bring their own bag lunch. No full-day camps are available for preschoolers.
- To ensure that your child and sibling/friend will be enrolled in the same camp session, registrations must be mailed together.
- For TTY communication, contact Minnesota Relay Service at (952) 297-5353 or 1-800-627-3529.

This document available in alternative formats upon request.

REFUND POLICY: If you must cancel your registration in a camp class, notify the Education Office at (952) 431-9320 no less than ten days prior to the camp for a refund of 75% of the camp fee. No refunds will be made less than ten days prior to the class. If you find your own replacement, please call (952) 431-9320.

2000 ZooCamp Registration Form

A separate form is required for each camper (photocopies are acceptable). For additional information call ZooCamp Scheduling at (952) 431-9320 (Email: ZooCamp@mail.mnzoo.state.mn.us). **No registrations will be accepted before Saturday, March 18th, 2000.**

Refund Policy: To cancel your registration, notify ZooCamp Scheduling at (952) 431-9320 no less than ten days prior to the camp for a 75% refund. No refunds can be made less than ten days prior to the class. If you find your own replacement, please notify Education Programs at (952) 431-9320.

Please include a note if your child requires any special accommodations to participate in ZooCamp. Thanks.

| | | |
|-------------------------------------|--------------------|-----------------------|
| Child's Name | First Camp Choice | Date/Time |
| Grade Next Fall | Second Camp Choice | Date/Time |
| Parent/Guardian Name | Third Camp Choice | Date/Time |
| Member # (required for member rate) | Fourth Camp Choice | Date/Time |
| Street Address | State | Zip |
| Home Phone | Work Phone | Email (if applicable) |
| | | Camp Fee |

Payment by: Check _____ Money Order _____ VISA _____ Mastercard _____ AmEX _____ Discover _____
 Card# _____ Exp. date _____ Total Fee (payable to Minnesota Zoo) _____
 Mail to: ZooCamp, Minnesota Zoo, 13000 Zoo Blvd., Apple Valley, MN 55124



Strategic Plan for Education 2001 -- 2005

Education Mission

The mission of the Minnesota Zoo is to strengthen the bond between people and the living earth. **The mission of the Minnesota Zoo Education Department is to excite and inform people about their dynamic connections to the living earth and to foster the development of knowledge and values regarding species survival, habitat preservation, ecosystem health and biodiversity.** The Minnesota Zoo provides opportunities for interaction, inquiry and discovery with an amazing living collection of plants and animals to promote a better understanding of and appreciation for nature and the intrinsic value of biodiversity. People live within and are an integral part of ecosystems. Our choices and actions have local and global impacts on the current and future health of the living earth. The Minnesota Zoo experience and its education programs encourage a stewardship ethic to inspire conservation action.

Learning at the Minnesota Zoo is fun, hands-on and relevant. In addition to a variety of structured education programs, Minnesota Zoo guests also learn about animals and nature through interpretive graphics and programs such as monorail tours, shark reef feeding sessions, dolphin and bird shows, animal demonstrations and special events. The Minnesota Zoo serves as a primary resource for Minnesota schools to achieve environmental education learning objectives and is the largest environmental education center in Minnesota, serving almost 250,000 people annually in formal education programs, including 145,000 K-12 students, teachers and chaperones who visit on school field trips.

Education Values

The Education Department work environment focuses on service, collaboration, teamwork, leadership, quality, innovation, change and fun. The staff selection process and ongoing evaluation seeks and encourages dedicated, responsible and talented people who will complement our work environment and strive for excellence. Training and development is critical to the professional growth of staff and the continuous improvement of programs.

Service

The Education Department designs its programs and activities to bring the Zoo's mission to the diverse audiences it serves. From the visitors seeking recreation to the structured school groups, the education staff considers the demographics and learning objectives of target audiences and designs and markets its products to their needs. Our programs and initiatives serve the recreation, conservation and education needs of the diverse expectations and needs of all Zoo visitors.

Collaboration

The Education Department collaborates with internal and external partners to further the reach and impact of its efforts. We develop and nurture mutually beneficial collaborations that fit the Zoo mission, provide added value to participants, create positive public relations and convey the Minnesota Zoo's conservation messages. In addition to strengthening existing collaborations, additional opportunities need to be explored for their potential to further our efforts to excite and inform people about their dynamic connections to the living earth, especially with the Science Museum of Minnesota, CBSG, AAZK, DNR, colleges and universities and with local and global conservation efforts.

Teamwork

The Education Department prides itself on its ability to work as a team. All programs require a team approach and the involvement and support of all Zoo departments are critical to the success of our efforts. Effective interdepartmental planning and cooperation insure that the education themes and messages are accurate and consistent with the Zoo's conservation initiatives and both short-term and long-term plans.

Leadership

Through the Zoo experience, education programs, unique living collection and attention to detail, the Minnesota Zoo has great potential to further its role as a local leader in conservation education. As the most visited environmental education learning facility in Minnesota, the Zoo's education programs and activities continue to provide relevant and engaging experiences to connect people to environmental issues. Currently, the Zoo's conservation and education programs are largely unnoticed by the general public and even by Zoo visitors. With increased public awareness and visibility at the Zoo and throughout the community, the Minnesota Zoo has the opportunity to position itself as an authority and leader regarding local and global animal and conservation issues. The Minnesota Zoo experience should encourage conservation awareness and action.

Quality

Education programs and activities must always tell stories and messages that are accurate and relevant. Our everyday efforts and practices must be environmentally sound to maintain the Zoo's credibility and to insure that the Zoo is true to its conservation messages. Education programs and activities should always focus on excellence, continuous improvement and surpassed expectations. Ongoing evaluation and program adaptation maintain the quality of our programs. Maintaining our accreditation as a Special Function School by the North Central Association for Schools

and Colleges requires thorough annual review of program and staff professional standards. In order to provide useful and valuable services to the formal education community, our programs are aligned with state graduation standards and the latest educational trends. The education staff must also continually develop and improve skills and actively participate in professional organizations to insure the quality of our programs and activities.

Innovation

The Minnesota Zoo experience, conservation messages and education programs must always be fresh and relevant. The plant and animal collection provides a dynamic and compelling resource to attract attention and spark curiosity. Education at the Zoo is interactive, engaging and opportunistic. The conservation messages and stories are delivered with varied techniques to provide interactive, multisensory and immersive experiences to satisfy varying levels of pre-existing knowledge and multiple learning styles. The popularity of existing programs attests to their unique and innovative blend of conservation, education and recreation experiences. As technology changes, opportunities to reach new audiences in new ways need to be considered and implemented when appropriate.

Change

All organizations experience change and change creates opportunities. A thorough plan is not restrictive or static, but rather allows the education staff and programs to be flexible, adaptable and opportunistic to take full advantage of change. Education must be a critical element of exhibit and facility planning and development in order to maximize the potential impact of changes. With our unique and dynamic living collection, opportunities for "planned" spontaneity and pleasant surprises should be part of the regular, and always changing, Zoo experience.

Fun

The Zoo is a fun place for its staff to work and for its guests to visit. Fun is an effective learning tool and should be part of every Zoo experience. Especially for children, play-learning in a safe setting is a natural and powerful way to explore and discover. The Zoo is most successful when its exhibits and programs engage people – physically, emotionally, intellectually – to excite and inform them about their dynamic connections to the living earth. These fun and interactive Zoo experiences foster the development of knowledge and values regarding species survival, habitat preservation, ecosystem health and biodiversity to encourage conservation action. Smiles and laughter can, and should, be important indicators of success.

Education Strategic Objectives – 2001 to 2005

- 1. Position Minnesota Zoo as a Premier Education & Conservation Organization**
 - Excite and inform people about their dynamic connections to the living earth.
 - Foster the development of knowledge and values regarding species survival, habitat preservation, ecosystem health and biodiversity.
 - Maintain clear primary focus on education and conservation in all Zoo programs.

- Expand education opportunities beyond our traditional K-6 target audiences to better serve secondary, post-secondary, adult and senior audiences.
- Concentrate more marketing efforts to increase public awareness of Minnesota Zoo education programs and conservation efforts.
- Establish leadership role as an authority on local and global conservation issues.

2. Maximize Minnesota Zoo Impact and Efficiency

- Increase "off-season" programs and activities to reduce seasonality of attendance.
- Deliver programs in all seasons and at all hours.
- Provide diverse and fun conservation education opportunities for families.
- Explore the potential of new programs, including Local/Regional Excursion, Lecture, Symposium, Workshop and Elderhostel programs.
- Partner with area organizations for programming and marketing whenever possible, appropriate and mutually beneficial.

3. Create Sense of Community Ownership

- Exceed expectations of program participants, members and guests.
- Provide access to all people of Minnesota.
- Increase participation of both current and new target audiences.
- Encourage increased conservation awareness and action.
- Foster an attitude of community pride and respect for the Minnesota Zoo.

4. Serve the specific needs and expectations of current and new target audiences.

- Explore the potential of programs to increase penetration into the local population.
- Increase the number of first-time guests and encourage repeat visits.
- Provide useful and relevant education experiences and resources for K-12 audiences aligned with state graduation standards.
- Re-establish and maintain a professional development program for teachers.
- Expand the use of technology-based education programs.

5. Invest in the Future of the Minnesota Zoo

- Support ongoing professional development for staff.
- Deliver additional interpretive programs for Zoo guests that involve interaction with staff.
- Improve interpretive program, including dynamic interpretive graphics, to better connect guests with the plant and animal collection, ecosystems and conservation.
- Emphasize and support the vital role of thorough research and development, ongoing evaluation and continuous improvement for all programs.
- Provide support to establish and pilot creative and innovative programs.
- Generate revenues associated with participation in Zoo experiences.
- Secure financial stability from a variety of public and private sources to allow for growth and improvement.

Education Messages

The Minnesota Zoo experience and its education programs and activities focus on the following conservation messages to focus and strengthen efforts *to strengthen the bond between people and the living earth*. These messages were adapted from the AZA Conservation Education Committee Conservation Messages.

1. All life on earth exists within an ecosystem.

- Ecosystems are made of interdependent relationships between groups of living things (biodiversity) and their physical environment.
- Impact on any element of an ecosystem affects the entire ecosystem.

2. People are an integral part of all ecosystems.

- Human activities within ecosystems affect these systems.

3. Healthy ecosystems provide many essential services and benefits that sustain and improve human lives.

- Natural systems maintain a habitable planet by regulating climate and by cycling water, oxygen, carbon dioxide and soil nutrients.
- Natural systems provide human beings with essential services (ecosystem services) that sustain life on earth... fresh air, clean water, soil and oceans that can produce food.
- People depend on thousands of plants and animals to live their daily lives.
- Biological diversity provides a multitude of natural resources used commercially for food, shelter, fuel, fiber and other products.
- Nature is the primary source for many common medicines upon which so many of us depend, and is also the likely source of promising new pharmaceuticals that may hold the secret for combating cancers, AIDS and other threatening diseases.
- Healthy ecosystems underpin healthy human economics and sustainable natural systems support sustainable human communities. Many jobs depend directly on protecting natural ecosystems (fishing, farming, etc.).

4. The human experience requires a connection to nature. Experiences with wildlife and in wild places enrich our lives and inspire our choices for future generations.

- For all people, nature is a place to renew the human spirit and refresh our emotional and mental health. For people of faith, nature is the work of and a connection to a higher power.
- Nature provides wondrous places to play and recreate, to explore, to be creative, to learn and enjoy both as individuals and with our friends and families.
- The beauty and resources of the natural world are national treasures. They help define America's national heritage and character and provide the nation with valuable and irreplaceable natural resources.
- The variety of life on earth – its biodiversity – is both essential and inspirational for human existence.

5. **People are responsible for dramatic changes to ecosystems at a rate unprecedented in earth's history.**
 - The growth of the human population coupled with the increased consumption of resources by individuals will increasingly impact the planet's finite resources.
 - The primary human threats to the biodiversity are habitat destruction, invasive species and the overuse of individual species.

6. **Through informed actions, we can benefit ecosystems.**
 - These actions include...
 - Making appropriate lifestyle decisions
 - Actively participating in public decisions
 - Sharing our knowledge and feelings about wildlife and wild places
 - Supporting conservation organizations, including the Minnesota Zoo, and the efforts of zoos and aquariums.
 - Being "informed" means considering multiple points of view.
 - Fostering critical and creative thinking skills to solve problems.

7. **We have the responsibility to care for the earth, to leave healthy ecosystems for our families and future generations.**
 - Due to the unprecedented changes the human species is causing on the planet, we must often intervene to save wildlife and ecosystems.
 - Many decisions involved with caring for the earth are extremely complex, and must take into account both human and animal needs.

8. **The Minnesota Zoo strives to conserve ecosystems and promote care and positive action for the natural world.**
 - The Minnesota Zoo shares knowledge, ideas and projects that empower people to take conservation action.
 - The Minnesota Zoo partners in the conservation community and helps further local and global conservation efforts by seeking workable and realistic solutions to conservation problems.
 - The Minnesota Zoo provides animal and nature experiences that encourage a sense of wonder and appreciation.
 - The Minnesota Zoo disseminates valuable information about animals and the ecosystems they inhabit.
 - The Minnesota Zoo models caring by providing leadership in ethical animal care.
 - The Minnesota Zoo commits to serving diverse segments of human society and provides a forum for exploring and communicating different perspectives concerning the natural world.

Education Programs

The Minnesota Zoo's core audiences are K-6 school groups and families with young children. These groups are also the primary target audience for most of our education programs. As we continue to develop, refine and improve programs for young children and their families, we also need to broaden our learning experiences to develop new

audiences. Opportunities for informal interpretation and interaction with guests throughout the Zoo experience will provide unique and personal learning opportunities for all guests. All Zoo education programs and activities should include research and development, marketing, delivery, evaluation and continuous improvement.

The Education Department will continue to find creative ways to support its programs and mission through earned revenue and other sources. In addition to increased revenue from programs, sponsorships and donations from corporations, foundation and individuals will support new programs that could be offered at no additional charge to Zoo guests. Strategic partnerships with local and regional organizations will help further the Zoo's mission, expand our educational reach and increase public recognition for our conservation education efforts.

The following directory groups our current and proposed programs by staff area and/or target audience. The proposed programs (indicated by the *) require further research and discussion for their potential to broaden the Zoo's participant base with new and/or expanded target audiences. Progress on the development of the new program areas will take place over the next five years with status reports included in the annual Education Department work plans.

Public Programs

These fee-based programs are designed to serve the needs of various target audiences within the broad general public. In addition to the current focus on programs for young children and their families, new initiatives will be explored to develop connections with new audiences. These programs also provide added opportunities for Minnesota Zoo members to further their involvement and participation in the Zoo experience.

- Preschool
- Zoo Camp
- Scout Groups
- Family Groups (Family Zoo Adventures, Family Workshops*, ...)
- Overnights (Farm, ...)
- Local/Regional Excursions*
- Lectures*, Symposiums*, Workshops*, etc. (AAZK Activities, Staff Presentations, Guest Speaker, ...)
- Elderhostel*

School Programs

These fee-based programs are designed for formal education groups and aligned with State of Minnesota graduation standards. Programs are developed around life science learning objectives at appropriate grade levels. Although Minnesota K-6 students are admitted to the Zoo with free admission during organized school programs, additional program fees provide support for the added education experiences provided by staff and volunteers. Research is needed to assess the factors that determine school group attendance and to develop appropriate marketing and communication plans.

- School of Environmental Studies
- Classes (ZooQuest)
- Guided Tours

- Special Event Days
- Overnights (AEO, Farm, ...)
- Distance Learning*

Volunteer Programs

Volunteers are an integral part of the Minnesota Zoo staff. Volunteer coordination must take into account the unique tasks of providing valuable and fulfilling work experiences to unpaid staff. In addition to the huge impact the Volunteers have on the daily Minnesota Zoo experience, efforts to recruit new Volunteers, recognize and retain current Volunteers and provide project-oriented Volunteer opportunities will continue to be developed. Efforts to further integrate the Volunteer Programs with the rest of the Education Department will continue in order to maximize efficiency and impact.

- Recruitment
- Training
- Recognition and Enrichment
- Public Interpretation (Zoolab, Theater Demonstrations, Interpretive Stations, Guided Tours, ...)
- Staff Support (Education Classes, Special Events, Horticulture, Library, Website, Farm, Graphics, ...)
- Community Service Projects (Corporate Volunteers, Eagle Scouts, ...)

Monorail Programs

In addition to the interpretive tours of the Northern Trail from the monorail, the Monorail Programs also incorporate a variety of other programs and activities. The monorail experience provides an accessible and unique learning experience for 20-30% of the annual Zoo attendance. This program is largely supported by the revenue it generates. In the coming years, plans to increase the visibility and both off-site and on-site marketing of the monorail program should be developed to increase the penetration of the annual Zoo attendance in order to increase the monorail's revenue potential. Efforts to further integrate the Monorail Programs with the rest of the Education Department will continue in order to maximize efficiency and impact.

- Public Interpretation (Monorail Tours, Behind the Scenes Tours, ...)
- Education Programs (Class/Monorail, School Partnership, Zoo Safari, Tot Time, Early Birders, ...)
- Special Event Support

Teacher Training Programs*

During the 1996-97 school year, 16 different training workshops were offered to teachers to earn both continuing education and graduate credit. The Teacher Training Programs were eliminated three years ago and will take several years to rebuild. Opportunities to deliver Teacher Training Programs at the Minnesota Zoo that are designed and presented by partner organizations will help to reestablish our connections with teachers and higher education institutions. New programs specific to the Minnesota Zoo and our conservation messages will further our conservation education efforts and also improve the Minnesota Zoo's stature as a conservation education leader and authority. In addition to revenue from program fees, these

Teacher Training Programs could also promote school group attendance and increase use of Minnesota Zoo education resources.

- Partner Workshops* (MN Dept. of Agriculture, DNR, WCS, ...)
- Minnesota Zoo Workshops* (TBD)

Community Involvement Programs*

Many of the Minnesota Zoo's current conservation efforts focus on distant ecosystems, global issues and species preservation. New opportunities should be explored to become more active in local conservation efforts that have direct, and perhaps more obvious, impacts on the lives of Minnesota Zoo members and guests. Through partnerships with community organizations to provide real-life opportunities for conservation education and action, the Minnesota Zoo can better position itself as a conservation leader.

- Environmental Education/Conservation Organizations (AZA, MNA, NAI, AMMPA, MAEE, EEAB, CBSG, AAZK, IZE, ...)
- Community Conservation Action* (Public Policy Advocacy, Habitat Clean-Up & Restoration, Festivals, ...)
- Partnership Activities* (SES, School Projects/Contests, Science Museum of Minnesota, Como Zoo/Conservatory, Children's Museum, U of M, Nature Centers, Mall of America, County, State & Federal Parks, ...)

Interpretive Programs

These programs do not directly generate revenue, but they add value to the Minnesota Zoo experience and provide opportunities to present conservation messages and stories in a dynamic, fun and effective manner. Through personal and meaningful interaction between staff and guests, we can enhance the Zoo experience, promote life-long learning and create lifetime advocates for the Zoo mission. Investment in these Interpretive Programs will create more engaging experiences to encourage repeat visits and a sense of community ownership and pride for the Minnesota Zoo.

- Message and Story Development*
- Exhibit Planning*
- Interpretive Graphics and Displays*
- Interpretive Talks and Carts
- Interpretive Theater

Education Resource Programs

The current curriculum materials require extensive improvements in content and design to improve their usefulness. Revision and development of education resource should support programs for multiple target audiences, including teachers, students, families, members and casual visitors. These resources should also complement the Interpretive Program elements throughout the Zoo to convey our conservation messages and stories.

- Curriculum Guides
- Website
- Family Guides*
- Multimedia Products*

Brief description of how Minnesota Zoo education programs meet the needs of visitors.

The Education Department designs its programs and activities to bring the Zoo's mission to the diverse audiences it serves. From the visitors seeking recreation to the structured school groups, the education staff considers the demographics and learning objectives of target audiences and designs and markets its products to their needs. Our programs and initiatives serve the recreation, conservation and education needs of the diverse expectations and needs of all Zoo visitors.

Education programs and activities convey stories and messages that are accurate and relevant. Our everyday efforts and practices are environmentally sound to maintain the Zoo's credibility and to insure that the Zoo is true to its conservation messages. Education programs and activities focus on excellence, continuous improvement and surpassed expectations. Ongoing evaluation and program adaptation maintain the quality of our programs. Maintaining our accreditation as a Special Function School by the North Central Association for Schools and Colleges requires thorough annual review of program and staff professional standards. In order to provide useful and valuable services to the formal education community, our programs are aligned with state graduation standards and the latest educational trends. The education staff must also continually develop and improve skills and actively participate in professional organizations to insure the quality of our programs and activities.

Brief description of how Minnesota Zoo education programs address the role of zoos and aquariums in conservation.

The mission of the Minnesota Zoo is *to strengthen the bond between people and the living earth*. The mission of the Minnesota Zoo Education Department is *to excite and inform people about their dynamic connections to the living earth and to foster the development of knowledge and values regarding species survival, habitat preservation, ecosystem health and biodiversity*. The Minnesota Zoo provides opportunities for interaction, inquiry and discovery with an amazing living collection of plants and animals to promote a better understanding of and appreciation for nature and the intrinsic value of biodiversity. People live within and are an integral part of ecosystems. Our choices and actions have local and global impacts on the current and future health of the living earth. The Minnesota Zoo experience and its education programs encourage a stewardship ethic to inspire conservation action.

Learning at the Minnesota Zoo is fun, hands-on and relevant. In addition to a variety of structured education programs, Minnesota Zoo guests also learn about animals and nature through interpretive graphics and programs such as monorail tours, shark reef feeding sessions, dolphin and bird shows, animal demonstrations and special events. The Minnesota Zoo serves as a primary resource for Minnesota schools to achieve environmental education learning objectives and is the largest environmental education center in Minnesota, serving almost 250,000 people annually in formal education programs, including 145,000 K-12 students, teachers and chaperones who visit on school field trips.

Brief description of how Minnesota Zoo education programs address local and global conservation and environmental issues.

The mission of the Minnesota Zoo Education Department is to excite and inform people about their dynamic connections to the living earth and to foster the development of knowledge and values regarding species survival, habitat preservation, ecosystem health and biodiversity. The Minnesota Zoo and its programs provide opportunities for interaction, inquiry and discovery with an amazing living collection of plants and animals to promote a better understanding of and appreciation for nature and the intrinsic value of biodiversity. People live within and are an integral part of ecosystems. Our choices and actions have local and global impacts on the current and future health of the living earth. The Minnesota Zoo experience and its education programs encourage a stewardship ethic to inspire conservation action.

Minnesota Zoo classes highlight our leadership role in local and global conservation efforts. Participants in education programs learn about our trumpeter swan breeding and reintroduction program, our status as an orchid rescue station for orchids confiscated by U.S. Customs and our partnerships with other AZA institutions in SSP's and other cooperative management programs for Bali mynah, green sea turtles, white-cheeked gibbon, tree kangaroo, takin, tapir, clouded leopard, Amur leopard, sun bear, Amur tiger, bactrian camels, Asian wild horses, Mexican wolves and other animals in our collection.

Written policy for use of exotic wildlife in off-premises situations

STATE OF MINNESOTA
MINNESOTA ZOOLOGICAL GARDEN
POLICIES/PROCEDURE A-3

Page 1 of 1
Eff. Date 08/89
Rev. Date 02/95

DIRECTOR'S SIGNATURE

UTILIZATION OF EXOTIC WILDLIFE IN OFF-PREMISES SITUATIONS

PURPOSE : The Minnesota Zoo exists to strengthen the bond between people and the living earth.

Animals may be used in off-site programs for educational and promotional activities providing their use is of a nature beneficial to the zoo, the public and wildlife in general and their use does not in any way compromise the health and welfare of the individual animals or the public.

Only animals from the Interpretive Programs Department are used in off-site presentations, unless otherwise specified by the Executive Director and Director of Animal Programs.

These include:

- contact animals from ZooLab presented by Zoomobile, an environmental education outreach program, which visit schools, civic groups, fairs, etc.
- birds from the World of Birds Show, presented in off-site education programs.
- domestic animals from the Childrens Zoo/MZG Farm, e.g. reindeer, llama and sheep representing the Zoo primarily as a marketing tool.

The Minnesota Zoo does not present, off the Zoo site, any potentially dangerous or life threatening animals such as primates, lions, tigers, bears or wolves unless specified by the Executive Director and Director of Animal Programs.

The animal ambassadors traveling off-site from the Minnesota Zoo are under the direction of paid staff. These animals have been selected because of their tolerance for travel and public contact.

Off-site presentations utilizing Zoo animals are designed to both generate an interest in attending the Minnesota Zoo (marketing) and a respect for awareness of the specific species in the animal kingdom and a need for preservation of their habitat in the wild (education). Great care is taken to ensure that staff does not in any way encourage the keeping of exotic animals as pets. Animals are not presented in any way as to construe anthropomorphisms or lack of respect for the animal. A conservation awareness for the future of all wildlife species and their natural habitat is the underlying theme in all presentations.

Description of Outreach Programs

- Zoomobile brochure



Zoomobile
Brings
the
Zoo
to
You!



MINNESOTA ZOO



The
Minnesota

Zoomobile offers a variety of presentations designed to educate and entertain audiences of all ages.

Our programs are great for both schools and community events throughout Minnesota. We use live animals, along with biological artifacts, theater techniques, and audience participation, to make each program dynamic, personal, memorable and fun.



Select from these exciting program options!



Formal Programs

These educational and fun programs generally run 45 minutes to one hour and include a variety of animals. (300 people maximum)
Topics include:

All Things Connected

In this program we lead our audiences through a process of discovery to recognize the relationships that connect all life on earth.

Tropical Forest

We bring tropical forest issues to life right in your community or school.

Cool Animals of the North

This program uses animals native to Minnesota and explores what makes our own "backyard animals" unique.

Formal Program Fees:

A single program is \$250 within 100 miles of the zoo. Outside of this area a nominal mileage charge is added. Additional programs on the same day and at the same location are \$125 each.

Booth Program

This program offers an informal interaction with a naturalist and animals, making it perfect for fairs, festivals and other community gatherings.

Booth Program Fee: \$250 for the first hour. An additional consecutive hour can be scheduled for \$125.



Classroom Seminar Programs

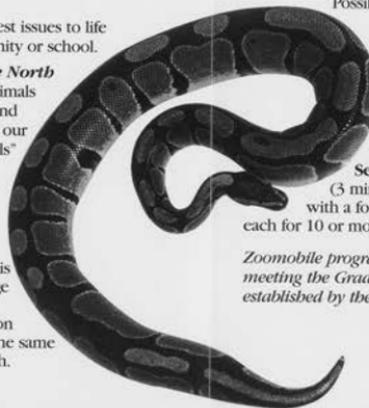
Zoomobile seminars are specifically designed for the classroom setting to offer an in-depth and interactive look at the topics covered. (30 students maximum)

Possible topics include:

Circle of Life
Tropical Forests
Reptiles
Birds
Animal Tales
Wetlands/Habitats
Minnesota Wildlife

Seminar Fees: \$85 each (3 minimum if not booked with a formal program) \$75 each for 10 or more.

Zoomobile programs aid teachers in meeting the Graduation Standards established by the State of Minnesota.



"The animals are always a huge hit at our festivals. Both young and old were entertained."

- Berni Orbeck

Chairperson Isanti County Fair

"The naturalists did a great job of connecting their presentation with our summer reading program. It really made the kids feel like they were part of something special."

- Linda Valen

St. Paul Public Libraries



"The Minnesota Zoomobile's exceptional staff has once again provided our students with a fantastic learning experience! We look forward to their return for the seventh consecutive year!"

- Jodi Conners

Eden Prairie Kindergarten Center

Schedule a Zoomobile Program today!

Call a Zoomobile naturalist for more information:

(952) 431-9228

toll free (800) 366-7811 ext.228

TTY 1-800-627-3529

www.mnzoo.org

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KOCH PETROLEUM GROUP LP

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St. Paul, MN
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MINNESOTA ZOO
13000 Zoo Boulevard
Apple Valley, MN 55124

Brief Description of Volunteer Program

Volunteers are an integral part of the Minnesota Zoo staff. In the most recent fiscal year, 589 Volunteers donated almost 90,000 hours of service. Volunteer coordination considers the unique tasks of providing valuable and fulfilling work experiences to unpaid staff. In addition to the huge impact the Volunteers have on the daily Minnesota Zoo experience, efforts to recruit new Volunteers, recognize and retain current Volunteers and provide project-oriented Volunteer opportunities are evaluated and improved on an ongoing basis. Efforts to further integrate the Volunteer Programs with the rest of the Education Department will continue in order to maximize efficiency and impact. Management of the Volunteer program includes recruitment, initial and ongoing training, recognition and enrichment. Volunteer opportunities include:

Adult Interpretive Program

The primary role of the adult interpretive volunteer is to interact with Zoo visitors. Opportunities include leading tours, staffing information booths, randomizing exhibit trails, handling animals in the Zoolab, assisting at Special Events, plus a variety of other activities that enhance our guests' visit. Training classes which provide an introduction to the Zoo's animals, plants and programs is offered regularly throughout the year.

ZooTeen Program

ZooTeen volunteers assist with the Summer Zoo Camp Program. During the winter, teen volunteers occasionally assist with Special Events. Zooteens must be between the ages of 13 - 18 years of age. Recruitment occurs in the late winter followed by a training program each spring.

Office Support Program

Opportunities include; data entry, filing, phone work, switchboard and mailing projects, as well as collating and compilation projects. Training is job specific. Office volunteers should be over eighteen, and be available during the week.

Short Term Opportunities

These volunteers assist with Special Events that typically call for a large number of volunteers and occur periodically throughout the year. Examples might include bike festivals, Zoo walks, holiday activities, and concert ushers.

See also E-2 and E-12

and teacher.

Minnesota Zoo
Multi-Cultural

*Mentor
Program*



Men·tor (men'tôr) n. A wise and trusted teacher.

**Minnesota Zoo
Multi-Cultural**

Mentor Program



Mentor (men'tôr) n. A wise and trusted teacher.

Discovering the animals and trails of the Minnesota Zoo provides a living backdrop for the study of Zoo sciences.

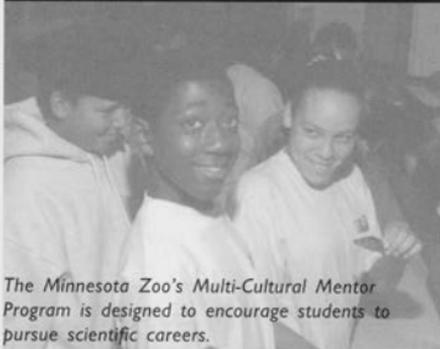
The Minnesota Zoo Mentor program provides a one-week experience for students grades 6-9. Students in grades 10-12 are accepted on an individual basis. Transportation and lunch are included in this program. When students complete the program they receive a \$25 science scholarship and a certificate of completion. Participants are selected with assistance from community-based youth organizations, ethnic/cultural centers and individual schools.

*Funded by a grant from the Medtronic Foundation Star program and additional funds from the Fingerhut and Deikel Foundations.

Our greatness lies in our diversity. We are all-inclusive. A mentor does not accept one person and refuse to work with another. Mentoring is not a matter of winning. A Mentor sheds the light of awareness through selfless service and without prejudice.

The Power of a Mentor

Science in Our Future



The Minnesota Zoo's Multi-Cultural Mentor Program is designed to encourage students to pursue scientific careers.

Career Explorations

Participants explore careers in Zoo science including:

- Veterinary Science and Nutrition
- Animal Behavior and Management
- Marine Mammal Management
- Marine Biology
- Bird Behavior and Management
- Wildlife Conservation
- Animal Training
- Interpretive Demonstrations
- Horticulture

Participants also learn zookeeping care with a variety of animals in the Mentor Clubhouse.

Minnesota Zoo
Multi-Cultural Mentor Program*
13000 Zoo Blvd.
Apple Valley, MN 55124
For more information contact the
Mentor Program at (612) 431-9260

Multi-Cultural Mentor Program
Minnesota Zoo
13000 Zoo Boulevard
Apple Valley, MN 55124-8199

Dolphins: Dark to Dawn



MINNESOTA ZOO



At 9 p.m., when the Minnesota Zoo closes for the night and everyone has gone home, you are invited to spend a unique overnight adventure with the Zoo's dolphins!

An Exciting Night of New Experiences

Your evening begins in the dolphins' home—Discovery Bay: United HealthCare Marine Education Center. To begin your adventure, we will observe the dolphins in their underwater habitat. We'll explore how scientists learn to identify individual dolphins and how they interpret their unique social behavior. Then it's off to decorate a one-of-a-kind T-shirt to take home as a memory of your experience. Next, we'll answer all your questions about dolphins and we'll learn about one of dolphins' greatest predators—the shark! Finally, you will retire for the

night by the underwater viewing windows of the dolphin exhibit and be lulled to sleep by the sounds of the dolphins. In the morning, you'll get a behind-the-scenes look at Discovery Bay and learn about dolphin training by watching a private training session in the new 800-seat theater.

What to Bring

You will need to bring a sleeping bag and pillow (a sleeping pad is recommended). Also, pack some necessary toiletries. Video cameras and cameras are welcome. Please no food, flashlights, or electrical appliances.

Meals

We will enjoy a late night snack while watching the dolphins. In the morning, we will rise to a continental breakfast of fruit and rolls.



Cost

The cost of the Dolphins: Dark to Dawn program is all inclusive. Cost is \$45 per person for Minnesota Zoo members, and \$65 per person for non members. Children ages five to 15 must be accompanied by an adult. Groups of 20 to 30 may be eligible for group rates. For more information or group rates, call (952) 431-9536.



Program Dates

The overnight program begins at 9 p.m. and continues until 9 a.m. the following morning. Dolphins: Dark to Dawn is offered on selected Friday evenings throughout the year.

**Call (952) 431-9536
for more information
and available dates.**

For TTY Communication, contact Minnesota Relay Service at 1-800-627-3529. This document available in alternative formats upon request.

Dolphins: Dark to Dawn Registration Form

Names Adult Child Age Dolphins: Dark to Dawn Dates

| | | | | |
|----------------|---|-------|---|-----------------|
| | | | First Choice: | |
| | | | Second Choice: | |
| | | | Third Choice: | |
| | | | Fourth Choice: | |
| | | | Member Number (required for member rate): | |
| Street Address | City | State | Zip | Fee per person: |
| | | | | Total Fee: |
| Daytime Phone: | Payment By: <input type="checkbox"/> Money Order <input type="checkbox"/> American Express <input type="checkbox"/> Discover | | | |
| Evening Phone: | <input type="checkbox"/> Check <input type="checkbox"/> VISA <input type="checkbox"/> MC Card # _____ Exp. _____ | | | |

Mail to: Minnesota Zoo, Dolphins: Dark to Dawn 13000 Zoo Blvd. Apple Valley, MN 55124

Check here if you require special accommodations. Someone from our office will contact you.

You will receive a confirmation letter and additional information two to three weeks prior to overnight.



MINNESOTA ZOO

13000 Zoo Boulevard
Apple Valley, MN 55124

**C
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INFORMAL CAREER SEMINARS



WHO: 7th Grade-College/Adults

DATES: March 7, 2001
April 7, 2001

TIMES: 9 am to 4 pm

FEE: \$25/participant

CALL: 952-431-9466

Learn about science careers and receive practical advice about how to prepare for the future. Professionals will recommend college programs, emphasize how volunteering and related work experience can make an impact, and describe what they do in their day-to-day activities. These are **INFORMAL SEMINARS** and not hands-on activities. Careers to be covered include:

- Veterinary Medicine
- Zoo Keeping
- Marine Science
- Animal Handling
- Education

.....
ZOO CAREER REGISTRATION FORM: \$25.00 FEE INCLUDES ADMISSION TO ZOO, ANY SEMINAR(S) ATTENDED, A BEHIND-THE-SCENES TOUR, AND MONORAIL RIDE.

PLEASE FILL OUT AND RETURN WITH YOUR PAYMENT TO:

**CAREER DAY- EDUCATION DEPT.
MINNESOTA ZOO
13000 ZOO BLVD
APPLE VALLEY, MN 55124.**

NAME _____ **DAY PHONE** _____

ADDRESS _____ **DATE ATTENDING:** March 7 or April 7

CITY _____ **STATE** _____ **ZIP** _____

Seminars attending: (please circle) Veterinary Medicine Zoo Keeping Marine Science Animal Handling Education

Research

ATTACHMENT R-1

The following list cites research conducted or supported by the Minnesota Zoo over the past three years. Supported research projects by outside investigators for the most part are on an opportunistic basis where significant staff time or resources have not been necessary to dedicate for support of the individual research programs.

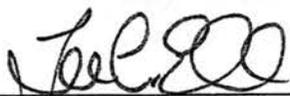
- 1) Willis, Kevin, Minnesota Zoo
Methods of Genetic Management of Captive Populations
In the past three years this research has resulted in five formal presentations and the publication of two manuscripts. Two AZA CEF grants have been awarded to support this work (one in 1997 for software development, one in 2000 for investigations into methods for integration of DNA fingerprint information). Research includes both theoretical and applied aspects of genetic management.
- 2) Traylor-Holzer, Kathy, Minnesota Zoo
Analysis Of The Regional And Global Captive Populations Of Sumatran Tigers (*Panthera tigris sumatrae*).
- 3) Nyhus, Philip, University of Wisconsin-Madison and Research Associate, Minnesota Zoo
Elephants, Tigers, and Transmigrates: Conflict and Conservation at Way Kambas National Park, Sumatra, Indonesia. A 12-month analysis of the tiger-human dimension in southeast Sumatra including elephant-human conflict, tiger-human conflict, and knowledge and attitudes toward tigers and other wildlife in communities in Sumatra, Indonesia. Ph.D. Thesis (see conservation bibliography).
- 4) Nyhus, Philip, Research Associate, Minnesota Zoo
Tigers, Cameras, And Satellites: Interdisciplinary Efforts To Map The Habitat And Threats Of The Last Sumatran Tigers.
- 5) Franklin, Neil, Pre-doctoral Student, University of York, UK and Research Associate, Minnesota Zoo
The Ecology and Population Dynamics of Wild Sumatran Tigers. A 5-year field study of a population of wild tigers in Way Kambas National Park, Sumatra, Indonesia (see conservation bibliography). Ph. D. Thesis.
- 6) Moseley, Melinda L., University of Minnesota
SCA8 CTG Repeat in Primates.
- 7) Liu, Wanguo, PhD, Mayo Clinic
Structural and Functional Analysis of the p53 Gene in Sharks and Other Animals.

- 8) Switzer, William M., Microbiologist, Center for Disease Control, Atlanta, GA
Seroprevalence of Nonhuman Primate Retrovirus Infections Among
Occupationally Exposed Workers.
- 9) Pelican, Katey, DVM, PhD Student Noahs Network NZP
Lupron Study of Clouded Leopards.
- 10) Brown, Janine L., Endocrine Research Laboratory, National Zoo
Determination of Estrous Cyclicity, Pregnancy and/or Seasonality Patterns
Using Fecal Hormone Assay
- 11) Miller, Michael R., Mercyhurst Archeological Institute, Erie, PA
Comparison Analysis of Moose and Caribou Blood Samples with Blood
Residues on Lithic Tools from the Orton Quarry.
- 12) Kirchhof, Nicole, MD, Department of Surgery, Diabetes Institute for
Immunology and Transplantation, University of Minnesota
Primate Serum Collection for Study on the Transplantation of Isolated Islets
of Langerhans for the Treatment of Type -1 diabetes mellitus.
- 13) Yunus, Muhamad, University of Lampung, Bandar Lampung, Sumatra
Observation Of Prey Populations In Prey-Rich Open Areas – Swamp And
Grassland, Way Kambas National Park, Indonesia. Senior Thesis
- 14) Subagyo, Agus, University of Lampung, Bandar Lampung, Sumatra
Relationships Between Paw Print Measurements And Tiger Identity. Senior
Thesis
- 15) Ma'turidi, University of Lampung, Bandar Lampung, Sumatra
Population Structure and Activity of Wild Long-tailed Macaques. Senior
Thesis.
- 16) Rustiati, Elley, Department of Biology, College of Mathematics and Natural
Sciences, University of Lampung, Sumatra. Primates As Potential Prey Of
Sumatran Tigers: Why Macaca? Ph.D. Thesis at Exeter University, UK.
- 17) Sriyanto, Bogor Agricultural College, Bogor, Indonesia
Analysis Of Wild Sumatran Tiger Diets In Lowland Habitat. Masters Thesis.

ATTACHMENT R-3

Results of research projects not undertaken by the MZG but supported by the MZG are normally published by the investigator and their representative institution. No copies of research projects occurring over the past three years are in our possession.

STATE OF MINNESOTA
MINNESOTA ZOOLOGICAL GARDEN
POLICIES/PROCEDURE A-18



Director & Chief Executive Officer's Signature

Eff. Date 3/84
Rev. Date 8/93; 1/01

RESEARCH PROPOSAL PROTOCOL

POLICY:

It shall be the policy of the Minnesota Zoo to support basic and applied research on all aspects of Zoo biology – ethology, physiology, pathology/anatomy/microbiology, genetics/demography, education, animal husbandry and/or management, reproduction, conservation, veterinary medicine, nutrition and horticultural studies.

PURPOSE:

The Zoo's primary contribution to research projects will be in providing access to the facilities and animal collection. The Zoo is limited in its ability to provide monetary support or staff assistance. All proposals must be compatible with the captive management policies of the Zoo and be directed toward species exhibited by the Zoo.

PROCEDURE:

Before a proposal is fully developed, the researcher should contact the Zoo's appropriate Biological Programs staff person to answer questions about animal availability, ages, sex ratios, enclosures, management routines, etc. Following the discussion(s) a formal typewritten proposal (in triplicate) on forms available from the office of the Vice President of Biological Programs should be delivered to the Zoo.

All applications will be reviewed by the Zoo's Animal Management Committee consisting of, but not limited to the Vice President of Biological Programs, Conservation Manager, Staff Veterinarian and Zoologists. Approval of proposals is based on (1) biological significance, (2) feasibility and relevance and (3) the ability to complete the project and/or study within the time frame proposed. Projects may be scheduled to begin at any time of the year, may be species-specific or broadly comparative and may emphasize any aspect of zoo biology. Originally, objectivity and applicability are major considerations for selection.

The Zoo animal inventory is available by writing or calling the Zoo Registrar or the office of the Vice President of Biological Programs.

Zoo staff will be assigned as contacts for each investigation. They will assist in solving problems, ensuring effective execution, and monitor compliance with agreed upon methods and review results on a periodic basis. Project changes after initiation of the project must be reported in writing and will be reviewed by the Animal Management Committee. Research projects may be terminated at any time if conflicts cannot be resolved, progress is unsatisfactory, agreements are not adhered to, or the research had unexpected and detrimental effects on the animal collection.

STAFF/INSTITUTE RESEARCH PROPOSAL
FOR THE
MINNESOTA ZOOLOGICAL GARDEN

Information must be typed in the space allowed on one side of the page only and limited to these three pages. If additional materials are essential to a full understanding of the project they must be attached. Return three copies of completed form to the Office of Biological Programs.

1. Principal Investigator(s):

Name (last, first, middle)

Present Position and Telephone Number (extension)

Home address and Telephone Number

Project Title (10 words or less)

a. Common and scientific name of animal(s) involved:

b. Facilities and equipment needed:

c. MZG staff assistance needed:

d. Funds requested from MZG (detail in #6): \$ _____

e. Expected duration of project (specify dates of field and laboratory study):

f. If MZG staff, time needed (requested) away from regular duties:

2. Background and Qualifications of Principle Investigator(s) (curriculum vitae may additionally be attached)

a. Length at present position: _____

b. Education and degrees (include institution and date):

c. Other qualifications pertinent to proposed research:

Principal Investigator(s):

3. Abstract of Proposed Research:

4. Significance of Proposed Research to MZG:

5. Budget for Funds Requested from MZG. Budget items must be listed with precision and in detail. All items purchased are the property of MZG:

Principal Investigator(s):

6. Detailed Description of Proposed Project. Relate what you propose to do to previous and current work on the subject by yourself or others. Cite references to published work. Detail the methodology that will be used, and describe any special techniques:

Approval of Vice President, Biological Programs _____

Signature

Date

Distribute copies to: Vice President, Biological Programs, Conservation Manager, appropriate Zoologist.

ATTACHMENT R-6

The Minnesota Zoo does not have a formal Animal Care and Use Committee responsible for reviewing research projects. In its place, the Minnesota Zoo utilizes its Animal Management Committee to perform that function. Current members of the Animal Management Committee are:

James H. Streater, Vice President, Biological Programs
Kevin Willis, Conservation Manager
Kristine R. Petrini, DVM, Senior Veterinarian
James M. Rasmussen, DVM, Associate Veterinarian
Beth Jo Schoeberl, Zoologist
Brad Geiszler, Zoologist
Chris Kline, Zoologist
Diane Fusco, Zoologist
Allan Maguire, Zoologist
Laura Trechsel, Zoologist
Steve Estebo, Zoologist
Staci Arnold, Zoologist
Jimmy Pichner, Zoologist
Kathy Holzer, Registrar
Tony Fisher, Farm Supervisor

Responsibilities and activities of this Committee are outlined in Attachment R-5 (MZG Policy A-18).

Other Programs



13000 Zoo Boulevard
Apple Valley, MN 55124-8199
(Nine miles south of the Mall of America)
Administrative Offices:
(612) 431-9200 or 1-800-366-7811
Zoo-to-Do Hotline (612) 432-9000
TTY 1-800-627-3529 or (612) 297-5353
www.mnzoo.com

♻️ Printed on recycled paper containing 20% post-consumer waste.

Join the Zoo

*It's one
of the
best family
values in
town!*



Yes! I want to be a member.

Membership For:

Name

Second Adult Name (If Household, Household Plus, or Advocate)

Address

City

State

Zip Code

Daytime Phone with Area Code

Legislative District

Number of **dependent** children under 18: _____

~or~

Grandchildren under 18: _____

Make check payable to Minnesota Zoo. Or charge on your

VISA Mastercard American Express Expiration Date: _____

Account #

Just complete and mail this form:

Membership From:

Name

Address

City

State

Zip Code

Daytime Phone with Area Code

Send Membership to:

Recipient Me

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*(Guest(s) must be accompanied by the member.)

Amended proposal for the
Master Plan for the Minnesota Zoo
A 10-15 Year Facility Development and Business Plan

Minnesota Zoological Garden
January 5, 2001

THE
PORTICO
GROUP



217 Pine Street, Second Floor
Seattle, WA 98101-1500



THE
PORTICO
GROUP

We have reduced the involvement of AldrichPears Associates and with it the degree of finish of a Zoo-wide interpretive plan. We firmly believe that a physical plan must be developed in concert with an overall interpretive plan – the two giving voice and form to the one another.

An assessment of existing utilities and utility planning based on proposed improvements remains part of our proposal with the level of finish reduced. URS will review existing documents, attend workshops, develop conceptual plans for utilities based upon the proposed phasing, assist with utility costs, and assess regulatory and code issues.

Our experience is facility planning has made us keenly aware of the significance of visitor flow and visitor services. ORCA's involvement has been reduced yet the significance their reduced participation and assessment will make a strategic difference in the early direction of the planning process.

Our team is remains without peer. We have worked on planning efforts that have had a wide spectrum of finish and fee. We are confident our expertise and passion facilitating workshops and visioning offers the Zoo the assurance of a secure foundation for the future development of the Zoo. ,

We bring an enthusiasm and sophistication of experience that will ensure an engaging process, timely delivery, and a thorough document.

The Minnesota Zoo has an impressive history of accomplishments and innovation as well as an enviably record of successful education programs.

We want to be part of the planning process to acknowledge the successes and history of the zoo, collaborate with project stakeholders, and establish a vision for the future that will ensure a fiscally healthy, experientially dramatic, and programmatically sound institution.

Sincerely,

Becca Hanson, FASLA
Principal

Kent Scott, ASLA
Associate Principal

Lars Erdahl, Vice President - Education
Minnesota Zoological Gardens
13000 Zoo Boulevard
Apple Valley, MN 55124

5 January 2001



THE
PORTICO
GROUP

Lars,

It is our pleasure to submit this revised proposal for a facilities development and business plan for the Minnesota Zoological Gardens.

Our proposal is within your \$200,000 budget for professional services and includes:

- a comprehensive planning effort to establish a vision for the Zoo
- conceptual physical and interpretive plans
- a business plan which includes operations
- a fundraising assessment
- a phasing plan
- a cost estimate based on phasing

Architects

*Landscape
Architects*

The reduction in fees when compared to our 20 December submittal is substantial yet the goal and spirit of the final product are unchanged - to develop a comprehensive vision for the development of the Zoo for the next 10 to 15 years.

*Interpretive
Planners*

We are confident of the success of our efforts and collaboration with the Zoo given the reduced fee.

*Exhibit
Designers*

We have revised the workshops increasing the first workshop to four days to allow the generation and development of ideas with the Zoo and stakeholders. Our strategy is to increase the work and products generated at the workshops and reduce our efforts when in Seattle. We have also deleted the last trip which was to present the final planning documents.

The previously completed marketing and visitor survey documents we received over the holidays provides a substantial base upon which to start the business plan and these fees have been reduced. The Office of Thomas Martin, who bring a unparalleled expertise to the project, will remain intimately involved with all aspects of the planning.

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Minnesota Zoo Master Plan — Project Understanding

The Portico Group along with AldrichPears Associates, The Office of Thomas J. Martin, Oppenheim Lewis, ORCA, and URS has carefully studied the Request of Proposal for a master plan and business plan at the Minnesota Zoo.

There are significant components to acknowledge and to build upon in this broad endeavor to create of framework for the Zoo over the next 10 to 15 years.

The Zoo has a strong mission statement that embraces the spirit of existing Zoo and operations. The mission statement should serve the Zoo through the implementation of the proposed master plan.

The Zoo has established programs that support the mission statement and should serve as a springboard for the development of a new master plan. These programs include captive propagation, wildlife/habitat conservation, naturalistic exhibits, and environmental stewardship.

The Zoo has achieved notable success in education and programs. The School of Environmental Studies is an impressive example of the Zoo's commitment and underscores the vision and potential in the master plan.

The Zoo has been an innovator since its inception and the completion of the Family Farm is a current example of innovation and success.

We understand our charge in the development of a master plan and business plan is to:

- **chart a course** for the Zoo for the next 10 to 15 years for the facilities, renovation and development, as well as programs
- expect **the capital improvements** for the master plan to cost between \$100 and 150 million
- create a **compelling vision** for the zoo that builds upon the mission statement, strengths and past success of the Zoo
- **work collaboratively** with the Zoo and identified stakeholders
- **listen** and attend carefully the thoughts, needs, and concerns of the Zoo and identified stakeholders
- expand and weave the existing **education** programs into the master plan
- **develop a plan that is real** – a plan that studies, addresses and supports the logistics, costs, operations, fundraising, and mission – and can be implemented.
- carefully assess **existing conditions** including infrastructure, husbandry, safety, operations, visitor experience, and visitor services
- develop an **interpretive plan** that embraces the mission and vision of the Zoo – that educates visitors on environmental stewardship and offers a strong basis for Zoo programs
- develop a **business plan** that works seamlessly with the physical plan, that addresses capital and operating expenses, revenues, and public and private fundraising
- increase earned **revenue and contributions**
- develop an **estimate of costs** for master plan improvements that address phasing and operations
- **workshop** with the Zoo and identified stakeholders to explore options, present findings, and determine the most appropriate, achievable, and visionary course for the Minnesota Zoological Gardens.

Minnesota Zoo Master Plan — Project Team

The Portico Group

Architecture, Landscape Architecture, Interpretive Planning & Exhibit Design

In 1983, five individuals from the disciplines of Architecture and Landscape Architecture came together to form The Portico Group. Our mission then, as now, was to undertake projects in collaboration with our clients that thoroughly engage people while enriching their understanding of the natural world around us.

Professionally, we are guided by design principles that spring from a sense of belonging to a larger community ... a community in which the preservation of our natural and cultural heritage is as important as the use of appropriate technology to support conservation.

Today, our offices in downtown Seattle house 44 professionals representing the disciplines of Architecture and Landscape Architecture, Interpretive Planning and Exhibit Design.

Our services range from process facilitation, feasibility studies and conceptual planning, cost projections, project design, and construction and fabrication support services. We are as proud of our design reputation as that engendered by our collaborative and humanistic approach.

We want to be a part of projects where the desire for beauty and integrity are woven with a commitment to lifelong learning and the joy of continued discovery.

Team Members

Becca Hanson, Principal-in-Charge
Kent Scott, Project Manager
Bill Hacker, Architectural Designer

AldrichPears Associates

Interpretive Planning

AldrichPears provides interpretive planning services to zoos, museums, interpretive centers and park facilities. Their work has helped clients to connect with their audience – people with a wide range of knowledge, needs, and interests. By using tools such as humor drama, object and illusion, in addition to technology and art, AldrichPears creates compelling and entertaining visitor experiences. Their goal is to inspire meaningful interaction, motivating visitors to become involved in the subject at hand.

AldrichPears has a long history of working together with The Portico Group. A few recent projects include Lacerte Family Children's Zoo at Dallas Zoo; Zoo Orlando Phase I Design; Regenstein African Journey at Lincoln Park Zoo and Las Vegas Springs Preserve.

Team Members:

Phil Aldrich, Principal

The Office of Thomas J. Martin

Business Planning and Fundraising

The Office of Thomas J. Martin, Economic Research and Management Consultants was founded in 1991 to provide services to clients in the areas of project and plan concept development, evaluation and implementation, and management and operations in the fields of visitor attractions and tourism development. The firm has special expertise and experience in zoos, aquariums, and museums, and other not-for-profit attractions; and in preparing tourism development strategies for various cities, counties and regions. The Principals of OTJM have conducted well over 250 directly relevant studies including business plans, market and financial feasibility studies, operations analyses and economic impact studies for existing and proposed visitor attractions.

OTJM's work in zoo, aquarium and museum development, expansion and operation typically focuses on issues related to visitation projections, facility pricing and marketing, management and operations, and economic feasibility. They generally work with client representatives as well as architects, designers, engineers and other related professionals on both new projects and project expansions and master plans. Their work sets the framework for other professionals in terms of overall visitation levels, seasonality of visitation, cost return trade-offs, and related issues critical to successful planning.

Their operations analyses often serve as central aspects of the "business plans" for projects. Projection of the economic impacts of visitor attractions is a specialty of our practice that is useful for the community and project sponsors in understanding the economic benefits that go along with a project of this type in addition to the educational and conservation benefits.

Team Members:

Thomas Martin, Principal
Robert Brais, Principal

Joining OTJM in evaluating funding potential and in preparing a financing strategy is Charles H. Bentz Associates, Inc., Fund-Raising Counsel.

Charles H. Bentz Associates, Inc. is a national fund-raising firm that provides full-service fund counsel to not-for-profit institutions throughout the United States. Although specializing in the management of capital and endowment campaigns, Bentz Associates also provides clients with a variety of ongoing development, fund-raising, marketing and management services on a consulting basis.

Charles H. Bentz established the firm in 1980, and has since served over 200 clients. Although Bentz Associates is best known for their work with cultural institutions such as museums, science and performing arts centers, and historical associations, they also serve educational, social service, and health care organizations.

Given the intense competition for the philanthropic dollar today, Bentz Associates focuses on quality homework as the important first step of a successful campaign. From day one, careful attention is given to research, organizational structure, campaign planning, timetables and costs.

ORCA

Visitor Services / Visitor Flow / Transportation Planning

Operations Research Consulting Associates (ORCA) is a specialized consulting firm offering quantitative analysis support for the planning and operation of leisure / entertainment / recreational facilities. Since 1993, the firm has provided services to a large variety of clients throughout the leisure industry.

A primary focus of ORCA's services is the comprehensive study of all issues related to visitor circulation, attendance capacity and layout/sizing for leisure venues and facilities. ORCA's objective on these project assignments is to ensure that the visitor spaces and visitor support facilities of a project are effectively sized and optimized to support daily attendance. Typically, ORCA's involvement on a project results in reduced costs, increased attendance capacity and improved visitor experience and satisfaction.

Team Member:

Al Shacklett, Principal

URS / BRW Inc.

Infrastructure and Regulatory Assessment and Planning

URS / BRW is a multidisciplinary consulting firm providing professional consulting services in the areas of civil and structural engineering, utilities design, municipal planning, environmental analysis, transportation and traffic engineering. Since 1956, BRW has offered multidisciplinary services from its headquarters in Minneapolis. In June of 1999 BRW merged with URS Corporation, creating a leading global engineering company. Together, BRW and URS have the resources, technical expertise and geographic reach to meet the evolving needs of our clients on a global basis.

Team Members:

Kevin Kielb, P.E., Civil Engineer

Oppenheim Lewis

Cost Estimators

Oppenheim Lewis is a full service project management and cost estimating firm founded in 1984 by Paul Oppenheim and Scott Lewis. They provide innovative and wide ranging construction consulting services to a variety of clients including owners, architects, engineers, construction managers, contractors, developers and government agencies.

They view themselves as developers of tools — cost control and project management tools that allow designers, owners and builders to make the most well informed choices possible throughout the course of project. The approach all of their projects, large and small, in a proactive manner and view themselves as an integral part of the design and construction of buildings.

Team Member:

Scott Lewis, Principal

Minnesota Zoo Master Plan - Revised Approach to the Master Planning Process

Revisions

This revised proposal does not alter the goals of the planning process or the final products. The Master Plan will comprehensively review and develop a 10 to 15 year vision for the Zoo and should serve as a touchstone for future development at the Zoo.

Our revised approach remains based on dynamic and engaging workshops and offers an unchanged spectrum of services. The studies the Zoo has already completed will provide us with significant information at the outset of the planning process allowing us to reduce our previously proposed scope.

We have proposed a selective but non-compromising paring of subconsultant services, and have increased the emphasis on the development of ideas and products during the workshops. While we have increased our expectation of products during workshops we have not altered the comprehensive scope of services or the quality of the final document.

Overview

A final document should be a document of record and a document of inspiration.

A planning process should acknowledge the history and strengths of the Zoo and create a clear and flexible vision for the future.

A planning process should be inclusive of all stakeholders.

The planning process should be deliberate, allow ranging discussion, and be enjoyable.

Portico's long term success with planning is directly linked to the enthusiastic and knowledgeable involvement of the key 'stakeholders' during the planning process.

This is especially true for mission-driven, public institutions that represent a broad range of interests including the Director, the Legislature and the Board; curators, keepers and veterinary staff; educators and docents; foundation members, and public agency staff members.

While the master plan process will be crafted beyond the proposal there are key questions to be raised including:

- Who cares and what do they care about?
- What is the state of the collection, the infrastructure and the facility itself?
- How can we strategically insure high visitation and an educational outcome?
- What is the role of the Zoo in the community, and within the conservation and sustainable-approach movements?
- What are the permitting and regulatory issues?
- What goals should we begin to set for the future?
- How is the Zoo organized to succeed?
- How much money can be reasonably allocated annually for construction / how much construction can the Zoo handle?

- What is potentially going to get in our way as we seek to implement this plan?

Philosophy of Design

Portico is one of the very few firms that approaches zoological design embracing the discipline of interpretive planning in combination with strategic business planning.

Our work with science centers, children's museums and interpretive centers which focus is on the communication of ideas, rather than the display of a collection has engrained upon us that the clarity of and institution's message and purpose is essential to its health and being. Such an approach will stand the Minnesota Zoo in good stead.

We feel, therefore, that during the planning process and before any physical design can be initiated, it is critical to answer three questions:

- What needs to be communicated by the Zoo?
- What are visitors interested in knowing and experiencing?
- How can the Zoo be best positioned to strategically take advantage of its strengths in order to support itself and carry out its mission?

The Portico Group is a leader in the planning and design of experiences where informal learning occurs within a natural context. Our work adopts comprehensive design principles and marries these with natural habitat creation, innovative interpretive programs, the development of botanical collections, and the incorporation of activity-based learning where staff and the environment become part of visitors' learning experience.

While all of the above is important in terms of conceptualizing visitor experiences, it is also important to remember that the Zoo is a slice out of its surrounding ecosystem. As such, and as a proponent of conservation, the Zoo's planning should demonstrate the highest order of ecological integrity. In this way, it can properly be said that the institution is ready to be held up as an example of "walking the talk".

Portico's work on projects throughout North America, as well as New Zealand and Australia, have demonstrated that there are innovative ways to solve consumptive dilemmas, and that zoos can be shining examples of sustainability.

Workshop Approach

We find that very focussed and interactive workshops are an effective means that allow diverse viewpoints to quickly forge a sense of purpose and cohesion.

With our considerable expertise in zoological planning and design issues this approach allows us to wisely lead the process while also building a sense of "team" through collaboration.

Both experience and active research to uncover and understand the issues provide a starting point for envisioning the future.

Planning Process

We proposed a series of workshops that move from introduction and understanding to discovery to brainstorming to alternatives to draft and finally a completed master plan report.

To achieve this we propose to begin the master plan process with a start-up meeting of the design team that will include a face-to-face exchange of the players as well as to begin the 'information quest' that enables us to see the institution through a very clear lens.

Because the Minnesota Zoo is interested in not only a physical and interpretive master plan, but also a business plan, it is important to get research into each of these initiated at the same time so that a strategic approach can be crafted in response to well understood opportunities and challenges.

This research will be conducted by the individual firms that are part of the Project Team in consultation with the Minnesota Zoo, and will be formatted into a report that can serve as the basis for the first of a series of workshops.

Workshop #1 – Presentation of Research/Solicitation of Ideas/Brainstorming

Once we have this base level of understanding, we begin the workshop process and we travel with a core design team to the Zoo to present, discuss, plan and interact intensively with all of the project stakeholders over a period of four days.

We feel that it is important for us to have direct contact with the diverse stakeholders to hear and solicit their view and ideas - what they are saying and how they are saying it – and to allow the design team to be questioned. This allows an open process, reduces review time, and enhances in-depth knowledge of the project.

The team will include experts in interpretive planning and design; exhibit, site and facility design; operations; animal husbandry; regulatory issues; infrastructure; project costing; and business planning/fundraising. Their immersion into the zoo's environment will provide an intimate understanding of the facility through day-to-day contact with the people who know it best. The process of talking, thinking, and dining with the diverse set of personalities and relationships provides us with subtle and important insights into the unique character and needs of the organization.

"I was truly amazed to sit through one of your workshops to see how you manage something as amorphous as design and keep everybody working as a team"

John Aiken, Project Manager
San Francisco Zoo

"In particular, I have appreciated your facilitation skills, bringing the creative talents of our staff into the project, your senses of humour, your superb technical skills and most importantly, your commitment to "team" which has not only made the project successful but for those who have been part of it, given us an enduring sense of achievement together."

Laura Mumaw, CEO
Melbourne Zoo

The research and solicitation of ideas allow for the final component in this workshop where the design team and project stakeholders delve into the possibilities for the Zoo. Here we will sketch and draw and walk on-site imaging the prospects of a new vision.

Following the first workshop the design team will test and explore the ideas that were generated and continue research where needed.

Workshop #2 – Goal Setting/Development of Physical and Thematic Approach/Alternatives

The earlier research and brainstorming gel into a range of possibilities when viewed through a sieve of fundraising, logistics, costs, appeal, mission, and consistency. We will present these possibilities as a series of alternatives and explore the detail effects of each.

This workshop should conclude with a defined set of goals, physical characteristics, and thematic direction.

Following the second workshop the design team will continue to refine agreed elements of the master plan. Critical to this work is the continued testing of the master plan ideas with the business plan, fundraising, and costing.

Workshop #3 – Draft Master Plan/Final Master Plan

The work of many months and significant dialogue between the design team and project stakeholders will be summarized in a draft master plan including an outline report with draft reports from design team, narrative, design guidelines, and drawings. This will be presented to insure that stakeholders views have been acknowledged and to solicit comment on the materials and deliverables of the master plan.

This workshop should conclude with an agreed upon set of changes to the draft master plan.

Following the workshop and written comments from the Zoo the draft master plan will be revised as the final master plan.

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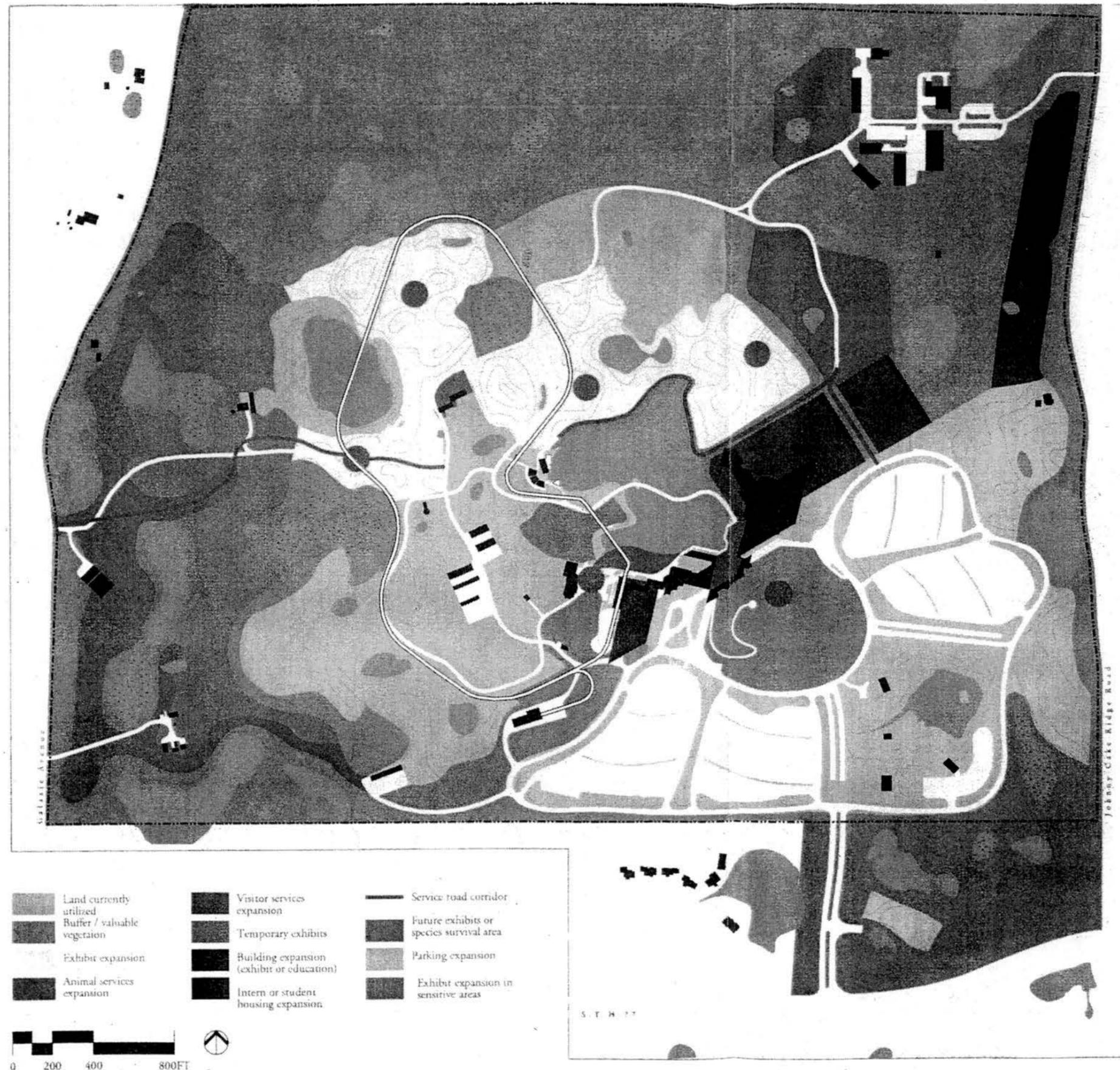
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Future Land Use Districts Plan

In essence, the Plan breaks the Zoo landscape into twelve types of zones:

1. **Current Land Use Districts** – districts determined by function and landscape character
2. **Sensitive Areas** – sites restricted from development
3. **Exhibit Expansion Districts** – areas designated for exhibit and program development
4. **Animal Service Expansion Districts** – areas designated for animal housing, quarantine, care, transport, and feeding
5. **Visitor Service Expansion Districts** – areas designated for new picnic grounds, restrooms, restaurants, and rest areas
6. **Temporary Exhibit and Recreation Districts** – areas designated for temporary events, fairs, and recreational facilities such as a carousel or other rides
7. **Educational and Conference Districts** – areas appropriate for a new environmental school, conference facilities, and other educational institutions
8. **Intern and Student Housing Districts** – areas designated for housing interns, researchers, and other Zoo visitors
9. **Potential Circulation Corridors** – linear areas that could be developed as service roads, exhibit trails, ski trails, or hiking trails
10. **Future Exhibits or Species Survival Zone** – areas reserved for endangered species programs
11. **Parking Expansion Areas** – locations where visitor parking currently exists and can be expanded
12. **Exhibit Expansion in Sensitive Areas** – portions of ecologically-sensitive areas that can be developed with low impact exhibits that highlight the natural qualities of the site



The Planning Process:

Learning from the History of the Land

The master plan process began with the most intensive ecological inventory ever taken of the Minnesota Zoo land. HGA's landscape architects, ecologists from the University of Minnesota, and zoo staff and board members gathered information about the functional needs of the zoo in the coming decades—along with data on the natural resources and "carrying capacities" of the 460 acre Zoo site.

In carrying out this site analysis process, HGA determined that the zoo is comprised of essentially three different types of landscapes that say much about the agricultural history of Dakota County. The landscapes include:

1. *Oak woodlands*—such as those found on the northern 150 acres of the Zoo

2. *Landscapes that have been farmed or otherwise disturbed*—such as the open areas that now house the Camel and Musk Ox exhibits

Wetlands and ponds—a remarkably complex web of ponds, wetlands, and mudflats that are spread throughout the Zoo

When examining the zoo landscape as a whole, HGA came to the interesting conclusion that *the agricultural history of the Zoo site can reveal much information about planning exhibits for the future.*

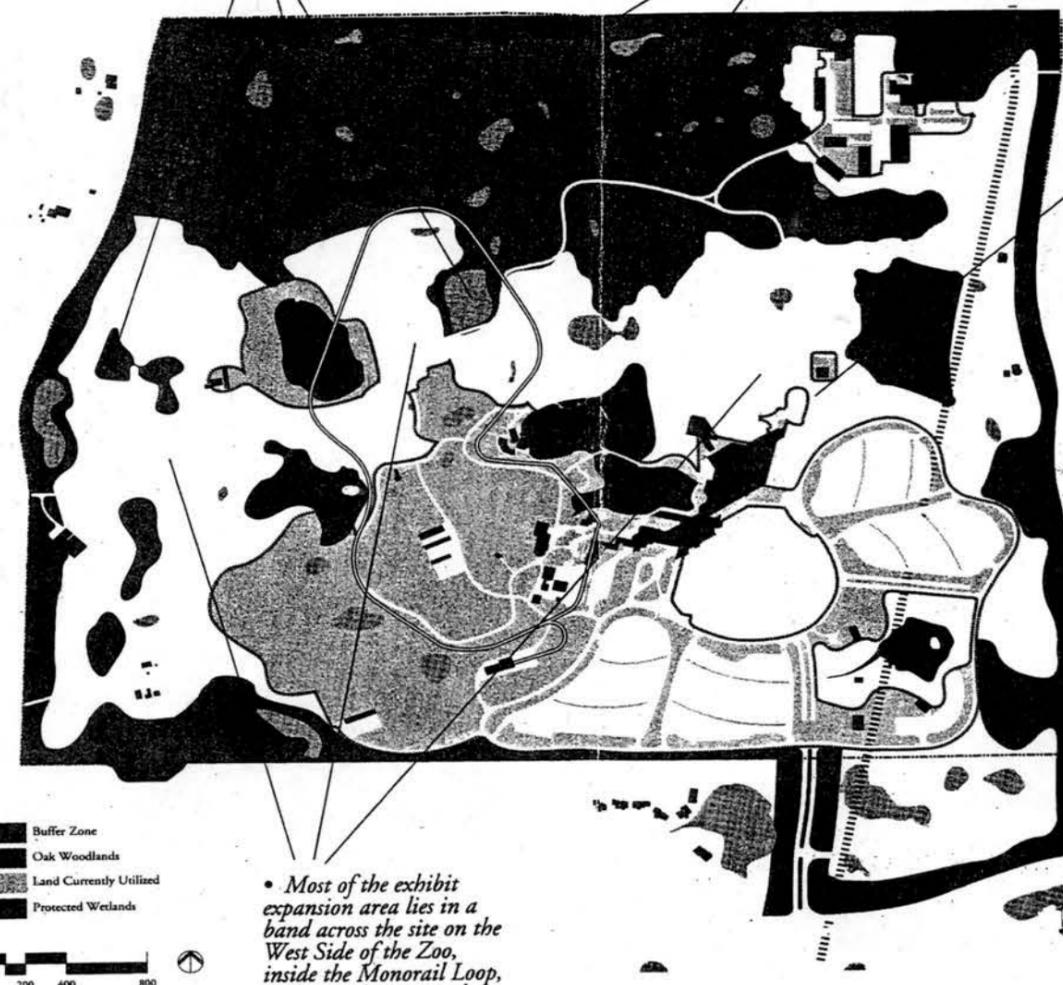
The open areas that were farmed are now covered with grasses and regenerating hardwood trees. These areas were probably chosen to be cleared by early farmers because they were the least hilly in the area. In this sense, the original settlers of the land performed a basic site analysis that led them to avoid the hilly back areas of the site which now, as a result, contain its oldest and most mature oak forests.

The Land Use Plan follows this historic precedent in recommending the preservation of the wooded and wetland areas of the site. Exhibit and visitor service expansion are mostly zoned for areas that have already been altered by human development.

The Plan's Findings and Recommendations

• *The Zoo contains a remarkable variety of ponds and wetlands that should not be harmed by development. Like the Oak Woods, many of the marshes offer a rare opportunity for teaching and research.*

• *The Oak Woods at the northern end of the Zoo property are very mature and rare. They may comprise as much as 2% of the protected oak woods in the state. The Zoo should use the woods as a resource for teaching and conservation through the development of extensive nature trails, improved graphics, tour programs, and even restaurants or picnic sites at key views.*



• *Most of the exhibit expansion area lies in a band across the site on the West Side of the Zoo, inside the Monorail Loop, and near the power plant area. All of these areas were once farm land.*

• *The Plan identifies a zone for a new Zoo school near Birch Pond where a rare prairie and oak woods can be found.*

• *After developed and environmentally-sensitive areas are taken into account, the Zoo has over 100 acres for expansion of exhibits and services*

• *Dakota County is one of the fastest growing areas in the state. New developments such as the proposed airport and increasing housing construction could have a significant impact on the zoo environment within 20 years. The zoo should become involved with the planning decisions made by neighboring governmental units.*

Putting the Plan to Work

The Land Use Plan has been designed as a workbook that zoo staff and board members can use in real-world situations to site new projects such as a donated animal or a major exhibit area. To help the zoo address the needs of future growth, the HGA plan divides the zoo into eleven different types of land use districts that are described on the following page in the Land Use Districts Plan.

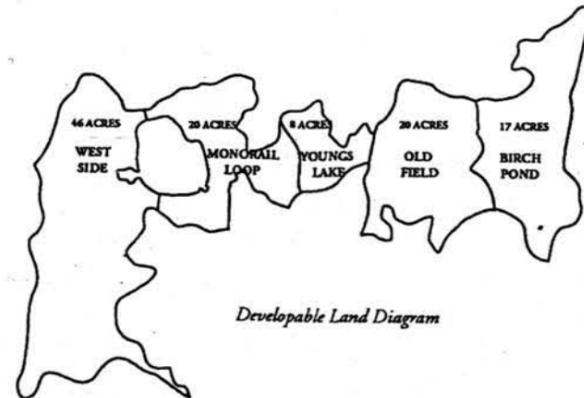
Promoting Bonding with the Living Earth

Central to this educational mission, and philosophically woven throughout the Land Use Plan, are the themes of management and long-term sustainability in the zoo's 460 acres. The new mission calls for flexible programming of activities within the confines of the zoo and a clear environmental image that does not give conflicting or overly romantic impressions of nature. In strengthening the bond between people and the living earth, we at HGA believe that the zoo must also make the visitor aware of the threats to the life of the earth. The New Land Use Plan that we have developed for the zoo does not merely mask surrounding problems and environmental threats as though the zoo were a static island. Rather, we hope to convey the message the zoo environment can become a model for management solutions and long-term stewardship of the land.

The New Land Use Plan:

Looking to the Future

In 1991, HGA began a second phase of work that focussed on future land use and planning. The resulting Land Use Master Plan provides fifty year vision of the Zoo's land use needs for exhibits, parking, visitor services such as restaurants, and the location of the unique new Zoo school on the site.



At the outset of the planning process, HGA developed three major goals to help the Minnesota Zoo make the most of its land while also avoiding costly planning mistakes in the future. The goals are:

1. To protect environmentally-sensitive areas

The plan recognizes significant environmental resources at the Zoo through intensive survey and documentation of existing steep slopes, native woodlands, wetlands, and remnant prairies. This gathered information can be used for management programs and visual site plans that restrict Zoo expansion from ecologically-significant sites.

2. To provide a long-term plan for zoo expansion areas

The plan creates a structure within which new exhibit and recreational development can occur in the future. It should be a clearly envisioned plan that creates a unified overall image for the Zoo while also allowing for and managing change.

3. To Protect and Manage a Unique Landscape

The Land Use Master Plan seeks to recognize, define, and protect the unique quality within the zoo environs. The Zoo should offer surprises and changes of events; and it should continue to offer surprises over repeated visits. The landscape should celebrate the change of seasons in Minnesota. Most importantly, the Zoo should do everything possible to become a place that is valued as extraordinary and unique by people throughout the Midwest.

Thus, the new Land Use Master Plan essentially seeks to protect the ecological, visual, and scenic potential of the zoo landscape over the next fifty years. It provides a long-term vision for the Zoo landscape as a whole. The plan is intended to be read as a guidebook for policy within which future specific design and expansion decisions can be made.

An Ecological Mission—an Environmental Plan: A New Land Use Plan for the Minnesota Zoo



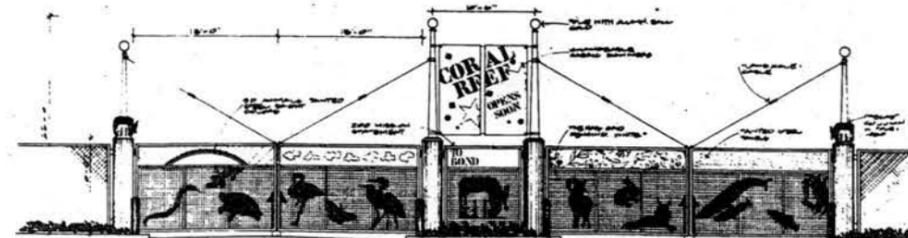
The Minnesota Zoo is one of the largest and most ecologically-rich metropolitan zoos in the world.

The zoo's land is also a living museum of the wetlands, hardwood forests, and prairies that once spread across much of Minnesota.

The pages to follow describe the beauty of the Minnesota Zoo's land and how the Zoo can expand in the coming years.

When the Minnesota Zoo was founded and planned in the early 1970's, few people probably understood the significance that the site would soon achieve. In the 1970's, the zoo seemed located far away from the Twin Cities; and few freeways connected to the site. But, only twenty years later, the Minnesota Zoo has become a rare natural island in the booming suburbs south of the Twin Cities.

In 1990, the Landscape Architecture division of Hammel Green and Abrahamson in Minneapolis began to study the vegetation, hills, and water of the zoo land in order to develop a new long-range vision for the landscape of the zoo. The first phase of the project included new parking lot designs to improve entry circulation and a stunning new entry gate with animals from the zoo's collections.





OUR
MINNESOTA ZOO
LONG-RANGE PLAN

June 17, 1999

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Long-Range Planning Committee Members

Minnesota Zoo Board of Directors

John Appel
Warren Bielke
Peter Hutchinson, Chair
Charlene Jundt
Dennis McGrath
Chris Moir
Jim Rickabaugh

Minnesota Zoo Foundation Board of Trustees

Shannon Burke
Ellie Crosby
Kevin Crudden
Ned Dayton
Peter Maritz
Mary Rasley

Minnesota Zoo Management Staff

Connie Braziel, Acting Director and COO
Lars Erdahl

The Long-Range Planning Committee of the Minnesota Zoo Board of Directors and the Minnesota Zoo Foundation Board of Trustees submitted this Minnesota Zoo Long-Range Plan to the Minnesota Zoo Board of Directors for approval. The Minnesota Zoo Board of Directors adopted this Minnesota Zoo Long-Range Plan on June 17, 1999.

1. Preamble and Mission

In June 1987, the Minnesota Zoological Board adopted a Long-Range Plan. The plan provided our Minnesota Zoo's guiding vision for the subsequent 5-10 years. Central to the Long-Range Plan was the mission statement that still guides all Minnesota Zoo activities...

...To strengthen the bond between people and the living earth.

In 1991, the Minnesota Zoo Board, Minnesota Zoo Foundation Trustees and the staff worked together to develop an updated vision for the future. In 1998, the Minnesota Zoo Board, Minnesota Zoo Foundation Trustees and the staff again worked together to update the vision and Long-Range Plan for the future. This is not a business or a detailed financial plan. This Long-Range Plan is intended to provide a direction for our Zoo as a whole and a basis for development of specific operational plans regarding the Collection, Conservation, Education, Recreation, Finance and Facilities Master Plan. It will also guide the creation and implementation of annual work plans that will include specific performance and financial indicators.

In most cases, this Long-Range Plan reaffirms existing goals, priorities and activities, while suggesting several new directions and priorities. It is the responsibility of Minnesota Zoo Board and management to evaluate our Zoo's effectiveness and efficiency to ensure that activities support the goals of the Long-Range Plan and to propose new activities in response to the Long-Range Plan.

This Long-Range Plan specifically recognizes the unique public-private partnership that exists between the State of Minnesota, the Minnesota Zoo Board of Directors and the Minnesota Zoo Foundation to sustain our Zoo as a resource for all Minnesotans.

Our Zoo's focus on conservation, education and recreation form the three cornerstones of our Zoo. Conservation is not possible without support from an educated public. Education through recreation is one of the most effective ways to learn – people learn best when they are having fun. Our Minnesota Zoo is a fun place to learn about and enjoy animals and serves as an excellent example of recreation with a purpose – to promote education and conservation.

2. Vision for the Future

We aspire to create a sense of ownership for our Zoo throughout Minnesota – *Our* Minnesota Zoo. Our Minnesota Zoo is a top family attraction, loved locally and recognized internationally. The outstanding animal and plant exhibits are the source of the Zoo's magnetism. Our Zoo attracts people because of their fascination with and respect for the diversity and beauty of life on earth. Our Zoo's reputation as a leader in conservation, its role as a unique environmental learning center and its family-focused education and recreation activities strengthen its connection with the people of Minnesota and also position our Zoo as a regional tourist attraction. Our Zoo's success results from focusing its resources to achieve excellence in all of its efforts.

As a **conservation leader**, our Zoo is an ark for the living earth, providing a *genetic insurance policy* by nurturing and conserving species and ecosystems from selected geographic areas. Zoo research promotes the survival of local and global threatened species and ecosystems, making the Zoo a leader in the study and practice of conservation, animal reproduction and population management.

Our Zoo experience inspires guests to take action to preserve the living earth. Guests leave feeling empowered to make a difference. Guests are immersed in exhibits that recreate the natural environment of the animals and plants. Doing so better connects guests with global ecosystems, sparks interest and promotes a sense of awe and respect for animals and nature. Our Zoo's interpretative programs build a better understanding of the fragile nature of the living earth and encourage a stewardship ethic and conservation action. Our Zoo places a major emphasis on activities to serve as a resource for sustaining the earth and its threatened and endangered species and ecosystems.

As an education leader, our Zoo is a teacher for all ages and a unique statewide resource for learning about the living earth. Education at our Zoo is fun, active, hands-on, interdisciplinary and incorporated throughout the Zoo experience. The goal of education at our Zoo is to provide the basic knowledge to encourage conservation action. Technology and the Zoomobile programs extend the Zoo experience beyond the local area with a variety of opportunities to teach and learn. Our Zoo serves Minnesota teachers and students as a primary resource to achieve environmental education learning objectives.

As a recreation leader, our Zoo brings its guests eyeball-to-eyeball with the animals in naturalistic exhibits. Hands-on immersion exhibits, movement, surprise, seasonal changes and the excitement of animal interactions intensify the experience. Zoo exhibits are designed with both animals and guests in mind. Special recreation programs and events promote our Zoo's mission, highlight the amazing plant and animal collection and focus on family-focused fun. No two Zoo visits are ever the same and no single visit is ever enough.

As a Minnesota resource, our Zoo belongs to and serves all Minnesotans. By matching programs to diverse guest interests, our Zoo facilities are utilized for maximum impact throughout the day, week and year. Our Zoo offers experiences that people value. As a result, our Zoo receives sustaining financial support from fees, contributions, public sources and revenue-generating activities that are closely tied to our Zoo's mission and take advantage of its unique resources.

As an organization focused on excellence and service, our Zoo wows guests with the quality and friendliness of the Minnesota Zoo experience. The work culture empowers staff with a clear vision of expected results and gives them the freedom to succeed. Our Zoo encourages its people to make a difference and expects personal and professional growth to support continuous organizational improvement. Our Zoo is a fun and stimulating place to work where people strive to achieve our Zoo mission and exceed guest expectations. An atmosphere of high expectations, entrepreneurial spirit and mutual trust carries throughout relationships among the board, foundation, management, staff and volunteers. Our Zoo is successful because it offers its guests a chance to learn and laugh, its animals and plants a chance to survive and thrive and its staff a chance to succeed and grow.

3. *Vital Purposes*

Our Zoo's vitality comes from effectively combining conservation, education and recreation in every Minnesota Zoo experience. Our Minnesota Zoo is a high quality and respected conservation, education and recreation organization. Our Zoo provides fun and exciting activities and programs for people of all ages and backgrounds to encourage a stewardship ethic, an appreciation for the rich diversity of the living earth, and conservation action.

Conservation

Our Minnesota Zoo's animal conservation programs will serve as *genetic insurance policies* to ensure species survival. Our Zoo will be a worldwide leader for both captive and in-situ efforts. Our Zoo will also be directly involved with local and global conservation programs aimed at habitat preservation for threatened and endangered species. Consistent with our Zoo's conservation principles, our Zoo will manage its operations and future expansion in ways that preserve and enhance the site and minimize environmental impact. The Conservation Plan, Collection Plan and Facilities Master Plan will provide guidance and priorities for decisions regarding future exhibit renovation and additions and the appropriate use of Zoo resources and facilities.

Care for the animal collection must meet the highest professional and ethical standards and will not be compromised for any reason. The animal management criteria *strengthen the bond between people and the living earth* by meeting the animals' needs for health, space and diet and by promoting reproductive requirements. Our Minnesota Zoo's continued accreditation by the American Zoo and Aquarium Association (AZA) is predicated on meeting the highest professional standards of animal care and facility management.

Education

Education at our Zoo is a source of fun and encourages conservation action. Our Minnesota Zoo is committed to informing our guests about the interrelationships between humankind and the environment. Education expands our guests' awareness of historical, current and future environmental issues. Programs demonstrate that all species have a right to survive and thrive and suggest how we can all effect change by becoming personally involved with conservation efforts. Our Minnesota Zoo education efforts provide knowledge and foster the development of values related to endangered and threatened species, habitat preservation and environmental stewardship.

The breadth and depth of Zoo education programs have been greatly enhanced through our partnership with Independent School District 196 and the City of Apple Valley to establish the School of Environmental Studies at the Minnesota Zoo (SES). SES provides innovative interdisciplinary education experiences for 400 high school juniors and seniors. Minnesota Zoo staff serve as adjunct faculty and mentors and our Zoo site, exhibits, living collection and network of resources make unique contributions to what has become an exceptional educational partnership.

Recreation

Through recreational activities, our Zoo carries out its conservation and education mission and also generates vital support. As a recreation resource for all Minnesotans and a regional tourist attraction, our Zoo makes valuable contributions to the culture and economy of the state. Our Zoo's plant and animal collection and its physical facility incorporate fun into Zoo experiences that are rich in education and conservation, creating dynamic year-round guest experiences. Activities throughout the year support and promote the use of the facility during other seasons. The objective is to increase attendance and program participation throughout the year, taking full advantage of the strength of our Minnesota Zoo as a four-season resource.

The success of recreation programs will be measured by their relevance to our Zoo's mission and their potential to generate revenue and attendance. A major objective is to increase the net earned revenues for our Minnesota Zoo. Revenue-generating programs will support a significant portion of the Minnesota Zoo's annual operating budget. Our Zoo's revenue generating activities, such as the gift store and the monorail, will continue to improve guest service, efficiency and profitability.

4. Long-Range Goals

The following goals guide processes to determine annual goals and performance indicators. All of these goals are important for the continued and future success of our Minnesota Zoo. These goals are not listed in order of priority and many have overlapping agendas and components.

1 Position our Zoo as a Premier Education & Conservation Organization

- Maintain clear primary focus on education and conservation in all Zoo programs.
- Contribute to *genetic insurance policies* through efforts to conserve species and habitats.
- Establish and implement an industry-leading Conservation Plan to guide local and global conservation efforts, including conservation education for the public.
- Establish and implement an industry-leading Collection Plan to guide species selection and exhibition according to conservation significance, educational impact and visitor appeal.
- Implement the Master Plan for Education at our Minnesota Zoo, including expanded education opportunities beyond the typical K-6 target audiences to better serve secondary, post-secondary, adult and senior audiences.
- Concentrate more marketing efforts to increase public awareness of Minnesota Zoo education programs and conservation efforts.

2 Make our Zoo Partnership Come Alive

- Establish and maintain open communication between partners (State, Board & Foundation), including regular partnership meetings.
- Realize the mutual benefits of our public-private partnership for each of the partners.
- Benefit the greater community through shared financial responsibility.
- Define and utilize legal authority of the Board.

3 Expand Use of our Zoo to Maximize Efficiency

- Increase "off-season" participation to reduce seasonality of attendance.
- Establish a metro-area Residential Environmental Learning Center at our Zoo.
- Deliver programs in all seasons and at all hours.
- Provide a variety of family recreation opportunities.
- Partner with area attractions and organizations for programming and marketing whenever possible, appropriate and mutually beneficial.

4 Create Sense of Zoo Ownership

- Serve Zoo members and guests by exceeding their expectations.
- Provide access to all people of Minnesota.
 - Increase membership – especially in out-state Minnesota.
 - Increase participation of targeted under-represented audiences.
- Encourage an attitude of statewide ownership – *Our* Minnesota Zoo.

5 Compete successfully for leisure time, dollars and attention

- Maintain market share of attendance to achieve annual goals.
- Generate revenues associated with participation in the Zoo experience.
- Increase the number of first-time guests and promote repeat visits.

6 Invest in the Future of our Zoo

- Create and implement Facilities Master Plan to establish long-range exhibits, facility-use and site-plan priorities and strategies.
- Secure financial stability to allow for growth and improvement.
- Improve interpretive graphics to better connect guests with the plant and animal collection, ecosystems and conservation efforts.
- Increase the emphasis on local wildlife and conservation issues to strengthen our connections and relevance with all Minnesotans.

Building Blocks of the Minnesota Zoo Guest Experience



5. *Strategies and Tactics*

1. *Create a magical experience*

Our Zoo is an experience, rather than as a series of distinct activities. Expanded and enriched experiences for families, primary, secondary and post-secondary students, adults and seniors will create a magical atmosphere for everyone who visits our Zoo. People will be overwhelmed with the richness of the possible experiences. Throughout the year, new activities, new exhibit interactions and new guest experiences will make each Zoo visit fresh and relevant. Immersion exhibits, costumed animal characters, games and prizes, music, surprises and innovative shows or displays create an atmosphere of excitement every day of the year. All staff will make it their job to create this atmosphere.

Schedules and programs will be planned and marketed to ensure that guests enjoy full, interesting and rewarding Zoo experiences. Activities will be designed to provide a variety of experiences throughout the day, week and year. In order to provide enriched guest experiences, more food vendors and picnic options, play areas and activities for children and inviting rest areas will be located throughout our Zoo. The spaces between exhibits will be welcoming, encourage activity and will be almost as important as the exhibits themselves.

Guest participation, especially from under-served audiences, will expand through better understanding of diverse backgrounds, use of innovative programming, new marketing approaches and outreach. Return visits will be encouraged by offering unique and memorable guest experiences and by offering new and relevant programs throughout the year. Value will be added to guest visits by infusing fun, learning and active participation in conservation into all Minnesota Zoo experiences.

2. *Thrive as a special place for children*

The desire of children to come to our Zoo will drive attendance for both children and adults. Exhibits and activities will be designed to meet children's needs and interests. Special children's areas will appeal to kids first and promote other themes second. Every exhibit will have kid appeal. Our entire Zoo will be "kid-friendly" and feel like a children's zoo.

3. *Know our guests*

In order to achieve our goals, a full understanding of the experiences of our current guests and also the needs and expectations of prospective guests are essential. Opportunities to "listen" to our guests will become more frequent. Listening techniques will include regular surveys, focus groups of guests and prospective guests, training staff to constantly seek guest feedback and guest comment/suggestion mechanisms to provide timely and accurate information about their experiences. Improving the guest experience based on this information will be a high priority for every work group.

4. *Manage guest "moments of truth"*

We must carefully manage all of the little things – *moments of truth* – that shape guests' impressions of their Minnesota Zoo experience. In particular, long and lasting impressions are made when guests first arrive and as they leave. Therefore, a high priority for improving the guest experience will focus on creating very positive first and last impressions. Staff and

volunteers will greet guests to create a warm, inviting and helpful first impression. Emphasis will be placed on impressing guests with the breadth and depth of possible Zoo experiences and helping them plan how they can get the most out of their visit. When leaving, guests will again experience special attention – feedback on their experience will be solicited and communication about coming attractions will encourage guests to return soon. Every comment or complaint from an identifiable guest will receive a prompt response. We will recover from negative impressions by making changes to prevent them in the future and offering guests appropriate redress.

5. ***Operate as a Partnership and Public Enterprise***

Our Minnesota Zoo is successful because of its solid foundation as a public-private partnership and its clear focus on its mission *to strengthen the bond between people and the living earth*. The State of Minnesota, the Minnesota Zoo Board and the Minnesota Zoo Foundation work together to provide the best possible and most effective education, conservation and recreation programs. Minnesota Zoo partners have the following responsibilities...

The **State of Minnesota** created our Minnesota Zoo for the people of Minnesota and owns it on their behalf. The State expects our Minnesota Zoo to provide excellent education and conservation programs. The State supports Zoo education and conservation programs with a state appropriation for core operations and state bonding for capital projects to advance our Zoo mission and to have a positive impact on the quality of life in Minnesota. Our Zoo belongs to the people of Minnesota and shall be protected and preserved as a valuable state asset.

The **Minnesota Zoo Board** manages all aspects of Minnesota Zoo operation. The volunteer community leaders serving on the Board represent our Zoo to the community, manage our Zoo as a valuable asset of the people of Minnesota and lead efforts to advance our Zoo's mission. Our Zoo provides quality education, conservation and recreation programs designed to serve Zoo audiences and achieve our Zoo mission. The Board selects, supports and challenges our Zoo's management team. The Board insures that all Zoo operational and capital expenses are adequately funded from a combination of public and private sources. The Board oversees the management of the animal and plant collection according to the highest ethical and professional standards of zoo management, education, conservation and recreation.

The **Minnesota Zoo Foundation** provides a margin of excellence for our Zoo and its programs. As a private non-profit entity with the sole purpose of supporting our Minnesota Zoo, the Foundation seeks broad-based private support from the community for new exhibits to insure our Zoo's continued successes. The volunteer community leaders serving on the Foundation represent our Zoo to the community, advocate on our Zoo's behalf and support efforts to advance our Zoo mission.

6. ***Build a successful organization***

We will continuously improve our organizational culture to focus on serving our guests. Continued success requires that all those involved understand the vision, their role in making it a

reality and the organization's expectations. All policies and practices will be examined to assure that they reinforce our guest focus and our Zoo mission. Policies and procedures should:

- Strengthen the bond between people and the living earth;
- Emphasize expected results;
- Give discretion to staff in deciding how to achieve them; and
- Be linked to improving guest satisfaction.

The process of continuous improvement will be comprehensive, covering all aspects of Zoo operation. Team building will help each work group adapt the vision and strategies for organizational improvement to their own unique circumstances. Team building will include identifying each group's customers and needs, reexamining the way in which the group delivers services and planning how performance of the group can be improved.

The Zoo Board, Foundation Trustees and management team will demonstrate their willingness, courage and commitment to continuous improvement. They will show the way for the rest of the organization and model teamwork and a focus on achieving the mission. Through the mutual understanding and cooperation of the entire organization, the vision will become a reality.

The ability of the staff to work effectively together in problem solving and responding to the day to day expectations of guests (especially during peak periods) will be increased through mechanisms that integrate and blend staff capabilities of various units and individuals. These include:

- Cross-training to provide back-up and interdepartmental cooperation;
- Direct guest contact for all staff on a regular basis;
- Teams and committees for specific purposes; and
- Regular communications that emphasize performance, recognition and feedback.

Hierarchy and departmentalization will be reduced where possible. Organizational units will be composed to bring together people who have similar functions or whose work is most closely linked. We will maximize the proportion of staff involved in activities that directly serve guests.

7. *Invest to make our existing Zoo great*

We will carefully invest resources and promote goals that *strengthen the bond between people and the living earth*. Our first priority is to make our Zoo "habitable" to our guests. This means providing basic facilities such as bathrooms, walks, rest areas and picnic tables. Our second priority is to replace and/or enhance one or two exhibits or activities each year. Adding a major exhibit every five years will be our third priority. In planning for such investments, the following factors will guide our decisions:

- Implementing the Conservation Plan, Education Master Plan and Collection Plan;
- Advancing our Zoo mission and attracting the most guests; and
- Enhancing the value and quality of the guest experience.

Facility Design and Maintenance

The Facilities Master Plan will guide the management of the physical facilities to contribute to positive guest experiences. This includes considering changes in the current

facilities and planning for expansion. Ways to make the facilities more inviting will be prioritized. Guest flow and comfort will be major concerns.

The way we look affects how people feel about us. We will adopt and carry out a plan for providing regular maintenance and replacement of assets. The plan will be designed to help the facilities contribute to positive guest experiences, help inspire our staff to provide outstanding guest service and be cost effective. The plan will be revised annually.

Animal Care

Animal acquisition, exhibition and disposition policies will consider what is best for the species, our Zoo and the individual animal. Animal exhibition will consider the animals' physical health and behavioral enrichment, as well as guest appeal. Exhibits will be arranged and managed so that interesting behaviors happen close to guests. Conflicts will be resolved through a process in which conflicting views are fully heard, understood and considered.

Partnerships

We will involve other organizations in exhibits when appropriate. Possibilities include free standing exhibits sponsored by others, professional cooperation in developing exhibits, our Zoo being the ultimate home for exhibits developed by other organizations and local, state, national and international cooperative efforts relating to species and environmental preservation.

The Zoo-wide work plan is formulated from the Long Range Plan. Each division then formulates its goals derived from the Zoo-wide plan.



FY 01 Zoo Plan

This is an evolving document. Progress is measured on a regular basis throughout the year. Written updates will be added to reflect changing priorities and fulfilled objectives. Our tasks for the year are arranged using the headings of our seven Vision Strategies.

CREATE a magical experience

Our Zoo is an experience, rather than a series of distinct activities. Expanded and enriched experiences for families, primary, secondary and post-secondary students, adults and seniors will create a magical atmosphere for everyone who visits our Zoo.

1. Increase staff interaction with guests.

Measurement 1 (LE)

Zoo Guests will have 3 additional/new ways to interact with staff and volunteers by March 1, 2001.

1st Quarter Update: Planning is in progress and on schedule for new staff/volunteer interaction.

2nd Quarter Update: Still in progress... Professor Fernleaf and SES theater performances are in the works. Recent discussions with bio programs staff to re-establish sun bear talks and also need to look into ways to provide info to guests about enrichment committee activities/plans. The Wells Fargo Family Farm provides many opportunities for guests to interact with staff on a regular basis.

THRIVE as a special place for children

The desire of children to come to our Zoo will drive attendance for both children and adults. Exhibits and activities will be designed to meet children's needs and interests.

- 1. The Wells Fargo Family Farm will offer daily hands-on interactive activities for children, which highlight the seasonality of agriculture and the natural world.**

Measurement 1 (LE)

Evaluate overall effectiveness of the exhibits by December 1, 2000.

1st Quarter Update: WFFF Evaluation team is assembled and meeting to initially track completion of construction, exhibitry and program elements and then test for guest impact.

2nd Quarter Update: Evaluation recently shifted for construction completion issues to focus more on the success of the WFFF experience and its programs. Free daily Farm Wagon rides from the central plaza to the WFFF have been implemented to improve accessibility.

Measurement 2 (LE)

Expand educational programming by 5% by June 1, 2001.

1st Quarter Update: Planning is in progress and on schedule for new staff/volunteer interaction.

2nd Quarter Update: Still in progress. The programs at the WFFF have greatly expended the breadth of our educational programs and have been the focus of new program development this year.

Measurement 3 (JC)

Develop five new partnerships, which will result in \$200,000 to the Zoo.

1st Quarter update: N/C

- 2. Increase Education participation by 5% overall.**

Measurement 1 (LE)

Develop and implement marketing/promotion plan to increase participation in existing and new education programs throughout FY 2001.

1st Quarter Update: Still need to develop plan in cooperation with PR/Marketing staff.

2nd Quarter Update: In progress... with the vacancy in the VP for PR/Mktg for the past few months, staff changes continue hamper detailed investigation to target marketing to school audiences. We have been in discussions with Bette Fenton and Periscope and are waiting for recommendations.

Measurement 2 (LE)

Pending grant funding, develop and pilot distance learning programs as a potential future revenue source. Pilot programs to be initiated by April 1, 2001.

1st Quarter Update: The \$210,000 three-year grant request that submitted to the Cargill Foundation to establish a partnership with Bancroft Elementary School in south Minneapolis and to include a distance-learning component that would have potential to create new program options for other schools throughout Minnesota and beyond. Although we were very optimistic our request was denied by the Cargill Foundation board at their September meeting. Eff

continue to pilot distance-learning programs in connection with TIES (Technology Information & Education Services - www.ties.k12.mn.us) with a program scheduled for November 9th.

2nd Quarter Update: Still seeking alternative sources of private funding to establish distance learning programs. Working with Development to submit proposal to a fund administered by The St. Paul Foundation.

Measurement 3 (LE)

Assess factors that determine school group attendance and increase school group attendance with targeted marketing efforts with quarterly progress toward 5% increase in school group attendance.

1st Quarter Update: Still need to develop assesment process/tools and develop marketing plan in cooperation with PR/Marketing staff.

2nd Quarter Update: In progress... with the vacancy in the VP for PR/Mktg, staff changes continue hamper detailed investigation to target marketing to school audiences. We have been in discussions with Bette Fenton and Periscope and are waiting for recommendations. We will continue to target fliers to past school special event participants.

Measurement 4 (LE)

Develop plan by November 1, 2000 to utilize updated Minnesota Zoo website for distance learning and promotion of education programs. Pilot and evaluate new web-based learning and promotion plan by June 1, 2001.

1st Quarter Update: In progress... This has been delayed by slow progress with updates to our website. Education staff has met with our IS staff to discuss potential education staff role with website development and maintenance.

2nd Quarter Update: On hold pending new and improved website and marketing recommendations from Bette Fenton and Periscope.

KNOW our customers

In order to achieve our goals, a full understanding of the experiences of our current guests and also the needs and expectations of prospective guests are essential. Improving the guest experience based on this information will be a high priority for every work group.

- 1. Act upon current information that some of our guests would enjoy visiting the zoo on a day with lower numbers of students.**

Measurement 1 (LM)

We will establish one day a month, September through April, where we plan for and publicize the day as a "no scheduled school group day."

1st quarter update: The first Monday of the month has been identified as a "no pre-scheduled school group day" and communicated to Zoo Members via the Members publication.

2nd quarter update: Continuing.

- 2. Establish an ad hoc Education Advisory Group by August 1 to contribute to the success of Education programs.**

Measurement 1 (LE)

Identify opportunities to better serve current audiences and create new audiences.

1st quarter update: No progress to date... need to revise timeline.

2nd Quarter Update: Staff focus has been on program delivery and we need to continue to incorporate evaluation more consistently. As of January 8, 2001, we'll finally be at a full staffing situation. Program evaluations are being utilized by program participants. Additional evaluation techniques still need to be created and implemented.

Measurement 2 (LE)

Evaluate education plan and program effectiveness.

1st quarter update: Evaluation and focus group sessions that took place last spring for the Aquatic Encounter Overnight program have resulted in program improvements this fall. Evaluation of other programs is in progress.

2nd Quarter Update: A draft of a revised Strategic Plan for Education is being reviewed by Education staff and will be finalized by mid-January 2001.

- 3. Include evaluation as an integral aspect of program development and implementation.**

Measurement 1 (LE)

Clarify/define program goals to measure success and continuously improve guest experiences.

1st quarter update: In progress...

2nd Quarter Update: In progress... we need to continue to incorporate evaluation more consistently in staff assignments, but due to budget constraints, most staff efforts focus on program delivery.

Measurement 2 (LE)

Utilize focus groups, surveys, pre/post tests, observation, etc. to measure program results.

1st quarter update: In progress...

2nd Quarter Update: Program evaluations are being utilized by program participants. Additional evaluation techniques still need to be created and implemented.

4. Increase number of seniors visiting the Zoo to 20,000, an increase of 25% over FY00.

Measurement 1 (CB)

Conduct a focus group of seniors to determine seniors' expectations of their zoo visit.

1st Qtr: Senior focus groups were conducted in August.

2nd Qtr: As of December 2000, senior attendance was 8,963 compared to 10,004 last year, or 10% -- however, senior attendance is doing better compared to all other attendance categories, which are down 14% this fiscal year.

Measurement 2 (LMC)

Design and implement one special event specifically targeting seniors.

1st quarter update: Grandparent's Day was held at the Zoo on Sunday September 10, 2000 including admission discounts, gifts to the first 500 grandparents, book signing by local author Cindy Marks, kids drawing activity, free coffee for grandparents and special lunch box compliments of Lancers, and graphics identifying grandparents within the animal collection.

2nd quarter update: We recommend that Grandparents Day be expanded to include addition senior activities on additional days.

MANAGE visitor moments of truth

We must carefully manage all of the little things -- moments of truth -- that shape guests' impression of their Minnesota Zoo experience.

1. Develop comprehensive interpretive graphics and directional signage plan.

Measurement 1 (LE)

Establish interdisciplinary staff team and create an interpretive graphics plan by December 31, 2000.

1st quarter update: In progress...staff team that worked on plan to improve interpretive graphics along the updated sections Northern Trail will meet in October to determine implementation plan.

2nd Quarter Update: The Zoo-wide comprehensive interpretive graphics/exhibitory plan is on hold pending the outcome of the ongoing master planning efforts.

Measurement 2 (LMC)

Establish interdisciplinary staff team and create a directional signage plan by November 30, 2000.

1st quarter update: the directional signage team will be integrated into the interpretative graphics team under the leadership of Lars Erdahl.

2nd quarter update: No change from above.

Measurement 3 (LE)

Implement interpretive graphic plan with ADA Funds for Tropics and Northern Trail by April 1, 2001.

1st quarter update: In progress...staff team that worked on plan to improve interpretive graphics along the updated sections Northern Trail will meet in October to determine implementation plan.

2nd Quarter Update: In progress... an interdisciplinary staff team defined the content for new permanent interpretive graphics along part of the Northern Trail and preliminary discussions with the Science Museum staff to design and fabricate the graphics have taken place. A formal proposal needs to be developed and submitted to the Science Museum.

LINK revenues to results

Our Minnesota Zoo is successful because of its solid foundation as a public-private partnership and its clear focus on its mission to strengthen the bond between people and the living earth. The State of Minnesota, the Minnesota Zoo Board and the Minnesota Zoo Foundation work together to provide the best possible education, conservation and recreation programs.

1. Develop a Special Events Plan to drive admissions with a seasonal calendar, partnering with other institutions in the marketplace.

Measurement 1 (LMC)

Analyze and report for cost effectiveness and efficiency by July 30, 2000.

1st quarter update: Each Special Events has an accompanying business plan and evaluation summary.

2nd quarter update: An inter-disciplinary zoo staff team meets after each Special Event to evaluate the guest experience. The component is added to the Business Plan along with profit/loss statement and forwarded to COO.

Measurement 2 (LMC)

Create twelve special events with "sponsorships" paying costs; partners assisting with the program, and evaluate effectiveness, based on increased attendance and compatibility with our mission.

1st quarter update: Working in cooperation with the Development Office, the Special Events calendar is established for FY 2001 and the Development Office staff secures sponsorships to support the events. Each Special Event has a corresponding business plan with an evaluation summary.

2nd quarter update: On going.

2. Establish a formal investment policy.

Measurement 1 (JC)

Formulate and present an investment and expenditure policy for the Zoo's endowment to the Minnesota Zoo Board and the Minnesota Zoo Foundation by January 26, 2001.

1st quarter update: In progress. Draft policy proposal to be considered at October 18, 2000, Foundation Finance Committee Meeting.

Measurement 2 (JC)

Implement the approved policy after approval by the Minnesota Zoo Foundation and the Minnesota Zoo Board.

2nd quarter update: Final draft policy to be presented to Foundation Finance Committee January 24, 2001.

3. **Financial goals are established and monitored for major revenue generating activities.**
The categories below will be monitored quarterly.

| TYPE | FY 00 actual | FY 01 Goal | 2nd quarter actual |
|----------------------------------|---------------------|-------------------|---------------------------|
| Attendance | 1,065,887 | 1,200,000 | 518,122 |
| Membership Households | 25,263 | 27,500 | 9,798 |
| Membership Revenue | \$1,522,545 | \$1,622,500 | \$592,985 |
| Membership Renewal | 75% | 75% | NA% |
| Corporate Discount Card | \$190,486 | \$335,000 | \$93,078.(*) |
| Picnics(tickets and site rental) | \$137,274 | \$205,000 | \$144,654.(*) |
| Groups | \$133,237 | \$285,000 | \$150,188.(*) |
| Evening Events | \$177,491 | \$165,000 | \$89,514 |
| Zoo Gift Store | \$1,284,438 | \$1,452,000 | \$602,351 |
| Special Events | \$117,206 | \$138,000 | \$24,570 |
| Sales Concessions(Misc.) | \$63,632 | \$63,000 | \$26,769 |
| Food Service | \$491,179 | \$528,000 | \$253,825 |
| Monorail | \$388,694 | \$482,000 | \$171,458 |
| Zoomobile | \$88,463 | \$94,870 | \$52,433 |
| Corporate Exhibit Sponsorship | \$98,000 | \$100,000 | \$9,750 |

Measurement 1 (All VPs)

Goals are established and plans developed to meet those goals.

October 1 update: Chart has been updated with most current available figures. Items marked with an * are as of August 31, 2000.

January 4, 2001: Chart has been updated with most current available figures. Items marked with an * are as of November 30, 2000.

Measurement 2 (JR)

VPs and budget activity manager for the Gift store, education, picnics, memberships, monorail, evening events, group sales and Zoomobile will meet quarterly with the COO to review status of goals and discuss opportunities and challenges.

October 1 update: Meeting schedule has been established and will be completed.

January 3, 2001 update: 1st quarter meetings were held, 2nd quarter meetings are scheduled to be held in the end of January.

BUILD a premier service organization

We will continuously improve our organizational culture to focus on serving our guests. Continued success requires that all those involved understand the vision, their role in making it a reality and the organization's expectations. The work culture empowers its people to make a difference and expects personal and professional growth to support continuous organizational improvement. Our Zoo is a fun and stimulating place to work where people strive to achieve our Zoo mission and exceed guest expectations.

1. Develop a marketing/public relations/membership business plan.

Measurement 1 (CB)

Conduct market analyses for 1) marketing and PR and 2) membership programs by September 30, 2000.

Measurement 2 (CB)

Develop two business plans with measurable goals by September 30, 2000.

2. Establish a Technology Roundtable which includes membership from all divisions of the Zoo.

Measurement 1 (JR)

The Roundtable will meet on a regular ongoing basis.

October update: The roundtable membership has been established, one meeting has been held, additional meetings have been scheduled and will be held as needed to complete the IT plan.

January 3, 2001 update: Committee has established a schedule of meetings and has met as scheduled.

Measurement 2 (JR)

An Information/Technology plan will be developed by April 1, 2001.

October 1 update: The Technology Roundtable has gathered sample plans and is in the process of reviewing.

January 1, 2001 update: Various sample plans have been reviewed. Assignments have been made for drafting of Zoo plan and drafts are being completed.

3. All major projects/initiatives will involve an interdisciplinary approach.

Measurement 1 (All VPs)

All major zoo projects and initiatives will be addressed by interdisciplinary staff teams from inception through realization and evaluation.

2nd Quarter Update: (JS) Biological Programs staff members have been involved in Meerkat, Master Planning, and Special Events programming from inception through realization. Biological Programs staff members of the Special Events Committee will participate with analysis and evaluation of the Walk the Wild Lights event that occurred during the Second Quarter.

INVEST to keep the existing zoo great

We will carefully invest resources and promote goals that strengthen the bond between people and the living earth. We will adopt and carry out a plan for providing regular maintenance and replacement of assets, as well as planning for expansion.

1. Attain re-accreditation from AZA (required every five years).

Measurement 1 (CB)

Have a permanent Zoo Director prior to September 1 in order to qualify for reaccreditation.

1st Qtr update: Lee Ehmke hired August 28,2000.

Measurement 2 (CB)

Prepare accreditation questionnaire manuals prior to team inspection, and insure that all policies and practices meet or exceed accreditation guidelines.

Measurement 3 (JS)

Review physical facilities and correct problems in animal areas prior to the inspection.

2nd Quarter Update: Review of all policies and protocols referencing the animal collection has been undertaken during the second quarter and will be completed prior to inspection. Actual review of the physical facilities will occur during the third quarter for correction prior to inspection.

Measurement 4 (CB)

Gain accreditation at the September 2001 committee meeting.

2. Animal acquisition and exhibit modification and enhancement will be driven by the Minnesota Zoo's collection and conservation plans.

Measurement 1 (JS)

Animal exhibition will consider the animals' physical health and behavioral enrichment, as well as guest appeal.

1st Quarter Update:

- a) Pronghorn/Saiga improvements underway
- b) Caribou improvements scheduled for November
- c) Beaver acquisition for breeding initiated
- d) Japanese macaque return to breeding in discussion stage

2nd Quarter Update:

- a) Pronghorn/Saiga improvements completed with exception of additional grading to the holding herd pens which will take place after spring thaw.
- b) Caribou exhibit improvements started prior to hard freeze. Remainder of work will be completed after spring thaw.
- c) Female beaver acquired; however, subsequent death of male necessitates additional acquisition ASAP.
- d) A new Japanese macaque breeding protocol is in place. All 25 animals have received health exams; 7.0 animals are being dispositioned to a sanctuary in Texas in January at which time 1.0 macaque will be acquired from Lee Richardson Zoo as a potential breeding mate for up to 5 of our females.

3. Prioritize recommendations of the recent Governance Study for implementation.

Measurement 1 (CB)

Develop a strong legislative agenda for 2001 session.

Measurement 2 (CB)

Develop and implement legislative strategy for securing legislative agenda.

Measurement 3 (CB)

Reestablish partnership meetings with State, Foundation and Board to continue to clarify roles and responsibilities of each partner.

4. An acquisition plan for Atlantic bottle-nosed dolphins will be recommended to the Board for approval by July, 2000.

Measurement 1 (JS)

Both short term and long-range plans (including a business plan) will be developed for Board action.

1st Quarter Update: Short-term plan unsuccessful; long-range plan initiated.

2nd Quarter Update: Minnesota Zoo has been accepted into a consortium of dolphin exhibitors as a partner in potential long term breeding programs. Site visits to the Minnesota Zoo and other consortium member institutions have been undertaken by the group. Minnesota Zoo staff has visited the Navy's dolphin facility in San Diego for advice and training on dolphin netting procedures. The consortium meeting will be held in Florida in January to further identify probable moves of individual animals between the member facilities.

Measurement 2 (JS)

Two additional female dolphins will be secured by October 1, 2000.

1st Quarter Update: Unsuccessful.

5. Biennial budget request (JR)

Measurement 1 (JR)

Develop FY02-03 Zoo budget proposal for approval by the Minnesota Zoo Board by October 1, 2000.

October 1 update: Proposed FY 2002-02 Zoo biennial budget proposal has been completed and distributed to Zoo management.

January 3, 2001: MZB Finance Committee recommended approval of budget proposal, and full MZB Board accepted that recommendation at the October 2000 meeting.

Measurement 2 (JR)

Submit Zoo budget proposal to Department of Finance for consideration by the Governor's Budget team by November 30, 2000.

October 1 update: Draft proposal has been submitted to DOF. Final proposal will be submitted as scheduled.

January 3, 2001: Zoo budget proposal was submitted to DOF according to schedule. Final review by the Governors office is in process.

Measurement 3 (JR)

Present Governor's recommended Zoo budget to the 2001 legislature.

October 1 update: NA

January 3, 2001: Legislative plan was developed and presented to MZB Community Relations Committee. As per the plan Lee, JR, and representatives from M&K have been meeting with legislators.

6. Investigate potential for private funding for Zoo Master Plan and make recommendations to Chief Operating Officer by September 1, 2000. (JC)

1st Quarter update: Foundation and individual prospects have been identified for master plan funding.

Miscellaneous

Misc.

Recreation Plan

Collection Plan (separate notebook)

2000 Annual Report



Recreation Plan

FY00 & 01

PREFACE

At the Minnesota Zoo, learning and recreation go hand-in-hand. Recreational learning is largely self-motivated, self-directed and can be lifelong. It occurs primarily through real, tangible exhibits and takes place during leisure time. The exhibit is the principal avenue of recreational learning. We focus on critical environmental issues that are engaging and relevant to our guests' daily lives and civic responsibilities. To stimulate a sense of inquiry, curiosity and delight, our exhibits and programs should be informative, entertaining and inspiring. The Minnesota Zoo must be a vital educational and recreational destination for local, statewide, national and worldwide communities.

PURPOSE

Foster a sense of wonder and connection to the natural world through a variety of entertaining (fun) conservation, education and recreation opportunities.

GOALS

I. Integrate recreation throughout the guest and staff/volunteer experience.

Objectives:

1. Include recreation as a focus when creating and developing exhibits.

- a) Develop a process or checklist for project managers to assure recreation opportunities are addressed whenever new exhibits are planned or current exhibits modified.

Cost: \$0

Responsibility: Lars Erdahl (Education Department)

Status: The Education Department will be involved in exhibit planning due to programming and graphics and will assure recreation is addressed.

2. Create hands-on and multi-sensory immersion exhibits that encourage guests to become active participants.

- a) Provide a graphic or scale where guests can compare their weight to the exhibit animal (and or paw, foot print, wing span)

Cost: \$100

Responsibility: Kim Thomas (Exhibits Shop)

Status:

- b) Build a bat cave where children can simulate a bat by hanging upside down on monkey bars, or use a hollowed out tree trunk as a slide for children.

Cost: \$2,500

Responsibility: Kim Thomas (Exhibits Shop)

Status: Cross-disciplinary team to decide issues of location and purpose; possibly in FY01

3. Plan and implement fun aspects of conservation, education and recreation through cooperative efforts of staff/volunteers representing different departments and disciplines.

- a) Investigate feasibility of bike trails, nature trails and snowshoe walking trails. Provide maps of the trails including distance and time.

Cost: \$0

Responsibility: Lars Erdahl (Education Staff)

Status: Will pilot trails near farm exhibit next year

- b) When developing and planning special events, a collaborative, cross-disciplinary staff and volunteer team approach will be used to insure recreation is incorporated.

Cost: \$0

Responsibility: Heidi Hughes Valega (Marketing & PR department)

Status: Currently use team approach; additional events with recreational elements are planned for FY01

4. Include pleasant surprises that enhance the Zoo experience.

- a) Bring animal to lobby while guests are waiting in line for admission.

Cost: \$0

Responsibility: Ivan Clements

Status: Judy Thompson and Sheri White Commers to be consulted

- b) Encourage and develop art in the Zoo.

Cost:

Responsibility: Lars Erdahl (Education & Exhibits Shop)

Status: Major art projects will require funding about art patrons in the community; the Exhibits Shop is capable of producing sculpture, if time and funds are available.

- c) Develop graphics for restrooms

Cost: \$7,500

Responsibility: Dave Cruz

Status: Will do pilot project for minimal cost to assess guest response.

- d) Paint animal footprints leading to selected exhibits

Cost: minimal <\$200

Responsibility: Exhibits Shop

Status: Pilot project to assess reaction; perhaps tapir mother & baby footprints; more permanent solutions will be incorporated into planning for outdoor pathway projects

- e) Provide "de-greeters" as guest leave, asking them if they enjoyed their day, etc.

Cost: \$0

- Responsibility: Guest Services*
Status: Currently being done; VPs to assist during summer duty weekends.
- f) Add costumed characters or theater/puppet programs.
Cost: (In Education workplan)
Responsibility: Grant Spickelmeyer
Status: Sidewalk theater with regular programming to be revived this year
- g) Increase Daniel Dolphin's presence.
Cost: \$0
Responsibility: Lars Erdahl (Volunteer Program)
Status: Need to identify volunteers and/or staff
- h) Add Professor Fernleaf in Aviary.
Cost: <\$200
Responsibility: Lars Erdahl (Education & Volunteers)
Status: Need to identify volunteers and/or staff

II. Serve as a community gathering place with a variety of fun experiences related to animals and nature.

Objectives:

1. Broaden the perception of our Zoo as an attractive location for public, private and family groups.

- a) Investigate the possibility of installing a carousel.
Cost: \$800,000
Responsibility: Connie Braziel
Status: (to be addressed in proposed Zoo Masterplan)
- b) Small group lunch/behind-the-scenes with a zookeeper.
Cost: \$0
Responsibility: Ivan Clements/AZK
Status: Keepers interested; AZK to be consulted
- c) Reopen fountain area.
Cost: ??
Responsibility: Don Appel
Status: Consultant hired to investigate what is necessary to open fountains & estimate costs.
- d) Overnights at the farm, waking up to do chores
Cost: (In Education plan for FY01)
Responsibility: Karrie Holler
Status: Being planned
- e) Offer more special events similar to the Koch Days, perhaps a "Wild Wolf Weekend".
Cost: ??
Responsibility: Heidi Hughes Valega
Status: Special Events Plan will be developed for FY01 with more special events than this fiscal year, including Wild Wolf Weekend in October and others

2. Improve the Zoo's ability to provide special groups with recreation activities specifically relevant to the group.

- a) Special days/events for day care, families, seniors, garden clubs, photography, etc.
Cost: Still being discussed – Girl Scouts, Garden Clubs
Responsibility: Heidi Hughes Valega
Status: Education is currently working with Girl Scouts; other ways to involve garden clubs and horticulturists will be explored.
- b) Evaluate partnering with 4-H, FFA
Cost: \$0
Responsibility: Jim Streater/Tony Fisher
Status: Is in plans for the Farm
- c) Investigate and plan a Junior Zookeeper club
Cost: ?
Responsibility: Connie Braziel.
Status: Needs further investigation; great PR tool, but costs are involved.
- d) Develop specific preschool activities in the pit area, run by volunteers, planned games.
Cost: \$0
Responsibility: Karrie Holler
Status: Activities in Kangaroo Korner could be delivered in the pit area

3. Provide recreational and educational opportunities, which encourage a sense of ownership, belonging and pride by guests, staff and volunteers.

- a) Use concrete walls as gallery space for photo contest/art displays; consider partnering with the Art Institute, Walker or SES.
Cost: In Education workplan.
Responsibility: Andy Spencer
Status: Art frames displayed with kids' art in Tropics ramp; needs elaboration.
- b) Use sports teams as a way to build ownership: Twins, Timberwolves, Lynx, Wild, etc.
Cost: \$0
Responsibility: Connie Braziel
Status: Lynx to be on site April 8 & 15 to sign autographs; currently working with Twins for promotion at July 30 game.

4. Connect guests to the community of animals and nature.

Action Idea(s):

- a) Offer travel programs with staff serving as guides to locations such as the Wolf Center, Wildlife Science Center or Crax Meadows for birding
Cost:
Responsibility: Lars Erdahl/Heidi Hughes Valega
Status:
- b) Investigate installing windows in Zoolab wall to corridor (or come up with short term enhancement to solve problem of guests not realizing what's in Zoolab.)
Cost:
Responsibility: Kim Thomas
Status: Needs to be included as part of collection planning.
- c) Staff on trails interacting with guests with interpretive booth and carts.
Cost: In Education workplan.

Responsibility: *Lars Erdahl*

Status: *Booth, carts and staff roaming are planned. Will consider adding Keeper Talks at a number of exhibits.*

- d) Consider naming high profile animals.

Cost: *\$0*

Responsibility: *Jim Streater*

Status: *This is happening at the Farm Exhibit*