1.0 PREAMBLE:

This Standard Operating Procedure (SOP) describes the acceptable method for monitoring birds for signs of stress and injury during bird banding activities. Birds captured using mist nets are handled, banded and released unharmed. Under rare circumstances, a bird may become unusually stressed, injured or die. Under such circumstances, proper stress and injury monitoring is essential to ensure the most appropriate and humane course of action is taken.

2.0 PURPOSE:

This procedure ensures that a consistent method is used to monitor birds for signs of stress and injury under field conditions during bird banding activities. This procedure is applicable whenever a bird displays signs of stress, is injured, or found injured or dead.

3.0 SCOPE:

This procedure applies when a bird displays signs of stress, is injured, or found injured or dead during bird banding activities. It applies to all personnel who may be involved in bird banding activities at Vancouver Island University (faculty, technicians, students, scientists, animal care and veterinary staff, members of the public approved to participate in banding activities).

4.0 RESPONSIBILITIES:

Principal Investigators and/or Responsible Managers have overall responsibility for: ensuring that personnel are aware of and understand this policy/procedure.

All Personnel that work under Animal Use Protocols (AUPs) that cite this SOP are responsible for:

a. Familiarizing themselves with this policy/procedure;
b. Obtaining training for this procedure prior to conducting the procedure (if unsupervised).
**5.0 APPROVED PROCEDURE:**

**5.1 Title of procedure:**
Monitoring Stress and Injury in Birds during Bird Banding

**5.2 Definition of terms used in the Standard Operating Procedure**

Bird banding: Technique used in the study of wild birds, by attaching a small, individually numbered, metal band to the leg, so that various aspects of the bird's life can be studied by the ability to re-sight or recapture the same individual later.

Injured bird: A bird displaying any observable injury including, but not limited to, predator-induced puncture wounds, broken limbs, broken neck or open wounds.

Mist net: Net used by ornithologists to capture wild birds for banding activities.

Near Passerines: Bird related to the passerines, which include species such as pigeons, owls, hummingbirds, kingfishers and woodpeckers.

Passerines: Birds of the order Passeriformes, which include species such as flycatchers, vireos, jays, crows, swallows, chickadees, nuthatches, wrens, kinglets, thrushes, warblers, sparrows, blackbirds and finches.

Raptors: Eagles, falcons, hawks, ospreys and owls.

Stressed bird: A bird displaying any observable sign of stress listed in section 5.4 in excess of what can be reasonably expected as part of regular bird banding activities.

**5.3 Supplies and Equipment:**
- Box or pet carrier to hold a stressed or injured bird
- Blankets to keep carrier dark
- Heat packs or warm water bottle as a source of heat while in the field
- Indoor access to hold a stressed or injured bird warm during cold days
- Band removal equipment: circlip pliers, blunt-end pliers
- Plastic bags, markers

**5.4 Pre-Procedural Preparations and Examination of Animal:**

During bird banding, wild birds (passerines and near passerines) are captured using mist nets, extracted, identified to species, banded and measured, and released unharmed
and with minimal stress. On rare occasions, banding activities (especially capture) may result in higher than usual stress for the bird, injury or death.

Birds captured and handled as part of bird banding activities must be continuously monitored for the following signs of stress or injury (CCAC 2003, 2008; NABC 2001a, b):

1. Eyes closed: The eyes remain closed for extended time (over 10-20 seconds) while the bird is resting in the net, or while the bird is in the bander’s hand (even when the grip is relaxed).

2. Imbalance or disorientation: The bird is not capable of maintaining a properly oriented upright body position.

3. Reduced movement: An apparent lack of or reduced movement and absence of struggle can indicate stress or hypothermia, although some species may be relatively passive upon capture.

4. Drooping of a wing: One or both wings held in a lower than normal position may indicate signs of wing strain, damage, broken limb or dislocated shoulder.

5. Inability to fly: Upon release, a bird that drops to the ground or cannot sustain flight to a nearby perch may indicate signs of wing strain, damage, broken limb or dislocated shoulder.

6. Abnormal leg position: An abnormal leg position or limp leg may indicate a leg strain, broken limb or dislocated joint.

7. High respiration rate: Open-mouthed breathing is not always linked to the stress of capture and handling, but should be considered. If prolonged or noisy, this can indicate disease.

8. Feather condition: Feathers should be intact, relatively parasite-free and waterproof. Sustained puffing up of feathers may indicate stress or may be an aggressive display in some species.

9. Messy vent: Staining or clumping of vent feathers with droppings may be caused by diarrhea or other illness, or may be due to injury and inability to void properly. Note that most birds void feces every 5-10 minutes, so this sign is not always linked to the
stress of capture and handling, but should be considered in combination with other signs.

10. Pectoral muscle mass: Loss of pectoral muscle mass indicates emaciation which can indicate disease, injury or lack of fitness.

11. Cardiac function: Tachycardia (rapid heart beat) or bradycardia (slow heart beat) may indicate underlying disease or toxic state. Although extremely difficult to evaluate in small birds (some passerines’ heart rates are >400 bpm), it still may be valuable to assess in larger species.

12. Capture myopathy: Stress during capture can result in capture myopathy, which can be indicated by muscle tremors and a catatonic state. This can be reduced by effective netting, reduced handling time and ensuring ambient temperature does not exacerbate hyperthermia induced during capture.

13. Bleeding: Bleeding from any part of the body can result from a wound inflicted by a predator (most common), or from abrasion while in a net or during handling with the banding equipment (rare).

14. Observable injury: Observable injuries may include predator-induced puncture wounds, broken limbs, broken neck, open wounds, bleeding tissue, or any other observed injury sustained during or outside of bird banding activities.

15. Death: In rare case, a bird may be found dead in or near a net, typically as a result of a predatory event (i.e., the bird was attacked by a raptor while in or near the net). A bird may also die during extraction from the net, handling or while being held for recovery.

5.5 Procedure

The following procedure should be followed upon encountering a bird that displays any of the above sign of stress, injury or death:

1. The Bander-in-Charge (BIC) must be notified immediately. The BIC is responsible for all decisions with regards to this SOP and the welfare of any stressed, injured or dead bird.
2. If a stressed or injured bird has not yet been banded, it must remain unbanded. If the bird was banded during a previous capture event, the band number must be recorded in addition to the required information as described in Section 6 below.

3. If the stress or injury is caused by a band already placed on the bird, then the band must be removed. A band is usually removed using circlip pliers or by applying blunt-end pliers to either sides of the band to pry it open. The method used is unique to each situation and will be determined by the BIC. Further information about band removal is available in the VIU Bird Monitoring and Banding Manual (Demers, 2015), and from NABC (2001a).

4. If the condition of the bird suggests that it could potentially recover from the apparent stress and/or injury (e.g., general handling stress, disorientation, hypothermia, wing strain), then it should be held in a quiet, warm, dark place (e.g., pet carrier) and its condition should be reassessed every 30 minutes. If the bird then appears alert, responsive, holds proper body positioning and appears eager to fly away, it should be released at ground level and monitored for proper flight. Further holding should be considered if the bird shows signs of gradual recovery suggesting that it could eventually be released.

5. If the bird could not fly away after a holding period or has a limb injury (broken wing or leg) but otherwise appears healthy and is likely to respond to professional treatment, then a veterinarian or rehabilitation centre can be contacted to make arrangements for treatment and rehabilitation. Injured birds should not be passed onto a rehabilitation centre unless survival to release looks like a realistic possibility. See below for names and addresses of rehabilitation centres.

6. If the bird is injured, is suffering and in pain, and does not appear likely to respond to professional rehabilitation treatment, then it should be euthanized in accordance with VIU SOP No. ACC-011 "Euthanasia of Birds during Bird Banding Activities."

7. If the bird is found dead, or dies during extraction from the net, handling or while it is held for recovery, it should be preserved in a freezer for future study skin preparation and/or necropsy, unless its condition warrants disposal. Birds preserved must be stored in plastic bags labelled with the date, location, species, any available measurements, name of personnel, and any relevant additional information. Preserved birds are stored in a freezer in the Biology Department and the appropriate VIU biology technician must be notified. Birds for disposal must be
placed in a plastic bag and disposed in garbage with daily collection (e.g., Biology Department laboratory).

8. Every stressed bird, injury or mortality event must result in a reassessment of the banding operation by the BIC, with appropriate action then applied to minimize the chance of repetition of the event. The decision of the BIC will be final.

ISLAND VETERINARY HOSPITAL  
1800 Bowen Road, Nanaimo, (250) 753-1288  
http://www.islandvet.com/

NORTH ISLAND WILDLIFE RECOVERY ASSOCIATION  
1240 Leffler Road, Errington, (250) 248-8534,  
http://www.niwra.org/, 40 km from Nanaimo

MOUNTAINAIRE AVIAN RESCUE SOCIETY  
6817 Headquarters Rd, Courtenay, (250) 337-2021  
http://www.wingtips.org/, 125 km from Nanaimo

5.6 Post-procedural Follow-Up:  
A record of all stressed, injured or dead birds (as defined in section 5.2) will be kept and maintained as part of all bird banding activities using the form entitled "Report of Bird Banding Casualties" (see Section 7). The date, species, band number (if applicable), net or location found, name of personnel involved, bird status (observed signs of stress, injury or death), probable cause (if known), action taken, outcome, and any other pertinent information must be recorded. The outcome of any treatment or rehabilitation must also be recorded on the form. Each record must be signed off by the BIC.

The BIC will notify the VIU veterinarian to discuss any perceived issue of potential animal welfare with the bird banding activities.

5.7 Safety Equipment and Procedures:  
As outlined in Demers (2015), VIU Bird Monitoring and Banding Manual, Section 8: Personnel Injuries and Diseases
5.8 Non-Conformance:

Any personnel determined to be improperly monitoring stress and injury in birds during bird banding will be considered in violation of the associated AUP and will be subject to VIU disciplinary procedure outlined in VIU Procedure 31.01.001 – Animal Care Committee - Section 5.

The VIU Animal Care Committee is authorized by the President of Vancouver Island University to halt any procedure where the committee considers that unnecessary or unforeseen pain or distress is being experienced by an animal, or where use deviates significantly from an approved protocol. Authority extends to humane destruction of the animal if it is considered that pain or distress of the animal cannot be alleviated. The institutional veterinarian is empowered to take the foregoing actions without reference to the researcher or the committee if his/her professional judgement so warrants. (Section 2 of VIU Procedure 31.01.001).

6.0 RECORDS

Records to be completed include:

See section 5.6 for records required for each stressed, injured or dead bird event.

The number of stressed, injured or dead birds will be reported annually on the VIU Animal Use Data Form (AUDF), along with the associated Report of Bird Banding Casualties forms.

7.0 FORMS

Forms to be completed include:

Report of Bird Banding Casualties

8.0 REFERENCES:


Associated SOP and documents:


9.0 AUTHOR CONTACT INFORMATION:

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Vancouver Island University
(250) 753-3245 local 2033
Bird Banding Permit No. 10885
REVISION LOG

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<td>Dr. Eric Demers</td>
<td>Dr. Eric Demers</td>
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