APPENDIX A: COMMON AND SCIENTIFIC NAMES OF SPECIES REFERRED TO IN REPORT

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Table A-1 Common and Scientific Names	
Common Name	**Scientific Name**
Vegetation	
Balsam poplar	*Populus balsamifera*
Bearberry	*Arcotstaphylos uva-ursi*
Canada buffaloberry	*Shepherdia canadensis*
Creeping mahonia	*Berberis repens*
Douglas fir	*Pseudotsuga menzieii*
Engelmann spruce	*Picea engelmnni*
False azalea	*Menziesia ferruginea*
Grouse berry	*Vaccinium scoparium*
Limber pine	*Pinus flexilis*
Lodgepole pine	*Pinus contorta*
Mountain heathers	*Phyllodoce* spp. and *Cassiope* spp.
Rhododendron	*Rhododendron albiflorum*
Snowberry	*Symphoricarpos albus*
Subalpine fir	*Abies labiocarpa*
Subalpine larch	*Larix lyalli*
Thimbleberry	*Rubus parviflorus*
Trembling aspen	*Populus tremuloides*
White spruce	*Picea glauca*
Whitebark pine	*Pinus albicaulis*
Mammals	
American badger	*Taxidea taxus*
American marten	*Martes americana*
American pika	*Ochotona princeps*
Beaver	*Castor canadensis*
Big brown bat	*Eptesicus fuscus*
Bighorn sheep	*Ovis canadensis*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
Black bear	*Ursus americanus*
Bobcat	*Lynx rufus*
Canada lynx	*Lynx canadensis*
Columbian ground squirrel	*Urocitellus columbianus*
Cougar	*Puma concolor*
Coyote	*Canis latrans*
Elk	*Cervus canadensis*
Ermine	*Mustela erminea*
Fisher	*Martes pennanti*
Golden-mantled ground squirrel	*Callospermophlius lateralis*
Grey wolf	*Canis lupus*
Grizzly bear	*Ursus arctos*
Hoary bat	*Lasiurus cinereus*
Hoary marmot	*Marmota caligata*
Least weasel	*Mustela nivalis*
Little brown myotis	*Myotis lucifugus*
Long-eared myotis	*Myotis evotis*
Long-legged myotis	*Myotis volans*
Moose	*Alces alces*
Mountain caribou	*Rangifer tarandus caribou*
Mountain goat	*Oreamnos americanus*
Mule deer	*Odocoileus hemionus*
Red fox	*Vulpes vulpes*
Red-tailed chipmunk	*Neotamias ruficaudus*
Silver-haired bat	*Lasionycteris noctivagans*
Water vole	*Microtus richardsoni*
White-tailed deer	*Odocoileus virginianus*

Table A-1 Common and Scientific Names	
Common Name	**Scientific Name**
Wolverine	*Gulo gulo*
Yellow pine chipmunk	*Tamias amoenus*
Reptiles and Amphibians	
Boreal chorus frog	*Pseudacris maculate*
Columbia spotted frog	*Rana luteiventris*
Long-toed salamander	*Ambyostoma macrodactylum*
Northern leopard frog	*Rana pipiens*
Red-sided garter snake	*Thamnophis sirtalis*
Wandering garter snake	*Thamnophis elegans vagrans*
Western tiger salamander	*Ambystoma mavortium*
Western toad	*Anaxyrus boreas*
Wood frog	*Lithobates sylvaticus*
Birds	
American crow	*Corvus brachyrhynchos*
American dipper	*Cinclus mexicanus*
American kestrel	*Falco sparverius*
American pipit	*Anthus rubescens*
American robin	*Turdus migratorius*
American white pelican	*Pelecanus erythrorhynchos*
Baird's sparrow	*Ammodramus bairdii*
Bald eagle	*Haliaeetus leucocephalus*
Baltimore oriole	*Icterus galbula*
Barn swallow	*Hirundo rustica*
Barred owl	*Stix varia*
Barrow's goldeneye	*Buchcephala islandica*
Black swift	*Cypseloides niger*
Black tern	*Chlidonias niger*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
Black-billed magpie	*Pica hudsonia*
Black-capped chickadee	*Poecile atricapillus*
Blue grouse	*Dendragapus obscurus*
Bobolink	*Dolichonyx oryzivorus*
Brewer's sparrow	*Spizella breweri*
Broad-winged hawk	*Buteo platypterus*
Brown creeper	*Certhia americana*
Brown-headed cowbird	*Mothrus ater*
Brown-headed cowbird	*Molothrus ater*
Calliope hummingbird	*Selasphorus calliope*
Canada goose	*Branta canadensis*
Cassin's finch	*Haemorhous cassinii*
Cassin's vireo	*Vireo cassinii*
Cassin's vireo	*Vireo cassinii*
Cedar waxwing	*Bombycillia cedrorum*
Cedar waxwing	*Bombycilla cedrorum*
Chipping sparrow	*Spizella passerina*
Chipping sparrow	*Spizella passerina*
Clark's nutcracker	*Nucifraga columbianus*
Clark's nutcracker	*Nucifraga columbiana*
Clay-coloured sparrow	*Spizella pallida*
Cliff swallow	*Petrochelidon pyrrhonota*
Common nighthawk	*Chordeiles minor*
Common nighthawk	*Chordeiles minor*
Common nighthawk	*Chordeiles minor*
Common raven	*Corvus corax*
Common raven	*Corvus corax*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
Common yellowthroat	*Geothlypis trichas*
Common yellowthroat	*Geothlypis trichas*
Dark-eyed junco	*Junco hyemalis*
Dark-eyed junco	*Junco hyemalis*
Dusky flycatcher	*Empidonax oberholseri*
Eastern kingbird	*Tyrannus tyrannus*
European starling	*Sturnus vulgaris*
Evening grosbeak	*Coccothraustes vespertinus*
Ferruginous hawk	*Buteo regalis*
Fox sparrow	*Passerella iliaca*
Golden eagle	*Aquila chrysaetos*
Golden-crowned kinglet	*Regulus satrapa*
Golden-crowned kinglet	*Regulus satrapa*
Golden-crowned sparrow	*Zonotrichia atricapilla*
Gray jay	*Perisoreus canadensis*
Great blue heron	*Ardea herodias*
Great gray owl	*Strix nebulosi*
Great horned owl	*Bubo virginianus*
Green-winged teal	*Anas crecca*
Grey-crowned rosy-finch	*Leucosticte tephrocotis*
Hairy woodpecker	*Picoides villosus*
Hammond's flycatcher	*Empidonax hammondii*
Harlequin duck	*Histrionicus histrionicus*
Hermit thrush	*Catharus guttatus*
Hermit thrush	*Catharus guttatus*
Horned grebe	*Podiceps auritus*
Horned lark	*Eremophila alpestris*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
House finch	*Haemorhous mexicanus*
House sparrow	*Passer domesticus*
House wren	*Troglodytes aedon*
Least flycatcher	*Empidonax minimus*
Lesser scaup	*Aythya affinis*
Lincoln's sparrow	*Melospiza lincolnii*
Long-billed curlew	*Numenius americanus*
Macgillivray's warbler	*Geothlypis tolmiei*
Mallard	*Anas platyrhynchos*
Mountain bluebird	*Sialia currucoides*
Mountain bluebird	*Sialia currucoides*
Mountain chickadee	*Poecile gambeli*
Mountain chickadee	*Poecile gambeli*
Mountain chickadee	*Poecile gambeli*
Northern flicker	*Colaptes auratus*
Northern flicker	*Colaptes auratus*
Northern goshawk	*Accipiter gentilis*
Northern harrier	*Circus cyaneus*
Northern pintail	*Anas acuta*
Northern pygmy owl	*Glaucidium gnoma*
Northern pygmy owl	*Glaucidium gnoma*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Northern saw-whet owl	*Aegolius acadicus*
Northern waterthrush	*Parkesia noveboracensis*
Olive-sided flycatcher	*Contopus cooperi*
Olive-sided flycatcher	*Contopus cooperi*
Olive-sided flycatcher	*Contopus cooperi*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
Orange-crowned warbler	*Oreothlypis celata*
Orange-crowned warbler	*Oreothlypis celata*
Osprey	*Pandion haliaetus*
Pacific Slope flycatcher	*Empidonax difficilis*
Pacific wren	*Troglodytes pacificus*
Peregrine falcon	*Falco peregrinus*
Pied-billed grebe	*Podilymbus podiceps*
Pileated woodpecker	*Hylatomus pileatus*
Pileated woodpecker	*Dryocopus pileatus*
Pine siskin	*Spinus pinus*
Prairie falcon	*Falco mexicanus*
Red-breasted nuthatch	*Sitta canadensis*
Red-breasted nuthatch	*Sitta canadensis*
Red-naped sapsucker	*Sphyrapicus nuchalis*
Red-naped sapsucker	*Sphyrapicus nuchalis*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ruby-crowned kinglet	*Regulus calendula*
Ruby-crowned kinglet	*Regulus calendula*
Ruffed grouse	*Bonasa umbellus*
Rufous hummingbird	*Selasphorus rufous*
Sandhill crane	*Grus canadensis*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Short-eared owl	*Asio flammeus*
Song sparrow	*Melospiza melodia*
Sora	*Porzana carolina*
Sora	*Porzana carolina*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
Spotted sandpiper	*Actitis macularius*
Spotted sandpiper	*Actitis macularius*
Steller's jay	*Cyanocitta stelleri*
Swainson's hawk	*Buteo swainsoni*
Swainson's thrush	*Catharus ustulatus*
Swainson's thrush	*Catharus ustulatus*
Tennessee warbler	*Oreothlypis peregrina*
Townsend's solitaire	*Myadestes townsendi*
Townsend's warbler	*Setophaga townsendii*
Townsend's warbler	*Setophaga townsendi*
Townsend's solitaire	*Myadestes townsendi*
Townsend's warbler	*Setophaga townsendi*
Tree swallow	*Tachycineta bicolor*
Tree swallow	*Tachycineta bicolor*
Trumpeter swan	*Cygnus buccinator*
Upland sandpiper	*Bartramia longicauda*
Varied thrush	*Ixoreus naevius*
Varied thrush	*Ixoreus naevius*
Varied thrush	*Ixoreus naevius*
Vesper sparrow	*Pooecetes gramineus*
Warbling vireo	*Vireo gilvus*
Warbling vireo	*Vireo gilvus*
Western tanager	*Piranga ludoviciana*
Western wood pewee	*Contopus sordidulus*
Western wood-pewee	*Contopus sordidulus*
Western wood-pewee	*Contopus sordidulus*
White-crowned sparrow	*Zonotrichia leucophrys*

Table A-1 Common and Scientific Names

Common Name	Scientific Name
White-crowned sparrow	*Zonotrichia leucophrys*
White-tailed ptarmigan	*Lagopus leucura*
Wilson's warbler	*Cardellina pusilla*
Winter wren	*Troglodytes hiemalis*
Yellow warbler	*Setophaga petechia*
Yellow-rumped warbler	*Setophaga coronata*
Yellow-rumped warbler	*Setophaga coronata*

APPENDIX B: WILDLIFE RESEARCH PERMITS

Alberta
Environment and Sustainable
Resource Development

8660 Bearspaw Dam Road N.W.
Calgary, Alberta, Canada
T3L 1S4

Telephone: (403) 476-4853
Fax: (403) 297-8803

June 12, 2014

Millennium EMS Solutions Ltd
6111 – 91 Street
Edmonton, AB T6E 6V6
Attention: Lawrence Brusnyk

Enclosed are Research Permit #55092, collection licence #55091, class protocol #004, Addendum to Class #004, along with the general conditions.

Please sign the Permit where indicated and ensure that your sub-permittees carry a copy of the Permit with them at all times while engaged in any permitted activities.

To avoid unnecessary public or government concerns, it is the responsibility of the licensee to contact the local Fish and Wildlife District office where the work is being conducted prior to conducting any permitted work. As they may be pertinent to your research and/or collection permit, please review and become familiar with the Sensitive Species Inventory Guidelines available on the ESRD website at:
http://srd.alberta.ca/FishWildlife/WildlifeManagement/SensitiveSpeciesInventoryGuidelines.aspx

Please remember that it is a condition of your license to submit an annual progress report and your observation on the load form described in the attached General Conditions.

Should you have any questions, please contact me at the above address, or at Brett.Boukall@gov.ab.ca

Thank you.
<Original signed by>

Brett Boukall
Senior Wildlife Biologist,
Operations Division, Resource Management
South Saskatchewan Region

55092

Alberta

Environment and Sustainable Resource Development
Operations Division

General Permit – GP

RESEARCH PERMIT District: Calgary

FEE $ NIL

PERMITTEE: Lawrence Brusnyk, Millennium EMS Solutions Ltd

ADDRESS: 6111 – 91 Street Edmonton, AB T6E 6V6

IS AUTHORIZED TO: Conduct bat surveys using mist nests and acoustic recorders for the Riversdale Grassy Mountain Wildlife Assessment.

DATE OF ISSUE: April 1, 2014 DATE OF EXPIRY: March 31, 2015

<Original signed by>

Signature of Permittee

<Original signed by>

For Minister of Alberta Environment and Sustainable Resource Development

IN ACCORDANCE WITH:

Class Protocols are reviewed by the Alberta Wildlife Animal Care Committee and approved by the Director of Wildlife. Class Protocols are available at http://esrd.alberta.ca/FishWildlife/Default.aspx.

In accordance with "methods specified in Wildlife Research/Collection License application and/or renewals; attached general conditions; Alberta Animal Care Committee Class Protocol #004, Addendum to Class #004

Additional conditions: Submit data to FWMIS ,
A biologist experienced in bat handling, and netting shall be present during mist-netting and bat handling activities
Record any incidental observations of alternative wildlife species observed during field work

Additional Researchers: Chuck Priestly, Jesse Patterson, Jessica Zgurski, Erik Cline, Loreley Will, Jonathan Martin-deMoor, Meaghan Bouchard, other personnel under the supervision of the licensee

---

****IMPORTANT**
District Office instructions:
Please photocopy this document once it is issued and forward copies to:

Original – Permittee
Copy to – Wildlife Management, Edmonton HQ
Copy to – Licencing & Revenue Services, Edmonton HQ
Copy for - Issuing District

55091

Alberta

Environment and Sustainable Resource Development
Operations Division

Licence – CN

COLLECTION LICENCE

District: Calgary

FEE $ NIL

NAME: Lawrence Brusnyk, Millennium EMS Solutions Ltd

ADDRESS: 6111 – 91 Street Edmonton, AB T6E 6V6

Is authorized to collect the following wildlife: Conduct bat surveys using mist nests and acoustic recorders for the Riversdale Grassy Mountain Wildlife Assessment.

This licence authorizes the use of the following equipment and methods: Mist nests, acoustic recorders

This licence is valid (location) South Saskatchewan Region

EFFECTIVE DATE: April 1, 2014 DATE OF EXPIRY: March 31, 2015

Collections are to conducted by: Licencee

<Original signed by>

Date of issue: June 11, 2014

Signature of Licencee (not valid unless signed by Licencee) **Licence must be carried while collecting**.

<Original signed by>

For Minister of Alberta Environment and Sustainable Resource Development

Conditions:

1. The licence is subject to all conditions listed in the attached Appendix 1.
2. The licencee must keep the appropriate Fish and Wildlfie Officer informed of collection activities as they occur.
3. This licence is not transferable.
4. Persons collecting under the authority of this licence must produce a copy of the licence on the request of a Fish and Wildlife Officer when carrying out collection activities.
5. If any information obtained from the collection of any wildlife under this licence is used in a report or publication of any kind, the licencee shall forward a copy of such publication to the Director of Wildlife.
6. Within 7 days of the expiry of the licence, the licencee shall complete the table below, and any other records required by this licence, and return licence and records to the Director of Wildlife.

Collection Date	Species	Sex M/F	Location	Disposition

IMPORTANT

District Office instructions:

Please photocopy this document once it is issued and forward copies to:

Original – Licencee

Copies to: Licencing Services-Edmonton HQ, Region, Issuing District

Appendix 1: Research Permit and Collection Licence General Permit Conditions
Addendum to Research Permit # 55092 and Collection Licence #55091

1. It is the responsibility of the Licencee to contact the appropriate Senior Area Wildlife Biologist and District Fish and Wildlife Officer and the appropriate landowner prior to the commencement of any Permitted activities. Contact information for Fish and Wildlife available at: http://www.srd.alberta.ca/AboutESRD/ESRDContacts/FisheriesWildlifeManagementAreaContacts.aspx or by calling 310-0000 and asking for the appropriate Fish and Wildlife office.
2. The Permit is valid only for research and collection activities in the specific area and for the dates identified on the Permit.
3. For activities in any Provincial Park, Ecological Reserve, Wildland Provincial Park, Natural Area, or Wilderness Area additional approvals for access may be required. Please contact your local Alberta Tourism, Parks and Recreation authority.
4. Permits are not transferable and must include the names (when known) of all authorized project members who must be prepared to show a copy of the Permit on the request of a Fish and Wildlife Officer.
5. The Licencee is responsible for ensuring that public safety is not endangered by activities associated with the project.
6. The Licencee shall be held accountable for damages to resources or property arising directly or indirectly from the project.
7. The issuance of this Licence does not exempt the holder from any other Canadian Laws that might otherwise apply.
8. All captured animals must be handled in a humane manner and according to the approvals of the Wildlife Animal Care Committee.
9. Animals captured using immobilization drugs must follow the Fish and Wildlife Drug protocols. **http://srd.alberta.ca/FishWildlife/WildlifeResearchCollection/documents/AnimalImmobilization-AppendixA-RecomDosages-Nov2003.pdf**
10. A report of the past year's activities is required before Permits are renewed.
11. If radio telemetry is a component of the research, the Licencee is responsible for providing up-to-date information on frequency deployment including date, general location, species, transmitter type, manufacturer, and expected transmitter life to the issuer of the Permit/Licence.
12. All observations made during your project are to be provided within either:
    a. A FWMIS Load Form (all data types excluding bird banding)
    b. Where USFWS bands are used in the project, a "Band Manager" digital export (see attached instructions titled: Submitting Banding Data to Alberta Environment and Sustainable Resource Development). Note: Banding data locations are to be provided as Latitude/Longitude in Degrees-Minutes-Seconds.

This completed file is to be returned to the Alberta Fish and Wildlife, as part of your annual or final report, upon completion of the project (no later than April 1st annually).

FWMIS.xls digital files can be accessed at the following web site:
http://srd.alberta.ca/FishWildlife/FWMIS/WildlifeLoadforms.aspx

Or, by contacting Lonnie Bilyk (Resource Data Biologist) at (780) 427-8136 or email at Lonnie.Bilyk@gov.ab.ca

ALBERTA WILDLIFE ANIMAL CARE COMMITTEE
CLASS PROTOCOL # 004

Adopted 11 February 2005

CLASS ACTIVITY: BAT CAPTURE, HANDLING, AND RELEASE

SPECIFIC ACTIVITIES: mist-netting, harp trapping

OBJECTIVES: to capture live bats, primarily for research and management purposes

PRIMARY CONTACT/AUTHORITY: Director of Wildlife

APPLICABLE PERSONNEL:

- Project leads must be biologists with experience in mist netting, identifying local bat species, and other related field procedures.
- Project team must include persons trained in general wildlife capture and handling as per an approved wildlife capture or animal care course.
- All crew members should be immunized against rabies and have had a suitable titre in the last two years.

SPECIES: all bat species

APPLICABLE GEOGRAPHIC RANGE: provincial

METHODS:

CAPTURE

- At least two crew members are needed for mist netting and harp trapping. Minimize other people on hand to only those needed for efficient handling.
- Wearing thin gloves may protect crew members from bites.
- Sampling can be conducted between the beginning of May and the end of August.
- Precipitation, strong winds, or temperatures below 10°C (5 °C in the north) tend to decrease bat activity; therefore, avoid setting nets under these conditions.
- Nets or traps are set up between dusk and dawn and removed at other times of the day.
- To avoid capture of pregnant or nursing bats, mist nets generally should not be set near maternal colonies (*i.e.,* directly in front of day roost openings), nor should roosts be disturbed.

1) <u>Mist nets</u>

- Mist nets are usually black, 6-36 m in length, 2-3 m high, have four shelves, have a mesh size of 36 mm, and are constructed from 50-70 denier/2 ply nylon. A variety of different materials can be used to support the nets, although 10' aluminum poles usually are used.
- Mist nets require constant monitoring (i.e. checked no less than every 10-15 minutes); captured bats quickly become entangled and should be removed immediately to avoid injuries or predatation.
- Mist nets should be closed until dusk in order to avoid catching birds.

- Place nets at common foraging sites and commuting flyways such as trails, cut-lines, small roadways, small forest clearings, beneath bridges, and over standing water or small streams.
- If placing the nets over water, do not position the nets too close to the water surface or bats caught in the lower shelf may drown or become sodden.

2) Harp traps

- The preferred trap whenever a large number of bats could be captured because they help to avoid trauma associated with the use of mist nets.
- Various sizes, generally two 2 X 1.8 m frames of aluminum tubing with a bank of 6-8 pound (3-3.5 kg) monofilament fishing line strung 2.5 cm apart across each frame. The frames are aligned 7-10 cm apart with a canvas bag, partially or fully lined with polyethylene, attached to the bottom of the frame.
- Traps should be checked hourly, especially if pregnant or lactating females are likely to be captured, the weather is cold/wet or hot/dry, or the trap is set during feeding periods. Frequent checks are also required since: 1) predators may enter the trap bag; and 2) multiple bats captured in the trap might injure one another.

CAPTURE OF NON-TARGETS

Release all non-targets such as songbirds immediately. If an owl or other bird of prey is captured, remove it from the net while holding the feet.

HANDLING

- Handle the animal efficiently and without sudden movements, and avoid unnecessary exposure to bright lights when possible.
- Once the bat is captured in a mist net, immediately remove it from the same side it was captured on and place it in a cotton bag with a drawstring closure.
- Processing time should be kept as short as possible. Preferably bats should be held less than one hour, but no more than two hours.

Exceptions:
- Lactating females or bats in late stage pregnancy should be processed and released immediately at the site of their capture.

- Fecal samples are collected from the holding bag after one hour has elapsed.
- *Recording reference calls* – If light sticks are used, activate the inner capsule in the stick. Use a small amount of non-toxic Skinbond® adhesive and attach light tags to the back (for low-flying bats) or the abdomen (for high-flying bats). A spotlight is far better for showing where bats are and requires less handling.

RELEASE

- Let the bat fly from your hand or place it on a ledge or high place from which it can drop down.
- Ensure the bat flies off a distance and does not just fall to the ground in distress.
- Torpid bats may need to be re-warmed in hands before releasing.

PROCEDURES

The above handling protocol is appropriate for catching bats for basic body morphometrics, taking hair samples, collecting faecal samples, collecting tissue samples, attaching radio transmitters, recording reference calls, and banding under authority of a Fish and Wildlife Research Permit or Collection Licence. For all noted procedures, previous training and experience is necessary.

Tissue samples:
Small samples are taken using a biopsy punch from the wing near the tibia, avoiding major blood vessels. The site must be cleaned with a disinfectant such as ethanol. Ensure any bleeding has stopped before the bat is released. Fairly specific training is required.

Attaching radio transmitters:
Transmitters should weigh no more that 5% of the bat's weight, including wing bands, tags, or adhesives. To attach the transmitter, carefully clip an area of hair between the shoulder blades approximately the size of the transmitter. Apply surgical adhesive (*e.g.,* non-toxic Skinbond®) to clipped area and transmitter. Attach transmitter below the head, with the antennae oriented towards the posterior, and gently press in place 3-5 minutes. If skin of the bat is cut while clipping hair, do not attach radio transmitter; provided it is a small nick, the bat can be released; however, if the bat is severely injured, crew members should consider holding it overnight and treating the injury.

Radio collars are not appropriate for bats found in Alberta.

Transmitters should not be attached to adult females during late pregnancy, juveniles, or repeatedly to the same bat. Radio-telemetry studies should only be conducted when prey are abundant. Transmitters should be removed once required data are collected, if possible (often it is not, but in time the surgical glue will release the transmitter).

Banding:
Split-ring plastic, aluminum, or flanged bands may be placed around the forearm, but remove sharp edges or corners on the band first. Do not place multiple bands on the same forearm. Generally, hibernating bats or lactating females should not be banded.

If other more invasive procedures are proposed, specific details must be included in the research application and evidence of appropriate training provided.

EUTHANASIA:

Euthanasia must be done quickly and with minimal pain or stress. All team members performing euthanasia must be competent in the proper techniques. Acceptable methods of euthanasia in bats include:

- Inhalants: Carbon dioxide, carbon monoxide, halothane, isoflurane, sevoflurane are recommended. Animals should be placed in a closed container with a cotton swab soaked in the inhalant agent.
- Intraperitoneal injection of barbiturates
- Cervical dislocation is acceptable in animals <200g bodyweight.

Carcasses euthanized by chemical methods SHALL NOT be left in the field.

EVALUATION

If any severe bat injury or mortality occurs, the operation should halt and all activities should be reviewed. If corrective factors cannot be identified, the operation should be discontinued.

COMMUNICATIONS AND MEDICAL EMERGENCIES

- All members of the capture team should understand risks associated with fieldwork (*e.g.,* climbing, rabies).
- An emergency medical plan that includes evacuation to the nearest medical facility should be considered when significant field hazards exist.
- Communications may be necessary with the local community regarding general location of mist or harp netting activities.

ACKNOWLEDGEMENTS and REFERENCES:

The material for this protocol comes largely from the Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta prepared by Maarten Vonhof for Alberta Environment, Fisheries and Wildlife Management Division. R. Barclay and L. Wilkinson reviewed the document.

Other documents consulted include:

1) Canadian Council on Animal Care. 2003. Guidelines on: the care and use of wildlife. http://www.ccac.ca/english/gui_pol/GUFRAME.HTM (under 'List of CCAC Guidelines')
2) Canadian Council on Animal Care. 2003. CCAC species-specific recommendations on: Bats http://www.ccac.ca/english/gui_pol/GUFRAME.HTM (under 'List of CCAC Guidelines' and 'Species-specific Recommendations')
3) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Live animal capture and handling guidelines for wild mammals, birds, amphibians & reptiles http://srmwww.gov.bc.ca/risc/pubs/tebiodiv/index.htm
4) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Wildlife radio-telemetry. Standards for components of British Columbia's biodiversity No. 5. http://srmwww.gov.bc.ca/risc/pubs/tebiodiv/index.htm
5) 2000 Report of the AVMA (American Veterinary Medical Association) on Euthanasia. JAVMA Vol. 218, no. 5, March 1, 2001. http://www.avma.org/resources/euthanasia.pdf

Last updated: Jan 28, 2005

D

Addendum to Class Protocol #004: Bat Capture, Handling, and Release

Wildlife Research Permits and Collection Licences

Adopted July 12, 2009

Alberta Bat Handling Protocol to Prevent Spread of White-Nose Syndrome

Basic procedures for working with bats in Alberta are provided in the provincial Class Protocol referenced above. Due to concerns about the spread of White-Nose Syndrome (WNS), a new fungal disease associated with massive mortality of hibernating bats in eastern North America, the Fish and Wildlife Division of Sustainable Resource Development requires compliance with the following additional handling procedures:

In Alberta, DO NOT USE any equipment, clothing, or footwear used in any WNS affected cave or mine in other jurisdictions.

In Alberta, do not use any equipment, clothing, or footwear used in bat-inhabited caves or mines east of the Mississippi River.

Decontaminate gear and clothes after entering **ANY** cave or minesite where bats are known to hibernate in Alberta or anywhere else; use US Fish and Wildlife Service protocols (see below).

Store clean items separately from items that have been contaminated.

Whenever possible micro-process and release bats at the capture device. Limit data collection to species, gender, adult/juvenile, reproductive status, fitness (emaciated or not), and wing damage assessment (see below). Hold bats for no longer than necessary and for no more than 1 hour.

Place only one bat in each holding bag (as opposed to multiple bats) and use each bag only once per night. Wash and dry holding bags before using again. One-time use paper bags may be used instead of cloth bags

All field gear used to capture, handle, and measure bats should be cleaned with a disinfecting agent each night, and equipment that comes in direct contact with bats, such as calipers and biopsy punches, should be cleaned after each bat. Disposable gloves may be worn over handling gloves. Although mist nets will be difficult to clean thoroughly, spot wiping with disinfecting agent where bats were captured is recommended as a minimum. For information on suitable disinfectants and further details refer to the US Fish and Wildlife Service Decontamination Protocols for Bat Field Studies:

http://www.fws.gov/midwest/Endangered/mammals/BatDisinfectionProtocol.html

Dd
Be aware of indications of WNS: white fungus on any skin surface, emaciation, and/or prominent wing damage (see below)

If a live bat is found with white powdery fungus anywhere on the skin, please take photos if possible, collect the bat and keep it isolated in a ventilated container. If large numbers of dead bats (more than 10 at one site) are found, please document the mortality by recording time, place, estimated number of dead bats, any other significant aspects of the mortality event, as well as take a picture and collect a few fresh dead carcasses (gloves must be worn and decontamination protocol followed). In either situation, contact any Fish and Wildlife office (toll free in Alberta 310-0000) or Dr. Margo Pybus (Alberta Provincial Wildlife Disease Specialist 780-427-3462) for further direction.

To help assess whether a bat has survived WNS, an index to bat wing damage has been developed:

www.fws.gov/northeast/PDF/Reichard_Scarring%20index%20bat%20wings.pdf

Please take photos of any bat showing similar wing damage and then notify Margo Pybus (as above). At this time, we are not requesting that bats with wing damage be collected.

WNS has not YET been detected in western North America; however, the rapid spread of bat mortality in the east and the likelihood that humans can carry the fungus to new areas requires a proactive approach to prevent WNS from spreading into or within Alberta.

Thank you for your cooperation.

For further information, visit:

http://srd.alberta.ca/FishWildlife/WildlifeResearchCollection/Default.aspx

You can also contact Lisa Wilkinson (Species at Risk Biologist, 780-723-8556).

55984

Alberta

Environment and Sustainable Resource Development
Operations Division

General Permit – GP

RESEARCH PERMIT

District: Cochrane

FEE $ NIL

PERMITTEE: Lawrence Brusnyk, Millennium EMS Solutions Ltd.

ADDRESS: 6111 – 91 Street, Edmonton, AB T6E 6V6

IS AUTHORIZED TO: Conduct wildlife surveys for owls, using ground-search and call-playback.

DATE OF ISSUE: February 18, 2015 DATE OF EXPIRY: March 31, 2016

<Original signed by>

Signature of Permittee

<Original signed by>

For Minister of Alberta Environment and Sustainable Resource Development

IN ACCORDANCE WITH:

Class Protocols are reviewed by the Alberta Wildlife Animal Care Committee and approved by the Director of Wildlife. Class Protocols are available at http://esrd.alberta.ca/FishWildlife/Default.aspx.

In accordance with "methods specified in Wildlife Research/Collection License application and/or renewals; attached general conditions; Alberta Animal Care Committee Class Protocol #006

Additional Conditions: please refer to General Conditions #3

Additional Conditions: Please review and abide by the ESRD Sensitive Species Inventory Guidelines, April 2013. Record any incidental observations of alternative wildlife species observed during field work. Individuals with owl surveys must be present at all times during survey.

Additional Researchers: Chuck Priestly, other personnel under the supervision of this permit.

****IMPORTANT**

District Office instructions:

Please photocopy this document once it is issued and forward copies to:

Original – Permittee
Copy to – Wildlife Management, Edmonton HQ
Copy to – Licencing & Revenue Services, Edmonton HQ
Copy for - Issuing District

55985

Alberta
Environment and Sustainable Resource Development
Operations Division

Licence – CN

COLLECTION LICENCE

District: Cochrane

FEE $ NIL

NAME: Lawrence Brusnyk, Millennium EMS Solutions Ltd.

ADDRESS: 6111 – 91 Street, Edmonton, AB T6E 6V6

Is authorized to collect the following wildlife: Conduct wildlife surveys for owls, using ground-search and call-playback

This licence authorizes the use of the following equipment and methods: call playback

This licence is valid (location) South Saskatchewan Region

EFFECTIVE DATE: April 1, 2015 DATE OF EXPIRY: November 30, 2016

Collections are to be conducted by: licencee

<Original signed by>

Date of issue: February 18, 2015

Signature of Licencee (not valid unless signed by Licencee) **Licence must be carried while collecting.**

<Original signed by>

For Minister of Alberta Environment and Sustainable Resource Development

Conditions:

1. The licence is subject to all conditions listed in the attached Appendix 1.
2. The licencee must keep the appropriate Fish and Wildlfie Officer informed of collection activities as they occur.
3. This licence is not transferable.
4. Persons collecting under the authority of this licence must produce a copy of the licence on the request of a Fish and Wildlife Officer when carrying out collection activities.
5. If any information obtained from the collection of any wildlife under this licence is used in a report or publication of any kind, the licencee shall forward a copy of such publication to the Director of Wildlife.
6. Within 7 days of the expiry of the licence, the licencee shall complete the table below, and any other records required by this licence, and return licence and records to the Director of Wildlife.

Collection Date	Species	Sex M/F	Location	Disposition

IMPORTANT

District Office instructions:

Please photocopy this document once it is issued and forward copies to:

Original – Licencee

Copies to: Licencing Services-Edmonton HQ, Region, Issuing District

Alberta
Environment and Sustainable
Resource Development

Suite 100, 3115 - 12 Street N.E.
Calgary, Alberta T2E 7J2

Telephone: (403) 297-6674
Fax: (403) 297-2843

March 28, 2014

Lawrence Brusnyk
Millennium EMS Solutions LTd
6111 – 91 Street
Edmonton, AB
T6E 6V6

Enclosed are Research Permit #55000, class protocol #06, along with the general conditions.

Please sign the Permit where indicated and ensure that your sub-permittees carry a copy of the Permit with them at all times while engaged in any permitted activities.

The Alberta Environment and Sustainable Resource Development, Wildlife Management Sensitive Species Inventory Guidelines have been updated and are now available on the ESRD website at http://srd.alberta.ca/FishWildlife/WildlifeManagement/SensitiveSpeciesInventoryGuidelines.aspx These provide clear, concise inventory guidelines for a number of wildlife species in Alberta, with a focus on pre-development wildlife surveys. Please review and become familiar with them as they may be pertinent to your research and/or collection permit.

Thank you.
<Original signed by>

Brett Boukall
Senior Wildlife Biologist,
Operations Division, Resource Management
Environment and Sustainable Resource Development
8660 Bearspaw Dam Road N.W.
Calgary, Alberta, Canada
T3L 1S4

55000

Alberta

Environment and Sustainable Resource Development
Operations Division

General Permit – GP

RESEARCH PERMIT

District: Calgary

FEE $ NIL

PERMITTEE: Lawrence Brusnyk, Millennium EMS Solutions Ltd.

ADDRESS: 6111 – 91 Street Edmonton, AB T6E 6V6

IS AUTHORIZED TO: Conduct wildlife surveys for owls, using ground-search and call-playback.

DATE OF ISSUE: April 1, 2014 DATE OF EXPIRY: March 31, 2015

<Original signed by>

Signature of Permittee

<Original signed by>

For Minister of Alberta Environment and Sustainable Resource Development

IN ACCORDANCE WITH:

Class Protocols are reviewed by the Alberta Wildlife Animal Care Committee and approved by the Director of Wildlife. Class Protocols are available at http://esrd.alberta.ca/FishWildlife/Default.aspx.

In accordance with "methods specified in Wildlife Research/Collection License application and/or renewals; attached general conditions; Alberta Animal Care Committee Class Protocol 006"

Additional Conditions: Record any incidental observations of alternative wildlife species observed during field work.

Additional Researchers: Chuck Priestly, other personnel under the supervision of this permit.

****IMPORTANT**

District Office instructions:

Please photocopy this document once it is issued and forward copies to:

Original – Permittee
Copy to – Wildlife Management, Edmonton HQ
Copy to – Licencing & Revenue Services, Edmonton HQ
Copy for - Issuing District

Appendix 1: Research Permit and Collection Licence General Permit Conditions
Addendum to Research Permit # 55000

1. It is the responsibility of the Licencee to contact the appropriate Senior Area Wildlife Biologist and District Fish and Wildlife Officer and the appropriate landowner prior to the commencement of any Permitted activities. Contact information for Fish and Wildlife available at: http://www.srd.alberta.ca/AboutESRD/ESRDContacts/FisheriesWildlifeManagementAreaContacts.aspx or by calling 310-0000 and asking for the appropriate Fish and Wildlife office.
2. The Permit is valid only for research and collection activities in the specific area and for the dates identified on the Permit.
3. For activities in any Provincial Park, Ecological Reserve, Wildland Provincial Park, Natural Area, or Wilderness Area additional approvals for access may be required. Please contact your local Alberta Tourism, Parks and Recreation authority.
4. Permits are not transferable and must include the names (when known) of all authorized project members who must be prepared to show a copy of the Permit on the request of a Fish and Wildlife Officer.
5. The Licencee is responsible for ensuring that public safety is not endangered by activities associated with the project.
6. The Licencee shall be held accountable for damages to resources or property arising directly or indirectly from the project.
7. The issuance of this Licence does not exempt the holder from any other Canadian Laws that might otherwise apply.
8. All captured animals must be handled in a humane manner and according to the approvals of the Wildlife Animal Care Committee.
9. Animals captured using immobilization drugs must follow the Fish and Wildlife Drug protocols. **http://srd.alberta.ca/FishWildlife/WildlifeResearchCollection/documents/AnimalImmobilization-AppendixA-RecomDosages-Nov2003.pdf**
10. A report of the past year's activities is required before Permits are renewed.
11. If radio telemetry is a component of the research, the Licencee is responsible for providing up-to-date information on frequency deployment including date, general location, species, transmitter type, manufacturer, and expected transmitter life to the issuer of the Permit/Licence.
12. All observations made during your project are to be provided within either:
    a. A FWMIS Load Form (all data types excluding bird banding)
    b. Where USFWS bands are used in the project, a "Band Manager" digital export (see attached instructions titled: Submitting Banding Data to Alberta Environment and Sustainable Resource Development). Note: Banding data locations are to be provided as Latitude/Longitude in Degrees-Minutes-Seconds.

This completed file is to be returned to the Alberta Fish and Wildlife, as part of your annual or final report, upon completion of the project (no later than April 1st annually).

FWMIS.xls digital files can be accessed at the following web site:
http://srd.alberta.ca/FishWildlife/FWMIS/WildlifeLoadforms.aspx

Or, by contacting Lonnie Bilyk (Resource Data Biologist) at (780) 427-8136 or email at Lonnie.Bilyk@gov.ab.ca

ALBERTA WILDLIFE ANIMAL CARE COMMITTEE
CLASS PROTOCOL # 006

Adopted 11 February 2005

CLASS ACTIVITY: *CALL PLAYBACK FOR OWLS*

SPECIFIC ACTIVITIES: Species-specific call playbacks, with appropriate taped vocalizations.

OBJECTIVES: To minimize disturbance and potential adverse effects on individual owls surveyed using call playback. Playback may increase the risk of predation, disrupt foraging and courtship, and/or draw females off a nest. As a result, this activity must have some limits on its use.

PRIMARY CONTACT/AUTHORITY: Director of Wildlife

APPLICABLE PERSONNEL:

- Project leads must be Wildlife Technicians, Wildlife Biologists, or Naturalists with appropriate avian experience and, in the case of endangered owls, species-specific experience and a detailed understanding of the legal and regulatory protections provided to the species.
- Project team must include at least one experienced field person with established search images of the species intended for census and be familiar with the species' biology, behaviours, and preferred habitat.

SPECIES: Various owls, including burrowing owl (*Athene cunicularia*), great-horned owl *(Bubo virginianus)*, barred owl *(Strix varia)*, great gray owl *(Strix nebulosa)*, long-eared owl (*Asio otus)*, boreal owl *(Aeoglius funereus)*, northern saw-whet owl *(Aegolius acadicus)* and northern pygmy owl *(Glaucidium gnoma)*.

APPLICABLE GEOGRAPHIC RANGE: provincial

METHODS:

It is well known that owls use a variety of vocalizations to communicate among individuals and perhaps among species. They identify themselves, claim territories, attract the opposite sex, maintain pair-bonds, and pairs track their whereabouts within the territory. Youngsters use other vocalizations to express alarm or to solicit food from attending adults. Call playback involves audio broadcast of taped calls in order to solicit behavioural or vocal response from owls in the vicinity. A series of broadcast sites is sampled along a designated transect.

In general, the methods as outlined in Takats et al. (2001) will be adopted. Specific guidelines relating to duration and repetition interval of call playback are primary to the potential negative effects on owls and must not be exceeded. In addition there are specific procedures included in the text below that apply to burrowing owls in Alberta due to their threatened status. General status of the other owl species can be found at:
http://www3.gov.ab.ca/srd/fw/status/reports/birds/index.html

CALL PLAYBACK

Every reasonable effort should be made to avoid unnecessarily disturbing sensitive species such as Burrowing Owls or their habitat.

Timing:

As a census technique, call playbacks should be conducted during the primary breeding season for the species of concern. **Specific to burrowing owl, the survey period is limited to 15 May to 31 July since most owls have migrated to breeding grounds by this time and have settled on territory.**

- Surveying is not recommended during periods of precipitation or when winds are greater than 20 km/h (as determined by a hand-held anemometer).
- Surveys for most species are generally conducted in the evening from 30 minutes after sunset until midnight, as call rates are high during this time for most species. However, for **burrowing owls surveys generally are done in the morning, starting at daybreak, and should be complete before 14:00 to avoid the heat waves and wind associated with the afternoon.**
- Avoid using call playback if there is direct evidence of predators in the vicinity
- Listening sites should be no less than 1.6 km apart for most species. **For Burrowing Owls, they should be no less than 600m and no more than 800m apart**.
- Tapes containing calls of multiple species can be used to survey different species at the same time. However, the combined effects on individual species response are not well documented and single species inventory is preferred.

Procedure:

- Upon arriving at a site, the observer selects a suitable vantage point and waits five minutes to allow owls to recover from any disturbance that may have occurred as the observer traveled to the survey point
- After the five-minute recovery period, taped primary calls are played using a Johnny Stewart Game Caller ™, or equivalent, over another five-minute period. **Note that for Burrowing Owls, ONLY the two-note *coo coooo* call of territorial males should be used.** The Caller is rotated over 360° from a fixed point during the course of the five-minute call period, allowing calls to be broadcast around the entire circumference of the survey circle.
- After the five-minute call playback period, the observer spends another five minutes scanning the surrounding landscape for owls.
- In total, each survey lasts 15 minutes. If no owls are detected, the observer continues to the next survey point and repeats the call playback.
- If for any reason the call playback period is repeated, total disturbance period should not exceed 30 minutes. If the 15-minute call playback sequence cannot be completed in less than 30 minutes, then the activity should be discontinued and postponed for 24 hours at that specific site.

EVALUATION

If there is any severe disruption to the habitat or to the owls in the area during the census, the operation is to be halted and all activities reviewed. If corrective factors cannot be identified, the operation is to be discontinued.

The Fish and Wildlife Division requires that all data for wildlife surveys completed under the authority of a research permit be submitted for input into the Biodiversity/Species Observation Database (BSOD). Information on BSOD and electronic load forms that are needed for this database can be obtained from biologists at Fish and Wildlife Division offices.

COMMUNICATIONS

- All members of the team should understand the inherent risks associated with fieldwork.
- Communications may be necessary with the local community and/or landowners regarding general location of call playback activities.

ACKNOWLEDGEMENTS AND REFERENCES:

1) Takats, L.D., C.M. Francis, G.L. Holroyd, J.R. Duncan, K.M. Mazur, R.J. Cannings, W. Harris, and D. Holt. 2001. Guidelines for Nocturnal Owl Monitoring in North America. Beaverhill Bird Observatory and Bird Studies Canada. 2001. 26p. http://www.bsc-eoc.org/download/Owl.pdf
2) Draft - Sensitive Species Inventory Protocols. May 2004. Fish & Wildlife Division, Alberta Sustainable Resource Development. Pp. 59-64.
3) Inventory Methods for Raptors. 2001. Standards for Components of British Columbia's Biodiversity No.11, Ministry of Sustainable Resource Management, Environment Inventory Branch for the Resources Inventory Committee. http://srmwww.gov.bc.ca/risc/pubs/tebiodiv/raptors/version2/rapt_ml_v2.pdf

Last Modified: Jan 28, 2005

Alberta Environment and Parks

Provincial Building, 2nd Floor,
12501-20th Avenue, Blairmore,
AB T0K0E0 (403) 562-3204

May 20th, 2016

Dear Sir/Madam;

Enclosed are the Research Permit # 57701 and the Collection Licence # 57702 along with the General Conditions.

Please sign the Permit(s) where indicated and ensure that the sub-permitted individuals carry a copy of the Permit(s) with them at all times while engaged in any permitted activities.

To avoid unnecessary public or government concerns, it is the responsibility of the licensee to contact the local Fish and Wildlife District office where the work is being conducted prior to conducting any permitted work. As they may be pertinent to your research and/or collection permit, please review and become familiar with the Sensitive Species Inventory Guidelines available on the Alberta Environment and Parks website at:
http://aep.alberta.ca/fish-wildlife/wildlife-management/documents/SensitiveSpeciesInventoryGuidelines-Apr18-2013.pdf

Please remember that it is a condition of your license to submit an annual progress report and your observation on the load form described in the attached General Conditions.

Should you have any questions, please contact me at the above address or at
Maria.Didkowsky@gov.ab.ca

Thank you.
<Original signed by>

Maria Didkowsky, MSc., PAg., PBiol.
Wildlife Biologist
Alberta Environment and Parks – Operations
South Saskatchewan Region
Blairmore / Pincher Creek

57701

Alberta
Environment and Parks
Operations Division

General Permit – GP

RESEARCH PERMIT

District: Crowsnest

FEE $ NIL

PERMITTEE: Robin Mackey , Millennium EMS Solutions Ltd.

ADDRESS: Suite 325, 1925- 18th Avenue, NE Calgary T2E7T8

IS AUTHORIZED TO: Conduct bat survey (mist net and acoustic) on the Riversdale Resources Grassy Mountain project, Crowsnest Pass.

DATE OF ISSUE: June 1st, 2016 DATE OF EXPIRY: August 31st, 2016

<Original signed by>

Signature of Permittee

<Original signed by>

For Minister of Alberta Environment and Parks

IN ACCORDANCE WITH:

Class Protocols are reviewed by the Alberta Wildlife Animal Care Committee and approved by the Director of Wildlife. Class Protocols are available at http://esrd.alberta.ca/FishWildlife/Default.aspx.

In accordance with 'methods specified in Wildlife Research/Collection License application and/or renewals, attached General Conditions, Animal Care Committee Class Protocol #004

Additional Conditions:
Record any incidental observations of alternative wildlife species observed during field work

Additional Researchers: Jesse Patterson Emilie Brien, and Ryan Hrywkiw under the supervision of the licensee

****IMPORTANT**
District Office instructions:
Please photocopy this document once it is issued and forward copies to:

Original – Permittee
Copy to – Wildlife Management, Edmonton HQ
Copy to – Licencing & Revenue Services, Edmonton HQ
Copy for - Issuing District

57702

Alberta

Environment and Parks
Operations Division

Licence – CN

COLLECTION LICENCE District:
FEE $ NIL

NAME: Robin Mackey , Millennium EMS Solutions Ltd.

ADDRESS: Suite 325, 1925- 18th Avenue, NE Calgary T2E7T8

Is authorized to collect the following wildlife: Conduct bat survey (mist net and acoustic) on the Riversdale Resources Grassy Mountain project, Crowsnest Pass.

This licence authorizes the use of the following equipment and methods: Mist nets, acoustic monitors

This licence is valid (location) South Saskatchewan Region – Blairmore area

EFFECTIVE DATE: June 1st, 2016 DATE OF EXPIRY: August 31st, 2016

Collections are to be conducted by: licencee, Jesse Patterson Emilie Brien, and Ryan Hrywkiw under the supervision of the licensee

<Original signed by>

Date of issue: May 20th, 2016

Signature of Licencee (not valid unless signed by Licencee) **Licence must be carried while collecting.**

<Original signed by>

For Minister of Alberta Environment and Sustainable Resource Development Parks (MAY 2016)

Conditions:

1. The licence is subject to all conditions listed in the attached Appendix 1.
2. The licencee must keep the appropriate Fish and Wildlife Officer informed of collection activities as they occur.
3. This licence is not transferable.
4. Persons collecting under the authority of this licence must produce a copy of the licence on the request of a Fish and Wildlife Officer when carrying out collection activities.
5. If any information obtained from the collection of any wildlife under this licence is used in a report or publication of any kind, the licencee shall forward a copy of such publication to the Director of Wildlife.
6. Within 7 days of the expiry of the licence, the licencee shall complete the table below, and any other records required by this licence, and return licence and records to the Director of Wildlife.

Collection Date	Species	Sex M/F	Location	Disposition

IMPORTANT

District Office instructions:

Please photocopy this document once it is issued and forward copies to:

Original – Licencee Copies to: Licencing Services-Edmonton HQ, Region, Issuing District

Alberta Environment and Parks

Appendix 1: Research Permit and Collection Licence General Permit Conditions
Addendum to Research Permit #_57701_____, Collection License #__57702____

1. It is the responsibility of the Licencee to contact the appropriate Senior Area Wildlife Biologist and District Fish and Wildlife Officer and the appropriate landowner prior to the commencement of any Permitted activities. Contact information for Fish and Wildlife available at: http://esrd.alberta.ca/about-us/contact-us/fisheries-wildlife-management-area-contacts.aspx or by calling 310-0000 and asking for the appropriate Fish and Wildlife office.
2. The Permit is valid only for research and collection activities in the specific area and for the dates identified on the Permit.
3. For activities in any Provincial Park, Ecological Reserve, Wildland Provincial Park, Natural Area, or Wilderness Area additional approvals for access may be required. Please contact your local Alberta Tourism, Parks and Recreation authority.
4. Permits are not transferable and must include the names (when known) of all authorized project members who must be prepared to show a copy of the Permit on the request of a Fish and Wildlife Officer.
5. The Licencee is responsible for ensuring that public safety is not endangered by activities associated with the project.
6. The Licencee shall be held accountable for damages to resources or property arising directly or indirectly from the project.
7. The issuance of this Licence does not exempt the holder from any other Canadian Laws that might otherwise apply.
8. All captured animals must be handled in a humane manner and according to the approvals of the Wildlife Animal Care Committee.
9. Animals captured using immobilization drugs must follow the Fish and Wildlife Drug protocols. http://esrd.alberta.ca/fish-wildlife/wildlife-research-collection/documents/WR-ChemicalImmobilizationWildlife-Dosages-2009.pdf
10. A report of the past year's activities is required before Permits are renewed.
11. If radio telemetry is a component of the research, the Licencee is responsible for providing up-to-date information on frequency deployment including date, general location, species, transmitter type, manufacturer, and expected transmitter life to the issuer of the Permit/Licence.
12. All observations made during your project are to be provided within either:
    a. A FWMIS Load Form (all data types excluding bird banding)
    b. Where USFWS bands are used in the project, a "Band Manager" digital export (see attached instructions titled: Submitting Banding Data to Alberta Environment and Sustainable Resource Development). Note: Banding data locations are to be provided as Latitude/Longitude in Degrees-Minutes-Seconds.

This completed file is to be returned to the Alberta Fish and Wildlife, as part of your annual or final report, upon completion of the project (no later than April 1st annually).

FWMIS digital loadform files can be accessed at the following web site:
http://esrd.alberta.ca/fish-wildlife/fwmis/wildlife-load-forms.aspx

Or, by contacting Lonnie Bilyk (Resource Data Biologist) at (780) 427-8136 or email at Lonnie.Bilyk@gov.ab.ca

Alberta Wildlife Animal Care Committee Class Protocol #004

Wildlife Research Permits or Collection Licences

Adopted 11 February 2005

Class Activity: Bat Capture, Handling, and Release

Specific Activities

Mist-netting, harp trapping

Objectives

To capture live bats, primarily for research and management purposes

Primary Contact/Authority

Director of Wildlife

Applicable Personnel

- Project leads must be biologists with experience in mist netting, identifying local bat species, and other related field procedures.
- Project team must include persons trained in general wildlife capture and handling as per an approved wildlife capture or animal care course.
- All crew members should be immunized against rabies and have had a suitable titre in the last two years.

Species

All bat species

Applicable Geographic Range

Provincial

Methods

Capture

- At least two crew members are needed for mist netting and harp trapping. Minimize other

Capture Of Non-Targets

Release all non-targets such as songbirds immediately. If an owl or other bird of prey is captured, remove it from the net while holding the feet.

Handling

- Handle the animal efficiently and without sudden movements, and avoid unnecessary exposure to bright lights when possible.
- Once the bat is captured in a mist net, immediately remove it from the same side it was captured on and place it in a cotton bag with a drawstring closure.
- Processing time should be kept as short as possible. Preferably bats should be held less than one hour, but no more than two hours.
    - Exceptions:
        - Lactating females or bats in late stage pregnancy should be processed and released immediately at the site of their capture.
- Fecal samples are collected from the holding bag after one hour has elapsed.
- **Recording reference calls** – If light sticks are used, activate the inner capsule in the stick. Use a small amount of non-toxic Skinbond® adhesive and attach light tags to the back (for low-flying bats) or the abdomen (for high-flying bats). A spotlight is far better for showing where bats are and requires less handling.

Release

- Let the bat fly from your hand or place it on a ledge or high place from which it can drop down.
- Ensure the bat flies off a distance and does not just fall to the ground in distress.
- Torpid bats may need to be re-warmed in hands before releasing.

Procedures

The above handling protocol is appropriate for catching bats for basic body morphometrics, taking hair samples, collecting faecal samples, collecting tissue samples, attaching radio transmitters, recording reference calls, and banding under authority of a Fish and Wildlife Research Permit or Collection Licence. For all noted procedures, previous training and experience is necessary.

Tissue samples

- Small samples are taken using a biopsy punch from the wing near the tibia, avoiding major blood vessels.
- The site must be cleaned with a disinfectant such as ethanol.

Evaluation

If any severe bat injury or mortality occurs, the operation should halt and all activities should be reviewed. If corrective factors cannot be identified, the operation should be discontinued.

Communications and Medical Emergencies

- All members of the capture team should understand risks associated with fieldwork (e.g., climbing, rabies).
- An emergency medical plan that includes evacuation to the nearest medical facility should be considered when significant field hazards exist.
- Communications may be necessary with the local community regarding general location of mist or harp netting activities.

Acknowledgements and References:

The material for this protocol comes largely from the Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta prepared by Maarten Vonhof for Alberta Environment, Fisheries and Wildlife Management Division. R. Barclay and L. Wilkinson reviewed the document.

Other documents consulted include:

1) Canadian Council on Animal Care. 2003. Guidelines on: the care and use of wildlife

2) Canadian Council on Animal Care. 2003. CCAC species-specific recommendations on: Bats

3) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Live animal capture and handling guidelines for wild mammals, birds, amphibians & reptiles

4) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Wildlife radio-telemetry. Standards for components of British Columbia's biodiversity No. 5.

5) 2000 Report of the AVMA (American Veterinary Medical Association) on Euthanasia. JAVMA Vol. 218, no. 5, March 1, 2001.

Last updated: Jan 28, 2005

D

Addendum to Class Protocol #004: Bat Capture, Handling, and Release

Wildlife Research Permits and Collection Licences

Adopted July 12, 2009

Alberta Bat Handling Protocol to Prevent Spread of White-Nose Syndrome

Basic procedures for working with bats in Alberta are provided in the provincial Class Protocol referenced above. Due to concerns about the spread of White-Nose Syndrome (WNS), a new fungal disease associated with massive mortality of hibernating bats in eastern North America, the Fish and Wildlife Division of Sustainable Resource Development requires compliance with the following additional handling procedures:

In Alberta, DO NOT USE any equipment, clothing, or footwear used in any WNS affected cave or mine in other jurisdictions.

In Alberta, do not use any equipment, clothing, or footwear used in bat-inhabited caves or mines east of the Mississippi River.

Decontaminate gear and clothes after entering **ANY** cave or minesite where bats are known to hibernate in Alberta or anywhere else; use US Fish and Wildlife Service protocols (see below).

Store clean items separately from items that have been contaminated.

Whenever possible micro-process and release bats at the capture device. Limit data collection to species, gender, adult/juvenile, reproductive status, fitness (emaciated or not), and wing damage assessment (see below). Hold bats for no longer than necessary and for no more than 1 hour.

Place only one bat in each holding bag (as opposed to multiple bats) and use each bag only once per night. Wash and dry holding bags before using again. One-time use paper bags may be used instead of cloth bags

All field gear used to capture, handle, and measure bats should be cleaned with a disinfecting agent each night, and equipment that comes in direct contact with bats, such as calipers and biopsy punches, should be cleaned after each bat. Disposable gloves may be worn over handling gloves. Although mist nets will be difficult to clean thoroughly, spot wiping with disinfecting agent where bats were captured is recommended as a minimum. For information on suitable disinfectants and further details refer to the US Fish and Wildlife Service Decontamination Protocols for Bat Field Studies:

http://www.fws.gov/midwest/Endangered/mammals/BatDisinfectionProtocol.html

Alberta Environment and Parks

Provincial Building, 2nd Floor,
12501-20th Avenue, Blairmore,
AB T0K0E0 (403) 562-3204

May 20th, 2016

Dear Sir/Madam;

Enclosed are the Research Permit # 57703 and the Collection Licence # 57704 along with the General Conditions.

Please sign the Permit(s) where indicated and ensure that the sub-permitted individuals carry a copy of the Permit(s) with them at all times while engaged in any permitted activities.

To avoid unnecessary public or government concerns, it is the responsibility of the licensee to contact the local Fish and Wildlife District office where the work is being conducted prior to conducting any permitted work. As they may be pertinent to your research and/or collection permit, please review and become familiar with the Sensitive Species Inventory Guidelines available on the Alberta Environment and Parks website at:
http://aep.alberta.ca/fish-wildlife/wildlife-management/documents/SensitiveSpeciesInventoryGuidelines-Apr18-2013.pdf

Please remember that it is a condition of your license to submit an annual progress report and your observation on the load form described in the attached General Conditions.

Should you have any questions, please contact me at the above address or at Maria.Didkowsky@gov.ab.ca

Thank you.

<Original signed by>

Maria Didkowsky, MSc., PAg., PBiol.
Wildlife Biologist
Alberta Environment and Parks – Operations
South Saskatchewan Region
Blairmore / Pincher Creek

57703

Alberta

Environment and Parks
Operations Division

General Permit – GP

RESEARCH PERMIT District: Crowsnest

FEE $ NIL

PERMITTEE: Robin Mackey , Millennium EMS Solutions Ltd.

ADDRESS: Suite 325, 1925- 18th Avenue, NE Calgary T2E7T8

IS AUTHORIZED TO: Conduct a baseline raptor nest and habitat inventory on the Riversdale Resources Grassy Mountain project, Crowsnest Pass.

DATE OF ISSUE: May 20th, 2016 DATE OF EXPIRY: August 31st, 2016

<Original signed by>

Signature of Permittee

<Original signed by>

For Minister of Alberta Environment and Parks

IN ACCORDANCE WITH:

Class Protocols are reviewed by the Alberta Wildlife Animal Care Committee and approved by the Director of Wildlife. Class Protocols are available at http://esrd.alberta.ca/FishWildlife/Default.aspx.

In accordance with 'methods specified in Wildlife Research/Collection License application and/or renewals, attached General Conditions, Animal Care Committee Class Protocol #011

Additional Conditions:
Record any incidental observations of alternative wildlife species observed during field work

Additional Researchers: Jesse Patterson Emilie Brien, and Ryan Hrywkiw under the supervision of the licensee

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****IMPORTANT**
District Office instructions:
Please photocopy this document once it is issued and forward copies to:

Original – Permittee
Copy to – Wildlife Management, Edmonton HQ
Copy to – Licencing & Revenue Services, Edmonton HQ
Copy for - Issuing District

57704

Alberta

Environment and Parks
Operations Division

Licence – CN

COLLECTION LICENCE District:
FEE $ NIL

NAME: Robin Mackey , Millennium EMS Solutions Ltd.

ADDRESS: Suite 325, 1925- 18th Avenue, NE Calgary T2E7T8

Is authorized to collect the following wildlife: Conduct a baseline raptor nest and habitat inventory on the Riversdale Resources Grassy Mountain project, Crowsnest Pass.

This licence authorizes the use of the following equipment and methods: Mist nets, acoustic monitors

This licence is valid (location) South Saskatchewan Region – Blairmore area

EFFECTIVE DATE: May 20th, 2016 DATE OF EXPIRY: August 31st, 2016

Collections are to be conducted by: licensee, Jesse Patterson Emilie Brien, and Ryan Hrywkiw under the supervision of the licensee

<Original signed by>

Signature of Licencee (not valid unless signed by Licencee) **Licence must be carried while collecting.**

Date of issue: May 20th, 2016

For Minister of Alberta Environment and Parks

Conditions:

1. The licence is subject to all conditions listed in the attached Appendix 1.
2. The licencee must keep the appropriate Fish and Wildlife Officer informed of collection activities as they occur.
3. This licence is not transferable.
4. Persons collecting under the authority of this licence must produce a copy of the licence on the request of a Fish and Wildlife Officer when carrying out collection activities.
5. If any information obtained from the collection of any wildlife under this licence is used in a report or publication of any kind, the licencee shall forward a copy of such publication to the Director of Wildlife.
6. Within 7 days of the expiry of the licence, the licencee shall complete the table below, and any other records required by this licence, and return licence and records to the Director of Wildlife.

Collection Date	Species	Sex M/F	Location	Disposition

IMPORTANT

District Office instructions:

Please photocopy this document once it is issued and forward copies to:

Original – Licencee

Copies to: Licencing Services-Edmonton HQ, Region, Issuing District

Alberta Environment and Parks

Appendix 1: Research Permit and Collection Licence General Permit Conditions
Addendum to Research Permit #_57703_____, Collection License #__57704____

1. It is the responsibility of the Licencee to contact the appropriate Senior Area Wildlife Biologist and District Fish and Wildlife Officer and the appropriate landowner prior to the commencement of any Permitted activities. Contact information for Fish and Wildlife available at: http://esrd.alberta.ca/about-us/contact-us/fisheries-wildlife-management-area-contacts.aspx or by calling 310-0000 and asking for the appropriate Fish and Wildlife office.
2. The Permit is valid only for research and collection activities in the specific area and for the dates identified on the Permit.
3. For activities in any Provincial Park, Ecological Reserve, Wildland Provincial Park, Natural Area, or Wilderness Area additional approvals for access may be required. Please contact your local Alberta Tourism, Parks and Recreation authority.
4. Permits are not transferable and must include the names (when known) of all authorized project members who must be prepared to show a copy of the Permit on the request of a Fish and Wildlife Officer.
5. The Licencee is responsible for ensuring that public safety is not endangered by activities associated with the project.
6. The Licencee shall be held accountable for damages to resources or property arising directly or indirectly from the project.
7. The issuance of this Licence does not exempt the holder from any other Canadian Laws that might otherwise apply.
8. All captured animals must be handled in a humane manner and according to the approvals of the Wildlife Animal Care Committee.
9. Animals captured using immobilization drugs must follow the Fish and Wildlife Drug protocols. http://esrd.alberta.ca/fish-wildlife/wildlife-research-collection/documents/WR-ChemicalImmobilizationWildlife-Dosages-2009.pdf
10. A report of the past year's activities is required before Permits are renewed.
11. If radio telemetry is a component of the research, the Licencee is responsible for providing up-to-date information on frequency deployment including date, general location, species, transmitter type, manufacturer, and expected transmitter life to the issuer of the Permit/Licence.
12. All observations made during your project are to be provided within either:
    a. A FWMIS Load Form (all data types excluding bird banding)
    b. Where USFWS bands are used in the project, a "Band Manager" digital export (see attached instructions titled: Submitting Banding Data to Alberta Environment and Sustainable Resource Development). Note: Banding data locations are to be provided as Latitude/Longitude in Degrees-Minutes-Seconds.

This completed file is to be returned to the Alberta Fish and Wildlife, as part of your annual or final report, upon completion of the project (no later than April 1st annually).

FWMIS digital loadform files can be accessed at the following web site:
http://esrd.alberta.ca/fish-wildlife/fwmis/wildlife-load-forms.aspx

Or, by contacting Lonnie Bilyk (Resource Data Biologist) at (780) 427-8136 or email at Lonnie.Bilyk@gov.ab.ca

Ground-Based Wildlife Surveys: Alberta Wildlife Animal Care Committee Class Protocol #011

Research Licences and Permits

Adopted 21 March, 2012

Class Activity: Ground-Based Wildlife Surveys

This class protocol must be followed for all wildlife surveys conducted from the ground that are designed to elicit a response from an individual, alter the behaviour of an individual, or are being done in close proximity to a den, nest, or house of a wildlife species and which have potential to result in avoidance or abandonment of the site by the individual.

Specific Activities

The following activities require issuance of a wildlife research permit and must be conducted according to this class protocol:

- Call playback - using conspecific or non-conspecific calls to elicit response from a species; Nest searches/nest drags - all physical searches or monitoring of active nests ; including camera use to record nesting activity;
- Den searches - all physical den searches, including camera probing methods;
- Attractants - drawing wildlife into areas through baiting, scent posts, or other attractants;
- Search animals - surveys that employ dogs or other animals to locate wildlife, signs of wildlife, or wildlife habitat;
- Night lighting - use of artificial lights to attract or detect wildlife, for example in surveys for swift fox and Ord's kangaroo rat.

Objectives

The primary objective is to minimize disturbance and potential adverse effects on wildlife. Of particular concern are activities that are designed to elicit a response from an individual, alter the behaviour of an individual, or occur in close proximity to an animal's den, nest, or house.

Primary Contact/Authority

Director of Fish and Wildlife Policy Branch

Applicable Personnel

Project leaders and project teams must comply with this class protocol; they must have adequate experience and skills as outlined below:

Euthanasia

In the event of unforeseen irreversible injury or intolerable pain to a captured individual, euthanasia must be done safely and humanely. The permittee must be properly equipped and prepared to react in these circumstances. Use approved methods for the species/species group as per the Canadian Council on Animal Care **http://www.ccac.ca/en_/standards/guidelines.**

All mortalities that result from survey activities, including euthanized animals, must be reported and submitted upon request to the local Fish and Wildlife office for forwarding to an appropriate diagnostic facility for post-mortem evaluation.

Communications

- All members of the team should understand the inherent risks associated with fieldwork.
- Communication may be necessary with the local community and/or landholders regarding general location of call playback activities and other surveys.
- Prior to commencing surveys the project lead must contact the local Fish and Wildlife office(s) regarding general location and timing of survey activities.

References

Alberta Fish and Wildlife Division. 2010. Sensitive Species Inventory Guidelines: August 2010 Update.(online)
http://srd.alberta.ca/FishWildlife/WildlifeManagement/documents/SensitiveSpeciesInventoryGuidelines-Apr18-2013.pdf 128 pages