

Standard Operating Procedure (SOP) 5: Training, Version 1.0

Dall's Sheep Monitoring Protocol

Arctic (ARCN) and Central Alaska (CAKN) Inventory and Monitoring Networks

Kumi L. Rattenbury and Joshua H. Schmidt

National Park Service
4175 Geist Road
Fairbanks, Alaska 99709

March 2017

U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science
Fort Collins, Colorado

Please cite this Standard Operating Procedure as:

Rattenbury, K. L. and J. H. Schmidt. 2017. Standard Operating Procedure (SOP) 5: Training Version 1.0. Dall's Sheep Monitoring Protocol, Arctic (ARCN) and Central Alaska (CAKN) Inventory and Monitoring Networks. National Park Service, Fairbanks, Alaska. Available online at <https://irma.nps.gov/DataStore/Reference/Profile/2238919>.

The main Narrative for the Protocol for Monitoring Dall's Sheep, Arctic (ARCN) and Central Alaska (CAKN) Inventory and Monitoring Networks is available from the NPS Inventory and Monitoring Arctic Network website (<http://science.nature.nps.gov/im/units/arcn/>), the NPS I&M Central Alaska Network website (<http://science.nature.nps.gov/im/units/cakn/>) and the Natural Resource Publications Management website (<http://www.nature.nps.gov/publications/nrpm/>).

SOP 5 – Training

Standard Operating Procedure #5
Version 1.0 (03/01/3017)

Revision History Log:

Previous Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #
Add rows as needed for each change or set of changes associated with each version.					

SOP 5 – Contents

	Page
SOP 5.0 – Introduction	4
SOP 5.1 – Safety Training	4
SOP 5.1.1 – Required Safety Training	4
SOP 5.1.2 – Additional Safety Training.....	5
SOP 5.1.3 – Pilots' Safety Training.....	5
SOP 5.2 – Survey Technique and Protocol Review	5
SOP 5.2.1 – Pilot, Observer and GIS Technician Briefing	6
SOP 5.2.2 – Hands-on Data Collection Training for Observers and GIS/data technicians	6
SOP 5.2.3 – Data Downloading.....	8
SOP 5.2.4 – Use of Paper Datasheets	8
SOP 5 – Literature Cited.....	8

SOP 5.0 – Introduction

This SOP describes the annual training procedures required for personnel involved with Dall's sheep monitoring for the Arctic and Central Alaska Networks, and has been adapted from Thompson et al. (2010). Training is carried out well in advance of the upcoming field season and should be completed by the middle of June. Survey and data processing/management personnel will be familiar with the Dall's sheep protocol narrative and SOPs. Survey personnel will complete safety training as well as data collection training to comply with quality assurance protocols. Safety is the most important aspect of conducting aerial surveys for monitoring Dall's sheep as aerial wildlife surveys are one of the more dangerous occupations for wildlife biologists (Sasse 2003). With this in mind, survey operations will be conducted with safety as the top priority in decision making processes. The Department of the Interior (DOI) Office of Aviation Services (OAS; <http://oas.doi.gov/>) manages use of both DOI (fleet) and contracted (vendor) pilots and aircraft within the National Park Service, and it provides pilot training and safety certification for these aircraft and pilots.

SOP 5.1 – Safety Training

To ensure crew safety, the NPS requires a high degree of training before crew members are allowed into the field. Each crew member must be able to show that they possess current certification in the classes listed under **SOP 5.1.1**. These training requirements do not pertain to vendor pilots who are required to have training and certification specific to their OAS contracts with DOI (see **SOP 5.1.3**). All crew members should be familiar with the aviation safety plan and flight following procedures prior to starting survey flying (see **SOP 1.7 and Appendix SOP1-1**).

SOP 5.1.1 – Required Safety Training

- 1) A-100 (formerly B-3) Basic Airplane and Helicopter Safety (8 hours): This class is for those people who have not had previous aviation safety training. Personnel who participate in Special Use flight activities (e.g., flights lower than 152 m [500 ft] Above Ground Level [AGL]) or who function as aircrew members (e.g., observe, photographer, radio tracker, survey recorder) must take this class before flying. DOI employees, except USGS, are required to take their initial B3 training in the classroom. Class schedules and locations can be found at <http://www.iat.gov> (accessed November 30, 2012).
- 2) B-3 Refresher (8 hours): Employees who have completed the Basic class are required to take a refresher class every 3 years. Topics covered will be similar to the Basic class, but in more specific detail and includes updated aviation safety and policy information. The B-3 Refresher may be completed online at <http://www.iat.gov>. Five modules are required for the B3 online refresher course:
 1. A101 Aviation Safety
 2. A105 Aviation Life Support Equipment
 3. A106 Aviation Mishap Reporting
 4. A108 Preflight Checklist & Briefing/Debriefing
 5. A113 Crash Survival

- 3) Bear and Firearms Safety Training (4 hours, annually). The bear safety portion of the class is required of all NPS field personnel and volunteers. The firearms (shotgun) training is not required of personnel who are not required to carry firearms in the field (observers on the sheep surveys are not required to carry firearms). However, observers based at base sites/airstrips (e.g., Dahl Creek, Kelly Bar) who wish to carry a firearm for safety must take this course before taking a shotgun to the field.
- 4) A project fixed-wing manager is now required on-site for any projects with special-use flights which includes the < 500' survey flying for the sheep surveys. A list of training requirements and opportunities for this position are available through <http://www.iat.gov>. The project fixed-wing manager can be an observer on the survey as well.

SOP 5.1.2 – Additional Safety Training

- 1) DOI Underwater Egress (Dunker) Training (4 hours). This training is not required particularly as we do not use float planes for sheep surveys. However it saves lives and should be considered for all field personnel who spend a lot of time in aircraft in Alaska.
- 2) CPR/First Aid (4 hours). Basic CPR and First Aid is required for all NPS personnel going into the field, although it is not required of NPS volunteers who may be participating as observers on sheep surveys.

The project managers must have a basic understanding of aviation management including the use of personal protection equipment (PPE), aircraft contracting, and pilot flight time and duty time limitations. PPE should be available for all persons who fly in the aircraft. The project managers will review the following Department of Interior Manuals and Handbooks:

- Departmental Manual (DM) Parts 350-354- Aviation Management
- Aviation Life Support Equipment (ALSE) Handbook

SOP 5.1.3 – Pilots' Safety Training

Survey pilots and planes will be required to possess a current Office of Aircraft Services (OAS) certification. Ensure pilots have this certification prior to scheduling them for a survey and have observers check their OAS cards and expiration dates at the start of each survey. Pilots with an OAS certification have taken additional training and flight exam specifications that are more restrictive than FAA requirements for commercial pilots and therefore have met all other required government certifications and requirements. Local OAS contract (vendor) aircraft and pilot sources can be found at <http://oas.doi.gov/> under the Aircraft and Pilot Sources link.

SOP 5.2 – Survey Technique and Protocol Review

Effective training of crew members is the single most important component of maintaining a viable and effective long-term monitoring program. Having properly-trained personnel (pilots and observers) reduces inter-observer error, helps to streamline sampling in the field, reduces sampling errors and ensures that the assumptions of distance sampling can be met. Being able to properly collect data, use equipment, troubleshoot equipment malfunctions and complete the data collection are essential to the Dall's sheep monitoring effort. The project managers are committed to developing a high quality training program that ensures observers are competent

and confident during survey flights and data collection and will guarantee the safety and success of the project.

SOP 5.2.1 – Pilot, Observer and GIS Technician Briefing

The project manager(s) will conduct a pre-survey briefing for all observers and GIS/data technicians participating in the survey and for those pilots who have not been involved in an aerial distance sampling survey in the last two years or those wanting a refresher. The project manager(s) should distribute copies of **SOP 7** to all pilots and observers, and **SOPs 6, 8, 9 and 10** to the observers and GIS/data technicians prior to the briefing. The briefing should be scheduled as a two-hour to half-day meeting conducted in person or via video conference. It should include a presentation followed by discussion covering the purpose of the sheep surveys; procedures for survey flying; data collection; flight following; and data downloading. A PowerPoint presentation for training can be found via the following link, and can be modified to meet the project manager's purposes for a particular survey:

O:\Monitoring\Vital Signs\Dall's Sheep\Training\ARCN_CAKN_Sheep_Transect_Training.pptx

The project manager will first review survey flight procedures with pilots, observers and GIS/data technicians (PowerPoint sections 1 and 2). The review will stress the importance of flight procedures that minimize disturbance to Dall's sheep and other wildlife. This is of particular importance to the ARCN and CAKN Dall's sheep survey methodology and statistical model assumptions that require sheep to be accurately recorded at their initially observed locations.

Observers and GIS/data technicians should stay on for training in sex-age classification of Dall's sheep, survey equipment setup, data collection and flight following procedures (PowerPoint section 3). Following that they will practice using the survey equipment by driving training transects in town (**SOP 5.2.2**). GIS/data technicians participating in the survey should also review **SOPs 2, 3 and 11** with the project manager(s) in a separate meeting prior to the surveys.

SOP 5.2.2 – Hands-on Data Collection Training for Observers and GIS/data technicians

The afternoon following the pilot-observer meeting will be used to train observers and GIS/data technicians in sex and age classification of Dall's sheep; use of the GPS units, cameras, field computers and datasheets (**SOP 8**); data downloading (**SOP 9 and 10**); and flight following using the satellite phone – cell-sat system in the aircraft. Training presentation section 3

(O:\Monitoring\Vital Signs\Dall's

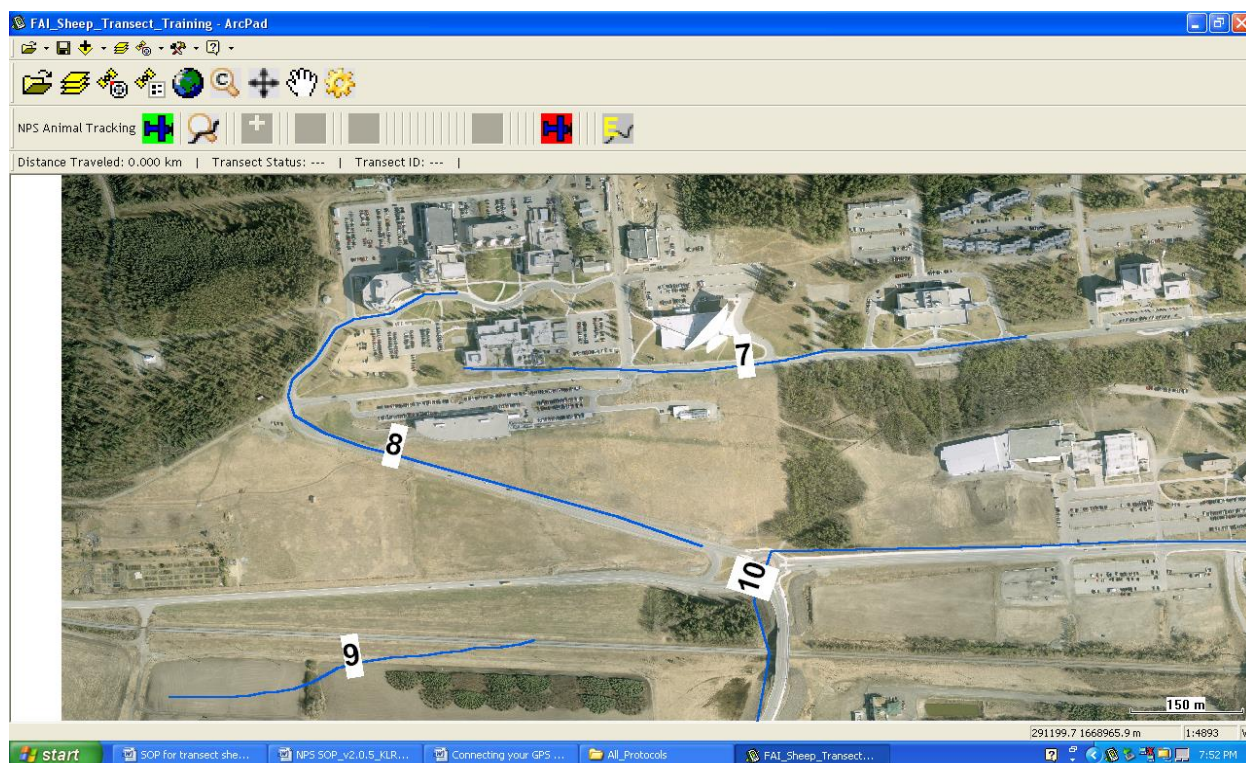
Sheep\Training\ARCN_CAKN_Sheep_Transect_Training.pptx) gives an overview of sex-age composition and highlights key features and instructions for different survey equipment.

The project manager(s) will then demonstrate use of the following data collection equipment and procedures.

- Garmin GPS unit setup (e.g., pilot's Garmin 296/496 and observer's Garmin 76csx, **SOP 8.1**)
- Camera setup (**SOP 8.2**)
- Field computer and external GPS (Garmin 18x) unit setup (**SOP 8.3**)
- Using the ArcPad applet on the field computer (**SOPs 8.4-8.12 and 8.14-8.18**)

- Datasheet protocols (SOP 8.13)
- Downloading data from the field slate, Garmin GPS units and camera (SOP 9)
- Checking/editing/fixing errors with the data in ArcMap (SOP 9.3 specifically)
- Using GPS-Photo Link (if there is time; SOP 10)

Once the observers/GIS/data technicians are familiar with the GPS unit, camera and field computer setup in the office setting, they will use those equipment to collect fake data while riding in a car on street-based transects generated specifically for training in Fairbanks, Kotzebue, DENA headquarters, etc. depending upon where the training is being held. ArcMap projects and ArcPad survey files (see SOPs 3 and 4) have been created for transect training by car in Fairbanks, Kotzebue and at DENA headquarters, and these can be accessed in separate folders within the following link: O:\Monitoring\Vital Signs\Dall's Sheep\Training\. The screenshot below shows the field computer's ArcPad interface and training transects generated around the University of Alaska campus in Fairbanks.



Each observer/GIS technician in training will have a field computer, GPS unit and camera for the day and copies of the protocol cheat sheet from Appendix SOP8-1 and paper datasheets. The project manager will assist them to connect their field computers to the external GPS unit, and to initiate a survey within ArcPad (SOPs 8.1-8.9). The project manager will then drive towards the first street transect. As the training vehicle approaches the transect, the project manager or another observer with some Dall's sheep survey experience will guide the observers and GIS/data technicians to use the ArcPad tools to start a transect (SOP 8.10). The project manager will leave the street transect at side streets, business parking lots, etc. to simulate off-transect flying and will call out fake sheep groups to the trainees. The observers/GIS/data technicians will follow along using the 'Off-Transect' tool and the 'Mark Animal' data form on the ArcPad

applet (SOPs 8.11 and 8.12) and will also record backup data on the paper datasheet (SOP 8.13). The project manager will then return to the street transect ('Resume Transect'; SOP 8.14) and repeat fake off-transect and animal marking sections until the observers/GIS/data technicians see the warning in ArcPad that they are approaching the transect end. They will end the transect and add fake weather data for the transect, keeping in mind various scenarios where the transect 'flight' line may be extended beyond the ArcPad-recognized endpoint (see SOP 7, step 11 and SOP 8.16). The observers/GIS/data technicians will also practice changing the 'Pilot's [uphill] view direction' (SOP 8.15) and Editing (SOP 8.17) in ArcPad as well as how to end the day's survey session (SOP 8.18) and trouble-shoot field computer issues (SOP 8.19). Several transects will be completed until the observers/GIS/data technicians feel comfortable using the ArcPad applet tools.

During the driving training session, it is important for the observers/GIS/data technicians to become familiar with using the field computer and the ArcPad applet. Therefore it's possible that they will not be able to spend much time looking out the window during the drive. However, while in the plane it is critical for the observer to be searching for sheep at all times while flying 'On-Transect'. When the pilot has flown 'Off-Transect' or in between transects the observer can focus on data entry or editing on the field computer. The more time spent practicing on the training transects in the car, the easier it will be for the observer to use the applet in the plane.

SOP 5.2.3 – Data Downloading

Following the driving portion of the equipment training, the project manager will guide the observers and GIS/data technicians through downloading their ArcPad data (SOP 9.2), the Garmin tracklog and waypoints (SOP 9.1) and photographs from the camera (SOP 9.4). They will then work together to import, display and edit these data in ArcMap (SOP 9.3). These tasks are an important part of data processing in the evening following survey flights while in the field.

SOP 5.2.4 – Use of Paper Datasheets

Training in the use of datasheets will complement the field computer training and show how and when to use these forms. Most data are entered through the pop-up windows associated with the 'Start/End Transect' and 'Mark Animal' function keys in the ArcPad applet on the field computer. Paper datasheets are used as a back-up in the event that the field computer fails, to note that a mistake was made while entering data in ArcPad, and to mark off- or below-transect sheep and other wildlife sightings. When the computer fails or there was a mistake entering data in ArcPad, observers must note on the datasheet when this occurs. However, training will emphasize the use of the field computer as the primary data collection tool. See also SOP 8.13, Appendix SOP8-2 and SOP 9.5 for datasheet protocols.

SOP 5 – Literature Cited

- Sasse, D. B. 2003. Job-related mortality of wildlife workers in the United States, 1937-2000. *Wildlife Society Bulletin* 31:1015-1020.
- Thompson, W. L., K. Peirce, and B. A. Mangipane 2010. Protocol for monitoring brown bears — Version 1.0: Southwest Alaska Inventory and Monitoring Network. Natural Resource Report NPS/SWAN/NRR—2010/275. National Park Service, Fort Collins, Colorado.