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# Field Manual for Double- Observer Method for Ungulates



**Objective:** The objective of the field guide is to guide the surveyors to understand the field survey protocols for ungulate survey using the double observer method.

### **Double-Observer Survey for the Ungulates:**

While surveying the snow leopard, it is important to estimate their prey densities and population as snow leopards are dependent on them for survival.

- The survey area is divided into several blocks based on accessibility. The route is decided based on complete visual coverage of the area.
- The double observer survey is conducted by walking transects on foot.
- Each block is surveyed by two teams, with the second team starting their survey 15–30 min after the first team had started its survey.
- Each team independently searches for ungulate groups and counts them. While doing so, they cannot give cues/hints to the other team about their observations.
- The ungulate groups are identified and classified based on their age-sex - class I, class II, class III and class IV males; adult female and sub-adult female; yearling and kid
- After the survey, both teams discuss their observations & tally their detections.
- The following needs to be recorded during the survey:
  - Block Name-
  - Site-
  - Date/Time-
  - Group Size-
  - Observer I Data- group detected/not detected
  - Observer II Data- group detected/not detected
  - GPS Location of each detection-
  - Number of individuals of each class in the group-

## **FOR IBEX-**

Class I Male: 2–3-year-olds; larger than females, with a small beard and short, spike-like horns

Class II Male: 4–5-year-olds; larger than class I with 6-7 ridges on their horns

Class III Male: 6–7-year-olds, full adult pelage, long beard, 8-9 ridges on horns

Class IV Male: >7-year-olds, very large horns with <10 ridges and more curved inwards

Adult Female- Grey brown with dark markings on legs, horns thinner than males

Sub-adult Female- Horns shorter than adult female, smaller body size

Yearling- newborns that survive first winter; small v shape horn in growing stage

Kid- smallest in size with a tuft of hair on head

## **FOR BLUE SHEEP-**

Class 1 males are as big as females with a horn size around 25 cm. Horn size reaches 35 cm in class 2, and >40 cm in class 3 and 4 males (with an upward turn at the very end). Adult rams have dark brown/black markings on the neck, chest & legs. Females are  $\frac{1}{3}$  the size of males and have much shorter & thinner horns. Females are dull shale in color.

## **FOR HIMALAYAN TAHR-**

Mature Males/Class III Males: >4 years old; narrow, black face, conspicuous straw-colored ruff, and a mantle of flowing hair which drapes from the neck, shoulders and chest down to the knees. Body is dark copper brown, except for a lighter underside, a rusty rump patch and a dark mid-dorsal stripe. The horns are dark and distinctly corrugated

Young adult males (Class II): 3–4-year-old; similar in size to Class III males, but less robust, and the mantle along the back is not well-developed.

Adult females and subadults (both sexes): These are similar in size, but much smaller than adult males, and lack a mantle or well-developed ruff. The pelage is a uniform brown apart from a dark mid dorsal stripe.

Class I or subadult males (2–3 years old) are lighter in build, darker in colour and have a more conspicuous neck ruff than adult females.

Yearlings (both sexes): These are 1–2-year-old animals with almost no distinction between the sexes, as they are similar in size. Males, however, have a ruff not only around the top of the neck but also on the brisket and the top of the shoulders, which the females do not have. They have horns that often appear more solid in nature, and lighter in colour on the muzzle and legs than mature females.

Young (<1 year old): These are smaller than yearlings but similar in overall appearance. During the first few months of birth, the pelage is pale or greyish.



Fig 1- A herd of class III male Himalayan tahrs

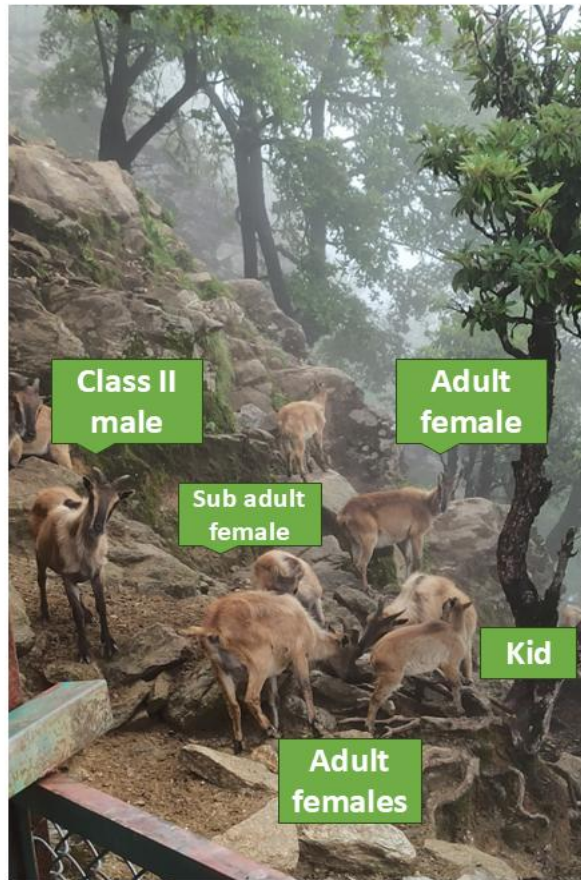


Fig 2: A tahr herd



Fig 3- Male tahrs

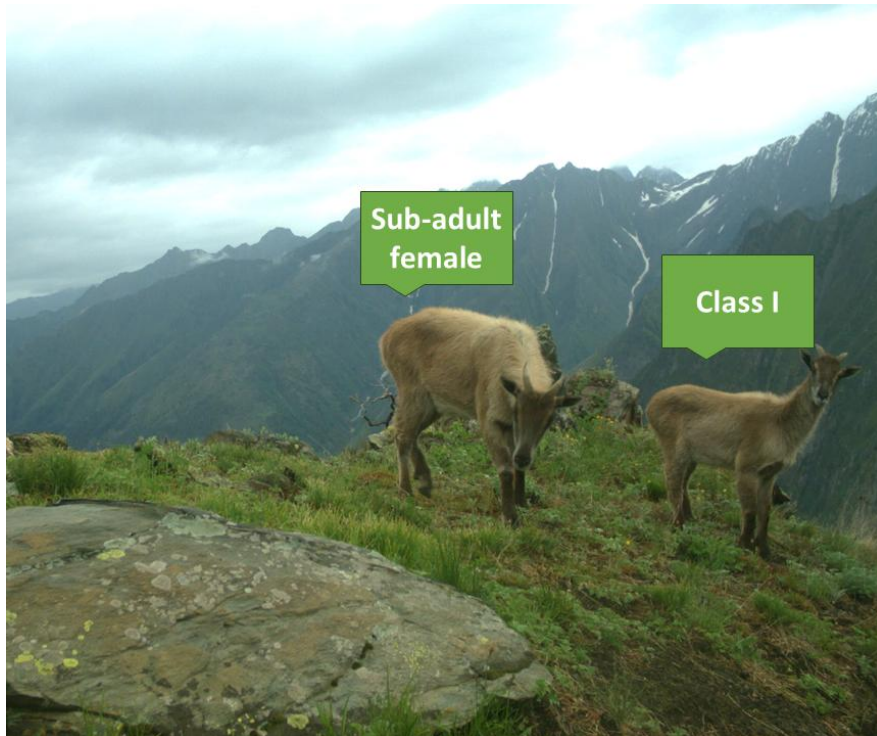


Fig 4- Class 1 tahr and a sub-adult female

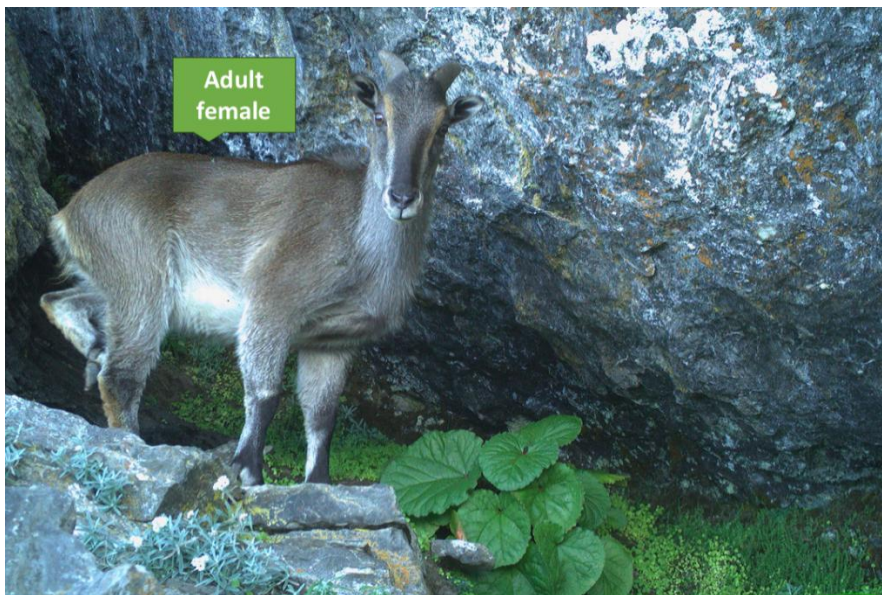


Fig 5- An adult female tahr, GHNP



Fig 6- Class III male blue sheep and Class IV male ibex



ibex

Fig 7- A group of class IV male



Fig 8- A group of adult females and kids of blue sheep



Fig 9- Blue sheep herd

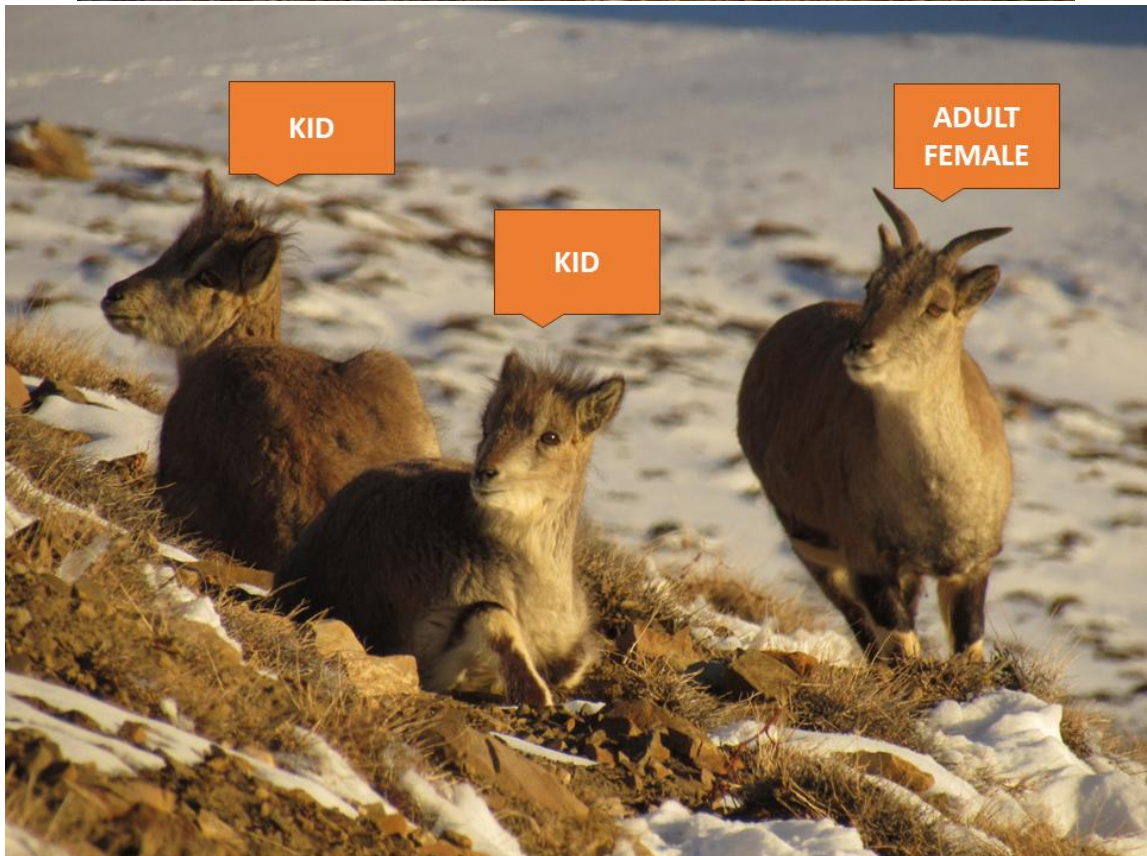


Fig 10- Blue sheep



Fig 11- Blue sheep



Fig 12- Ibex herd



Fig 13- Ungulate herd with both blue sheep & ibex

## References –

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