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**REPORT ON RADIO-COLLARING OF ARGALI LAMBS
IN
BOKHMORON AND SAGIL SOUMS, UVS AIMAG**

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An argali-population monitoring site was set up in Mandakh Aarag as of April 2005 under the WWF Mongolia's effort of monitoring population dynamics and migration of argali sheep on the territories of Sagil and Bokhmoron soums bordering with Russia. A series of monitoring results will help to identify migratory pattern and factors affecting population dynamics for argali sheep population.

Goal of the operation: Radio-collaring of argali lambs in two pre-selected sites of Mandakh Aarag and Tsagaan Gol valley, Uvs aimag

METHODOLOGIES APPLIED

Special forms for keeping record of physical characteristics and measurements; notebook; camera, compass, a GPS unit, soft and metal measuring tapes; a scale; a thermometer; a binocular; a telescope; short and long wave radio stations

There are many different methods of capturing ungulates. The lambs were captured based on the knowledge of their behavior of hiding from danger. 2-3 helpers upon capturing the lambs, their eyes were covered with cloth straps and within next 10-15 minutes all the required physical measurements were taken. Then the lambs were collared with 2900 series E23RD AVE telemetric units installed on flexible rubber bands. Each collar weighs appr.130 gr. The signals were received by the receivers of West Taft Avenue Model R 1000 brand with the help of hand adjusted antennas. Using the signals received the location and movement of the radio-collared lambs will be determined with higher accuracy. All the lambs were physically inspected and measured and the data were recorded into the Recording Sheet or the special form as follows:

Form to be filled out upon capturing of lambs

Capture site name: _____
 Date: _____ Species name: _____ Captured by: _____
 Time of capturing: _____ Time of Release: _____ Total duration of capture: _____
 Sex: _____ Age: _____ Weight: _____ (kg/lbl)
 Lamb Name: _____ Collar Serial number: _____
 Location (GPS readings): _____ Height: _____

Physical Measures in cm

Ear length: _____ Tail length: _____ Front legs: _____ Rare legs: _____
 Height of Chest circle: _____ Total body length: _____ Neck circle: _____
 Hoove width/length: _____

Body temperature; heart beats; breathing frequency

Hour	Temperature	Heart beats	Breathing frequency

Weather of the area (°C/°Φ)

Air temperature: _____ Landscape: _____

Temperature: _____ Humidity: _____ Heat index: _____

Wind velocity: _____ Average wind speed: _____

Info on the captured lambs

6 argali lambs were captured for collaring and released upon successful collaring during 4 days field work from April 20, 2007 through April 24, 2007 in 2 sites: Mandakh Aarag of Bokhmoron soum and Tsagaan Gol of Sagil soum in Uvs aimag.

Table 1. Info of captured lambs

Description	1	2	3	4	5	6
Site of capturing	Mandakh Aarag Tsahir am	Mandakh Aarag Ulaan Mankhan	Mandakh Aarag Khodoo uushig	Tsagaan Gol Khokh Davaa	Tsagaan Gol Kherts	Tsagaan Gol Hogoos Kharaach Khoshoo
Date of Capture	04/21/07	04/21/07	04/22/07	04/21/07	04/24/07	04/24/07
Time of Capture	10:40	13:06	17:23	15:10	12:03	15:01
Release Time	10:53	13:16	17:35	15:21	12:13	15:07
Sex	male	female	male	male	male	Female
Age	3-4 hours old	1-2 days old	2-3 days	1 day	5-6 hours	2-3 days
Weight	13,14 lbl	14,1 lbl	12,15 lbl	5,12 kg	6,13 kg	5,76 kg
Lamb name	enkhee	zagda	demchig	shumaher	nemkhee	Monkho
Collar serial No	164,511	164,166	164,092	164,415	164,041	164,302
GPS readings	49,84170 90,60522	49,87528 90,61514	49,80257 90,64058	50,19914 90,71399	50,17883 90,59975	50,18631 90,63953
Height	2145	2091	1867	1819	2229	1892
Ear length	7,9	6,7	8	7,8	7,5	7
Tail length	5	4,5	4	5	4,5	3,8
Front leg height	21	19,5	19	19,9	22,2	21
Rare leg height	33	22	24	25	26,3	24
	46	45,8	?	51,5	53,4	45
Chest circle	46	45,5	53	38	44	49
Body total length	73	70,8	71	64,5	67	71
Neck circle	21	19,5	?	19	21,8	19
Hoove width/length	3,6x1,8	4,1x2	4,4x3	3,2x1,8	4x2	4,2x3,7
Body temperature	38,8	39,2	37,9	38,3	38,9	28,5
Breathing frequency	?	?	?	78	66	?
Weather	Cold, windy	Cold windy	Windy with sun	Cloudy with wind	Sunny warm	Sunny warm
landscape	Rugged terrain	Rugged terrain mountain front slope	Inclined slope	Rugged front slope	Rugged terrain	Rare slope
Captured by	Mandakh	Mandakh	Mandakh	Tsogtjargal	Tsogtjargal	Ganbold

Field Team members include: In total, 8 people worked in the team. First team of 5 people worked in the first site of Mandakh Aarag and a 3 person-team at the second site of Tsagaan Gol.

Team members include:

B. Ganbold, Head, Irbis 1 Mobile Anti-Poaching Unit
R. Mandakh, member of Irbis 1 MAPU (Bokhmoron soum, Bag 2)
T. zagdsuren, local of 3rd Bag, Bokhmoron soum
L. Nemekhbayar, Local of 3rd Bag, Bokhmoron soum
B. Enkhee, representative from Uvs
O. Monkhtogtokh, Biologist, WWF Mongolia Field Office in Khovd
G. Tsogtjargal, researcher, Argali Center
Shi. Gantulga, Driver, WWF Mongolia Field Office in Khovd

State of Argali Population in 2 sites: With the capturing exercise, we tried to update the previously existed data on argali population and its size based on our observations during this monitoring process. The observation and monitoring lasted for duration of 15 days from April 10 through April 25, 2007.

Site 1. Mandakh Aarag: 2 teams jointly conducted census of argali sheep covering the entire territory of Mandakh Aarag for 2 days. Based on existing data from our ranger Mandakh's regular monitoring, the teams performed the survey of pregnant adults. Their distribution has been recorded as follow:

A. Females

- Sevshig mountain: 12 females (adults 6, youngs 6)
- Ulaan Mankhan: 21 females (A herd of 15 consisting of 12 adults and 3 youngs grazed on the front slope of the mountain and 6 including 3 adults and 3 youngs on the back slope)
- Tsakhir mountain: 8 females. They are assumed to be the remaining group of a larger cluster of 17 spotted a day before. 9 out of those 17 moved to Omno Jivert mountain overnight.
- Omno Jivert mountain: 9 females (pregnant-5; youngs 4)
- Beelii ovor mountain: 4 adults
- Ortuut peak: 9 adult females
- Aragt mountain: 4 adult females

Based on the observations, it can be concluded that there are 67 individuals-females in separate clusters and herds. According to the numbers of pregnant heads it can be assumed that in spring of 2007, there will be 40-43 new lambs. 1/3 out of total 67 is considered to be non-pregnant individuals.

B. Herd of single non-pregnant females: 23 single individual sheep made up a cluster or the herd as observed in nearby of a place called Botoon Khuush.

C. Ram herds: Observed were 3 adult-rams following the herd of singles. As Mr. Mandakh, local ranger informed that there were spotted 20 rams in the area that very possibly left to Tsagaan Gol well before the lambs were captured.

Site 2. Tsagaan Gol

Size of argali population in Tsagaan Gol has been estimated through monitoring and observations that were conducted during April 18-19, 2007. Breakdown of them according to their sex provides following info:

A. Female Adults:

- Khokh Davaa -2 adults
- Khar am-19 adults
- Usnii ekh-3 adults
- Tsagaan Khotol-2 females

In total counted were 26 females. We assume that 16-17 individuals out of them will deliver young. As the timing has overlapped with the delivery period, recorded were 7 cases of delivery.

B. A herd of singles: last year 20 individuals made up a herd which was not spotted this year as they had been spotted in different areas.

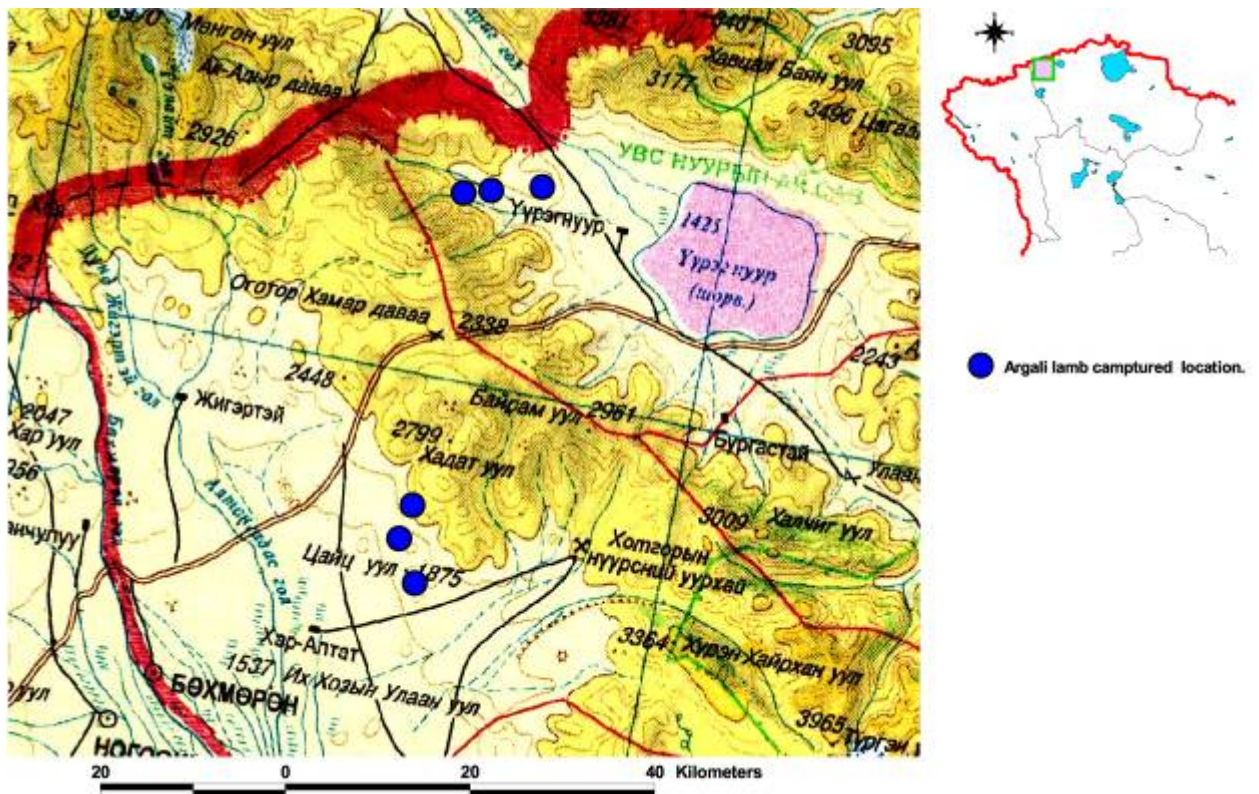
C. Herd of Rams: in total 19 rams were spotted with 11 individuals in Baga Buraat and 8 in Khargait am.

In addition to argali, 5 male individuals of deer were observed in Khar Am.

CAPTURING OF LAMBS: A PROPER TIMING

According to data we have collected this year, it can be concluded that both sites experienced delivery of youngs simultaneously, for this year. A 5-day-delay in birth of youngs that is usually observed by experienced herders in case of relatively warm and normal winters provides some insight for scheduling of similar operations for following years. Perhaps April 15 is the right timing in most cases for camping at already well-known and familiar sites such as Mandakh Aarag and Tsagaan Gol for capturing lambs. This has a cost-cutting implication: enabling the capturing team members to arrive to the site upon receiving a notice on first new-borns. Meanwhile, those who camped earlier or the monitoring team could be engaged into monitoring and census activities.

We also believe that the timing for capturing is fairly limited with duration of a week or so once the new-borns start arriving.



CONCLUSION and RECOMMENDATIONS

1. In 2006 we attempted to do some capturing, but with not much success. However, in 2007 we managed to capture and collar the argali new-born lambs. Mr. Tsogtjarghal from Argali Research Center was assigned to help the national team with this task.
2. With this, we have gained certain experience in capturing wildlife. Based on this, we recommend undertaking this activity with our own capacity with no involvement of foreign experts. Already experienced national experts could be invited to provide guidance and direction to the capturing team.
3. Satellite collars are considered to be the most effective tracking tool for trans-boundary movement of argali sheep population. Although it is costly, we foresee an opportunity to cooperate closely with experts from the neighboring countries such as Russian Federation. It is known of a satellite-collared individual called “Misha” transmitting signal from territory of Russian Federation. The last signal is received on April 24, 2007, for instance.
4. For radio communication, this year, we relied on the radio station installed in MAPU 1 jeep and an extra handset. This was the convenient field solution as the station was automatically charged with the car-battery requiring no special and additional devices and units such as alkaline batteries etc.
5. Therefore, for following years, it is highly recommended to have the car-station and individual handsets for each participant enabling their effective communication.
6. For monitoring teams it is possible to camp starting from April 15 at both sites. Upon receiving a notice on first new-born lambs, the capturing team should arrive to the site thus saving time and resources. On the other hand, other cost-cutting opportunities could be explored with the Border Guards who could be trained in capturing and be involved into the conservation work. Therefore, they could be an excellent source for first-hand and solid info on migratory patterns and movements of argali population.
7. Based on our experience, we find the capturing time or duration itself to be fairly limited with more less of a week’s time after arrival of new-born lambs.
8. Follow strict procedures exercising precautionary principles for capturing of lambs avoiding disturbance from crowd of people. Preparing well in advance for capturing exercise is the “must-do” pre-requisite for successful operation. Prepare necessary tags or earrings to mark the captured lambs for further identification in case if the collars get lost. Kestrel 900 series mobile weather units and writing pads for record keeping should come handy for this type of operation.