NATIONAL PARK SERVICE

OPERATIONS PLAN

AERIAL CAPTURE, ERADICATION, AND TAGGING OF ANIMALS

The policies and procedures contained in this *NPS ACETA Operations Plan, i*ssued as a supplement to *351 DM 2.3A* and DOI ACETA Handbook, have been established to provide NPS personnel guidance in the planning, procurement, and utilization of aircraft and services while maximizing safety and enhancing efficiency**.** Reference Manual 60, Aviation Management (RM 60) is the NPS policy that authorizes this ACETA Operations Plan.

The National Park Service on October 21, 1994 established Special Directive 94-5 addressing a more restrictive policy approach for ACETA. With the approval of this *NPS ACETA Operations Plan*, the Special Directive 94-5 is rescinded.

The objectives, policies, and procedures prescribed herein are generally broad in scope and define minimum program standards. It is the responsibility of each NPS program to determine, within the parameters of this document, additional requirements necessary for safe and efficient operations. These requirements must identify and define specific (and often unique) program needs; these requirements are outlined in the park's ACETA Project Aviation Safety Plan that must be approved by the Regional Aviation Manager (RAM).

NPS ACETA operations include a wide range, but a limited number of park units which utilize NPS personnel to accomplish the mission. To be authorized as an ACETA *program*, park units must have approval through the National Aviation Manager, by the NPS Director. An ACETA *program* uses ACETA annually on a regularly reoccurring basis (high frequency). Some park units may request approval to use ACETA on a onetime non-recurring *project* basis, which must be reviewed and approved by the RAM.

ACETA operations are inherently high-risk to aircraft and personnel; aircraft are routinely maneuvered close to the ground, in all types of terrain, and in close proximity to vegetation, vertical terrain, wires and man-made hazards. During ACETA operations pilots are required to function in a highly focused manner with little margin for error. In addition, these missions require close coordination between the pilot and other crew members to accomplish the task and to maintain safety. In order to make ACETA missions safe and efficient, NPS and vendor personnel must have the knowledge, skills, training, and experience to function in this high-risk environment.

NPS personnel will familiarize themselves with the examples and definitions found in the appendices at the end of this plan. The NPS uses subject matter experts and/or training specialists for enhanced training either through manufacturer-certified trainers and/or NPS-approved trainers.

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Chapter 1 - GENERAL INFORMATION

1.1 Purpose

This *NPS ACETA Operations Plan* outlines policies, procedures, qualifications, and equipment for aerial capture, eradication, and tagging of animals (ACETA) as a supplement to 351 DM 2.3A and the DOI ACETA Handbook. ACETA has been identified as a unique high-risk special use activity that requires specialized training and qualifications. Creating a program for wildlife capture, eradication, or tagging involves many facets of resource management and planning. Training, qualifications, and equipment for the aviation components will be covered in this Operations Plan; however, other aspects must be considered in a comprehensive plan (Fig. 1). ACETA operations should only be considered after all non-aviation options have been explored.

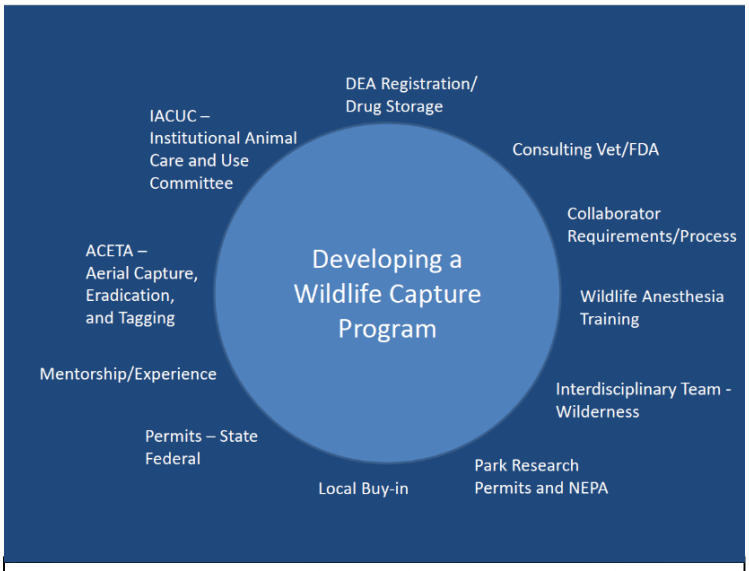


Figure 1. Illustration of many of the components of a wildlife capture program. Only the aerial aspects will be covered in this plan; however, additional training, coordination, and qualifications are needed for other components.

Some of the following activities are not considered ACETA but may be used in conjunction with ACETA: hazing, herding, and radio telemetry.

It is the responsibility of each NPS-approved ACETA program/project to ensure ACETA training, project planning, wildlife capture, handling standards, firearms safety training and qualifications, and standards for immobilization drug training are provided to personnel that participate in ACETA operations.

This Operations Plan does not address issues associated with the training of personnel in the handling of wildlife, DO #77-4, (Use of Pharmaceuticals for Wildlife) or firearm qualifications. The Biological Resources Division, part of the NPS Natural Resource Stewardship and Science Directorate should be consulted for questions regarding wildlife field anesthesia.

This *NPS ACETA Operations Plan* pertains to all NPS ACETA operations conducted with aircraft and aircrew procured through the Office of Aviation Services (OAS) managed under DOI and NPS aviation policy as well as other bureau personnel and cooperators that may be involved in NPS ACETA operations.

For operations utilizing the On Call ACETA helicopter contract, when the vendor provides all services, refer to the Master On-Call ACETA contract found on the DOI Acquisition Services - Contracts & Agreements web page found on the OAS website.

A. Departmental and NPS Policy

All aircraft operations will be conducted within DOI and NPS aviation requirements and policy. Operational control of the project must be established prior to any flight operations. The pilot-in-command has full and final authority over operation of the aircraft. No one shall pressure the pilot into performing operations beyond the capabilities of either the aircraft or pilot. Any personnel in ACETA operations have the obligation and duty to prevent or terminate flight operations that they feel are unsafe, overly hazardous, or not in compliance with DOI/NPS policy.

B. NPS Operations

Only trained an approved NPS personnel may participate in actual ACETA operations. NPS personnel must be qualified for the specific type of operations to be performed (i.e., darting, net gun, mugging, Single Skid, Toe-In and Hover Exit/Entry Procedures (STEP) operations, etc.) Personnel can only be qualified in a NPS-approved ACETA training course. Regional Aviation Managers or their designee must provide approval for students to attend ACETA training.

NPS park units must initiate a written agreement with cooperators performing ACETA missions.

C. Firearm/Capture Device Safety

All ACETA gunners employing a firearm or capture device must be certified per the standards set by their park unit, program chief, Chief Ranger and/or Senior Law Enforcement Officer.

All ACETA projects/programs must have their own purchased and approved equipment per the standards found in this Operations Plan. It is important that ACETA personnel are trained in proper use, care and inspection of this equipment. All firearms/capture devices will be maintained, cleaned and operating properly. No NPS personnel are allowed to modify or alter the firing device. Other than simple field repairs/maintenance per manufacturer's recommendations all firearm/capture device repairs must be made by a certified gunsmith or manufacturer's certified personnel.

Except for equipment specified in a procurement document, all NPS ACETA gunners will not use vendor, cooperator or contractor equipment for any NPS operational control ACETA missions.

All gunners are responsible to adhere to all federal, state and local laws that apply to the firearm/capture device. This may include proper transport, security, and packaging of the device.

For environmental contamination considerations, only non-lead ammunition should be used (Get The Lead Out Initiative). If safety is compromised due to possible ricochet based on terrain, aircraft type, or other factors lead-based ammunition may be considered via approval by the park's Regional Director.

Net guns shall be Bureau of Alcohol, Tobacco and Firearms (ATF) approved or be registered and meet the requirements under the National Firearms Act (26 USC. Chapter 5 of 27 CFR Part 470). Documentation of approval or registration of the net gun must be provided. Any net guns that are not approved/registered by the ATF will not be allowed. NPS ACETA personnel will not use vendor or other agency equipment for ACETA.

1.2 Approval

ACETA programs and projects must be approved at the appropriate level.

A. New ACETA Program Requests

Requests shall be forwarded to and approved by the NPS Director or their delegate, per Reference Manual 60, Aviation Management (RM-60). Requests shall include a copy of the NPS Enhancement Application and the proposed local ACETA operations plan, signed by the RAM, describing when and how ACETA will be used. The operations plan must use a Go/No-Go process for risk management purposes**.** Plans must comply with agency and departmental policies and guidelines. A copy of the NPS approval will be provided to the Director of OAS.

B. ACETA Projects (One time or Infrequent basis)

Park units should coordinate with their RAM. Avenues to accomplish ACETA projects include:

1. Use of the DOI On-Call ACETA contract with qualified NPS ACETA personnel on board.
2. Procuring services through the DOI On Call ACETA contract, ordered with vendor-supplied personnel.
3. Use of an end product contract.

1.3 REVISIONS to the NPS ACETA Operations Plan

The NPS National Aviation Office will initiate a review of this Operations Plan every three (3) years or when applicable Federal Aviation Administration (FAA), DOI, or NPS aviation policies/regulations change, or when this plan no longer adequately meets the needs of the ACETA programs.

Chapter 2 - AIRCRAFT - PILOT APPROVALS & REQUIREMENTS

2.1 ACETA Aircraft Procurement

Requests for aircraft services must be in compliance with NPS policy at the local, regional and national level. The contractor that is requested must be approved by OAS for the specific ACETA activity required for the project. Current On-Call ACETA contractor rates and information are available from the NPS RAM or via the OAS website that lists Acquisition Services-Aviation Resources. Official lines of authority exist to administer aviation contracts.

2.2 Aircraft

A. Airplane

1. Approvals

Airplanes associated with ACETA are primarily used for radio tracking, survey, flight following, spotter and reconnaissance purposes. The aircraft may need to be approved for various missions, e.g. low level operations, off-airport landings and reconnaissance. If airplanes are to be used in any other capacity, additional approvals and procedures will need to be developed.

2. Equipment

Airplane must be equipped with communication systems; FM radio, satellite telephone or other means that are capable of establishing and maintaining contact with other aircraft, ground or dispatch personnel at all times during ACETA operations.

B. Helicopter

1. Approvals

Helicopters will meet all standards for equipment and performance required in the ACETA procurement document or DOI fleet aircraft standards. The aircraft will be inspected an approved by OAS for ACETA before the aircraft can be used in any ACETA operation. Not all make and models are compatible with ACETA operations.

Load Calculations are required for every ACETA mission. The interagency Helicopter Load Calculation shall be completed per the instructions for Form OAS-67/FS 5700-17. Load capacity of the helicopter skids must also be verified as some make and models have a maximum load stress capacity on skids while performing a hover. This could restrict STEP procedures.

2. Performance

Aircraft limitations shall be adhered to during all operations. Helicopters provided should meet the minimum performance in at least one of the following categories. *OPM-32, ACETA Helicopter Performance* .

NOTE: Special OAS approval for aircraft other than above may be requested where justified and warranted. In order to safely and successfully complete the mission, the helicopter must be capable of meeting the performance required. Payload, hover ceiling, airspeed, and fuel requirements need to be considered in selecting the proper aircraft. Use actual aircraft weight, pilot weight, passenger weights, cargo weights, and required fuel using the load calculation and performance charts to determine if the aircraft meets the hover out of ground effect (HOGE) performance.

a. The aircraft must meet hover HOGE performance for the highest anticipated density altitude (DA).
b. Minimum aircraft requirements: 3 seats (1 pilot, and 2 passenger seats) and 180 horsepower output.
c. Above listed performance may be reduced for projects where less than two air crewmembers are required.

3. Equipment

a. The helicopter must be equipped with one of the following three intercom systems to allow hands free communication by the gunner to the pilot and other ACETA personnel onboard.
    1) "Hot" microphone for the gunner with a manual on/off switch. (Periods of operation will be covered in pre-flight briefing).
    2) Voice activated intercom system.
    3) Foot pedal push-to-talk (PTT) intercom system, mounted at the gunner's position and able to be activated while in gunner's position.
b. Aircraft must be equipped with communication systems; programmable FM radio, satellite telephone or other means that are capable of establishing and maintaining contact with other aircraft, ground or dispatch personnel at all times during ACETA operations.
c. Approved ACETA aircraft may at times require the installation of a sliding door, removable door or door equipped with a shooting window.

4. Rapid Refueling

   When identified in the project aviation safety plan (PASP), as provided in the On Call Contract rapid refueling can be requested:

   a. To facilitate safety

   b. To enhance performance

   c. For operational considerations

2.3 Pilot Approval & Requirements

The pilot is an essential part of any aviation mission and must be made an integral part of a team effort whose objective is flight safety and efficiency. The pilot is in command of the aircraft and has ultimate responsibility under the FAA and the DOI regulations for the safety of the aircraft and its occupants.

All pilots must pass a flight evaluation given by a qualified OAS pilot inspector in accordance with the Interagency Airplane and Helicopter Practical Test Standards and be approved for the specific special use involved prior to performing any operation. The helicopter pilot's card will be issued with the appropriate endorsement for the activity in which they are to participate. (see Table 2.1.)

A. Airplane Pilot

1. Participates in risk analysis and Go/No-Go decision prior to and during the ACETA mission.
2. Coordinates with other aircraft participating in the ACETA mission.
3. Understands ACETA techniques, and operational concerns.

In addition, the pilot must meet the following requirements:

1. 10 hours pilot in command (PIC) in make, model in last 12 months.
2. 200 hours PIC in category in low-level operations to include 10 hours PIC over typical terrain within the last 12 months if low-level operations are required.
3. If conducting ACETA operations, 50 hours experience as pilot in aerial eradication operations, or a DOI-approved ACETA training course.

B. Helicopter Pilot

1. Participates in risk analysis and Go/No-Go decision prior to and during the ACETA mission.

2. If necessary, prior to operation performs a live mock-up with gunner, mugger and spotter (as applicable).
3. If STEP is involved, performs a mock-up with applicable personnel per Chapter 5.
4. Coordinates with gunner in determining a "shoot" or "no shoot" situation.
5. Coordinates with other aircraft pilots participating in the ACETA mission.
6. Understands ACETA techniques and operational concerns.
7. Demonstrates ability to work with the ACETA personnel.
8. Completes annual operational training with the park unit per Chapter 3.
9. Pilots must receive firearm/capture devices and chemical immobilization briefing as appropriate to the mission.

In addition, the pilot must meet the following requirements:

1. 10 hours PIC in make, model and series in last 12 months.
2. 200 hours PIC in category in low-level operations, including 10 hours over typical terrain within the last 12 months.
3. 50 hours experience as PIC helicopter in aerial eradication, net gunning, darting, or tagging/marking operations in which the helicopter was consistently flown and maneuvered close to the surface or a DOI-approved ACETA training course.
4. If the ACETA PASP requires STEP landings and exit methods, the pilot must be trained and approved for STEP.
5. Vertical reference skills to include precision longline placement of fragile loads (animals) via an external cargo load may be required depending upon the proposed project.

NOTE: Inventory (counting animals) is not considered ACETA and can be accomplished with aircraft approved for low level missions.

2.4 ACETA Endorsements

Pilots will receive only the endorsement for which they are approved. The following table lists the endorsement and explains the activity allowed under that endorsement. It is extremely important for the users to review *Appendix A, Definitions* section of this Operations Plan to understand what each activities entails and thus ensure that the pilot possesses the proper endorsement for the mission being conducted.

Helicopter Pilot Endorsements For ACETA Operations		
Endorsement (in order of low to higher risk)	**Hazards/Risks**	**Pilot Skills/Carding Required**
A. Herding > 50′ AGL	Possible contact with trees/snags, animal behavior is unpredictable, frequent and abrupt aircraft maneuvers required.	Low level & STEP (if aircrew is on board)
B. Eradication > 50′ AGL (flown high as possible)	Use if firearms from aircraft, depending on ammunition & altitude: ricochets can strike/damage aircraft or errant shot can penetrate rotor blades or other parts of aircraft. Brass from ammunition FOD (foreign object damage).	Low Level & STEP
C. Capture- Darting Projectile Operations > 50′ AGL	Inadvertent drug exposure, LTE, settling with power, requires herding, maneuvering to accomplish shot placement. Exceptional crew resource management required between crew. The higher these actions are performed the chance of ground/vegetation strike risk is reduced.	Herding, Positioning, Pursuit, Vertical Reference Long Line, STEP and Chemical Immobilization
D. Capture – Trapping < 50′ AGL	Aircraft contact with ground/vegetation or manmade obstacles (fence or wires). Precision herding. Extremely low altitude required to get animal into trap. Maneuvering in trap wings with frightened, unpredictable animals greatly increase ground/animal/trap strike risk in confined area.	Herding, Low Level and STEP (if aircrew is on board)
E. Capture – Low Altitude Projectile Operations (darting/paint, balls/nets)	Aircraft contact with ground/nets/darts, LTE, settling w/power. Requires herding, extreme low altitude and abrupt aircraft maneuvering to accomplish shot placement. Exceptional CRM required between crew.	Herding, Positioning, Pursuit, Vertical Reference Long Line, Low Level, STEP and Chemical Immobilization (as appropriate)

***Inventory (counting animals):** This is not considered ACETA; however, it is a skill set pilots should have before being approved for "Classification."

***Classification (gaining information about a group of animals):** This is not considered ACETA; however, it is a skillset pilots should have before being approved for other ACETA missions.

CHAPTER 3 - ACETA PERSONNEL Qualifications & Requirements

3.1 Position Qualifications

Depending on the ACETA mission, all positions may not apply.

A. Project Aviation Manager

A project aviation manager has overall responsibility for the ACETA missions. See RM-60 for duties and training requirements. This person may or may not be onsite for the ACETA mission.

B. Resource Helicopter Manager

A qualified helicopter manager is required for all ACETA missions that use helicopters. The helicopter manager may or may not be involved in the ACETA mission as a gunner or mugger. Depending upon the complexity of the mission a standalone manager may be warranted.

1. Qualified and current per RM-60.
2. May perform duties of project aviation manager per RM-60.
3. Performs duties of resource helicopter manager in accordance with Interagency Helicopter Operations Guide (IHOG).
4. Pre-inspection of aircraft to ensure compliance with the On-Call ACETA helicopter contract.
5. Familiar with rigging the aircraft for ACETA operation to be performed.
6. Provides expertise for external cargo.

C. ACETA Instructor

A NPS unit, region, or program will recommend personnel to be designated as an instructor for each ACETA area of specialty. Designation of ACETA instructors shall be approved and renewed annually by the RAM in the form of a letter of authorization. In addition to meeting all ACETA gunner specialty requirements, instructors must have:

1. Required Certifications
    a. Qualified and current as resource helicopter manager per RM-60.
    b. Qualified in the sub specialty they instruct, e.g., net gunning, darting, marking, eradication, etc.

2. Additional Skills & Knowledge

a. Maintains currency as a gunner with minimum of two years experience.
b. Have demonstrated ability as an instructor and assisted in the training of at least two ACETA gunners.

D. Gunner

This person is the primary air crew member responsible for the safe discharge of a firearm/capture device from the aircraft, while in flight, to accomplish the specialty ACETA operation for which they are qualified.

1. Required Certifications
    a. Qualified and current as resource helicopter crewmember (HECM) per RM-60.
    b. Current certification for A-110, Interagency Aviation Transport of Hazardous Material and A-200, Aviation Mishaps Review (required every three years).
    c. Current certification for STEP.
    d. Meets park/program firearm/capture devices qualification training.
    e. Meets requirements in DO-77-4, *Use of Pharmaceuticals for Wildlife,* when applicable.
    f. Current 1st Aid and CPR.

2. Additional Skills & Knowledge
    a. Experienced in animal mugger/handler duties; the gunner is usually the last mugger out of the aircraft.
    b. Familiar with animal behavior, habitat and how to restrain an animal effectively, efficiently, and safely.
    c. Coordinates and confirms animal selection and capture strategy with pilot.
    d. Demonstrates ability to inspect, care for and maintain ACETA equipment.
    e. Demonstrates ability to rig the helicopter for ACETA, provide a safety briefing and conduct a safety check of ACETA personnel without procedural error.
    f. Demonstrates knowledge of emergency procedures (e.g., exposure to wildlife pharmaceuticals, aircraft emergencies, etc.).
    g. May prepare or assist in preparation of an animal for sling loading including hover hookups.
    h. Trained and competent to shoot from seat positions in the aircraft as necessitated by aircraft weight and balance, ACETA operation and in coordination with the pilot.

E. Mugger/Handler

This person, while airborne, may assist the pilot with hazard identification and flight following. On the ground the mugger is responsible for assisting the gunner with the capture and as applicable, preparing the animal for transport.

1. Required Certifications
    a. Qualified and current as resource HECM per RM-60.
    b. Current certification for STEP, if required for the operation.
    c. Meets requirements in DO-77-4, *Use of Pharmaceuticals for Wildlife*, when applicable.
    d. Current 1st Aid and CPR.

2. Additional Skills & Knowledge
    a. May act as spotter during flight; identifies hazards or potential hazards observed and communicates with pilot and gunner during flight. Notifies immediately if evasive action is necessary.
    b. Prepares or assists in preparation of an animal for sling loading including hover hookups.
    c. Familiar with helicopter rigging per Chapter 5 for ACETA operations.

F. Observer Helicopter (Spotter)

This person, while airborne, may assist the pilot with hazard identification and flight following. The spotter assists in locating target animals by visual means or radio telemetry.

1. Required Certifications
    a. Qualified and current as a resource HECM per RM-60
    b. Current certification for STEP, if required for the operation.
    c. Meets requirements in DO-77-4, *Use of Pharmaceuticals for Wildlife*, when applicable.
    d. Current 1st Aid and CPR.

2. Additional Skills & Knowledge

a. Identifies hazards or potential hazards observed and communicates with pilot and gunner during flight. Notifies immediately if evasive action is necessary.

b. Notifies and guides capture aircraft and ground personnel to location of animals.

c. Provides radio coordination and flight following assistance for capture aircraft.

d. May monitor status of animals and/or assist with processing once the capture has occurred.

G. Observer Airplane (Spotter)

This person, while airborne, may assist the pilot with hazard identification and flight following. The spotter assists in locating target animals by visual means or radio-telemetry.

1. Required Certifications
   a. Qualified and current aircrew per RM-60.
2. Additional Skills & Knowledge
   a. Identifies hazards or potential hazards observed and communicates with pilot during flight. Notifies immediately if evasive action is necessary.
   b. Notifies and guides capture aircraft and ground personnel to location of animals.
   c. Provides radio coordination and flight following assistance for capture aircraft.
   d. May monitor status of animals.

NOTE: If miscellaneous ground crew, e.g., fuelers**,** veterinarian, animal handlers and/or data collectors must be transported by helicopter they are required to be qualified helicopter crew members (HECM) or transported by qualified HECM(s). For personnel to be transported by airplane per NPS policy, they must meet the qualifications of an aircrew member or be transported by qualified aircrew members per RM-60.

3.2 Training and Proficiency Requirements

A. Goal

NPS employees shall be trained and qualified in accordance with this ACETA Operations Plan (*see Appendix B*) and established DOI/NPS-specific policy, guidelines, procedures, and training requirements. All cooperators (federal, state, universities, and others) shall comply with these requirements and guidelines when NPS has operational control. If the ACETA operation is performed via an end product contract, where NPS does not have operational control, refer to OPM-35, *Identification of End Product/Service and Flight Service Procurement.*

Demonstration of equivalent training, advanced training and certification by other NPS approved federal or state agency, university, or manufacturer certified trainer and others may

be substituted as determined and approved by the NPS National Aviation Office. Requests for ACETA aviation safety training shall be made through the RAM. All NPS ACETA Training requests will use the request form in *Appendix G*.

B. Objectives

ACETA proficiency will be maintained in accordance with the requirements listed below. More frequent proficiency intervals may be identified in the ACETA PASP. ACETA programs may also add this to the park aviation management plan. ACETA proficiency may also be acquired through routine live helicopter mock-up mission but must be approved by the ACETA project manager and documented.

C. ACETA Training, Currency and Proficiency

If a 180-day period passes without an operation or live mock-up, prior to a mission, a static mock-up per this plan must be conducted and documented using an approved ACETA fleet or vendor pilot and gunner. If 365 days are exceeded, a required ACETA refresher training is required. (See *Appendix G* for training documentation).

ACETA Initial Certification, Currency and Proficiency Requirements Matrix			
Position	**Initial Certification**	**Currency**	**Proficiency Requirements**
ACETA Instructor	Qualified gunner. Attend an NPS-approved advanced ACETA training course.	Teach or co-teach an ACETA course every three years.	Current ACETA Qualified Gunner within 365 days **OR** Current ACETA Net gunner within 180 days Every three years attend or instruct an advanced ACETA training session consisting of at least 24 hours of approved training.
ACETA Net Gunner	Attend the initial ACETA course with a Net Gunning module. Complete minimum of three live mock-ups without procedural error.	Attend ACETA Refresher every 3 years.	Deploy 3 nets in the last 180 days without procedural error during either actual mission or live mock-up. **OR** Attend an advanced ACETA training session consisting of at least 24 hours of approved training.
ACETA Dart Gunner (Marking/Paint Ball)	Attend the initial ACETA course with a Dart Gunning module. Complete a minimum of three live mock-ups without procedural error.	Attend ACETA Refresher every 3 years.	Complete three actual, live or static mock-ups in the last 365 days without procedural error. Maintain currency with Chemical Immobilization protocols if appropriate.

ACETA Initial Certification, Currency and Proficiency Requirements Matrix			
ACETA Eradication Gunner	Attend the initial ACETA course with an Eradication Gunning module. Complete a minimum of three live mock-ups without procedural error.	Attend ACETA Refresher every 3 years.	Complete three actual, live or static mock-ups in the last 365 days without procedural error.
ACETA Mugger/Handler	Attend the initial ACETA course.	Attend ACETA Refresher every 3 years.	Maintain appropriate training as required per job description.
Ground Crew	HECM if involved in operations involving helicopter.	Maintain in accordance with RM-60.	Maintain appropriate training as required per job description.

NOTE: A-312, *Water Ditching and Survival* is required if ACETA operations over water will be conducted beyond gliding distance from shore.

3.3 Documentation

Training and qualification(s) of ACETA personnel will be documented by the approved NPS ACETA Instructors and the requesting unit personnel. Copies of this documentation must be forwarded to the RAM. The initial documentation and follow-up proficiency will be documented on Form PD-01 found in *Appendix G.*

3.4 Cooperators

All cooperator personnel on ACETA missions under operational control of the NPS will meet all requirements of this operational plan.

Cooperator aircraft carrying NPS personnel on ACETA missions must be approved by the process contained in 351 DM 4, *Cooperator Operations*.

Chapter 4 - EQUIPMENT FOR ACETA OPERATIONS

4.1 Personal Protective Equipment (PPE)

A. Aviation Life Support Equipment (ALSE)

Project leaders and helicopter managers shall ensure appropriate and adequate ALSE is properly used onboard the aircraft. Detailed information is contained in the *ALSE Handbook*.

Suggested additional items:

- Microphone cover (wind reduction for flight helmet)
- Pocket Knife, Electrical tape, painters tape (net gunning)
- Strobes and signal mirrors
- Personal Locator Beacon (PLB)
- Personal survival kit
- Eye protection meeting ANSI standard Z87.1

NOTE: Due to environmental considerations, deviations from the PPE requirements of the ALSE Handbook may be required. Per RM-60, an *Enhancement Application* is required for waivers from policy.

B. Seat Belt

Seat belts must be worn as the primary restrain at all times through duration of flight. All non-shooting (observer/spotter) personnel seated the front passenger position must wear the full seat restraint system. Seat belt extensions are commonly used to allow gunners to position properly.

NOTE: Per the *ALSE Handbook*, a lap belt (no shoulder harness) may be used if there is a valid operational or safety requirement. With pilot concurrence, gunners may choose to utilize the lap belt only in order for proper firing positioning during training or an actual ACETA missions. The shoulder harness must be secured in the aircraft.

C. Secondary Restraint Devices

In addition to the seat belt, all gunners shall wear a secondary restraint during doors off or open operations; the secondary restraint device must consist of an approved full body harness. Refer to the *Aviation Life Support Equipment Handbook*, Chapter 2.4, "Aircrew Member Secondary Restraint System." **Gunner straps are not allowed at any time**.

1. Approved **Full Body Harnesses** will meet 29 CFR 1910.66, or 1926.502, or ANSI Z 359.1 Additionally, it is recommended that these devices have no plastic parts or pass through buckles.
    a. Must be commercially made, or manufactured by an FAA Master Rigger.
    b. Inspect harness frequently for wear or other damage (stitching, buckles, webbing abrasion, etc.).
2. In conjunction with the harness, a safety strap, per 29 CFR 1926.502(e), is required that consists of either an approved tether or harness tether/tether attachment per MTDC drawings #946 and #993 is required. See *Appendix I.*

NOTE: No secondary restraint device will be required when the aircraft is equipped with an approved shooting door and operable window that will safely allow a firearm/capture device to be utilized. Operations are restricted to eradication, darting, and marking/paintball. Net gunning is not allowed through a window opening.

D. Carabiners

All carabiners used for ACETA will be of a locking screw-gate (1), twist or auto-lock design (2). Both steel and aluminum are approved. Inspect carabiners frequently for proper function of gate and locking mechanisms, abrasion, burrs, rough edges, etc.

NOTE: Load carabiners longitudinally. If the load occurs on the side, i.e., cross gate loading, failure may occur. If screw-gate carabineers are used, be aware of the potential for vibration-induced movement of the locking mechanism.

E. Knife

A knife suitable for rapid cutting shall be worn and accessible for emergency use.

4.2 Firearms and Capture Devices

Parks and programs anticipating ACETA operations will consider the condition of the following equipment and consider the need for it in their planning process.

A. Firearms

1. Authorized ammunition (i.e., non-lead)
2. Quantity of ammunition sufficient

B. Net guns

1. Quantity of nets, weights, canisters sufficient
2. Canisters loaded properly (weights not cross loaded)
3. Weights tested prior to use

C. Dart guns/ delivery devices

1. Number of darts needed (needed to be constructed?)
2. Need for and number of human antagonist kit required?

D. Hazing guns

E. Paint/marking guns

F. Additional capture equipment:
e.g. collars, blindfolds, hobbles, data collection equipment, wildlife pharmaceuticals, transport bags, external load equipment, drive and corral traps (as needed).

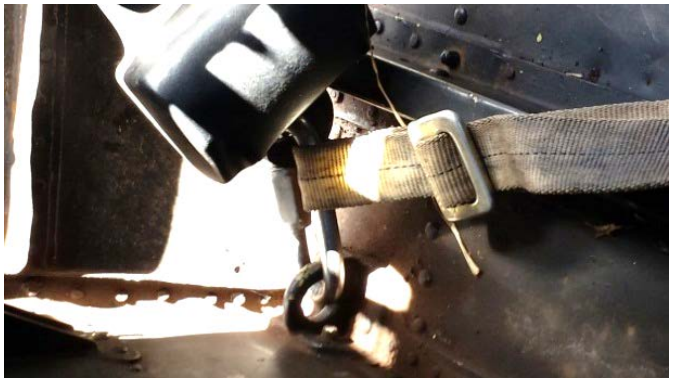
4.3 Equipment Rigging and Management

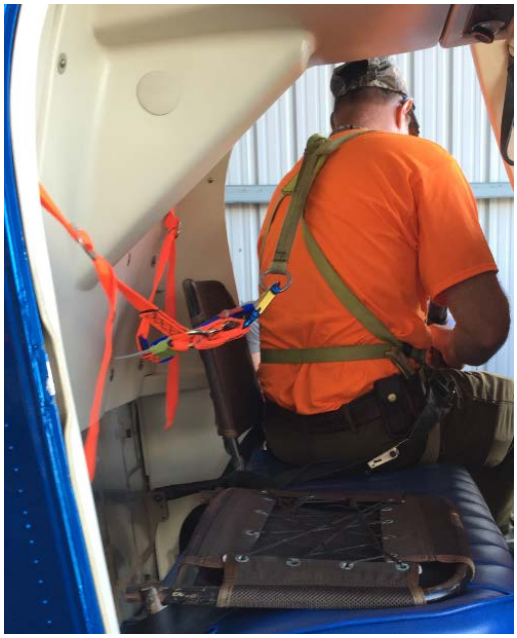
A. Full Body Harness and Rigging Attachment Points

All NPS ACETA Gunners are required to utilize a secondary restraint system when flying during doors off or open operations.

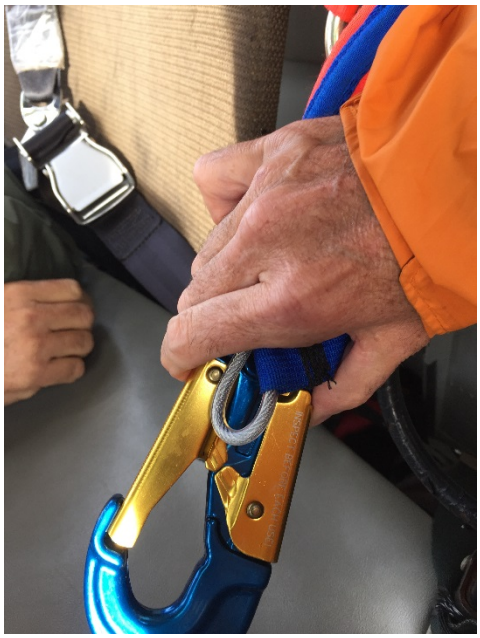
1. A full body harness with either a sewn-in tether or that is attached by approved carabiners to a tether. The tether shall be attached to the aircraft in accordance with the ALSE handbook.
2. The full body harness need must be secured and rigged in a manner that allows the gunner to quickly release it from the aircraft in order to exit the aircraft to assist on the ground or in the event of an emergency.

Examples of Approved Anchors (seat belt anchor):





Example of Harness, with Sewn in Tether



Example of Quick Release Capability

B. Equipment Management

All personal items and equipment must be secured in the aircraft. There must be a device or method to secure the firearm/capture device when the gunner has left the aircraft. Personnel who exit the aircraft in the course of operations will be required to have a means of communicating with the pilot.

Secured Netgun

Secured Gear Bag

1. **Eradication Gunner**

   a. All extra clips, ammunition and operation-specific equipment must be placed in a container and secured in the aircraft within reach of the gunner.

   b. All semi-automatic firearms will be required to have an approved manufactured round deflector for all ACETA missions.

   c. There must be a device or mechanism to secure the net gun when the gunner departs the aircraft.

2. **Net gunner/Mugger**

   a. Net canisters should be pre-loaded on the ground and nets secured with tape or Velcro within the canister; blue painters tape is recommended for warm weather, green painters tape for cold weather.

   b. All nets must be inspected for damage and repaired if necessary.

   c. Gunners are responsible for proper packaging of the net canisters to avoid cross over and entanglements during deployment.

   d. All extra nets, canisters, rounds, capture bags and operation-specific equipment must be placed in a container and secured in the aircraft within reach of the gunner.

   e. Gunners are required to immediately secure the empty canisters in the aircraft after discharge of nets.

   f. There must be a device or mechanism to secure the net gun when the gunner departs the aircraft.

3. **Dart Gunner/Mugger**

   a. Darts should be pre-loaded prior to flight.

   b. All extra darts and pharmaceuticals must be in a spill resistant container and secured in the aircraft within reach of the gunner.

   c. Assure proper equipment to remove projectile from the dart gun/ capture device is available (e.g., push rod).

   d. All personnel will carry a human antagonist kit, if appropriate, for the immobilization drug being used.

   e. There must be a device or mechanism to secure the dart gun when the gunner departs the aircraft.

Chapter 5 - OPERATIONS

5.1 Operational Requirements

A. Pre-Mission Requirements

Per IHOG, all NPS ACETA aviation missions require a minimum of three (3) personnel (Helicopter Manager and 2 Helicopter Crewmembers). Before the first flight of the day, a comprehensive briefing consisting of a minimum of the items below must be conducted. Subsequent briefings will be conducted prior to each day's operation.

1. **Job Hazard Analysis (JHA).** Create, review and update as necessary all related JHAs. Procedures for developing JHAs can be found in RM-50B. Special attention should be paid to section 4.15 (*Safe Work Practices for Employees Handling Wildlife*). *See Appendix H*.

2. **Project Aviation Safety Plan.** Per DOI OPM-06, PASPs will be developed for all special use missions. Chapter 10 of RM-60 further defines the minimum requirements for PASPs. Flight plans should be incorporated into the PASP. RAMs must review and sign all ACETA PASPs. Project planning will insure that a current Aviation Mishap Response Plan is available to dispatcher and/or flight follower. (See the PASP Template in Appendix 3 of RM-60).

3. **Pilot and Aircraft Approvals.** The helicopter manager assigned to the project will examine pilot, aircraft, and fuel truck approval cards to ensure current qualification for the intended ACETA missions. If there are problems with pilot, aircraft, or fuel truck approval, flight will not occur until the local aviation manager/dispatch has been notified and discrepancies have been resolved.

B. Mission Requirements

1. **Pre-Mission Briefing**. The pilot, project manager, dispatch, aviation/helicopter manager, and all personnel involved in the project shall review the entire plan including the mission objective, Go/No-Go Checklist, project schedule, aerial hazard map, radio frequencies, flight following procedures, PPE requirements, animal euthanasia/humane killing protocol, plan for human exposure to wildlife drugs, communication protocols/hand signals, emergency procedures, (to include proper crash position for lap belt only) etc**.**

2. **Weight and Balance.** Load calculations must be completed in accordance with procurement documents and DOI Departmental Manuals. All aircraft limitations shall be adhered to during all aircraft operations. *OPM-32, ACETA Helicopter Performance* provides additional guidance on minimum aircraft performance standards for DOI.

3. **Preflight Briefing.** The pilot must provide an aircraft orientation and a safety briefing to crewmembers, passengers, and ground personnel at the beginning of the project. Whenever crewmembers or passengers are flown, a preflight safety briefing will be conducted. The OAS-112 *Aviation Operations Checklist* may be used to facilitate this briefing.

4. **Radio Programming / Communications Test.** Prior to flight, all frequencies and tones identified in the PASP will be programmed into the aircraft radios. A functional test will be conducted between aircraft and ground crew, between aircraft and dispatch, and between ground crew and dispatch. Cellular phone and/or satellite service from the operational site should also be functionally tested if applicable.

C. Flight Plans and Flight Following

All flights under the operational control of NPS will be conducted under an approved flight plan. Approved flight following methods will be utilized. Examples of flight plans can be found in RM-60.

During all flights, a qualified flight follower will be available as a contact point for initiating the Mishap Response Plan in the event of aircraft mishap. The flight follower must provide continuous radio, satellite phone, or automated flight following. Communications must be monitored and personnel must know the mishap response plan and implementation procedures.

1. Flights between the project area and the local overnight base (beginning and end of day) will be flight followed by local dispatch.
2. If the aircraft is to remain overnight at the project site and on-site flight following has been utilized, dispatch or the park flight follower must be notified whenever helicopter operations begin or end for the day.
3. In addition, dispatch or the park flight follower must be informed of planned helicopter or spotter aircraft activities for the following days to adequately staff, plan, and coordinate airspace if needed.
4. ACETA personnel seated in the front of the aircraft, if they will be performing flight following duties, must have the ability to communicate over the aircraft's radios to complete flight following requirements.

Local or On-site Flight Following: If a pilot is in continuous communication with a ground crew or in visual range of a ground crew, in visual range of another aircraft this is known as "local" or "on-site" flight following. This is an acceptable means of flight following when the following provisions are met:

1. The NPS helicopter manager or their designee, is conducting and recording check-ins (flight following log). The assigned individual(s) may perform other activities as long as they do not detract from their flight following function.
2. The on-site flight following designee has continuous visual or radio contact with the aircraft and positive communications (radio or telephone) with local dispatch at all times.

5.2 Pre-Flight Equipment Checks

These final checks should be accomplished right before the commencing the mission, prior to take-off.

A. **Weapons Check**

- ✓ Firearm/ capture device ready for operations.
- ✓ Spent casing (brass) deflectors/containment in place (if applicable)
- ✓ Sufficient ammunition, darts, net canisters, or paintballs are preloaded and ready for use.

NOTE- Loading nets into canisters and filling darts should only occur on the ground.

B. **Personnel Safety Check**

Prior to a mission, each individual will check themselves and/or their partner from head to toe. This inspection will be adapted to the specific mission.

- ✓ Helmet properly fitted, chinstrap fastened
- ✓ Eye protection secured
- ✓ Fire resistant clothing properly worn
- ✓ Collar up and flight gear completely zipped/buttoned up
- ✓ Gloves (Nomex or leather shooting gloves)
- ✓ ALSE approved footwear
- ✓ Survival gear carried on body, as needed
- ✓ PFD (if operating beyond gliding distance to shore)
- ✓ Approved full body harness (when required)
- ✓ Approved tether(s)
- ✓ Inspect stitching and webbing for abrasion, wear or other damage

- ✓ Carabiners
- ✓ Seat belt cutter or knife attached to personnel
- ✓ Hand held radio operational, correct frequency, extra battery
- ✓ Hobbles/Blindfolds, capture equipment bag(s) (as appropriate)
- ✓ Human drug reversal/antagonist kit (as appropriate)
- ✓ Sha

C. **Helicopter Equipment Check**

- ✓ Cargo – secured all cargo and remove items not essential to mission
- ✓ Anchor system for tethers installed, tested and secure
- ✓ Ammunition, darts, net canisters security established
- ✓ Seatbelts secured and operational
- ✓ Maps and mission information secured, but accessible
- ✓ Door with approved shooting window installed (if applicable)

- ✓ Onboard radios/intercom system (ICS) operational (foot pedal PTT secured, if used)
- ✓ Automated flight following operational
- ✓ 1st Aid & Survival Kits onboard

D. **Mock-ups**

- ✓ ACETA live or static mock-up accomplished if an operational mission hasn't occurred in the past 180 days.
- ✓ Perform STEP mock-up(s) if required per OPM-40, *Single-Skid, Toe-In, and Hover Exit/Entry Procedures (STEP) Operations.*

5.3 ACETA In-flight Mission Duties

A. Reconnaissance

- A helicopter/airplane locates target species and coordinates the capture in accordance with PASP
- Coordination with spotter aircraft for animal location (if applicable)
- Known animal locations and specific tactics.
- Search patterns
- Determine fuel cycles
- Spotter/pilot coordinate with spotter aircraft for collision avoidance (if applicable)
- Spotter/pilot flight following duties

B. Identify Target Species

- Approach routes and animal position
- Best time to approach
- Anticipate likely reactions to aircraft by the animal
- Spotting and engagement actions
- Crew coordinate on target selection
- Shooting and terrain precautions

C. Initiate Capture/Eradication Operation

- Flight Profile
- Pilot places and maintains aircraft in position for animal capture/ eradication
- Gunner communicates verification of target and prepares to shoot
- Gunner verifies with crew success of attempt and next action
- Communicates to crew that the firearm/capture device is safe and secured

D. Deploy Personnel

- STEP procedures or determination of aircraft landing
- Crew coordination
- Gunner/mugger, when warranted, assists pilot in clearing landing zone

- Non-verbal and hand signals to be used, if needed

E. Animal Management

- Personnel checks on welfare and performs primary care of captured animal
- Prepares animal for transport (if applicable)
- Processes animal (if applicable)
- Ground crew maintains communication with pilot, advises as necessary
- Maintains awareness for helicopter overhead – pilot may be trying to communicate
- Personnel may be relocated to the capture site as needed

5.4 Post Operations

A. Post mission debrief can include After Action Review (AAR)

B. File SAFECOM (as necessary)

Chapter 6 - EMERGENCY PROCEDURES

Pre-planning for emergency procedures is a critical component of risk management. Accordingly, ACETA programs must evaluate and discuss potential scenarios and actions that may best mitigate any associated hazards. Training for effective crew resource management should be a part of this process.

This chapter deals specifically with aviation related ACETA emergency procedures. Additional training, experience is required to address animal health and welfare-related emergencies.

6.1 Interagency Aviation Mishap Response Plan

All NPS ACETA projects must review and update their Interagency Aviation Mishap Response plan to include the additional site specific Emergency Response Plans and Search and Rescue plans applicable to the project planning and available resources.

6.2 Aircraft Emergencies

A. Helicopter Control and Power Maintained

Examples: Caution indicator, chip light on, loss of oil pressure.

- The pilot will continue to fly and notify all ACETA personnel on board and on the ground that precautionary landing will occur as soon as a suitable landing area is found.
- The gunner will make the device safe as appropriate to the firearm/capture being used.
- Once made safe, the gunner will either secure the firearm/capture device or discard it downward and out of the aircraft.
- Gunner will ensure that all other items (ammunition, net canisters, darts, etc.) are secure and will not discharge.

B. Helicopter Loss of Control or Power, Engine Failure

Examples: Loss of tail rotor authority, transmission failure, compressor stall, engine failure, etc.

- The pilot will declare the emergency to the ACETA personnel onboard.
- The mugger or observer sitting in the front of the aircraft should attempt to declare an emergency to the flight follower.

- The pilot will attempt to land with the aircraft under control and secure the aircraft.
- All personnel should prepare for an emergency, then either discard or attempt to secure equipment.
- Gunner will try to rapidly disconnect shooter's harness and assume crash position.
- All personnel should be braced for an emergency landing.
- Once on the ground, if the weapon hasn't been discarded, the gunner should try to secure and unload it.

NOTE: If conducting darting or eradication, there are potential drug exposure hazards or live rounds in event of fire.

6.3 Operational Emergencies

A. Procedural or Equipment Emergencies

Examples: Inadvertent discharge of weapon known or suspected into the aircraft or personnel, shell casing impacting aircraft, net entanglement, etc.

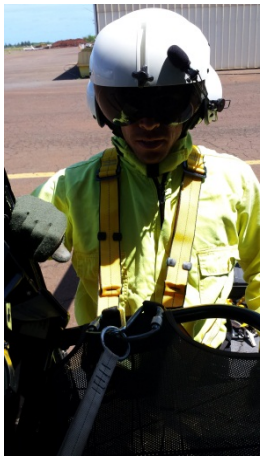
- The gunner must immediately notify the pilot.
- The pilot, mugger or observer must advise the flight follower of the precautionary landing.
- The pilot must land the aircraft immediately.
- The gunner will secure the firearm/capture device and ensure that all other items (ammunition, net canisters, darts, etc.) are secure and will not discharge.
- The pilot will inspect the aircraft to determine if it sustained damage. If there is suspected damage, the aircraft must remain on the ground until maintenance personnel return the aircraft to service.

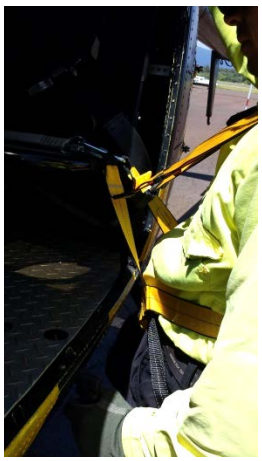
B. Personnel Falling Out of Aircraft

Example: Gunner inadvertently releases seat belt and falls out.

- Gunner must immediately attempt to notify the pilot.
- The gunner will discard the firearm/capture device in a downward direction.
- Gunner will attempt to establish any point of contact with the skids, foot step handhold, floor, seat or harness straps and try to climb back into the aircraft.
- If gunner cannot climb back into the aircraft, then the gunner will secure themselves as best they can until the pilot can safely land.

Examples of Falling Out and Proper Use of Harness/Straps



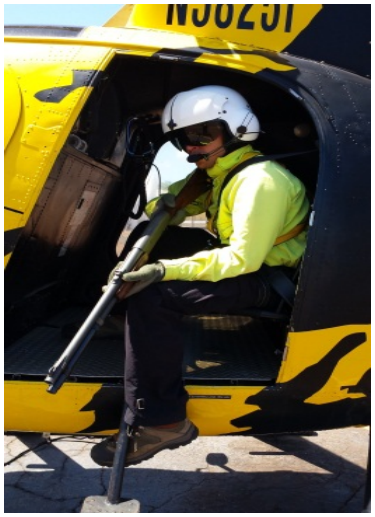


C. Malfunctioning Firearm or Capture Device

Example: Gunner has a firearm/capture device malfunction, misfire, or jam while onboard and in flight.

- The gunner will continue to hold the firearm/capture device out of the aircraft in the downward position and notify the pilot what has happened and ask to land in a safe area.
- On landing, the gunner will continue to point the firearm/capture device down and away from the aircraft, disconnect the harness and seat belt.
- When approved by the pilot, the gunner will exit the aircraft and clear the firearm/capture device in a safe location, away from the aircraft.
- The gunner will determine the functionality of the firearm/capture device, the crew and pilot will determine whether to continue the project.

Example of a Safe Direction



D. Human Exposure to Wildlife Pharmaceuticals

Examples: Needle contact, inadvertent spill with exposure, accidental dart deployment into a person.

All NPS projects that are conducting ACETA operations utilizing chemical immobilization drugs must meet the training requirements as described in DO #77-4 (*Use of Pharmaceuticals for Wildlife*). Wildlife anesthesia protocols and a Job Hazard Analysis which cover what to do in the case of a human exposure to wildlife pharmaceuticals will be written. Wildlife anesthesia protocols must be signed by the veterinarian of record, the project leader (park practitioner), and the park superintendent or Regional Natural Resource Manager. A copy will be included with the PASP and sent to the RAM.

A briefing must be conducted each day prior to capture activities which covers what will happen if a human exposure occurs. All personnel participating in the operation must be capable of taking life-saving actions (e.g., CPR, rescue breathing, reversal/antagonist drug administration if appropriate) should an accidental drug exposure occur.

Local emergency medical providers should be aware of wildlife anesthetic drugs being used, likely drug exposure scenarios, and appropriate antagonist (i.e., drug reversal) protocols. All capture team personnel should have the radio frequencies and phone numbers of first responders. Material Safety and Data Sheets should be easily accessible and first responders should have copies. A plan for communication and evacuation to local or regional hospitals should be part of the PASP.

Appendix A - DEFINITIONS

The following definitions are used to describe the difference in types of ACETA missions as well as common terms unique to some of these missions as they may pertain to NPS operations. These definitions do not cover all aspects of this type of work.

ACETA
Acronym for Aerial Capture Eradication and Tagging of Animals.

ACETA Program
A park that uses ACETA annually on a regularly reoccurring basis (high frequency).

ACETA Project
Park units that use ACETA on a onetime or infrequent basis.

AGL
Above ground level.

Antagonist
A drug that reverses the physiological actions of another. In the context of wildlife anesthesia, it is the reversal drug that will bring the animal out of the effects of the immobilization drug(s).

Banding
Placement of an identification device to an animal.

Bait Trapping
Placing an attractant to lure an animal to a location, used with corral traps, drop netting sets, mortar or rocket-deployed net.

Blind Folds
Material used to cover and protect the eyes and calm animals.

Capture Device
A device that retains then propels any type of projectile upon the command of a person. This projectile can be a net, paint ball, cracker shell, weights, darts, mortar or any other type object that is loaded into the device. Normally, the device uses a cartridge and propellant ignited with a primer or a compressed gas.

Census (see Classification)

Chemical Immobilization
Use of wildlife pharmaceuticals to capture and immobilize an animal.

Classification (Survey, Census)
Classification is not considered ACETA. This an operational function conducted to gain information about a group of animals including: numbers, age class, gender or structure or to perform a visual evaluation of their overall condition. Many times a herd of animals must be split and directed so they do not immediately reassemble the herd structure and confound the classification process.

This operation often requires a pilot to maneuver below 50’ AGL and much closer to the animals to gain the desired effect. It is often necessary for the biologist to see a specific part of the animal's anatomy (i.e., the head) to determine accurate age or sex classification, thus requiring more aggressive maneuvering.

For the purposes of this operations plan, this endorsement is required for a pilot to be approved for ACETA operations.

Collaring
Attaching a flexible belt-type device to an animal.

Corral Trap
A trap constructed of material that allows animals to be retained but allows the animals to continue to move freely within its borders.

Darting
The act of using a device to propel a projectile containing pharmaceuticals (i.e., drugs) for immobilization, vaccination, other treatments or tissue sampling.

Dart Gun
A device used to fire a projectile containing drugs for immobilization, vaccination, other treatments or tissue sampling.

Drive Trap
A trap constructed with net barriers that allow animals to been trapped with netting that entangles them as they try to push through it. The netting comes free from its suspending structures thus capturing them.

Eradication
Eradication for the purpose of this guide is defined as the lethal removal of animals by the use of firearms fired from an aircraft.

Euthanasia/ Humane Killing Protocol
An approved procedure, compliant with the American Veterinary Medical Association's *Guidelines for the Euthanasia of Animals*, devised to dispatch animals that are physically compromised and require immediate attention to minimize pain and suffering.

Firearm
Per 36 CFR 1.4, a loaded or unloaded pistol, rifle, shotgun or other weapon designed to, or may be readily converted to, propel a projectile by the ignition of a propellant.

Firearm/Capture Device Restraint
System used to restrain unattended firearm/capture device from falling out of the aircraft.

Gear Bag
A soft bag specially designed to be easily anchored to retain any loose objects on or in the aircraft during doors removed or open operations.

Gunner
Crewmember assigned the duty of operating the firearm or capture device during ACETA operations.

Hard Point
Approved attachment point engineered to accommodate load stresses.

Harness
A full body system worn as a secondary restraint by the gunner when the aircraft is flown with doors removed or open; this also can also be used as a positioning device.

Hazing
Causing animals to move from their current location by the presence of any threatening or annoying method.

Hazing Guns
Firearm used to launch firecracker or screamer shells used to cause animals to move.

Helicopter Crewmember (HECM)
The HECM serves as a trained member of a helicopter crew, assisting the Helicopter Manager in the performance and completion of helicopter missions.

Herding
Aircraft is used to move or drive an animal or group of animals in a particular direction.

Hobbles
Straps, ropes, or any materials used to restrain the legs of animals during capture operations.

Inventory (Animal Counting)
Inventory flights are not considered ACETA. Inventory is the assessment of overall numbers of animals in a specific area and are neither gender nor age specific. Flights are typically conducted at low level altitudes (generally 100 feet AGL or higher).

Live Mock-up
This is a proficiency technique that allows pilot, gunners and spotter/mugger to practice without live animals but utilize stationary targets, 3D animal targets, tires, etc. while conducting an actual flight.

Marking
Use of paint or other substance used to mark and identify similar looking animals to prevent confusion with unmarked animals.

Muggers (Animal Handlers)
This a term used to describe personnel utilized to subdue, blindfold, secure, handle, sample, and collar animals and to collect scientific data. The term is normally used in connection with net gun capture where the muggers form an integral part of the restraint process.

Net Gun
A device designed to dispense a net for the purpose of capturing.

Net Gunning
Net gunning is a means of capture where a net is deployed from a handheld gun in order to capture animals.

Positioning
Utilizing the presence of the aircraft to cause the desired target animal to arrive at a precise location at the same time as the aircraft and gunner arrive in the proper position to shoot. The animal may still be traveling in a group and is normally not running at top speed.

Precision Longline
Longline vertical reference placement of loads (animals or cargo) utilizing lines greater than 50 feet. This line is attached to the cargo hook of a helicopter during sling operations.

Pursuit/Engaging
This occurs after the animal is positioned. Pursuit is limited to very short periods of time when the firing of the dart, net, paint ball etc. occurs. The aircraft is normally ten to twenty feet above the ground, maintaining a very close proximity to the animal. The animal is taking extreme evasive action at top speed.

Radio Telemetry
Radio-telemetry is not ACETA. Animals are frequently tagged with radio transmitters that can be used to locate the animal, using an antenna-equipped aircraft or handheld equipment. Telemetry is often used to locate animals prior to capture/eradication and for follow-up classification. Flights are usually 50 feet AGL and above. Methods of attaching antenna to aircraft must be approved by FAA and OAS.

Rapid Refueling (Hot Refueling)
Refueling of an aircraft while the engine(s) is running.

Seat Belt
A safety belt required by the Federal Aviation Regulations for passenger restraint.

Seat Belt Extension
Commonly used in gunning from helicopters to allow gunners to position properly (recommend rotating type buckles).

Sharps Container
A hard-sided container designed to hold all sharps (e.g., needles, darts etc.) should be used in any capture operations where sharps will be utilized.

Shooting Door
An aircraft door that remains closed, specifically designed to prevent occupants from falling out, that has an opening large enough from which the gunner can fire.

Shooting Window
The term describes the optimum distance, angle, and azimuth between the airborne gunner, aircraft, and intended target. This "zone" provides the highest degree of success in terms of safety for the aircraft, crew and successful capture of the target animal.

Single-Skid, Toe-In, Hover Exit/Entry Procedures (STEP)
Step-out landings are those landings where the helicopter is not in contact with the ground and the center of gravity can shift laterally and longitudinally. Skid/wheel height above the ground is no greater than 24 inches.

Sling load
External load suspended under an aircraft with line lengths of less than 50 feet.

Static Mock-up
This technique is used with an aircraft on the ground, not running, to simulate the use of a shooting zone, pilot communication, spotter/ mugger responsibilities, harness preparedness, emergency procedures, etc.

Tagging
Attaching a device to or otherwise marking an animal.

Tether
An approved strap used to connect the gunner's harness to aircraft hard point with use of the approved tether attachment or directly to the aircraft hard point(s).

Tether Attachment
An approved device between the tether and the aircraft.

Transport Bag
A bag used to transport animals by helicopter from a cargo hook in an upright manner that supports the animals' total weight without using the animal as part of the lifting system.

Trap Site
Physical location of man-made traps used to capture and retain animals.

Trap Wings
Device(s) such as post and wire, jute or some other material to contain animals once herded toward a corral or similar enclosed area.

Trapping
Capturing the target animal(s) in either in a corral type trap or in netting that will entangle them.

Appendix B - OUTLINE ACETA ORIENTATION & SAFETY TRAINING

A. Course Objectives

1. To provide trainees with a general overview of ACETA and policy requirements.
2. To train for qualification in safe ACETA procedures for specific missions.

B. Training Aids

NPS National ACETA Operations Plan, PowerPoint presentation, and individual lesson aids and materials, STEP Curriculum (if being taught).

C. Lesson Agenda

Lesson 1 – Introduction to ACETA and General Information

Lesson 2 – Aircraft and Pilot Requirements

Lesson 3 – Personnel Duties and Training

Lesson 4 – Equipment

Lesson 5 - Operations

Lesson 6 – Emergency Procedures

Lesson 7 – Static Practical

Lesson 8 – Field Practical

Advanced ACETA Training Recommended Topics

Lesson 1 – Introduction to ACETA and General Information

Time Frame: 1.5 Hours
Training Aids: Chapter 1 of *NPS ACETA Operations Plan*, ACETA Mishap Review, Appendices A *Definitions* and D *Alternative ACETA Planning Checklist* and a list of websites where all other policy documents can be obtained

Lesson 1 – General Information	**Key Points**
Unit Objectives	
1. Trainees will understand the history, purpose, limitations and benefits use of ACETA and how it fits into a wildlife or an animal management program.	
2. Recognize and identify potential safety risks in an ACETA environment	
3. Provide trainees with an overview of Departmental and NPS policy requirements	
Outline	
1. Program history	
a. Special Directive 94-5	• Special Directive rescinded by this plan but gives good history of NPS and ACETA
b.1997 DOI ACETA Handbook	
2. Purpose of ACETA	
a. Components of a capture eradication program	• Review chapter 1 of the NPS ACETA Operations Plan • Give examples of where ACETA has been used and alternatives to ACETA - Appendix D • ACETA terminology – Appendix A
3. ACETA mishap review	• Provide examples of how ACETA exposes personnel to high risk flying.

Lesson 1 – General Information	Key Points
	• Mishap review power point presentation – differences between risk management using NPS personnel and contract personnel
4. DOI ACETA policy a. STEP b. Training (more later) c. Procurement (more later)	DOI Policy • 351 Departmental Manual 2.3A and ACETA Handbook – minimal recommendations • OPM-4 Aviation User Training Program • OPM-32 ACETA Helicopter Performance • OPM-35 Identification of End Product/Service and Flight Service Procurement. • OPM-40 Single skid, Toe in, Hover exit – entry procedures (introduction to step, if step is taught in this course, more depth will be found later in the course.
5. NPS ACETA policy a. Firearm capture device safety b. IHOG c. Wildlife pharmaceuticals-more later	• Relevant NPS Policy -DO and RM-60 Aviation Management -Adoption of Interagency Helicopter Operations Guide (IHOG) as policy in 2005 • DO 77-4 Use of Pharmaceuticals in Wildlife • Director's Memo "Get the Lead Out Initiative"
6. Approval processes a. Programs b. Projects	• Ch. 1.2 of this Ops Plan and RM-60, Appendix 5, "Enhancement Application"

Lesson 2 – Aircraft and Pilot Requirements

Time Frame: .5 Hours
Training Aids: Chapter 2 of *NPS ACETA Operations Plan*, Appendix C *Capture Operation Questionnaire: Full Service Contractor*, OPM-32 *ACETA Helicopter Performance*, OPM-35 *End Product Contracts,* OPM-29 *Special Use Activities,* Current On-call ACETA Contract

Lesson 2 – Aircraft and Pilot Requirements	Key Points
Unit Objective	
1. Understand the aircraft and pilot approval process and requirements	
Outline	
1. Aircraft procurement a. On Call ACETA contract	• Review Chapter 2 of NPS ACETA Operations Plan • Explain On call contracts and alternatives to park provided ACETA operations • Review OPM-35 • Introduce Appendix C – ordering an On Call contract.
2. Overview of aircraft requirements a. Fixed wing b. Helicopter	• Review aircraft performance standards in OPM-32
3. Overview of pilot requirements a. ACETA Endorsements b. Requirements	• Reference OPM-29 Discuss and explain Table 2.1, *Pilot Endorsement Matrix.*

Lesson 3 – ACETA Personnel Duties and Training

Time Frame: 1 hour
Training Aids: Chapter 3 of *NPS ACETA Operations Plan*, Appendices F *ACETA Training Request Form* and G *Trainee/Gunner Proficiency Form*, OPM-35 *End Product Contracts*, 351 DM 4 *Cooperator Operations.*

Lesson 3 – Certification, Currency, and Proficiency	**Key Points**
Unit Objectives	
1. Trainees will identify the roles and responsibilities of personnel involved in ACETA training and missions. 2. Understand the required documents for ACETA training and proficiency	
Outline	
1. ACETA mission personnel a. Roles b. Certification, skills, knowledge	• Review Chapter 3 of the *NPS ACETA Operations Plan* • Review Qualifications requirements for each position.
2. ACETA training requirements a. Instructor b. Gunner c. Muggar/handler d. Spotter e. Misc. Personnel f. Cooperators	• Review training requirements for each position
3. Documentation	• Demonstrate how to document training and qualifications for each position. • Introduce and review Appendix F – training request for. • Introduce and review Appendix G – Training proficiency form.
4. Cooperators	• Provide an overview 351 Departmental Manual

Lesson 4 – Equipment for ACETA Operations

Time Frame: 2 Hours
Training Aids: Chapter 4 of *NPS ACETA Operations Plan*, Appendix I *MTDC Equipment Drawings*, Aviation Life Support Equipment (ALSE) Handbook, RM-60

Lesson 4 – Equipment	**Key Points**
Unit Objectives	
1. Trainees will be able to describe personal protective equipment and restraint devices necessary for ACETA missions. 2. Trainees will be familiar with the various firearms and capture devices used in ACETA work.	
Outline	
1. Personal protective equipment a. Aviation Life Support Equipment b. Seat belts c. Secondary restraint devices d. Other equipment	• Review Chapter 4 of the *NPS ACETA Operations Plan* • Review ALSE Handbook requirements. Discuss use of seatbelts vs lap belt only. • Introduce Appendix I. • Discuss, demonstrate additional equipment to be used/secured in the aircraft, e.g., gear bag, firearm/capture device restraint, intercom system, etc. • Explain and show the students how to prepare gear so it is easily accessible, e.g. hobbles, knife, radio, radio cord, etc.
2. Firearms and capture devices a. Nets b. Canisters c. Weights d. Darts e. Ammunition	• Provide examples (real or photos) of capture equipment • Demonstrate proper use, inspection and repair of all related capture/eradication equipment. • Discuss importance of cleaning/disinfecting nets.

Lesson 4 – Equipment	Key Points
3. Equipment rigging and management a. Eradication firearms b. Net gun c. Dart gun	• Demonstrate proper use of restraints and rigging, discuss appropriate operation of firearms/capture devices.

Lesson 5 – Operations

Time Frame: 2-3 hours
Training Aids: Chapter 5 of the *NPS ACETA Operations Plan*, Appendices E *ACETA Operations Go/No-Go Checklist*, I *MTDC Equipment Drawings*, and J *Field Briefing Checklist*, RM-60, OPM-32, *ACETA Helicopter Performance*, IHOG, OAS-112 (*Aviation Operations Checklist*), Bring example(s) of a Project Aviation Safety Plan

Lesson 5 – Operations	**Key Points**
Unit Objectives	
1. Trainees will understand pre-flight planning requirements. 2. Trainees will demonstrate proficient pre-flight equipment checks. 3. Trainees will understand how aircraft, rigging and equipment is to be managed during ACETA operations. 4. Trainees will perform multiple static mock-ups in the classroom demonstrating an understanding of in-flight mission duties.	
Outline	
1. Pre-mission planning a. Job Hazard Analyses b. Project Aviation Safety Plan c .Pilot and aircraft approvals	
2. Mission Requirements a. Pre-flight briefings b. Weight and balance c. Pre-flight Briefing	• Introduce examples of field briefings/ debriefing as part of mission briefing – Appendix J. • Emphasize importance of standardized communication and hand signals between crew and pilot. • Review importance of placements of cargo/personnel in the aircraft, center of gravity, fore/aft and lateral. • Introduce Appendix E – Go/No-Go Checklist.

Lesson 5 – Operations	**Key Points**
3. Flight plans and flight following	• Review content of a flight plan and how they are filed. • Explain the roles and responsibilities of a flight follower.
4. Pre-flight equipment checks a. Weapon check b. Personnel safety check c. Helicopter equipment check	• Discuss the importance of each pre-flight check. • Demonstrate how to check oneself and a partner for the personnel safety check
5. Mission duties a. Reconnaissance b. Identify target c. Capture/Eradicate d. Deploy (STEP if needed) e. Animal Management	• Discuss mission duties, emphasize that extensive mentoring is critical to proficiency of these duties.
6. Post-mission operations	• Review debriefings and who should attend. • Perform post-mission debrief including an after action review and how SAFECOMs are filed.

Lesson 6 – Emergency Procedures

Time Frame: 1 Hour
Training Aids: Chapter 6 of the *NPS ACETA Operations Plan*, DO 77-4, Appendices H, *ACETA JHA* and K, *Protocol for Use of Anesthesia*

Lesson 6 – Emergency procedures	**Key Points**
Unit Objectives	
Trainees will demonstrate how to plan for and respond to an aircraft or operational emergency.	
Outline	
1. Mishap response plan	• Review Chapter 6 of the *NPS ACETA Operations Plan* • Emphasize that pre-planning is critical to risk management. Perform scenario planning using available tools such as: -Mishap response plan -Job Hazard Analysis (Appendix H) -Green Amber Red (GAR) Models • Mission briefing/debriefing
2. Aircraft emergencies a. With control b. Without control	• Discuss procedures for gunner/mugger in event of an aircraft emergency. • Mock-up in the classroom the most common aircraft emergencies (e.g., loss of power, projectile hitting the aircraft, falling out, human exposure to pharmaceuticals.
3. Operational Emergencies a. Procedural or equipment emergencies b. Personnel Falling c. Malfunctioning firearm or capture device d. Human exposure to wildlife pharmaceuticals	• Demonstrate now to troubleshoot a malfunctioning firearm or capture device. • Appendix K; emphasize to trainees that if wildlife pharmaceuticals are to be used in their ACETA work they need to establish a relationship with a prescribing veterinarian and have a plan for human exposure to drugs. Mentorship is required. Exercise: Have trainees complete a Job Hazard Analysis and Mishap Response Plan for their proposed operation

Lesson 7 – Static Practical

Time Frame: 3-4 Hours – or as needed
Training Aids: *NPS ACETA Operations Plan*, Helicopter, Equipment including, PPE, rigging, firearms/ capture devices

Lesson 7 – Static Practical	**Key Points**
Unit Objectives	
1. Trainees will demonstrate proficiency in using their firearm/ capture device for their ACETA mission at a controlled range. 2. Trainees will gain a familiarity with and have an opportunity to use other firearms/ capture devices at a controlled range. 3. Trainees will demonstrate proficiency in performing a pre-mission briefing, rigging a helicopter, securing equipment, obtaining and maintaining a shooting position, communicating with the team, securing the weapon, and exiting the aircraft	**NOTE:** Prior to classroom and static mock-ups, perform weapon safety check; remove and separate any ammunition, cartridges or charges from the weapons. A controlled range and designated range master is required. Trainees will provide PPE and firearm/ device as appropriate capture Ensure trainees bring their copy of Appendix G Trainee/Gunner Proficiency Form. Sign-off is at the discretion of the instructor
Outline	
1. Classroom Mock-Ups	• Once instructor has demonstrated the following, trainees will: • Demonstrate effective and safe firearm/capture device practices • Demonstrate proper storage of firing device, ammunition, darts, immobilization drugs or net canisters. • Demonstrate proficiency, comfort, handling, and squib load protocol • Demonstrate shooting zone.
2. Pre-mission briefing	• Designate a trainee to provide a pre-mission briefing prior to static mock-ups

Lesson 7 – Static Practical	**Key Points**
3. Helicopter static mock-up a. Mission b. STEP	• STEP mock-up is only required if the trainees plan to use this technique in their mission. • It is important to mock-up the communications portion of the mission. • Static mock-up should be appropriate to the mission (e.g. eradication, darting or net
4. Post-mission debrief	• Designate a trainee(s) to provide a post – mission debrief.

Lesson 8 – Field Practical

Time Frame: 3-4 Hours – or as needed
Training Aids: *NPS ACETA Operations Plan*, helicopter, ACETA equipment including firearms/ capture devices

Lesson 8 – Field Practical	Key Points
Unit Objectives	
1. Trainees will demonstrate safe and proficient shooting, darting, and/or net gunning from a helicopter using stationary or moving targets	**NOTE:** Live mission will be instructor's discretion; if the trainee is not ready to discharge a firearm/capture device from a helicopter they will not be certified as an ACETA gunner.
Outline	
1. Pre-mission briefing 2. Rigging 3. Repeat abbreviated static mock-up 4. Live mock-up 5. Post-mission debriefing	Trainees will only be required to perform a live mock-up using a firearm or capture device they intend to use for their planned ACETA mission. Proficiency and safe deployment are determined by the ACETA instructor. There are no pre-determined requirements.

Advanced ACETA Training Recommended Topics

1. **Aerodynamics, helicopter capabilities and ACETA operations**
2. **Helicopter ACETA operations safety**
3. **Survival and capture equipment familiarization**
4. **Advanced techniques for data collections/sampling**
5. **ACETA gunner safety equipment**
6. **Release procedures**
7. **Live animal capture**

Appendix C - CAPTURE OPERATION QUESTIONNAIRE

FOR FULL SERVICE CONTRACTOR FOR ACETA
(To be filled out by Bureau and sent to CO)

Project location_____

Project contact (name)_____Billing address _____

Telephone_____Cell_____Fax_____

Project date(s) start_____Billee Code_____

Estimated completion date_____Cost Code_____

Description of work requested:_____
_____
_____
_____

Pricing Method Requested		
Per Head Cost	Contract Flight Hour	Daily Availability

Capture Location Information	
GPS coordinates	**N -**
	W -
Type of terrain	
Elevation	
Size of capture area	
% of ground cover (trees, brush, etc.)	

Service Provider	
Government Provided	**Contractor-Provided Crew**
Gunner	Gunner
Muggers	Muggers
Veterinary services	Veterinary services
	Pilot

Equipment	
Government Provided	**Contractor Provided**
Net gun and nets, canisters, blanks	Net gun and nets, canisters, blanks
Dart gun and darts, blanks	Dart gun and dart, blanks
Immobilization drugs/reversal drugs	Immobilization drugs/reversal drugs
Hobbles/blindfolds	Hobbles/blindfolds
Transport equipment	Transport equipment
Radio collars and attaching tools	Radio collars and attaching tools
Biological sampling equipment/syringes, gloves, needles, etc.	Biological sampling equipment/syringes, gloves, needles, etc.

Services Required		
Paintball marking		
Eradication		
Drive trapping		
Drive netting		
Darting (chemical immobilization)		
Net gunning		
Animal transport		
Biological sampling		
Collar placement		
Ear tagging		
Collar distribution		
Telemetry		
Herding		
Trapping		

Animal Information		
	Initial Capture of Animals	**Recapture of Animals**
Animal species		
Number of animals		
Animal gender		
Animal age		
Animal density		
Any known diseases		
Type of disease*		
*Captures that are conducted in an area that is identified as a chronic wasting disease-suspected area will require that the Government purchase and retain control of the equipment utilized to prevent spread of the disease to other areas. This will include nets, blindfolds, restraints, and transport equipment.		

Biological Samples*			
Inoculation(s)/subcutaneous, intramuscular, intravenous	☐	Tooth extraction	☐
Animal conditioning	☐	Body measurements	☐
DNA sample	☐	Fecal sample	☐
Ultrasound	☐	Vaginal swab	☐
Blood samples	☐	Pharyngeal swab	☐
Nasal swab	☐	Ear swab	☐
Vaginal transmitter placement	☐	Subcutaneous transmitter installation	☐
Collar installation	☐	Ear tag installation	☐
*Sampling equipment required to collect biological samples will be Government provided unless otherwise agreed upon.			

Project Manager's Signature (required):_____

Print Name:_____ **Date:**_____

Appendix D - ACETA ALTERNATIVE CHECKLIST

	Y	N
1. Is ACETA the only alternative?	☐	☐
2. Can this ACETA project be completed with the minimum personnel requirements for NPS aviation operations in accordance to RM 60?	☐	☐
3. Does your unit have personnel with currency/experience to do the ACETA mission within the last 6 months?	☐	☐
4. Does your unit have a designated Park Aviation Manager and are they qualified for that position in accordance to RM-60?	☐	☐
5. Have you reviewed all the required DOI-NPS policies for aviation projects and included the prerequisite and currency training requirements for you ACETA personnel?	☐	☐
6. Do you have the resources to accomplish this ACETA mission in accordance to this *NPS ACETA Operations Plan*?	☐	☐
7. Will your ACETA project be high frequency (Example – weekly, monthly missions throughout the year?) If yes, are approvals in place for an ACETA Program?	☐	☐
8. Are all NPS ACETA personnel trained in accordance with this *NPS ACETA Operations Plan*?	☐	☐
9. Did you receive written approval from your park(s) superintendent?	☐	☐
10. Has the Regional Aviation Manager approved this ACETA project?	☐	☐

NOTE: All ACETA Training request will be submitted to the requesting unit's Regional Aviation Manager.

If majority of the answers are **NO**, reconsider other alternatives or seek out the resources needed to obtain approval for the ACETA project such as a full service contract or an end product contract.

Appendix E - ACETA OPERATIONS GO/NO-GO Checklist

The helicopter operations on this project require the use of this checklist. If all items are not checked as satisfactory and maintained in that state for the duration of the mission, flying operations will be suspended until the deficiency is mitigated.

Project/Incident:		Location:
Project Manager:		Date:
Helicopter/Helibase Manager:		Date:
ORGANIZATION		**DAILY INSPECTION**
GO	**NO-GO**	
○	○	Organization chart has been prepared showing responsibility for functions by name.
○	○	All ACETA positions are filled by qualified personnel and trainees identified.
○	○	Pilot and aircraft agency approved cards checked.
○	○	ACETA module certified by agency aviation manager and documentation checked by helicopter manager.
○	○	Vendor provided equipment and personnel approved through contracting and checked by helicopter manager.
HELIBASE OPERATIONS		
○	○	Multiple aircraft - Helibase Manager qualified and assigned.
○	○	Briefing: to include as a minimum all required Spray Ops personnel, spotting personnel, ground personnel, herbicide handling personnel, and pilot.
○	○	Overhead personnel responsibilities and authorities identified and discussed.
○	○	Area flight hazard map reviewed, hazards discussed and mitigated with pilot.
○	○	Personnel assignments/duties/responsibilities known and understood, PPE standards discussed.
○	○	Helibase Managers checklist reviewed.
○	○	All personnel will be briefed on the hazards associated with the handling of the materials.
CRASH RESCUE PLAN		
○	○	Aviation Safety Plan approved, and available at helibase.
○	○	Helibase crash-rescue personnel assigned, duties discussed and understood.
○	○	Aircraft Incident Response Plan/Crash Rescue Plan posted at Helibase and dispatch notified.
○	○	Aircraft Incident Response Plan/Crash Rescue Plan posted at Helibase and dispatch notified.
○	○	Emergency procedures with spray operations reviewed, duties discussed and understood.
○	○	Emergency fire suppression and Medivac procedures reviewed, duties discussed and understood. Location of crash rescue, evacuation and first aid equipment discussed with all.
ANIMAL CARE AREA		
○	○	Separate from other helibase activities
○	○	Traffic, ground vehicles, personnel, and aircraft control measures in place.

Appendix F - NPS ACETA TRAINING NOMINATION FORM

The National Park Service ACETA programs are considered an extremely high risk activity. It is required that all units within the NPS have an approved ACETA program/project prior to requesting training.

Park units requesting training must fund the training or seek out the available funding sources for ACETA Training.

The following are the required prerequisite that all gunner trainees must have prior to ACETA training.

PREREQUISTE REQUIREMENTS: Attach approved NPS ACETA Project Aviation Safety Plan to this form

All NPS ACETA gunner trainees will have the following before attending an initial ACETA course or recertification, if expired. (See training matrix for currency).

- A-110, Interagency Aviation Transport of Hazardous Material
- A-200, Aviation Mishap Review
- Qualified Interagency Helicopter Crewmember, attach completed task sheet
- Firearms/Capture Device Certification/Currency
- Formal Wildlife Anesthesia Training (if pharmaceuticals will be used)
- Applicable experience or training: animal handling, etc.

REQUESTOR:
Trainee's Name/Position:
Park Unit:
Email:
Telephone Number:

QUESTIONNAIRE PORTION:
WHAT TYPE OF ACETA TRAINING IS REQUESTED? (STEP, mugger, eradication, darting, net gunning, trapping or refresher)?
ARE YOU STEP QUALIFIED?
DESCRIBE YOUR PROGRAM AND POSITION REQUIREMENTS?

QUESTIONNAIRE PORTION:
DOES THE PERSON ATTENDING THIS TRAINING MEET COURSE PREREQUISITES? (attached documentation) ◉ Yes ○ No
DESCRIBE IN DETAIL THE JUSTIFICATION TO ATTEND THE TRAINING:
LIST THE FIREARMS/CAPTURE DEVICES YOU WILL BRING TO THE TRAINING:
LIST THE SAFETY EQUIPMENT YOU WILL BRING TO THIS ACETA TRAINING (flight helmets, PPE, harness, tethers, etc.)
LIST YOUR EXPERIENCE PERTAINENT TO ACETA:

REQUESTOR SIGNATURE: _____

DATE: _____

PARK SUPERINTENDENT APPROVAL: _____
DATE: _____

REGIONAL AVIATION MANAGERS APPROVAL: _____
DATE: _____

ACETA REQUEST APPROVED: ___○___ DISAPPROVED: ___○___

ACETA INSTRUCTOR SIGNATURE: _____
DATE: _____

Narrative:

Appendix G - TRAINEE/INDIVIDUAL PROFICIENCY CHECKLIST

This Gunner Individual/Team Initial Proficiency Checklist will be initiated by the NPS-approved ACETA trainer at the time of initial ACETA gunner training. This form will be used to document that the NPS ACETA gunner trainee has achieved the following steps **before** being approved to independently conduct an ACETA mission:

1. Pass the NPS-approved Initial ACETA Training.
2. Receive an initiated Gunner (trainee) - Team Proficiency Checklist from ACETA Trainer.
3. Return to home unit and perform the static and live mock ups with approved vendor/fleet, pilot, aircraft and ACETA personnel.
4. Complete the actual ACETA mission with home unit's approved vendor/fleet pilot, aircraft and ACETA personnel.
5. Signatures required on this form and send to RAM; file original.

The initial qualification will be completed by the NPS approved ACETA Trainer. The home unit training mock-ups and the ACETA mission check boxes will be completed together as a home unit ACETA TEAM (Pilot, Gunner, and Spotter/Mugger).

The purpose for this NPS ACETA Gunner-Team Proficiency Checklist is to establish a documentation process, to ensure all NPS ACETA personnel have established a proficient and safe ACETA TEAM. The initial training is an introduction to the NPS ACETA program. Performing an initial ACETA operation at the home base, while being mentored, completes the training and certification for independent operations.

For the static mock-ups, live mock-ups, briefings and missions, ensure all NPS ACETA personnel conduct a risk assessment. It is important that the ACETA TEAM understands, conducts briefings and debriefings from the Project Aviation Safety Plan:

- Purpose of ACETA mission
- Crew Resource Management (capture crew roles and responsibilities)
- Communication Protocols: Pilot, Gunner, Spotter/Mugger, Ground Crew etc.
- "Go/No-Go" (to include fatigue, when to call it quits)
- Conduct training, mock-ups (especially if use of ACETA is low frequency, or to avoid complacency when use of ACETA is high frequency)
- After the Capture (animal restraint and handling, temporary restraint, mechanical, AAR)
- Emergency Procedures (roles and responsibilities)

This form is to be used by the park unit to document individual or ACETA team proficiency requirements in this *NPS ACETA Operations Plan*. Depending on which operation is being performed, all gunners will complete this form every 180 or 365 days with a Static Mock-up, a

Live Mock-up or an ACETA Mission. Copies will be provided to the RAM and the original will be kept at the park. Net gunners must perform a live mock-up or actual mission.

ACETA INDIVIDUAL/TEAM PROFICIENCY DOCUMENTATION LOG FORM		
IQ= Initial Qualification: Must be completed by the NPS approved ACETA Instructor/ Trainer		
SM= Static Mock-Up: Must be completed by home unit NPS ACETA personnel and vendor/fleet pilot.		
LM= Live Mock-Up: Must be completed by home unit ACETA personal after practical flight training.		
AM= ACETA Mission: Will be completed by home unit ACETA personnel after actual approved ACETA Mission has been conducted.		
Name:	Type of Gunner:	Date of Certification:
Home Unit:	Phone:	Email:
NPS Trainer:	Home Unit:	Position:

ACETA INDIVIDUAL/TEAM PROFICIENCY DOCUMENTATION LOG FORM				
Check the appropriate box to ensure Gunner has demonstrated the following:	IQ	SM	LM	AM
SAFETY BRIEFING: Demonstrates an effective preflight safety briefing, project briefing, mission briefing, emergency procedures and ensures all ACETA personnel are involved.	☐	☐	☐	☐
KNOWLEDGE OF TARGET SPECIES: Demonstrates knowledge of and/or willingness to learn target species behavior, capture technique, animal handling and conduct effective, safe and efficient ACETA operations.	☐	☐	☐	☐
FLIGHT SAFETY: Consistently adheres to required aviation safety standards, firearm/capture device safety protocols and drug handling protocols (as applicable).	☐	☐	☐	☐
COMMUNICATION ABILITY: Demonstrates effective communication with the pilot, spotter/mugger and other ACETA personnel, installs approved on-board communication devices and establishes standards for communication with ACETA personnel.	☐	☐	☐	☐
SAFETY RIGGING: Demonstrate the proper wearing of an approved harness and established approved anchor points, quick release locking carabineers, ensures secondary checks with spotter/mugger, understands and addresses emergency procedures for harness incidents.	☐	☐	☐	☐

ACETA INDIVIDUAL/TEAM PROFICIENCY DOCUMENTATION LOG FORM				
Check the appropriate box to ensure Gunner has demonstrated the following:	IQ	SM	LM	AM
HANDLING FIRING DEVICE: Demonstrates positive, effective and safe firearm/capture device practices, proficiency, comfort, handling, squib load protocol, target zone and	☐	☐	☐	☐
SAFE SHOOTING ZONE: Identifies and safely maintains effective, safe airborne sight window of target species, elbows on knees for net gunning, barrel of firing device does not lift above the pilots shoulders, keeps gun in safe direction at all times, performs good firing device mechanics.	☐	☐	☐	☐
TARGET ACQUISITION/APPROACH: Identify target, communicate plan and execute.	☐	☐	☐	☐
FIREARM/CAPTURE DEVICE: Demonstrates a minimum of three accurate deployments from firing device (e.g.: bullets, darts, paintballs or nets).	☐	☐	☐	☐
FIREARM/CAPTURE DEVICE SAFETY: Properly clears and secures equipment after use.	☐	☐	☐	☐

Signature Pilot: _____

Gunner: _____

Spotter/Mugger: _____

Date of ACETA Mission Completed: _____

This section can be signed if the park unit already has a qualified ACETA gunner designated as a mentor.

The RAM or superintendent can designate an ACETA gunner mentor only if they are current and proficient.

ACETA Trainer or Current ACETA Gunner Signature: _____

Date Completed: _____

Appendix H - Job Hazard Analysis – Template

Injury Source for the middle column: SB= Struck by, SA = Struck Against, CBY = Contacted by, CI = Caught in, CB = Caught Between, CO = Caught On, FB = Fall to Below, CW = Contacted with, O = Overexertion or Repetitive Motion, FS = Fall at the Same Level, BR = Bodily reaction E = Exposure to Chemical, Noise etc.

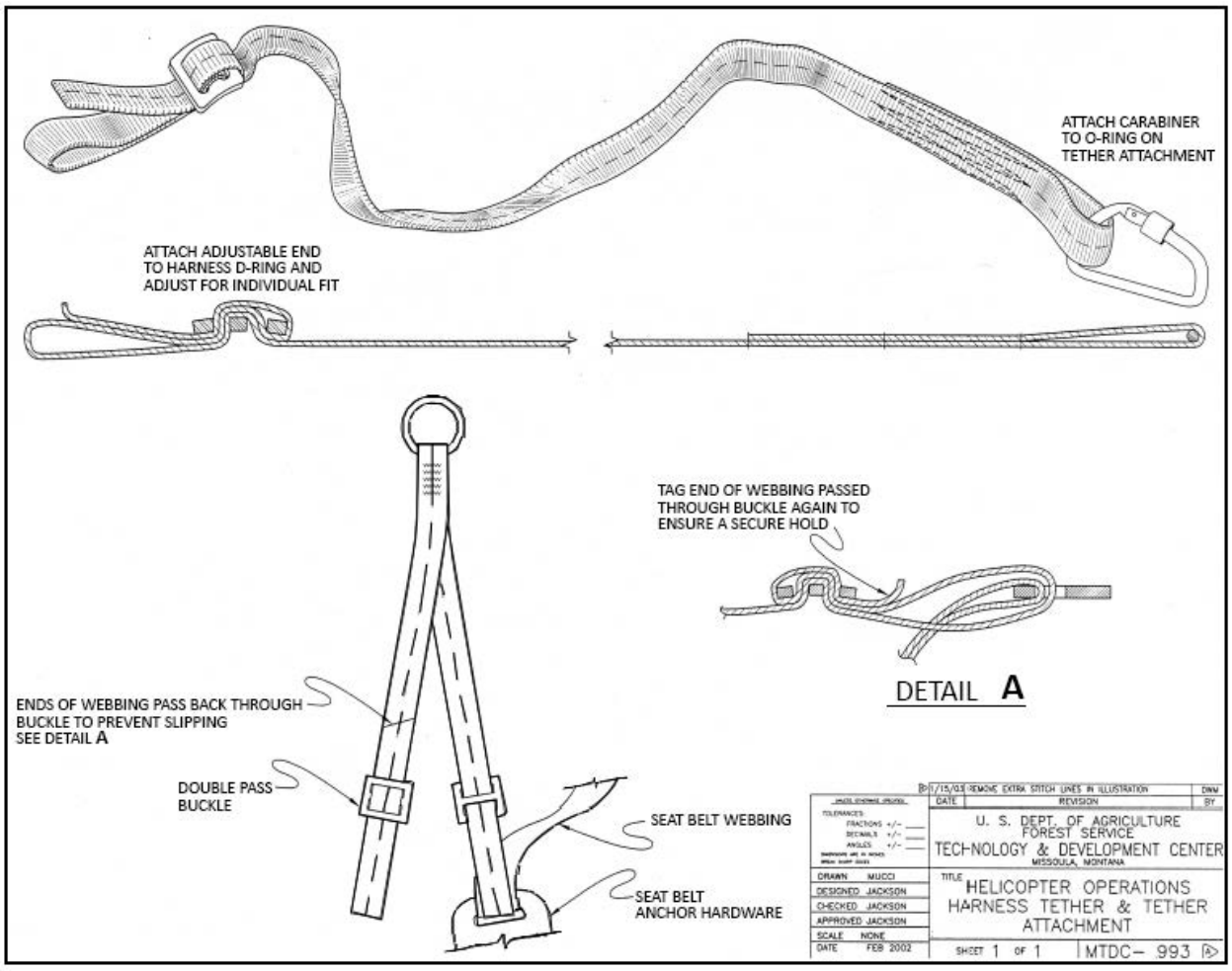
JOB HAZARD ANALYSIS (JHA)			
		Date	Revised JHA
Park Unit:	**Division:**	**Branch:**	**Location:**
JOB TITLE:		**JHA Number:**	**Page __ of ___**
Job Performed by:	**Analysis By:**	**Supervisor:**	**Approved by:**
Required Standards and General Notes:			
Required PPE:			
Tools and Equipment:			

Sequence of Job Steps	Potential Hazards/ Injury sources	Safe Action or Procedure

*NPS JHA Policy

Appendix I - MTDC EQUIPMENT DRAWINGS

Example: Tether and Tether Attachment, MTDC #993 & 946



Appendix J - Field Briefing Checklist

Example 1: Hawaii Volcanoes NP Aerial Darting Specific Mission Briefing Guide

The following drugs are used in darting missions:

1. Name of Drug
   a. Effect on animal and humans
   b. Animal handling procedures and care
   c. Safety precautions
   d. Control and Disposal

Any lost darts will be accounted for and retrieved as soon as possible.

Known Animal Locations and Specific Tactics

1. Location
   a. Best time to approach
   b. Approach routes
   c. Animal likely reactions to aircraft
   d. Animal Handling Precautions
   e. Flight Safety Precautions
      1. Search Patterns and Fuel Cycles
      2. Spotting and Engagement Actions
      3. Crew Coordination
      4. Mugger/handler deployment
      5. Rotor Blade Clearance
      6. Non-Verbal and Hand Signals Used
      7. Doors Off Flight Precautions
      8. Cartridge and Casing Control
      9. Weapon and Animal Handling Equipment Control

Emergency Procedures

1. Weapon Jam or Misfire
2. Loss of control of drug/dart
3. Engine Failure and Crash landing procedures
   a. Pilot
   b. Spotter
   c. Shooter

Example 2: NPS Biological Resources Division Field Briefing Checklist for Darting

Date _____

Weather

☐ Temperature (low/high) _____

☐ Wind Chill _____

☐ Wind _____

Human Safety

☐ Wildlife Pharmaceuticals

- Each team should have "Fact sheet for EMS and healthcare providers" detailing Naltrexone HCl, Carfentanil citrate, and "Accidental Human Exposure to Wildlife Immobilization Agents – Carfentanil"

- Carfentanil Citrate (Wildnil®)
  - Synthetic opiate with a clinical potency 10,000 times that of morphine
  - Effects on humans: depression of central nervous system, depression or failure of respiratory system. May be fatal if swallowed, injected, inhaled or absorbed through mucous membranes or skin abrasions.
  - Exposure from splash or spill: flush with large quantities of water.
  - Injection exposure: call 911, administer Naltrexone, stay with person
    - 1st antidote dose in lateral mid-thigh through clothing – if full dart exposure, give 3 ml Naltrexone
      {50mg per mg Carfentanil that was injected; using 3mg Carfentanil in darts, therefore 150 mg Naltrexone at 50mg/ml = 3 ml}
    - 2nd antidote dose – same if no response in 3-5 minutes
    - Additional antidote doses if clinical signs of narcotic poisoning return

- Xylazine Hydrochloride
- Ketamine Hydrochloride
- Naltrexone
- Yohimbine Hydrochloride (Antagonil®)

☐ Remain calm during tense moments; e.g., do not run out of control
☐ Locations of: human treatment kits, CPR kits, first aid kits, PPE (gloves)
☐ Location of MSDS sheets.
☐ Rescue breathing or CPR if needed
☐ Local weather conditions (lightning, severe weather)
☐ Safety practices

- buddy system
  - tell if suspect exposure
  - watch for abnormal behavior, incoordination (heart attack, hypothermia, etc.)
- don't touch dart or dart injection site unless it's your job
- dart handling - sharp containers, latex/nitrile gloves, if stuck in tree add eye protection

- don't eat, drink, or smoke around animals (wash hands before do after handling animals)
- be aware of traffic as driver and pedestrian
- help shooters look for visitors
- watch where shooters are and don't be in their way

If volunteers are present add:

☐ PPE for animal handling (latex gloves; consider coveralls)
☐ Hats/sunglasses/sunscreen/water (effects of elevation)
☐ Environmental hazards (footing, cold temperatures, avalanche awareness, ticks)

Wildlife Safety

☐ Read TPRs aloud to team leader; guidelines (team leader/vet discretion):
- Temperature
  - >104°F action to cool
  - >106°F get animal up
  - <99°F action to warm
  - <96°F critical low; actions may be needed before getting animal up
- Pulse – 40/min common with Carfentanil; 20/min action needed
- Respiration – 4/min common with Carfentanil

☐ Location of warming agents
☐ Location of veterinarian emergency pack
☐ Reminder – if use 2 darts to get elk down (2x Carfentanil), then administer 2x the Naltrexone dose
☐ Watch for faster than normal immobilization, awkward head or body condition, lack of breathing

If volunteers are present add:

☐ Stand back, wait for signal to approach
☐ Appropriate approach to animal
☐ Minimize noise during capture procedures
☐ Don't be afraid to call out safety concerns; we want your common sense!!

Team Assignments

☐ Team assignments and vehicles; individual roles
☐ Team search areas
☐ Radio channels
- CH 1 – Dispatch (direct); CH 2 – Dispatch (repeater)
- CH 9 – Natural Resources (direct); CH 10 – Natural Resources (repeater)

☐ Any concerns/issues we need to know – allergies or medical conditions?
☐ CWD assessment sheets

If volunteers are present add:

☐ Call numbers/names (including dispatch)
☐ Basics – locate/shoot/approach/packs/collection/marking/reversal
☐ Any medical qualifications (CPR, EMT, etc.)?
☐ Proper clothing/lunch for field

Field Debriefing

Date _____

What went well?

What went badly?

Improvements/suggestions for next time:

Additions/revisions to kits:

Safety issues:

Animal specifics:

Additional comments:

Appendix K - EXAMPLE PROTOCOL FOR USE OF ANESTHESIA

Protocol for use of Anesthesia for Brown Bear Capture and Handling in Katmai National Park and Preserve
October 2014

PURPOSE

Brown bears in Katmai National Park and Preserve (KATM) occasionally need to be anesthetized for research and management purposes. This may include anesthesia prior to euthanasia. Outlined below is the protocol for these field procedures.

PARTICIPANTS

The park practitioner (regional Wildlife Biologist) will be assigned as a work leader for field anesthesia. The park practitioner will be ultimately responsible to the attending veterinarian. Field anesthesia will be performed by qualified NPS staff using only approved techniques and protocols. Deviations from these protocols require approval from the attending veterinarian.

Drugs will be stored under double lock with access limited to approved personnel. The park practitioner will maintain drug inventory sheets. Whenever drugs are used, capture forms will be completed. Capture forms and drug inventory sheets will be forwarded to the attending veterinarian within 30 days of capture.

I. Training and Qualifications

A. All capture team leaders will have the appropriate qualifications/certifications. At a minimum these include:

1. Successfully completed the NPS 24-hour Wildlife Capture and Chemical Immobilization class and 8 hours of supervised field captures/immobilization; or successfully completed the minimum training standards as defined in Chapter 5, page 70 and 71 of Natural Resource Management Guidelines NPS-77.

2. Current CPR certification

3. Current firearm qualification with dart rifle (if a remote delivery system is used) or appropriate knowledge and training of equipment used.

4. If aerial capture, successful completion of the NPS Basic Aerial Capture Eradication and Tagging of Animals (ACETA) Safety and Orientation Training, and requirements for ACETA gunner qualification

B. All capture participants will have reviewed the relevant guidance documents prior to involvement in field operations. In addition to this protocol these include:

1. Job Hazard Analysis for wildlife handling and anesthesia.

2. MSDS sheets for wildlife pharmaceuticals to be used in the operation.

3. Project Aviation Safety Plan for aerial operations.

II. Participants:

A. Attending Veterinarian:

B. KATM Park Practitioner:

C. Capture Team:

D. Helicopter Manager:

E. Support Personnel:

CAPTURE PERIOD

Three capture periods will be used, May, June-July, and September-October. It is preferred that capture not be conducted under the following conditions:

- Aerial captures will not take place if weather conditions do not meet NPS mandated minimum limits for aviation safety (500ft ceiling and 2 miles visibility).

- Aerial captures will not take place if steady winds exceed 30 knots or have a maximum gust spread of 15 knots.

NOTE: Research objectives may require the capture of females with cub(s). Cub(s) will not typically be captured but will be allowed to naturally return to their mother post-capture.

IMMOBILIZATION

I. Capture Method

Aerial or free-range darting

1. Bears will be captured and restrained using chemical anesthesia. Bears will be immobilized with anesthesia drugs delivered from helicopter via a syringe (dart) fired from specially designed firearms (dart rifles), using ¾" or 1⅛" needle. Supplemental drugs may be administered via a hand held syringe.

II. Animal Anesthesia

Anesthesia will be accomplished by intramuscular injection to the bear's front shoulder or rear quarter. In the fall, injection will be made on the lower portion of the hind limb or lower shoulder to avoid fat pads. The injection should be made perpendicular to the injection site to ensure proper injection. If the bear needs to be euthanized upon

anesthesia, increase anesthetic dose 1.5 to 2 times to ensure a deep plane of anesthesia.

One of the following combinations will be used.

A. Telazol – Aerial darting

1. Anesthesia

Name	Dosage	Route	Concentration/vial
Telazol	8-12 mg/kg	IM	572 mg/vial

To obtain proper volume for administration:
Add 1.8 ml sterile water to 1 vial Telazol powder and mix well to obtain an end volume of 2.5ml/vial. This yields a concentration of 229 mg/ml.

Administer based on 8 mg/kg dosage:

Bear weight (kg)	Bear weight (lbs.)	Telazol (mg)	Volume (ml)
150	330	1200	5.2
200	440	1600	7.0
250	550	2000	8.7
300	660	2400	10.5
350	770	2800	12.2
400	880	3200	14.0
450	990	3600	15.7
500	1100	4000	17.5

Anesthesia induction times are variable, but generally takes 3-10 minutes.

If the bear is not down in 20 minutes half to a full dose may be repeated (if signs of sedation are observed use a half dose, if little to no sedation is observed use a full dose).

For larger than average animals or fall captures, bears may require multiple darts to administer the appropriate dose for anesthesia.

2. Reversal-There is no reversal for Telazol. Capture personnel will not remain with the bear during recovery from the drug. The position of the bear upon departure should be natural and offer protection from the elements. Most bears can be left in sternal recumbence (on their bellies) with their heads facing away from the sun. Recovering bears are monitored by fixed-wing spotter aircraft later in the day to confirm their recovery.

III. Anesthesia Drug Considerations

A. Telazol is a schedule III drug. There is no reversal agent.

B. All Drugs:

1. All syringes, needles, and darts used in the capture operation will be delivered to a veterinary clinic or hospital for safe disposal.
2. The aerial capture technique makes recovery of fired darts extremely difficult. Attempts will be made to recover darts when feasible. In areas where human use is expected, approximate location of the lost darts will be determined and mapped for attempted recovery at a later date.

IV. Precautions to avoid exposure to wildlife pharmaceuticals

A. Two people will always be present during loading of syringes or darts to ensure that all safety precautions are taken and that any accidental exposure or potential exposure is detected immediately and proper first aid and care can be implemented.

B. An emergency medical kit will always be present with the field team. In addition, each individual will carry a personal field kit that includes a CPR mask.

C. Latex gloves and eye protection will always be worn when handling wildlife pharmaceuticals.

D. NPS ACETA Operations PlanDarts will only be loaded in a secure, quiet environment (office space or closed, ventilated non-moving vehicle) where interruptions will not occur.

E. Darts will be stored in original packaging and/or inside of a solid container during transportation.

F. Only those individuals who have met the appropriate training requirements will handle darts or wildlife pharmaceuticals.

G. Basic firearm safety procedures will be followed at all times. Any individual who is using or handling a dart rifle will be qualified with that firearm, will have attended the appropriate firearms training, and will have park approval to use it.

V. Protocol for Treatment of Accidental Human Exposure to Drugs

A. NOTE: There are many unknown factors for human exposure to wildlife pharmaceuticals. Recommendations in this section are based on the following:

1. MSDS for wildlife pharmaceuticals listed below or the most closely similar wildlife pharmaceutical that has a MSDS
2. Kreeger, T. J., and Amemo, J.M. 2012. The Handbook of Wildlife Chemical Immobilization.

B. Telazol: Telazol is a dissociative. This section details the procedures for treatment of accidental human exposure to Telazol.

1. Accidental exposure to Telazol can be through ingestion, direct injection, ocula exposure, and mucous membrane exposure.
2. Notification: Inform dispatch of potential accidental exposure and agent. Request Park EMS personnel begin to respond to scene non-emergent as patient is observed for additional signs and symptoms.

3. Signs and symptoms include excitement, agitated behavior, loss of coordination, respiratory depression and coma.
4. If signs are observed upgrade park EMS response to emergent.
5. Treatment and Care
    a. There is no antidote.
    b. Wrap patient in blanket to achieve a total body restraint.
    c. Maintain low-light and quiet surroundings.
    d. Be prepared to give rescue breathing and CPR.

VI. Euthanasia and Carcass Removal

Euthanasia: Bears with severe injuries as a result of the capture operation that would result in chronic pain or severe impairment of function will be euthanized (e.g., broken legs, large open abdominal wounds, etc.). Bears may also need to be euthanized for management reasons at the discretion of park (e.g., aggressive behavior towards humans).

A. If euthanasia becomes necessary 2 methods are acceptable.
1. Gunshot to head, **using non-lead ammunition of the appropriate caliber.**
    a. Euthanasia - Aim at the center of an "X" connecting the eyes and ears (front view) or at the midpoint between the eye and ear (side view).
    b. Carcass Disposal- If no wildlife pharmaceuticals were used the carcass can be left in the environment.
2. Two stage euthanasia (anesthesia followed by euthanasia).
    a. Anesthesia - The bear will be placed under a surgical plane of anesthesia (corneal reflex depressed) using Telazol as described above. Then one of the following procedures will be performed.
    b. Euthanasia after surgical plane of anesthesia- Dissolve 2 grams potassium chloride/10 mls sterile water. Then, based on the estimated body weight administer 2-4 grams/50 kilograms of body weight injected via syringe IV into the jugular vein. After death the muscle mass surrounding the **anesthesia** injection site must be removed.
    c. Euthanasia after surgical plane of anesthesia- Gunshot to head, neck, or chest. After death the muscle mass surrounding the anesthesia injection site must be removed.

B. Carcass Disposal: Discretion will be used so that the carcass of any bear killed is far enough from areas of human use. Due to the remote nature of KATM, the carcass of most bears killed can likely be left at the site of euthanasia. If the site is deemed to be near an area of human use, the carcass will be moved to the nearest suitable site.

VII. Animal Handling

Upon immobilization, respiration, body temperature and position of the animal should be initially and continually monitored to ensure that the bear is comfortable, stable, and sufficiently and safely immobilized throughout processing.

A. The bear will be positioned on its side or sternum so breathing will not be constricted. The head will be positioned slightly downhill of the body to allow excess salivation to escape.

B. Because bears' eyes remain open while immobilized, the bear should be positioned so that it faces away from the sun and a towel/blindfold laid over the eyes; ophthalmic ointment will be placed in the eye to prevent drying before blindfolding.

C. Temperature is taken rectally, with a thermometer or probe lubricated with K-Y Jelly® and inserted at least two inches to obtain core body temperature. Normal body temperature for bears is about 101° F (38.3° C). If the observed temperature is greater than 105° F (40.5° C), attempts should be made to cool the bear by packing the chest and groin area with snow or pouring cold water over these regions. The lack of thermoregulatory ability in anesthetized bears can also lead to hypothermia. Body temperatures lower than 98° F (36.7° C) are cause for concern, and handlers should take action to warm the bear. Warming strategies can include moving the bear out of the wind and onto dry ground and/or covering with an emergency blanket. Both warming and cooling of a bear may be a slow process, taking 30 minutes or more, and temperature should be monitored and recorded every 5 minutes until it has reached the desirable range.

D. Respiration will be observed visually, and pulse detected with a stethoscope or manually by palpation of the femoral artery.

E. Capillary refill time, an index of cardiac function, can be measured by pressing on a non-pigmented part of the gum, releasing pressure, and determining the time to restoration of color. A capillary refill time of less than 2 seconds generally implies adequate blood perfusion. A slower refill time indicates low blood pressure or other circulatory dysfunction.

F. Dart or other wounds found on the bears will be cleaned using an application of diluted povidone-iodine solution. Bears will be given the long-acting antibiotic LA-200®, which has a concentration of 200mg of oxytetracycline per ml, at a dose of 10 ml per 100 kg of body weight (20 mg/kg), administered intramuscularly or subcutaneously.

G. All vital signs will be recorded along with the time (military or 2400-hour time) on the table provided on the capture sheet.

H. The following steps will occur during animal processing:

1. Sex, age class, weight, and basic morphometrics will be determined.
2. Body composition will be measured by bioelectrical impedance analysis.
3. Hair, claw, blood, breath, feces, and ectoparasites samples may be collected.
4. Radio collars will be fit to animals captured.

I. The withdrawal time of the antibiotics, anesthetic, and reversal drugs is 45 days. Bears captured within 45 days of a time they could be harvested must be marked prior to release to avoid human consumption. This will be done by writing on the radio collar or an ear tag "Do Not Consume—Call (phone number)" or "Do not consume before (date 45 days from anesthesia)."

VIII. Emergency Drug Usage

A. Treatment of severe respiratory depression (<2breaths per minute) or apnea (i.e., not breathing; holding breath for prolonged intervals).

Name	Dosage	Route	Concentration
Dopram	1-2 mg/kg	IV or under tongue	20 mg/ml

Doses for the 1 mg/kg dosage.

Bear weight (kg)	Bear weight (lbs.)	Dopram (mg)	Volume (ml)
150	330	150	7.5
200	440	200	10.0
250	550	250	12.5
300	660	300	15.0
350	770	350	17.5
400	880	400	20.0
450	990	450	22.5
500	1100	500	25.0

Capture Operation After Action Review

All persons involved in the capture operation will participate in a review/critique of capture operations.

Prepared by: _____
Date _____.
Park Practitioner, KATM

APPROVED FOR IMPLEMENTATION IN KATMAI NATIONAL PARK AND PRESERVE

Approved by: _____
Date _____.
Attending Veterinarian

Approved by: _____
Date _____.
Superintendent