MY NOTES

169 — 349



NAVNEET



Tsotso Dolkar
Sying Lakeg

TSO KAR

18/8

More Plains & Rupshu

[signature]

B. S Adhikari &

P.L. Saklani

Chain Singh

LAKE Startsapuk 21/8

NUBRA VALLEY

12 - 22 Aug '02

Entered [signature] 3/3/05

Tso kar :-

Location 78° 03 E, 33° 15'

Area - 20,000 ha

Alt - 4480 m

WWF Board says Potamogeton & Hydrilla (?)

Changes

Agropyron → Elymus canaliculatus

Poa ~~pagophylla~~ nemoralis → P. ~~Poa~~ pagophylla

Stipa tibetica → Stipa orientalis

Oxytropis villo → O. cashmeriana

Stipa capillata → S. jacquemontii

Elymus dahu → Leymus secalinus

Crassula → Minuarta

Polygonum emodi → P. sibiricum

Lychnis sp. → Silene sol

Carex infuscata → C. pseudobicolor

169

site 1 - On way to Tanglang La 18/8

Sedge - Grass comm. on the slope

S-Facing - # GPS 1

Overall :- 50% veg. cover

33° 29' 01"
77° 48' 39"
4915 m

→ 30 % Carex melanantha

→ 5 % Leontopodium himalayanum

2 % Poa ~~Pagophylla~~ nemoralis

1 % Agropyron longiaristatus

12 % Other Herbs

	Quadrats 1	2	3	4	5	6	7	8	9	10	
Carex melanantha (27)	47	24	11	-	-	33	23	59	31	68	55 / 296 < 15 cm
Poa ~~pagophylla~~ nemoralis (88)	4	6	~~53~~ -	8	8	2	2	1	6	-	40 → Grazed
Oxytropis cachmiriana (71)	5	4	2	2	1	3	2	5	2	-	26
Pot. bifurcata (93)	31	3	53	22	32	-	-	-	-	58	- 199
~~Thylacospermum~~ Arenaria bryophylla (8)	1/3%	2 (2)	-	3 (10)	1 (4)	1 (1)	-	-	-	-	- 6
Leontopodium (65)	3	2 (5)	-	-	4 (5)	9 (18)	2 (5)	-	-	-	11
Agropyron longiaristatus (4)	2	-	-	1	2	1	2	4	6	1	- Grazed 19
Sisymbrium sp	-	-	-	-	-	-	1	-	-	-	1
	8		1.271 / 0.611								
Cattle/yak	+	-	+	-	-	+	-	+	+	+	6
Sheep/goat	+	-	+	+	-	+	-	+	+	+	7
Donkey/Kia	-	+	-	-		-	-	-	-	-	1

(2) 33° 29' 03" N
77 48' 36" E ; 4882 m

170

S-W. slope : 30° ; Caragana - scrub

70% vegetn cover
→ 50% Caragana
→ 5% Eurotia
→ 15% Poa attenuata ~~pagophylla~~

20% Rocks
10% Soil
Grazed area

5 m r area for Caragana & Eurotia (#)

#	R1	R2	R3	R4	R5
Caragana	106	87	65	259	
Eurotia	8	14	43	65	

(7) 1.107 0.569

Herbaceous

	Q1	Q2	3	4	5	6	7	8	9	10	
Agropyron longiar	4	4	-	9	3	-	-	-	2	3	25
Poa attenuata ~~pagophylla~~	8	3	6	9	5	2	7	13	9	5	69
Arenaria bryophylla ~~sergyll~~	1 (8%)	2 (5)	-	-	3 (15)	-	-	-	-	1 (2)	7
Lychis sp	-	-	-	-	-	-	-	-	7	-	7
~~Agropyron~~	-	-	-	-	-	-	-	-	2	-	
Arenar. serpylli	-	-	-	-	-	-	-	-	1	-	1
Oxytropis microph	-	-	-	-	-	-	-	-	1	-	1
Potentilla nivea ~~alpigena~~	-	-	-	-	-	-	-	-	1	-	1
Yak	+	+	+	-	+	+	+	-	+	+	8
Sheep + goat	+	+	+	+	+	+	+	-	+	+	9

(3) GPS :- 33° 29' 07"
77 48' 34" ; 4875 m ; W Facing ; 10°

80% Cover :- Caragana scrub

→ 60% caragana ✓
10% Agropyron sp 2
7% Aren. serpyllifolia ✓
3% Carex melanantha ✓
10% Rock
10% Exp. Sd.

5 m r → #	P_1	P_2	P_3	
✓ Urtica hyp.	106	81	81	268
✓ Caragana	-	4	6	10
Eurotia				

Q →											
Herbaceous →	1	2	3	4	5	6	7	8	9	10	36 ✗
✓ Aren. serpyll.	83	24	-	13	81	92	32	7	44	93	468
✓ Poa pagophyll	7	5	3	-	9	13	10	9	8	4	68
✓ Pot. multifida	24	11	2	-	-	3	-	-	1	-	21
✓ Agropy. (2)	-	7	1	12	7	4	18	-	1	13	63

(A) 0.802
0.578

Yak

✓

(4) Cattle Camp - Valley Bottom - 10 m from pen
10 m from Stream

172

40% Veg. Covers

28%. Elymus

10%. Chenopodium

2% Eurotia + Artem.

40% Rocks —

20% Exp. Soil + Dung.

10 quadrats:-

	①	②	③	④	⑤	⑥	⑦*	⑧	⑨	⑩	
✓Chenopod.	26	56	89	16	644	488	21	129	83	520	227 2
✓Elymus sp.	18	46	1	67	-	-	-	-	35	3	170
✓Carex gracilenta	-	-	97	-	-	-	48	-	-	-	145
✓Oxytropis lapponica	-	-	1	-	-	-	-	1	-	-	2
✓Potentilla bifurca	-	-	-	-	-	-	56	-	52	-	108
✓Agropy. longiar (Blues) Elymus	-	-	-	-	-	-	2	19	3	-	24
Poa palustrella	-	-	-	-	-	-	20	2	-	-	22
✓Eurotia cerat.	-	-	-	-	-	-	-	1	-	-	1
✓Artem. tridentata Wallichiana	-	-	-	-	-	-	-	1	-	-	1

(9)

0.702
0.390

* Dungless (Rocky).

(5) Valley Bottom

SW; <5°; Near Chhorten

PT 1

70% vegetn
→ 45% Eurotia
→ 10% Caragana
→ 3% Dracocephalum
→ 3% Stipa

3% Rocks
25% Exposed soil.

Heavy grazing

5 m r → shrubs:-	P1	P2	P3	
Eurotia	48	91	57	196
Caragana	–	5	29	34

Herbaceous →	1	2	3	4	5	6	7	8	9	10	
✓ Agropyron longiaristi	2	2	1	–	4	1	1	6	1	13	31
✓ Oxytropis ~~wilosa~~ cashmiriana	4	20	1	6	7	5	20	13	12	20	108
✓ Dracocephalum	18	44	14	–	1		–	–	33	28	138
Stipa ~~tibetica~~ orientalis	–	11	–	–	–	–	–	–	–	–	11
Alyssum ~~Draba~~ canescens sp.	–	1	–	–	–	1	–	–	–	–	2
✓ Art. ~~tanacet~~ wallichiana	–	8	–	–	–	1	7	51	11	7	85
✓ Pot. bifurca	–	–	87	122	–	–	–	–	–	23	232
✓ Artemisia scoparia (1)	–	–	–	–	16	–	5	6	–	–	27
✓ Sissymbrium sp	–	–	–	–	–	–	–	–	1	–	1
Poa pagophyll	–	–	–	–	–	–	–	–	–	5	5
Goat + sheep	+	+	+	0	+	+	+	+	0	+	8

1.683
0.731

(10)

174

⑥ VB - Marsh Sedge meadow 33°28' 34" 77 48 20" 4789 m

95% vegetn
→ 85% Carex ~~Sorii~~ stenophylla - 85
→ 5% → Potentilla bifurca
→ 2% Chenopodium
→ 1% Dracocephalum

57% Sol Bolder
sandy (murrum)
Carex plowing

Herbaceous	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
Carex ~~Sorii~~ stenophylla	600	444	280	235	240	322	280	144	178	228	→ < 5cm 2951
Pot. bifurca	39	13	16	147	39	126	98	104	-	181	< 5cm 763
Micrograecum	1	.	-	-	-	-	-	-	-	.	1
Artem. ~~tanac.~~ wallichian	-	1	1	1	-	-	-	-	-	-	3
Oxytropis ~~vit.~~ capturin	-	.	1	-	2	-	-	1	3	-	7

5

0.529
0.329

Goat + Sheep	+	+	+	+	+	+	+	+	+	9
Kiang	0	+	-	-	-	+	+	+	+	5
Yak	-	-	-	-	-	+	-	+	+	2

06.50 Hrs

(7)

19/8

175

More Plains

Valley Bottom

Sedge-Grass Community

33° 24' 45"
77° 53 10"

4653 m

50 % Cover
→ 40% Carex melanantha
→ 5 % Stipa orientale
→ 5 % Other Herbs
50% Sand & Morrum

Asp 0
Slope 0

Grazed by Kiang + Other L.s.

Herbaceous vegtn Plots :→	1	2	3	4	5	6	7	8	9	10	
✓Car. melanantha	63	69	73	96	66	52	27	47	49	34	576 Ca 15cm
✓Stipa orient	1	-	-	-	-	-	-	3	-	-	4
✓Oxytr. ~~vitkash~~	-	1	-	-	-	1	-	-	-	-	2
✓Eurotia cerat.	-	-	1	-	-	-	-	1	-	-	2
							-	-	-		
Yak	-	-	-	-	+	-	-	-	-		1
Sheep + goat	-	-	+	+	-	+	-	-	+		4
Kiang	-	-				-	-		-		
Vole - burrow										+	1

4

0.009
0.062

C1
10 mr
patches of
pure potentilla
bifurca
in the
VB

(8) 1

(176)

V.B. → 250 m away from 7th plot

0°, 0 Aspect - Herbaceous formation

60% Vegetn cover

1	1	2	3	4	5	6	7	8	9	10	
✓ Potentilla	520	348	366	325	244	224	521	341	330	255	34
✓ Carex bifurca nedan	-	1	1	-	1	20	—	2	-	-	2
✓ Stipa orient.	-	-	-	-	2	5	5	-	-	-	2
→ goat / sheep	+	+	+	-	+	+	+	+	+	+	9
→ Tib. woolly hare			+		+	-	-	-	-	-	2
→ Yak						+	+	-	-	-	2
→ Kiang						+	-	-	-	+	2
Oxytropis								1		-	1

(4) 0-005
0-004

(9) VB - 0°; O Asp.

Eurotia - Scrub

33°24'50"
77°53'02"

4647 m

40% Vegetn
→ 30% Eurotia
→ 6% stipa
→ 4% Other hers.

60% Sand.

5 m r pl →

Kiang - fresh Dung

		①	②	③	
3474					
25	Eurotia	231	167	234	632
2					

9	Hers Plots →	1	2	3	4	5	6	7	8	9	10	
2	✓ stipa	1	-	1	5	2	-	1	-	-	3	13
2	✓ Alyssum ~~Draba (?)~~		-	-	-	-	2	-	-	-	-	2
2	→ Kiang	+	-	+	-	+	+	-	-	+	-	5
1	→ goat /	+	-	+	+	-	-	+	-	-	+	5
	→ Woolly hare	0	+	-	-	-	-	-	-	+	+	3
	Elymus ~~sp~~ long								4	6	2	12
	Carex melan									-	51	51
	Astragalus ladakhensis ~~Oxytropis~~ ~~lapponica~~							-	-	-	1	1

5

1.014
0.630

✓

(10) Elevated/plateau 33 25 00 / 77 52 59 4648 (178)

Dry wind blown :- 0°; 0 Asp.

Stipa - Oxytropis - Draba formation

40% Vegetn Cover

→ 20% Stipa

→ 18% Draba + Oxytropi

→ 2% Eurotia

60% Sand + Gravel

Wind

Herbaceous →	1	2	3	4	5	6	7	8	9	10	
✓ Stipa orient	11	10	1	2	16	4	16	2	3	2	66 Grazed
✓ Oxytropis	15	28	9	10	9	7	5	18	2	6	109
✓ Alyssum ~~Draba~~ sp	–	–	42	44	5	4	–	41	–	20	156
Carex borii	–	–	–	–	–	76	131	–	–	–	207
Eurotia	–	–	–	–	–	1	2	–	2	6	10
Elymus dahu									32	40	72 grazed
→ Goat + Sheep	+	+	+	–	+	–	+	+	+	+	8
→ Kiang	–	+	–	–	+	–	–	–	+	–	3
→ Yak	–	–	–	–	–	+	+	–	–	–	2

(6)

1.574
0.879

179 (11) Elevated, Dry (wind blown) 33°25'00" | 4660m
Flat – ; 0 Aspect. 77°53'09"

Stipa - Draba - Dracocephalum | Grazed yak + Kiang.

65% Vegetn Cover –
→ 20% Stipa
15% Dracocephalum
10% Oxytropis vill.
5% ~~Draba~~ - Draba
5% - Eurotia

	1	2	3	4	5	6	7	8	9	10	
Stipa orient	26	15	19	27	39	38	19	39	26	28	270 Heav. Grazed
Dracocephalum	31	1	15	19	7	-	-	-	14	8	85
Oxytr. micro	17	21	39	16	18	24	19	25	17	27	223
~~Draba alpina~~ Alyssum ca	3	19	1	5	-	-	32	-	-	-	60
Eurotia	-	-	-	3	-	-	-	-	1	-	4

(5) 1·252 0·778

Goat + sheep	+	+	-	+	+	-	+	+	+	+	8
Tib. Woolly hare	+	+	+	+	+	-	+	+	+	+	9
Tib. Wolf	-	+	-	-	-	*	*	-	-	-	1
Kiang	-	+	-	-	-	-	-	-	-	-	1
Yak				+	-	-	+	-	+	-	3

(12) Way to Tsokhar – More pl. 33°23'44" / 4645 m
180 Valley Bottom 77°54'31"

Stipa - Elymus - Carex comm.

60% veg. Cover
→ 30% Stipa capillata
→ 20% Elymus
→ 10% Carex + Eurotia + Oxytropis

Yak + Sheep & Goats.
Digging by Vole

	1	2	3	4	5	6	7	8	9	10	11	
Stipa morphologica capillata	6	5	5	2	4	2	11	+	1	1		38 Grazed
Carex mela.	4	16	3	5	53	–	5	1	1	–		88
Eurotia	2	3	2	1	–	1	–	–	1	2		12
Oxytrop. leg. Chiliophylla	2	–	–	–	–	–	–	–	1	–		3
Elymus	–	4	48	56	52	72	75	57	62	69		495
(5)	0.787	0.458										
Goat + sheep	+	+	+	+	+	+	+	+	+	+		10
Woolly hare	+	–	–	+	–	–	–	–	+	–		3
Kiang	–	+	–	–	+	+	–	+	+	–		5

(13) Valley Bottom 33° 23' 11" | 4645 m
On way to Tso-Kher. 77° 55' 19
Elymus - Carex - Comm.

½ km from Road Vole digging - intensive

85% veg cover
→ 75% Elymus
10% Carex
15% - Clay

seasonally inundated? Clayey soil. Kiang + Goat grazing.

	1	2	3	4	5	6	7	8	9	10	
✓ Elymus dahu	51	81	124	132	83	86	105	81	98	49	890
✓ Carex melan.	30	10	-	-	-	-	-	-	-	34	74
✓ Stipa capill.	-	-	-	-	-	-	1	-	-	-	1
Goat + sh.	+	+	+	+	+	+	-	-	+	-	7
Tib. Woolly H.	-	+	-	+	-	-	-	+	-	+	4
Yak	-	-	+	+	+	-	-	-	-	-	3
Kiang	-	-	-	+	-	-	-	-	+	-	2

(3) 0.279
0.254

Vole Tunnels + Colonies - Frequent -

(14) Adj. to (13) 33° 23' 11" 4645 m
Valley B.H. 77° 55' 20"

Carex - Elymus

85% Veg. Cover
→ 80% Carex melanantha
→ 05% Elymus

Grazing season

95% - Fine clay + silt.

	1	2	3	4	5	6	7	8	9	10	
Carex	76	84	85	86	125	138	110	115	110	95	1024
Elymus	2	1	-	-	-	-	-	-	-		3

(2) 0·002
0·003

Kiang	+	-	-	-	-	-	+	-	+	-	3
Goat+sh.	+	+	+	+	+	+	+	+	+	+	10
Yak		+	-	+	-	-	-	-	+	-	3

(15)

15° slope ; NE (Close to valley Bottom)

~~Bottom~~ :-

Eurotia - Caragana steppe

Veg. cover

40%

→ 20% Caragana
15% Eurotia
5% - Oxytropis + Elymus.

60% - Exp. rock + soil.

Heavy trampling by cattle - Grazed (60% Exp.)

33°22'20"
77°57'36"
4679

Circular - 5mr	①	②	③	
Caragana	9	4	5	18
Eurotia	73	53	33	159

Herbaceous	1	2	3	4	5	6	7	8	9	10	
Elymus dah	14	-	-	-	32	-	-	-	13	-	59
Stipa cappill	2	11	4	26	14	28	9	17	18	18	147
~~Draba~~ Alyssum ca	2	-	-	2	1	-	-	-	-	-	5
Oxytrop. microphy	2	6	-	2	-	3	2	3	5	3	26
Eurotia	-	1	1	12	1	3	7	2	2	-	30
Agropyr. longi arist	-	-	-	-	-	-	-	-	-	1	1

(6) 1:229
0.686

Yak	+	-	-	+	-	-	-	+	-	+	4
Sheep + Goat	+	+	+	-	+	+	+	+	+	+	9
Kiang	+	-	-	-	-	-	-	-	-	-	1

(16) 581

33°21'55"
77°57'26"

4610 m

(184)

Wet meadow - V.B. Tsokar

Grass - Herb comm.
85% cover
~~50%~~ 50% Stipa -
5% Oxytropis microphylla
15% Leucopoa
10% Herbs (Potentilla, Lomatogonium etc)

Grazed
~~Sandy~~ clay
Gravel + clay
Marmot colonies abundant

2.181
0.80

Herb. com	1	2	3	4	5	6	7	8	9	10	(13)
Puccinella ~~Leucopoa~~ himalai	28	22	4	6	7	9	-	15	16	21	128
Oxyt. microph	4	-	-	-	-	-	-	-	-	1	5
Stipa capilla	20	65	116	44	23	6	25	8	9	50	366
Pot. multifida	10	19	4	3	4	5	18	-	11	7	112
Oxytr. lapponica	4	8	6	13	31	21	16	13	15	4	131
Pot. bifurca	5	14	19	30	7	5	37	3	9	16	153
Lomatogonium a	1	13	2	1	2	-	-	-	-	-	19
Polyg. islandicum	6	15	4	4	5	8	13	2	30	-	<1 cm 87
Gentiana sp	1	38	-	19	36	25	19	8	27	11	187
Microgynaecum	9	-	1	8	-	-	-	1	-	2	20
Taraxacum forrestii	1	-	-	-	-	-	-	1	-	-	2
Agropyron large-arist	-	8	6	4	12	15	6	5	12	4	84
Carex borii	-	-	-	-	23	36	-	23	-	-	Eurotia (1), 1/9 82
Yak	-	+	-	-	-	-	-	-	-	+	2
Kiang / k	+	+	-	+	-	+	+	+	+	+	Horse 0
Sheep + goat	+	+	+	+	+	+	+	+	+	+	dug ? 10
Woolly hare	-	+	-	-	-	-	+	-		-	2

(185)

(17) Tso Khar - N. Bank 33° 22' 00' | 4621 m
V.B - 0°, 0 Asp. 77° 57' 53"

Stipa - oxytropis

Dry - (windy), sandy - murrum area
25% cover
→ 20% Stipa
5% Draba + Oxytropis

Kiang
Sh. + goat

	1	2	3	4	5	6	7	8	9	10	
Stipa capill.	13	14	3	4	7	3	10	3	3	4	64
Alyss can ~~Draba alp.~~	15	24	4	22	5	4	3	20	1	7	106
Oxytr. mior	3	6	-	-	-	-	-	-	-	-	9
Elymus dahu	-	-	10	-	-	20	10	-	17	14	71
Oxytrop. ~~Nitro~~ Carpo	-	-	3	1	2	1	1	-	1	-	8
Eurotia	-	-	-	-	1	-	-	-	1	-	2
Kiang	+	+	-	-	-	-	-	-	-	-	2
Sheep + goat	+	+	+	+	+	+	+	+	+	+	10
Yak										+	1

(6)

1.326
0.740

~~Sand 5~~
~~Kiangs~~
~~2 foals~~
~~3 Adult~~

87

1/9 82

8

10

281 (18) Close to Cattle Camp → 33°22'17" | 4633 m
Hardus. 77°57'39"

(186)

South facing slope 30° -.

Rocky + Pebbly slope + Gravel

Eurotia - Stipa scrub. -

27 % Veg. Cover → 20 % Eurotia
5 % Stipa
2 % Alyssum

75 % - Gravel + Rocks + Pebbles. sol.
(10) (60)

Uniform Eurotia

Sh → 5 mr [All Eurotia] → | 76 | 78 | 68 | |

	1	2	3	4	5	6	7	8	9	10	
Eurotia	5	2	1	5	13	8	7	2	1	3	47
~~Draba~~ Alyss cor	-	52	41	10	-	-	-	-	-	-	103
Stipa	-	1	1	10	5	3	-	12	-	1	33
~~Oxytropis mirop~~	-	-	-	-	-	1		-	-		
Goat + sheep	+	+	+	+	+	+	+	+	+	+	10
Donkey	+	-	-	+	-	-		+	-	-	3
Yak	-	-	+	+	-	+		-	-	-	3
Tanacetum tibetica (?)	-	-	-	-	-	-	→		4	-	5
Chenopodium murale										1	1

5

1.105
0.687

(19) 281 (187)

SE Facing slope – 33°22' 25" | 4720 m
40° – 45° 77°57' 34"

Scree – Scrophularia – stipa comm.

45% – "
→ 20% Scrophularia
20% Stipa
5% – Scopolia + Tanacetu
55% → stones + scree (fine).

Grazing sites
Higher – Eroded gully

	1	2	3	4	5	6	7	8	9	10	
Scrophula	2	–	1	–	2	3	–	2	2	–	12
Scopolia	6	4	8	1	–	9	13	–	4	1	46
Agropyr. longica	–	1	2	–	–	–	–	–	1	–	4
Tanacet. tibet	–	4	–	3	5	–	–	–	–	–	12
~~Draba~~ Alyss can	–	1	5	10	–	–	–	–	–	4	20
Stipa capill*	–	–	–	6	–	–	–	–	–	–	6
Eurotia	–	–	–	–	2	–	–	–	1	–	3
Aconogon tortuc	–	–	–	–	1	–	–	3	–	–	4
Potent. bifu	–	–	–	–	–	9	–	–	–	–	9
Eritrichium sp	–	–	–	–	–	–	1	–	–	–	1
Sheep + goat	+	–	+	+	–	–	+	–	+	–	5
Lamium sp (?)							2	–	–		2

Yak (11) 1.905 0.795 + 1

* purple sheath –

(20) F81 (188)

SE :- → 33° 22' 30" } 4788 m
77° 57' 29

35° - slope - ~~Rocky~~ & Bouldery + Pebbly - Ground
Artemisia - Eurotia - Stipa

45-50 % ↳ Artemisia
20 %
15 % - Eurotia
10 % Stipa - ~~Araba~~
3.5 % Alyssum

Light grazing

Q:-	1	2	3	4	5	6	7	8	9	10	
Artemisia	2	1	1	1	-	1	-	2	3	-	11
~~Scorpione~~ Scorpione											
Agropy. longi ani	2	-	-	-	5	-	-	-	-	-	7
Aconogonum	1	-	-	-	-	-	-	1	-	-	2
Stipa capill	1	3	2	5	8	-	3	2	1	13	38
Euphorbia tibetica	-	3	4	1	-	-	-	1	-	-	9
~~Araba~~ Alyss can alp.	-	9	10	7	-	20	5	8	7	11	77
Eurotia	-	4	-	6	-	7	-	-	-	5	22
Oxytr. capt	-	-	3	-	1	-	1	2	1	4	12
Eritrichum	-	-	-	-	-	-	-	-	-	1	1
			9		1.658 0.755						
Goat + sheep	+	+	-	+	+	+	-	+	+	+	8
Red fox (?)								+	-	-	1
Woolly hare									+	-	1

5 mr plots →	1	2	3	
Artemisia	4	5	9	18
Eurotia	25	30	21	76

(21) SE → 3° slope / gently undulating



33°22'29" } 4641
775756

c. 300 m away from Herder's Camp.
c. 2 km × ½ km - uniform growth of Stipa - Oxytropis (Tanacetum - Eurotia) - Heavily Grazed - (30)% Cover
↳ 10% Stipa
10% Oxytropis microphylla
5% Eurotia + Tanacetum
5% Draba.

Eurotia highly stunted

Sheep dug B

70% → Boulders + Rocks + Murrum (pebbles)

	1	2	3	4	5	6	7	8	9	10	
Oxy micro	4	5	3	2	3	1	7	5	3	2	36
Stipa orientalis capitt	12	11	13	14	15	17	16	18	12	10	138
Oxy caph.	1	-	-	-	-	-	-	-	-	-	1
Alyss can.	3	14	12	37	13	21	6	-	15	11	132
Eurotia	-	-	2	3	5	-	5	2	1	1	19
Tanac. tibet.	-	-	-	3	-	-	-	-	-	8	11
Goat + sheep	+	+	+	+	+	+	+	+	+	+	10
Donkey	+	-	-		-	-	-	-	-	-	1

(6)

1.263
0.708

5 mr. →

	①	②	③	
Eurotia	12	14	18	44
Tanacetum	1	3	2	6

20/8 ~~81~~ → (22) TSO KAR – 33° 22' 58" } 4626 m
78° 00' 47"

Flat (1-2°) – Elevated – wind blown –

Stipa – Oxytropis – comm.

20 ~~25~~% cover
↳ 15% Stipa
5% Oxytropis

60% Murrum + Pebbles

Grazed by kiang

	1	2	3	4	5	6	7	8	9	10		
✓ Aloss ~~Draba~~ Cash aprina	22	3	5	5	4	8	14	16	21	6		104
✓ Oxytr. mirr	2	–	4	1	1	–	2	1	1	1		13
✓ Stipa capill	17	12	16	11	13	12	14	14	11	13		150
✓ Eurotia	–	4	–	–	–	–	–	–	–	3		7
✓ Oxytr. ~~vill~~ cash	–	–	4	2	3	1	1	2	–	2		15
Goats + sh	+	+	+	+	–	+	+	+	+	+		9
Kiang	+	+	–	–	+	–	–	+	–	–		4

(5) 1.091
0.678

* Saw 5 kiang (4 Adult & 1 foal) 100 m away

(23) (191)

33°22'57"
78°01'10" | 4656 m

Gently undulating - Stipa - oxytropis
(3-4°) - W. facing

20-25% Cover
⇒ 15% - Stipa
10% Oxytropis + Eurotia

Grazed by Horses Kiang

	1	2	3	4	5	6	7	8	9	10	
Stipa capill.	14	14	8	9	11	13	11	12	10	16	118
Oxyt. microph.	7	1	1	1	–	–	–	–	–	1	11
Eurotia	1	1	1	–	–	–	1	–	2	1	7
~~Shoeba~~ Alyss can.	3	4	12	10	14	18	10	19	5	4	99
Sheep + goat	+	+	+	+	+	+	+	+	+	+	10
Kiang	-	-	+	-	-	+	-	-	-	-	2

(4) 0.958
0.691

(24) (192)

W. facing - 15° slope -

23° 22' 53"
78° 01' 58" } 4756

10 m x 200 m pure strip of Carex melanantha

60% cover -

Sandy - loose - → 55% Carex
05% - Oxytropis + Eurotia

	1	2	3	4	5	6	7	8	9	10	
Carex melana	75	84	88	47	80	86	56	53	65	67	701
Oxytr. microphylla	1	-	1	1	-	-	-	1	1	2	7
Eurotia	-	-	-	2	-	-	-	-	-	1	3
Stipa capillata	-	-	-	6	3	-	4	1	1	-	15
Euphorbia tibetica	-	-	-	-	-	-	-	8	-	-	8
Goat + sheep	+	+	-	+	+	+	+	+	+	+	9
Yak							+	-	-	+	2

(5)

0.240
0.149

(25) Tso khar Basin

→ 33°22'43" | 5095 m
78°02'44"

N-W facing slope - 40° - Pebbles + Marrum

Stipa tibetica - S. capillata - Carex melananthe

50% Veg. Cover

→ 25% - S. tibetica - (longer - (Photographed)

20% - S. capillata - (shorter " ")

5% - Dracocephalum - ~~Hedy~~ Oxytropis microph

Grazed by ~~Uriyal~~ Nyan

50% — Gravelly slope

	1	2	3	4	5	6	7	8	9	10	
Stipa ~~tibetica~~ orient.	18	5	13	14	13	17	20	13	24	25	162
Dracocephalum hetm	20	-	5	12	14	17	-	5	8	26	107
Sibbaldia microphylla	15	5	2	5	1	5	15	25	11	9	93
Oxytr. ~~villosa~~	1	1	3	3	1	2	-	-	1	-	12
Carex melananthe	6	39	28	37	18	32	28	15	-	-	203
~~Draba~~ Alyss can. sp.	17	14	5	-	26	5	-	1	-	34	102
Stipa capillata	2	1	1	-	-	-	-	-	-	-	4
Eurotia	-	-	-	2	-	-	-	-	-	-	2
Oxytrop microph	-	-	-	-	-	-	1	1	-	3	5
(9) 1.695 0.771											
Woolly hare	+	+	+	+	-	-	+	-	+	-	6
Uriyal	+	-	-	+	-	-	+	-	+	-	4
Horse/Kiang	-	-	-	+	-	-	-	-	-	-	1
Sheep goat	-	-	-	+	+	+	-	-	-	-	3

(26) S facing slope - (25-30' slope) 33°22'42" 78°02'53" 5115m

Caragana - Eurotia - Stipa

Heavily grazed slope - (LS)

* 5-50% cover

30% - Caragana

10% - Eurotia

10% - Stipa + Draba

60% Scree + Pebbles

Sh. → 5 mr. →				
Caragana	16	26	12	54
Eurotia	32	36	47	115

	1	2	3	4	5	6	7	8	9	10	
Stipa ~~tibetica~~ jacquemontii	2	8	4	2	7	3	2	5	2	5	40
~~Draba~~ Alyss cames alpina	4	-	5	-	1	-	11	2	-	-	23
Caragana	-	1 (80%)	-	-	-	1 (60%)	-	-	4	-	6
Eurotia	-	9	-	5	2	-	-	1	2	1	20
Sibbaldia microph	-	-	-	-	-	-	-	1	-	-	1
Oxytropis microph	-	-	-	-	-	-	-	-	-	1	1
Sheep + goat	+	+	+	-	-	+	+	+	-	+	7
Woolly hare	-	-	-	+	-	+	-	+	-	+	4
Pica / vole	-	-	-	+	-	-	-	-	+	-	2

(6) 1.320 0.737

(2.2) Fell field - N-W facing slope 35°

Rocky -/Bouldery - area -

33°22'36" | 5101 m

78 02 53"

30% Vegetn cover

Grass - Forb mixed community

→ 10% - Dwarf Artemisia

5% Arenaria bryophylla

5% Oxytropis

20% - Grasses → Agropyron canaliculata + Carex

70% - Boulders + Rocks

(11) 2.125 0.886

	1	2	3	4	5	6	7	8	9	10	
Carex melantha	15	-	-	-	-	-	-	-	-	3	18
Agropyron = longear canalicul	4	4	10	6	1	5	1	4	6	3	44
Aren. bryophyll	2 (10)	2 (20)	1 (2)	1 (3)	2 (5)	1 (8)	1 (5)	4 (40)	-	3 (10)	17
Eremopoa sp.	3	2	1	4	1	4	4	7	-	2	28
Potentilla ~~sibirica~~ nivea	1	-	-	5	1	1	6	1	3	2	20
Kobresia sp.	-	2	2	4	2	5	-	1	3	5	24
Artem. sieversia (nana)	-	4	4	5	6	5	5	5	5	6	45
Pot. bifurca	-	-	-	4	-	-	-	-	-	-	4
Dracocephalum	-	-	-	1	-	1	-	5	5	3	15
Oxytr. ~~villosa~~ cash	-	-	-	-	1	-	-	-	2	1	4
Oxytr. microphyll	-	-	-	-	-	-	-	-	-	1	1
→ Woolly hare	+	-	-	-	-	-	+	+	-	-	3
→ Tib. snow cock	+	-	-	+	+	+	-	-	-	+	5
→ Sheep + goat	+	+	+	-	+	-	+	-	+	-	6

(28) – S facing – 33° 22' 00" / -78° 02' 02" | 4797 m | (196) Grazing by Sheep Yak

50° – Loose soil + pebbles (round)

Stipa – Eurotia – sparse –

<10% Vegetn Cover → 5% Stipa, 5% other | 90% – Rubbles

Tussocks

	1	2	3	4	5	6	7	8	9	10	
Stipa tibetica	3	3	3	6	4	3	3	2	–	4	25
~~Draba~~ Alyss caf	1	1	22	–	6	6	15	8	–	–	100
Euphorbia tibetica	2	–	–	–	–	–	–	–	–	–	2
Microgynaecy (?)	–	–	–	4	5	–	–	–	–	–	9
Eurotia	–	–	–	–	1	1	–	–	–	–	2
Stipa capillata	–	–	–	–	–	–	–	–	2	–	2
	6	0.875 0.488									
Sheep + goat	+	–	–	+	–	–	+	–	–	4	4
Yak	+	–	+	–	–	–	–	–	–	–	2

(29) - V.B. Uniform - Caragana - Leymus - Stipa

1-2° slope - South facing

Sady soil

40% Vegetn cover

15% Caragana

10% Leymus

5% Stipa

10% Eurotia + Astragalus

(Grazed)

33°21'46"

78°02'04"

4636 m

60% Sand - fine gravel

Sh: 5 m r plots

Caragana	8	12	18	38
Eurotia	9	9	12	30

	1	2	3	4	5	6	7	8	9	10	
Stipa tibetica	1	1	2	4	-	9	5	-	1	-	18
~~Leymus latifolia~~	15	27	9	23	23	24	60	40	24	18	223
Astragalus sp. ? x gratnicus	4	2	2	3	-	-	-	-	-	1	12
Oxytr. ~~villosa~~ Cash	2	3	1	-	-	5	-	-	-	-	11
Eurotia	-	-	1	-	-	-	1	-	-	-	2
Microgynaecum sp	-	-	-	14	-	-	-	4	-	52	70
Caragana	-	-	-	-	1 (80)	-	-	1	3	-	5
Sheep + goats	+	+	-	+	+	+	+	+	+	+	9
Donkey / Horse	-	+	-	-	-	-	-	+	-	+	3

(7) 1.079
0.554

vole tunnels - everywhere

(198)

(30) - VB Near — 1°-2° Slope | 33° 21' 33" / 78° 01' 38" | 4629 m

(Rale - Samad) ca 1 Km from Village | Winter grazing area

Compact soil - gravels + pebbles

Stipa - Elymus - Eurotia

20% vegetn cover

→ 10% Stipa ; 5% Elymus ; 5 - Eurotia -

	1	2	3	4	5	6	7	8	9	10	
Stipa tibetica	5	5	7	12	11	9	-	-	6	6	61
Elymus dah.	8	1	8	8	1	1	16	16	11	-	70
Eurotia	-	-	-	1	1	1	-	-	-	-	3
Alyss can ~~Draba alp.~~	-	-	-	1	-	-	-	-	-	-	1
Oxytr. microphyll	-	-	-	-	-	-	2	-	-	-	2
Dracocephalum	-	-	-	-	-	-	-	-	+	-	1
Oxytr. vill.	-	-	-	-	-	-	-	-	-	1	1
Stipa capillata	-	-	-	-	-	-	-	-	-	1	1
	8		0.993 0.477		-						
Sh + goats	+	+	+	+	+	+	+	+	+	+	10
Kiang	-	-	-	-	+	-	-	-	-	+	2

2/8 (31) 005 Tartsapuk

Spartuk lake

Elevated site 5° slope, N facing

33°15'31"; 78°02'35"; 4568m

Carex - Elymus VC - 95%, Carex 80%, ~~Elymus~~ Polygonum 15%

Soil - loamy

Species	1	2	3	4	5	6	7	8	9	10
Carex	180	126	233	94	110	195	176	59	90	1285 22
Lucciniala himal. ~~Eremopoa~~	36	38	73	36	2	–	–	23	–	208 –
Polygonum sibirica	24	–	73	–	123	–	21	–	32	273 –
Microgynicum	9	–	–	–	3	–	–	24	–	36 –
Elymus	9	7	5	4	–	–	–	26	124	228 53
Chenopodium	–	–	–	–	–	3	4	–	–	7
Lucciniala distancia ~~[illegible]~~	–	32	–	5	21	–	–	–	–	72 14
Kiang	–	–	–	–	–	–	+	–	–	– 1
Sh + Goat	–	+	–	+	–	–	–	+	–	+ 4
Yak	–	–	–	–	–	–	+	–	–	+ 2
Vole	–	–	+	–	+	+	–	–	–	+ 4

7 1.239 0.637

(32) Spantuk lake

Depressed area (flat)

VC 97% Microgynicum - Polygonum

Crisula.
~~Microgynicum~~ 70%, Polygonum 15%, Eremopoa 10%

Soil - loamy

33°15'28", 78°02'38", 4569m

	1	2	3	4	5	6	7	8	9	10
Crisula ~~Microgynicum~~	414	323	228	125	136	204	28	92	–	49
Carex indan	23	19	–	–	–	4	–	8	44	4
Puccinjala himal. ~~Eremopoa~~	29	73	7	2	1	–	–	4	–	3
Polygonum emodi var. mon	157	125	172	307	68	84	204	63	–	144
Microgynicum	–	–	16	24	13	29	35	6	43	12
Elymus	–	–	–	–	4	32	–	33	68	38
Puccinjala dist.	–	–	–	14	–	–	17	–	–	–

(7)

Sh + Goat	+	–	+	+	–	+	+	+	+	+
Kiang	–	–	–	–	+	+	–	–	–	–
Yak	+	–	–	–	–	–	–	–	–	+
Wooly hare	–	–	–	+	–	–	–	–	–	–
Vole	–	–	–	+	–	–	–	+	+	+

205 (33) Adjacent to Spartuk lake (201)

Puccinella himalayense & P. distance commu.

VC 95%, Puccinea him 60%, P. distance 25%, Carex 8%.

33°15'27"; 78°02'48"; 4569m

Soil - Clay-loam, flat area (patch about 1.5 hac.)

	Sp.	1	2	3	4	5	6	7	8	9	10
	✓ Puccinella him.	20	73	39	21	36	28	18	16	53	342 / 38
	✓ Carex melan	18	43	63	43	14	20	7	4	6	261 / 43
119	✓ Elymus	23	2	28	19	4	6	21	37	63	219 / 16
1324	✓ Pucci. dis.	–	20	33	16	–	–	125	137	68	492 / 93
178	✓ Polygonum emodi var. minor	–	–	–	–	–	–	102	34	138	274 / –
175											
31											
	(5)	1.557 / 0.974									
8											
2	Yak	–	–	–	–	–	–	–	–	–	–
2	Sh. + Goat	+	+	+	–	+	+	–	–	–	5
1	Vole	–	–	–	+	–	–	+	+	+	4
4											

✓

(34) 205 (202)

Along fresh water channel

Calamogostris - Puccinela dis.

VC 100%, Calamog. 50%, Carex 25%,

Soil - ~~loamy~~ clay, flat area

33° 15' 24" } 4567 m
78° 02' 51"

(15) 2.141
0.790

Sp.	1	2	3	4	5	6	7	8	9	10
Calamogostris	98	108	91	28	–	–	–	6	62	393
Carex melanc	37	98	68	84	62	38	63	96	107	679 26
P. distance	23	–	–	15	11	–	19	8	96	172
Arenaria-2	137	38	64	7	8	246	196	216	–	1159 247
Poa-1	–	38	–	8	–	38	67	–	–	151
Polygonum emodi var. minor		32	120	21	205	89	38	28	6	622 83
~~Arenaria~~ ~~Lomatogonium~~ Ranunculus		~~38~~	8	62	8	63	68	261	8	484 6
~~Elymus~~ Tricetum	–	–	–	–	23	23	8	6	6	148 82
Scripus pumilus (thin)	–	–	–	–	–	220	257	206	20	803 –
Oxytropis	–	–	–	–	–	1	–	–	–	1
Yak	–	–	–	–	–	–	–	+	+	+3
Vole	–	–	+	–	–	–	+	+	+	4
Goat + Sh.	–	–	–	–	–	–	–	–	–	–
Kobresia cano.	–	–	–	–	–	1(20)	1(25)	–	–	–
~~Tricetum~~	–	–	–	–	–	~~23~~	~~8~~			
Scripus planifolia	–	–	–	–	–	32	92	99	–	–
Taraxicum ~~off.~~ forest	–	–	–	–	–	–	–	2	–	–
Potentilla supina	–	–	–	–	–	–	–	1	–	–
Puccinea himala..	–	–	–	–	–	–	–	–	–	63

ANIMAL

(35) Away from the Shore (100m) 33°15'25" 78°02'54" | 4560 m

203

Carex community

Flat - with clay

90% vegetn cover

80% Carex melananthe - 20-25 cm

4% Elymus 60 cm

6% Poa → 20 cm

10% Clay with white (Borax?

	1	2	3	4	5	6	7	8	9	10
= Puccinella himala. Shining glue Poa 2 (taller)	38	-	14	20	25	-	15	33	24	18 187
Carex melananthe	57	63	32	57	33	18	54	48	18	36 416
Elymus dahuricus	-	22	58	-	8	25	-	16	14	22 165
Ranunculus lobatus	-	200	-	-	-	-	-	-	47	247
Crassula sp.	-	315	-	4	-	-	-	-	15	92 426
Polygonum emodi var	-	1	-	-	-	105	33	41	37	217
Microgynaecum	-	-	73	13	1	-	8	-	-	58 153
Puccinella distans	-	-	2	-	3	-	10	-	32	47
P. himalaica	-	-	-	-	-	10	-	33	14	62
Scirpus sp.										

(9) 2.017 0.918

2

223

2 Yak	-	-	-	+	+	-	+	+	-	5 +
1 Sh. + goats	+	+	+	+	+	-	+	+	-	8 +
63 tunnels by voles	+	+	-	+	+	-	+	+	+	7 -
			-	-	-					

36 Compact | 33° 15' 46" | 78° 02' 36" | 4571

Dry | Sandy + Murrum

400 m away from Lake

Elymus - Oxytropis

30% Vegetn Covers — 15% Elymus
10% Oxytropis
5% Carex

Elymus dahur.	15	24	27	40	32	45	1	51	-	-	235
Oxytropis mic.	-	1	1	-	-	-	2	-	2	1	7
Stipa tibetica	-	-	4	-	5	2	3	1	15	5	32
Carex melan	-	-	-	-	4	-	-	-	-	-	4

(4) 0.572
0.413

Sheep + goat	+	-	+	+	+	+	+	+	+	+9
Vole tunnel	-	-	+	-	-	-	+	-	-	-2

(37) Island Between Tsartsapuk & Tsokar | 33°16'34" 78°02'05" | 4569 m

205

Flat - marsh / Sedge meadow

95% vegetn cover
→ 75% Scirpus planifolius (s)
10% Ranunculus ; 10% Pucciniella

Vole tunnels
Sheep + goat
Yak

	1	2	3	4	5	6	7	8	9	10
Scirpus planifolius (s)	500	480	470	450	500	400	350	300	500	120
Pucciniella himalaica	10	8	2	–	4	12	–	–	–	–
Ranunculus tuvi	436	480	500	480	750	400	600	550	400	300
Taraxacum forrestii	3	–	–	–	–	–	–	–	–	–
Crassula sp.	300	1400	200	230	600	80	435	305	32	22
Polygonum emodi var. nana	400	70	–	10	225	65	–	80	66	–
Kobresia pygmea	5200	4870	4000	4600	2500	3000	4000	5100	4000	–
Scirpus pumilus	–	[illegible]	60	–	–	–	–	100	–	50
Pucciniella distans ~~Crassula sp~~	–	–	14	18	72	30	70	80	98	–
Kobresia schoenoides	–	–	–	1(2%)	–	1(5)	–	–	–	–
Gentiana sp.	–	–	–	–	–	–	150	–	–	–
Scirpus planifolius (T)	–	–	–	–	–	–	–	–	–	1000
Sh + goat	+	+	–	–	–	–	–	–	+	–
vole	–	+	–	–	–	–	–	–	–	–
Donkey	–	–	–	–	–	+	–	–		

407
36
4846
3
3604
916
37270
210
382
2
150
1000
2
1
1

12

1.706
0.687

(38) (206)

Alluvial Fan - with Pebbles | 33°20'55"
(Brown - round - Coming out of | 78°01'52"
Brown rock - 2-3° - SE. facing. | 4586 m

Vegetn cover 30%.
↳ 20% Artemisia salsoloides
5% Oxytropis microph,
5% Draba + Stipa tibetica

	1	2	3	4	5	6	7	8	9	10	
Artem salsoloids	12	13	23	20	13	17	3	16	8	28	153
~~Draba alpine~~ = Alyssum	10	6	3	-	9	2	4	3	6	1	43
Eurotia	2	=	1	-	1	2	1	1	2	-	10
Stipa capillata	-	2	4	-	2	1	3	-	-	3	15
Oxytrop. microphylla	-	-	-	-	-	-	4	1	-	1	6
Goat - sheep -	-	+	+	-	+	-	+	+	+	+	7
	-	-	-	-	-	-	-	-	-	-	

5

0.994
0.618

→ Biannual 20 seedlings - insignificant cover
?

22/8 Starsteapuk - W Bank

(207)

(39) Wet - Meadow (200 m away from bank) / 33 16' 17" 7801' 38" / 4574 m

Undulating - clay deposit - Grazed by LS.

Yak Horse Donkey

80% vegetn cover

→ 30% Pucciniella himalaica

20% Bromopsis

20% Deschampsia koeleroides

10% Carex melanantha + Oxytropis

Black necked Crane nesting area

(13) 2.319 0.904

	1	2	3	4	5	6	7	8	9	10		
Elym. shrenkianus Bromopsis sp	80	98	-	-	68	-	6	-	29	-	281	
Pucci. him.	138	25	4	64	36	53	15	-	8	26	211	
Microgynaecum	114	-	-	22	22	7	4	27	-	-	307	
Carex melan	95	38	98	55	27	34	38	21	38	37	401	
Desch. koeleroides	4	121	48	68	25	-	7	8	1	10	282	
Elymus dah.	32	30	-	30	18	63	32	28	-		~~368~~	233
Oxytrop. lapponica hypoglott.	-	12	95	83	8	8	37	56	32	37		368
Taraxacum forrest.	-	2	6	13	-	-	1	2	-	2		26
Pucc. distans	-	7	-	4	-	-	28	38	-	-	77	
Scirpus pumilus	-	12	61	23	-	-	-	-	-	-	96	
Pot. multifida	-	-	4	-	-	-	-	8	-	-		12
Ranunculus tri	-	-	4	-	17	14	23	1	3	22	84	
~~Elymus dahur.~~	-	-	-	~~53~~	-	~~34~~	-	~~8~~	-			
Crassula sp	-	-	130	56	142	9	48	-	12	-	447	
Vole hole	+	+	+	-	+	+	+	+	+	-	8	
Goat + sheep	-	-	-	+	-	+	-	+	-	-	3	
Yak	-	-	-	-	+	-	-	-	-	-	1	

(40) Sedge meadow / Bog

Watch Tower

VC 97%, Carex nivalis 50%, Carex parva 20%, Scirpus 10%, Moss 15%

33° 16' 15"; 78° 1' 38"; 4562 m

Sp.	1	2	3	4	5	6	7	8	9	10	
Carex nivalis	15	68	33	94	133	76	205	370	308	262	1564
Carex parva	431	206	407	33	128	–	–	–	–	78	1283
Kobresia sp.	562	94	53	12	4	–	–	–	–	–	725
Ranunculus	42	38	–	94	21	31	13	28	–	17	284
~~Carex~~ Scirp pumilus	–	–	93	22	38	–	–	–	–	147	300
Poa aquatica?	–	–	–	3	–	98	19[illegible]	–	–	–	291
Juncus	–	–	–	47	–	–	78	–	14	–	139
Carex microglokin		–	–	–	–	–	127	–	–	439	566
Catabrocella	–	–	–	–	–	–	–	24	–	12	36
Moss	+	+	+	+	+	+	+	+	+	+	10
Yak	–	–	–	–	–	–	–	–	+	–	1

(9) 1.84[illegible] 0.838

[205]

(41) Sedge meadow - W Bank of Starstapuk TSO

209

33°15'48"
78°01'40" } 4573 m

85% V. Cover
↳ 35% C. nivalis
40% Scirpus pumilus
20% Kobresia. P.

Bog - grazed by Yak, Donkey

Reddish mushroom

15% Aquatic vegetn w/ Potamogeton + Catabrosella Hippuris

(15) 1.477 0.546

	1	2	3	4	5	6	7	8	9	10
Carex nivalis = corbicularis	300	320	~~27~~	-	-	350	290	600	230	2090
Scirpus pumilus	238	260	1300	-	1000	121	108	-	-	3019
Poa sp. dry (3)	8	3	48	85	-	-	-	-	-	144
Carex parva	38	-	62	-	-	-	62	-	-	162
Polygonum sp.	20	-	47	41	66	-	-	-	-	174
Potentilla nivea ~~supina~~	32	-	-	-	-	-	-	-	-	32
Ranuncul. aquat.	-	56	86	138	83	12	6	16	7	404
Kobresia ll schoenod.	-	-	3	2	-	-	-	-	-	5
Gentiana argentea	-	-	13	-	-	-	-	-	-	13
Oxytr. lapponica	-	-	27	-	-	-	-	-	-	27
Hippuris vulgaris	-	-	-	-	-	-	-	-	17	17
Juncus sp	-	-	5	-	-	-	-	-	-	~~27~~ 5
Scirpus planifolius (5)	68	15	78	55	68	-	-	-	-	284
Catabrosella distans	-	-	-	3	6	-	-	-	-	10
Crassula sp	-	-	42	56	18	6	-	-	-	122
Taraxacum forrestii	-	-	-	3	-	-	-	-	-	3
goat dung	-	-	+	-	-	-	-	-	-	1
Yak dung	+	-	-	+	+	-	-	-	-	3
Vole Hole	+	+	-	+	-	-	-	-	-	3

POC

210

(42) Sedge meadow

Boggy (~~[illegible]~~) 331541 | 4621 m

(Less than 41) 780136

95% Vegetn cover

↳ 35% Carex parva

30% Calamagrostis

15% Potentilla supina

10% Scirpus

(14) 1.334 0.508

10% water

30% water

25% water (Fig)

	1	2	3	4	5	6	7	8	9	10	
Taraxacum for	-	-	-	-	4	-	-	-	-		
Carex parva	491	290	405	251	485	290	750	200	400	1100	Pota 4 mogeton
Calamagrostis sp	94	103	58	-	-	33	60	-	-	-	348 (20%)
Scirpus pumilus	200	1000	600	-	103	-	75	600	-	-	2578
Ranunculus	-	15	-	-	6	12	12	-	3	-	48
~~Trigochin maritim~~	-	-	-	-	-	1	-	-			
Crassula sp	-	217	-	-	-	-		-	-	-	218
Gentiana argentea	-	6	9	-	8	-	-	-	-	-	23
Pot. ~~supina~~ nivea	22	38	44	23	1	-	-	-	-	-	128
Scirpus planifolius	-	400	108		-	80	-	-	-	-	588
Kobresia tib	-	-	8	30	66	-	-	-	-	-	104
Pedicularis tub	-	-	-	2	-	-	-	-	-	-	3
Poa sp 2	-	-	-	-	10	-	-	-			10
Juncus sp	-	-	-	3	15	-	-	-	-	10	28
Carex nivalis	-	-	-	51	-	-	-	4	-	-	55
Deschamp. koeler	-	-	-	-	31	-	-	-	-	-	31
Vole	+	-	-	+	+	-	-	-	-	-	3
Yak	-	-	-	-	+	-	-	-	-	-	1

(43) 207 Grazed ← 100 m from cattle cap.

grass - Herb mixed formation 33°15'04" 78°01'21" | 4569 m

Sandy clay - between the cattle camp; Elevated area and Stream bank 400 m from the lake. | Vole digging

95% vegetn cover

→ 45% Oxytropis lapponica var (larger)

→ 35% ~~Calamagrostis~~ Agropyron + Deschampsia

10% Carex melanantha

5% Other herbs

4662 (13) 1.685 0.657 ?

	1	2	3	4	5	6	7	8	9	10	
Oxytropis sp. (n) glutinosa	338	26	145	43	69	144	62	87	182	159	1155
Agropyron longi	98	18	10	1	3	1	–	–	–	6	140
Deschapsia koeler.	64	48	15	–	–	–	–	–	–	–	127
Potentilla bifur	32	38	53	–	92	–	18	12	41	6	292
Carex mela.	44	62	61	74	95	67	28	1.14	104	63	712
~~Cakiberella~~ Puccinellia distans ~~Agropyron~~ longi	–	–	–	4	–	–	–	–	–	–	4
Poa (dry) 2	–	–	33	–	137	6	–	–	–	–	176
Microula tibetica	–	–	–	42	–	3	7	–	–	–	52
Pot. ~~supina~~ nivea	–	–	–	58	–	123	–	6	–	–	187
Chenopodium murale	–	–	–	–	1	–	–	–	–	–	1
Gentiana sp	–	–	–	–	–	2	–	–	–	–	2
Elymus dahu(?)	–	–	–	–	–	–	3	–	–	–	3
Sagina - ~~saginoides~~ procumbens(?)	–	–	–	–	–	–	2	–	–	2	
Yak	–	–	+	–	–	–	–	+	–	3	
Vole Hole	+	+	+	+	+	+	+	+	+	+	10
Goat & Sh	+	–	–	+	+	+	+	–	–	+	6

Stipa tibetica (= sibirica) - log pulse (1) in g*

3 Kiang

2 Pools

212 115 (44)

South of ~~Bank~~ Tso WAR | 33°16' 35" 78°00' 58" | 4590 m

Alluvial fan - Pebbles ∞

> 10 Km² - Gentle slope - 2-3°

Artemisia salsoloides - Stipa

25% cover → Art. 20% ; others 5%. | > 75% Pebbles Cland + Sand

	1	2	3	4	5	6	7	8	9	10	
Stipa capill	1	19	9	4	6	7	8	8	3	15	80
Art. salsol.	43	8	6	12	24	2	48	17	10	14	184
~~Brass~~ Alyss canes alp.	-	-	2	-	-	-	-	-	-	-	2
Oxytr. microphyll	-	-	-	1	-	1	-	-	-	-	2
Oxyt cashmeric	-	-	-	-	-	1	1	-	-	-	2
Goat + sh	+	+	-	+	+	+	+	+	+	+	9

5 0.731 0.484

(45) Southern flank of 33° 16' 47" 78° 00' 17" | 4597.

213

Tso Kar – Sand + Gravel + Scattered pebbles

Stipa - Oxytropis < Microph / Kashmirians

30%

↳ 20% Stipa

10% Oxytropis ; Sibb

Wind blown

	1	2		3	4	5	6	7	8	9	10	
Stipa capillata	8	11	11	14	6	9	6	8	9	9	7	98
~~Draba~~ Alyss can alp.	7	7	6	9	39	22	13	23	4	15	7	152
Sibbaldia sp.	1	2	2	-	2	2	-	+	-	-	2	2
Oxyt. kashm	1	1	2	2	1	7	2	6	5	3	2	32
Stipa ~~Libetice~~ orientalis	-	-	-	-	1	-	-	-	-	-	-	1
Oxy. microphyll	-	-	-	-	-	1	-	-	1	-	-	2
Sh + goat	+	+	+	+	+	+	+	+	+	+	-	9

6

1.037

0.579

(46) E facing - 40° - Stony slope - Dry | 4611

214

100 m Above cattle camp. - | 33°17'39" 77°58'08"

Caragana scrub -

213

25% vegetn cover ; 15% caragana
6% Scrophularia
5% Scopolia + Oxytropis

Heavily grazed & trampled
T. Woolly Hare - Burrow

75% Pebbles — Sandy clayey - 5

	1	2	3	4	5	6	7	8	9	10	
Alyss can. ~~Araba alp~~	12	25	35	20	36	3	20	10	26	2	189
Scrophularia	1	1	2	-	2	-	-	-	-	-	6
Scopolia lu	-	-	-	4	-	-	-	-	-	-	4
Eurotia	-	-	-	-	-	2	-	-	-	-	2
Stipa capill	-	-	-	-	-	2	-	1	-	-	3
Euphorbia tibet	-	-	-	-	-	-	-	1	1	3	5
Sh + goat	+	+	+	+	+	+	+	+	+		9

6 0.463
0.259

✓

Caragana (+40 cm Ht) (5 m. r.)
5 m r. plots.
50 cm Radius

1	2	3	
3	3	4	10
~~+~~	—	2 (Eurotia)	2

(47) Cattle camp: 33°17'43" | 77°58'10" | 4504 m (215)

Flat - Base of the stony slope

Vegeh Cover 35%

~~25%~~. Chenopodium

5%. ~~Agropyron~~ Elyonus

75%. Rocks + Dung.

	1	2	3	4	5	6	7	8	9	10	
Chenopodium rw	17	2	12	57	1	–	–	–	13	86	188
Elymus dahu. (=Leymus)	–	12	14	15	46	10	22	24	1	–	157

(2) 0.689 0.994

✓

Yak	–	+	+	+	+	+	+	+	+	+	9
Sh + goat	+	–	+	+	+	+	+	+	–	+	8

(48) 216

Sedge meadow
W Bank - Tsol Khar -

33°17'48"
77°50'11" | 4555 m

(4

99 % Cover vegetn
50% → Scirpus pumilus
35% Scirpus planifolius
5% Calamogrostis
5% Ranunculus ; 4% Poa etc.

	1	2	3	4	5	6	7	8	9	10	
Ranunculus	76	120	67	77	46	200	205	160	150	175	1278
Scirp. pumilus	1000	525	150	-	1200	1200	1250	1100	1000	800	8225
Poa (dry)	10	10	-	4	-	-	-	4	75	80	183
Scirpus planif.	175	800	600	113	100	150	165	-	120	-	2223
Calamogrostis	10	-	-	-	-	-	-	-	-	-	10
~~Catabros.~~ Puccinellia dist.	7	-	-	-	-	-	-	-	-	-	7
Carex nivalis	-	-	350	400	-	55	6	-	-	-	811
Crassula	-	-	-	155	-	-	-	300	132	-	587
Polygonum sp	-	-	-	-	7	4	12	17	18	30	88
Gentiana argent.	-	-	-	-	-	-	-	10	-	-	10
Yak	+	+	+	-	-	-	-	-	-	+	4
Horse	-	-	-	-	+	-	-	-	-	-	1

(10)

1.234
0.536

St
O
D
Ox
Lv

Sh
Ya
Kia

(49) 23/8/2K4 (217)

E facing | 33° 21' 17" / 77° 57' 26" | 4584 m

Gentle C. 6° - slope -

Fine Murram + Pebbles [Gravel].

Stipa - Oxytropis with sparse Caragana

50% covers:

→ 30% Stipa capillata
10% Oxytropis
10% Caragana + Eurotia

400m away from Chhoster

	1	2	3	4	5	6	7	8	9	10	
Stipa cappillata	21	16	22	13	15	18	16	12	24	19	176
Oxy. micro	8	2	-	3	1	-	-	-	-	1	15
~~Alyss~~ canesc. ~~Draba alp.~~	11	-	-	-	2	3	4	7	10	7	44
Oxytr. cachemys	-	-	-	-	3	1	2	2	3	3	14
Eurotia ~~Leontopodium~~	-	-	-	-	-	1	1	-	-	1	1

(5)

0.908
0.562

Sh + goat	+	+	+	+	+	+	+	+	+	+	10
Yak	-	-	-	-	+	-	+	-	-	-	2
King										+	1

23/8 Cattle camp
Herder's camp

on the plateau (50) (218)

'2 Pens' – | 33° 20' 59" 77 57' 19" | 4655 m

Sandy gravel + Rocks.

35% Vegetn Cover :– 25% Chenopodium marale album
5% Stipa tibetica + S. capill.
5% Oxytropis + Elymus.

65% – Rocks + Exp. soil + Dung.

	1	2	3	4	5	6	7	8	9	10	
Chenop. marale alb.	41	17	–	17	8	47	17	24	56	4	208
Elymus dahur	–	19	27	15	–	5	24	–	–	6	96
Stipa tibetica – Sibirica orientalis	–	–	–	–	2	–	–	–	–	–	2
Kochia sp	–	–	–	–	1	–	–	–	–	–	1
Vole digging	–	–	–	+	–	–	+	+	+		3
Sh. goats	+	+	+	+	+	+	+	+	+	+	10
Yak	–	+	+	–	–	–	–	–	+	+	4

(4) 0.679
0.489

(51) W facing - bouldery - Pebbly slope | 33° 20' 42"
(219) middle slope (35° - slope) | 77° 57' 11"
Caragana - Eurotia - Stipa | 4684 m

- Grazed by LS ;-

50% Cover -

↳ 25% Caragana → 35 cm
15% Stipa capillata → 10 cm
5% Oxytropis ; 5% Eurotia

	1	2	3	
5 m r. plot →				11
Caragana	5	4	2	$\bar{x}$ radi. 50 cm
Eurotia	28	19	14	61

	1	2	3	4	5	6	7	8	9	10	mean Ht
Stipa capillat	10	10	9	16	3	7	11	14	16	4	100
Oxytr. micro.	-	2	2	-	-	1	-	-	1	-	6
Alys can ~~Draba~~ alp.	2	-	8	5	31	-	13	7	14	1	81
Eurotia	1	-	-	-	-	-	-	1	2	4	$\bar{x}$ 7 12 cm
Oxy cachem	-	-	-	1	-	4	1	-	-	-	5
Stipa sibirica	-	-	-	-	8	-	2	-	-	2	$\bar{x}$ = 8 cm 12
A grop. longa	-	-	-	-	-	-	-	-	2	-	2
✓	(7)		1.229 0.631						-		
Yak	-	+	-	-	-	-	-	-	-		1
sh + goats	+	+	+	+	+	+	+	+	+	+	10
Horse + Duty	-		-	-	-	-	-	-	-		

(52)

220

Plateau to the NW of TSO KAR c. 50° - E. facing

Stipa - Oxytropis - community

Boulders + Pebbles + Fine - Gravel

33°20'21"
77°57'04"
4768 m

(50%) Cover → 25% Stipa capillata
20% - Oxytropis.
5% Agropyron + Eurotia

Heavily Grazed by L.S.

	1	2	3	4	5	5	6	7	8	9	10	
Oxytr. microphyll	28	7	3	14	9	-	2	1	-	1	-	65
Oxy cachem.	3	3	-	2	-	4	3	7	9	5	1	38
Eurotia	07	-	-	-	8	2	-	4	2	4	3	x ht 15 cm 30
~~Draba alp.~~ Alyss canes	04	-	16	7	5	11	22	6	-	6	17	94
Stipa capillata	14	13	5	15	10	18	16	15	24	13	11	12 cm ht 154
Euphorb. tibetica	1	-	-	-	-	-	-	-	-	-	-	1
Sibbaldia sp.	-	-	-	4	-	7	-	3	6	6	-	26
Agropy longiarist	-	-	-	-	1	-	1	-	1	-	-	10 cm ht. 3
Yak	-	+	-	+	-	-	-	-	-	-	-	2
Sh. + goat	+	-	-	+	+	+	+	+	+	+	+	8
Tib. Woolly hare	+	+	+	+	+	-	-	+	-	-	-	5

8

1.633
0.785

✓

(53) Old Cattle camp. (Dilapidated): on the plateau | 33°20'11" 77°57'08" | 4785 m

(221)

Abundant Rocks + Pebbles

40% Vegetn cover
→ 25% Oxytropis
10% Stipa capillata
5% Eurotia

	1	2	3	4	5	6	7	8	9	10	Mean Ht.
Oxyt. microph	4	1	-	1	-	8	14	4	12	-	44
~~Draba~~ Alyssum carens	11	18	12	9	29	13	1	7	4	1	105
Sibbaldia sp	6	-	-	-	2	1	-	-	1	-	10
Stipa capillata	21	4	11	-	6	12	15	17	16	15	$\bar{x}$=8 cm 117
Oxytr. cachem	-	1	-	-	-	1	-	-	1	7	10
Eurotia	-	1	-	3	4	-	2	2	-	4	$\bar{x}$ = 16/2 cm

(6) 1.397
0.779

Horse	-	-	-	-	-	-	-	-	-	+	1
Sh. + goats	+	+	+	+	+	+	+	+	+	+	10
Tib. Woolly Hare	-	-	+	-	-	-	-	-	-		1

(54) (222)

[0°] | 33° 19' 32" / 77° 56' 42" | 4874 m

ICS

Chhorten + Plateau -

35% Vegetn cover
↳ 20% Stipa capillata
10% Oxytropis microphylla
2% Draba
3% Eurotia + Dracocephalum

Boulders + Pebbles

	1	2	3	4	5	6	7	8	9	10	x̄ ht ↓
~~Alyss caes~~ ~~Draba~~ alp.	18	22	15	27	14	10	26	7	20	3	162 / 11
Oxytrop. microph	-	2	6	6	5	7	3	-	2	4	35
Oxyt. Cachem	-	3	6	2	6	4	-	3	5	3	28
Stipa capillata	-	6	8	9	-	4	11	18	25	12	6-8 cm. 93
Dracocph.	-	-	1	-	-	-	-	-	-	-	1
Artem Scopa	-	-	-	-	1	1	-	-	-	-	2
Agropy longiaristi	-	-	-	-	-	1	-	-	-	-	1
Sibbaldia sp	-	-	-	-	-	-	4	15	6	1	26
Pot. multifida	-	-	-	-	-	-	2	-	-	-	2
			(9)	1.427		0.649					
Goat + sheep	-	+	-	+	+	-	+	+	+	+	7

√

223

(55) - Adj. to 54 — 33°19'21" / 4873 m
Yellow patch on FCC — 77°56'42"

Stipa - Oxytropis - Draba

35-40 % Cover - Uniform - Fine - Gravel } Pebbles + Gravel 65 %
↳ 25 % Stipa capillata
8 % Oxytropis
5 % - Draba + Dracocephalum

	1	2	3	4	5	6	7	8	9	10	x̄ Ht
Stipa capill	21	26	17	13	21	17	25	22	19	21	202 / 8 cm
~~Draba~~ Alys corros alp.	8	17	13	17	4	5	10	4	8	43	129
Oxyt. cachemyr.	2		4	9	11	7	8	5	4	5	55
Oxyt. microphylla	-	2	2	-	7	-	1	1	-	-	13
Sibbaldia sp	-	-	2	12	2	-	16	4	7	-	43
Dracocephalum	-	-	-	-	-	25	12	-	-	-	37
Poa glaucensis(?)	-	-	-	-	-	-	-	1	-	-	10 cm²
(7) 1.498 0.770											
Horse / Donkey	-	+	-	-	-	-	-	-	+	-	~~2~~
Goat + Sheep	+	+	-	+	+	+	+	+	+	+	9
Tib. Woolly hare	-	-	+	+	+	+	-	-	-	-	4

✓

SSS

(56)

224

Wind Blown - N. facing, | 33°19'01" / 77°56'52" | 4896 m

Gentle slope :- 15° - Pebbles - { Quartzite + Shales }

Stipa - Oxythropis - Artemisia nana

40 %. Covers :- 30 %. Stipa ;

~~40~~ 8 %. Oxythropis ; 2 %. Others.

(10) 1.544 0.671

	1	2	3	4	5	6	7	8	9	10		
Oxyt. micro	3	1	1	2	8	4	-	-	2	-		21
Oxy. cachem	2	2	1	3	-	1	7	3	-	7		26
~~Draba alp~~ Alyssum	12	17	6	10	6	4	3	6	12	16	18	110
Stipa capill.	28	18	15	5	18	14	8	5	13	30		$\bar{x}$ 6 cm - 1.54
Agropyron longi	-	1	-	-	-	-	7	8	-	-		16
Poa lahulensis	-	2	-	-	-	-	1	-	-	-		3
Sibbaldia sp	-	10	2	5	2	1	1	-	2	7		30
Artemisia nana	-	-	2	-	-	-	-	-	-	-		2
Pot. bifurca	-	-	-	-	-	-	-	2	-	-		2
Eurotia	-	-	-	-	-	-	-	2	-	-		2
										-		
Sh + gout	+	-	-	+	+	+	+	+	+	-	+	7
T. Woolly Hair	-	-	-	+	+	-	-	-	-	+	-	3

✓

(57) Plateau / Ridge - Windblown area - Fine murrum + scattered

33° 18' 39" 77' 56° 31"	4965 m

Pebbles - Stipa-oxytropic community

40% vegetn cover | 5° slope (N-W)

↳ 30% Stipa

No vole ~~+ [illegible]~~ ↳ 10% Oxytropis microphylla + O. cachemyri + Draba

1.354
0.681

8

	1	2	3	4	5	6	7	8	9	10	
Stipa capillata	23	24	18	12	8	36	18	14	28	16	197 $\bar{x}$ Ht → 5-6 cm
Oxyt. microphylla	1	-	-	-	-	-	-	1	1	1	4
Oxytrop. cachem	3	4	6	3	8	8	2	-	4	1	39
~~Draba alp.~~ Alyss cana	18	14	20	-	-	4	4	12	5	20	97
Pot. bifurca	-	-	-	77	16	-	-	-	-	2	95
Carex melanat	-	-	-	-	3	-	1	-	-	-	(→ moist) 4
Artemis. nana	-	-	-	-	-	-	1		-	-	1
Sibbaldia sp	-	-	-	-	-	-	-	1	-	-	1
Sh. + goat	+	+	+	+	+	+	+	+	+	+	10
T. Woolly Hare	-	+	-	-	+	-	-	-	-	-	2

226

(58) E facing slope 33° 18' 46" | 4918 m
35° - Caragana scrub 77° 56' 40"

50 %. Vegetn cover
↳ 30 %. Caragana
→ 8 %. Aconogonon
5 %. Grass (Festuca / Agropyron - Poa

Scattered pebbles / Stony soil - Loose clay

Grazed Shapu Hare

		①	②	③	
5 mr. plots	Caragana →	37	31	18	86
	X̄ Radius - 40 cm Eurotia	1	7	42	58
	X̄ Ht → 25 cm Artemisia	—	14	62	76

Snow leop. scat
Heavy use by weeds

(9) 1.710
0.778

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
Caragana	5	1	4	7	1	4	6	3	4	9	44
Agropy. long.	10	-	-	6	2	-	6	-	15	6	45
Poa lahulensis	4	4	10	-	8	1	2	3	6	8	38
Carex melan	-	-	-	-	-	-	-	-	-	3	3
Aconog. tortuos.	-	1	2	1	1	1	-	1	1	-	8
Pot. ~~sibirica~~ / leucomata	-	-	3	-	-	-	-	-	-	-	3
Artemisia sieversi	-	-	4	-	2	1	-	-	-	-	7
Eurotia	-	-	-	-	3	4	2	-	-	-	9
Corydalis sp. (adiantifo Cyrtha fol.)	-	-	-	-	-	-	-	1	1	-	2
Sheep + goat	-	+	-	+	+	-	+	-	+	+	6
Shapu	+	+	+	-	+	-	-	-	-	-	4
Hare T. Woolly	-	+	+	-	-	+	+	-	+	+	6
Snow cock	-	-	-	+	+	-	-	-	-	-	2
Yak	✓								+	-	1

(59) (227)

Sandy / stony slope ; E-facing
(45° slope) Caragana - Eurotia - Stipa patch

BSS
33° 19' 45"
77° 56' 56"
4807 m

50% Cover
↳ 30% Caragana
15% Eurotia
5% Stipa

Circular plots
ht 55 cm ; 48 cm
R. 45 cm

Caragana	2	2	4	8
Eurotia	4	8	2	14

7 1.574 0.809

	1	2	3	4	5	6	7	8	9	10	11	
Stipa capill	4	-	-	-	3	-	-	6	-	2		15
Alyss cane Draba adp	16	2	-	17	-	12	-	8	-	5		60
Agropyron long	2	-	3	-	-	-	4	-	4	-		13
Stipa sibirica	-	-	-	-	2	-	-	-	3	2		7
Pot. bifurca	2	-	-	4	-	-	-	1	-	6		13
Oxyt. microphy	-	6	-	-	-	7	3	-	-	1		14
Eurotia cerat	-	-	-	1	-	-	2	-	-	-		3
Sh + Goat	-	-	+	+	-	-	-	+	-	+		4
T. Woolly H.	+	-	-	-	+	-	-	-	-	-		2

(60) (228)

VB- W Bank of Tsokar
Sedge meadow — 30 m from the road

33° 19' 19"
77 57 13
4569

Boggy

90% vegoh cover
↳ 55% Scirpus pumilus
20% Carex parva
16% Other

(14) 1.590 0.602

	1	2	3	4	5	6	7	8	9	10	
Carex nivalis	-	-	-	-	-	7	-	-	2	10	19
Juncus sp.	17	6	-	-	-		-	2	-	2	27
Scirpus pumilus	150	120	112	120	38	200	38	128	93	36	< 100 1035
Polygon sp. eno	19	7	40	10	-	3	-	-	15	-	94
Pedicul. longif	10	-	-	-	-	-	-	-	-	-	10
Scirpus planifol	110	60	38	-	63	-	93	-	138	-	502
Trigl. maritt	-	4	-	-	-	2	12	-	-	-	18
Carex parva	-	60	50	98	62	730	40	-	-	128	1168
Crassula sp	-	-	38	16	42	14	-	8	10	96	224
Ranunculus sp	-	-	32	22	2	-	-	-	7	-	63
Pucci. himalaica	-	-	15	-	2	-	-	-	-	-	17
Gentiana sp	-	-	6	3	3	-	-	-	1	7	20
Kobresia sp.	-	-	3	-	-	-	-	-	-	3	6
Taraxacum off	-	-	-	1	+	-	-	-	-	5	6
Yak	+	+	-	-	+	-	-	+	-	+	5
Sh + Goat	+	-	+	+	+	-	+	-	+	-	5
Horse	-	-	+	+	-	-	-	-	-	-	2

✓

(6) 225 229

WB :- NW Flank of Tsokar
Wet/Boggy area (½ km) from
Lake; 400 m from Chorten

33° 21' 37"
77° 57' 31"
4611 m

Highly grazed, Campingsite (20m).
Full of Garbage -

90% Vegetn cover → 60% Scirpus pumilus
20% Pedicularis
5% Triglochin palustre
5% moss + other
10% - water

	1	2	3	4	5	6	7	8	9	10	
Scirpus pumilus	730	645	765	750	485	225	310	155	355	430	4850
Pedicularis longiflora	46	4	-	6	52	6	18	46	24	44	234
Triglochin maritima	1	-	1	1	-	1	3	-	2	1	10
Trigl. palustre	5	-	1	-	-	2	16	18		9	71
Polygon. islandicum	-	-	-	-	-	-	1	21	-		25
Juncus sp.	6	1	-	-	-	-	1	7	1	3	19
Ranunculus trivsp	41	14	32	4	5	26	-	-	46	17	185
Poa (dry) 2	17	-	1	-	-	3	6	2	1	3	33
Gentiana argentea?	-	3	-	-	-	-	-	-	18	1	22
Taraxacum off	-	-	1	-	-	-	-	-	1	-	2
Polygonum sp	-	-	8	-	-	-	-	-	-	-	8
Potent. multifida	-	-	-	1	-	-	-	-	7	-	8
Carex nivalis	-	-	-	-	50	185	-	-	-	-	235
Donkey/Horse	+	+	+	+	+	-	+	-	+	+	8
Yak	-	+	+	-	+	-	-	-	-	-	3

13 0.692
0.240

24/8 Rafé Marsh meadow (62) → 33°21'20" / 70°1'20" | 4579 m (230)

PGS

Sedge meadow – with Hummocks

Grazed area

30 m from the dry – salty bank

90% Cover:-

50% Carex nivalis

15% Carex parva

15% Scirpus pumilus

10% Ranunculus + Pedicularis

10% – Water (Puddles) –

	1	2	3	4	5	6	7	8	9	10	
Carex nivalis	432	64	26	52	76	68	127	4	-	-	986
C. parva	170	280	135	5	20	165	12	185	~	-	972
Scirpus pumilus	145	210	84	280	145	300	215	170	240	225	2015
Ranunculus sp.	180	46	40	56	36	45	52	14	50	180	699
Pedicularis long	02	-	-	-	-	-	-	-	-	-	2
Gentiana sp.	11	4	-	-	-	1	6	23	1	-	46
Taraxacum off.	3	4	-	5	1	3	-	3	1	2	22
Polygonum emodi	-	32	12	14	7	-	8	12	-	-	85
Triglochin maritimum	-	-	-	-	-	-	-	2	-	-	2
Kobresia schoenoid	-	-	-	-	-	-	-	-	1(4)	3(5)	4
Poa ~~(dry)~~ 2	-	-	-	-	-	-	-	-	24	-	24
Puccinellia kingii	-	-	-	-	-	-	-	-	2	2	4
Crassula sp	-	-	-	-	-	-	-	-	-	135	135
Deschampsia koeleri	-	-	-	-	-	-	-	-	-	9	9

(14) 1.568 0.594

(63) 232 231

Dry - Flat - Sedge - Grass 33°21'26" | 4573 m
Meadow :- White clay 78°01'06"
(Borax ?)

70% vegetn Cover
→ 45% Calamogrostis
→ 10% Carex melanantha
→ 15% Pucciniella
→ ~~Ely 140% Elymus~~
30% - Bare Earth

Grazed
Very compact Soil

7 1.186
0.609

	1	2	3	4	5	6	7	8	9	10	
~~Calamogrostis sp~~	~~07~~	~~05~~	~~5~~	~~-~~	~~1~~	~~7~~	~~23~~	~~8~~	~~19~~	~~80~~	
Pucciniella dist.	88	25	24	7	19	45	2	4	3	-	217
Carex melanantha	3	-	-	-	-	-	-	-	-	-	3
Microgyn ✓ Salsola	-	14	-	-	13	-	108	71	57	-	263
Calamogrostis (?) ~~Elymus dahuricus~~	115	105	157	246	87	67	72	68	77	24	1018
Taraxacum off	-	-	5	-	-	-	-	-	-	-	5
Ranunculus sp	-	-	9	163	-	-	-	-	-	-	172
Crassula sp	-	-	-	28	-	-	-	-	-	-	28
Sh + goat	-	-	-	+	-	-	-	-	-	-	1
Horse	+	+	+	-	+	+	-	-	+	-	6
Yak			+	-	-	-	-	+	-	-	2

✓

(232)

(64) Compact _ Elevated clayey soil

(227)

Elymus (≤ Leymus) 33°21'26" 78°00'51" | 4568m

→ 60% cover - All Elymus | Vole hole

	1	2	3	4	5	6	7	8	9	10		X Conv
Leymus secalinus ~~Elymus~~ dal	150	49	37	72	66	56	83	107	70	93	1137	50
Eurotia cerat	-	1	-	1	2	-	-	-	-	-	9	5
Stipa capillata	-	-	-	-	2	-	-	-	-	-	2	1
Horse	-	-	-	-	-	+	+	-	-	-	2	
Sht Goat	+	-	+	+	+	+	+	-	+	+	8	
vole hole	+	-	+	+	+	+	-	+	+	+	8	

(3)

0.006
0.008

✓

(65) ~~ES~~ Wet = Sedge meadow
Slight Hummock formation
95% cover
45% Cara pasva
40% Scirpus planifolius
5% Carex nivalis
10% Other (Ranunculus, Gentiana) - Calamogrostis

33°21'48"
78°00'23"

233
4577

Grazed

(11)

	1	2	3	4	5	6	7	8	9	10		1.465 / 0.611
Scirpus planifo	660	350	150	10	-	-	-	30	-	-	1208	30
Carex pasva	72	105	36	43	184	120	93	55	47	86	849	8.5
Calamogrostis	-	42	-	27	-	16	19	29	33	31	197	4.2
Gentiana holciformis	8	-	-	-	-	-	-	-	-	-	8	.8
Ranunculus trichophyllus	92	12	70	4	19	11	76	25	15		332	3.1
Trigloch. maritim	-	9	-	-	-	-	-	-	-	-	9	.9
Scirpus pumilus	-	-	19	510	215	305	340	395	215	530	2259	6
Puccinellia hindalica	-	-	-	-	10	28	-	-	-		38	.3
Carex nivalis	-	6	-	-	-	-	8	-	95	-	109	1.3
*Pedicularis	-	-	-	-	-	-	-	-	8	-	8	.8
Sh. + goat	-	-	-	+	-	-	-	-	-	-	1	
Horse	+	+	+	-	-	+	-	-	-	+	5	
Polygonum Sibiricum	-	-	-	-	-	-	-	-	12	-	2	.2

✓

* Pedicularis cheilanthifolia

S.S.S.

(66) Calamogrostis wet meadow | 33° 21' 51" / 78 00' 24" | 234 | 4586 m²

85% Cover

Grazed

↳ 50% Calamogr. → 20% Scirpus pum | 15% Pucciniell 5% other

	1	2	3	4	5	6	7	8	9	10	
Calamogrostis Koleiformis	153	140	83	83	142	151	73	133	72	145	1175 11.7
Pucc. himalaica	124	24	15	27	7	38	3	37	42	65	382 3.82
Polyg. emodi	42	5	18	57	23	35	17	29	23	18	422 4.2
Ranunc Cymbalaria	16	98	110	68	82	26	-	-	4	13	417 4.17
Carex Glaux maritima	-	110	-	-	120	43	-	-	-	-	273 2.73
Triglochin mait	-	19	-	-	-	-	-	-	-	-	19 1.9
Gentiana leucolaena	-	3	-	-	-	-	-	-	-	-	3 .03
Scirpus pumilus	-	99	43	-	80	32	-	-	-	24	278 2.78
Pucciniella distans	-	8	10	12	-	-	-	-	-	-	30 .3
Taraxacum leucanthum	-	-	-	-	-	-	-	-	24	-	24 .2
Horse	-	+	+	-	-	-	+	-	-	-	3
Sh. + goat	+	+	+	-	-		-	-	-	+	4
Vole hole	-	+	-	+	+	-	+	+	+	+	7

10

1.736

0.754

(67) Rocky/Bouldery slope above Rale approach Road
S-W facing slope - 45°.

33° 21' 46" | 4630 m
78° 01' 07"

Tanacetum - Eurotia

35% Vegetn cover
→ 20% Tanacetum
10% Eurotia
5% Stipa - Draba
} Heavily Trampled Grazed

5 m r.r plot → Eurotia | 12 | 12 | 3 | 27

	1	2	3	4	5	6	7	8	9	10		X cov
Eurotia ceratoides	1	1	-	-	1	1	1	4	-	2	7	7
Tanacetum artic	5	6	-	5	2	3	5	3	6	4	39	3.9
Alyssum Draba Alyssum canescense	-	12	34	13	-	9	2	4	2	-	76	7.6
Stipa capillata	-	-	1	-	-	-	-	+	1	-	3	.3
Alyssum canescens												
Horse	-	-	-	-	-	+	-	-	-	-	1	
Sh + goat	-	-	-	-	-	-	-	-	-	-		

4

0.917
0.661

236

(68) Gentle S. facing slope - stable
10° - Bouldery / sandy
wind blown area - near Polokongkha La

33° 15' 47"
78° 11' 13"
5012 m

Stipa - Tanacetum comm.

45% Cover →
30% - Stipa sibirica
10% Tanacetum artemisoides
5% Sibbaldia; Agropnon longiaris

Sh + goat grazing

→ 20% - Boulders; 35% Exposed soil - silty - sandy.

	1	2	3	4	5	6	7	8	9	10		X cov
Stipa sibirica	21	4	13	15	21	18	18	15	30	17	172	17.2
Chamaerhodes sabulosa ~~Sibbaldia sp~~	32	34	7	11	24	14	43	-	29	20	214	2.14
Tanacetum artemisioides	-	10	5	-	3	2	-	5	-	7	32	3.2
Polygonum sibiricum ~~amodi~~	-	-	-	-	-	1	-	-	-	-	1	.1
Draba sp. 2 (Y)	-	-	-	-	1	-	-	-	-	-	1	.1
Carex melanantha = C. moorcroftii	-	-	-	-	.	-	-	-	-	16	16	1.6
Yak	-	-	+	+	-	-	+	-	-	-	3	
Sheep + goat	+	+	+	+	+	+	-	+	+	+	9	

6

1.057
0.589

✓

237

(69) Gentle N. facing slope 5-10°; - Bouldery - sandy

Stipa - Agropyron

Grazed area -

33° 15' 31"
78° 10' 59"
4989 m

50% cover → 30% Stipa — 30%
Carex — 5%
5% Dracocephalum - 5%
Herbs - Lepidium + Draba 10%

	1	2	3	4	5	6	7	8	9	10		$\bar{X}$ cov
Carex moorcroftii	6	-	-	-	-	2	-	-	-	-	8	.8
Stipa sibirica	17	36	24	25	27	-	-	13	19	22	183	18.3
Dracocephalum	15	6	-	-	16	-	2	-	41	-	80	5
Draba (Y)	11	8	12	1	-	1	3	-	-	-	36	3.6
Lepidium capit	2	-	7	-	-	-	1	-	-	-	10	1.0
Chamaerhodos ~~Cobbaldia~~ sabulosa	-	-	4	-	-	-	9	-	1	33	47	.4
Elymus canaliculatus ~~Agropyron lapidistus~~						3	6	-	-	-	9	.9
Sh. + Goat	+	+	+	+	+	+	-	+	+	+	9	
Yak	-	-	-	-	-	+	-	-	+	+	2	

7

1.436
0.738

✓

(238) 237

70 | Flat area. moist 0° Aspect | 33 15 51
moist | Stipa - Carex - Sibbaldia | 78 10 54"
Sandy clay - Brown soil. | 4977m
55 ~~60~~% vegetn cover.
→ 30% Stipa
20% Carex
~~15~~% other

	1	2	3	4	5	6	7	8	9	10		$\bar{X}$ cov
Stipa sibirica	27	27	15	5	-	7	20	3	14	11	129	12.9
Chamaerhodos ~~Sibbaldia~~ sabulosa	2	-	-	5	2	17	52	1	22	18	119	1.19
Carex moorcroftii ~~melan~~	17	10	17	5	1	8	-	57	28	27	170	17.0
* Chenopodium ~~[illegible]~~	-	12	-	3	3	-	-	-	-	4	22	2.2
Tanacet. artemisioides		-	-	-	-	-	-	1	-	-	1	.1
Yak	-	-	-	-	+	-	+	+	+	+	5	
Sh + goat.	+	+	-	-	+	+	+	-	-	+	6	

5 1.244 0.773

✓

* chenopodium glaucum

239

(71) Wet Meadow - Near the Summer camp of Sheep herders - (Polokongkha La).

10% Moss
20% Carex
20% Oxytrop
10 others

Clayey soil - Heavily croped close to the ground - 70% Vegetn cover

33° 16' 08" / 78° 10' 32" / 4964 m

	1	2	3	4	5	6	7	8	9	10		
Polygonum emodi	12	28	37	27	13	31	36	34	57	126	451	4.51
Glaux maritima	32	-	3	-	-	-	82	-	-	-	117	1.17
Taraxacum sp	2	-	-	-	-	-	-	-	4	-	6	.6
* Scirpus sp (plant)	120	300	500	400	335	230	250	330	276	180	< 5 cm	2921 / 29.2
Poa koelzi	15	-	15	42	-	-	-	-	-	-	5 cm	72 / 1.2
Draba lasiophylla	30	-	-	-	-	-	-	-	-	-	2 cm hi	301
Pot. multifida	6	-	4	-	-	5	30	-	-	-	45	4.5
Puccinellia himalaica	7	-	3	-	26	43	-	51	22	6	158	1.5
Pah Thalictrum alpinum (Thalictrum)	-	2	-	-	-	-	-	-	-	-	2	.2
Arenaria sp	-	-	-	-	-	-	42	12	16	-	98	.8

(10) 0.970
0.421

* Scirpus planifolium

Yak	+	+	+	+	+	+	+	+	+	+	10
Horse	+	-	-	-	-	-	-	+	+	+	3
Sheep	-	+	+	-	-	-	-	-	-	-	3

(72) (240)

Rocky outcrop [Bouldery]
N. Facing - 45° slope
Scattered Urtica hyperborea
($\bar{X}$. 1 clump per 5 m r area).
Boulders with 10% ~~20%~~ Lichens

33° 15' 47"
78° 08' 58"
5097 m

(25)% Vegetn Cover : 15% Artemisia
3 ~~5~~% Agropyron
~~3~~% Thylacospermum
2
5 } Poa Oxytropis & others

Artemisia - Agropyron - Poa Lahulensis - Urtica

(75%) : Rocks (45%) ; Soil (20%) ; 10% Lichens

(13) 2.028 0.791

	1	2	3	4	5	6	7	8	9	10		$\bar{X}$ cov
Agropyr. Longiarist = Elymus canaliculatus	3	5	4	10	-	1	12	2	10	18	65	6.5
Artem. nana	15	14	-	12	-	4	-	4	3	11	63	6.3
Dracocephalum	10	20	-	-	-	-	-	-	-	-	30	3.0
Sauss. glanduligera ~~[illegible]~~ heterophyll	2	4	-	-	-	-	2	2	1	-	11	1.1
Oxytropis ~~glutinosa~~ microphylla	-	10	2	-	-	8	-	-	-	-	20 heavily Grazed	2.0
Poa Lahulensis	-	3	6	-	-	-	-	8	2	4	23 tall within	2.3
~~Draba alpina~~ Alyssum canesc.	-	-	13	6	-	-	-	-	-	-	19 (urtica bushes)	1.9
Thylacospermum caesp.		1/(20)	-	-	-	-	1/(5)	-	-	-	2 25	2.5
Urtica hyperborea	1/(50)	-	-	-	-	-	-	-	-	-	1	5
Arenaria serpyllifo	1	-	-	-	-	-	-	-	-	-	1	.1
Pot. multifida	-	-	-	-	-	-	-	-	-	1	1	.1
Poa attenuata	-	-	-	1		-	-	1	-	-	2	.2
Sh. + Goat	+	+	+	-	-	-	-	+	-	+	5	

(73) 241

Stream course of Polokongkha Sb (5 m on either side).

N. facing slope – Kobresia – Sedge meadow – 35° slope.

75% Vegetn cover →

↳ 50% Kobresia pygmea

10% K. schoenoides

10% Thalictrum + Potentilla

33° 15' 30"
78° 08' 44"
5259 m

Grazed by Yaks

(14) 1.211 / 0.489

	1	2	3								X Cover
Kobr. pygmea	085	342	560	482	325	340	610	290	310	500	4644 50
Kobr. schoenoid	4/10	5/15	17/12	13/20	14/20	3/5	6/5	11/20	2/15	1/3	135 13.3
Oxyt. lapponica	86	52	74	62	–	–	76	56	–	32	432 4.3
Pot. multifida	40	78	–	41	12	–	21	60	32	8	292 2.9
Aren. serpyll.	36	–	47	–	51	13	7	3	–	46	203 2.0
Saxif. brunonis	3	–	2	–	3	–	1	1	4	4	18 1.8
Thali. alpinum	25	41	47	62	39	8	90	104	21	46	483 4.8
Scirp. pumilus	23	36	16	56	92	3	42	4	30	42	338 3.3
Poa tabulensis	14	7	–	–	–	1	–	4	21	–	47 1.0
Potent. nivea sibirica	→	–	–	10	3	38	8	2	–	–	61 2
Tarax. leucanthum forestii	–	–	–	3	3	–	–	–	1	–	7 .7
Gent. leucolaena sp.	–	–	–	–	–	1	–	–	2	2	5 .5
Pedicul. rhinanthoides Oed	–	–	–	–	–	–	–	1	–		1 .1
Ranunculus pulchellus Fr.	–	–	–	–	–	–	–	–	–	50	50 .5
Snow cock	+	+	+	–	+	–	–	+	–	+	6
Sh. + goat	+	+	–	+	+	–	+	+	–	+	7
yak	+	–	–	+	–	+	+	+	–	+	6

(74) 242

Gentle (20°) N facing
Wind blown (?) Area
Compact gravel + Rocks (10%)

33° 15' 40"
78 08 39"
5260 m

70% Veg. Cover
↳ 40% Carex melanantha
20% Poa pagopyll.
5% Stipa capillata
2% Agropyron (new)
3% Pot. bifurca

Sheep grazing
13 1.566 0.610

	1	2	3	4	5	6	7	8	9	10		$\bar{X}$ Cov
Carex melanan	76	62	50	22	33	53	40	44	30	33	443	40
= C. moorcroftii Sauss. ~~stolicz~~ glanduligera	20	28	~	-	-	-	1	2	7	2	60	6
Artem (isia) sieversiana	1	-	-	-	-	-	-	-	-	-	1	.1
Arenaria serp.	22	-	-	24	+	-	28	-	5	21	100	1.0
Elymus schrenkianus ~~Agropy~~ ~~nana~~ (new)	-	6	1	-	-	4	-	-	1	2	14	1.4
Poa pagophylla	9	7	6	4	12	-	-	-	6	15	59	3
Potent. bifurca	-	4	9	6	14	2	6	-	-	-	41	4.1
Chamaerhodos ~~[illegible]~~ sabulos	-	-	8	-	-	-	-	14	5	-	27	2.7
Stipa capillata	-	-	-	16	-	1	4	4	2	21	43	4.3
Dracocephalum heterosph.	-	-	-	-	-	2	-	5	6	-	13	1.3
Oxytr. lapponica	-	-	-	-	-	-	1	-	-	-	1	.1
Sauss. taraxicifolia	-	-	-	-	-	-	-	-	-	1	1	.1
Urtica hyperborea	-	1	-	-	-	-	-	-	-	-	1	.1
Sh + goat	-	+	+	-	+	+	+	+	-	-	6	
Yak	+	+	-	-	-	-	-	-	-	-	2	

(75) Similar to (74) - continuation of comm. 15°; N. facing

33° 15' 47"
78 08 43"
5233 m

243

70% Vege. cover
40% Car melan
5% Poa pagophylla
10% Stipa capillata
2% Sauss.

} Grazing by Yuk

(8) 1.202 0.578

	1	2	3	4	5	6	7	8	9	10		X Cov
Car. melan = C. moorcroft	24	46	36	20	41	22	29	38	35	28	31.9	31.9
~~Sibbaldia mic~~ = Chamaerhodos sabulosa	15	6	-	13	-	-	3	4	2	31	7.4	0.718
Poa pagophyll	-	2	1	-	1	-	-	-	-	-	4	.4
Stipa jacquemontii ~~capill~~	-	9	13	-	5	8	-	16	13	8	7.2	7.1
Oxyt. lapponica	-	1	1	-	-	-	-	-	-	-	2	.2
Dracoceph. heter	-	2	13	17	-	3	-	-	-	5	4.0	2
~~Draba alpina~~ Alyssum canescens	-	-	-	-	-	-	5	-	-	2	7	.7
Sauss ~~stolice~~ glanduligera	-	-	-	-	-	-	4	-	-	-	4	.4
Yuk	+	-	+	+	-	+	+	-	+	-	6	
Sh + goat	-	-	+	+	-	-	-	+	-	-	3	

26/8 (76)

244

33° 23' 50"
78° 0 1' 02"
4684 m

Stipa - Oxytropis - Eurotia

Gravel + Sandy soil with stones

Flat - (< 3°)

~~25~~ % V. C. → 15 % Stipa ; 5 % Oxytropis.
5 % Draba + Eurotia

	1	2	3	4	5	6	7	8	9	10	
Stipa capill	19	11	16	22	10	14	20	19	11	8	150
Eurotia	1	1	5	1	2	1	-	-	-	-	11
Oxyts. microphyll	1	1	3	-	-	-	4	-	1	1	11
~~Draba sp.~~ Alyss canesc.	3	13	-	-	9	3	4	-	16	12	60
Sh + goat	+	+	+	+	-	+	+	+	+	+	9

(A) 0.921
0.664

✓

245 (78) 240

Cattle / sheep - Goat

Camp - Base of a hillock

Pebbles + Scree + Sandy loam

Chenopodium - Kochia

33°23'57"
78°01'28"
4727 m

30% 30% Cover :→ 20% Chenopodium murale
10% Elymus
10% Oxytropis - Kochia + Eurotia

70% - Rocks + stones

	1	2	3	4	5	6	7	8	9	10	
Chenopod. mu	208	9	-	9	1	17	10	5	7	6	272
Kochia sp	1	-	-	-		-		-	1	-	2
Elym. dah	-	-	17	1	13	-		15	8	-	54
Eurotia	-	-	-	-	-	-	1	-	-	-	1
Scopolia										1	1
Horse + Donkey	-	-	-	-	-	+	-	-	+	-	2
Yak	-	-	-	-	+	-	-	+	+	+	4
Sh+Goat	+	+	+	+	+	+	+	+	+	-	9

5

0.521
0.324

(78) 246

W-facing slope (35°)
stony loose soil (Gravel + sand)
20 away from LS camp.

33° 23' 54"
78° 01' 41"
4784 m

(30) % V.C. → 12% S. sibirica
10% S. capillata
5% Draba
3% Eurotia

Heavy grazing

(70%) Soil + Rock

	1	2	3	4	5	6	7	8	9	10	
Stipa sibirica	2	6	7	14	9	9	8	12	2	–	69
S. capillata	4	3	4	–	2	6	7	4	1	16	47
Eurotia	1	1	1	1	–	1	2	3	5	1	16
~~Draba alpi.~~ Alyss canes.	18	4	15	18	2	13	12	7	–	12	101
Oxyt. micro	–	2	1	–	3	1	–	–	1	–	8
Oxytr. carhm.							1	–	–	–	1
Sh + goat	+	+	+	+	+	+	+	+	+	+	10

(6) 1.356
0.757

✓

(79) N. of Ridge line (3 m & below) E-W Direction | 33° 24' 06" 78° 01' 48 | m 4902

247

Rocky, Covered with shales

Wind blown – 30° – 35°.

Stipa – Oxytropis – Potentilla sibirica

25% V.C. → 12% Stipa

→ 5% Oxytropis

4% Potentilla

4% Artemisia ; Draba + Dr

13 2.286 0.891

	1	2	3	4	5	6	7	8	9	10	
Artem. sieversia	-	-	-	-	-	-	-	-	1/5	3/8	
~~Draba alp~~ Alyss can.	8	-	7	-	19	1	-	-	-	4	39
Stipa capill.	12	7	-	3	2	-	-	1	-	-	25
Pot. ~~sib.~~ nivea	2	-	-	-	-	-	-	-	-	-	2
Agropyr. canalic. longiar.	-	3	7	3	6	4	3	-	-	-	26
Pot. leuconota (= P. sericea)	-	13	1	2	-	-	5	-	-	3	62
Dracoceph.	-	10	5	4	7	4	-	3	-	-	33
Artem. nana	-	-	6/10	13	3/5	5/8	11/20	7/15	1/2	-	33/73
Poa pagophylla	-	-	1	-	-	-	3	1	3	10	18
Oxytr. microph	-	-	4	1	-	3	1	1	1	-	11
Eurotia	-	-	-	3	3	-	-	-	-	-	6
Sibbaldia	-	-	-	-	21	2	-	3	-	-	26
Oxytr. cashmir.	-	-	-	-	1	2	-	2	3	2	10
Arenaria bryoph						1/10	1/10	-	-	-	2/20
Sh + goat	+	+	+	-	+	+	-	+	+	+	8
~~Hose~~ Kiang	-	-	-	+	+	-	-	-	-	-	2

(80) 248

N Facing ; 25° slope
Loose soil with scattered shales. Carex melanantha - Artemisia nana - Pot. bifurca com.

33° 24' 04"
78° 02' 04"
4930m

249

40% veg. cover
↳ 20%. C. melanantha
10%. Artem. nana
5%. Potentilla + Dracoceph.
5%. - Oxyfr. microph. + Agropyron

(10) 1.681
0.730

	1	2	3	4	5	6	7	8	9	10	
Carex melan.	42	14	11	16	33	17	11	11	25	9	189 10-12 cm ; Fl.
Dracoceph.	12	-	7	12	4	24	-	4	-	1	64
Oxyfr. cash.	3	-	1	-	3	2	6	-	1	2	16
Agropy longian	5	-	10	3	5	3	5	2	-	3	36
Pot. bifurca	9	-	6	9	-	-	1	-	3	11	Fl. 39
Oxyfr. micro.	1	1	2	3	1	-	1	-	-	1	10
Artem. nana	-	5/25	1/10	6/15	-	4/10	2/8	2/10	-	-	20/78
Sibbaldia sp.	-	-	3	4	-	-	-	2	-	-	9
Art. sieversiana	-	-	-	-	1/7	3/6	-	1/5	1/20	-	6/38
Poa pagophyla	-	-	-	-	1	-	4	-	-	1	6
Sh + goat	+	+	+	+	+	-	+	+	+	+	9

249 (81)

South facing - Broken, Stony Slope (35°) - with shales

Stipa - Oxytropis.

Loose. Gravel.

33° 23' 58"
78° 02' 12"
4971 m

20% V.C. → 10% Stipa ; 5% Oxytropis mic.
5% Dracocaph + Drax

(11) 2.129
0.888

	1	2	3	4	5	6	7	8	9	10	
Sauss. stoliczc										4	4
Oxytr. microph	2	1	-	1	-	-	-	-	-	-	4
Stipa capillata	6	7	2	-	3	-	7	-	-	-	25
~~Draba~~ Alyss ~~alpina~~ Canes	3	1	3	2	2	4	3	-	10	1	29
Pot. leuconota	1	6	4	3	5	2	9	-	3	6	39
Sibbaldia	3	-	-	2	-	-	4	-	-		9
Poa pagoph.	-	3	4	2	2	-	3	-	-	1	15
Dracoceph	-	2	-	-	-	-	-	-	-	-	2
Artem. nana	-	-	-	2/3	1/2	1/5	-	-	-	-	4/10
Pot. bifurca	-	-	-	-	-	-	7	-	-	-	7
Oxytr. glutinosa	-	-	-	-	-	-	-	8	-	-	8
Eritrichium sp	-	-	-	-	-	-	-	18	-	-	18
Sh + goat	-	-	+	-	-	-	-	-	-	+	(2)
Yak	-	-	-	-	-	-	-	-	-	-	

✓

(82) N. facing - 35° Smooth
Gravelly soil - with pebbles

33	23	52
78	02	34

4993 m

250

(35)% vegeln cover [Artemisia steppe]

→ 25% Artemisia sieversiana
5% Oxytropis glutinosa
5% Elymus longiaristatus + Poa.

(65) - Gravel / Loose

	1	2	3	4	5	6	7	8	9	10	
Art. siersiane	6/18	5/20	11/30	4/18	7/35	5/10	5/20	3/15	2/12	9/35	57/213
Oxytr. glutinosa	1	3	-	1	-	3	-	1	1	-	10
~~Elym~~ Agropyr. longia.	2	-	3	3	3	5	-	1	3	4	24
Poa pagophylla	-	-	-	-	-	3	-	2	-	1	6
Stipa capillata								1	-	-	1
Sh. + goat	-	-	-	+	-	-	+	+	-	-	3
Kiang signs	+	-	-	-	+	-	-	-	+	-	3
T. Woolly Hare	-	-	+	-	-	-	-	-	-	-	1

5

1.110
0.689

✓

251

(83) LS Camping site.

33° 24' 27"
78° 02' 53"

4842 m

By the side of a seasonal stream and near the base of a hillock - (2-5° slope - south facing).

Ab. 1 ha patch. - 2 pens.

60 % vegetn cover
↳ 45% Chenopodium
10% Stipa
5% Agropyron + Eurotia.

	1	2	3	4	5	6	7	8	9	10	
Chenopod. glauca	185	55	17	110	162	240	172	96	77	210	1324
Stipa capill.	3	-	-	1	-	-	-	-	-	-	4
Stipa sibirica	2	-	-	2	-	-	-	-	-	-	4
Elymus dahur	-	9	4	-	-	-	-	-	23	-	36
Eurotia	-	-	-	-	-	-	-	+	-	-	1
Kiang	-	+	-	-	-	-	-	-	-	-	1
Sh + gout dung	+	+	+	-	+	+	+	+	+	+	9

5

0.167
0.104

✓

252

84

LS Camp in V Bottom — R side of the seasonal stream (same in 83).

# of pens 4 -

33° 24' 25"
78° 01' 50"
4766 m

60% Vegetn cover

↳ 40% Chenopodium
15% Elymus dahuricus
5% Stipa + Eurotia

Chenopodium	152	-	53	-	-	92	48	85	17	43	490
Elymus dahur	-	39	27	65	22	15	22	-	-	28	218
Stipa orientalis	-	-	-	-	-	-	1	-	-	-	1
vole	-	+	-	-	+	-	-	-	-	-	2
Sh + goats	+	+	+	+	+	+	+	+	+	+	10
Yak	+	+	+	-	+	+	+	+	+	+	9

(2) 0.627
0.571

✓

(85) LS camp in VB –
R.S. of stream – (83) & (84)

Depression –

30% Vegetn cover
↳ 25% Chenopodium
5% Tanacetum + Eurotia

33° 24' 28"
78° 01' 29"
4733 m

Soil – Fine shales + scree

	1	2	3	4	5	6	7	8	9	10		
Chenopodium mucronatum	158	146	93	39	84	73	106	36	71	146	78	1030
Tanacetum	–	–	–	–	–	–	/	1	–	–	–	1
Eurotia tibetica	–	–	–	–	–	–	–	–	–	1	–	1
Kochia	–	–	–	–	–	–	–	–	–	–	1	1
Sheep + goat	+	+	+	+	+	+						6
Yak	–	–	–	–	–	–						

(4) 0.002
0.002

✓

254

(86) — VB —

Sandy - murrum alluvial fan - close to marsh meadow (300 m)

33°22'35"	4570 m
78°00'37"	

Heavily grazed.

35% vegetn cov
→ 30%. Eurotia; 5% oth

	1	2	3	4	5	6	7	8	9	10	
Eurotia	1	2	4	3	2	3	2	2	4	1	21
Stipa capill	1	1	1	-	-	2	-	-	-	-	4
Oxytr. micr	-	-	-	2	-	1	-	-	1	3	7
Oxytr. cach	-	-	-	-	-	1	-	-	-	-	1
	4		0.978 0.706								
Sh + Goat	+	+	+	+	+	+	+	-	+	+	9
Kiang	-	-	-	-	-	+	-	+	-	-	2

Circular plots 5 m r.	Eurotia	53	43	28	x̄ 10-cm 124
	-	-	-	-	

✓

(87) 100 m away from (86). (255)

depression - seasonal stream course
(more eroded)

Vegetn cover 30%.
↳ 25% Eurotia
5% - Stipa
5% Others

33° 22' 34"
78° 00' 32"
4590 m

	1	2	3	4	5	6	7	8	9	10	
Eurotia	4	5	4	6	5	5	6	1	5	9	45
Stipa sibirica	2	1	1	1	-	-	-	1	-	-	6
Stipa capill.	1	-	3	-	-	2	-	2	1	4	13
Oxyt. mirs	-	1	1	-	-	-	-	1	-	-	3
Kochia sp	-	-	-	-	-	-	-	2	-	-	2
~~Orobanche alp.~~ Alyssum	-	-	-	-	-	-	-	-	1	2	3
Sh + goat	+	+	+	+	+	+	+	+	+	+	10

(6) 1.174
0.655

5 m r. plots:- Eurotia → #

61	43	38	142

x̄ Ht. 15-20

27/8

(88) LHS of Polokongkha stream opp Summer camp of Ankung pastoralists - Flat; Bouldery, terraced Stipa - Oxytropis

Restricted for Ankung

Sandy - Gravel - V.C. (35%)

33° 16' 34"
78° 08' 23"
4832 m

→ 30% Stipa 65 = Boulders + Pebbl
5% - Elymus + Oxytropis

	1	2	3	4	5	6	7	8	9	10	
Elymus dahu	3	-	-	-	-	-	9	6	6	-	24
Stipa sibirica	11	12	7	13	5	-	14	-	15	2	79
Stipa capillata	1	2	2	5	9	15	2	15	-	5	56
Oxyt. cash	3	-	-	-	-	-	-	-	-	-	3
Sibbaldia	12	-	6	-	-	-	-	-	-	9	27
~~Draba~~ Alyss canes	1	3	1	22	18	7	19	14	33	5	~~195~~ 194
Oxytr. microph.	-	-	3	5	-	7	-	-	-	-	14
~~Draba~~ Chenop. botrys	.	-	-	1	-	-	-	-	-	-	1
		8		1.469							
				0.706							
Tib. wolly hare	-	-	-	-	-	-	+	-	+	-	2
Yak	-	-	+	-	+	-	+	-	-	-	3
Sh + goat	+	+	+	+	+	+	+	+	+	+	10

✓

(84) (257)

Natural Terrace formation (< 3° slope) Bouldery

33° 16' 35" (82 S)
78° 08' 10"
4818

400 m for V.B. → Stipa tibirica – Stipa capillata (88)

45 % V. Cover → 45 % Stipa both spp
Sandy – Gravel – (loose stone) 5 % Draba + Oxyth
(55 %) Boulders + Pebbles – grazed by Sh. + goat

	1	2	3	4	5	6	7	8	9	10	
Stipa sibirica	8	4	2	10	3	9	1	3	6	5	51
Draba (Alyss can alp.)	10	9	3	14	3	14	9	7	18	8	95
Stipa capillata	2	3	6	-	4	1	4	·	5	4	29
Oxyt cashm	-	2	1	-	-	-	1	2	-	-	6
Carex (stenophylla) capillifolia (31)	-	-	-	-	13	6	7	4	-	-	36
Oxyth. microphyll	-	-	-	-	-	1	-	-		-	1
Oxyth. new sp.								-	-	12	12
(7)	1.513										
	0.777										
Yak	+	-	-	+	-	-	-	+	-	-	3
Sh. + goat	+	+	-	+	+	+	+	+	+	+	9

Aster sp. → Adjacent seasonal water course (Photo).

✓

258

Base of the old

(90) Avalalanche Trap (Bouldery)

33° 15' 31"
78° 07' 49"
4812 m

257

V1

252

Stipa - Oxytropis microphylla - Tanacetum artemesioides

35% V. C.

→ 20% Stipa Capillata
10% - Oxytropis
5% Tanacetum & others.

(11)

(65%) Stable Boulders — + Murrum

1.710
0.713

	1	2	3	4	5	6	7	8	9	10	
Stipa sibirica	4	-	-	1	-	-	5	-	-	-	10
S. capillata	6	9	6	5	10	4	8	6	15	5	74
Oxytr. microph	1	-	-	-	2	1	-	2	1	-	7
~~Draba~~ Alyss cam alp.	13	3	2	3	10	-	2	-	15	5	53
Pot. bifurca	6	-	-	-	-	-	-	25	-	-	31
~~Ag~~ Tanacetum art.	-	2	-	-	-	1	-	-	-	-	3
Chenopod. ~~embryopt~~ botrys	-	-	-	-	1	-	2	-	6	3	12
Boraginaceae	-	1	-	-	-	-	1	-	-	-	2
Poa pagophylla	-	-	-	1	-	-	-	-	-	-	1
Sibbaldia sp	-	-	3	-	-	-	-	-	-	-	3
T. woolly hare	+	-	-	-	+	-	-	+	-	-	3
Sh. + goat	+	+	+	+	+	+	+	+	+	+	10
Euphorbia tibetica	-	-	-	-	-	-	-	-	-	1	1
Carex ~~capillifol.~~ stenophylla										15	15

✓

(91) (259) RHS Plateau of Polokongkha stream

33° 16' 20"
78° 07' 36"
4832 m

(N facing) 5° – Bouldery – Murrum (Sandy gravel)
Stable – (40%) V.C (35) Stipa capillata – St. sibirica –
(5) – Draba – Sibbaldia.
(90%) Rock ; 20% Exp soil. (8)

	1	2	3	4	5	6	7	8	9	10		
Stipa capillata	23	13	11	15	16	2	15	15	17	15	119	1·479
Sibbaldia sp	-	9	28	25	16	35	12	3	5	8	136	0·711
~~Draba~~ Alyssum sp	15	8	10	11	3	7	8	5	3	8	78	
Oxyfr. cosh	-	-	-	1	-	-	-	-	-	-	1	
Stib. sibirica	-	2	8	3	3	9	2	2	2	6	37	
Aster sp.	-	-	-	15	-	-	-	-	-	-	15	
Oxyfr. microph	-	-	-	-	-	-	-	2	-	-	2	
Chenop ~~botrys~~	-	-	-	-	-	-	-	-	-	3	3	
~~T~~. Woolly hare	-	+	-	-	-	-	-	-	-	-	1	
Sh. + Goat	~~15~~	+	+	+	+	+	+	+	+	+	10	
Yak.												

(92) N - Facing Bouldery / stony slope - heavily trampled & grazed by LS. Loose sandy-gravel soil.

260

33° 15' 58"
78° 06' 57"
4847 m

(65%)

(35%) V. C. → 20% Carex melanantha
8 % Stipa capillata
5 % Agropyron longiaristatus
3 % Artemisia sieverstiana

<35° slope>

	1	2	3	4	5	6	7	8	9	10	
Agropyron longiari	4	2	2	-	3	-	1	3	-	-	33
Carex melanan	17	11	8	18	4	24	32	13	-	-	127
Stipa capillata	2	1	3	3	6	4	4	7	8	-	38
Art. siever.	-	2/18	-	-	3/10	2/10	-	-	1/5	3/10	11/53
Oxytr. microphy										3	3
Oxytr. cashm	-	-	1	-	-	-	-	-	1	1	3
Poa pagophylla	-	-	4	-	-	-	-	-	-	3	7
~~Draba alp.~~ Alyss can	-	-	-	3	-	-	1	-	-	20	24
Dracocephalum	-	-	-	-	6	-	4	-	-	3	13
Sibbaldia sp							2	-	6	5	13
Pot. bifurca								-		16	16
Sh. + goat	+	+	+	+	+	+	+	+	+	+	10

(11) 1.834
0.768

(93) Plateau / Base of Rocky outcrop.

261

$\bar{X}$ 75% Boulders / Granitic conglomerate + Murrum

$\bar{x}$ 25% V.C.

↳ 10% Stipa
10% Oxytropis
5% Artemisia sieversia + Potentilla

} Heavily Grazed.

33° 15' 50"
78° 06' 50"
4874

W facing < 3°

	1	2	3	4	5	6	7	8	9	10	
Artemisia siev.	1/12	-	3/10	-	-	1/10	-	-	-	-	5/32
Oxytr. mic.	3	5	-	12	8	9	3	1	-	-	41
~~Draba alp.~~ Alyssica	2	-	-	-	-	2	-	-	-	12	16
Stipa capill.	5	15	8	6	4	10	9	12	3	-	72
Oxytr. cashm	-	5	-	-	-	-	-	-		-	5
Pot. bifurca	-	12	-	-	-	-	-	-	6	-	18
Sibbaldia sp.	-	1	18	9	15	-	-	8	19	13	155
~~Oxy~~ Stipa sibirica				2	2	-	-	2	-	2	8
Boraginaceae	-	-	1	3	-	-	-	-	-	-	4
Euphorbia tibetica										1	1
Yak	+	-	-	-	-	-	-	-	-	-	1
Sh. + Goat	+	+	+	+	+	+	+	+	+	+	10

10

1.548
0.672

Blue sheep horn

✓

(94) RANG Pasture between Scree and Ridge - | 33° 15' 12" 78° 06' 22" | 4921

262

Gentle (2-3°) slope - Smooth

Stipa - Carex comm - 2 spp.

Compact clayey + scattered pebbles.

50% Veg → 25% Stipa (2 oth) 15% Carex ; 10% others.

	1	2	3	4	5	6	7	8	9	10	
Stipa sibirica	7	5	6	8	9	10	14	12	11	6	88
S. capillata	24	9	4	4	2	2	3	3	-	-	51
Poa pagophylla	-	-	-	2	-	-	-	-	-	-	2
~~Draba~~ alpi	14	-	17	15	-	2	1	9	2	-	60
Pot. bifurca	1	-	-	-	-	-	-		-	-	1
Pot. multifida	2	-	-	-	-	-	-	-	-	-	2
~~Draba~~ Alyss. can sp.	-	-	-	2	-	-	-	-	-	-	2
Sibbaldia sp	-	-	-	-	-	-	-	6	1	15	22
Art. minor	-	-	-	-	-	-	-	-	-	1/4	1/4
Carex melan.	-	-	-	-	-	-	-	-	-	8	8
Sheep + goats	+	-	+	+	+	+	+	+	-	+	8
Horse	+	-	+	-	-	-	-	-	-	-	2
Yak.	-	-	-	-	-	-	-	-		-	

10

1.548

0.672

✓

(95) RANG Pasture (263)

33° 15' 02"
78° 05' 58"

4912 m

L.H.S of Rang stream

VB - with gravel + murrum (Sw Gro)

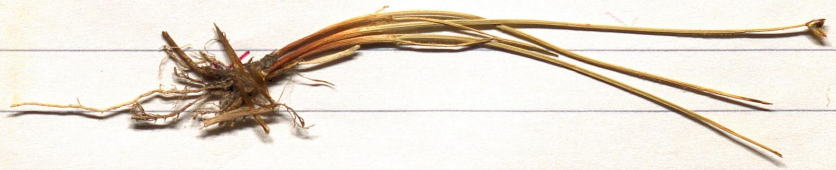
3-5° - N facing slope

55% V.C. → 30% Stipa, 10% Oxytropis

10% Stipa sibirica, 5% others.

Draba (new)	3	-	-	-	-	-	-	-	-	-	3
Stipa capillata	4	✓	-	1	3	-	4	5	8	6	31
S. sibirica	17	20	24	13	-	12	10	3	9	4	112
Oxytr. micro	-	-	2	-	-	-	-	+	-	-	3
Sibbaldia	-	-	-	6	9	77	15	-	-	2	109
~~Draba alpina~~ Alyssum	-	-	-	-	18	-	-	-	-	-	18
Pot. bifurca	-	-	-	-	-	-	-	1	-	24	25
Yak	-	+	-	-	-	+	+	+	+	-	5
Sh + goat	+	+	+	+	+	+	+	+	-	+	9
T. woolly Hare	+	-	-	-	-	-	+		-	-	2

(7) 1.437
0.738



(96) 263

Rang pasture

33°15'04"
78°05'30"

Gentle-NE facing -20°-25° slope | 5009 m

~~Smooth~~ (Gravel - + Rocks.) - stable

V.C. 40%. [Stipa capillata 25%; S. sibirica 10%; 5% - others

60 - Boulders (Rocks) + Murrum].

	1	2	3	4	5	6	7	8	9	10	
Sibbaldia	4	16	4	9	-	18	-	3	20	12	86
Stipa sibirica	5	7	5	8	23	8	5	4	3	4	$\bar{X}$ ht 72 = 10 cm
Stipa capillata	4	5	12	6	8	7	4	12	8	6	$\bar{X}$ ht 72 = 5 cm
Oxytr. cash.	1	2	-	-	-	-	1	1	-	-	5
~~Draba alp~~ Alyss. ca	-	-	6	-	12	2	1	-	-	-	21
~~Agrop~~ Agropyl longiaris pagophylla	-	-	-	1	-	-	-	-	1	2	4
Euph. tib.	-	-	-	-	-	-	-	1	-	-	1
Dracoceph										-	
Sheep + goat	+	-	+	+	+	-	+	+	+	-	7
T. Woolly hare	-	-	+	+	-	-	-	-	-	-	2

7

0.440
0.740

(97) (265)

33° 15' 01"
78° 05' 18"
c. 5038 m

N - West facing, Heavily Broken slope
35-40° - upper part of the site heavily used by Snow-cocks - ind. by Heaps of droppings.

Artemisia + sieversiana - Stipa - Agropyron comm
35% Veg. cover → 20% Artem; 5% Stipa + 5% Agropy

Artem. siever	3/25	4/20	3/30	4/35	6/40	4/30	2/15	2/25	4/45	4/15	36/280
Poa pagophylla	3	-	-	-	1	3	-	4	4	-	15
Artem. minor	1/3	1/5	-	-	-	-	1	-	-	-	2/9
Oxyt. glutin. microph.	-	1	-	-	-	-	-	-	-	-	1
~~Draba~~ Alyss ca ~~adpi~~	-	-	12	3	-	-	-	-	-	6	21
Agropy. nutans	-	-	1	2	-	2	-	2	-	-	7
Stipa sibirica	-	-	-	-	2	-	2	-	3	7	14
Sauss. stoliczae	-	-	-	-	-	-	-	22	-	-	22
Stipa capillata	-	-	-	-	-	-	-	-	-	3	3
(9)	1.847 0.841										
Sh. + goat	+	+	+	-	-	-	+	+	+	+	7
Snow cock	+	++	++	++	++	-	-	-	-	-	9

✓

(98) (266)

33° 45' 17"
78° 05' 24"
5020 m

N. facing smooth slope 15°
Loose sandy Gravel w/ stones

AC. 50% V.C. → 35% Carex melanantha
10% Stipa
5% Saiss. stoliczae + Dracoc + Oxytrop.

	1	2	3	4	5	6	7	8	9	10	
Carex mela	17	21	19	12	22	25	17	12	27	25	197
Stipa sibirica	4	3	1	3	-	2	-	-	-	12	25
Saussurea sti.	-	3	-	2	-	-	-	3	-	-	8
~~Alyss corres~~ Draba alpina	-	4	-	-	4	-	-	1	4	3	16
Stip. capillata	-	1	3	-	15	-	6	-	-	2	27
Dracocephalum	-	-	2	6	2	4	-	5	-	1	20
Sibbaldia			3	-	9	19	-	-	25	6	62
Draba (new)	-	-	-	-	-	9	8	6	18	-	35
Oxytr. cash							-	-	3	-	3
	(9)	1.611							-		
		0733									
Sh. + goat	-	+	+	+	+	+	+	+	+	+	9

✓

(99) (267)

33° 15' 42"
78° 05' 34"

4954 m

N- ~~W~~ facing - Gentle 38° slope
Loose Gravel - Wind blown - Exposed ~~[illegible]~~

V.C. (40%) → 35% Stipa capillata
5% Saussur. Sibbaldia

	1	2	3	4	5	6	7	8	9	10	
Stipa sibirica	10	1	9	2	1	1	-	7	-	-	31
Stipa capillata	1	2	1	6	3	6	8	4	14	16	61
~~Draba alpina~~ Aluss cam	8	5	6	-	4	12	-	1	1	6	43
Euphorbia tibetica	-	1	-	-	1	1	-	-	-	-	3
Sibbaldia sp	-	2	3	3	-	3	1	1	-	2	15
Oxytr. cash	-	-	-	4	-	1	-	1	-	-	6
Artem. sieversi	-	-	-		2/3	-	-	-	-	-	2/3
Carex melan	-	-	-	-	3	-	-	-	-	-	3
Oxyt. microph	-	-	-	-	-	-	1	1	1	-	3
Sh. + goat	+	+	+	+	+	+	+	+	+	+	10

(9) 1.635
0.744

✓

(100)

268

267

33°16'18"
78°06'10"
4785

N - Facing - 40° slope

Hard - stony - wind blown

V.C. - 35%. 25% Stipa
5 - ~~Draba~~ + Euphorbia
5% - Oxytropis + others

	1	2	3	4	5	6	7	8	9	0		winter pasture of
Stipa capillata	9	11	13	14	6	10	13	14	13	15	118	Samed
Euphorb. tibetica	-	5	-	1	2	1	-	-	1	-	10	
~~Draba alpina~~ Alyss canes	8	10	12	8	13	4	3	-	5	15	78	
Oxytro cashm.	6	3	-	1	-	2	-	1	2	2	15	
Oxytr. microp	-	-	-	-	-	3	-	-	-	-	3	
Sh. + goat	+	-	+	-	+	+	+	+	+	-	7	

5

1.083
0.673

✓

28/8 (101) 269

Nuruchan Wet - Meadow
Kobresia - sedge meadow
Beside fodder farm & stream course

33° 14' 14"
77° 59' 34"
4690 m

V.B. 0°/ 100 % vegetn cover

Kobresia - 50%
Schoen.
K. pygmaea - 30%
Scirpus pulmilus - 10%
Other herbs - 10%

L S grazing
Yak + Horses.

20 2.141
0.715

	1	2	3	4	5	6	7	8	9	10	-3
Sauss. taraxiat	-	-	-	-	3	-		-	-	-	
Kobr. shoenoides	66	32	110	17	122	105	62	98	57	88	757
Kobr. pygmea	-	-	200	120	120	-	14	-	-	-	355
Potent. multifida	15	-	-	12	3	-	1	-	-	-	21
Scirpus pumilus	285	93	48	80	-	-	150	42	110	-	858
Pucciniella dist.	24	2	-	-	-	-	-	2	12	52	92
Carex parva	-	-	-	-	-	-	-	1	-	-	1
Ranunculus sp.	52	40	16	6	80	46	27	16	-	-	275
Pedicularis longifl.							4	-	-	-	4
Aster stracheyi	1	-	4	-	20	-	18	7	-	-	50
Crassula sp	92	77	-	-	40	25	-	-	20	12	261
Thalictrum alpinum	10	-	-	-	12	-	9	12	-	8	51
Oxytropis lapponica	3	65	-	-	8	-	7	61	8	82	189
Pot. nivea	28	115	-	-	-	12	9	-	18	3	185
Plantago tibetica (= gentianoides)	2	1	12	-	-	-	-	-	-	-	15
Desch. koeloeriod	-	18	-	-	-	-	3	-	-	3	24
Festuca new	-	-	-	-	-	-	-	1	-		1
Taraxacum off.	-	3	-	-	-	-	-	-	-	2	7
Kobresia nepal.	-	-	-	4	27	-	-	12	-	-	43
Gentianella sp	-	5	-	-	-	-	-	12	-	-	17
Poa sp (dry)		1	+	-	-	-	10	1	-	-	13
Horse	+	+	-	-	-	-	-	+	-	-	3
Yak	+	-	+	+	+	-	-	-	+	+	6
Sh. + goat	+	+	+	+	-	-	-	-	-	+	5
Vole digging	-	+	-	-	-	+	-	-	-	-	2

102

270

L.S. Camp on a low plateau (Nuruchan) –

33° 13' 38"
77° 59' 06"
4748 m

50% V. Cover –
→ 40%. Chenopodium
5%. ~~Agropyron~~ canaliculatus
5%. Urtica + Scopolia

No. of pens – 4 – w/ 2½ hr

	1	2	3	4							
Chenopodium	17	56	22	38	66	31	11	58	60	30	397
Urtica hyperbu	–	–	1 (20)	–	–	–	–	–	–	–	1 (20)
Agropyr. canalicul.	–	–	–	–	–	21	–	–	–	–	21
Elymus	–	–	–	–	–	–	79	23	–	–	102
Stipa sibirica										1	1

5 0.680
0.423

Vole					+	+	–	+	–	–	3
Sh + goats	+	+	+	+	–	+	+	+	+	+	9
Yak	+	+	–	–	+	–	–	–	+	+	5

103 271 Plateau - wind blown - Sandy Gravel w/ stones - 0 Aspect.

33° 13' 33"
77° 59' 04"
4740 m

45% V.C. → Stipa capill - 25%
Oxyfr. mis 12%
Draba + Eurotia - 10%.

	1	2	3	4	5	6	7	8	9	10	
Stipa sibirica	-	1	-	-	-	-	-	-	-	-	1
S. capillata	12	14	24	13	17	18	13	22	21	15	169
Oxy Micrograph.	1	1	1	1	-	-	1	-	2	1	8
~~Draba alpina~~ Alyssum canescens	7	-	-	3	6	9	5	15	13	7	65
Oxy ~~lapponica~~ Caroum	1	2	-	1	3	6	1	-	1	-	15
Sibbaldia sp.	-	32	17	-	4	6	3	-	2	5	73
(6)		1.244									
		0.694									
Sh. + goat	+	+	+	+	+	+	+	-	+	+	9
Yak	-	+	-	+	-	-	-	-	-	-	2

✓

Red fox / weasel droppings?

104

272

VB :- Nusuchan stream - 33° 18' 33" 77° 59' 10" 4735 m

Moist - Compact clayey soil.

Kobresia - (Sedge) - Poa. meadow

V.C. 95% - Heavily grazed.

↳ Kobr. schoenoides - 30%

Poa (dry) - 30%

Scirpus pumilus - 30%

Gentiana Sibbaldia - 5%

Tourists' Camping area

14 1.643 0.623

	1	2	3	4	5	6	7	8	9	10		
Kobresia schoen.	-	3/5	-	-	-	-	-	2/5	-	-	-	5/10
Poa (dry)	21	33	43	18	7	9	-	11	-	-	-	142
Scirpus (Ellcarex) pumilus	140	250	200	246	215	280	170	172	82	160	78	1993
Gentiana argentea	14	9	10	37	32	86	8	27	18	12	40	293
Calamagrostis sp.	6	-	-	-	-	45	72	8	48	28	-	207
Pot. multifida	7	8	3	3	-	-	-	7	27	3	2	60
Crassula sp.	30	12	7	-	-	-	180	21	96	13	-	359
Polyg. emodi	12	17	-	-	-	-	-	-	52	-	-	86
Kobresia pygmea	-	86	36	-	-	-	-	-	-	5	-	127
Thalictrum alpinum	-	-	-	-	-	-	-	-	-	-	15	
Oxyt. lapponica	-	-	8	-	-	-	-	-	1	-		24
Kobresia nepalensis	-	-	22	-	-	-	-	1/5	-	4/25	6/20	11/672
Ranunculus trics	-	-	-	-	-	152	32	10	147	-	-	341
Oxyt. lappon. var.	-	-	-	-	-	-	-	-	28	-	-	28
Pucc. tenella chist	-	-	-	-	-	-	-	-	-	2	2	4
Horse	+	-	+	-	+	-	+	-	+	+	+	7
Sh. + Goat	-	-	+	+	-	-	-	-	-	-	-	2
Yak ✓	+	+	-	-	-	-	-	+	-	-	-	4

(105) N. Bank of Tso khar – 200 m from Chhosten – Marsh meadow – (Sedges) – Bogs + Carex.

33° 19' 40"
78° 02' 14"
4572 m

Veg. cover 85%

Water (Puddle) – 15%

→ 40% Carex nivalis
40% Scirpus planifolius
10% others

	1	2	3	4	5	6	7	8	9	10	
Crassula sp.	60	-	-	-	-	-	-	-	-	-	60
Carex nivalis	50	12	20	15	120	80	-	22	56	24	407
Scirpus planifolius	800	950	100	232	224	120	-	45	153	126	2750 – Brownish.
Taraxacum off.	1	-	-	1	1	-	-	-	-	-	2
Ranunculus sp.	15	-	-	-	36	10	-	-	-	-	61
Trigl. palustre	-	6	28	21	18	12	30	65	17	74	273
Carex pulva	-	-	200	90	-	68	475	30	82	36	997
Pedicularis long	-	-	-	7	-	3	-	62	67	4	143
Primula involucrata	-	17	-	15	10	-		01	20	-	143
Trigl. maritim	-						67	23	7	16	113
Kobresia sp (tall)	-	-	-	-	-	-	-	27	-	-	27

(11) 1.443
0.602

✓

ETS 274

106 Wet (sedge meadow) - 600m from 105

Carex parva - scirpus

33° 20' 02"
78° 02' 03"
4590 m

95%

→ 50% C. parva
30% Scirpus planifolius
10% C. nivalis
5% others — incl. Triglochin.

	1	2	3	4	5	6	7	8	9	10	
Carex parva	405	208	118	426	-	20	-	-	-	198	1375
Scirpus planifol.	206	294	310	67	-	342	292	445	318	172	2497
Trigl. palustris	1	-	-	-	-	4	-	-	11	-	16
Ranunculus [illegible] sp.	-	10	-	72	-	36	-	12	-	18	148
Puccin. distans/hima	-	-	18	-	-	13	-	-	-		31
Polygon. emodi	-	-	-	-	4	4	-	-	-		8
Trigl. maritima	-	-	-	-	5	-	-	3	-		8
Pucciniella dist	-	-	-	-	406	12	5	-	-		63
Primula involucr.	-	-	-	-	-	-	3	-	-	18	21

(9) 0.963
0.450

Horse	-	-	+	-	+	-	+	-	-	+	4
Vole/pika	-	-	-	+	+	+	+	-	+	+	6

✓

Biological Spectrum

Raunkier's (1934) Life form class	Normal	Ladakh Sagwal * (1991)	Changthe (Tsokar) This study
Phanerophytes (Ph)	28	2.62.	
Nanophanerophytes (N)	15	4.84.	
Chamaephytes	9	26.83.	
Hemicryptophytes	26	9.61.	
Geophytes	4	21.31.	
Hydrophytes	2	0.62.	
Therophytes.	13	33.18.	
Epiphytes	.3	-	

* Sagwal, S.S. 1991. Ladakh : Ecology and Environment. Ashish Publishing House N. Delhi 136 pp.

Kachroo, P., Sapru, B.L. & Dhar, U. (1977). Flora of Ladakh : An Ecological & taxonomical appraisal. BSMS, Dehra Dun. 172 pp

① Habitat-wise classification
② Community-classification

From: Jina, P.S. 1995. High Pasturelands of Ladakh Himalaya. Indus Publishing Co. New Delhi. 142.

Changthang - • 21,000 km² Area
• 3" - Rainfall.

Sh. & goat Popln in Nyoma Block, Changthang

	1980-81	1985-86	1990-91	1998-99 *
Sheep	40,000	60,000	80,000	4,758
goats	54,000	100,000	146000	7,215

[Changthang] → Goat 72453, Sheep → 53,948 [1998-99]

- Periodic spells of heavy snowfall (Once in 4-5 yrs heavy snowfall leading to mass mortality of LS). e.g., 82, 86, 93, 98,

- Chang-pas or 'Northerners' originally migrated from 'Hor' of Tibet during A.D. 800".

- Changthang has been an important trading centre since early days. It is estimated that ca. 16,000 Kgs of pashmina is produced from Chang-Thang every year - that costs Rs 0.6 crore 99s.

> 50% of pashmina is produced from 3 areas i.e. Rupshu, Korzok & Kharnak

= Rebo = Tent

- After 1962 – over 10,000 TRs arrived in Ladakh – many of them settled in Ladakh → Leading to shortage of fodder.

PV. Cattle camps

	4	47	50	77	83	84	85
	% cover / % F						
Graminoids	30/47 38/7	5/8	5/7	10/5	10/2	5/7	0/0
Forbs	10/2	25/7	30/9	20/9	45/10	40/7	25/10
Shrubs	2/1	0/0	0/0	0/0	1/1	5/1	5/1

	102	117	128	53	18	45
Gramin.	5/2	[illegible]			5/7	20/100
Forbs	40/10				2/3	10/100
Shrubs	5/10				20/100	0/0

Prominance value $[PV_x] = M_x \sqrt{f_x}$

Cattle camps

Species	% cover	% freq.	PV
Leymus secalinus	30 %	7	
Chenopodium glaucum	10 %	2	
Carex gracilenta			
Oxyt. lapponica			27 T
Pot. bifurca			~~1,85,000~~
Elymus longiarist.			~~21000~~
Poa nemoralis			3
Eur. ceratoides			
Art. tanacetifol.			

Chenopodium		25	7%	
~~[illegible]~~ Leymus		5	8%	√%.F.
Cattle camps	Graminoids	Forbs	Shrubs	100 = 10
Prominence value	250.8	41.8	6.32	90 = 9.48
	44.7	209.0	0.0	80 = 8.94
	41.8	284.4	0.0	70 = 8.36
	70.7	189.6	3.16	60 = 7.74
	44.7	450.0	15.8	50 = 7.07
	35.35	334.4	15.8	40 = 6.32
	0.0	250.0	50.0	30 = 5.47
	22.35	400.00	200.00	20 = 4.47
	35.3	8.94	0	10 = 3.16
	200.0	100.00		
	$\bar{X}$ = 74.5	235.9	29.1	

Sandy Plains or Desert Steppe: PV.

PV (%C + %F)		10	11	12	13	14
	Gramineids	20/10	20/10	50/10		
	Forbs	10/10	30/10	2/1		
	Shrubs	2/4	5/2	8/7		

T. Sheep & Goat Popln in Kharnak & Samad. [1998-99].

	Kharnak	Samad
sheep	9,975	4585
Goats	10,165	4,386

1997-98

	Kharnak	Samad
sheep	11,098	10,606
Goats	11,134	8,516

Moist meadow	G	F	Sh	PV
	600	200		
	880	14.0		
	750	35.0		
	500	450		
	500	54.7		
	500	200		
	300	178.8	44.7	
	900	80		
	850	100		
$\bar{x}$:	642.2	100.8	44.7	

Sandy plains PV

Graminoids	Forbs	Shrubs
450	22.35	8.94
27.3	400.00	0.0
200.00	180.0	12.68
200.0	300.00	
500.0	31.8	12.68
200.0	40.0	22.35
150.0	30.0	41.8
150.0	12.68	4.47
200.0	40.00	8.94
300.0	100.0	27.3
		0.0
$\bar{X} = 237.7$	$\bar{X} = 115.6$	60.0
		$\bar{X} = 73.9$

Marsh meadow PV

Graminoids	Forbs	Shrubs
800	94.7	–
800	50.0	–
800	150.0	–
800	100.0	–
800	200.0	–
700	100.0	–
800	90.0	–
900	100.0	–
850	50.0	–
800		–
$\bar{X}$ 850.0	$\bar{X} = 88.4$	

Gentle slope - Desert steppe - PV.

G	F	Sh.
100	150	50
550	35	8.92
450	50	8.92
300	80	6.32
350	100	6
350	80.0	0
660	20	
650	6.32	3.16
220	80.0	47.7
184	80.0	3.16
$\bar{x}$=371.4	68.1	12.8

PV

Higher (>4800 m) slopes and ridge line

Gr	F	Sh.
109.4	223.5	16.41
89.4	31.7	210.0
178.8	134.1	100
50.0	44.7	-
250.0	178.8	-
200.0	89.4	49.0
250.0	94.8	3.16
300.0	89.4	14.0
50.0	134.1	25.46
120.0	717.4	
$\bar{x}$ = 179.7	= 109.7	41.8

Caragana - Eurotia Scrub. PV

G	F	Sh.
150	27.35	447.0
120	66.36	568.8
150	31.60	200
4.47	44.70	142.2
150	50	250
30	44.70	292.6
100	6.32	400
$\bar{x}$ = 100.63	38.71	328.65

VC $Y = -0.0339X + 211.87$ $R^2 = 0.0721$

Den $Y = -0.2944x + 1529$ $R^2 = 0.0638$

SR $Y = 0.0027x - 4.9399$. $R^2 = 0.0247$

Div. $Y = 0.0006X - 1.7846$

$R^2 = 0.0603$

12/8
2K2 →

$K_1 - K_7$

Khardungla area



Nubra Survey

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P. K. Joshi
H. Padalia
P. Angchuk
G. Dorje (Gambo)
Nana (T. Namgyal).

2

Khardung La

(K1) - 1 m² plots

5398 m 34° 16' 47"
77° 36' 18"

N facing - Broken - loose boulders.

	1	2	3	4	5	6	7	8	9	10	
W. glabra	2 (10)	29 (30)	0	4 (5)	0	17 (30)	0	0	0	0	47
moss %	(10)	(2)	(0)	(2)	0	3%	0	0	0	0	
lichens	5%	5%	10	5%	30%	35%	35	50	30	15	
Boulders	70%	50%	95%	5%	98%	65	100	100	100	100	
Overall (veg.)	30%	35%	5	5	0	20	0	0	0	0	$\bar{x}$ 9 ± 12

(1)

Species outside plot (within room).

1. Primula macrophylla.
2. Saus. bracteata obvallata (small heads)
3. Nepeta longibracteata
4. Saus. gnaphaloides
5. Saxifr. sibirica.
6. Draba alpina

1 + 6

(K2) 5349m : 34° 17' 7.8" 77° 35' 50" | Avalanche trap - rocky - slope -

333

	1	2	3	4	5	6	7	8	9	10	
Rh. heterodonta	1 (2%)	[illegible]	20 (10)	0	0	0	0	2 (1)	10 (4)	4 (3)	37
Wal. glabra	29 (20%)	14 (5)	25 (10)	3 (2)	0	0	0	26 (2)	11 (3)	4 (2)	112
Sax. flagellaris	6 (1)	-	20 (3)	0	0	0	0	0	9 (1)	5 (1)	40
Nepeta longibracteata	4 (3)	-	-	0	0	0	8 (5)	0	0	0	12
Draba altaica	10 (1)	1 (<1)	12 (3)	0	0	0	0	13 (3)	9 (<1)	3 (<1)	48
Potentilla nubicola ~~nivea~~	-	-	4 (3)	0	0	0	0	-	2 (1)	1 (<1)	7
Saus. gnaphaloides	-	-	2 (4)	0	0	0	0	0	15 (3)	65 (5)	84
Silene tibetica (?)	-	-	1 (<1)	0	0	0	3 (2)	0	-	25 (<1)	29
Draba amiena (?)	-	-	6 (<1)	0	0	0	0	-	-	3 (<1)	9
Trisetum aenium	-	-	17 (5)	1 (<1)	0	0	0	15 (6)	8	16 (3)	57
Arenaria sp	-	-	1 (<1)	0	0	0	0	0	-	-	1
Mosses	0	0	10%	0	0	0	0	0	0	5	
Lichens	0	1%	3%	0	0	0	1	1	3	0%	
Rock	60	80%	40%	85%	25	40	85	60	75	70	
scree	40	-	-	-	35%	55	~	10	.		
Overall green	50	5	40%	3%	0	0	7%	6%	10%	10	x SD 10.1 ± 11.39
Aster flaccidus							Crevice			7 (3)	7
Saxifraga white oxalis andersonii										6 (3)	6

(13) H' = 2.135 E = 0.832

Other species :→ Delphinium brunonianum, Primula macrophylla, Saussur. leontodontoides, Carex nivalis, Leontopodium himalayanum, Poa lahulensis, Ranunculus trivispis, Potentilla fruticosa var. minor

K3

224

5325 m ; 34° 17' 22.9" / 77 35' 48.9" } Wind blown Fellfield / plateau

	1	2	3	4	5	6	7	8	9	1	
Rh. heterodonta	6 (3)	1 (<1)	3 (5)	3 (2)	5 (2)	6 (2)	10 (2)	19 (4)	8 (3)	0	62
W. glabra	11 (5)	20 (10)	8 (2)	48 (18)	11 (2)	17 (2)	-	8 (2)	16 (2)	12 (3)	149
Draba alpina	8 (1)	2 (<1)	4 (1)	15 (2)	-	-	2 (<1)	-	-	-	31
1.8 Trisetum aenium	2 (<1)	13 (2)	8 (2)	25 (7)	8 (2)	-	3 (<1)	3 (1)	6 (1)	6 (1)	76
1.4 Pot. nubicola	2 (2)	-	-	1 (<1)	12 (1)	4 (3)	4 (1)	13 (3)	4 (1)	12 (2)	53
.8 Sax. flagellaris orange	-	53 (2)	-	-	13 (2)	7 (<1)	-	-	16 (1)	15 (1)	104
.8 Saus. graph.	-	4 (<1)	-	-	-	33 (4)	1 (<1)	1 (<1)	-	6 (2)	45
1.6 Arenaria serpyllifolia	-	13 (3)	1 (1)	-	8 (1)	5 (1)	16 (3)	13 (3)	4 (1)	6 (3)	66
.01 Saxi fr. flagellaris	-	-	-	-	-	4 (<1)	-	-	-	-	4
3.4 Carex borii	-	-	-	-	-	-	240 (30)	15 (4)	-	-	255
1.2 Sibbaldia purpurea	-	-	-	-	-	-	10 (12)	-	-	-	10
.02 Nep. Longibract.							-	7 (2)	-	-	7
.01 Primula macroph								1 (<1)	-	-	1
13											
Mosses	1%	0	1%	1%	<1	0	0	0	0	0	
Lichens	3	2%	10	1%	10	20	10% (crust)	20	5	8	
Rocks	70%	20 (pebb)	85%	18%	60	65 (pebb)	15% pebble	45 (pebb)	85	70	
Overall green	7%	4%	10%	15%	12%	7	40%	15	7	7	x̄ 12.4 ± 9.04

$H' = 2.086$ $E = 0.813$

Others: Oxytropis cashemeriana; Poa lahulensis; Potentilla multifida (var.).

K4 — Fell field — 335

5257 m — Stable — 34 17' 26.3" / 77 36 02.1"

Cover (1) / % — Kobresia sedge

	1	2	3	4	5	6	7	8	9	10	
1 Rh. heterodonta	7 (1)	2 (<1)	2 (1)	20 (3)	5 (1)	2 (<1)	7 (2)	1 (<1)	—	—	46
2.4 Saus. gnaph.	13 (2)	17 (2)	16 (2)	73 (4)	16 (3)	-	53 (4)	23 (3)	22 (3)	2 (<1)	238
.8 Wald. glab.	12 (2)	20 (2)	7 (1)	11 (2)	—	—	5 (<1)	—	—	—	53
.9 Silene tibet.	6 (1)	4 (1)	6 (1)	-	3 (<1)	27 (2)	-	-	2 (<1)	7 (2)	55
4.1 Lloydea serotina	50 (3)	42 (5)	28 (2)	2 (1)	—	-	-	20 (1)	8 (<1)	17 (1)	157
6.7 Carex borii	74 (20)	40 (8)	110 (8)	-	33 (4)	40 (4)	11 (3)	53 (6)	69 (7)	58 (7)	518
1.4 Pot. argyrotl. sm.	4 (1)	-	1 -	-	-	9 (4)	1 (<1)	9 (4)	15 (4)	-	38
Thalictrum alpinum	17 (3)	-	-	-	-	2 (<1)	17 (4)	19 (4)	4 (1)	21 (6)	80
1 Draba alpina	5 (<1)	17 (1)	13 (2)	7 (1)	8 (1)	3 (<1)	0 (1)	4 (<1)	3 (<1)	6 (<1)	74
.5 Pot. nubicola (gl)	-	7 (2)	6 (2)	-	-	-	1 (<1)	-	-	5 (1)	19
1.6 Leontop. alpin.	-	-	1 (2)	-	2 (1)	9 (2)	13 (4)	7 (3)	10 (4)		43
1.5 Thylac. spera.	-	-	1 (7)	-	-	-	-	-	1 (8)		2
3.6 Kobresia (stiff turfy)	-	-	-	17 (4)	22 (12)	9 (3)	39 (16)	19 (4)	14 (2)	13 (1)	133
.3 Trisetum aeru.	-	-	-	-	0 (2)	1 (<1)	-	-	-	-	9
.1 Saxifr. orange					3 (<1)	-	-	-	-	-	3
Lomatogonium - .5	-	-	-	-	4 (<1)	2 (1)	12 (3)	-	-	12 (2)	30
Moss 1%					—	—	—	—	—	—	
Lichens	10	15	7	5	9	12	7	10	6	25	
Green $\bar{x}$ = 26.7, SD = 12.00	25	15	25	12	25	10	30	40	35	50	
Rocks	45	35	10	10 (pebb)	45	60	40	15	30	30	
(.7) Kobr. royleana	-	-	-	-	-	-	-	41 (3)	8 (3)	0 (1)	
.2 Arenaria serpy	-	-	-	→	2 (<1)	-	-	-	-	1 (<1)	
* Heavily grazed											

Cerastium sp.; Taraxacum officinale, Parrya sp.; Saus. gossypiphora, Poa sp., Saxifraga sp. (orng), Draba sp(p). Oxytropis Cochleariana

Addl.:

18

$H' = 2.231$ $E = 0.772$

K5 Valley Bottom HM — Kobresia - sedge Meadow — 336

5051 m asl 34°17'37.2" 77°36'39.3"

H' = 2.212 E = 0.726

		1	2	3	4	5	6	7	8	9	10	
Pot. nubicola	3.6	9 (4)	2 (2)	2 (<1)	6 (1)	1 (1)	24 (10)	4 (2)	13 (10)	6 (5)	–	67
Thal. alpinum	1.5	22 (5)	–	–	–	–	–	–	–	–	–	22
Pot. bifurca	2.5	74 (20)	–	–	–	–	–	–	–	–	19 (5)	93
Kobr. stiff. (Schoen.)	4.2	58 (10)	–	53 (20)	37 (6)	34 (4)	7 (1)	3 (1)	–	–	–	192
Kobr. royleana	6.0	90 (20)	–	97 (5)	67 (20)	66 (5)	–	–	42 (10)	–	–	362
Poa tabulensis	3.1	13 (4)	8 (5)	1 (1)	–	8 (2)	1 (<1)	86 (2)	26 (5)	14 (1)	24 (10)	181
Draba oreades	.02	6 (1)	–	–	–	–	–	–	–	4 (<1)	–	10
Carex	2.6	–	62 (10)	–	–	–	84 (6)	14 (2)	12 (1)	24 (4)	22 (3)	218
Pot. multifida	.4	–	1 (<1)	–	1 (<1)	24 (2)	–	–	–	–	–	26
Draba alpina	.01	–	4 (<1)	–	–	–	–	–	–	–	–	4
Wald. glabra	3.5	–	2 (<1)	5 (3)	–	–	39 (6)	43 (8)	8 (2)	36 (15)	–	133
Silene himalayensis tibet.	6	–	–	17 (2)	–	4 (21)	–	1 (1)	1 (1)	5 (1)	–	28
Oxytropis kapmica	.4	–	–	1 (<1)	2 (1)	1 (<1)	–	–	1 (1)	–	–	5
Leont. alpi	1.1	–	–	26 (2)	8 (1)	–	2 (4)	–	2 (4)	–	–	38
Wald. tomentosa	.1	–	–	–	1 (1)	–	–	–	–	–	–	1
Trisetum aen	.3	–	–	–	1 (1)	–	2 (1)	–	–	5 (1)	–	8
Elymus nutans	.1	–	–	–	–	1 (#1)	–	–	–	–	–	1
Sibbald. cuneata	.01	–	–	–	–	–	–	1 (?)	–	–	–	1
Taraxacum off.	.01	–	–	–	–	–	–	1 (<1)	–	–	–	1
Saus. gnaphal.	.2	–	–	–	–	–	–	–	1	15 (2)	–	16
Pot. argyroph (alp)	.1	–	–	–	–	–	–	–	1 (1)	–	–	1
Moss		–	–	–	–	–	–	–	–	–	–	
Lichens		–	–	–	2	1	6	2	10	1	5	
Rocks (+pebbles)		–	20%	10	4	4	15	40	60	40	25	
Veg. cov.		50%	10%	60%	55	65	40	30	40	35	25	

X = 41.0
SD = 16.09

(K6) VB Chocolate Col. boulders - Colluvial Dep.

4970

34° 18' 13.2"
77° 37' 33.3"

337

	1	2	3	4	5	6	7	8	9	10		
Sibbaldia purpurea 8.7	13 (40)	12 (10)	0	0	-	1 (10)	53 (25)	-	-	5 (2)		84
Kobresia schoen. 1.5	4 (5)	5 (5)	0	0	6 (5)	-	-	-	-	-		15
Carex borii 3.1	88 (10)	-	0	0	-	-	60 (3)	35 (10)	-	24 (8)		207
Carex nivalis 1.2	-	5 (4	0	0	-	6 (4)	-	-	-	5 (4)		16
Leont. alpi. .8	-	7 (2)	0	0	4 (3)	-	-	17 (3)	-	-		28
Saus. gnaph. 1.1	-	-	-	-	18 (10)	1 (1)	-	-	-	-		18
Pot. argyr. (high) .2	-	-	-	-	1 (1)	-	-	-	-	1 (<1)		2
Poa lahulensis .3	-	-	-	-	3 (2)	-	-	-	-	2 (1)		5
Silene tibet. .2	-	-	-	-	5 (2)	-	-	-	-	-		5
Pot. nubig. .5	-	-	-	-	-	-	-	14 (5)	-			14
Aster flaccidus .1	-	-	-	-	-	-	-	1 (<1)	-	4		5
Moss	0	0	<1	0	0	0	0	0	0	1		
Lichen	1	0	2	1	5	2	2	3	2	8		
Rocks	60	85	100	100	85	90	35	70	100	75		
% Veg. cov.	40	10	0	0	10	8	30	15	0	15		$\bar{x}$ = 12.8 SD = 12.55
Silene 2										2 (1)		

(11) H' = 1.555 E = 0.648

Addnal :- Beiberstenia odorata ; saxifraga flagellaris

Tanacetum sp ; Primula sp.

Elymus nutans , Saussurea stolickza (glabra)

K(7) Khardung Base Deep soil - Sedge meadow 338

4948 m Marmot colonies/Dung

34° 18' 23.2"	77° 37' 17"

		1	2	3	4	5	6	7	8	9	10	
Oxyt. lappon	5.1	19 (10)	-	-	13 (20)	5 (2)	28 (15)	-	-	3 (2)	1 (2)	Yak & cow dung 2% 69
Leont. alp	3.3	6 (7)	4 (1)	7 (5)	4 (3)	12 (1)	8 (3)	14 (10)	5 (2)	9 (2)	3 (1)	72
Saxif. orange	3.1	16 (8)	-	-	9 (7)	13 (5)	13 (5)	-	8 (2)	11 (3)	6 (1)	76
Kobr. schoen.	7.0	7 (6)	27 (1)	72 (5)	70 (20)	40 (5)	36 (3)	29 (5)	37 (10)	31 (10)	22 (5)	371
Kobr. royl.	18.1	26 (20)	160 (40)	82 (35)	48 (10)	90 (12)	80 (10)	120 (40)	-	27 (5)	40 (10)	721
Thal. alpinum	14.7	8 (10)	5 (4)	23 (25)	11 (15)	3 (5)	13 (20)	11 (20)	4 (8)	8 (10)	17 (30)	103
Pot. multifida	.3	-	6 (2)	-	-	-	-	-	1 (1)	-	-	7
Aster flaccid.	.9	-	1 (<1)	-	1 (<1)	-	-	-	19 (3)	22 (3)	3 (1)	46
Draba alpina	.5	-	12 (1)	-	4 (1)	7 (1)	-	-	10 (1)	5 1	-	36
Pot. argyr.	.1	-	2 (<1)	-	-	-	-	-	-	-	-	2
Kobresia capillata	4.6	-	-	72 (25)	2 (1)	-	-	22 (15)	-	-	5 (5)	101
Poa lahulensis	.2	-	-	-	4 (1)	-	3 (1)	-	-	-	-	7
Pot. nubicola	.01	-	-	-	-	-	1 (1)	-	-	-	-	1
Silene tibetica	.01	-	-	-	-	-	2 (<1)	-	-	-	-	2
Poa sp	.1	-	-	-	-	-	-	-	3 (<1)	-	-	3
Lloydea serotina	.2	-	-	-	-	-	-	-	-	-	11 (2)	11

(16) H' = 1.758 E = 0.634

moss %	0	0	1	0	0	0	4	0	0	16
lichen %	0	0	0	0	3	2	0	2	5	4
rock/stones %	0	4	0	0	2	-	-	10	5	10
% veg. cov	70	80	75	70	65	75	75	40	60	50

$\bar{x}$ = 66.0
SD = 12.0

goat dung.

NP1 | 13.8.02 | 339 | Opp. North Polu camp. 1 (mushroom)

4770 m | 15° slope | Heavy LS Grazing; Marmot colony) (Thick deep soil)

34 19' 36.9" | NW

77 39' 04.4"

	1	2	3	4	5	6	7	8	9	10	+
Kobr. royleana 8.9	144 (25)	12 (5)	124 (6)	–	24 (8)	80 (10)	7 (4)	10 (7)	48 (12)	39 (12)	488 Urtica
Kobr. capillata 10.0	82 (20)	75 (15)	10 (2)	–	26 (4)	48 (2)	21 (15)	200 (30)	48 (12)	510	0 hyper by bores
Oxytr. lapponica 7.8 (minor)	36 (28)	13 (7-8)	60 (10)	20 (3)	30 (15)	17 (10)	–	–	3 (4)	179	Poa sp.
Poly viviparum 5.4	52 (8)	72 (10)	1 (<1)	72 (8)	60 (8)	76 (5)	58 (6)	24 (4)	6 (1)	16 (3)	437
Thalictr. alpinum 11.7	22 (20)	42 (30)	240 (60)	–	40 (20)	–	13 (12)	–	25 (40	48 (35)	430
Lloydea serotina .3	4 (<1)	2 (<1)	–	–	31 (1)	–	–	–	–	–	37
Stellaria decumbens .9	1 (<1)	1 (<1)	46 (5)	–	–	–	1 (1)	1 (1)	–	–	50
~~Lancea~~ .5 / Saxifraga pseudopoll.	8 (<1)	14 (2)	–	–	8 (1)	–	5 (1)	–	–	–	35
Poa ~~lahatensis~~ nemoralis .5 (?)	2 (1)	–	3 (2)	–	2 (1)	–	–	–	2 (1)	–	9
Carex maritima 4.4	–	20 (8)	1 (<1)	170 (25)	10 (1)	1 (1)	13 (1)	3 (1)	2 (1)	16 (5)	242
Leontop. alpinum 1.1	–	1 (1)	1 (1)	–	1 (3)	–	3 (2)	–	–	7 (4)	13
Kobr. schoenoides 1.8	–	–	8 (4)	–	–	24 (10)	–	1 (1)	13 (2)	2 (1)	48
Potentilla argyro... 1.2	–	–	10 (1)	–	–	–	–	7 (3)	26 (7)	4 (1)	47
Draba altaica .1	–	–	1 (<1)	–	–	–	–	–	–	–	1
Scirpus pumilus 3.0	–	–	–	160 (30)	–	–	–	–	–	–	160
Gentianella sp. .3	–	–	–	–	15 (1)	–	7 (1)	–	–	8 (1)	30
Oxytrop. ~~lapp~~ humifusa (larger) 3.1	–	–	–	–	–	28 (10)	32 (2)	33 (7)	16 (8)	15 (4)	124
Pot. multifida .2	–	–	–	–	–	1 (1)	–	–	5 (1)	–	6

18 H' = 2.290 E = 0.792

Moss	0	0	5	6	2	1	0	5	2	1
Lichen	<1	2	0	0	3	2	1	6	0	2
Rock	<1	3	1	1	1	1	0	5	3	4
Veg. cover	65	60	80	85	75	80	75	60	65	80

$\bar{x}$ = 72.5
SD = 0.73

P2 340 4733 m ; 34° 19' 42.7"
77 39' 05.8"

Carex - green (orbicularis)
Slope 10° ; NW asp.

Deep clay - moist meadow

		1	2	3	4	5	6	7	8	9	10	
Carex ~~orbicularis~~ cruenta ~~nigra~~	121.1	111 (40)	16 (35)	90 (10)	85 (25)	7 (1)	3 (1)	13 (4)	-	-	27 (5)	352
Carex intuscata ~~maritima~~	23.3	12 (2)	66 (25)	110 (30)	100 (35)	220 (45)	62 (5)	240 (40)	40 (7)	46 (12)	170 (30)	1122
Gentianella sp	.2	17 (2)	-	-	-	-	-	-	-	-	-	17
Polygonum vivip.	4.0	3 (1)	3 (1)	9 (2)	-	18 (1)	50 (6)	23 (4)	46 (12)	45 (5)	40 (8)	237
Saxifraga pseudopalli	.3	7 (<1)	-	-	7 (1)	-	-	-	-	6 (1)	-	20
Poa nemoralis	0.9	-	8 (1)	15 (2)	9 (1)	-	-	-	12 (5)	-	-	44
Ranunculus sp	.1	-	-	-	1 (1)	-	-	-	-	-	-	1
Kobresia schoen	1	-	-	-	1 (1)	7 (3)	-	1 (1)	-	8 (5)	-	17
Oxytropis lappon. (d)	1.1	-	-	-	-	5 (1)	26 (5)	-	8 (2)	9 (2)	4 (1)	52
Thalictrum alpinum	.1	-	-	-	-	4 (1)	-	-	-	-	-	4
Polyg. islandicum	1.6	-	-	-	-	-	31 (10)	2 (<1)	21 (2)	7 (2)	2 (<1)	63
Aster flaccidus	.3	-	-	-	-	-	11 (2)	-	3 (1)	-	-	14
Scirpus pumilus	.2	-	-	-	-	-	1 (1)	-	3 (1)	-	-	4
Arenaria sp (2)	.2						9 (2)	-	-	-	-	9
Leontop. alp.	.4						1 (1)	-	4 (3)	-	-	5
Kobresia royleana	.7								-	6 (7)	-	6
Polyg. yellow (mi.)	.1									13 (1)	-	13

17 H' = 1.455 E = 0.513

%											
Moss	25	30	10	15	35	10	35	8	12	30	
Lichen	0	0	0	0	0	0	0	5	3	3	
Rock	0	0	0	0	0	0	0	15	0	0	
overall green	80	90	75	80	80	50	80	60	55	85	$\bar{x}$ = 74.5 SD = 11.71

NP 3 Plateau – | 4728 | 34° 20' 14.3" 77° 38' 45.6"

Boy Scout Spanje – mixed Herbaceous formn <5°/SE

	1	2	3	4	5	6	7	8	9	10	
2.1 Euphorbia tibetica	3 (1)	2 (1)	-	8 (2)	4 (2)	7 (4)	6 (2)	5 (3)	2 (2)	3 (2)	35
4.6 Carex melanantha	52 (3)	1 (21)	21 (5)	20 (8)	37 (5)	5 (1)	8 (3)	7 (2)	110 (15)	23 (3)	284
4.5 Oxyt. kapponica	3 (2)	8 (6)	22 (5)	29 (4)	3 (8)	12 (10)	-	7 (5)	6 (4)	3 (1)	90
.5 Psychrogeneton andr.	14 (4)	-	-	-	-	-	-	-	-	1 (1)	15
2.6 Elymus nutans	2 (1)	44 (4)	1 (1)	10 (3)	26 (3)	29 (2)	16 (3)	18 (4)	6 (2)	10 (3)	170
1.3 Pot. bifurca	-	-	10 (2)	4 (3)	40 (4)	3 (1)	+	4 (1)	4 (+)	2 (1)	68
.3 Nepeta podostach	-	-	-	-	-	2 (1)	-	2 (2)	-	-	4
.2 Artemisia marit.								+ (1)	1 (1)	-	1
(8)	H' = 1.495			E = 0.719							
moss	0	0	0	0	0	0	0	0	0	0	
Lichen	0	0	0	0	0	0	3	2	0	3	
Rock	5	10	3	3	2	15	3	15	2	8	
% veg. cover	15	5	8	8	10	25	6	7	15	8	$\bar{X}$ = 10.7 SD = 5.76

marmot colony
clay-gravel
Heavy seasonal grazing
341

№ 1 Acantholimon – Artemisia scrub | 4775 m

34° 20' 19.3"
77 38 43.2"

stable, bouldery 35°/SE

Sandy soil

	1	2	3	4	5	6	7	8	9	10	
Acantholimon 12.1	2 (40)	2 (30)	3 (10)	1 (2)	2 (12)	1 (2)	1 (15)	1 (5)	2 (5)	1 (4)	16
Artem. melanii 8.6	2 (12)	3 (15)	6 (8)	5 (12)	3 (4)	5 (15)	8 (6)	2 (6)	6 (4)	3 (4)	43
Euph. tibetica 1.9	3 (3)	2 (1)	1 (1)	7 (2)	2 (1)	2 (2)	2 (2)	4 (3)	6 (3)	4 (2)	33
Dracocephalum heter .6	5 (1)	-	-	-	-	3 (1)	13 (2)	7 (2)	-	-	28
Elymus nutans 1.7	8 (3)	4 (2)	2 (1)	2 (1)	6 (2)	5 (1)	5 (2)	2 (2)	4 (2)	2 (1)	41
Oryzopsis gracilis .2	1 (1)	-	-	-	-	-	-	1 (2)	-	-	2
Oxytropis microphyll. .4	-	5 (3)	-	-	-	5 (3)	-	-	-	-	5
Astragalus rhizanth .2	-	1 (2)	1 (2)	-	-	-	-	-	-	-	1
Psychrogeton .6	-	3 (3)	2 (1)	3 (1)	3 (2)	2 (1)	-	-	-	1 (1)	11
Ephedra gerardiana .4	-	1 (2)	2 (1)	-	-	-	2 (1)	-	11 (2)	-	15
Pot. bifurca .6	-	-	16 (1)	19 (2)	1 (1)	-	-	25 (2)	-	-	61
Oxytrop. lapponica .5	-	-	-	-	3 (1)	5 (2)	-	-	4 (2)	-	12
Poa lahulensis .1	-	-	-	-	-	1 (1)	-	-	-	-	1
Eritrichium sp .1	-	-	-	-	-	1	-	-	-	-	1
Eurotia ceratoides .2	-	-	-	-	-	-	-	-	-	1 (2)	1

15 H' = 2.192 E = 0.809

Moss %	0	0	0	0	0	0	0	0	0	0	
Lichen %	1	4	0	0	1	2	0	0	0	0	
Rock %	40	20	15	10	10	40	4	4	8	6	$\bar{x}$ = 19.22
Vegetn %	50	35	10	25	20	10	15	8	7	10	SD = 13.58

(AP 5) 4565m { 34° 20' 58.9" / 77° 39' 30.2" } 15° slope S-E aspect

Artemisia scrub 2 Km × 200-300 m — uniform - above road
North Pole

	1	2	3	4	5	6	7	8	9	10	
Artem. gamelini 15.7	11 (25)	4 (8)	4 (15)	5 (15)	8 (20)	6 (6)	9 (10)	7 (20)	5 (20)	10 (18)	Ephedra 79
Euph. tibetica 2.0	5 (5)	5 (4)	1 (2)	1 (1)	-	-	1 (2)	5 (2)	2 (3)	3 (1)	heavily 23 browsed
Stipa jacquem 5.4	36 (6)	11 (6)	5 (5)	9 (10)	13 (5)	15 (5)	14 (8)	4 (2)	8 (5)	9 (2)	124
Ephed. gerard .3	3 (3)	-	-	-	-	-	-	-	-	-	3
Elymus nutans .1	5 (1)	-	-	-	-	-	-	-	-	-	5
Oxyto. micropl .6	-	-	2 (1)	-	-	10 (3)	-	1 (<1)	-	1 (1)	14

(6) H' = 1.225

E = 0.684

343

% moss	0	0	0	0	0	0	0	0	0	0	
% Lichen	1	0	3	2	5	5	0	1	0	2	
% Boulder/rock	15	2	6	15	20	20	7	10	5	15	
% vegen	25	8	10	20	25	6	25	25	25	25	$\bar{x}$ = 19.4
											SD = 7.65

NP6 (344) Snow cock droppings – frequent 35°, East/South facing slope

4494 m | 34° 21' 40.3" 77° 39' 51.2" | 25 – 30% Cover

	1	2	3	4	5	6	7	8	9	10	
Art. maritima 9.6	8 (10)	5 (12)	9 (8)	13 (10)	6 (8)	9 (7)	5 (6)	3 (20)	4 (5)	9 (4)	66
Stipa jacq. 3.1	9 (3)	6 (5)	1 (1)	9 (3)	7 (3)	6 (2)	3 (1)	5 (4)	5 (4)	7 (5)	58
Art. minor ~~sacrorum~~ .3	–	1 (1)	–	3 (2)	–	–	–	–	–	–	4
Thesium alpinum .1	–	–	1 (1)	–	–	–	–	–	–	–	1
Psychrogeton .4	–	–	2 (1)	–	1 (<1)	–	–	–	–	5 (2)	8
Moss	0	0	0	0	0	0	0	0	0	0	
Lichen	0	0	0	0	0	0	0	0	0	0	
Boulder/rock	20	10	35	55	20	35	15	15	40	12	
Vegetn cov	20	10	8	15	12	10	7	25	8	6	$\bar{x}$ = 12.1 SD = 5.85

(5)

H' = 1.020

E = 0.634

RP 7

345

Plateau → 4384 m

Lower North Polu (Flat) 34 21 48.1 / 77 40 1.8"

Heavy Exposure of soil dump of sheep & goats

	1	2	3	4	5	6	7	8	9	10	
Stipa jacq. 3.0	15 (5)	6 (3)	4 (1)	10 (4)	15 (10)	17 (3)	13 (6)	12 (5)	2 (1)		102
Pot. bifurca .4	2 (1)	19 (2)	-	-	-	-	-	-	2 (1)		23
Pot. argyrophylla (cf) .1	1 (1)	-	-	-	-	-	-	-	-		1
Oxyfr. microphylla .7	-	-	1 (2)	-	5 (1)	10 (4)	-	-	-		16
Artem. maritima .2	-	-	-	-	-	6 (2)	-	-	-		6
Eurotia ceratoides .6	-	-	-	-	-	1 (1)	-	-	6 (5)		7
Eschrogeton .1	-	-	-	-	-	1 (1)	-	-	-		1
Elymus mutans .1	-	-	-	-	-	-	-	-	3 (1)		3
H' = 1.195											
E = 0.574											
moss	0	0	0	0	0	0	0	0	0		
Lichen	0	0	0	0	0	0	0	0	0		
Pebbles	20	12	4	15	7	12	8	10	20		
Veg. cover	8%	5	3	5	8	10	7	6	7		$\bar{x}$ = 6.55 SD = 1.94

Astragalus canolleanus / strigosus

Heavily grazed & trampled by LS

< 10% vegetn cover

Tunnel

Khalsar ① Plateau < 5°

~~KL~~ ① ~~Khardung~~ Village

KV1

3 Km from Khardung Village

3970 m

34° 26' 4.2"

77° 40' 13.6"

346

	1	2	3	4	5	6	7	8	9	10	
Artem. ~~sieversiana~~ ~~sieversiana~~ .8	7 (5)	1 (1)	–	–	–	1 (2)	0	~~19~~ – (20)	–	–	9
Tanacetum tibet. 10.8	–	9 (0)	8 (10)	15 (20)	10 (10)	8 (15)	0	19 (20)	10 (10)	5 (15)	84
Eutotia cerat .8	–	1 (5)	–	2 (3)	–	–	0	–	–	–	3
Stipa jacquem .1	–	–	–	–	–	–	–	–	1 (1)	–	1

④

H' = 0.499

E = 0.360

Moss	0	0	0	0	0	0	0	0	0	0	
Lichens	0	0	0	0	0	0	0	0	0	0	
Rocks / Pebbles	15	10	10	10	10	15	5	20	10	15	
Vegetn	5	20	15	15	10	20	0	20	12	15	$\bar{X}$ = 13.2 SD = 6.33

Boulders + Pebbles – Scattered.

14/8/02 ~~OPEN~~ (350)

Sandy soil → Eroded,

PN (1) Ephedra scrub - Panamic Alluvial fan

5 m r plots # (cover) | 34°52'17.7 / 77°29'29 | SE < 2°

3300m

	1	2	3	4	5	6	7	8	9	10	
Ephedra gerardiana 6.3#	6 (6)	10 (5)	24 (10)	1 (1)	6 (3)	23 (20)	6 (4)	2 (3)	7 (8)	21 (3)	100
Atriplex 1.0	4 (<1)	5 (<1)	1 (<1)	1 (<1)	1 (<1)	6 (2)	2 (<1)	1 (<1)	2 (<1)	1 (<1)	4
Eurotia ceratoides .2	1 (<1)	-	-	1 (<1)	-	-	-	-	-	-	2
Tanacetum + all Atriplex	-	5 (<1)	1 (<1)	1 (<1)	1 (<1)	-	-	-	-	-	
(3) H' = 0.549											
E = 0.500											
Rocks / Pebbles	30%	25	10%	45%	40%	30	20	30	15	40	
Sand (Rest)	40%	75	80%	~	~	-	-	~	~	~	
% veg.	8	6	10	4	4	25	5	4	8	4	$\bar{x}$ = 7.8 SD = 6.07

Donkey + goat dung frequent larger clumps - dugout for fuelwood

SE / < 5°

PN (2) scattered Ephedra scrub 3294m

No moss
No lichen
No herbaceous vegetn

(351) opp Aye village - 34°51'29.7" / 77°29'45.6

	1	2	3	4	5	6	7	8	9	10	
Ephedra 1.9	3 (3)	-	-	4 (4)	4 (3)	3 (2)	1 (1)	4 (3)	-	1 (2)	20
Atriplex 2.2	17 (1)	34 (2)	52 (3)	45 (3)	15 (2)	37 (3)	22 (2)	24 (2)	17 (2)	40 (2)	303
(2)											
H' = 0.232											
E = 0.335											
Rocks	10%	20	15	20	5	8	8	8	10	5	
Boul. Rest sand / fine pebble	4	2	3	6%	6	6%	3	6	2	5	$\bar{x}$ = 4.3 SD = 1.61
% Total veger											

frequent Tibetan woolly hare dropping

(351)

Fine sand deposited around Ephedra

Ephedra clumps partly dugup for fuelwood

PN 3 — 3244 m — 34°50'19.2" / 77°30'18.2"

352 — SE / <2°. Eroded

All Ephedra in seedling stage (<12 cm) but fruiting

		1	2	3	4	5	6	7	8	9	10	
Perovskia ~~Atriplex~~	1.2	1 (<1)	13 (2)	6 (1)	6 (1)	1 (<1)	2 (1)	11 (2)	—	18 (2)	4 (1)	62
Ephedra	1.3	6 (<1)	1 (<1)	7 (1)	1 (2)	3 (1)	2 (<1)	3 (1)	8 (3)	—	∞ (2)	31 Only herb
Art. sacrorum (= A. Tridentini)	.1	—	—	—	—	—	—	—	—	1 (<1)		1 Parry
Tot. vegetn $\bar{x}$ = 2.2, SD = 0.87		1	2	2	3	1	2	2	4	2	3	
Rocks %		40%	45%	40%	25	30	50	35	30	40	15	Astragalus rhizoph

3

H' = 0.688

E = 0.626

Matthiola flavida

white woolly crucifer

Young like Anaphalis

Larger clumps - dug out for fire/wood

353 — 3287 m — 34°47'30" / 77°32'07.5" — C.5° / SE — 35

PN 4 — Village Pasture :- Scrub (Edge) 5 m² r plots

		1	2	3	4	5	6	7				
Hippophae rhamn.	20.5	27 (20)	44 (40)	41 (40)	39 (15)	49 (20)	8 (10)	30 (20)				238
Rosa webbi	3.7	3 (10)	—	1 (2)	1 (4)	—	5 (20)	1 (1)				11
Lonicera spinosa	.3	—	—	1 (2)	—	—	—	1 (1)				2
Clematis orientalis	2.0	—	—	—	—	—	4 (20)	+				4
T. Shrub cover		30	40	50	20	20	25	22				$\bar{x}$ = 29.57, SD = 10.60
T. rock		5	25	20	5	—	—	—				

4 — H' = 0.303

E = 0.218

Hippophae ht. 1 m ; Rosa - 2.5 m

Contd.

PN 4 Contd.. for Herbs

353

Vill. pasture

		1	2	3	4	5	6	7	8	9	10
Lancea tibetica	5.4	115 (15)	90 (15)	30 (5)	2 (<1)	130 (5)	12 (3)	48 (10)			427
Kobresia royleana	12.2	104 (12)	112 (12)	145 (30)	124 (15	86 (40)	43 (5)	130 (8)			744
Leontop. alpin.	2.4	81 (18)	–	4 (2)	17 (4)	—	–	–			102 ~~744~~
Pot. bifurca	4.7	96 (12)	18 (4)	5 (<1)	4 (<1)	45 (4)	120 (25)	60 (			348
Pot. argyrophyllin'd (?)	1.1	7 (1)	10 (4)	9 (2)	7 (2)	75 (2)	–	–			110
Gentiana ~~tibetica~~ capitata	.1	1 (<1)	–	–	–	–	–	–			1
Taraxacum officin	.2	–	4 (1)	1 (<1)	–	–	–	–			5
Gentianella sp.	.1	–	–	–	1 (<1)	–	–	–			1
Carum carvii	.1	–	–	–	–	3 (1)	–	–			3
Pot. anserina	.1	–	–	–	–	6 (1)	–	–			6
Pennisetum flacci	.3	–	–	–	–	–	36 (0	17 (1)			53
Plantago tibetica	.2					–	12 (2)	–			12

Peroyskia, Artemisia scoparia, Stipa splendens – Heavily grazed tussocks.

12

H' = 1.545

E = 0.622

moss	0	0	0	0	0	0	0			
Lichen	0	0	0	0	0	0	0			
rocks	0	0	0	0	0	0	0			
% Ground	90	90	80	70	80	75	70			$\bar{x}$ = 79.28 SD = 7.75

30% flowing water

PN (5) 354 (5 m r plots) c. 2–3° / SE

Alluvial fan:- Lycium x Ht = 55 cm.

Eroded 3206 m / 34°40'06" / 77°32'31"

Regenerating - Ephedra 2 cm in ht:

	1	2	3	4	5	6	7	8	9	10	
Lycium 5.1 ruthin.	31 (4)	14 (5)	63 (12)	20 (5)	14 (5)	12 (4)	8 (5)	7 (3)	11 (5)	5 (3)	185
Atriplex 1	3 (<1)	2 (<1)	3 (<1)	2 (<1)	6 (1)	9 (1)	5 (1)	1 (1)	13 (1)	3 (<1)	46
Ephedra ·5	-	∞ (<1)	-	∞ (<1)	∞ (<1)	-	-	∞ (1)	∞ (<1)	∞	∞
Perovskia ·4	-	-	-	-	-	-	-	10 (4)	-	-	10
(4)											
Rock/pebbles	20	15	20	15	20	70	10	15	20	25	
Veg/scrub	25	6	4	5	5	6	5	7	8	5	$\bar{x}$ = 5.6 SD = 1.15

H' = 0.618

E = 0.446

355 → Flat lake basin - Sandy clay

Lobanthera

PN6 1 m² plots :- Phragmites (< 5 cm)

3206 m / 34°45'16" / 77°30'16".

		1	2	3	4	5	6	7	8	9	10
379	Phragmites australis 15.0	44 (40)	26 (15)	25 (18)	15 (8)	68 (65)	28 (10)	27 (8)	56 (10)	20 (6)	62 (20)
320	Leymus sec. 3.1	-	65 (	-	33 (1)	-	110 (25)	52 (2)	60 (2)	-	-
66	Kobresia royleana ·8	-	4 (<1)	-	-	-	5 (1)	35 (5)	7	-	15 (1)
6	Sonchus oleraceus ·3	-	1 (<1)	-	-	1 (<1)	-	-	4 (1)	-	-
8	Carex maritima ·2	-	-	-	4 (1)	-	4 (1)	-	-	-	-
(5)											
	Sand	60%	70%	60	70	65	60	65	60	70	70
	Veg	40%	25	20	25	30	30	25	35	15	25

$\bar{x}$ = 27.0

SD = 6.78

H' = 1.009

E = 0.627

PN 4 Nabanthang
upper Summit

356

		1	2	3	4	5	6	7	8	9	10	
Artemisia ~~sieversiana~~ * maritima	19.5	7 (25)	6 (20)	15 (10)	2 (5)	8 (20)	11 (25)	8 (15)	8 (15)	18 (35)	20 (25)	111
Perowskia	1	-	-	-	-	2 (10)	-	-	-	-	-	2

2

$H' = 8.89 \times 10^{-2}$

$E = 0.128$

Sand/Barren	70	50	80	50	40	60	70	40	30	60	
Rock	5	20	5	30	30	5	15	45	30	10	
vegetn →	25%	20	15	10	30	25	15	15	40	25	$\bar{x} = 22.0$ SD: 8.42

Shrubs ↓ 5 mr.

Sophora 3.1 moorcroft	2 (4)	1 (2)	-	7 (10)	-	-	-	5 (10)	2 (5)	-	17
Lonicera spinosa 1.9	-	-	-	-	-	-	-	-	2 (4)	12 (15)	14

2

$H' = 0.688$

✓ $E = 0.990$

Astragalus candolleanus

R = 4

* Grey

15/08/02

Diskit

357

D1

5 mr plots

3130 m

34° 33' 43.3"
77° 30' 57.8"

Goat + Hare pellets abundant) (T.W.)

		1	2	3	4	5	6	7	8	9	10	
Lycium	17.4	31 (25)	6 (25)	14 (25)	12 (30)	13 (20)	5 (10)	3 (5)	19 (15)	6 (5)	8 (4)	117
1												
Boulders		–	4	3	3	5	3	6	1	4	20	
Sand		60%	60	70	60	70	75	70	85	50	80	
~~Cirsium~~ Veget phrasi		25	25	75	–	20	10	5	15	5	4	$\bar{x}$ = 18.4 SD = 20.68
1m² plot →		–	–	–	–	–	–	–	–	–		

H' = 0

D2 3125

34° 33' 50.1"
77° 30' 59.9"

TW Hare & Livestock

358

H' = 0.922
E = 0.573

		1	2	3	4	5	6	7	8	9	10	
Cirsium arvense	.8	9 (3)	5 (2)	–	–	–	–	–	–	1 (<1)	5 (2)	21
Phragmites australis	12.0	26 (4)	5 (8)	29 (20)	52 (30)	20 (15)	4 (3)	14 (5)	–	15 (5)	47 (30)	212
~~Leymus sacalin~~ Calamagrostis	2.2	4 (1)	5 (1)	2 (1)	19 (2)	8 (1)	26 (3)	16 (2)	29 (5)	19 (6)	–	128
Taraxacum sp	.4	–	–	–	1 (<1)	–	–	1 (<1)	3 (2)	–	–	5
Hippophae	.3	–	–	–	–	–	–	–	–	1 (3)	–	1
5												
Sandy clay		80	90	75	65	80	90	85	90	60	50	
Total vegetn		8	10	25	35	16	7	8	7	35	35	

Taraxacum sp.

↳ $\bar{x}$ = 18.6
SD = 11.92

359

D3 3121 m | 34°33'55.4" / 77°31'03.7"

→ L.S. dung + urine depositions

Marsh meadow:	1	2	3	4	5	6	7	8	9	10	
~~Lagmus~~ Calamogrostis 2.8	33 (8)	-	-	15 (3)	14 (2)	-	13 (4)	17 (2)	10 (4)	21 (4)	123
Phragmites ~~10.1~~ 10.1	42 (10)	9 (3)	14 (3)	58 (8)	34 (4)	70 (35)	45 (5)	48 (6)	65 (12)	46 (15)	431
Taraxacum .3	1 (<1)	-	1 (1)	-	5 (1)	-	-	-	-	-	7
~~Tillaea~~ Stellaria decus sp. 1.6	24 (1)	-	85 (3)	47 (10)	15 (2)	-	-	-	-	-	171
~~Kobresia~~ Scirpus pumilus sp. 8.7	41 (5)	400 (50)	260 (35)	46 (2)	-	18 (4)	6 (1)	-	-	-	871
Carex maritima 2.3	-	60 (3)	135 (20)	50	-	-	-	-	-	-	245
Equisetum sp .3	-	-	2 (1)	1 (<1)	2 (3)	-	-	-	-	-	5
Pucciniella him. .7	-	-	6 (<1)	-	15 (3)	2 (1)	6 (1)	1 (<1)	-	-	30
Triglochin palustre (पतली) .5	-	-	-	-	25 (2)	12 (2)	-	2 (1)	-	-	39
Overall gr. veg	50	60	70	60	40	50	20	20	25	28	$\bar{x}$ = 42.3 SD = 17.36
Clay / sandy	50%	40	30	40	60	50	80	70	70	70	

Close to str

9

H' = 1.527 E = 0.695

Fleshy & thorny bush

+ Halerpestes tricuspis; salsola / Haloxylon sp.

360

D4 - Hippophae patch

Very dense & impenetrable patch of Hippophae — 32 - 35 bushes within 5 ~~km~~ m r area. Associated spp. Calamogrostis, Ag.

$\bar{x}$ = 90.00

H' = 0.56

3118 m - 34°34'14.3"
77°31'14.9"

Sand dunes around

D5 361

5 mr

→ Systematic sampling along dry [illegible] course

3248 m.

34°32'34.1" / 77°34'13.3"

→ Christolea crassifolia

		1	2	3	4	5	6	7	8	9	10	
Lycium	3.7	10 (8)	1 (1)	-	-	-	13 (10)	12 (10)	6 (5)	4 (3)	-	46
Tanacetum	.2	2 (1)	-	-	-	-	-	-	-	1 (1)	-	3
Atriplex	2.2	-	7 (8)	4 (8)	1 (2)	-	1 (1)	3 (1)	2 (1)	-	1 (1)	19
*Ephedra	2.0	-	-	∞ (10)	1 (4)	-	10 (4)	-	-	-	1 (2)	12
4		-	-									
Rocks		60%	70	80	8	90	80%	85	85	90	85	← Rest soil
% Vegetn		10	15	20	5	0	15	12	6	4	3	$\bar{x}$ = 9.0 SD = 6.08

H' = 1.067 E = 0.769

* Ht < 5 cm

D6 Grass-sedge mixed

Wet meadow ↓ 1 m² 3150 m | 34 32 42.5 / 77 34 26.4

362

		1	2	3	4	5	6	7	8	9	10	
Sonchus	1.0	16 (5)	-	-	2 (1)	1 (1)	-	-	40 (1)	10 (2)	-	69 Elaeo Charis
Scirpus	10.5	216 (30)	260 (35)	380 (40)	-	-	-	-	-	-	-	856
Phragmites	6.7	26 (5)	36 (7)	8 (4)	96 (15)	29 (6)	28 (4)	14 (3)	58 (6)	23 (12)	36 (5)	354
Kobresia royleana	2.9	160 25	33 (4)	-	-	-	-	-	-	-	-	199
Tillaea (Tso morari dtd)	1	1	45 (10)	-	-	-	-	-	-	-	-	46
Hippophae	1	-	-	1 (10)	-	-	-	-	-	-	-	1
Calamagrostis ~~Magnus~~ Sacatinus	4.5	-	-	-	30 (5)	104 (15)	-	-	25 (20)	70 (5)	-	229
7	H' = 1.412	E =	0.7	26	-				-	-		
Vegetn %		85	80	50	50	40	5	5	40	35	20	$\bar{x}$ = 41 SD = 25.86
Soil		15	20	50/wet	50	60	90	95	60	65	80	

D7 Scrub:- 5 m r. plots

Sandy-bed

3137 m

34° 32 43.7"

77° 34' 29.3"

	1	2	3	4	5	6	7	8	9	10	
Tamarix 12.2	1 (1)	1 (6)	–	13 (10)	2 (10)	65 (50)	33 (15)	–	–	56 (30)	171
Lycium 6.2	24 (15)	22 (5)	20 (5)	–	–	–	20 (15)	3 (2)	50 (20)	–	149
Hippophae .8	–	–	4 (5)	1 (2)	1 (1)	–	–	–	–	–	6
(3)											
H' = 0.769											
E = 0.700											
% Total (Sh) Veg.	20	10%	13%	15	20	50	30	3	20	30	
% Ground Vgch. (1)	80	90	50	80%	25	10%	20%	2	5%	(1)	

80% Phragmites

(0% Pebbles)

$\bar{X}$ = 36.25 ± SD 33.78

363

SF = Sumur fu

Shrub

GF1 (364) 16/8 3706 m 34 38 12.1 / SE - 35°
77 38 28.2

~~Peroskia~~ Atriplex scrub — soil - sandy (rubble).

	1	2	3	4	5	6	7	8	9	10	
~~Peroskia~~ Atriplex 4.9	24 (8)	28 (10)	19 (10)	17 (12)	24 (15)	13 (10)	14 (10)	15 (6)	11 (8)	23 (12)	188
Artem. ~~maritima~~ 2.8	-	-	1 (1)	-	1 (1)	30 (8)	20 (7)	1 (1)	18 (10)	-	71 sheep & goat pellets
Ephedra .2						1 (1)	-	-	-	1 (1)	2
Tanacetum .1										3 (1)	3
(4) % V.C.	10	10	12	12	16	20	18	7	18	15	$\bar{x}$ = 13.8 SD = 4.01
Loose rocks	60	80	60	60	70	55	65	60	70	60	
Soil.	20	10	30	25	10	10	20	10	(10)	10	

H' = 0.682 E = 0.492

(365)

GF2 [~~Chumur~~ way to Fu] - Location 3978
↳ 'MAL' 34 38 40.8"
77 39 48.8"

An abandoned campsite - with 3 large populus ciliata trees - River bank, Myricaria - Roses.

	1	2	3	4	5	6	7	8	9	10	
Myricaria 24.5	23 (5)	8 (30)	2 (10)	4 (15)	6 (20)	13 (40)	4 (30)	3 (30)	-	5 (25)	68
Populus ciliata .2	3 (5)	-	-	-	-	-	-	-	-	-	3
Rosa webbiana .4	1 (4)	-	-	-	-	-	-	-	-	-	1
Eurotia ceratoides 2.2	-	-	-	-	-	-	-	-	7 (20)	2 (2)	9
(4) H' = 0.567 E = 0.409											
T. shrub cov	20%	30%	10	25	20	70	30	30	20	30	$\bar{x}$ = 28.50 SD = 15.17

(For herbs - Contd) →

Populus ciliata CBH :- 260, 360, 320 cms

SF_2 contd

$1 m^2$ Q.

		1	2	3	4	5	6	7	8	9	10	
Kobresia royleana	4.8	178 (20)	–	7 (28)	–	–	–	–	–	–	–	185
Bysmus compressus	3.6	18 (10)	120 (20)	76 (6)	–	–	–	–	–	–	–	114
Cirsium arvense	3.8	1 (1)	15 (35)	4 (2)	–	–	–	–	–	–	–	20
Lancea tibetica	.3	9 (3)	–	–	–	–	–	–	–	–	–	9
Taraxacum	.5	7 (1)	5 (3)	2 (1)	–	–	–	–	–	–	–	14
Potentilla fulgens	.6	19 (6)	–	–	–	–	–	–	–	–	–	19
Carex sp. (herbaceous)	3	200 (30)	–	–	–	–	–	–	–	–	–	200
Leymus secalinus	1.3	2 (1)	5 (2)	10 (10)	–	–	–	–	–	–	–	17
Kobresia lehmanii	2	118 (20)		–	–	–	–	–	–	–	–	118
Cichorium intybus	1.1	–	40 (8)	–	–	–	3 (3)	–	–	–	–	43
Elymus mutans	.4	–	6 (4)	–	–	–	–	–	–	–	–	6
Total ground vegetn		75	80%	60%	65	–	(45)	10	(3)	15	5)	$\bar{x}$ = 35.8 SD = 30.68
Rocks		10%	6	3	3	40	40	50	40	60	80	
11												
Physochlaina praealta	11				4 (60)	–	5 (40)	4 (10)	–	–		13
Tanacetum tibetica	1.9				1 (3)	–	–	–	–	6 (15)	1 (1)	8
Christolea	.5				–	–	–	–	3 (2)	–	1 (3)	4
Euroti												
14												

$H' = 2.000$ $E = 0.758$

(SF3) Chumur Fir Lower Plateau 4297 m

B66 Dry, Bouldery plateau 34 38 53.8"
Low scrub. 77 40 20.8"
1 m² / Yaks / sheep & goat grazing

Eurotia 4.7	3 (3)	2 (4)	1 (5)	–	–	–	2 (25)	–	–	8
Tanacetum tibetica 6.9	5 (4)	1 (1)	2 (3)	2 (5)	4 (6)	10 (20)	4 (10)	–	8 (20)	29
Oxytropis microphylla .6	2 (5)	–	1 (1)	–	–	–	–	–	–	3
Oryzopsis m 1.4	–	–	–	2 (1)	8 (5)	2 (1)	–	9 (7)	–	21
Total veg. %	10%	4	20	12	10	24	35	8	20	$\bar{x}$ = 15.80
Pebbles / Rocks %	3%	1%	8	10	30	12	5	50	30	SD = 9.14
Murrum / Gravel %	80%	95	65	80	60	65	60	40	50	

(4) H' = 1.141
E = 0.823

No lichens
No moss
Gravel.

* Snow cock droppings

SF4 4471 m (367) Blank Sheep (?) Dung Frequent

Eurotia - Tanacetum scrub

34° 39' 06.7"
77° 41' 45.1"

Sandy / Gravel; Greyish soil

	1	2	3	4	5	6	7	8	9	10	
Eurotia 11.3	8 (12)	9 (15)	13 (15)	14 (15)	1 (1)	6 (10)	5 (10)	–	9 (20)	6 (15)	71
Oxytr. micro 9.3	7 (12)	12 (12)	12 (12)	2 (5)	5 (10)	2 (5)	4 (8)	7 (10)	11 (8)	7 (8)	69
Stipa jacquem 5.4	12 (2)	30 (5)	10 (6)	7 (1)	11 (10)	12 (8)	2 (5)	(6) (8)	6 (4)	7 (5)	103
Tanacet. tibeticum 4.7	–	2 (5)	1 (2)	4 (2)	10 (10)	14 (15)	4 (3)	6 (3)	3 (2)	6 (7)	50

(4)

H' = 1.353

ε = 0.976

Rocks / Pebbles	10	8	10	10	30	15	10	35	10	15	
Vegetn	20%	24	30	30	35	20	25	15	25	25	$\bar{x}$ = 24.9 SD = 5.48
Rest - soil	-	-	-	-	-	-	-	-	-	-	
Lichens %	-	-	-	-	2	1	-	-	-	✓	

SF 5 No plot

SF5 368

Dry clay / Colluvial Deposite - 1-2 - Plateau
↳ Chocolate coloured rocks

34° 39' 13.1"
77° 41' 26"

4578 m

	1	2	3	4	5	6	7	8	9	10	
Tan. tibeticum 15.6	10 (20)	9 (15)	22 (15)	12 (15)	12 (15)	13 (15)	8 (20)	4 (20)	-	10 (20)	100
Oxy. & micro 1	1 (5)	-	2 (5)	-	-	-	-	-	-	-	3
Stipa jacquemon .7	-	1 (2)	2 (3)	1 (1)	-	5 (7)	-	-	-	-	9

3

H' = 0.400

E = 0.364

%										
Rocks	20	25	60	50	50	45	40	40	100	35
Vegetn	25	16	15	15	15	22	20	20	0	20
Lichens	-	-	1	1	2	2	-	-	3	3-4

$\bar{x}$ = 16.9
SD = 6.44

(Rest soil)

SF6 34° 39' 16.4" / 77° 41' 30.2" 369 369

Base of an active scree
Blue sheep / Snow cock droppings
Fine scree (brown)

4615 m

	1	2	3	4	5	6	7	8	9	10		
Tanacetum 9.1	2 (10)	-	1 (8)	-	2 (30)	2 (15)	-	1 (3)	3 (15)	3 (10)	14	Chrys anthemum pyre throids
Christolea 3.1	2 (7)	-	2 (6)	2 (8)	-	-	3 (10)	-	-	-	9	
Physochlaina .2	-	-	-	-	-	1 (2)	-	-	-	-	1	
Euphorb. tibetica .1	-	-	-	-	-	-	-	2 (1)	-	-	2	

H' = 1.023 E = 0.738

4

Pebbles/scree	40	50	35	40	35	30	25	40	30	25	
Total vegat	9	0	15	8	30	17	10	5	15	-	

$\bar{x}$ = 10.9
SD = 8.49

SF 7 | 4644m | 34° 39' 14.5" / 77° 41' 38.2" | Snow cock / Pica / Pellet

Artemisia - Ephedra - Lonicera scrub *

		1	2	3	4	5	6	7	8	9	10	
Art. ~~sacrorum~~ =A. gmelinii	15.3	1 (35)	-	-	3 (30)	7 (50)	3 (20)	-	1 (10)	-	2 (8)	13 Lonica
Oxytrop. micr.	12	1 (8)	-	-	-	-	-	-	-	-	1 (4)	Spines 2
Tanacet. tibet	8.3	1 (1)	7 (20)	5 (12)	3 (5)	-	-	5 (10)	3 (15)	-	12 (20)	36
Ephedra	3.1	1 (1)	-	-	9 (15)	3 (12)	-	1 (1)	-	-	1 (2)	15
Poa nemoralis	1.3	-	-	-	-	5 (10)	-	-	-	-	2 (3)	7
Artem. salsoloides	8	-	-	-	-	-	-	1 (8)	-	-	-	8
Lonicera hispida	3.5	-	-	-	-	-	-	-	-	1 (35)	-	1
% Lichens		4	4	2	-	5	2	-	3	3	3	
Rocks		40	70	50	15	20	35	25	70	50	30	
Total veg.		45	20	12	50	70	20	15	25	~~35~~ 35	35	$\bar{x}$ = 32.7, SD = 17.25

H' = 1.545 E = 0.794

* Base of a whitish brown exposed rock
Sandy soil — 25%
Pica; Blue sheep & yak grazing

340

370

17/8 Summer

Chumur Fu 4540 m 34° 39' 04.4" 77° 48' 21.7"

371

SF8

Moist Meadow (Between Kobresia-Wet and Artemisia scrub)

371

	1	2	3	4	5	6	7	8	9	10	
Oxytropis lapponica 11.3 (Fl.)	112 (40)	93 (40)	19 (40)	3 (8)	35 (15)	–	–	8 (10)	23 (15)	14 (45)	277
Trisetum cenium 17.5 (Golden shining)	210 (25)	82 (20)	159 (25)	74 (15)	64 (15)	60 (12)	10 (8)	96 (5)	128 (25)	120 (35)	1003
~~Kobresia~~ Stipa jacquemontii sp. 2.2	25 (5)	1 (2)	2 (3)	–	5 (10)	–	–	–	–	5 (2)	38
Potentilla multifida 3.6	~~93~~	93 (25)	14 (7)	–	–	–	–	–	21 (4)	–	58
Dracocephalum hetero 1.5	–	–	4 (5)	7 (4)	12 (6)	–	–	–	–	–	23
Artemisia sacrorum 1.2	–	–	–	2 (12)	–	–	–	–	–	–	2
Potentilla bifurca 2.1	–	–	–	–	9 (3)	–	19 (3)	15 (3)	48 (12)	–	91
Oxytropis microphylla 1.0	–	–	–	–	–	–	4 (10)	–	–	–	4
Tanacetum tibet. 1.7	–	–	–	–	–	3 (1)	15 (15)	–	3 (1)	–	21
Eurotia 2.3	–	–	–	–	–	–	4 (15)	2 (8)	–	–	6
Artemisia macrocephl 1.2	–	–	–	–	–	–	–	–	5 (2)	–	5
Halerpestes cymbal 1.1	–	–	–	–	–	–	–	–	–	16 (1)	16
% Total veg.	80	85	75	40	45	10	30	45	75	60	$\bar{x}$ = 55.3 SD = 21.85

12

H' = 1.202

E = 0.483

SF 9 4800m

Artemisia-scrub 1 m²

10° slope (NW)

Snow cock droppings ∞

372

34° 38' 49" / 77° 42' 02.3"

Sandy murrum w/ fine rubble

	1	2	3	4	5	6	7	8	9	10	
Art. minor ~~nana~~ 17.8	11 (20)	16 (25)	7 (15)	14 (20)	11 (20)	12 (15)	4 (5)	21 (22)	15 (16)	15 (20)	126
Art: sacrorum (green) = gmelini 3.5	3 (3)	4 (20)	–	–	–	–	1 (8)	1 (2)	1 (1)	1 (1)	11
Dracocephalum 1.3	–	5 (3)	–	–	–	–	15 (8)	3 (1)	1 (1)	–	24
Oxytr micro .3	–	–	2 (3)	–	–	–	–	–	–	–	2
Lichens	4	2	6	1	–	3	2	15	2	2	
Moss	30	2	–	–		1	–	–	–	–	
Rocks	20	8	20	30		15	20	45	10	10	
~~Rest (Vegeta~~	25	35	8	20	20	25	25	25	30	25	$\bar{x}$ = 23.8 SD = 6.70
~~Vegeta~~ (Rest soil)											
Stipa .6	–	–	–	1 (1)	–	–	1 (2)	1 (1)	2 (2)	–	5
Pot. bifurca .6	–	–	–	–	11 (2)	–	3 (1)	–	5 (1)	11 (2)	30
Sisymbrium sp. .3	–	–	–	–	–	15 (2)	1 (1)	–	–	–	16
Ephedra 2.5	–	–	–	–	–	–	–	–	11 (25)	–	11

8

H' = 1.441 E = 0.693

373

SF 10 17.08

Artemisia – Biebersteinia scrub

4749 m 34° 38' 46.7" 77° 41' 52"

Stable scree

Artemisia sacro-gmelini 16.3	15 (25)	3 (40)	5 (30)	9 (12)	11 (15)	10 (30)	–	–	3 (10)	–	55
Bieberstinia 3.4	5 (2)	1 (2)	–	–	–	–	–	41 (30)	–	–	47
Sedum quadrif. .7	2 (1)	–	–	–	1 (5)	–	–	1 (1)	–	–	4
Poa nemoralis .5	–	–	–	–	6 (5)	–	–	–	–	–	6
Dracocephalum 2.0	–	–	–	–	–	2 (8)	–	–	56 (12)	–	58
Lichens	<1	<1	3	3	1	–	–	4	2	40	
Rocks % x	48 30	45 40	60 30	80 12	65 25	35 40	35 0	15 60	25 50	95 0	$\bar{x}$ = 28.7 SD = 19.05

20° NW Base of a scrub moist Slaty grey pebbles

H' = 1.754 E = 0.798

	1	2	3	4	5	6	7	8	9	10		
Elymus nutans .1	~~20~~ (12)	-	-	-	-	-	-	21 (1)	-	-		21
Lonicera spinosa .2	-	-	-	-	-	-	-	1 (2)	-	-		1
Leontopodium him. 6.0	-	-	-	-	-	-	-	17 (30)	24 (30)	-		41
Tunacetum sp. .3	-	-	-	-	-	-	-	-	2 (3)	-		2
~~Sedum~~ → 9												
SF 374 → Wet meadow		0°; V. Bottom :- 45 67 m							34° 38' 57" / 77° 41' 35"			
(Depression on the bank of Chumur Fu stream	1	2	3									
	1	2	3	4	5	6	7	8	9	10		
Carex maritima 39.9	300 (85)	120 (80)	80 (25)	120 (25)	180 (80)	160 (5)	162 (7)	184 (6)	242 (3)	150 (20)	1698	Algae (BG)
Taraxacum sp. 2.0	13 (1)	20 (3)	8 (1)	42 (4)	16 (5)	2 (1)	11 (2)	2 (1)	3 (1)	5 (2)	124	
Potentilla multifida .9	21 (3)	-	-	-	-	3 (2)	6 (2)	8 (2)	-	-	38	
Scirpus sp. 1.2	80 (5)	10 (4)	-	-	-	-	-	20 (3)	-	-	110	
Oxytropis lapponica 8.2	-	-	45 (50)	-	-	-	-	-	40 (2)	32 (20)	117	
Pot. bifurca 1.9	-	-	10 (2)	32 (4)	9 (2)	6 (2)	16 (4)	22 (3)	-	6 (2)	101	
Gentiana crassuloides ~~Kobresia~~ 2.8	-	-	~~80~~ (25)	2 (1)	-	-	-	-	3 (1)	1 (<1)	6	
Pot. argyrophylloides 1.4	-	-	-	82 (10)	-	6 (2)	2 (1)	4 (2)	-	-	94	
Elymus .1	-	-	-	1 (1)	-	-		-	-	-	1	
Leontopodum .4	-	-	-	6 (4)	-	-	-	-	-	-	6	
Festuca sp(?) .2	-	-	-	4 (1)	-	-	6 (1)	-	-	-	10	
Kobresia royleana .7	-	-	-	-	-	-	6 (2)	3 (2)	-	5 (3)	14	
Vegetn cover	95	92	95	85	90	95	85	90	85	90	$\bar{x}$ = 90.2 SD = 3.9	
moss	-	-	2	-	-	-	2	2	-	-		
Art. sacrorum .2									(1)		1	

Gentiana argentea (crassuloides)

13 H' = 1.105 E = 0.431

SF 12 — 4562m — Snow Cock droppings ∞ — 375

Yak " -∞

Eurotia-Tanacetum scrub.

	1	2	3	4	5	6	7	8	9	10	
Eurotia .3	1 (1)	-	-	-	-	-	-	1 (2)	-	-	1
Oxy. microphylla 4.2	3 (5)	8 (15)	10 (4)	2 (2)	2 (1)	2 (2)	6 (4)	3 (6)	6 (2)	2 (1)	44
Stipa jacquem 1.9	6 (10)	-	3 (3)	-	2 (2)	1 (1)	-	4 (2)	1 (1)	-	17
Tanacetum tibetia 4.8	10 (10)	6 (4)	6 (6)	6 (7)	10 (7)	5 (3)	9 (8)	3 (2)	6 (1)	-	61
Ephedra .1	-	-	-	1 (1)	-	-	-	-	-	-	1

5

H' = 1.066

E = 0.662

% Rock	15	15	8	20	5	5	5	16	20	22	
T. Veg. Cover	20	20	12	20	10	8	12	15	16	15	$\bar{X}$ = 17.8 SD = 3.91
Lichens	-	3	-	6	-	-	2	-	-	-	

* 34° 38' 56.8"
77° 41' 40"

Arnebia euchroma - scattered - adj. plot.

375

H' = 1.102

GF13 — Kobresia Sedge meadow — 4550m — 34° 39' 03.4" — 77° 41' 32.5

17/8 — Between a river course — Clayey sol. — Grazed. — heavily by yak

376

	1	2	3	4	5	6	7	8	9	10	
Kobresia schoenoides 17.5	21 (15)	–	36 (20)	9 (15)	11 (25)	8 (30)	18 (20)	12 (20)	8 (10)	20 (20)	143
Kobs. royleana 26.1	240 (60)	12 (10)	400 (25)	210 (15)	240 (25)	168 (15)	252 (45)	208 (26)	88 (10)	232 (30)	2050
Pedicul. oederi 2.9	15 (8)	11 (5)	–	38 (5)	26 (3)	18 (5)	4 (1)	3 (1)	1 (<1)	–	116
Oxytr. lapponica 18.7	20 (5)	1 (2)	132 (50)	59 (20)	120 (25)	121 (10)	165 (20)	105 (20)	93 (15)	152 (20)	968
Gentiana crassuloides .8	3 (1)	–	12 (2)	8 (<1)	1 (<1)	1 (1)	–	–	4 (2)	1 (1)	19
Festuca sp (minor) 2.3	96 (20)	–	23 (3)	–	–	–	–	–	–	–	119
Pot. bifurca .2	64 (2)	–	–	–	–	–	–	–	–	–	64
Leontopod. alp/him 3.3	6 (1)	–	3 (5)	–	20 (15)	2 (1)	10 (3)	16 (8)	–	–	57
Carex parva .1	3 (1)	–	–	–	–	–	–	–	–	–	3
Juncus thomsonii .1	11 (1)	–	–	–	–	–	–	–	–	–	11
Carex maritima .7	–	14 (2)	24 (3)	–	–	–	7 (1)	–	–	7 (1)	52
Pot. multifida .3	–	–	–	4 (2)	–	–	–	4 (1)	–	–	8
Pot. argyrophylla .3	–	–	–	1 (2)	–	–	–	1 (<1)	–	–	2
Gentiana argentea 2.6	36 (9)	–	19 (5)	–	72 (57)	10 (2)	15 (4)	16 (3)	4 (1)	14 (2)	186
Deschampsia kobresioides .8	–	–	–	–	–	–	1 (<1)	–	11 (5)	4 (2)	16
Taraxacum sp. .5	–	–	–	–	–	–	–	–	6 (5)	–	6
H' = 1.454											
16 E = 0.524											
Rock	–	–	–	20	–	–	–	–	10	–	
Total vegetn	98	50	90	70	90	95	98	96	85	95	$\bar{x}$ = 86.7, SD 14.59
Moss	–	5	–	–	–	–	–	–	–	–	

Dug & trampled by yak

Lakjung (1) | River bed Clayey → "Tebla" Plantn | 3140m | 377

Forest plntn | Frequent Hare | 34 34 01.5 | 77 37' 08.9

	1	2	3	4	5	6	7	8	9	10	
Tamarix 17.7	16 (35)	14 (40)	*232 (25)	30 (25)	10 (15)	16 (8)	1** (1)	31 (20)	-	6 (8)	356
Myricaria 10.2	-	-	-	10 (10)	34 (30)	5 (4)	-	1 (3)	17 (35)	11 (20)	88
Salix sp. (baby lonia) 2.5	-	-	-	-	-	-	-	-	13 (15)	4 (10)	17
Hippophae rh. .3	-	-	-	-	-	-	-	-	2 (3)	-	2
Total veg'n	40	45	30	35	45	15	1	25	40	40	$\bar{x}$ = 31.6 SD = 13.56
(Rest Herbaceous)			*$\bar{x}$ ht 50cm	-	-	-	** (Dry)	-	-	-	

(4)

H' = 0.662 E = 0.4707 Camel droppings

Herbs:-

Cirsium arvense ; Artemisia macrocephala

Calamagrostis sp.

Leymus secalinus

Sonchus sp.

~~Camel~~

L2 — 3147 m — 34° 34' 03.8" — 77° 37' 07.9" — 378

Tamarix + ht 3m

Shrubby area

	1	2	3	4	5	6	7	8	9	10	
Tamarix 43.5	55 (80)	70 (70)	63 (70)	82 (65)	95 (70)	15 (40)	65 (50)				455
Myricaria 2.0	–	1 (5)	–		2 (5)	–	1 (10)				4
Clematis orientalis .2	–	–	–	–	–	1 (2)	–				1
3											
Total vegetn	80	75	75	65	75	45	65				$\bar{x}$ = 68.7 SD = 10.92

$H' = 6.539 \times 10^{-2}$

$E = 0.059$

OBS

Cirsium asvera, Artemisia biennis,

379

L3 — 5 m r plot

	1	2	3	4	5	6	7	8	9	10	
Hippophae 18.9	25 (30)	19 (30)	14 (25)	6 (10)	7 (20)	12 (25)	6 (15)	9 (12)	13 (20)	2 (2)	113
Clematis orient 5	–	–	2 (8)	11 (10)	3 (5)	13 (10)	–	7 (8)	8 (6)	1 (3)	45
2											
sh. cover	30	30	25	20	25	35	15	20	25	5	$\bar{x}$ = 23.1 SD = 9.45

$H' = 0.597$

$E = 0.861$

L3 Contd. 1 m² 3147 m; 34° 32' 38.6" / 77° 38' 28.2"

Herbs	1	2	3	4	5	6	7	8	9	10	
Artemisia macroph 2.3	31 (5)	–	–	15 (10)	–	–	–	2 (1)	41 (5)	6 (2)	96
Art. sacror. var 1.3	2 (1)	–	–	–	–	1 (2)	1 (10)	–	–	–	4
Cuscuta europaea .2	34 (2)	–	–	–	–	–	–	–	–	–	34
Tribulus terrestris .4	–	3 (2)	–	90 (2)	–	–	–	–	–	–	93
Art. sieversia .7	–	14 (5	1 (1)	–	–	–	2 (1)	–	–	–	17
Eragrostis minor 3.7	–	–	61 (30)	37 (1)	–	–	10 (1)	–	35 (5)	–	143
Euphorbia sp. .3	–	–	1 (2)	–	–	–	–	–	1 (1)	–	2
Chenopodium botrys sp .4	–	–	–	–	–	19 (1)	–	–	18 (3)	–	37
T. Gr. cover	(35)	6	40	10	–	3	12	25	20	2	$\bar{x}$ = 17.0 SD = 13.09
Soil (Rest)					100% (&c)	97	–	clematis			

8

H' = 1.646 E = 0.791

380

L4 opp. Ephedra scrub - sandy dunes

Lycium - Tamarix - 3167 m → 34° 34' 40.6" / 77° 37' 15.4"

	1	2	3	4	5	6	7	8	9	10	
Lycium 5.6	6 (8)	6 10	2 (5)	0	1 (3)	0	0	0	15 (20)	8 (10)	30
T. sh.	8	10	5	0	3	0	0	0	20	10	$\bar{x}$ = 5.6 SD = 6.2
Sand (Rest)	–	–	–	–	–	–	–	0	–	–	

1

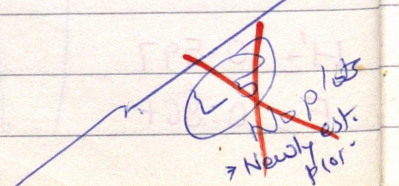
H' = 0

Tamarix

$\bar{x}$ 5.6

SD 6.2

L5 No plots est. → Newly plot



L5 Marsh meadow / Kobresia

381

3141 m

34° 36' 43"
77° 36' 59.6"

		1	2	3	4	5	6	7	8	9	10	
Scirpus sp	37.5	460 (40	420 (50)	360 (30)	410 (40)	380 (40)	365 (20)	360 (50)	415 (40)	320 (25)	430 (40	3920
Tillaea sp	11.0	62 (60)	40 (6)	24 (3)	26 (3)	4 (<1)	5 (5)	65 (7)	12 (2)	140 (20)	15 (3)	393
Carex maritima	13.6	68 (3)	75 (20)	126 (30)	98 (2)	6 (1)	30 (5)	115 (20)	130 (10)	220 (30)	64 (15)	932
Taraxacum off	18.0	–	10 (2)	1 (<1)	2 (4)	–	–	–	2 (1)	12 (4)	18 (6)	45
Scirpus planifolius	10.0	–	12 (3)	8 (2)	6 (3)	–	6 (2)	–	–	–	–	32
(Elysmus) Phragmites comm	10.0	–	3 (1)	2 (1)	–	32 (5)	2 (1)	–	–	2 (1)	3 (1)	44
Halerpestes ~~Ranunculus~~ cymbala	5	–	–	5 (1)	1 (2)	–	–	–	–	–	4 (2)	10
Potentilla anserina	4	–	–	–	–	9 (3)	1 (1)	–	–	–	–	10
Triglochin merit	1.5	–	–	–	–	35 (10)	20 (5)	–	–	–	–	55
Elymus		–	–	–	–	–	1 (<1)	–	–	–	–	1

10 H' = 0.908
E = 0.394

T. veg cover	80	80	75	60	75	40	85	65	75	70	$\bar{x}$ = 70.6
Rest soil/algae											SD = 12.38

L6 3147 m 382 34 36 57.0 18
Managed 77 36 56.8
Clayey soil hay plot of Gompa area

		1	2	3	4	5	6	7	8	9	10	
Phragmites	9.9	6 (35)	3 (15)	7 (10)	3 (5)	4 (3)	8 (5)	6 (15)	-	3 (6)	5 (5)	45
Calamagrostis pseudoph	13.6	5 (10)	4 (5)	4 (20)	25 (15)	20 (6)	-	-	10 (30)	40 (25)	14 (25)	122
~~Sonchus~~/Cichorium	1.1	2 (2)	2 (6)	-	-	-	1 (1)	5 (2)	-	-	-	13
Stipa splendens	6.5	3 (10)	1 (5)	1 (5)	-	1 (3)	9 (35)	4 (2)	3 (5)	-	-	22
Leymus secalinus	2.5	-	5 (25)	-	-	-	-	-	-	-	-	5
Taraxacum	.9	-	2 (1)	-	-	-	5 (3)	4 (1)	-	2 (4)	-	13
Scirpus sp-2 (Spem)	19.8	-	200 (50)	160 (25)	150 (15)	120 (5)	130 (20)	-	320 (50)	14 (8)	160 (15)	1254
Lancea tibetica	.5	-	-	-	-	-	-	-	13 (5)	-	-	13
Pot. bifurca	.5	-	-	-	-	-	-	-	21 (5)	-	-	21
(9)												
T. vegetn		70	65	70	75	70	65	75	80	60	55	$\bar{x}$ = 68.5 SD = 7.08
moss		-	-	10	20							

H' = 0.724 E = 0.329

Lonicera spinosa ; Cirsium arvense

Hay to Hunder Dok (HD 1) 19/8 3560 m 34° 33' 56.9" 77° 27' 08.3"

Clayey soil

Tanacetum - Atriplex (Halaxylon) - 2-3°

383

	1	2	3	4	5	6	7	8	9	10	11	
→ DRY Tanacetum tib. 2.1	3 (6)	-	-	-	1 (4)	2 (8)	1 (3)	-	-	3 (12)	-	10
Atriplex 6.1	-	-	-	-	1 (1)	-	-	-	-	3 (30)	1 (30)	2

$\bar{X} = 5.2$

$SD = 0.74$

(2)

$H' = 0.450$ $E = 0.650$

Rocks	55	70	60	58	30	25	60	45	70	15	15
No moss; No lichens	-	-	-	-	-	-	-	-	-	-	-

HD 2 3579 m

34° 32 54.4"

77° 26' 32.4"

384

	1	2	3	4	5	6	7	8	9	10	11	
Atriplex 5.0	2 (7)	1 (2)	1 (4)	-	6 (7)	-	-	-	2 (10)	2 (8)	1 (12)	15
Tanacetum tib. 1.5	-	-	-	-	1 (5)	-	1 (2)	-	2 (8)	-		4

(2)

$H' = 0.514$ $E = 0.742$

Rock/Boulders	~~45~~	65	35	70	70	60	80	45	30	60	40

% V. Cover $\bar{X} = 5.9$; $SD = 5.75$

HD 3 Ridge - with Chocolate coloured boulders →

Ridge

HD3

2-3° / N. – 34° 32' 48.9"
77° 26' 25.9"

3671

385

		1	2	3	4	5	6	7	8	9	10	
Atriplex	8.9	1 (12)	–	1 (8)	1 (20)	2 (30)	1 (3)	2 (6)	–	1 (5)	2 (6)	10
Boulders		20	20	10	8	5	10	30	8	20	30	
Lichens							(3)	(2)	–	–	–	

Cover
$\bar{X} = 10$
SD = 9.13

1

H' = 0

3570m

HD4 *

34° 34' 13.9"
77 27' 04"

386

		1	2	3	4	5	6	7	8	9	10	
Perovskia	1.3	7 (5)	–	–	–	–	–	–	1 (3)	1 (5)	–	9
Atriplex	.2	–	–	1 (2)	–	–	–	–	–	–	–	1
Ephedra	5.5	–	–	–	1 (25)	–	–	3 (25)	1 (5)	–	–	5
Tanacetum tib	2.2	–	–	–	–	–	1 (2)	–	–	3 (20)	–	4
Rocks		20	35	25	25	30	30	50	–	80	(40)	

No mosses/lich

H' = 1.188

4

E = 0.857

Highly eroded / undulating slope - NW / 30-40°.

$\bar{X}$ V. Cover $\bar{X} = 9.2$; SD = 10.61

HD5 Only Rocky outcrop 3324 m 34° 34' 45.3" 77° 27' 16.1"

→ Sandy soil – Boulders.

387

	1	2	3	4	5	6	7	8	9	10	
Lycium 14.8	6 (20)	5 (0)	20 (15)	24 (20)	23 (20)	19 (15)	18 (15)	11 (10)	31 (20)	14 (15)	171
Peruvskia .3	-	1 (3)	-	-	-	-	-				1

Cover → $\bar{x}$ = 14.8, SD = 5.23

2

% Rock	30	35	70	65	80	70	65	60	65	70	

$H' = 3.572 \times 10^{-2}$

$E = 5.15 \times 10^{-2}$

HD6 *

388

Riverine scrub

Rosa webbiana occasional

	1	2	3	4	5	6	7	8	9	10	
Myricaria ($\bar{x}$ Ht (2.5m))	20 (35)	17 (30)	10 (35)	8 (25)	10 (30)	13 (30)	16 (25)	18 (30)	15 (20)	10 (20)	135
Hippophae ($\bar{x}$ Ht 1.5m)			16 (25)	21 (30)	-	-	-	1 (5)	-	-	38
Lonicera sp	-	-	-	1 (2)	-	-	-	-	-	-	1
Boulders	65	50	40	15	40	60	50	45	30	25	

Cirsium arvense.

3 $H' = 0.558$ $E = 0.508$

* 3227 m ; 34° 34' 47.6"
77° 27' 27.6"

% V. Cover $\bar{x}$ 34 ± 12.8 (SD)

Turtuk TL (1) — 3089 m — Irrigated plot — 34° 41' 38"
77° 41' 58"

389

Irrigated slope → Soil conservation Dept.

	1	2	3	4	5	6	7	8	9	10	
Crepis tenuifolia	2 (30)	6 (30)	-	-	4 (40)	1 (3)	1 (1)	8 (8)	3 (15)	1 (5)	21
Melilotus (purple)	2 (15)	4 (2)	-	6 (3)	6 (15)	8 (5)	6 (15)	3 (6)	2 (5)	3 (10)	40
Leymus	3 (8)	-	-		-	-	-	2 (4)	-	3 (10)	8
Matthiola sp	1 (5)	-	-	-	-	-	1 (2)	1 (4)	2 (2)	-	5
Artemisia sieversia	33 (12)	1 (5)	-	2 (20)	9 (10)	49 (50)	98 (30)	22 (15)	8 (10)	20 (6)	240
Kochia sp	-	2 (1)	12 (10)	5 (5)		-	-	-	-	-	19
Chenopod. botrys	-	-	1 (1)	1 (1)	5 (5)	-	1 (1)	-	-	-	8
Tribulus terrestris	-	-	-	4 (12)	2 (6)	-	-	-	-	-	6
Eruca (?)	-	-	-	1 (1)	-	-	-	-	-	-	1
Tot. vegetn	75	40	10	40	60	65	70	45	50	30	$\bar{x}$ = 48.5
Rock/pebbles	25%	7	4	15	10	10	10	5	20	20	SD = 18.84
						-				-	
Astragalus (coluteal)	-	-	-	-	5	-	-	-	-	-	5
Setaria glauca	-	-	-	-	-	-	4 (3)	-	4 (3)	1	9
Calamogrostis										2 (3)	4

Cuscuta sp.

12

H' = 1.344 E = 0.541

TU2 | 34° 39' 39.3" 77° 20' 23" | 3096 m | Rubble sandy

390

	1	2	3	4	5	6	7	8	9	10	
Artem. salsoloides	10 (25)	12 (10)	2 (5)	-	4 (10)	1 (2)	1 (2)	4 (5)	3 (8)	1 (2)	37
Perovskia	7 (15)	-	1 (10)	4 (6)	2 (30)	-	9 (40)	-	-	-	23
Tanacetum sp	-	1 (1)	-	-	-	-	-	-	-	-	1
Matthiola	-	-	1 (1)	-	-	-	-	-	-	-	1
Chenopod. botrys	-	-	1 (1)	-	-	-	-	-	-	-	1
Bromus sp (?)	-	-	27 (2)	60 (8)	-	-	-	16 (1)	-	-	103
Artem. sacrorum	-	-	-	-	2 (20)	-	-	-	1 (4)	-	3
Clematis orientalis	-	-	-	-	-	3 (10)	3 (10)	-	-	-	6
Atriplex	-	-	-	-	-	-	-	-	1 (2)	-	1
Total vegetn	60	12	40	10	60	0	65	6	15	2	$\bar{X}$ = 27.0 SD = 24.98
Pebbles	3	70	3	25	15	90	25	60	70	85	

9

H' = 1.209

E = 0.550

Fine Rubble & Sandy soil

391

5 m r plots

34° 38' 28.3" H
77 24 23" 70

TU 3

30 96 m

	1	2	3	4	5	6	7	8	9	10	
Ephedra	3 (5)	2 (8)	2 (10)	4 (10)	9 (15)	2 (3)	6 (15)	–	–	12 (15)	38
Art. Salsola	–	–	–	–	–	–	–	–	1 (1)	–	1

Cover $\bar{x}$ = 8.2
SD = 5.49

2

H' = 0.119 E = 0.172

Pebbles	70%	70	40	70	70	80	60	80	80	60

Way to Khardung village Khalsar

347

KV 2 – 3654 m

34/27/38.2
77/43/04.3

	1	2	3	4	5	6	7	8	9	10	
Ephedra (→ Fruits)	2 (8)	1 (11)	0	6 (10)	5 (8)	3 (8)	9 (15)	2 (15)	6 (8)	2 (15)	37
Tanacetum tibeticum	1 (2)	–	1 (1)	9 (5)	6 (4)	6 (6)	3 (3)	4 (2)	3 (2)	–	33

2

H' = 0.691 E = 0.997

Rocks/pebbles	15%	20%	20%	70	60	40	35	30	70	60
V.G.%	12	12	2	15	12	15	20	18	10	15
M/L%	0	0	0	0	0	0	0	0	0	0

$\bar{x}$ = 13.1
SD = 4.67

KV3 21/8

3738 m

34° 26' 44.7"
77° 42' 12.9"

348

PAE

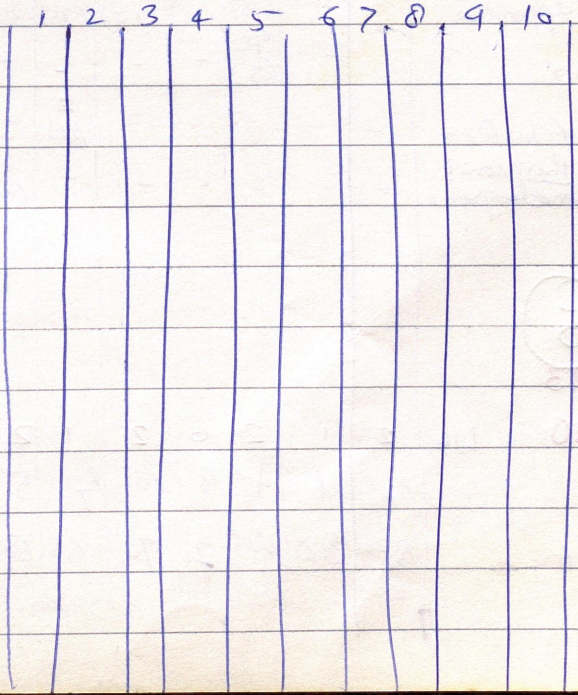
Rocky slope
chocolate coloured rocks

	1	2	3	4	5	6	7	8	9	10	
Ephedra	3 (5)	4 (6)	8 (15)	4 (10)	4 (5)	5 (10)	1 (5)	4 (10)	5 (15)	3 (10)	41
Tanacetum tib.	–	–	–	–	1 (1)	–	–	–	–		1
Rocks/pebbles	40	50	40	45	50	70	45	40	60	45	
% Veg.	5	6	15	10	16	10	6	10	15	10	$\bar{X}$ = 10.33
m/L	0	0	0	0	0	0	0	0	0	0	SD = 3.97

(2)

H' = 0.112

E = 0.162



KK4

349

opp. Tokmar village

$\bar{x}$ Lt 2 cm –

Moist meadow –

2° slope :– 4163 m

34°22'30.2" / 77 39' 43.9"

	1	2	3	4	5	6	7	8	9	10	
Carex maritima	240 (30)	160 (30)	140 (12)	–	110 (8)	–	–	–	–	–	650
Kobr. royleana	43 (8)	27 (5)	64 (15)	68 (22)	26 (20)	42 (7)	44 (7)	19 (6)	64 (13)	6 (4)	403
Polygon. viviparum	47 (5)	45 (5)	310 (20)	465 (70)	245 (15)	525 (35)	190 (5)	176 (10)	330 (20)	–	2341
Kobr. schoenoides	20 (7)	23 (15)	85 (8)	33 (8)	20 (5)	24 (5)	–	10 (4)	16 (5)	–	231
Scirpus pumilus	480 (50)	–	–	102 (20)	105 (12)	120 (25)	72 (5)	220 (25)	–	240 (25)	1339
Gentianella sp.	11 (2)	10 (3)	7 (1)	–	8 (5)	12 (3)	8 (1)	2 (1)	6 (1)	–	64
Thal. alpinum	12 (5)	40 (10)	–	28 (10)	15 (5)	48 (20)	12 (5)	26 (10)	70 (15)	4 (1)	335
Euphrasia officin.	–	3 (1)	12 (1)	8 (3)	2 (<1)	15 (2)	4 (1)	9 (4)	–	16 (2)	69
Carex crwenta	–	10 (3)	–	–	–	–	43 ( )	11 (3)	26 (5)	42 ( )	140
Halerpestes foicupis	–	14 (3)	–	–	–	–	–	–	–	–	14
Pedicularis tubiff.	–	1 (1)	–	2 (3)	–	–	26 (21)	12 (7)	–	10 (3)	51
Oxytropis lapponica	–	–	63 (15)	60 (25)	92 (15)	142 (25)	180 (35)	–	78 (12)	11 (2)	626
Scirpus sp 2	–	–	90 (3)	–	–	–	–	–	60 (8)	–	150
Plantago tibetica	–	–	–	–	–	2 (11)	–	–	–	–	2
Juncus thomsonii himalayana	–	–	–	–	–	–	1 (11)	–	–	–	1

15

H' = 1.923

E = 0.710

Lichens	2	1	2	0	2	1	2	0	0	1	
Moss	6%	1	4	15	20	4	5	2	3	5	
T. Vegetn	85	80	65	70	90	65	60	65	55	60	$\bar{x}$ = 67.5
Rock	–	–	–	–	–	–	–	–	(10)	(2)	SD = 0.73

Nubra Survey:- Reference Points [Addl].

Altitude (m)	Latitude	Longitude	Description of site
3114 m	34° 37' 05.5"	77° 36' 59"	Galaxy GH. Sumoor
3888 m	34° 38' 06.5"	77° 38' 57.3"	Gebakhar – Old fort on way to Sumoor Fu
4623 m	34° 39' 46.5"	77° 41' 33"	White pebbly scree - Artemisia sacrorum & Tanacetum - 15° slope.
3167 m	34° 34' 29"	77° 37' 10.8"	Diskit area: Ephedra Scrub Valley ← Alluvial Fan → Rocl. Soil
3172 m	34° 35' 06"	77° 28' 11.8"	Snow Leop. GH.; Hunder
3517 m	34° 34' 19"	77° 27' 05.1	- Exposed gravel; deep gorge - Scattered Ephedra (Way to Hunder Dok)
3525 m	34° 34' 10.5"	77° 27' 10.5"	Helipad / plateau way to Hunder Dok
3651 m	34° 33' 54.5"	77° 26' 56.5"	Rocky out crop above winter village – Way to Hunder Dok
3651 m	34° 33' 40.7"	77° 27' 15.4	Rocky slope with rust colour rocks – Iron content.
3135 m	34° 42' 45.8"	77° 13' 07.6"	Alluvial Fan – Windblown - 'Capparis' hummocks.
3955	34° 26' 31"	77° 40' 36.4"	- Extensive plateau - Eurotia - Tanacetum.

Nubra: Other Reference Points:- contd.

Alt (m)	Lat	Long	Description
5306	34° 17' 39.8"	77° 36' 0.1"	41 point - GREF Camp.
5250	34° 17' 23.8"	77° 35' 59.6"	Snow-bed community Rhodiola, Saxifraga, Waldhi
4954	34 18 24.2	77° 37' 18.5"	Summer Grazing Camp/ Puloo - 5 Enclosures
4675	34° 19' 42.5"	77° 38' 47.0"	LS Camp opp. N. Pullu - Donkeys, Sheep, goats + Yaks
4682	34° 19' 48.0"	77° 38' 56.7"	Yak camp.
4235	34 22 31.8	77 39 27.2	Tangmar Village Beyond Wheat, Barley & mustard
4143	34° 22' 33.3"	77° 39' 47.5"	Tangmar Village Bridge (1.0m) on Chuski Nala
3916	34° 26' 33.4"	77° 41' 22.3"	Beginning of Ephedra Scrub - on Nallah 15 km before Khalsar
3635	34° 29' 34.1"	77° 42' 38.4"	Khalsar check post - 1 Km of barren scree before C.P.
3299	34° 34' 24"	77° 28' 37.8"	Sasoma TCP - Below Dry rock/ monolith
3249	34° 44' 17.3"	77° 35' 30"	Chamsen Bridge (1.0m)
3143	34° 32' 41.4"	77° 34' 15.9"	TSOGSTOTH Lake near Diskit

Landscape units & Vegetation Types of Nubra

1. SN: Snow / Glacier (>5000m)
2. MO = Moraines / Glacial outwash (>4000m)
3. HR = Hard Rocks
4. SS = Scree slopes

~~RO = Rocky outcrops (Colluvial Deposits)~~

5. AF = Alluvial Fan (with sparse vegetn).
6. SD = Sand Dunes
   DRB = Dry River beds [Pebbly]
   RB = Riverbed (Boulder + Sand)
7. R1 = Stream / ~~courses~~ River
8. LW = Lake / water body
9. SM = Marsh meadow / sedge meadows (waterlogged)
10. HM = Herbaceous (moist) meadow >4000 m. moist
11. RS = Riverine scrub < open / close (Dense) — HIP - Hi; H - MS - MiY; MYS - Myers
12. → ES = Ephedra Scrub
13. EDS = Eroded Dry scrub (& ~~steppe (Plateau & G.S.)~~ <5% Cov)
15. FL = Fell-Fields (~~Cushionoid~~ - Moss Lichen)
16. PL = Plantation
17. A-P = Agricult with plantn
17. AG = Agriculture / Fallow
18. HB = Habitation
19. LS = Livestock camps (In the pastures)
14. DSP = Dry scrub on plateau (Artem-Tanac. 20-35% G)

Alt. Range

1 = <3500 m ; 2 = 3501 - 4000 ; 3 = 4001 - 4500 ; 4 = 4501 - 5000 ; 5 = >5000

F1

25cm – 2m.

N = Nanophanerophytes (< 2 m) Woody.

Ch = chamaephytes [Woody, Semi-woody Perennial]

(a) Suffucticose ch.

(b) Passive ch.

(c) Active ch.

(d) Cushion ch.

H = Hemicryptophytes All above ground parts dies
: Many graminaceae

C = Cryptophytes <

(a) Geophytes

(b) Helophytes :- (mud; water)

(c) Hydrophytes

T = Therophytes

Rongdofu :- Above Tiri

✓ Cattle camps } ⇒ 4, 47, 50, 77, 83, 84, 85, 102, 117, 128, 53, (18), 45

Stream Course ⇒ 34, 3, 73

✓ Sandy plains ⇒ ~~6~~ 7, 8, 10, 11, 12, 13, 14, 17, 22, 23, 30, 36, 49, 70, 88, 89, 95 (76)

✓ Marsh meadow ⇒ 40, 41, 42, 60, 61, 62, 48, 65, 66, ~~67~~, 101, 106, 118, 31, 32, 33, 37, 105

~~Wet~~/moist meadow ⇒ 16, 35, 39, 43, 63, 64, 71, 94, 104. 6

Alluvial fan
- ~~Caragana~~ Caragana ⇒ 2, 3, 29, 46, 51, ~~52~~
- Eurotia ⇒ 5, 9, (18), 67, 86, 87
- Carag. - Eurot ⇒ 15, 26, 59
- Artem. sals. ⇒ 31, 44.

G. slope : Stipa-Oxytr. :- 21, 24, 25, 56, 68, 69, 74, 75, ~~76~~, 78, 81, 96, 98, 99, 100
→ (Desert Steppe)

Steeper / Higher Rocky slopes + Ridge Line ⇒ 19, 20, 27, 28, 52, 54, 55, 57, 72, 79, 80, 82, 42, 93, 97, 103.

(91, 92) - Rocky out crop at base)

Dr. M. Sharif
Livestock Development offiner
Sheep Husbandry Deptt
Diskit - Nobra - 194401-
phone - 01982 - 20068 (offie)
- 01982 - 21037 (Resi)

1:50,000 map: 1" = 250 cm : 2.5 m

भूस्थितीय यंत्र (GPS).

"Truth always prevails, like the sunrise every day!"

– Diskit
AHD office
10.8.02

Droséra

318
−34
284



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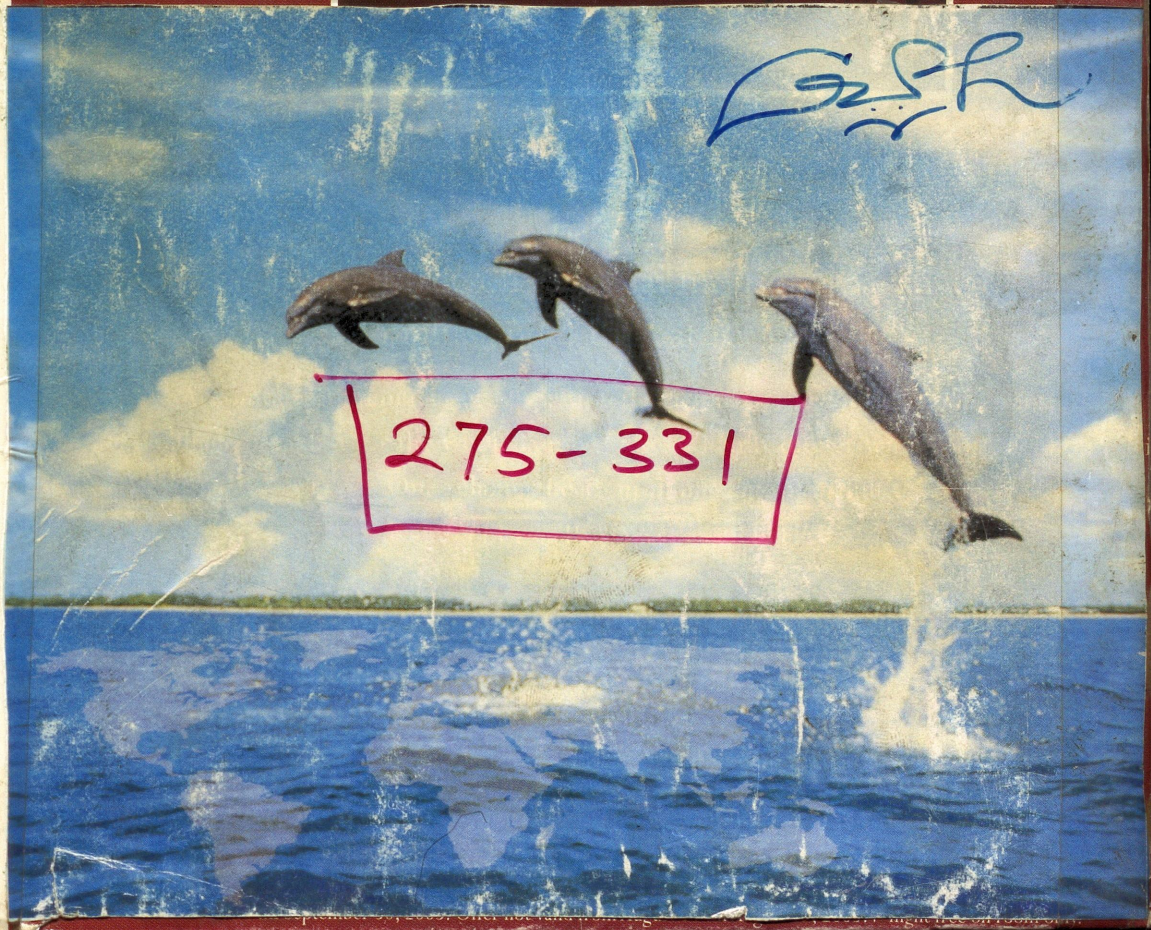

275-331

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① 2000-01: Vegetation Survey
TSOKAR - PUGA Valley
GSR, BSA, PLS & CSR

② 2003 :- [signature] & S. Uniyal
Aug: Sangay + Thinlay Dorje + Jagdish

Species for biomass estimation

1. Elymus ✓
2. Poa spp. ✓
3. Stipa spp. -2 ✓
4. Kobresia - pygmea ✓
   - Caricoides ✓
5. Carex melanantha ✓ Carex nivalis ✓
6. Carex parva ✓
7. Oxytropis - lapponica ✓
   - microphylla ✓
   - cashemeriana
8. Caragana ✓
9. Eurotia ✓
10. Euphorbia tibetica ✓
11. Puccinella - distance ✓
    - himalayecum ✓
12. Artemisia - sibericiana ✓
    - salsoloides ✓
13. Tenacetum ✓
14. Dracocephallum ✓
15. Agropyron ✓
16. Scirpus pumilus
17. Cristollia ✓

— GPS reading on blank sites and alluvial fans on more plains

— Soil from the major sites

— Crisula, Polygonum, Allium

— Cristollia community

= 2 Kid with mother belly white Pupper site grey
2/9/01 (just like female Cheetal)
(Ridak)

Male Yak — Fuyak ~~(Ma~~ female yak - demo (डीमो)

— Nakpogunjing (all male yak of Aakung village) in winter all yaks together at Aakung

— 37 Ridak on the same site in the morning
33° 13' 41' } 4433 m
78° 18' 07' } At camp

— Cristolia community ended towards Polokongla pass at 33° 14' 19"; 78° 15' 27" & 4500 m

— Aakung village position 33° 14' 04" } 4642 m
78° 14' 14" }

Rinchin Tundup.
#400

1. Sedge-grass — 1
2. Caragana-Eurotia — 𝍸𝍸 = 10
3. Cattle (Livestock) camp — 𝍸𝍸 = 10
4. Valley bottom — Sedge meadow — 𝍸𝍸𝍸 = 15
   Sedge-grass — 𝍸𝍸𝍸 = 13
   mixed — 𝍸𝍸𝍸 = 13
5. Eurotia — 𝍸 = 4
6. Stipa-oxytropis — 𝍸𝍸𝍸𝍸𝍸 = 25
7. Wet meadow — 𝍸𝍸 = 7
8. Marsh meadow — 1 = 1
8. Artemisia — 𝍸𝍸 = 6
9. Elymus — 1 = 1
10. Tenacetum-Eurotia — 1 = 1
11. Stipa-tenacetum — 1 = 1
12. Stipa-Agropyron — 1 = 1

Dhok 52 41 56
77 11 00 5813

Bharal at 33° 15' 21" } 4334 m
78° 24' 11"

2.47 PM # 8

Borax plant 33° 13' 37" } 4428 m
78° 20' 48"

Sumdo 33° 14' 02" } 4432 m
78° 21' 56"

Borax deposits in Puga marsh meadow

Triglochin pale. & ~~other~~ maritime (more) — community along downsite of the deposits

Puccinella community 33° 13' 16' } 4425 m
78° 19' 31"

separate community

5 Kiang – 3/9/01 at site No. 124
1 Kiang 4/9/01 at site No. 126

4/9/01 2 Kiang on Eurostia patch

(107) Drier flat area 33° 13' 28" } 4431 m
loose sandy soil 78° 18' 04" }

VC 35%, Elymus 18%, Stipa 10%, 2% Caragana, 5% Drabe, Chenopodium, Sibaldia

(9)

	1	2	3	4	5	6	7	8	9	10	
Elymus	–	43	15	4	–	+	–	–	–	–	62
Stipa capi	5	–	6	8	8	1	2	1	–	2	33
Stipa tibetica	7	2	–	–	–	1	7	–	–	–	17
Drabe	38	–	20	17	26	54	23	42	28	38	286
Chenopodium	43	–	–	7	10	–	2	3	17	–	82
Kochia sp.	28	–	8	22	3	6	3	41	58	3	172
Oxytropis lap.	–	–	3	3	5	12	–	–	–	–	23
Sibaldia	–	–	2	–	–	–	1	–	–	–	3
Carex mela.	–	–	–	–	–	–	–	–	–	4	4
Goat + Sheep	+	–	+	+	+	+	+	+	+	+	(9)

276

(108) Lateral old moraine

33°13'05" } 4437 m
78°18'07"

Cristollia community

VC 40%, Cristollia 30%, 5% Stipa, 5% Draba, Oxytropis

Sandy gravel with loose stones

5-10% slope, N facing aspect,

(5)

	1	2	3	4	5	6	7	8	9	10	
Cristollia	7	1	7	2	3	6	5	5	2	2	40
Draba	4	–	–	3	–	–	–	18	–	12	37
Stipa cap.	–	3	–	1	3	2	4	3	6	–	22
Kochia	–	2	–	–	–	3	–	–	–	–	5
Chenopodium	–	1	–	–	–	–	–	–	–	–	1
Goat + Sheep	–	+	+	+	+	+	+	+	+	+	9
Horse	–	–	–	–	–	–	–	–	–	+	1

(109) Boulday stable slope, 15°, N aspect,
VC 30%, Cristollia 20% (thigher) Cristollia community
5% Tenacetum
5% Stipa, Crepis, Drabа
Sandy gravel with loose stones
33° 12' 39" } 4601 m
78° 18' 09" }

(8)

	1	2	3	4	5	6	7	8	9	10	
Cristollia	–	9	1	1	–	–	–	–	–	–	11
Stipa cap.	12	–	3	3	1	4	~~+~~	19	5	17	64.
Drabа	14	–	–	12	23	5	–	16	18	15	103
Tenacetum arf.	–	–	–	1	–	–	–	–	–	–	1.
Crepis	–	–	–	–	–	10	–	–	–	–	10
Euphorbia ti.	–	–	–	–	–	2	–	–	–	–	2.
Oxytropis lap.	–	–	–	–	–	3	–	–	–	–	3
Eurotia	–	–	–	–	–	–	1	–	–	–	1.
Goat+Sheep	+	+	+	+	+	+	+	+	+	+	(10)

(10) Stable boulday slope (higher) 22°, N aspect, 278

VC 25%, Oxytropis 10%, Stipa 5%, Caraganas 5%, Elymus 5%, Tenacetum 5%

Sandy gravel with loose stones

33° 12' 23" }
78° 18' 29" } 4668m

(10)

	1	2	3	4	5	6	7	8	9	10	
Oxytropis micro	4	1	2	2	1	1	-	-	-	2	13
Tenacetum	2	-	1	-	-	-	2	2	1	-	9
Agropyron Cana	3	-	-	-	-	-	-	-	-	-	3
Eurotia	2	4	-	2	2	-	-	-	-	-	10
Stipa cap.	6	3	10	6	6	9	3	10	6	10	69
Oxytropis lapp.	-	2	-	-	-	1	-	-	-	-	3
Draba	-	-	5	24	19	3	23	-	14	6	94
Stipa tibe.	-	-	-	-	-	-	4	-	-	-	4
Potentilla bifu.	-	-	-	-	-	-	-	-	17	9	26
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	(10)
Elymus	-	-	-	-	-	-	-	-	12	11	23

(111) West facing loose flat stony slope, 30° slope

279

VC 30%, Agropyron 15%, Oxytropis 5%, Artemisia 2%, Euratia 2%, Puccinella & Euphorbia 11%

Loose sandy gravel

33° 12' 13"
78° 18' 55" } 4665 m

(15)

	1	2	3	4	5	6	7	8	9	10	
Agropyron (an scop.)	12	6	–	–	–	+	1	–	4	7	30
Artemisia tibe (white)	–	+	–	–	–	–	–	–	–	–	1
Puccenela dis.	2	–	1	–	–	–	–	–	–	–	3
Viola	4	–	–	–	–	–	–	–	–	–	4
Oxytropis micr	–	–	1	–	–	–	–	–	–	–	1
Stipa cap.	3	3	–	–	–	~~2~~	2	2	–	–	10
Draba	–	2	–	–	10	12	12	7	–	–	43
Stipa tibe.	2	–	–	–	–	–	–	–	–	–	2
Euphorbia tibe.	1	–	–	2	–	–	–	–	–	–	3
Potentilla bif.	–	–	–	15	–	–	–	–	15	34	64
Arte. sel. ? green dark		~~2~~	2	–	–	–	–	–	–	–	2
Erytrichum	–	–	–	3	–	–	–	–	–	–	3
Goat + Sheep	+	+	+	+	+	–	+	+	+	+	(9)
Corydalis	–	–	–	–	5	1	–	–	–	–	6
Tenacetum	–	–	–	–	1	2	2	2	–	–	7
Euratia	–	–	–	–	–	–	–	1	–	–	1

(112) Loose sandy gravel soil, N facing, 30° slope (280)

Higher slope VC 50%, Carex 30%, Oxytropis micro. 5%, Agropyron 5%, Viola 5%, Euphorbia 5%

33° 12' 19"
78° 19' 18" } 4669 m

(11)

	1	2	3	4	5	6	7	8	9	10	
Carex mela.	23	27	35	31	-	-	-	+	-	3	119
Viola	8	11	1	-	3	-	-	-	-	-	23
Euphorbia ti.	12	-	4	8	12	5	-	-	12	16	69
Agropyron Cant	9	8	12	-	-	-	-	-	-	-	29
Oxytropis micro	-	-	1	2	-	-	-	-	-	2	5
Poa	2	6	2	-	-	-	-	-	-	-	10
Artemisia (white)	-	3	-	-	-	-	-	-	-	-	3
Potentilla bifurca	-	2	-	-	-	1	-	-	-	-	3
Stipa cap.	-	-	-	-	15	8	12	14	17	8	74
Goat + Sheep	+	+	+	+	+	+	+	+	+	-	(9)
Eurotia	-	-	-	-	2	-	-	-	-	-	4
Draba	-	-	-	-	-	15	7	6	-	12	40

(113) Lower gentle slope N facing, 25° slope (281)
VC 38%, Stipa cap. 20%, Oxy. micro. 5%, 5% Eurotia
5% Euphorbia & ~~Drabe~~
Stipa community
Soil – Gravel sandy loose soil with stones
33°12'54" } 4533 m
78°19'38" }

(7)

	1	2	3	4	5	6	7	8	9	10	
Stipa cap.	20	12	26	3	4	7	8	10	1	2	93
Oxytropis micro	1	-	-	-	-	-	-	-	-	-	1
Draba	5	18	12	3	7	15	14	13	19	3	109
Euphorbia f.	-	5	-	-	-	-	-	-	-	-	5
Tenacetum	-	-	-	4	9	-	-	-	-	-	13
~~Eurotia~~ Eurotia	-	-	-	-	2	-	-	-	-	-	2
Cristollia	-	-	-	2	1	-	-	-	4	4	11
Goat & Sheep	+	+	+	+	+	+	+	+	+	+	(10)

(114) Old lateral moraine with small stones (282)

VC 25%, Eurotia 15%, Stipa 9%, 1% Draba & Oxy. micro.

Stipa – Eurotia Community

Soil – compact clay with gravels

5° slope, N aspect

33° 13' 03" } 4439 m
78° 19' 44" }

	1	2	3	4	5	6	7	8	9	10	
Stipa capa.	6	6	5	–	1	3	7	5	4	5	42
Eurotia	3	3	–	3	1	–	–	1	2	–	13
Draba	5	10	11	2	2	8	3	3	6	3	53
Stipa tibe.	–	–	–	–	1	1	–	–	3	–	5
Euphorbia	–	–	–	–	–	–	–	–	–	1	1
Oxy. micro.	–	–	–	–	–	–	–	–	–	3	3
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	10

(6)

Eurotia	13	18	15
height	25cm	20cm	22cm

(115) Edge of the marsh meadow (282)

Puccinella – Triglochin community

VC 95%, Puccinella 70%, Triglochin 20%, Polygonum 5%

33° 13' 12"
78° 19' 38" } 4423 m

(3)

kind	1	2	3	4	5	6	7	8	9	10	
Puccinella – 1	970	1130	1210	913	94	68	113	608	517	107	5730
Polygonum emodi	35	8	–	10	17	–	24	27	93	57	271
Trichoglochin pal.	–	–	–	–	128	403	172	–	–	238	941
Moss	+	–	+	+	+	–	–	+	–	+	6

(116) Marsh meadow (flat)

VC 90%, Carex 75%, Puccinellia 10%, 5% Crisula

33° 13' 22" }
78° 19' 23" } 4428 m

Yak grazing

	1	2	3	4	5	6	7	8	9	10	(6)
Puccinellia lina.	8	3	52	2	15	3	98	15	43	33	272
Carex-1	919	883	803	775	753	653	203	338	218	621	6166
Crisula	–	98	3	–	–	15	4	–	73	–	193
Triglochin pal.	–	–	4	–	4	4	–	5	2	3	22
Polygonum eno	–	–	–	–	–	–	8	10	–	6	24
Goat + Sheep	–	+	–	–	–	–	–	–	–	–	(1)
Yak	–	–	–	+	+	–	+	+	+	–	(5)
Ranunculus Poba	–	–	–	–	–	–	–	98	38	80	216

(117) Cattle camp

area about 45m radius & Soil compact

25m × 100m strip (# Pan 3)

33° 13' 19" } 4441m
78° 19' 07"

VC 50%, Polygonum 50%

	1	2	3	4	5	6	7	8	9	10	(4)
Polygonum end.	304	238	104	188	105	56	361	278	161	68	1860
Microgynicum	–	–	–	7	–	5	–	–	3	6	21
Dichcampsia	–	–	2	–	1	–	2	–	–	–	5
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	(10)
Elymus	2	–	1	–	3	–	2	–	–	–	8

(118) 285 Bog (with small mounds) (286)

VC 80%, Carex 40%, Ranunculus 20%, Carex-1, 10%, 5% Pedicul

33°13'16" } 4478m
78°18'49" }

goat/sheep grazing

	1	2	3	4	5	6	7	8	9	10	(18)
Hippuris	20	–	–	–	–	–	–	–	–	–	20
Cinsula	10	–	–	–	–	–	–	36	62	–	108
Ranunculus	25	–	36	12	36	38	5	94	69	152	467
Carex-1	73	238	293	–	–	–	–	–	–	–	604
Triglochin p.	–	7	5	18	4	–	–	6	–	–	37
Potamogiton	–	8	–	–	–	–	–	–	–	–	8
Pedicularis odo	–	–	39	–	12	5	9	4	4	4	77
Moss	+	+	–	–	–	–	–	–	–	–	2
Calamagrostis	–	–	3	–	–	–	–	–	–	–	3
Carex parva	–	–	–	238	363	203	209	–	298	103	1414
Poa	–	–	–	–	62	–	–	–	–	–	62
Oxytropis ?	–	–	–	–	5	–	–	–	–	–	5
Dipscamptia	–	–	–	–	–	6	32	15	36	3	92
Potentilla (sibbaldia leaf)	–	–	–	–	–	36	12	–	–	–	48
Polygonum emodi	–	–	–	–	–	–	–	8	12	8	28
Goat+Sheep	–	–	–	+	–	+	+	–	–	–	(3)
Yak	–	+	–	–	+	–	–	–	–	–	(2)
Puccinella	–	–	–	–	–	–	–	–	40	–	40
Taraxicum	–	Gentiadiella	–	–	–	–	–	–	6	–	6
									32		32

(119) Flat ~~drier~~ (~~[illegible]~~ mesic) site

Sandy clay soil

VC 95%, Puccinella 50%, Oxytropis 25%, Carex parva 20%

33° 13' 23"
78° 18' 23" } 4438m

Yak grazing & goat & sheep grazing

	1	2	3	4	5	6	7	8	9	10	9
Puccinella	92	68	15	–	–	–	71	18	–	–	264
Oxytropis	48	4	2	4	2	–	–	43	–	6	109
Potentilla	–	–	–	–	–	–	3	–	–	–	3
Carex parva	138	261	320	106	132	67	48	61	7	–	1140
Crisula	5	–	–	–	–	–	–	–	–	–	5
Carex mela.	–	18	37	63	98	51	88	38	63	92	548
Discantia	–	–	–	8	15	10	32	22	48	8	143
Yak	–	+	–	–	–	–	–	–	–	–	1
Sheep + Goat	–	–	+	+	+	+	+	+	+	+	8
Horse	–	–	–	–	–	+	–	–	–	–	1
Microgynicum	–	–	–	–	–	–	–	2	–	–	2
Oxy. lapp.	–	–	–	–	–	–	–	–	–	5	5

(120) Flat valley bottom (200)

Sandy gravel soil with boulder

3/9/01 VC 25% Cristolia 15% Stipa 5% Tanacetum 5%

33° 13' 38" } 4460m Grazed by goat
78° 17' 10" } Sheep & Yak

Cristolia	6	5	3	2	7	3	9	8	2	4	49	(7)
Tanacetum	1	–	–	–	–	1	–	–	–	–	2	
Stipa capu.	5	2	2	3	1	6	2	5	5	5	36	
Draba	–	–	–	2	1	–	–	1	1	–	5	
Kochia	–	–	–	2	–	–	–	–	–	–	2	
Crepis	–	–	5	–	–	–	–	–	–	–	5	
Oxytropis lapp	–	–	–	–	–	–	1	–	–	–	1	
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	(10)	

On the side of water channel
Caragana is present

(121) Lateral Old buldary ~~moraine~~ moraine (289)

18°, South facing, VC 20%, Stipa 10%, Tenacetum 5%, Oxytropis 2%, Cristollia 1%

Compact gravel sandy with ~~loose~~ stones

Opposite Aankang village 32°14'11" 78°41'08" 4560m

	1	2	3	4	5	6	7	8	9	10	(6)
Cristollia	–	–	–	–	–	–	2	–	2	–	4
Tenacetum atti.	–	7	8	3	2	2	–	3	–	1	26
Stipa cap.	18	10	10	16	14	11	11	8	7	9	114
Oxytropis micro.	–	1	–	–	–	–	–	2	–	–	3
Artemisia salsaloides	–	2	–	2	–	–	–	–	–	–	4
Arte. scopeina	–	–	–	–	–	–	3	–	–	–	3
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	10
Horse	–	–	–	–	–	–	–	–	+	–	1

PBS 122 Boulder slope 30°, South-East facing (290)

Tenacetum – Stipa community (Till Aakung Village)

Soil gravel sandy compact

VC 45%, Tenacetum 25%, Stipa (both) 15%, Oxytropis 5%

33° 14' 29" } 4822 m
78° 13' 04"

(11)

	1	2	3	4	5	6	7	8	9	10	
Tenacetum tib.	6	4	4	2	4	3	1	–	–	–	24
Stipa cap.	–	–	–	–	–	2	–	–	–	6	8
Stipa tibe.	8	7	8	12	7	8	11	6	8	5	80
Oxytropis micro.	3	–	2	6	5	4	4	–	3	5	32
Urtica hyper.	–	1	–	–	1	–	–	–	–	–	2
Artemisia scop.	–	2	–	–	1	–	–	–	–	–	3
~~Tena~~ Artemisia siberica	–	–	–	–	–	–	3	–	–	–	3
Sibaldia	–	–	–	–	–	–	6	5	–	–	11
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	(10)
Draba	–	–	–	–	–	–	–	10	15	19	44
Elymus	–	–	–	–	–	–	–	4	–	–	4
Potentilla bifurca	–	–	–	–	–	–	–	–	–	4	4

(123) Stable gentle slope with boulders (291)

Stipa - Oxytropis community

VC 25%, Stipa 15%, Oxytropis 5%, Artemisia & Elymus 5%

Soil Sandy gravel

1/2 Km from Polokankga La towards Puga

33°15'19" } 4934 m
78°11'38"

	1	2	3	4	5	6	7	8	9	10	
Stipa cap.	–	–	–	2	–	–	–	1	3	2	8
Stipa tibe.	12	10	8	3	13	9	14	8	8	10	98
Elymus	–	–	–	–	–	2	–	–	–	–	2
Arte. siberciana	–	–	–	–	–	–	2	2	–	6	10
Oxytropis micro.	3	–	–	–	–	–	–	–	–	–	3
Sibaldia	6	3	27	–	5	26	19	–	16	9	111
Draba	1	15	3	7	6	1	2	5	15	–	55
Oxytropis lappo.	–	–	1	–	–	2	–	–	–	–	3
Cioat + Sheep	+	–	+	+	+	+	+	+	+	+	9
Horse	–	–	–	–	–	–	–	+	–	–	1

8

1 PF

4/9/05

Flat ~~area~~ meadow with 2-3° slope. (292)

(124) Loose sandy gravel

Stipa - Elymus community

VC 20%, Stipa 15%, 5% Draba, Oxytropis & Elymus

Grazing by Kiang and goat & sheep

33° 17' 27" } 4587 m
78° 03' 23"

(6)

	1	2	3	4	5	6	7	8	9	10	
Stipa cap.	3	2	–	2	1	2	–	3	2	–	15
Draba	20	13	9	8	4	21	18	16	8	7	124
Stipa tibetica	–	2	1	5	3	1	1	2	5	1	21
Oxytropis micro.	–	–	1	–	–	1	–	–	–	–	2
Oxytropis lapp.	–	–	2	1	–	–	–	1	4	6	14
Elymus	–	–	–	–	8	–	11	4	–	14	37
							–				
Sheep + Goat	+	+	+	+	+	+	+	+	+	+	(10)

(125) Stipa – Elymus – Oxytropis community (293)

VC 40%, Elymus, 25%, Stipa 5%, Oxytropis 8%, Draba 2%

Flat meadow

Loose sandy gravel soil

Grazing by Kiang 33°17'32" 78°3'16" 4590m

(7)

	1	2	3	4	5	6	7	8	9	10	
Stipa tileti.	1	–	1	2	3	0	5	2	–	–	22
Oxytropis lap.	3	3	–	–	1	–	3	–	2	1	13
Oxytropis micro.		–	–	–	–	1	–	–	1	2	4
Draba	6	0	–	3	12	4	3	16	8	22	82
Stipa cap.	1	–	–	1	2	–	1	4	–	2	11
Elymus	15	8	17	18	–	9	–	–	–	–	67
Exotic	–	–	–	–	–	–	–	–	–	1	1
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	10

SPC (294)

(126) Caragana on the mounds — Spacing 10° slope

Lower hill slope Caragana – Elymus – Carex

VC 40%, Caragana 20%, Elymus 10%, Carex 8%,

Oxytropis lapp. 5% 32° 18' 03" } 4636 m

Soil – Sandy loose ~~silt~~ 78° 3' 40" }

Grazing by Kiang

(8)

	1	2	3	4	5	6	7	8	9	10	
Caragana	–	–	–	–	1	–	–	1	–	–	2
Carex ne	28	–	22	5	2	–	–	–	20	8	85
Elymus	21	9	7	15	9	18	–	2	8	4	93
Draba	14	10	13	6	16	8	9	1	10	16	103
Oxytropis lapp.	–	–	8	3	6	1	4	–	2	6	27
Stipa Caf	–	–	–	–	–	–	5	–	5	3	13
Stipa tibet.	–	–	–	–	–	–	2	–	1	2	5
Goat + Sheep	+	+	+	+	+	+	+	+	+	+	(10)
Kochia – 1	–	–	–	–	–	–	–	8	–	1	9

Caragana	3	4	2
	26 Cm	20 Cm	22 Cm

(127) S facing 2-8° slope

Elymus - Oxytropis - Draba community

VC 20%, Elymus - 10%, 8% Draba & 8% Oxytropis

Soil: loose gravel, sandy with stones

33° 17' 81" } 4610m
78° 03' 31" }

(7)

	1	2	3	4	5	6	7	8	9	10	
Elymus	15	19	12	16	21	12	8	7	8	19	127
Draba	4	2	-	6	15	3	6	2	6	2	44
Oxytropis lap	-	2	2	1	2	8	5	4	5	3	29
Oxytropis micro	2	-	-	-	-	-	-	1	-	1	4
~~Stipa~~ Sibaldia	-	-	-	-	-	4	-	-	2	1	7
Kochia-1	-	-	-	-	-	2	-	10	4	5	21
Sheep + Goat	+	+	+	+	+	+	+	+	+	+	(10)
Stipa cap.	-	-	-	-	-	-	2	3	3	-	8

GPS readings

— Towards More Plains

Carex & Stipa community with caragana on channel site
32° 21' 45" }
77° 54' 50" } 4673 m

— Lateral Moraine 3-5° slope E facing
Scattered Caragana
2 or 3 Caragana in 5m radius
Gravel Sandy soil with stones (full of)
VC 40%, Caragana 30%, Stipa 5%, Eurotia 5%
32° 21' 02" }
78° 55' 07" } 4673 m

— Caragana on valley centre
Carex melaf & Stipa
VC 55%, Caragana 40%, Stipa - 5%, Eurotia 8%,
Carex 5%, Sandy ~~loose~~ compact with loose stones
32° 18' 31" }
77° 54' 50" } 4699 m

— from 32° 17' 24" } 4715 m up to 32° 16' 33" } 4729 m
77° 54' 00" } 77° 52' 48" }
Carex with stipa ~~farms~~ a community on valley
the other side on slopes scattered Caragana
forms community

Stipa Community (Site 129)
up to 1/2 Km

— Stipa - Carex community till next point

—— Gap (nothing) 33°18'08" 77°80'32" } 4736m
800 m long & 200 m wide
in Centre

—— Stipa - Carex community

—— Blank, small stony area
1 Km wide and 600 m long on the way
33°18'02" } 4747m
77°48'8" }

— Caragana community
33°12'48" } 4743m
77°47'54" }

(128) Cattle Camp (Abandon) (impact on 35m radius) (296)

5/9/01 Elymus community

VC 25%, Elymus 20%, Eurotia 3%,

Soil sandy gravel

E facing, 5° slope 33°19'37" | 4692 m
77°88'15"

(5)

	1	2	3	4	5	6	7	8	9	10	
Elymus	48	37	25	29	–	15	4	20	37	20	235
Eurotia	2	2	1	1	3	–	1	1	–	–	11
Stipa cap.	–	–	–	–	5	4	–	–	–	–	9
Stipa tibe.	–	–	–	–	–	1	–	–	–	–	1
Goat+Sheep	+	+	+	+	+	+	+	+	+	+	(10)
Horse	+	+	–	+	–	–	–	+	+	+	(6)
Chenopodium	–	–	–	–	–	–	5	2	1	1	9
Yak	–	–	–	–	–	–	–	–	–	+	(1)

(129) Stipa community W facing 2-3° slope

Flat valley area

297

33°16'7"
77°52'23" } 4748m

VC 50%, Stipa 35%, Carex 5%, Draba 8%, Sibaldia 2%

Carex on depressed site

(6)

	1	2	3	4	5	6	7	8	9	10	
Stipa Cap.	2	15	3	3	3	3	–	3	2	2	35
Stipa tibe.	3	4	1	2	1	1	–	4	4	5	25
Draba	2	26	42	40	12	10	5	8	15	10	170
Sibaldia	1	35	45	29	6	25	6	4	21	15	187
Oxytropis lapp.	–	–	–	–	–	4	2	–	–	–	6
Carex mela.	–	–	–	–	–	–	38	–	–	–	38
Goat + Sheep	+	–	+	+	+	+	+	+	+	+	9

2

130

Caragana community
Flat Valley area

Compact soil with stones

VC 40%, Caragana 39%, 1% Stipa
33°12'48", 77°47'53", 4744m

Caragana	49	57	46
	9 Cm	11 Cm	6 Cm

(131) Caragana County
Flat valley area
VC 80%, Caragana 75%, Stipa 5%

Compact & sandy soil with small stones

33°10'15" } 4785 m
77°47'42"

Caragana	46	59	33
	8cm	12cm	6cm

Caragana	2	3	4	–	1	2	3	2	2	3
Stipa	–	–	–	2	–	–	–	–	–	–

33 6 17
77 45 57 | 45 47 Ahead Pang

Lachulung La 33° 06' 11" } 5111 m
77° 37' 47"

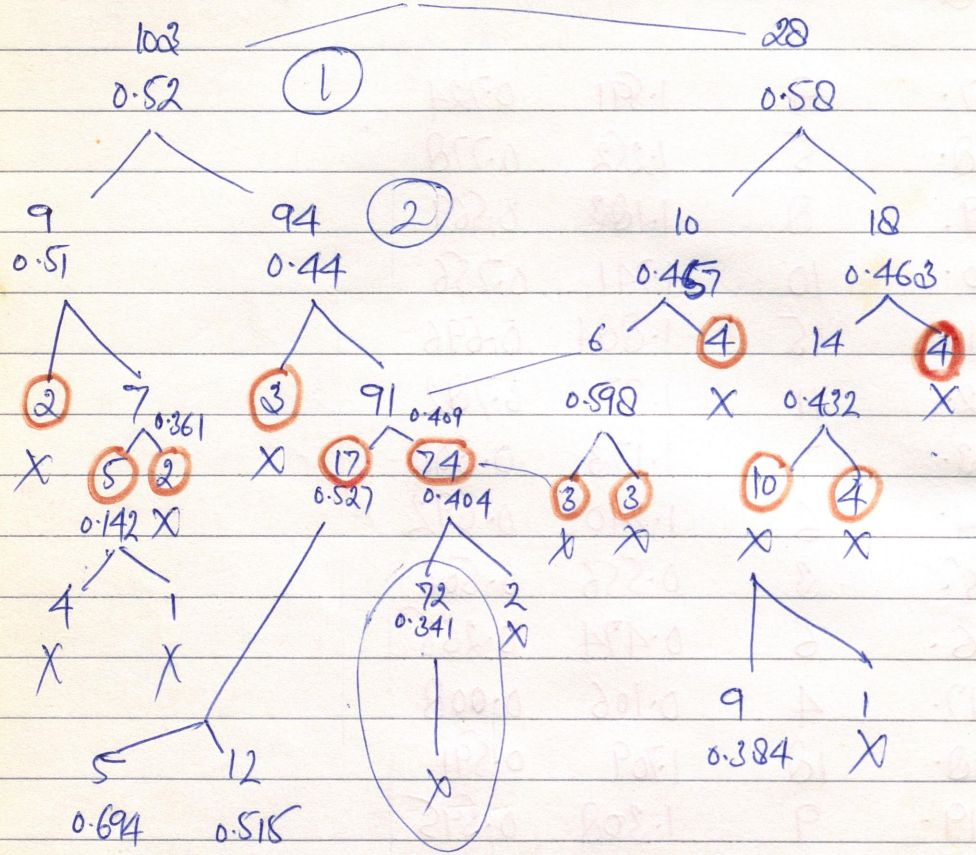
16616 ft

128.	5	0·489	0·304
129.	6	1·350	0·753
~~130.~~			

107.	9	1·591	0·724
108.	5	1·252	0·778
109.	8	1·183	0·569
110.	10	1·741	0·756
111.	15	1·884	0·696
112.	11	1·874	0·782
113.	7	1·173	0·603
114.	6	1·240	0·692
115.	3	0·556	0·506
116.	6	0·474	0·268
117.	4	0·106	0·008
118.	18	1·709	0·891
119.	9	1·308	0·595
120.	7	1·219	0·627
121.	6	0·866	0·483
122.	11	1·806	0·753
123.	8	1·397	0·672
124.	6	1·257	0·702
125.	7	1·417	0·728
126.	8	1·582	0·761
127.	7	1·370	0·704

131

0.845



2, ~~5, 7, 2~~, 3, 17, 74, 3, 3, 4, 10, 4, 4

Tot. 0, ~~8~~, ~~8~~, 12, 51, 85, 9, 18, 16, 45, 26, 35

7 4

JLF's Collection from Aru Basin, Tibet

6' 11" * 5132 m
2 32"

298

PPS

Elymus sp.

Smooth - wind blown area.

Leontopodium alpinum

sol.]

[No (% cover)]

	5	6	7	8	9	10	
Carex melanantha ssp. moorcroftiana	1 (3)	-	2 (10)	1 (5)	-	-	13
Oxytropis microphylla	15	20 (5)	13 (3)	2 (<1)	22 (4)	7 (2)	153
Leymus secalinus	1 (<1)	-	4 (5)	2 (5)	-	-	11
Carex orbicularis var.	6 (1)	11 (<2)	-	-	14 (3)	8	50
Stipa jacquemontii	1	-	3	3 (2)	1	1	26
Artemisia salsoloides	16 (2)	5 (1)	20 (<3)	12 (2)	17 (5)	-	72
Poa attenuata	-	2 (1)	9 (2)	15 (5)	-	-	26
Kobresia capillifolia							351
Carex stenophylla							
Potentilla bifurca							
Stipa orientalis							
Stipa subsessiliflora							
	8	25	30	35	25	5	203
	-	-	-	-	-	-	
	-	-	-	-	-	-	

Kiang yak Nyan

Nyan dug.

H = 1.5806

E = 0.8123

Biodiversity Hotspots in Ladakh

[acc: Mohamed Abbas]

F.R.O., Leh

Changchenmo

Dolatbeg

Gurgurdo (Kargil)

Lingshed

Mushko

Rumbak

Sapi

Shang

Surru

Gyameru

Shyok

TSOKAR
24.08.03
Nalbokhar 1

33° 26' 11" N
78 02 32" E

5132 m

298

NPS

South facing 5-10° slope - smooth - wind blown area

[Pebbles - + Brownish soil]

[No (V. Cover)]

	1	2	3	4	5	6	7	8	9	10	
Arenaria bryophylla	2 (20)	3 (10)	2 (10)	2 (8)	1 (3)	-	2 (10)	1 (5)	-	-	13
Elymus longi-arist.	21 (12)	19 (5)	16 (3)	18 (2)	15	20 (5)	13 (3)	2 (<1)	22 (4)	7 (2)	153
Eurotia ceratoides	2 (10)	1 (2)	1 (2)	-	1 (<1)	-	4 (5)	2 (5)	-	-	11
Pot. bifurca	1	-	4 (<1)	6	6 (1)	11 (<2)	-	-	14 (3)	8	50
Oxyt. cashmer.	3	5	3	6 (2)	1	-	3	3 (2)	1	1	26
Dracocoph. heterophyll	-	-	2 (1)	-	16 (2)	5 (1)	20 (<3)	12 (2)	17 (5)	-	72
Stipa jacquemontii	-	-	-	-	-	2 (1)	9 (2)	15 (5)	-	-	26
(7)											351
											H = 1.5806
											E = 0.8123
Overall Gr. Cov	30%	25	30	20	8	25	30	35	25	5	203
Moss	Nil	-	-	-	-	-	-	-	-	-	
Lichen	Nil	-	-	-	-	-	-	-	-	-	

Kiang dung

Kiang ytch Nyan

Nyan dung

NB 2 S. facing Pebbly slope [33° 26' 16" / 78 02 58"] 5160 m

[Loose pebble - 70 %]

299

45° - Carex melanantha dominated slope.

Ht of vegetn... c. 16 cm

	1	2	3	4	5	6	7	8	9	10	
Carex melanantha	39 (20)	27 (15)	21 (5)	29 (10)	3 (2)	26 (5)	32 (6)	16 (3)	45 (20)	27 (8)	265
Dracoceph. het.	35 (2)	12 (2)	1	9 (2)	3	15 (10	10 (2)	-	13 (3)	2	100
Eurotia cerat.	2 (3)	-	-	-	-	-	2 (5)	-	1 (2)	-	5
Pot. bifurca	18 (2)	-	-	-	-	8 (2)	10 (2)	-	6 (4)	-	42
Lamium rhomboid.	1	-	1	1	-	-	-	-	-	-	3
Stipa subsessiliflora	1 (1)	-	-	-	4 (3)	1	-	-	-	-	6
Alyssum canex	-	-	-	2	8	-	-	2	-	1	13
Elymus longiarist.	-	-	-	-	1	-	-	-	-	-	1
~~Stipa~~ Artemisia minor	-	-	-	-	7 (5)	2 (5)	1 (2)	1 (2)	1 (1)	-	12
Oxytr. cashmiriana	-	-	-	-	4 (2)	-	-	-	-	3 (1)	7
T. Ground Cow	60	30	10	20	25	40	35	20	50	25	315
Nyan dung	+	-	-	-	-	-	-	+	+	-	
Sauss stoliczae = cf Tara xicifolia	-	-	-	-	-	-	11 (3)	31 (5)	20 (2)	-	62
Oxytrop. [glabra?]	-	-	-	-	-	-	-	-	1	1	2

518

12

$H' = 1.5158$

$E = 0.6100$

NB 3

33° 26'.28"
78 02.81'

5225 m

300

Plateau - 0° - Flat.

Brown - Sandy/Gravel - 60%

	1	2	3	4	5	6	7	8	9	10	
Carex melan.	37 (12)	20 (6)	21 (5)	9 (2)	16 (6)	17 (5)	6 (3)	5 (2)	30 (10)	–	161
Oxytr. cashm.	5 (2)	8 (2)	6 (3)	2 (<1)	3 (1)	6 (2)	4 (1)	13 (3)	11 (5)	8 (4)	66
Arenaria bryophylla	6 (15)	2 (3)	5 (10)	14 (10)	–	1 (<1)	1 (3)	2 (5)	–	–	31
Pot. bifurca	30 (3)	16	1	2	–	19 (2)	5 (2)	–	9 (3)	–	82
Stipa jacquemontii	2 (1)	3 (5)	7 (3)	3 (2)	11 (4)	2 (1)	2 (1)	1 (1)	3 (1)	4 (2)	38
Dracoceph. heteroph	7 (3)	20 (3)	3 (1)	7 (1)	4 (1)	4 (2)	4 (1)	–	27 (6)	36 (5)	112
Artem. minor	3 (3)	6 (5)	7 (3)	6 (5)	6 (10)	11 (20)	14 (20)	10 (15)	1 (3)	3 (10)	67
Sauss. stoliczcae	–	–	–	1	–	–	–	–	–	–	1
Elymus longiarist.	–	–	–	–	–	–	–	–	1 (1)	–	1
Total Gr. Vegetn	45	40	45	35	30	45	30	30	45	35	380
Dung	–	Hare +	Kiang Nyang	Kiang [illegible]	–	–	–	–	Kiang	Kiang	

9

559

H' = 1.8344
E = 0.8349

NB-4 (301)

Windblown - Flat
Compact soil on the plateau - 0°
(Away from Carex patches)
Gravel - 50% - Herbaceous-formation

[33° 26.436' / 78° 02.975'] 5245 m

	1	2	3	4	5	6	7	8	9	10	
Sauss. graphalodes	62 (5)	4 (1)	15 (5)	18 (3)	16 (5)	30 (8)	15 (3)	39 (10)	19 (3)	5 (2)	231
Draco heteroph.	132 (20)	36 (2)	1 (<1)	23 (3)	39 (5)	-	-	-	-	-	231
Oxyr. cashmer.	7 (3)	2 (1)	6 (2)	6 (1)	4 (2)	3 (1)	9 (5)	6 (2)	3 (1)	5 (2)	51
Lamium rhomboid [?]	-	3 (1)	3 (1)	2	-	1	1	-	-	-	10
Stipa jacquem.	-	-	2 (5)	1	-	1 (2)	-	-	-	-	4
Oxyt. glabra (?)	-	-	1	-	-	-	-	-	1 (<1)	-	2
Oxytropis sp. (Cushioned)	-	-	-	8 (5)	8 (5)	-	4 (1)	4 (2)	-	2 (1)	18
Artem. minor	-	-	-	-	-	1 (1)	-	-	-	-	1
Arenaria bryophylla (Stipa gaz.)	-	-	-	-	-	-	1 (1)	-	-	-	1
Christolea sp (dissected) (10)	-	-	-	-	-	-	-	3 (1)	4 (1)	-	7
											556
											H' = 1.2658
											E = 0.5497
Overall Gr. %	50	10	15	20	20	25	20	15	10	10	205
Dung	-	-	-	-	-	-	-	-	-	Nyan	
Lichen (Red					+ (Id)						

Nyan Argali

NB 5 - North facing - Gentle - 5-10°.

302

Moist slope - Mixed - clayey soil -

(Brown) Scattered rocks & Gravels - 50%.

33° 26.533'
78 03.29'

5220 m

[Heavy use by Argali & Kiang] + Abandoned marmot colony

	1	2	3	4	5	6	7	8	9	10	
Poa lahulensis	3 (15)	5 (2)	2 (1)	5 (5)	6 (8)	3 (1)	3 (2)	-	-	-	27
Carex infuscata	19 (20)	33 (8)	15 (5)	-	21 (4)	9 (2)	31 (20)	29 (5)	-	11 (3)	168
Oxytrop. cashmeriana	3 (1)	3 (2)	14 (2)	2 (1)	1 (1)	4 (2)	11 (5)	-	8 (2)	-	46
Sauss. gnaphaloides	1 (<1)	-	13 (2)	22 (3)	1	-	-	8 (2)	13 (1)	-	58
Pot. multifida (alpina) x	1	-	-	3 (1)	3 (1)	1 (1)	-	-	2 (1)	-	~~10~~
Thylacospermum	1 (5)	-	-	3 (10)	6 (10)	3 (6)	-	-	-	-	13
Elymus longicaristah	1	4 (1)	6 (2)	8 (3)	-	6 (2)	-	1 (2)	15 (5)	-	41
Oxytropis sp.	3 (1)	-	-	10 (3)	-	-	-	1 (1)	-	2 (2)	16
Oxytropis glabra	-	2 (<1)	-	-	1 (<1)	-	-	-	-	-	3
Arenaria serpyllifolia	-	13 (1)	-	-	3 (<1)	-	38 (2)	72 (2)	11 (1)	7 (<1)	144
Leontopodium alpinum	-	-	-	3 (5)	6 (5)	4 (8)	-	-	-	-	13
Arenaria bryophylla	-	-	-	-	-	1 (3)	-	-	-	-	1
Dracocephalum heterophl.	-	-	-	-	-	-	2 (<1)	22 (5)	-	-	24
Crepis (?)	-	-	-	-	-	-	-	-	1	-	1
Stipa sibirica (?)	-	-	-	-	-	-	-	-	-	26 (5)	26
Sauss. stoliczcae	-	-	-	-	-	-	-	-	-	206 (20)	206
											797
											H = 2.1322
											E = 0.7690
Overall cover (%)	45	25	25	20	30	25	50	20	20	50	310
Argali Dung	+	Kiang Ibex Nyan	-	Kiang	-	-	-	-	Nyan	Kiang	

16

NBG Depression on Nalbukhar Plateau

Well drained soil (Clayey soil - on one side)

Compact - scattered pebbles - 20%

33° 26.416'
78° 03.410'
5195 m

Kiang use ++ [sighted] → slushy during May/June

	1	2	3	4	5	6	7	8	9	10	
Polyg. sibiricum	47 (5)	27 (10)	125 (15)	14 (5)	–	–	–	–	–	–	213
Elymus longi-arist.	7 (5)	21 (3)	5 (2)	14 (2)	9 (3)	52 (20)	27 (10)	–	9 (3)	23 (5)	167
Oxytr. cashmiriana	10 (2)	4 (1)	3 (1)	6 (1)	4 (2)	6 (2)	7 (2)	–	4 (2)	6 (3)	50
Saus. gnaphaloides	–	–	1 (1)	–	–	–	25 (5)	2 (2)	37 (5)	32 (3)	97
Dracoceph. heterophy.	–	–	5 (2)	–	–	–	–	–	–	–	5
Corydalis sp.	–	–	1	–	–	–	–	1	–	–	1
Christolea sp.	–	–	–	–	2 (2)	–	–	–	–	–	2
											535
											H' = 1.3375
											E = 0.6873
Tot. Gr. veg	25	15	20	10	5	25	25	3	10	12	150
Dung	–	–	–	Kiang ++	Kiang ++	–	–	Kiang	Kiang	–	

NB7 - Caragana scrub on higher slopes - S. facing - Pebbly - Brown-compact soil.

83° 26.711'
78° 03.566'
5220 m

304

$1 m^2$

	1	2	3	4	5	6	7	8	9	10	
Caragana	5 (80)	2 (20)	3 (20)	4 (50)	4 (30)	5 (30)	3 (30)	5 (35)	5 (40)	3 (20)	39
Stipa sp	2 (1)	9 (5)	7 (3)	1 (1)	11 (5)	1 (2)	-	-	-	5 (5)	36
Carex melanantha (3)	-	-	-	-	-	-	24 (10)	-	-		24
											99
											H = 1.078
											ε = 0.9815
Total cover	85	25	25	55	35	35	45	35	40	30	410
Dung	Kig	-	-	-	-	Kig	-	-	Nyak	-	

NB 8 Flat (slightly depressed) 200 m W. of [NB 6]

33° 26.802'
78° 03.482'
5190 m

Carex patch - paddy colour

Clayey - Compact soil

Ht of Carex - c. < 10 cm; Stipa - quite heavily cropped

	1	2	3	4	5	6	7	8	9	10	
Carex melanantha	176 (40)	246 (70)	200 (70)	79 (15)	71 (15)	152 (40)	155 (45)	216 (45)	205 (40)	163 (15)	1743
Stipa sp.	1 (2)	-	2 (3)	-	-	1 (2)	-	11 (10)	-	22 (15)	37
Oxytropis Cashmeri	8 (2)	4 (2)	3 (1)	1 (1)	6 (2)	-	-	1 (2)	2 (1)	1 (1)	26
Dracocephal. heteroph.	11 (2)	-	-	-	-	-	-	-	-	-	11
Arenaria serpyll.ij	83 (2)	4 (1)	-	87 (5)	-	24 (1)	74 (5)	-	-	-	272
Elymus longi-aust	-	1 (1)	-	-	11 (3)	-	1 (2)	1 (1)	-	-	14
Leontopod. alp.	-	1 (2)	-	-	-	-	-	-	-	-	1
											2104
											H = 0.6102
											E = 0.3135
Tot. Gr. cover	170	75	80	30	40	60	50	50	45	35	535
Dung	Yak	-	-	-	-	-	-	-	-	-	

(7)

NB 9 End of the plateau 33° 27.00' 78 03.25' 5170 m

306 3-5° - NW-facing

Compact - clayey soil

Marmot colonies - [live -] - Long tailed ??

	1	2	3	4	5	6	7	8	9	10	
Elymus longi-arist	51 (10)	52 (10)	12 (3)	27 (10)	22 (15)	29 (5)	5 (5)	38 (10)	2 (3)	34 (8)	272
Oxytropis lapponica	12 (5)	3 (2)	9 (5)	3 (1)	6 (5)	1 (<1)	1 (<1)	7 (1)	3 (2)	1	46
Arenaria serpyllifol.	537 (8)	17 (3)	31 (3)	80 (5)	66 (3)	47 (3)	202 (15)	50 (5)	39 (2)	24 (2)	1175
Dracocepha. hetcroph	7 (1)	37 (5)	-	102 (10)	8 (2)	22 (3)	1 (<1)	-	30 (5)	31 (5)	238
Sauss. gnaphal	1	-	3 (<1)	-	9 (2)	38 (5)	4 (2)	2 (1)	35 (5)	10 (2)	102
											1831
											H' = 1.086
											E = 0.6750

5

T. Gr. Cover	35	30	20	25	25	15	25	25	20	20	240
Dung	-	Yak	-	-	-	-	-	-	-	-	

Snow Cock

(NB 10) N-facing - Bouldery (moist)
Snow bed (?)

307

Rocks 10%. | 15°.

33° 27.17'
78 03.042'
5180 m

Pebbles - 20%.
Loose - Gravel + sandy clay -

	1	2	3	4	5	6	7	8	9	10	Tanacetum
Sauss. bracteata	34 (10)	21 (5)	12 (2)	4 (2)	-	-	3 (1)	-	-	-	74
Delph. brunonianum	4 (5)	-	3 (5)	-	-	-	2 (2)	-	3 (5)	5 (5)	17
Thylacospermum	1 (25)	2 (10)	-	-	-	-	-	-	-	1 (2)	4
Leontop. alp	104 (10)	18 5	71 (5)	-	-	-	35 (5)	-	245 (15)	-	473
Dracocegh. het	3 (1)	-	-	-	-	-	11 (2)	4 (1)	-	-	18
Silene sp.		1 (2)	-	-	-	-	3 (2)	-	-	-	4
Oxytropis cashmer	-	1 (1)	1 (<1)	-	-	2 (3)	2	-	2 (1)	1	9
Potentilla ~~alpine~~ nivea	-	2 (1)	3 (1)	-	-	-	-	-	-	-	5
Poa lahulensis	-	2	3 (2)	-	-	3 (1)	-	-	3 (1)	-	11
Elymus nutans	-	-	3 (2)	-	-	2 (2)	8 (10)	-	-	1 (2)	14
Lamium (?)	-	-	-	1	4 (3)	-	-	3 (1)	-	-	12
Total Ground c.	45	25	20	2	10	30	40	3	25	15	215
16 ~~Dung~~ Dung	Nyan Pica	-	~~20~~ -	Nyan	Nyan	-	-	-	-	-	939
H' = 1.4889	-	-	-	-	-	-		-		-	
E = 0.5730											
Microula tibetica	-	-	-	-	4 (2)	1 (1)	-	-	-	-	5
69 Arenaria serpyll	-	-	-	-	22 (3	-	-	-	47 (3)	-	
3 Urtica hyperbor	-	-	-	-	-	3 (25)	-	-	-	-	
9 Sauss. gnaph								3 (1)	6 (1)	-	
2 Elymus longi-arist	-	-	-	-	-	-	-	-	-	2 (2)	

Patches of Biebersteinia, Kobresia, Schoenoides

LYNX
Ang. caragana

33° 27.58', 78° 02.566' → 5135 m - 200 m - valley with lush green meadow...

N-facing slope - continues for 8 34 steps - X ½ Km) uniform
Delphinium - Thylacosperm.

NB 11 S-facing wind blown - Pebbly - 33° 27.039'
Slope -> 70% pebbles - 78° 02.169'
Partly broken - 20-25°. 5225 m
T. Woolly Hare, Kiang - use

308

	1	2	3	4	5	6	7	8	9	10	
Sauss. leontodontoides	80 (10)	-	-	-	-	-	-	-	-	-	80
Tanacetum sp. (dwarf Large Head)	1 (3)	-	-	-	1 (1)	-	-	-	1 (3)	4 (8)	7
Oxyfr. Cashmeriana	9 (2)	-	2 (1)	-	-	-	-	2 (1)	3 (3)	4 (2)	20
Dracocaph. heteroph	14 (3)	7 (2)	88 (5)	14 (3)	-	-	-	33 (5)	6 (2)	11 (3)	173
Arenar. bryophylla	3 (5)	-	-	-	-	-	-	-	-	-	3
Oxyfr. glabra	2 (1)	1	1	-	-	-	-	-	-	-	4
Elymus longi-arist	5 (2)	-	1 (1)	-	-	-	-	6 (2)	13 (2)	-	25
Sauss. gnaphal	-	5 (1)	-	2 (3)	6 (2)	2 (1)	5 (3)	-	6 (2)	13 (2)	34
Elym. nutans	-	10 (5)	1 (3)	-	-	-	-	-	-	-	11
Alyssum canesc	-	3 (1)	-	-	1 (<1)	-	-	-	-	-	4
~~Elym. longi-arist~~ Lamium sp. (?)	-	-	[illegible]	1	-	-	-	-	-	-	1
Delphinium brunon	-	-	-	-	2	2 (1)	-	-	-	-	4
Poa sp. (2)	-	-	-	-	2 (2)	-	-	-	-	-	2
T. Gr. cover	25%	20	10	4	15	5	12	20	10	10	131
Dung.	TWH	-	S.C.	Kiang	-	-	-	TWH	Nyan	-	
Artemisia minor	-	-	-	-	-	-	4 (5)	-	-	-	4
Stipa jacquen	-	-	-	-	-	-	-	5 (3)	3 (2)	-	8
Eurotia ceret								4 (5)	-	-	4

Snow cock (SC)

Urtica hyperborea; Stipa jacquen

384

Argali - Sighting
T. Woolly Hare - Sighting

17

H' = 1.8913
E = 0.6675

25.08.03 | SB 1 | 33° 23.986' 77° 58.017' | 4680 m

Shebuk Nala & Base of Red Hill } Bouldery, Pebbly slope area < 2° slope.

Reddish boulders 60%

Ht of vegetn - < 8 cm

	1	2	3	4	5	6	7	8	9	10	
Oxyfr. microphylla	19 (10)	2 (2)	4 1 (3)	3 (5)	10 (3)	19 (10)	8 (10)	-	2 (2)	2 (1)	69
Eurotia ceratoides	16 (10)	9 (7)	8 (10)	3 (2)	11 (3)	18 (15)	12 (8)	6 (5)	2 (2)	4 (5)	89
Stipa orientalis	23 (3)	10 (3)	7 (3)	13 (3)	25 (5)	18 (5)	15 (3)	16 (3)	16 (2)	19 (5)	162
Alyssum canescens	11 (2)	5 (<1)	-	24 (3)	3 (<1)	39 (2)	-	31 (1)	43 (2)	27 (2)	183
Pot. bifurca	-	30 (2)	160 (10)	-	-	-	-	-	-	-	190
Elymus longi-aristatus	-	-	3 (2)	-	-	-	-	-	-	-	3
Euphorbia tibetica	-	-	-	-	-	-	-	-	-	1 (2)	1

T = 697 | H' = 1.5691 | E = 0.9063

(7)

T Ground cover %	25	30	40	20	25	35	25	15	10	12	237
Dung →	Sheep	Sh + goat	Sh + goats T.W. Hare	Sheep	Yak	Sh + goats	Sh + goat Yak TW H.	Sh + goats	Sh + goats yak	Sh + goats	

309

808

SB2

33° 34.066'
77° 27.615'

4860 m

310

RH slope of Shebuk Nala

Gentle slope - 15-20° - compact - Sandy clay - Brownish soil - Scattered Morrum - 60-70%.

10-15 m - Very good patch of Viola kunawarensis [SHOLO]

	1	2	3	4	5	6	7	8	9	10	
Stipa subsessiliflora	4 (3)	~~6~~ -	~~6~~ (2)	1 (1)	3 (2)	-	2 (2)	2 (1)	-	1 (2)	25
Elymus longi-arist.	6 (2)	-	-	6 (2)	~~45~~ (3)	56 (10)	13 (5)	2 (1)	4 (2)	38 (5)	130
Alyssum canesc.	14 (1)	11 (1)	17 (2)	~~4~~ (1)	6 (1)	-	-	19 (2)	-	-	71
Eurotia cerat.	-	1 (2)	1 (1)	2 (5)	-	1 (5)	2 (5)	2 (15)	1 (6)	1 (5)	11
Stipa orientalis	-	6 (2)	1 (1)	~~4~~ -	-	-	-	-	-	-	7
Oxyr. microphylla	-	-	-	2 (5)	-	1 (1)	-	-	-	5 (5)	8
Euphorbia tibetica	-	-	-	-	9 (5)	2 (1)	1 (1)	-	2 (2)	-	14
Viola kunawarensis	-	-	-	-	-	6 (2)	-	-	-	5 (3)	11
Potent. bifurca	-	-	-	-	-	-	31 (6)	-	-	-	31 → 308
											H' = 1.6966
											E = 0.7721
T. Ground cover %	6%	5%	6	15	12	20	25	25	10	20	144
	Sheep	Goat + Sh.	Goat	Sh + Goat	Sh - Goats	Sh + Goat + H.	T.W.	-	Sh + goat	-	

Dung → +/-

9

SB 3 - upper Base of Red rock - Clayey soil - Flat c. 1 ha. Sedge meadow - surrounded by bouldery - Reddish rocks - Grazed by Snow cock, Kiang

311

33° 24.144'
77° 57.246'

5075m

H' = 1.7601
E = 0.5875

		1	2	3	4	5	6	7	8	9	10
Kobresia royleana	398	10 (5)	178 (20)	56 (10)	98 (20)	18 (10)	11 (2)	-	-	1 (2)	26 (5)
Calamogr. ~~Nayauxiti~~ holciformis	1226	78 (10)	102 (15)	7 (2)	54 (6)	43 (6)	142 (10)	162 (5)	312 (12)	293 (15)	33 (2)
Carex sagaensis	363	145 (20)	73 (10)	8 (3)	86 (10)	51 (5)	-	-	-	-	-
Lomatogonium sp.	19	-	9 (<1)	4 (<1)	1	-	-	-	-	-	5 (1)
Aster flaccidus	192	-	67 (5)	56 (5)	52 (7)	-	-	-	-	-	17 (3)
Saussurea bracteata	42	-	12 (5)	18 (3)	12 (2)	-	-	-	-	-	-
Leontopod. alpinum	78	-	-	11 (3)	42 (10)	-	-	-	-	-	25 (5)
Pucciniella himalaica	63	-	-	17 (2)	-	8 (2)	7 (1)	-	-	2 (1)	29 (3)
Lloydea serotina	376	-	-	22 (2)	110 (2)	6 (<1)	106 (5)	17 (2)	-	48 (5)	67 (2)
Pedicularis sp.	1	-	-	1 (1)	-	-	-	-	-	-	-
Kobresia schoenoides	16	-	-	-	7 (5)	9 (10)	-	-	-	-	-
Pleurospermum sp.	1	-	-	-	1 (1)	-	-	-	-	-	-
Potentilla multifida	1	-	-	-	1	-	-	-	-	-	-
Arenaria serpyllifolia	8	-	-	-	8 (1)	-	-	-	-	-	-
Gentiana crassuloides	2	-	-	-	2 (1)	-	-	-	-	-	-
Thylacospermum caespit.	1	-	-	-	-	1 (5)	-	-	-	-	-
Stipa subsessiliflora	1	-	-	-	-	-	-	-	1 (2)	-	-
Caragana versicolor	1	-	-	-	-	-	-	-	-	1 (3)	-
Draba alpina	14	-	-	-	-	-	-	-	-	-	14 (<1)
Polygon. sibiricum	2	-	-	-	-	-	-	-	-	-	2 (<1)
T. Gr. cover	335	50%	60%	25	50	45	25	15	15	20	30
Dung →		-	Bl. Sheep TWH	- TWH	Bl. Sheep TWH	Bl. Sh.	TWH Bl. Sh.	Bl. Sh. TWH	TWH	Bl. Sh.	TWH

2805

20

+ Rheum tibeticum → Higher - bouldery slope had Potentilla fruticosa, Ephedra gerardiana, Silene sp.; Corydalis bowerii (?) - Corydalis sp. 2

SB 4 - Red/Brown Bouldery slope - No soil - 40 - ~~45~~°
East facing ~~slope~~ [95% boulders]

33° 24.165'
77° 57.106'
5160 m (E)

312

		1	2	3	4	5	6	7	8	9	10
Athyrium sp. [Fern]	32	26 (1)	5 (~~2~~)	-	-	-	-	-	-	-	-
Silene sp.	21	4 (1)	2 (~~2~~)	2 (1)	8 (3)	-	-	1 (2)	~~4~~ (1)	-	-
Calamagrost. holciformis	57	43 (3)	-	-	-	-	-	-	14 (3)	-	-
Corydalis boweri (?)	5	-	1 (2)	2 (1)	2 (1)	-	-	-	-	-	-
Potentilla fruticosa sp	4	-	2 (3)	-	-	-	-	2 (3)	-	-	-
Poa sp.	1	-	-	1 (1)	-	-	-	1 (1)	-	-	-
Thylacospermum caesp	1	-	-	1 (10)	2	-	-	-	-	-	-
Tanacet. ~~large~~ (dw. laiseff.)	15	-	-	7 (5)	2 (1)	1 (1)	-	-	5 (2)	-	-
Puccinellia	4	-	-	4 (2)	-	-	-	-	-	-	-
~~Aster~~ flaccidus	34	-	-	34 (3)	-	-	-	-	-	-	-
Festuca sp	1	-	-	1 (1)	-	-	-	-	-	-	-
Arenaria festucoides	1	-	-	-	1 (1)	-	-	-	-	-	-
T. Gr. Cover /	37	5	8	2	~~6~~	~~1~~	0	3	~~18~~	2	0
Dung	-	-	-	-	-	-	-	-	-	-	-
Leontopod. alpi.	17	-	-	-	-	-	-	-	17 (5)	-	-
~~Christolea~~ (= christolea) Chorispora sabul.	1									1 (2)	

+ R Cremanthodium sp. + Saxifraga cuneata + Bicheriastrum

Nepeta longibracteata

Carex borii

194

H' = 2.121

E = 0.7204

19

33° 24.296'
77 56.909
5410m

→ Lunch point + Snow leopard scat.

SB 5 - Flat Top - Windblown | 33° 24.283' / 77° 56.726' | 5430 m

313

Pebbles (Flat) - 40% - slaty

Vegetn <4cm high < 1% Red lichen

Scattered Oxytropis microphylla patches.

T. Woolly Hare – Blue sheep.

		1	2	3	4	5	6	7	8	9	10
	22. K. pygmea	278	186	206	126	302	224	216	286	315	134
Carex infuscata	2237	(20)	(10)	(12)	(8)	(15)	(15)	(23)	(15)	(20)	(10)
Oxyt. cashmeriana	100	4 (1)	40 (3)	8 (3)	4 (1)	8 (2)	6 (2)	12 (3)	9 (2)	7 (2)	2 (1)
Sauss. graphalodes	503	82 (2)	112 (5)	34 (1)	76 (2)	–	–	36 (5)	66 (2)	32 (4)	65 (2)
Arenaria serpyllif.	269	64 (1)	–	36 (2)	–	–	4 (1)	41 (2)	100 (3)	20 (3)	4 (1)
Pot. sericea Carom.	47	6 (1)	–	4 (2)	–	26 (5)	3 (1)	7 (3)	1 (<1)	–	–
Oxytropis glabra	2	–	–	1 (1)	–	–	–	1 (1)	–	–	–
Aren. bryophylla	6	–	–	+	–	–	–	6 (1)	–	–	–
Poa koelzii(?)	1										1 (1)
H' = 0.9378											
E = 0.4510											
	3165										

8

Malaxis alpicola
33° 24.440'
77 56.741
5830 m
Koeleria mucronata (Bl. sheep)

→ Nearby slopes - heavy use by blue sheep (♂ & Young) Vole/pica - storage ?of winter ??

T. Gr. cover	220	30	18	15	12	25	20	25	26	30	25
Dung		TWH	TWH Snow cock	TWH	TWH ++	TWH Snow core	TWH ++ Vole	TWH H Sirkin coupl	TWH Vole Snow Co	TWH	TWH Bl. sh. Vole

S12

(SB6) E facing - shady

(314) Caragana scrub - 30 - 40°.

Bouldery - 15.20% Boulders

33° 24.462'
77° 56.831'

5320 m

		1	2	3	4	5	6	7	8	9	10	
Oxyt. micr. var.	odora	4 (10)	-	-	-	-	-	-	-	-	-	4
Caragana		6 (50)	4 (60)	3 (50)	-	2 (30)	3 (30)	2 (35)	3 (45)	2 (45)	2 (10)	27
Dracoceph. het		3 (1)	1 (1)	-	-	-	-	-	-	-	-	4
Poa lahulensis		4 (1)	1 (1)	1 (2)	3 (2)	3 (3)	-	1 (2)	-	1 (1)	-	14
Stipa jacquem		1 (2)	-	-	-	-	-	-	-	-	-	1
Arenaria serpyll.		3 (2)	-	130 (3)	-	1	-	-	-	-	-	134
Eurotia cerat	20	-	-	1 (10)	-	2 (15)	4 (15)	3 (20)	1 (5)	4 (10)	5 (20)	
Tanacet. large fl.	1	-	-	1 (2)	-	-	-	-	-	-	-	
Stellaria sp.	5	-	-	-	5 (1)	-	-	-	-	-	-	
Elymus longi-arist	3	-	-	-	-	3 (2)	-	-	-	-	-	
	213											
T. Cover	525	70	70	75	10	50	50	65	50	55	30	
Dung		TWH	-	-	-	Bl. Sh.	TWH Bl. Sh.	Snow Cock	-	-	-	
				Snow Cock				Lichen		TWH	Bl. Sh.	

Urtica hyperborea

Saxifraga hirculus

Ely. nutans

Heavy use by Bl. sheep.

(10)

$H' = 1.3021$

$\varepsilon = 0.5655$

(SB7) Ridge - w/ Broken Bouldery rocks
Slaty / black rocks -
Scattered caragana

315

33° 24.599'
77° 57.315'
5090 m

314

L.S. → Great view of Shibuk pastures -
RHS - Tsokar basin

		1	2	3	4	5	6	7	8	9	10
19	Stipa subsessiliflora	5 (3)	-	5 (10)	-	-	6 (10)	1 (3)	-	-	2 (3)
6	Poa (green)	3 (2)	-	-	-	-	-	-	-	-	3 (3)
31	Artemisia gmelini	5 (10)	1 (15)	1 (5)	9 (15)	2 (5)	3 (5)	1 (3)	4 (10)	3 (5)	2 (15)
6	Eurotia cerat	1 (5)	-	1 (3)	-	-	1 (2)	-	1 (5)	-	2 (3)
14	Alyssum canescens	-	-	4 (1)	-	10 (2)	-	-	-	-	-
12	Ephedra gerardiana	-	-	-	6 (5)	-	-	3 (2)	-	-	3 (4)
4	Caragana vericus	-	-	-	-	-	1 (5)	1 (3)	2 (20)	-	-
1	Aconogonon tortuosum	-	-	-	-	-	-	-	-	1 (80)	-
	Total Gr. 267	20	15	20	15	8	22	12	40	85	30
	Dung	TWH	TWH	TWH Sn.c.	-	TWH ++	Sheep TWH Sc.	Sn.c Sheep TWH	TWH	TWH	TWH

93

8

Ephedra gerard.; Aconogon. tort. frequent
Saussurea stolicae

$H' = 1.7777$
$E = 0.8548$

SB8

33° 24.610'	4900 m
77° 57.525	

NE-facing - Broken

30-35° - slope - Pebbles + boulders - 60%.

316

Artem. gmelini - Eurotia - Stipa steppe

Pica - use - intensive -

F/E

	1	2	3	4	5	6	7	8	9	10	
Artem. gmelinii	1 (5)	1 (5)	5 (15)	1 (10)	1 (3)	4 (5)	5 (10)	3 (10)	1 (10)	5 (10)	24
Stipa subsessilifl.	2 (3)	2 (2)	2 (3)	1 (3)	-	-	-	-	-	-	7
Poa lahulensis	2 (2)	-	-	-	2 (1)	-	-	-	-	-	4
Alyssum canesc.	18 (3)	22 (2)	9 (2)	12 (1)	-	1	4 (1)	-	10 (1)	5 (1)	81
*Oxytropis cashm [var. inse pedi]	3 (1)	1 (1)	-	4 (3)	3 (2)	5 (2)	4 (2)	2 (1)	2	5 (3)	29 → Var. of s. sp of O. cashm
Euphorb. tibetica	1 (<1)	-	1 (1)	2 (1)	-	1 (1)	-	2 (1)	1	2 (1)	10
Stipa sibirica	-	3 (3)	1 (2)	1 (3)	-	1 (3)	2 (5)	4 (2)	3 (3)	5 (1)	20
Aconog. tort.	-	-	-	1 (<1)	-	-	-	-	-	-	1
Elym. longiarist	-	-	-	2 (2)	2 (1)	2 (2)	1 (2)	1 (2)	3 (2)	1 (2)	12
Poa sp. (cf Lahulensis) more lax	-	-	-	-	-	-	1 (1)	-	-	-	1
											189

H' = 1.7401

E = 0.7557

* Coll. No. 441 SU

10

Total Ground cover	15	12	15	25	8	8	25	12	15	15	150
Dung	TWH	TWH	Red fox TWH	TWH	TWH	TWH	TWH Sheep	TWH Sheep	TWH Sheep	TWH Sh. gm	

[Hare burrow] - As big as that of Marmot - Frequent - burrows

Camping site of Sheep herders at the gateway of Shebuk Nala

33° 24.255'

77° 57.908'

4758 m

→ Valley - Lindelofia anchusoides

→ Full of Chenopodia

one side dense Caragana

26.08.03 (RG1) Flat Stipa

33° 13.546'
78° 05.548'

4975m

Rang Pasture - Heavily grazed by Sheep & Goats 300 m from T.R. camp - c. 5000 sheep & goats.

317

0°/- Either side - Hillocks - / Trampled (Sandy Lager + Rubble - 60%

Ht of vegetn - < 5 cm -

Sandy-clay - Loose

	1	2	3	4	5	6	7	8	9	10	
Stipa subsessiliflora	56 (25)	53 (25)	49 (15)	56 (15)	62 (18)	72 (10)	51 (15)	35 (10)	18 (3)	45 (10)	497
Carex melanantha	-	4 (1)	2 (1)	2 (2)	-	-	-	18 (5)	-	1 (1)	27
Draba sp (?)	-	-	1 (.)	-	-	-	-	-	-	-	1
Sibbaldia sp	.	-	-	1 (.)	-	1 (.)	2 (.)	-	.	-	4
											529
Cover	25	25	18	20	20	12	15	15	5	10	165
Dung	SG	SG YK	SG	SG ++	SG	SG	SG ++	SG Kiag	SG TWH	SG	

SG = Sheep & Goat

4

H' = 0.2592
E = 0.1870

RG2 318

Plateau - slightly undulating
1 Km from TR - herder's camp.
Stipa & carex - heavily grazed
Sandy-clay - Trampled / loose
Pebble - 15-20%.

33° 12.754'
78° 04.543'
5035 m

(·) = negligible cover

↓ SPP.	1	2	3	4	5	6	7	8	9	10	
Stipa subsessiliflora	87 (10)	94 (10)	60 (1)	83 (15)	57 (8)	63 (5)	80 (15)	38 (10)	59 (15)	41 (10)	612
Carex melanantha	97 (5)	95 (10)	53 (10)	–	50 (5)	31 (3)	66 (3)	69 (5)	57 (10)	24 (5)	551
Sibbaldia sp	3 (·)	9 (1)	10 (2)	–	–	30 (10)	5 (2)	5 (·)	1 (·)	27 (3)	90
Pot. bifurca	–	–	–	–	5 (2)	–	–	–	–	–	5
Oxyr. cashmeriana	–	–	–	–	–	1 (2)	–	–	–	–	1
Potentilla anserina or species	–	–	–	–	–	1 (·)	–	–	–	–	1
											1260
T. Gr. cover %	15	20	25	15	15	20	25	20	25	20	20
	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	

6

H' = 0.9342
E = 0.5214



Dung

RG3 - End of plateau
slightly elevated & dry
Sandy-morrum - 6 km from
TR-herders camp -

319

33° 12.540'
78° 02.964'

5070 m B1E

c [60%]

Ht of vegetn - < 10 cm

	1	2	3	4	5	6	7	8	9	10	
Stipa orientalis	32 (15)	52 (3)	41 (7)	40 (10)	47 (5)	38 (10)	55 (10)	48 (10)	39 (5)	31 (2)	423
Artem. minor	13 (10)	6 (2)	4 (8)	11 (10)	11 (10)	5 (6)	4 (8)	1 (2)	1 (3)	9 (10)	65
Alyssum	2 (·)	16 (1)	29 (1)	-	8 (2)	-	37 (1)	-	42 (1)	4 (1)	138
Oxytr. carhm.	-	-	1 (1)	-	-	-	1 (·)	5 (2)	-	3 (2)	10
Pot. bifurca	-	-	4 (2)	-	-	5 (1)	-	-	-	-	9
Sibbaldia sp.	-	-	3 (1)	1 (·)	6 (1)	2 (·)	1 (·)	3 (1)	6 (1)	-	22
Pot. sericea	-	-	-	-	-	-	1 (·)	-	-	-	1
Stipa subsessiliflora	-	-	-	-	-	-	-	-	1 (2)	-	1
											669
T. Gr. cover	25	10	20	22	20	18	22	18	12	15	182
Dung -	S.G.	SG KING	SG	SG TWH	SG. Kiang	SG	SG Kiang	SG	-	SG Yuk	

8

$H' = 1.0945$
$\varepsilon = 0.5263$

RG4 – Lower plateau (320)

33° 12·066′
78° 02·346′
5000 m

Compact soil

Pebbles – 20–25%

Soil – Clayey-compact. | depressed, well drained

Sighted - 4 Kiangs - ½ km

	1	2	3	4	5	6	7	8	9	10	
Artem. minor	11 (15)	6 (6)	8 (15)	9 (10)	15 (12)	8 (15)	7 (7)	13 (10)	10 (8)	12 (10)	99
Stipa sub-sessiliflora	72 (5)	34 (6)	25 (10)	43 (8)	26 (10)	42 (10)	19 (7)	25 (3)	33 (10)	23 (5)	342
Sibbaldia	1 (·)	10 (2)	–	3 (·)	5 (1)	7 (1)	2 (·)	–	–	·	36
Alyssum	–	4 (1)	11 (3)	16 (2)	–	–	13 (3)	1 (·)	4 –	–	40
Oxyfr. microphylla	–	–	–	–	1 (2)	–	–	–	–	–	1
Carex melanantha	–	–	–	–	–	–	–	25 (5)	1 (1)	4 (3)	30
											548

(6)

H' = 1.1438

ε = 0.6383

T. Gr. Cover	20	15	28	20	25	26	18	20	20	15	207
Dung	SG	Horse	SG	SG H	SG Kias	SG (Kias)	SG	SG	SG	SG	

RG 5 E facing gentle slope with quartzitic rubble - 60%

33° 12.298'
78 02.008

5008 m

321

Soil sandy clayey - brown - wind blown; vegetn <10 cm..

	1	2	3	4	5	6	7	8	9	10	
Stipa orientalis	26 (5)	21 (3)	36 (5)	46 (5)	37 (10)	27 (4)	18 (10)	33 (10)	11 (7)	28 (4)	283
Oxytr. cashmer.	1 (3)	–	1 (2)	–	1 (2)	–	1 (1)	–	–	2 (4)	6
Alyssum canesc.	32 (1)	59 (2)	55 (2)	76 (1)	38 (1)	25 (2)	36 (2)	67 (2)	40 (2)	43 (2)	471
Sibbaldia sp.	95 (3)	95 (3)	78 (2)	66 (2)	67 (1)	89 (3)	26 (2)	35 (3)	48 (1)	117 (2)	716
Oxytr. microphylla	–	1 (1)	–	–	–	–	–	1 (1)	–	–	2
											1478
T. Gr. Cover	10	8	12	10	15	9	15	16	10	12	117
Dung	SG YK	H?	SG	SG. H	KHAG	SG KHAG	–	SG	SG	SG	

5

H' = 1.0633

E = 0.6606

RG 6 - W Facing. Gentle slope - 10-15° - Carex melanantha - Flat - Pebbles - 25-30%.

322

33° 11.325'
78° 02.395'
5135 m

Carex - 10-15 cm - high.
melanantha

	1	2	3	4	5	6	7	8	9	10	
Carex melanantha	59 (15)	58 (20)	38 (15)	49 (15)	1 (2)	36 (5)	52 (15)	–	12 (3)	26 (6)	331
Artem. minor	4 (5)	–	5 (5)	1 (2)	–	9 (6)	7 (3)	14 (3)	15 (5)	7 (4)	62
Sibbaldia	17 (2)	18 (2)	19	10 (2)	24 (1)	19 (2)	27 (1)	9 (2)	15 (2)	43 (2)	192
Stipa jacquemontii	8 (3)	3 (5)	9 (3)	9 (5)	16 (3)	–	4 (2)	12 (3)	10 (4)	8 (2)	79
Stipa subsessiliff.	–	1 (1)	–	–	–	–	–	–	–	–	1
Oxyfr. microphylla	–	–	1 (2)	–	–	1 (1)	–	–	–	–	2
Oxyfr. cashmeriana	–	–	1 (1)	–	–	–	–	–	–	–	1
Alyssum canescens	–	–	–	21 (1)	–	–	–	23 (2)	–	–	44
											712
T. Gr. cover	25	30	28	25	5	15	20	10	15	10	183
	Kiag	Kiag SG	SG	SG	Kiag	SG	SG Kiag	SG	SG	SG	

8

H' = 1.3729

E = 0.6602

Drung

RG7 Kobresia meadow [33° 09.931' / 78° 02.569']

Upper Nuruchan Valley pasture

Close to TR Herder's camp. 4940m

S23

Heavily grazed meadow - < 3 cm.

2.5 cm x 2.5 cm patch = 50 Kobresia pygmaea

mr. RABGYAL TR-Herder.

[RACHUNGARU - meadow]

	1	2	3	4	5	6	7	8	9	10	
Kobr. schoenoides	88 (15)	40 (15)	28 (10)	38 (15)	60 (20)	63 (20)	42 (15)	16 (5)	28 (10)	27 (5)	430
Kobr. royleana	34 (10)	28 (5)	116 (10)	50 (35)	108 (15)	24 (3)	20 (3)	-	132 (5)	132 (2)	644
Kobr. pygmaea (%)	(80%)	(85)	(90)	-	(50)	(50)	(85)	(90)	(80)	(90)	500
Thalictr. alpinum	56 (5)	1	6 (2)	240 (5)	160 (3)	25 (3)	-	-	-	-	488
Potentilla anserina	1 (1)	-	-	-	-	92 (20)	-	-	12 (1)	-	105
Tarax. forrestii	2 (1)	1	3 (.)	88 (5)	4 (.)	4 (1)	-	-	3 (.)	2 (.)	107
Sauss. tarraxifolia	1 (.)	-	-	-	-	-	-	-	-	-	1
Oxytropis spl. 4	-	32 (5)	4 (.)	36 (15)	-	83 (6)	4 (.)	3 (2)	1 (2)	-	235
Gentiana crassuloides	-	-	2 (.)	-	-	-	-	-	-	-	2
Arenaria serpyllifolia	-	-	-	16	-	-	-	-	-	-	16
Polygonum sibiricum	-	-	-	46 (2)	-	-	-	-	-	-	6
Ranunculus tricuspis	-	-	-	-	1	-	-	-	-	-	1
Lomatogonium sp	-	-	-	-	3 (.)	-	-	-	-	-	3
Festuca (Poa minute purple)	-	-	-	-	-	20 (1)	-	-	-	-	20
T. Gr. C.	95%	96%	98	80	85	80	85	90%	80	98	905
Dung	YK	H	YK H.	YK	YK GS	YK G.S.	YK H	YK H	YK H.	YK H.	10
Carex sagaensis (?)								10 (3)			2368
Moss											

~~14~~ 15

H' = 1.8688

E = 0.7081

27.08.03 (NU1) 33° 14.475' 77° 58.674' 4815 m.

Nuruchan - Mid Plateau - fine rubble - 50%

324

LL: Sandy plain :- Stipa - Oxytropis - Alyssum

↳ 2-3° E. → Kiang 1♂; 1♀ & foal. - 2 sightings

	1	2	3	4	5	6	7	8	9	10	
Stipa orientalis	59 (20)	38 (10)	56 (5)	41 (5)	45 (5)	55 (15)	40 (5)	44 (5)	39 (5)	46 (5)	463
Alyssum canesc.	57 (10)	11 (2)	64 (2)	67 (2)	43 (3)	41 (1)	33 (2)	40 (2)	36 (2)	23 (2)	415
Oxytr. cashmeriana	1 (1)	-	-	-	-	2 (•)	1 (1)	-	-	-	4
Sibbaldia sp.	6 (1)	-	-	2 (•)	13 (•)	-	-	2 (•)	-	4 (1)	27
Oxytr. microphylla	-	2 (10)	1 (3)	1 (2)	-	-	1 (5)	1 (1)	1 (2)	2 (7)	9
											918
T. Gr. Cover	25	20	15	12 14	12	20	12	10	10	15	153
Dung	SG	SG	SG	SG	SG	SG	SG	SG	SG	SG	

5

H' = 0.8768

E = 0.5448

(NU2) ~~Up~~ middle slope - 25-30°

E. facing, Loose pebbles (flat)

Scrub-steppe - Pebbles - 30-40%

33° 14.292'
77° 58.427'
4915 m

325

		1	2	3	4	5	6	7	8	9	10		
Artemisia gmelinii	13	3 (5)	-	-	1 (3)	-	1 (3)	-	2 (15)	-	-	6 (25)	NB
Carex melanantha	137	26 (3)	-	-	-	-	34 (10)	33 (10)	26 (7)	18 (5)	-	-	R37
Oxyfr. cashmer.	43	4 (3)	3 (1)	14 (2)	1 (1)	-	3 (2)	11 (5)	1 (·)	3 (1)	2 (1)	1 (2)	Artem. salsoloides
Euphorbia tibetica	57	9 (2)	5 (1)	24 (5)	-	-	4 (1)	-	11 (2)	1 (1)	1 (1)	2 (1)	
Alyssum canosa.	89	17 (2)	6 (·)	8 (1)	6 (2)	24 (2)	6 (·)	3 (·)	2 (1)	11 (1)	3 (·)	3 (·)	
Stipa orientalis	62	6 (2)	13 (10)	11 (6)	3 (2)	7 (5)	1 (·)	4 (1)	-	2 (1)	7 (2)	8 (2)	
Artemisia minor	14	-	2 (3)	-	1 (3)	2 (5)	1 (2)	1 (2)	-	-	7 (10)	-	
Eurotia ceratoides	2	-	1 (3)	-	-	1 (5)	-	-	-	-	-	-	
Dracoceph. heteroph	77	-	45 (5)	-	-	11 (2)	6 (1)	3 (2)	-	3 (1)	-	9 (3)	
Potent. sericea	2	-	-	2 (1)	-	-	-	-	-	-	-	-	
Stipa jacquemontii	2	-	-	-	2 (2)	-	-	-	-	-	-	-	
Elymus nutans.	1	-	-	-	-	-	-	-	-	-	-	1 (3	

12 - 499

33°.13.673'
77°.58.554
5020 m

Nuruchan Top -
View of More plains, Upper Nuruchan

T. Gr. cov.	15	25	20	15	12	18	15	30	15	15	35	215
Dung	TWH SG	SG TWH	SG TWH	SG	SG TWH	SG TWH	TWH SG	SG -	SG TWH	SG	TWH SG	

old-shelter Pica

$H' = 1.9430$; $E = 0.7819$

NU3 326

10 m Below Nuruchan Top – 33° 13.673'
77° 58.554'
5020 m

Opp yak slope – Jagdish saw 7-Blue sheep grazing / contd yak

East facing broken/bouldery slope – 45–50°.
70% – rocks – Gueldenstaed's redstart ...
Pica droppings.

FSS

		1	2	3	4	5	6	7	8	9	10	
Stipa orientalis	23	4 (5)	3 (2)	3 (5)	2 (2)	2 (1)	3 (2)	5 (5)	-	-	1 (½)	Lamnesgeiri.
Artemisia gmelinii	24	3 (10)	2 (5)	2 (7)	1 (3)	5 (10)	4 (5)	5 (5)	3 (2)	-	2 (3)	
Alyssum caens.	168	4 (1)	-	53 (3)	22 (3)	29 (3)	26 (2)	7 (1)	-	14 (2)	13 (3)	
Ephedra gerardi (इंगाल)	15	2 (2)	-	-	3 (5)	2 (3)	2 (3)	2 (1)	1 (2)	1 (5)	2 (10)	
Oxyt. cashm	1	1 (1)	-	-	-	-	-	-	-	-	-	
Potentilla alpina (small)	1	1 (1)	-	-	-	-	-	-	-	-	-	
Poa sp.	5	-	1 (1)	-	-	4 (2)	-	-	-	-	-	
Artem. minor	2	-	-	2 (1)	-	-	-	-	-	-	-	
~~Ephed~~ Aconog. tortuosum	4	-	-	-	-	1 (1)	-	2 (1)	1 (70)	-	-	
Pot. sericea (hary-)	5	-	-	-	-	3 (2)	-	-	-	-	2 (3)	
Stipa jacquemontii	1	-	-	-	-	-	1 (1)	-	-	-	-	
Scrophularia scabiosaef.	1	-	-	-	-	-	-	-	-	-	1 (3)	
												flora just over
(12)	H' = 1.2300			I	250							
	E = 0.4449											
Lichens (red)	19	3/	3	2	5	2	2	1	-	1		head
T. Gr. cov	20	10	10	16	40	25	10	15	80	10	15	
Dung		TWH	TLWH	TWH Snow cover	TWH	TWHS	SG TWH	SG TWH	SG TWH	TWH	SG	

27.08.'03 Moist meadow between

(ST1) Starstapuk Tso & Tso Kar

Carex & Scirpus.

[Heavily] grazed by Kiang – on ~~take~~ marginal/ puddles

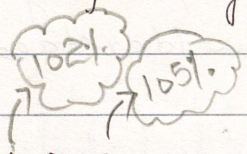
33° 16.605'
78° 02.084'

4565 m

327

102%

105%



	1	2	3	4	5	6	7	8	9	10	
Carex sagaensis	134 (40)	404 (60)	435 (50)	256 (60)	636 (50)	-	372 (50)	168 (40)	218 (40)	114 (10)	2740
Carex x Kobresia	52 (20)	72 (15)	37 (10)	12 (1)	52 (10)	-	68 (10)	8 (1)	12 (1)	-	313
Pucciniella himalaica	32 (5)	8 (3)	112 (10)	24 (3)	44 (5)	-	20 (5)	56 (10)	101 (5)	64 (10)	461
Calamagrostis sp.	13 (2)	156 (3)	226 (5)	312 (10)	38 (3)	-	244 (15)	58 (5)	316 (15)	172 (5)	1545
Ranunculus tricuspis	224 (20)	196 (10)	310 (20)	362 (25)	140 (5)	-	166 (10)	232 (20)	228 (15)	112 (5)	1970
Crassula sp.	550 (15)	-	159 (10)	2 (·)	8 (1)	-	12 (2)	52 (4)	65 (5)	68 (5)	916
Kobresia schoenoides	-	-	-	-	1 (15)	-	-	-	-	180	181
Blysmus ~~planifolius~~ Compressus	-	-	-	-	-	508 (70)	-	-	-	18 (5)	526
~~Ranunc~~ Polygonum sibiricum	-	-	-	-	-	-	-	-	1 (·)	15 (2)	16
Sueada sp. – (Red)	-	-	-	-	-	-	-	-	-	2 (·)	2
											8640

10

H' = 1.785

E = 0.775

T. Gr. cover %	90	95	98	98	95	70	85	90	95	70	886
Dung	SG	YK SG	SG	SG YK	SG	SG Kiang	SG Kiang	–	SG	SG	
Vole burrows	1	-	-	-	-	-	-	-	6	5	

(ST2) Meander of Startsapuk stream 33° 16.749'
towards Tso Kar – 78 02.045'
328 Carex (Sedge meadow). 4564 m

PSE

Cover %

Elevated burrowed by vole.

	1	2	3	4	5	6	7	8	9	10	
Carex sagaensis	1218 (70)	812 (80)	1152 (30)	–	916 (60)						4098
Pucciniella himalaica	36 (3)	120 (3)	76 (3)	20 (2)	16 (2)						268
Ranunculus tricuspis	421 (25)	312 (20)	348 (30)	–	412 (20)						1493
Carex x Kobresia	64 (3)	35 (2)	16 (·)	–	36 (3)						151
Calamogr. sp.	–	16 (3)	6 (2)	–	–						22
Gentiana sp.	–	1 (·)	–	–	42 (2)						43
Crassula sp.	–	–	152 (15)	284 (10)	224 (10)						660
Polyg. sibiricum	–	–	–	364 (15)	36 (3)						400
Sueda sp. (red).	–	–	–	88 (10)	–						88
~~Gentiana sp.~~ Pucciniella green	–	–	–	–	14 (1)						14
											7197
T. Gr. Cover	98	100	90	60	90						438
Dung	Brh. Duck	–	Br. Duck	Br. Duck	SG						

10

$H' = 1.7858$

$E = 0.7755$

4 Vole wholes

28.08.03 (TK1)

33° 21.883'
77° 59.806'
4585 m

Tso Kar - Northern Flat (salty flat Bank)

Eurotia - Stipa - [White clay]

8 SS

329

	1	2	3	4	5	6	7	8	9	10	
Eurot. coral.	12 (5)	9 (15)	2 (7)	2 (5)	5 (5)	3 (2)	-	4 (5)	11 (20)	5 (10)	53
Stipa subsessiliff.	5 (10)	7 (3)	1 (1)	-	2 (1)	5 (3)	-	2 (2)	-	-	22
Oxyt. micropb	1 (1)	-	-	-	-	-	-	-	-	-	1
											76

(3)

H' = 0.6672

E = 0.6073

T. Gr. Cov. %	25	10	0	5	6	6	0	10	20	10	108
	50	50	50	50	50	50	50	50	50	50	
Dung											
Vole burrows holes #	3	-	-	3	-	3	1	3	3	2	18

(TK 2) Salt pans

33° 21.800'
77° 59.810'

4580m

Flat
Hard soil →

330

	1	2	3	4	5	6	7	8	9	10	
Leymus secalinus	41 (5)	129 (5)	54 (6)	90 (3)	36 (6)	114 (3)	126 (5)	60 (3)	28 (3)	38 (3)	716
~~Hurd~~ Pucciniella sp (Gen)	6 (1)	113 (5)	–	41 (1)	2 (.)	48 (2)	–	–	–	3 (1)	212
Carex melanantha	–	–	–	–	62 (8)	–	–	–	–	–	62
Stipa subsessilifl.	–	–	–	–	5 (1)	–	–	–	–	–	5
Eurotia cerat.	–	–	–	–	–	–	–	1 (3)	–	–	1
											996
T. Gr. cover	6%	8	6	4	15	5	5	6	3	4	62
Dung	–	–	–	.	SG	SG	SG	SG	SG	SG	

5

$H' = 0.7729$

$E = 0.4802$

TK3 PangoNagku - inside Exclosure
Near 'Chhorten'
Gravel 60-70%

33° 21.543'
77° 57.649 m
4600 m

331

Sandy Clayey -

	1	2	3	4	5	6	7	8	9	10	
Leymus secalinus	28 (5)	40 (5)	9 (2)	-	11 (2)	-	47 (3)	-	-	-	197
Stipa jacquemontii	8 (2)	1 (1)	-	1 (2)	-	12 (3)	1 (2)	12 (3)	7 (1)	8 (3)	49
Oxytr. microphylla	-	1 (2)	-	1 (1)	8 (3)	-	-	-	2 (1)	-	12
Eurotia cerat.	-	-	1 (3)	1 (5)	1 (3)	-	-	-	-	-	3
Stipa orientalis	-	-	-	12 (5)	3 (2)	-	-	-	-	-	15
Oxytr. cashmeriana	-	-	-	1 (1)	4 (2)	6 (2)	-	2 (1)	3 (1)	23 (3)	39
Salsola sp	-	-	-	-	-	1 (1)	-	10 (3)	-	6 (2)	17
Pot. bifurca	-	-	-	-	-	-	79 (10)		-	-	79
Artemisia macrocephala	-	-	-	-	-	-	-	14 (2)	9 (3)	-	23
Chenopodium glaucum	-	-	-	-	-	-	-	1 (1)	-	-	1
Pot. multifida	-	-	-	-	-	-	-	-	-	1	1
											436
T. Gr. Cover %	8	8	5	15	12	6	15	12	6	5	88
Dung	SG	SG	SG	SG	SG H.	SG YK	SG -	SG	-	YK	

11

$H' = 1.6887$

$E = 0.7042$

GEN: LADAKHI NAMES

SHOKPA = Juniperus macropoda

MALCHANG = Salix alba

SELCHANG = Salix flabellaris

YARPA; BYARPA = Populus nigra

S'IPAN = Peganum harmala

ZIMCHI = Saussurea graphaloides

TIANKU = Nepeta longibracteata

SING
SHING = Stop

YONG = Come

DUL = Let's go

PANG = Thylacospermum - Fuel.

SPANG = Marsh

PHU = Upland

DO = Valley

LU
RONGPA = Valley

SARPO = Yellow

TAK = Snow leopard

SHAN = Wolf

REEDAK = mountain ungulate ~~Woolly Hare~~

RONGPA = Agro-pastoralist - of Zanskar

EE = Lynx

WATSE = Red fox

NYAN/RNYAN = Nayan

KYAKLAQ = Bearded Vulture

RIBBIA = Him. Snow Cock

REBONG = Tib. Woolly Hare

ABI - Grandma

= Lammergeir

THUG JE CHHEY = Thank you

LOCAL NAMES OF FODDER SPP /MAPS "CHANGTHANG"

NAMCHAR = Kobresia schoenoides

THOMSA : Causes giddiness ~~tomog~~ LS

OMA-ZIZI - Euphrobia tibetica

NEVED :

SHOLO : Rhodiola heterodonta → Dry, boil → water wash, m/x with → Butter milk - drink

ZAJUD = Nettle, also used as vegetable, No fodder
Urtica hyperborea

TEJAMPO = Potentilla leuconota (hair, aromatic)
used as incense.

TOLO = Pedicularis longiflora

TAMA-DAMA = Caragana versicolor - browsed mainly used as during winter

SHOLO = Viola kunawarensis

NGYALOP = Triglochin palustris

SPANGEN

PANGSHI = Kobresia spp.

TIKTA = Meconopsis aculeata

TESI = Elymus sp.

PASHYAKA

TAKSHYA = Oxytropis microphylla - Juice of plant used for healing wounds.

CHAGUPE

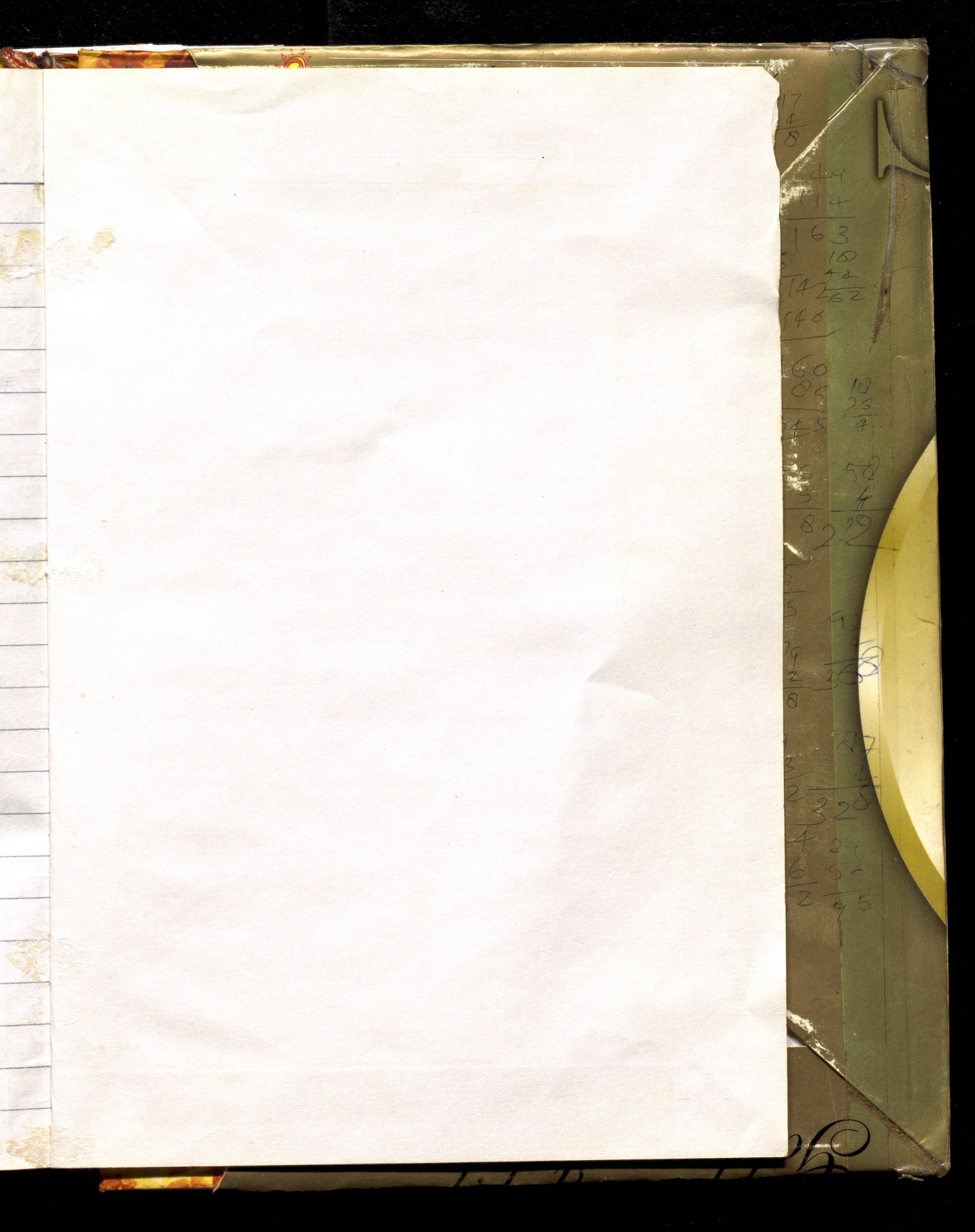
KACHU = Rheum tibeticum -

LUDUT

NAMA = Kobresia Pygmea

PARPATHA

TOMA = Potentilla anserina



298	299	300	301	302	303	304
6·8	9·4	5·1	4·5	3·4	3·5	36·0
3·7	2·2	2·4	3·1	6·7	5·3	2·2
2·5	1·0	4·7	2·0	1·6	1·6	1·0
0·7	1·0	1·5	0·2	0·8	1·6	
1·3	0·3	2·1	0·7	0·4	0·2	
1·7	0·5	2·3	0·2	3·1	0·1	
0·8	0·01	9·4	0·9	1·6	0·2	
	0·01	0·1	0·1	0·7		
	1·5	0·1	0·2	0·2		
	0·3		0·2	0·8		
	1·0			1·8		
	0·2			0·3		
				0·6		
				0·1		
				0·5		
				2·0		

305	306	307	308	309	310	311	312
39.5	7.9	2.0	1.0	4.6	1.3	7.4	0.5
3.3	2.3	2.2	1.5	6.7	3.0	8.3	1.0
1.2	4.4	3.7	0.9	3.7	0.9	4.8	0.6
0.2	3.3	4.0	2.3	3.7	0.9	0.3	0.4
~~1.4~~ 1.4	1.9	0.4	0.5	1.4	4.4	2.0	0.6
0.9		0.4	6.2	1.2	0.3	1.0	0.2
0.2		0.4	0.3	0.2	1.1	1.8	1.0
		0.6	0.7		0.9	0.9	0.9
		0.2	1.4		0.5	1.9	0.2
		0.5	0.8		0.6	0.1	0.2
		1.6	0.2			1.5	0.3
		0.4	0.1			0.1	0.1
		0.3	0.2			0.1	0.1
		0.6	0.2			0.1	
		2.7	0.5			0.1	
		0.2	0.2			0.5	
		0.2	0.5			0.2	
						0.3	
						0.1	
						0.1	

Golden Jubilee

(1953-2003)

इंडियन एयरलाइन्स
Indian Airlines

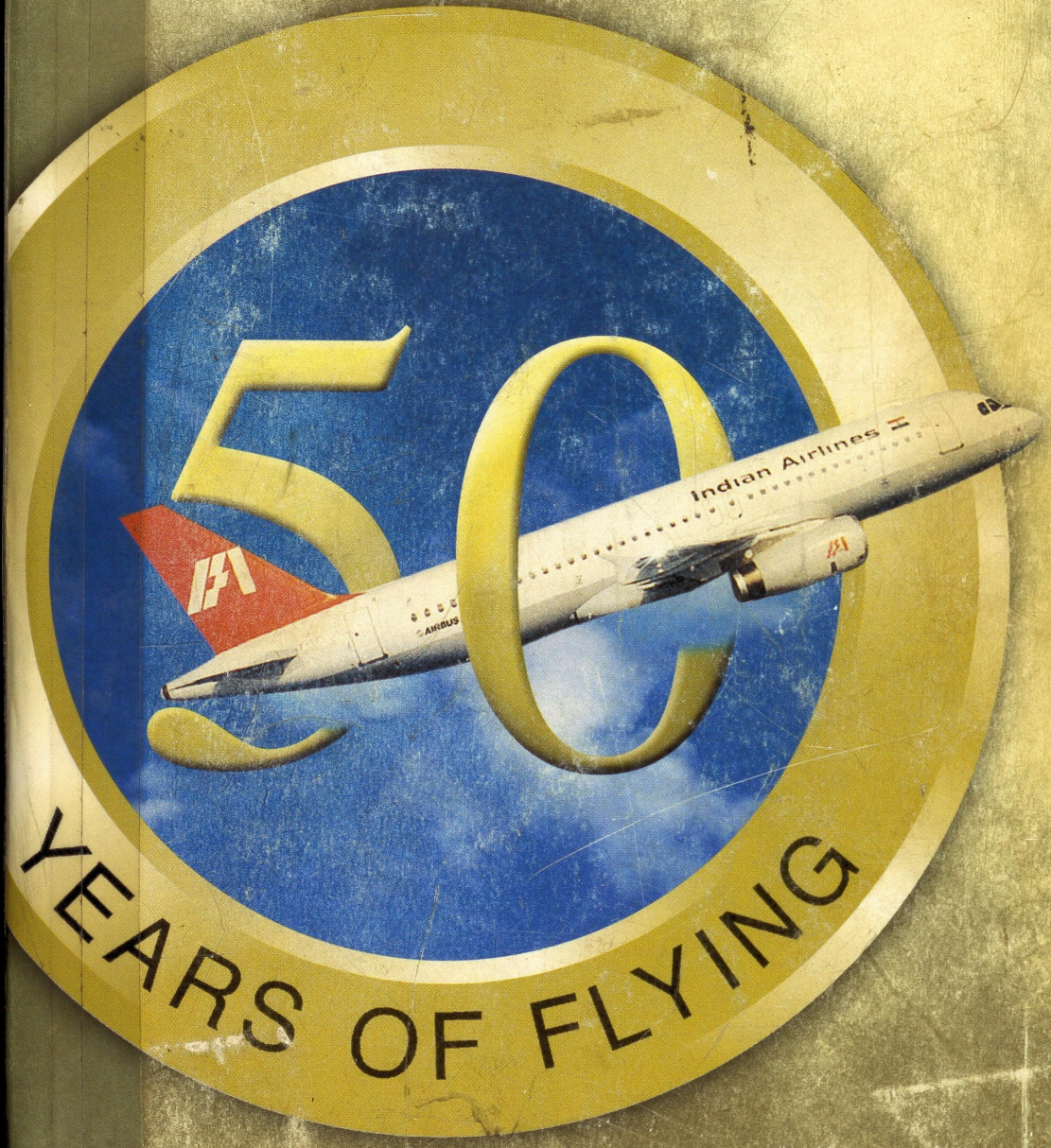
ALLIANCE AIR



A Media Transasia publication

SWAGAT

AUGUST 2003



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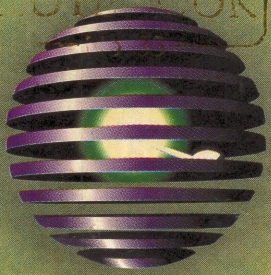


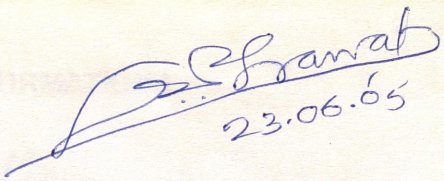
501-535

H' - Div. Index

- Exponential of H' = measure of Characteristic species
  "Dominant spp"

- [GPS]
  → Conversion of degree decimal
  [last decimal points × 60]
  = sec. ''

हम तेरे जल्वाहिर तरफ कुलह
को क्या देखें,
हम तो औज ताला लाला औ
गुहर को देखते हैं



[signature]
23.06.'05

1. Visit to Valley of Fls 24-25, June, '05

2. Gaumukh — Gangotri NP
27-29 June '05

3. Nelong : 30.6 - to 2.7.'05

4. Nelong : 5.9.'05 to 6.9.'05

5. Kandara Bugyal 7 — 8 Sep. '05

6. Kedarnath WLS 8-17 May '06
[X - M.Sc. WL.Sci - H.A.Tech] Tour.
↳ Chandrasila; Bansinarayan

7. Jalandri Gad / Kyarkoti 22-27 Aug '06

8. Changchenmo Aug 3-7, 2007

9. Mandal - Chopta - T.Nath April 26 - May 1 '08

10. Harkidoon 2-5 June 2008

PERSONAL INFORMATIONS

Name G.S. Rawat

Office Wildlife Institute of India
Chandrabani, Dehra Dun

Phone

Home ~~[illegible]~~

Mobile : 9412053542

Phone

Driving Licence No.

Insurance Policy No. PAN.

Bank A/c. No.

IMPORTANT CONTACTS

Doctor	Doctor
Tax Consultant	Bank Manager
Insurance Agent	Travel Agent

REMINDER/ RENEWAL

Passport	Insurance Policy
Driving Licence	R.T.O. Tax
Income Tax	Sales Tax

Municipal Licence Factory Licence Factory Permit

Solicitor

Electrician

Insurance Policy

Professional Tax

Credit Card No.

IMPORTANT STD CODES

STATION	CODE
AASRON	0188188
ABOHAR	01634
ADAPUR DABA	018284
ADILABAD	08732
AGARTALA	0381
AGRA	0562
AHMEDABAD	079
AHMEDGARH	01676
AJMER	0145
ALAMGIR	811
ALALNDI	021262
ALATHUR	04922
ALIGARH	0571
ALLAHABAD	0532
ALLEPPEY	0477
ALMORA	05962
ALWAR	0144
AMBALA	0171
AMBALAPUZHA	047785
AMBARNATH	025182
AMBERNATH	0251
AMBUR	04176
AMETHI	053681
AMLOH	01768
AMRAVATI	0721
AMERLI	02792
AMRITSAR	0183
ANANTNAG	01932
ANGUL	06764
ANPARA	054462
ANKLESHWAR	02646
ASANOL	0341
ATTILIALE	08116
ATTINGAL	04726
AURANGABAD	02432
AURANGABAD (BIHAR)	06186
AZAMGARH	05462
BABATPUR	055293
BADNAPUR	024828
BADNAWAR	072951
BAGPAT	01236
BARAMPUR	03482
BAILESHWAR	072951
BAILHONGAL	08337
BAJPE	082481
BAJPUR	0594988
BANGALORE	080
BAPTALA	086432
BARAGAT	033
BARAMATI	02112
BARAMULA	01952
BAREILLY	0581
BARMANA	0197881
BARMER	02982
BARNALA	01679
BARODA	0265
BARWAH	07280
BEGUSARAI	06342
BEHRAM	0182485
BEHRAMPUR	0348212
BELLARY	08392
BELWADI	0821
BHAGALPUR	0641
BHAGWANPUR	0622485
BHAVANI	04256
BHAWANI	01664
BHOPAL	0755
BHUBANESHWAR	0674
BIJPUR	054464
BIJNORE	01342
BIKANER	0151
BILASPUR	07752
BOMBAY	022
BURHANPUR	0735
CALCUTTA	033
CALICUT	0495
CHANDIGARH	0172
COIMBATORE	0422
CUTTACK	0671
DADRI	05737
DEHRADUN	0135
DELHI	011
DWARKA	02892
DWARKA TRIUMALA	088291
ETAH	05742
ETAWA	0568
FAIZABAD	0527
FARIDABAD	011828
FARIDKOT	01639
FARRUKHABAD	05692
FEROZPUR	01632
FURSATGANJ	05357
GALWATI	0176583
GANGTOK	03592
GAZIBAD	01184
GURGAON	01272
GWALIOR	0751
HALFLONG	03673
HISSAR	01662
IMPHAL	03852
INDORA	0186839
INDORE	0731
ITARSI	07572
JABALPUR	0761
JAINPUR	05117
JAIPUR	0141
JAISALMER	02992
JALANDHAR	0181
JAMMU	0191
JANDIALA GURU	01854
JETPUR	028239
JODHPUR	0291
JUNAGARH	0285
KADI	0276912
KANPUR	0512
KARAIKAL	04368
KARTARPUR	018283
KHANNA	01622
KOTA	0744
KOTU (PKT)	0186853
KRISJMAMAGAR	03472
KUBA	0163439
KUDAL	02362
KULU	01902
KURALI	01888
LUCKNOW	0522
LUDHIANA	0161
MADRAS	044
MADURAI	0452
MAHABALEHSWAR	02168
MAHABALIPURAM	04113
MAHANANDI	05814
MALWAN	05184
MAYILADTHURAI	04364
MADHUBANI	06296
MEERUT	0121
MEHATPUR (HP)	019758800
MEEHBOOBNAGAR	08542
MEHMDABAD	02695
MEMORI	034491
MERCARA	08272
METTUR	04298
METTALPALAYAM	04254
MINICOY	048672
MIRAJ	0233
MIRGANJ	0615682
MIRZAPUR	05442
MITHAPUR	028992

Locality **Date…..**

Sampling Point # Geog. Coordinates

Altitude

Topography (Land form):

Aspect Slope (°)

Soil (Type and thickness of A1 horizon):

Vegetation Type (Formation):

% Shrubs …. ….% Herbs… … % Graminoids… …% Mosses … …

% Lichens .. .. ….Total Ground Cover . . . . . .

(Height) . . . .

Notes: (Grazing pressure, MAP collection, signs of wild ungulates etc):

[Spp. enumeration: 5 m r – Sh; 1m^2 - H/Gr.]

Plot Nos. → Spp.	1	2	3	4	5	6	7	8	9	10	Remarks (x ht)
Poly sib.											2 cm,

501

(501)

24/06/05

NOTES

Baminidhaur 3437 m

Overall ground cov 70%; 20 cm

30° 43' 27.8"

79° 35' 24.5"

Undulating, Gentle slope –

Deep soil – Polygonum Removed area

Vole digging [25 m from cave) –

Tall Herbaceous formation

No mosses & Lichens

3° slope –

			1	2	3	4	5	6	7
122	Fritill. ~~Roylei~~	(7.3 ~~4.8~~)	10 (10)	4 (5)	3 (5)	13 (10)	11 (5)	21 (10)	4 (2)
1	~~Phlomis~~ Epilobium roy	.1	–	–	1 (1)	–	–	–	–
54	Pot. atrisanguin	(3.1)	5 (10)	1 (2)	10 (3)	4 (1)	9 (2)	12 (1)	13 (3)
61	Geranium wallich	(10.7)	3 (15)	5 (20)	6 (10)	3 (5)	18 (15)	6 (10)	3 (2)
73	Selin. vag.	(5.1 ~~3.6~~)	24 (20)	3 (1)	8 (2)	7 (2)	1 (1)	10 (5)	20 (5)
74	Chaeroph. vill.	(4.7)	13 (10)	7 (2)	17 (2)	12 (10)	9 (3)	16 (5)	–
24	Rumex nepal.	1.3	3 3 (2)	1 (2)	3 (2)	–	–	2 (5)	7 (2)
24	Ranun. hirt.	1.4	2 (1)	3 (2)	1 (1)	1 (1)	2 (1)	–	4 (2)
19	Prenanth. violaef	1.1	12 (5)	–	–	3 (1)	4 (2)	–	
11	Poly polyst	1.0	7 (3)	–	–	1 (1)	–	1 (2)	2 (2)
8	Rum. acetosa	.2	7 (1)	–	–	–	1 (1)	–	–
45	Filipendula vestita	2.4	2 (3)	3 (2)	3 (3)	12 (3)	6 (3)	8 (3)	3 (2)
1	Polygonatum op	.1	1 (1)	–	–	–	–	–	–
8	Phlomis bracteosa	.6	2 (1)	–	2 (2)	2 (1)	1 (1)	1 (1)	–
28	Vicatia cuneifolia	1.2	–	3 (2)	3 (2)	1 (1)	3 (1)	5 (2)	3 (2)
21	Prenanthus brunonian	1.3	–	11 (2)	–	1 (2)	5 (3)	3 (3)	1 (1)

NOTES

	8	9	10	
Salt				
Frit. Royleri	9 (5)	21 (10)	26 (10)	
Ger. wall.	5 (4)	17 (15)	5 (10)	
Rumex nep	5 (3)	3 (1)	-	.4
Pot. atris.	10 (5)	15 (5)	-	
27 Seli vag	5 (5)	9 (5)	13 (5)	
Ran. hir	3 (2)	5 (2)	3 (2)	.6
3 Gagea lut	2 (1)	-	1 (1)	.2
Carex pipt.	1 (1)	-	-	.1
26 Prem. vid	-	23 (1)	3 (2)	
Cher. vill	-	12 (10)	6 (5)	
~~Sel. veg~~	-	0 -	-	
3 Morina lag	-	-	3 (10)	1.0
Fil. p. ves	-	-	8 (5)	
6 Pren. brun	-	-	6 (2)	.2
9 Poly polyst	-	-	9 (2)	.2
Vicat = comi	-	-	8 (2)	.2

[spp = 23]

H' = 2.62905

E = 0.66531

(90% 1/4 300 ind.

24/06/05 (22) 502 34

VOF

NOTES

~~3146~~ 3515 m

0 Aspect

30° 43' 32.8"

79° 36' 08.7"

Digging by voles

Semastoli Camp — Flat valley Bottom.

Alluvial soil —

Mixed Herbaceous formation

Shrubs — 0%; Herbs — 90%; Graminoids — 35

			1	2	3	4	5	6	7	8	9	10
22	Aco. atr.	2	3 (2)	1 (1)	–	–	–	3 (5)	–	9 (10)	–	6 (2)
155	Pot. abor.	6.7	15 (10)	12 (10)	8 (5)	17 (3)	11 (5)	13 (15)	16 (2)	10 (5)	28 (2)	25 (10)
98	Ger. wall.	16.4	8 (10)	15 (20)	8 (10)	9 (10)	4 (2)	11 (50)	14 (25)	6 (25)	14 (2)	9 (10)
5	Dactyl. hat	0.5	1 (1)	–	–	1 (1)	1 (1)	–	–	1 (1)	–	1 (1)
187	Sel. vag.	6.4	20 (5)	17 (3)	2 (1)	20 (5)	–	19 (3)	30 (5)	18 (3)	60 (30)	–
87	Anaph. ~~cana~~ nubi	1.5	60 (5)	7 (2)	45 (5)	–	40 (3)	–	–	–	–	–
39	Rumex acetosa	1	1 (1)	–	3 (1)	3 (1)	3 (1)	7 (2)	10 (1)	8 (1)	2 (1)	2 (1)
88	Calamagrostis (?)	3	38 (10)	–	–	28 (30)	–	–	–	–	–	–
41	Carex nivalis	1.9	2 (1)	25 (10)	–	–	–	2 (1)	5 (3)	5 (2)	3 (1)	2 (1)
43	Chaerophyll.	.8	1 (2)	5 (2)	10 (3)	–	2 (–)	–	–	25 (1)	–	–
103	Sel. wallich	5.9	1 (1)	–	25 (5)	–	–	1 (1)	1 (1)	–	–	75 (50)
179	Prenan. violaef.	2.5	–	15 (2)	88 (2)	10 (3)	6 (1)	–	–	–	3 (1)	40 (15)
24	Vicatia cuneif.	1	–	1 (1)	2 (1)	7 (2)	3 (1)	2 (1)	5 (3)	4 (1)	–	–
10	Codonopsis rotu.	.4	–	7 (2)	–	–	–	1 (1)	2 (1)	–	–	–
7	Frithll. royleri	.4	–	–	4 (1)	1 (1)	–	2 (2)	–	–	–	–
3	Gagea lutea	.2	–	–	1 (1)	–	–	–	–	–	2 (1)	–
2	Ipomis bract	.2	–	–	–	1 (2)	–	–	–	–	–	1 (1)

NOTES

		6	7	8	9	10
Anthiacea brom. 1.0		(10)	–	–	–	–
5 Polyg. plyst	.8	–	2 (5)	1 (2)	–	2 (1)
1 Epilobium ray	.1	–	1 (1)	–	–	–
12 Viola biflora	.5	–	–	–	8 (2)	4 (3)
1 Gentiana argent	.1	–	–	–	1 (1)	–

SPP = 21
H' = 2.4302
E' = 0.79822

[503] VOF

Talla Dronagair

3536 m
30° 43' 35"
79° 36 27.1"

Scattered scrub –
Bouldery but stable patch 2-3°.

5 m r – { Lonicera myrtillus 12 (5%)
Betula utilis – 1
Juniperus pseudosabina – 2 (5%)
Rosa webbiana – 8 (3)

Sh - 15%
Gramin. - 15%, Mosses – 10%, Lichens 1
Herbs - 35%

503

SPP = 27
H' = 1.96568
E' = 0.5964

NOTES

			1	2	3	4	5	6	7	8	9	10
193	Iris kem	9.6	22 (5)	27 (10)	36 (30)	9 (1)	54 (25)	32 (20)	6 (2)	–	7 (3)	–
82	Anaph. nub	1.7	65 (10)	4 (1)	–	2 (1)	–	7 (3)	4 (2)	–	–	–
120	Poly viv.	2.2	42 (5)	5 (1)	18 (3)	7 (1)	14 (1)	12 (3)	4 (2)	3 (1)	5 (2)	10 (3)
2	Dactyl. hat	.2	1 (1)	–	–	–	–	1 (1)	–	–	–	–
24	Pot. argyrophyll.	1.0	4 (1)	–	6 (3)	–	6 (1)	2 (1)	3 (2)	–	3 (2)	–
20	Androsace sar.	.9	3 (1)	–	7 (5)	7 (2)	–	–	3 (1)	–	–	–
11	Solid. virg.	.5	3 (1)	1 (1)	4 (1)	1 (1)	–	–	–	2 (1)	–	–
474	Kobresia nepal.	5.1	125 (5)	–	60 (3)	80 (10)	65 (5)	112 (20)	–	–	25 (5)	7 (3)
6	Gent. argent	.3	3 (1)	–	–	–	–	–	2 (1)	–	1 (1)	–
23	Geran. wall.	1.3	3 (1)	4 (5)	–	5 (1)	5 (1)	–	2 (3)	–	–	4 (2)
3	Gerbera pusilla	.2	1 (1)	–	–	–	–	–	–	2 (1)	–	–
7	Rumex acetosa	0.4	–	3 (2)	–	–	–	–	3 (1)	–	1 (1)	–
8	Pot. atrisang	.5	–	4 (2)	2 (1)	–	–	–	–	2 (2)	–	
12	Phlo. bract	.8	–	3 (2)	6 (1)	–	1 (2)	1 (2)	1 (1)	–	–	
6	Viola bifl.	.2	–	4 (1)	–	–	–	–	2 (1)	–	–	
26	Carex nivalis	.6	–	12 (1)	–	5 (–)	–	3 (2)	–	–	6 (3)	
7	Vicatia coniif.	.6	–	3 (1)	–	–	–	–	4 (5)	–	–	
2	Origanum vulg	.1	–	2 (1)	–	–	–	–	–	–	–	
9	Anaph. nubigeana	1.1	–	4 (5)	–	2 (2)	–	–	2 (3)	–	1 (1)	
1	Ophiogl. vulg	.1	–	1 (1)	–	–	–	–	–	–	–	
11	Frag. nubicola	.7	–	2 (–)	2 (1)	–	–	–	6 (5)	–	1 (1)	
7	Anemone polyan	1.5	–	–	–	4 (10)	–	2 (3)	–	1 (1)	–	
8	Sel. wall.	.4	–	–	–	3 (2)	3 (1)	–	–	2 (1)	–	
6	Poly. polyst	2.1	–	–	–	1 (1)	–	2 (10)	–	–	3 (10)	
3	Phleum alp.	.2	–	–	–	–	–	–	2 (1)	–	1 (1)	
1	Polyg. hookerii	.1	–	–	–	–	–	–	1 (1)	–	–	
2	Cassiope fast	.3	–	–	–	–	–	–	–	2 (3)	–	

35[illegible] Sewchand (504) Terminal Moraine

30° 45' 39.5" | 79° 36' 45.3" Grassy – Low

NOTES

Sh – 5%
Herbs – 10
Grami. – 30
Lichens – 5%
Mosses – 5%

Sandy
Boulder
Ob[illegible]

5mx – Salix denticulata 3
Salix kazeliwii 2
Myrica[illegible] 7

		1	2	3	4	5	6	7	8	9	10
	Myri. gale 2.8	4 (10)	–	–	1 (2)	1 (1)	3 (15)	1 (1)	–	–	1 (1)
186	Epil. latif 4	1 (1)	23 (5)	41 (10)	14 (5)	5 (1)	24 (10)	26 (5)	9 (2)	25 (7)	18 (2)
352	Calamagr. emod 9.2	80 (25)	32 (10)	12 (3)	15 (3)	70 (10)	65 (10)	10 (2)	15 (3)	35 (1)	18 (1)
80	Anaph. royl. 2.6	27 (15)	8 (2)	3 (1)	–	40 (–)	–	–	–	16 (2)	26 (6)
4	Oxyria digyna .2	3 (1)	–	–	–	–	–	–	1 (1)	–	–
159	Kobresia nep 2.3	15 (2)	40 (7)	–	–	85 (10)	15 (3)	4 (1)	–	–	–
8	Poly polyst .6	–	7 (5)	–	–	1 (1)	–	–	–	–	–
21	Festuca vales 1.9	–	12 (5)	–	–	–	2 (1)	–	7 (3)	–	–
10b	Juncus sp .8	–	–	–	1 –	65 (3)	28 (3)	–	–	15 (2)	–
115	Anaph. nubigens 1.2	–	–	–	–	110 (10)	–	5 (2)	–	–	–
1	Brachyactis monte .1	–	–	–	–	–	–	–	1 (1)	–	–
1	Carex green (mill.) .1	–	–	–	–	–	–	–	–	1 (1)	–

SPP = 12
H' = 1.83195
E' = 0.737231

Moss				40%	35%	25	10	15	5	5	5
Lichen				5%	10	1	2	10	40	10	10

Dronagair Plateau (505) 25/06/05

Edge of Rhodo campan. + Junip. pseudosabina

NOTES

Osmunda patch — 60% Osmunda — Hags — 30%; Graminoids — 5% Litter

3698 m; 30° 43' 51" (3700) 79° 36' 34.7"

mass — Lichens Nil | Deep humus 5

70	Osm. clay	8·6	13 (10)	10 (5)	5 (5)	17 (5)	8 (10)	17 (5)
54	Frit. royleri	3·9	15 (5)	7 (3)	3 (2)	12 (5)	6 (2)	11 (2)
90	Sel. vag.	4·0	23 (5)	12 (4)	17 (6)	7 (5)	22 (3)	9 (2)
21	Sauss. pipt.	1·6	6 (2)	12 (5)	1 (1)	-	(1)	2 (1)
8	Rum. acet	·5	5 (1)	-	-	-	2 (1)	1 (1)
29	Pren. violoid	·8	4 (1)	6 (2)	4 (1)	-	-	15 (1)
10	Codonop. rot	·5	1 (1)	1 (1)	-	-	-	3 (1)
2	Ran. hirt.	·3	1 (1)	-	-	1 (1)	-	-
7	Phlomis bract	·7	-	4 (1)	-	-	1 (2)	2 (1)
33	Pot. alpina	1·5	-	15 (4)	5 (1)	-	6 (2)	7 (5)
16	Viola bif.	·8	-	2 (1)	-	5 (2)	9 (2)	-
9	Epilob. royl.	1·8	-	1 (2)	-	-	8 (3)	-
9	Lychnis indica	·5	-	4 (2)	-	-	-	5 (1)
12	Sauss hypol.	2·5	-	-	12 (15)	-	-	-
1	Polyg. polyst	·2	-	-	-	1 (1)	-	-
2	Nom. oxyp.	·1	-	-	-	-	2 (1)	-
6	Allium govan.	·3	-	-	-	-	6 (2)	-
2	Dactyl. hata	·3	-	-	-	-	2 (2)	-
17	Bupleur. longic	1·6	-	-	-	+ (-)	14 (3)	3 (1)
6	Vicia cunei	·5	-	-	-	-	5 (2)	1 (1)
1	Osmorhiza ?	·1					1 (1)	-
8	Geran. wall.	·3	-	-	-	-	3 (1)	5 (1)
1	Eritrich. can	·1	-	-	-	-	1 (1)	-

Festuca vel. — (1)² Phleum alp. 30% frag.

Arten. bulbosum — 10% frag.

SPP = 23

H' = 1·51807

E = 0·80301

(506)

deep soil

Drongair – Slope 3669 m

NOTES

S. facing slope – 30° 43' 51"
30° – 40°. 79 36 13.
Miliolite baceous Formation. 90% Gr. Cover No shrub

			1	2	3	4	5	6	7	8	9	10
18	Mor. longif	1.8	5 (1)	1 (2)	2 (1)	7 (2)	2 (1)					
31	Nom oxy	2.8	11 (7)	2 (1)	4 (3)	2 (1)	12 (4)					
49	Vicatia cuni	1.8	17 (3)	8 (2)	8 (3)	3 (1)	15 (2)					
29	~~Eyeathium laevigatum~~ Lob.	15	9 (20)	6 (15)	5 (10)	4 (15)	5 (10)					
18	Ger. wall.	8	5 (3)	6 (15)	2 (10)	4 (15)	1 (3)					
8	Coryd. cashm.	.8	2 (1)	1 (1)	1 (1)	4 (1)	–					
11	Phlomis bract	1.6	4 (3)	2 (1)	4 (2)	–	1 (1)					
167	Prenanth violac	4.2	36 (3)	30 (3)	16 (3)	40 (6)	45 (10)					
11	Prim. denticul.	.8	1 (1)	1 (1)	–	2 (2)	7 (1)					
66	Pot. atrisang	2.8	4 (2)	25 (3)	13 (5)	9 (6)	15 (2)					
54	Iris kem.	1.6	6 (1)	15 (1)	8 (2)	3 (1)	22 (5)					
3	Epilob. royl.	.3	2 (1)	–	–	1 (1)	–					
13	Frit. royl.	.8	3 (1)	5 (2)	–	3 (1)	2 (1)					
38	Sol. vagin.	3	3 (1)	8 (3)	12 (3)	2 (4)	13 (7)					
15	Lychnis inf.	.8	3 (1)	7 (3)	4 (1)	1 (1)	–					
10	Viola biff.	.3	–	3 (1)	–	7 (1)	–					
17	Allium humile	1.3	–	12 (3)	1 (2)	–	4 (3)					
4	Bupl. longic	.1	–	4 (1)		–	–					
3	Artem. poly	4	–	–	3 (25)	–	–					
9	Rum. aceto	.6	–	–	4 (2)	5 (2)	–					
2	Dachyl. hatag	.3	–	–	1 (1)	1 (1)	–					
5	Parn. nubic	.1	–	–	5 (1)	–	–					
3	Eritrichum	.1	–	–	3 (1)	–	–					

		4	5								
3	Gagea lutea ·1	3 (1)	-								
17	Argopteris barbig.	17 (1)	-							1.4	
6	Stachys melissaef.	6 (2)	-							·3	
1	Saussa piptathera	-	1 (2)							·3	

Spp = 27

H' = 2.64241

E' = 0.801742

(507) 29/06/05

Glacier above Gaumukh.

NOTES

8% Ground Cover 3% Grasses; 2% Herbs

Silt + Gravel — Blue sheep dung ++

	1	2	3	4	5	6	7	8	9	10	
Epil. latif. ·2·3	3 (1)	10 (2)	2 (1)	5 (2)	8 (3)	11 (3)	5 (2)	11 (5)	9 (2)	1 (1)	65
Saxifr. flagell. ·2	1 (1)	—	-	-	-	-	—	-	1 (1)	—	2
Carex ~~nubs~~. nivalis ·8	2 (1)	1 (1)	-	2 (1)	3 (1)	-	1 (1)	1 (1)	2 (1)	1 (1)	13
Draba white 1	9 (1)	14 (1)	7 (2)	-	13 (1)	-	14 (1)	16 (2)	5 (1)	2 (1)	80
Stellaria decumb ·1·1	2 (1)	6 (1)	7 (1)	6 (2)	8 (1)	3 (1)	7 (2)	12 (1)	-	3 (1)	54
Anaph. nub. ·7	14 (1)	-	-	-	9 (2)	-	-	7 (1)	3 (1)	12 (2)	45
Calamagr. emod ·9	10 (3)	2 (1)	-	-	6 (2)	-	-	-	6 (3)	-	24
Oxyria digy ·1	-	4 (1)	-	-	-	-	-	-	-	-	4
~~Poa~~ Juncus sp ·2	-	1 (1)	-	-	-	-	1 (1)	-	-	-	2
Poa sp. ·3	-	1 (1)	1 (1)	-	-	1 (1)	-	-	-	-	3
Festuca valesi ·4	-	-	3 (1)	-	-	-	-	1 (1)	3 (2)	-	7
Rhod. quadrif ·1	-	-	-	-	-	-	-	-	2 (1)	-	2
Moss		5%	2	-	1	2	1	-	1	v	v
Lich		2	-	-	1	-	-	-	v	v	v

SPP = 12

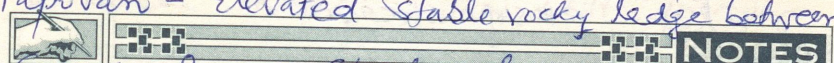
H' = 1.90365

E' = 0.766085

4346 [30° 54' 48.3" 79° 09' 37.8"] 29/06/05

Boulder 25%

Tapovan – Elevated stable rocky ledge between Gangotri gl. and Shivling glacier – vegetn cover



80% – Kobresia – Potentilla – (mixed herbaceous)

Sandy

Herbs – 30% Kobresia gramn. – 30% Moss+Lichen – 5%

	1	2	3	4	5	6	7	8	9	10	
Kobresia schoenoides cf. 11.1	36 (40)	7 (10)	28 (15)	15 (8)	16 (10)	8 (1)	14 (3)	10 (5)	23 (15)	20 (3)	177
✓Pot. argyroph. var 9.8	40 (20)	25 (3)	38 (2)	22 (5)	20 (10)	42 (18)	5 (2)	32 (8)	38 (20)	17 (10)	289
Thlaspi alpestre 1.8	18 (5)	2 (1)	5 (1)	11 (2)	6 (1)	9 (3)	10 (3)	9 (2)	–	4 (1)	80
Pedic. oed .9	2 (1)	1 (1)	–	5 (1)	1 (<1)	1 (1)	–	6 (2)	1 (1)	1 (<1)	18
Draba sp. .7	3 (1)	7 (1)	–	1 (<1)	–	8 (2)	6 (1)	8 (1)	–	–	33
Artem. absinthium vestita 1.5	–	2 (1)	–	3 (2)	3 (2)	15 (3)	1 (1)	3 (1)	5 (3)	3 (2)	35
Sisyrinbrium brac .1	–	–	–	–	–	–	–	–	–	1	1
Acono. tort. .4	–	–	–	1 (2)	–	1 (1)	–	2 (1)	–	–	4
Festuca velis .9				1 (1)	–	8 (2)	7 (2)	–	3 (2)	8 (2)	27
Poa sp .1	–	–	–	–	–	3 (1)	–	–	–	–	3
Calamagrostis sp .3	–	–	–	–	–	–	3 (2)	–	3 (1)	–	6
Anaphalis nubigena .4	–	–	–	–	–	–	2 (<1)	–	–	4 (3)	7
Brehan Cicerbita violacea .4	–	–	–	–	–	–	–	1 (<1)	2 (<1)	1 (2)	4
Aster flaccid .1	–	–	–	–	–	–	–	–	1 (1)	–	1
Cicerbita lessertioides .2	–	–	–	–	–	–	–	–	2 (1)	3 (1)	5

(509) 29/06/06

Taporan - Middle Camp.
Flat - RHS of stream

NOTES

Flat meadow - Trampled & grazed; Sandy soil.

4314; 30° 55' 2.5" 79° 04. 36.4" 5091 m

overall cov - 75%. Sandy soil - no str.

	1	2	3	4	5	6	7	8	9	10	
Acon. tort. ·8	19 (5)	-	1 (1)	-	1 (2)	-	-	-	-		21
Pot. argy 7.7	9 (2)	15 (30)	13 (20)	19 (2)	-	23 (10)	-	6 (1)	14 (10)	24 (2)	123
Nepeta spp. ·7	16 (3)	3 (2)	3 (1)	-	2 (1)	-	-	-	-	-	24
Astrag. candol ·8	4 (1)	1 (1)	2 (3)	4 (2)	-	-	-	-	3 (1)	-	14
Thlaspi alp ·6	4 (<1)	2 (1)	3 (1)	-	2 (1)	-	-	-	1 (<1)	3 (1)	15
Cerastogr. ·5	7 (3)	-	-	3 (1)	1 (1)	-	-	-	-	-	11
Elymus nut. ·6	3 (1)	-	1 (1)	-	2 (3)	-	-	-	-	1 (1)	7
Kobres. schoen 10.5	-	18 (10)	12 (3)	12 (2)	15 (10)	10 (5)	12 (5)	80 (50)	30 (20)	-	189
Fest. vales 1.7	-	7 (1)	10 (5)	18 (10)	-	-	-	-	-	2 (1)	37
Sibbal. cum 2	-	-	1 (1)	-	2 (1)	1 (2)	18 (8)	2 (2)	2 (1)	4 (5)	30
Poa sp. ·5	-	-	1 (2)	-	-	6 (3)	-	-	-	-	7
Rosularia alp. ·1	-	-	1 (1)	-	-	-	-	-	-	-	1
Arenaria gert. ·2	-	-	1 (1)	1 (1)	-	-	-	-	-	-	5
Artem. vest. ·3	-	-	-	1 (1)	-	-	1 (1)	-	1 (1)	-	3
Draba sp. ·1	-	-	-	-	-	1 (1)	-	-	-	-	1

SPP = 14

H' = 1.87416

E' = 0.71063

Gaumukh Lateral moraine 29/06/05 510

Terminal Heap of boulders & silt. 10% Veg.

NOTES

Cover — Herbs 5%, Graminoids 6-8%, overall

No mosses & Lichens —

Occasionally trampled by pilgrims —

One higher meadows we saw a group of 50+ Blue sheep grazing on meadows.

3939 m

30° 55' 55.7"

79° 04' 28.6".

		1	2	3	4	5	6	7	8	9	10	
Epil. latif.	5	7 (5)	8 (5)	9 (3)	4 (5)	7 (3)	4 (5)	5 (8)	3 (3)	8 (10)	5 (3)	60
Calamagr. emod.	3	10 (5)	12 (25)	÷	-	-	-	-	-	-	-	22
Poa sp.	3	3 (2)	-	-	-	-	-	-	-	-	1 (1)	4
Arenar. bryoph	5	-	81 (1)	1 (2)	-	-	-	-	-	1 (2)	-	82
Carex nivalis	1.8	-	1 (1)	-	-	-	2 (10)	1 (4)	1 (1)	5 (2)	-	10

SPP = 5

H^1 = 1.22906

E^1 = 0.763658

m -

L -

3829 m

Bhojbasa 30° 57' 8.5" 79° 02' 54.9"

29/06/05

511

NOTES

E. Facing gentle - Bouldery slope

Juniperus - Lonicera scrub - Gaumukh

View point - Shrubs - 20%, Herbs - 35%, Gram 10%

Ephedra 5% overall - 60%

Gravel - shallow - Grazed by heavily mules & B/Sh.

		1	2	3	4	5	6	7	8	9	10	
Thym. linearis	6.6	4 (5)	7 (10)	8 (4)	15 (15)	1 (2)	15 (10)	7 (3)	12 (20)	10 (3)	12 (4)	103
Rosularia alpestre	2.4	34 (5)	17 (5)	-	6 (1)	1 (2)	10 (2)	7 (2)	9 (2)	4 (2)	17 (3)	100
Pleurospermum large	.7	3 (1)	-	-	-	-	7 (2)	2 (2)	-	-	2 (2)	24
Lonic. myrtillus	2.5	2 (10)	-	-	-	-	-	2 (15)	-	-	-	4
Aren. bryoph.	1.8	4 (1)	6 (2)	3 (1)	8 (2)	-	21 (3)	-	16 (4)	5 (2)	11 (3)	74
Astrag. candoll.	1.5	3 (2)	9 (5)	6 (2)	-	-	1 (1)	3 (2)	3 (1)	-	10 (2)	34
Anaph. nubig	1.6	3 (2)	12 (2)	11 (2)	15 (8)	-	-	-	-	5 (2)	-	45
Morina coulteriana	1.5	-	8 (7)	-	-	-	-	12 (5)	2 (3)	-	-	22
Festuca valesi	.8	-	6 (2)	1 (1)	-	2 (3)	-	-	6 (2)	-	-	15
Anaph. roylcana	1.0	-	-	1 (1)	-	2 (5)	-	-	2 (1)	-	10 (3)	14
Piptatherum gracile	.7	-	-	1 (1)	-	1 (2)	2 (1)	6 (2)	-	-	5 (1)	15
Potentilla cuneifolia	2.8	-	-	-	60 (25)	-	-	-	25 (3)	-	-	85
Ephedra gerard	1.4	-	-	-	-	1 (2)	-	3 (10)	-	3 (2)	-	7
Poa sp.	.1	-	-	-	-	-	1 (1)	-	-	-	-	1
Pleurosp. candolle	.1	-	-	-	-	-	1 (1)	-	-	-	-	1
Draba white	.1	-	-	-	-	-	-	-	4 (1)	-	-	4
Artem. gmelinii	.5	-	-	-	-	-	-	-	-	3 (5)	-	3
Moss - %		-	-	-	-	-	-	-	-	-	-	
Lichens %		2	-	-	1	2	-	-	1	-	-	

SPP = 17

H' = 2.29052

E' = 0.808453

JN of 30/06/05 (512)

Nilapathi & Managad.

NOTES

Flat – Pebbly & bouldery area – Camping area of sheep & goats. (Silt.)

Mysicaria elegans – 5%.

Herbs – 10%; Graminoids – 10%. } Overall 30% cover

Ht of vegetn – 15 cm.

3893 m 31°06'33.1" 79°09'8.3"

	1	2	3	4	5	6	7	8	9	10		
Cous. thoms	1 (3)	-	-	-	-	-	-	-	-	-	1	(·3)
Mysic. elegans	1 (5)	-	1 (2)	-	2 (2)	-	2 (15)	2 (10)	2 (20)	-	10	(5.4)
Elytrichum sp.	2 (1)	-	-	4 (1)	6 (1)	-	2 (1)	3 (1)	2 (1)	-	19	·6
Ribes orientale	1 (1)	-	-	-	-	-	-	-	-	-	1	·1
Saussur. falcon.	1 (2)	-	-	-	-	-	-	-	-	-	1	·2
Oxyria digyna	1 (1)	1 (1)	-	1 (2)	-	-	-	-	-	1 (2)	4	·4
Melica persica	2 (1)	-	-	-	-	-	-	-	-	-	2	·1
Epilobium latif	-	4 (2)	-	-	-	-	-	-	-	-	4	·2
Potent. eurcifolia	-	1 (2)	-	-	-	-	-	-	-	1 (1)	2	·2
Calamogrostis emod	-	4 (5)	4 (2)	6 (2)	-	-	-	-	-	-	14	·9
Elymus semicost.	-	2 (1)	-	-	-	-	-	20 (25)	8 (4)	-	30	3.0
Artem. gmelinii	-	-	1 (20)	-	-	-	-	-	-	-	1	2
Arenaria kashmiria	-	-	-	-	2 (1)	1 (1)	-	-	-	2 (1)	5	·3
Piptatherum sp.	-	-	-	-	-	15 (20)	-	-	-	-	15	2.0
Urtica hyperborea	-	-	-	-	-	1 (2)	-	-	-	-	1	·2
Scrophul. pedicularifol.	-	-	-	-	-	-	1 (10)	-	-	-	1	1
→ Artem. sieversiana	-	-	-	-	-	-	1 (15)	-	-	1 (5)	2	1.5
Brachyactis menthod	-	-	-	-	-	-	-	2 (4)	-	5 (5)	7	·6
Elymus hispidus	-	-	-	-	-	-	-	3 (2)	-		3	·2
Astragalus candol	-	-	-	-	-	-	-	-	1 (5)		1	5

NOTES

Heracl. pinnatum	9 (2)	–	9	.2
Cicer microphyll.	2 (3)	–	2	.3
Rosa ~~webbiana~~ Wobbiana	–	1 (1)	1	.1

SPP = 23
H' = 2.56009
E' = 0.816487

30/06/05

Nilapani

E. Facing broken slope above confluence
Lonicera – Ephedra scrub.
Grazed by Sh + Goats – Sandy soil – 50° slope
Shrubs – 80% Herbs – 10% Graminoids – 5%

3930 m.
~~3916~~ m – 31° 06' 37.6"
79° 09' 10.1"

514

30/06/05

Nilapani – 1 Km before
Confluence of Managad & Nolapani
E facing Bouldery slope – Scrub
vegetn –
CHHEDU – Juniperus indica
Padam – J. macropod
Shrubs – 30% Herbs – 5% Gramin – 5%
40% cover – – Eroded, Exposed
~~2800~~ 40°.

31° 06' 33.6"
79° 09' 40.2"
3914 m

513

	1	2	3	4	5	6	7	8	9	10	
NOTES											
Cicer mic .6	6 (2)	-	1 (2)	1 (1)	-	-	-	1 (1)	-	-	9
Astrag. candoll (xvu) 1.2	3 (2)	-	1 (10)	-	-	-	-	-	-	-	4
Lonic. spinosa 23.5	2 (20)	1 (25)	3 (30)	2 (50)	1 (10)	2 (20)	-	2 (30)	2 (35)	5 (15)	21
Ephedra gerard 8.4	2 (3)	1 (2)	-	-	10 (40)	7 (2)	1 (10) 12	3 (5)	8 (10)	9 (10)	41
Cynoglossum lanc. 3.1	-	1 (1)	-	-	-	-	(30)	-	-	-	13
Piptatherum gracile .4	-	-	-	-	1 (1)	-	5 (3)	-	-	-	6
Cousinia thom. .4	-	-	-	-	-	1 (2)	-	1 (2)	-	-	2
Verbascum thapsus .2	-	-	-	-	-	-	-	2 (2)	-	-	2
Bupleurum longic. .2	-	-	-	-	-	-	-	4 (1)	-	2 (1)	6
Elymus sp. .1	-	-	-	-	-	-	-	4 (1)	-	-	4
Crepis tenuifolia .1	-	-	-	-	-	-	-	-	1 (1)	-	1

spp = 11
H' = 1.89617
E' = 0.790764

	1	2	3	4	5	6	7	8	9	10	
Allium carolin .7	8 (3)	-	3 (1)	1 (1)	4 (1)	1 (1)	-	-	-	-	17
Rhod. heterod. .3	3 (1)	-	-	-	-	1 (2)	-	-	-	-	4
Nepeta podostach .4	7 (2)	-	-	-	-	-	-	-	1 (2)	-	8
Ephedra gerald .2	1 (2)	-	-	-	-	-	-	-	-	-	1
Potentilla biflora .5	2 (5)	-	-	-	-	-	-	-	-	-	2
Rosularia alp .1	1 (1)	-	-	-	-	-	-	-	-	-	1
Elymus sp. .2	6 (2)	-	-	-	-	-	-	-	-	-	6
Poa lahulensis .2	8 (1)	-	-	-	-	-	-	1 (1)	-	-	8

NOTES

		2	3	4	5	6	7	8	9	10	
Junip. indica	12.5	1 (10)	1 (25)	-	2 (60)	4 (30)	-	-	-	-	8
Melica persica	.1	4 (1)	-	-	-	-	-	-	-	-	4
Elymus hispi	.2	-	4 (2)	-	-	-	-	-	-	-	4
Aren. Kashm	.5	-	-	5 (5)	-	-	-	-	-	-	5
Piptatherum grac	1.0	-	-	6 (1)	10 (3)	-	2 (1)	-	4 (3)	3 (2)	25
Bupleur. longic	.5	-	-	-	5 (2)	-	-	-	2 (2)	2 (1)	9
Lonicera hispid	.5	-	-	-	1 (5)	-	-	-	-	-	1
Rosa webbiana	.2	-	-	-	-	2 (2)	-	-	-	-	2
Morina coultaria	.2	-	-	-	-	1 (2)	-	-	-	-	1
Junip. macrop	6	-	-	-	-	-	1 (60)	-	-	-	1
Astragal. cand	1.5	-	-	-	-	-	-	2 (15)	-	-	2
Aren. Kashm.	2.0	-	-	-	-	-	-	-	8 (20)	-	8
Eritrich. canum	.1	-	-	-	-	-	-	-	1 (1)	-	1
Rubia cordif. (?)	1	-	-	-	-	-	-	-	-	1 (10)	1

SPP = 22
H' = 2.64008
E' = 0.854107

~~Scree~~ Slope Nelong V. 515 01-7-05
above Jadung bridge
S-E facing & Scree - 25 m
above Jadganga - 60° - loose
3655 m

Herbs - 40%
~~No gram~~ / No sh.
Gram - ~~5~~ 2%

31° 08' 24.5"
79° 04' 41.1"

NOTES

		1	2	3	4	5	6	7	8	9	10	
Rubia tibetica	11.3	4 (40)	1 (40)	-	-	-	2 (3)	-	-	3 (30)	-	10
Cicer microph	11.1	1 (5)	-	3 (5)	6 (10)	8 (15)	-	5 (25)	4 (25)	2 (1)	7 (25)	35
Melica persica ?	1.9	-	-	2 (5)	1 (1)	-	3 (5)	-	1 (5)	-	-	7
Eritrichum sp	.2	-	-	1 (1)	-	-	-	-	-	1 (1)	-	2
Galium aparine	.5	-	-	-	6 (3)	-	-	-	3 (2)	-	-	9
Sisymbrium bracissif	.1	-	-	-	-	-	5 (1)	-	-	-	-	5
~~Melica sp (broadl.)~~		~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~3 (1)~~	~~-~~	~~1 (-)~~	~~-~~	~~-~~	~~4~~
Allium carolinian	.2	-	-	-	-	-	-	-	-	2 (2)	-	2

~~Ey~~

SPP = 7

H = 1.51022

E' = 0.7761

3889 m ; 31° 11' 15.2" ; 79° 02' 32" [21/07/05] (516)

Jadung – Base of Scree slope E. Facing

NOTES

25°/- Broken - Aconogonum - Artemisia - Oryzopsis. Cover - 8-10% - Herbs - 6% Gram - 2% - Mosses + Lichens - ~0 ; Seasonally grazed by Sh + Goats - (Ca 3000) -

	1	2	3	4	5	6	7	8	9	10	
Acon. tost. 5.2	3 (10)	3 (2)	3 (2)	21 (10)	2 (2)	1 (1)	4 (2)	18 (10)	7 (3)	5 (10)	69
Chenopod. sp. 1	-	1 (1)	-	-	-	-	-	-	-		1
Oryzopsis minutiflora .8	-	7 (2)	6 (2)	4	1 (1)	-	-	8 (3)	-		22
Arabidopsis sp. .2	-	2 (1)	-	-	2 (1)	-	-	-	9 (6)	9	13
Nepeta podostachys .4	-	-	9 (=)	1 (1)	-	-	-	3 (2)	-	1 (1)	5
Melica persica .3 (br)	-	-	-	-	-	2 (1)	-	-	4 (1)	1 (1)	7
Galium aparine .1	-	-	-	-	-	-	-	2 (1)	-	-	2
Rosularia alpestris .1	-	-	-	-	-	-	-	-	1 (1)	-	1

SPP = 8

H' = 1.3162

E' = 0.632958

01/07/05 3924 m | 31° 11' 11.8" | 79° 02' 30.0"

Jadung upper slope - E facing - Broken / Scree

NOTES

20° / Pebbly - Scattered Artemisia sieversiana - Lonicera spinosa [Sh - 3%. Gr Herbs - 5%. Graro. 3%.] Overall 12-15% cover - Grazed by L.S. -

		1	2	3	4	5	6	7	8	9	10
		3	6	4	24	5	4	3	13	9	8
79	Acon. tort 9.1	(1)	(2)	(2)	(20)	(3)	(5)	(4)	(8)	(3)	(3)
19	Cous. thomsonii 1.2	9 (3)	-	6 (5)	-	-	3 (1)	-	-	-	1 (1)
8	Hracl. pinnatum 3	1 (1)	-	-	6 (1)	-	-	-	-	-	1 (1)
11	Nepeta podost .9	2 (1)	-	2 (1)	-	-	6 (5)	1 (2)	-	-	-
8	Polygon. filicaule .6	5 (1)	-	-	-	-	3 (1)	-	-	-	-
13	Oryzopsis 4	3 (1)	2 (1)	-	4 (1)	-	4 (1)	-	-	-	-
53	Artemis. sieversiana 2.5	1 (2)	-	2 (3)	-	-	4 (5)	6 (5)	-	(10)	-
18	Galium aparine .3	-	-	-	17 (3)	-	-	-	-	-	1 (1)
3	Rhamus prostratus 1.0	-	-	-	-	-	3 (10)	-	-	-	-
1	P. Juniperus macroph 1.0	-	-	-	-	-	-	1 (10)	-	-	-
3	Elymus longe-aris .2	-	-	-	-	-	-	1 (1)	2 (1)	-	-

517

SPP = 11

H' = 1.8421

E' = 0.768215

1/7/05 - Jadung Abandoned Agric. Field - 518

NOTES

More sheep & goat dung - Convolvulus arvensis + Verbascum.

Sample point - 3883 m [31 10' 57.2" / 79° 02' 53.9"]

Overall cover - 5% - Ht of grass - 5 cm.

Sparse Hyssopus - Geranium. [Grass - 3%; Herb - 5%]

	1	2	3	4	5	6	7	8	9	10	
Nepeta podostachys 2.6	9 (4)	-	5 (5)	-	9 (2)	13 (5)	2 (2)	1 (2)	2 (2)	6 (4)	47
Cynogloss. wallichi 1.2	4 (2)	1 (1)	2 (1)	2 (1)	6 (2)	3 (1)	1 (1)	-	2 (1)	3 (2)	24
Elymus longe-aris 3.8	20 (5)	22 (3)	-	-	-	24 (5)	32 (5)	48 (10)	26 (5)	28 (5)	208
~~Chenop~~ Axyris am. .4	-	1 (1)	-	4 (1)	-	-	-	-	3 (2)	-	7
Hyssopus offici .9	-	-	1 (2)	-	-	-	-	-	1 (2)	1 (5)	3
Verbascum thap .3	-	-	-	1 (1)	-	-	1 (2)	-	-	-	2
Cousinia thomsonii .2	-	-	-		1	-	-	-	-	-	1
Oryzopsis graci .3	-	-	-	-	2 (3)	-	-	-	-	-	2
Artem. gmelinii .3	-	-	-	-	-	-	-	1 (3)	-	-	1
Polygonum filicaule .1	-	-	-	-	-	-	-	4 (21)	-	-	4

SPP = 11

H' = 1.04267

E' = 0.434827

5/9/05 31° 16' 56.1" 79° 06' 67.6" Tipani - RHS 4211 m

(519)

NOTES

Myricaria scrub in the Valley Bottom @ 15 Hrs -

Bouldery - Myricaria germanica - @ 70% cover

5 m x. plot:- 58 indiv. Ht - 1 m. (7%)

#. Heavy grazing -

Random Quadrats plots:-

		1	2	3	4	5	6	7	8	9	10	
Urt. hyp.	2.7	10 (20)	-	-	-	-	1	2 (5)	-	1 (2)	-	13
Oxyr. digy	1.5	5 (6)	-	-	1 (1)	-	-	10 (5)	1 (2)	6 (2)	-	23
Silene sp.	.2	2 (1)	1 (1)	-	-	-	-	-	-	-	-	3
Carex sp. (long thin)	.3	18 (5)	-	-	-	4 (1)	-		-	-	-	22
Nepeta (aromatic)	.1	-	2 (1)	-	-	-	-	-	-	-	-	2
Artemisia gmelini	.3	-	1 (2)	1 (1)	-	-	-	-	-	-	-	2
Crepis tenuifolia	.1	-	1 (1)	-	-	-	-	-	-	-	-	1
Elymus sp.	.2	-	2 (1)	-	-	-	-	-	2 (1)	-	-	4
Youngia (Crepis flowers)	1.4	-	-	3 (1)	-	1 (1)	24 (5)	-	6 (2)	3 (2)	13 (3)	50
Calamogrostis sp.	.2	-	-	2 (1)	-	-	1 (1)	-	-	-	-	3
Artemisia salsol.	2.5	-	-	1 (2)	2 (5)	3 (7)	-	-	4 (10)	1 (1)	-	11
Cicer microphyll	.2	-	-	-	-	2 (2)	-	-	-	-	-	2
Epilobium sp.	.3	-	-	-	-	-	-	1 (1)	-	9 (2)	-	10
Sisymbrium sp	.2	-	-	-	-	-	-	1 (1)	-	1 (1)	-	2
Melica persica	.2	-	-	-	-	-	-	-	3 (2)	-	-	3

SPP = 15

H' = 2.02918

E' = 0.749314

5/9/05 4230 m; 31° 16·508" 79° 6·654" Tipani

520

NOTES

N. facing steep/broken slope
RHS stream; Heavily grazed.
Chocolate coloured pebbles & loose sandy soil.
Caragana – Eurotia scrub.
Caragana – 25%. Eurotia – 5%.
Overall – 30% 30–32% cover.

	1	2	3	4	5	6	7	8	9	10	
Artem. gmelini 2.1	3 (2)	4 (5)	3 (2)	2 (3)	4 (5)	-	3 (2)	5 (2)	1 (2)	1 (1)	26
Artem. salsol. 9	3 (2)	-	-	-	-	-	11 (7)	-	-	-	14
Acon. tortuos. 2.0	1 (2)	-	-	1 (3)	1 (2)	2 (3)	6 (5)	-	3 (5)	-	14
Eurotia cerat. 1.6	1 (1)	1 (2)	-	-	-	3 (10)	5 -	1 (3)	-	-	6
Lindelophia anchu .5	4 (1)	2 (3)	1 (1)	-	-	-	-	-	-	-	7
Elymus sp. .6	1 (2)	1 (1)	-	-	1 (3)	-	-	-	-	-	3
Caragana versicol. 15.0	-	1 (5)	-	2 (50)	-	2 (70)	-	-	-	3 (25)	8
Nepeta podostach .5	-	-	1 (3)	-	1 (1)	-	-	-	3 (1)	-	5
Eritrichum (miniature) (sp?) .9	-	-	2 (1)	1 (1)	-	2 (1)	5 (2)	1 (1)	1 (1)	3 (2)	15
Cicer microphyll 2.7	-	-	1 (1)	-	-	-	1 (5)	-	10 (25)		12
Oryzopsis sp .7	-	-	1 (1)	-	-	-	-	2 (1)	2 (3)	5 (2)	10
Poa sp .1	-	-	-	1 (1)	-	-	-	-	-	-	1
Heracleum pimatum .5	-	-	-	-	3 (5)	-	-	-	-	-	3
Elymus mutans .1	-	-	-	-	-	-	2 (1)	-	-	-	2
Arenaria festucoid 1.6	-	-	-	-	-	-	-	3 (5)	1 (1)	2 (10)	5
Viola kunawarensis .1	-	-	-	-	-	-	-	-	3 (4)	-	3

Spp = 16
H' = 2.22262
E = 0.803444

5/9/05 Left bank of Rangmanch Gad 4200 m

400 m from bridge

521

NOTES

Way to Rangmanch Gad | Sandy clay

Ht of vegetn – 2 cm | Heavily

Cover – 95% | 31° 16.770'

100 x 5 m — Sedge meadow | 79° 06.354'

		1	2	3	4	5	6	7	8	9	10	
11.7	Plantago tibetic.	140 (20)	35 (10)	11 (2)	18 (3)	9 (2)	58 (5)	80 (20)	74 (10)	82 (25)	65 (20)	572
6.4	Glaux maritima	185 (10)	500 (50)	–	25 (2)	–	–	–	– (2)	–	–	710
2.1	Potentilla multifida	12 (1)	4 (1)	16 (5)	21 (4)	8 (1)	7 (1)	–	5 (5)	15 (2)	1 (1)	89
7.7	Kobresia royleana	100 (15)	1%	–	–	–	–	–	3 (1)	–	60 (30)	163
4	Carex nivalis	100 (20)	10%	–	–	–	–	–	–	38 (10)	–	138
9.5	Carex paddy	56 (30)	30%	–	10%	10%	10%	–	–	–	(5)	56
.9	Lomatogonium sp.	–	1 (1)	–	–	–	1 (1)	2%	8 (2)	6 (2)	2 (1)	18
5.5	Oxytropis lapponica	–	1 (<1)	2 (1)	–	–	1 (1)	3 (2%)	19 (10)	–	–	26
.2	Scirpus planifolius	–	3 (1)	–	–	–	–	–	3 (1)	–	–	6
.4	Taraxacum forrestii	–	–	2 (1)	6 (2)	–	–	1 (1)	–	–	–	9
10	Brassicaceae (UJ)	–	–	2 7%	1 2%	1 1%	–	–	–	–	–	4
4	Elymus nutans	–	–	14 (2)	–	–	–	4 (2)	–	–	–	18
1.1	Geranium grevill.	–	–	1 (1)	24 (5)	25 (5)	–	–	–	–	–	50
10.8	Calamogrostis holciform	–	–	–	1 (1)	–	40%	8 (1)	(2)	300 (40)	(60) 20	369
5.1	Calamogrostis emed sp	–	–	–	15%	12 (1)	–	–	40 (35)	–	–	52
2.0	Lonicera spinosa	–	–	–	–	3 (20)	–	–	–	–	–	3
.1	Poa alpina	–	–	–	–	–	–	–	7 (1)	–	–	11
.2	Gentiana carinat	–	–	–	–	–	–	3 (1)	–	–	2 (1)	5
.5	Kobresia #2	–	–	–	–	–	–	20 5%	–	–	–	20

SPP = 19

H' = 1.99951

E' = 0.67908 (50% overall)

5/9/05 (522)

Rangmanch Nala:- ~~4149~~ 4149 m

NOTES

31° 17.118'

79° 06.262'

S-W facing - steep Eroded slope -

Cicer - Aconogonon - comm -

Pebbly - slope:-

Overall cover - 35 - 40%

Ht - 15 cm -

		1	2	3	4	5	6	7	8	9	10	
Cicer microph.	14.1	3 (30)	5 (25)	1 (5)	1 (20)	6 (30)	1 (5)	2 (2)	2 (3)	2 (5)	5 (15)	28
Lamium rhomb.	.3	5 (3)	-	-	-	-	-	-	-	-	-	5
Aconog. tort.	1.3	4 (3)	-	2 (5)	-	-	-	2 (2)	-	-	4 (3)	12
Heracl. pinnatum	1	-	1 (2)	1 (1)	-	-	-	-	3 (7)	-	-	5
Oryzopsis gracilis	.4	-	-	2 (1)	-	-	1 (5)	-	1 (2)	-	-	4
Nepeta podost	0.6	-	-	-	-	-	2 (2)	-	3 (2)	-	2 (2)	7
Artem. gmelinini	0.6	-	-	-	-	-	1 (4)	-	-	1 (2)	-	2
~~Oryzopsis gra~~ Artemisia salsoloides	2	-	-	-	-	-	-	2 (10)	-	2 (10)	-	4
Crepis	.1	-	-	-	-	-	-	1 (1)	-	-	-	1

SPP = 9

H' = 1.78843

E' = 0.81395

7/09/05 (523) 3591 m 31°00.576'
78° 39.931'

Kandara Bugyal

NOTES

S-E facing - Herbaceous formation
100 % cover - Ht. - 60 cm -
Adjacent to Ormunda patch - deep soil
25° slope - Arnebia. Angelica arch.
Dactylorhiza hatagirea.

		1	2	3	4	5	6	7	8	9	10	
Acon. heterophyll.	.8	2 (1)	-	1 (1)	1 (1)	-	-	1 (2)	3 (3)	-	-	9
Orig. vulg.	7.0	18 (10)	16 (5)	13 (5)	9 (5)	12 (11)	6 (2)	3 (1)	16 (10)	24 (15)	6 (2)	123
Dryopteris sp	.1	3 (1)	-	-	-	-	-	-	-	-	-	3
Ligularia arnic.	3.2	8 (8)	5 (3)	5 (2)	-	3 (5)	5 (3)	1 (1)	2 (3)	7 (2)	6 (10)	41
Morina longif	5.9	6 (10)	17 (25)	4 (3)	3 (2)	2 (5)	6 (2)	4 (2)	6 (3)	4 (2)	1 (3)	53
Dipsacus in.	1.0	2 (1)	1 (1)	2 (2)	4 (1)	2 (2)	4 (2)	-	-	3 (1)	-	18
Anaph. royleana	2.0	15 (10)	3 (2)	3 (1)	4 (1)	-	10 (2)	7 (2)	2 (1)	3 (1)	-	47
Eroger. multir.	1.2	3 (2)	-	2 (1)	4 (3)	-	-	1 (1)	1 (1)	1 (1)	2 (3)	14
Anem. rivularis	1.8	4 (2)	3 (2)	-	2 (3)	1 (1)	4 (2)	2 (1)	3 (5)	2 (1)	2 (1)	24
Pot. atrisanguin	2.8	7 (5)	4 (2)	10 (5)	4 (1)	8 (2)	7 (3)	5 (2)	6 (5)	3 (1)	9 (2)	63
Senec. chrysanth.	1.4	6 (3)	4 (2)	2 (2)	-	1 (1)	1 (1)	-	2 (2)	2 (1)	4 (2)	22
Codonopsis rot.	1	3 (1)	2 (2)	-	1 (3)	-	1 (1)	2 (2)	3 (1)	-	-	12
Delphin. vestit.	1.1	2 (2)	3 (2)	2 (1)	3 (1)	-	3 (1)	1 (1)	3 (1)	3 (1)	3 (1)	23
Corydal. govan.	1.2	3 (3)	4 (1)	7 (2)	1 (1)	2 (1)	-	-	5 (1)	5 (1)	*	27
Artemis. sp. (vestit.)	.3	4 (2)	-	-	6 (1)	-	-	-	-	-	-	10
Polyg. vaticell.	1.4	5 (2)	4 (1)	-	12 (2)	3 (1)	6 (2)	5 (1)	1 (1)	4 (1)	6 (3)	46
Androsace sarment	.2	6 (3)	-	-		-	-	-	-	-	-	6
Achillea millefol.	.8	1 (2)	-	-	1 (1)	5 (1)	-	1 (1)	1 (1)	1 (1)	5 (1)	15
Ranuncul. hirt.	.1	4 (1)	-	-		-	-	-	-	*	*	4
Viola biff.	.5	5 (1)	-	4 (2)	8 (1)	→	3 (1)	-	-	-	-	20

NOTES

		1	2	3	4	5	6	7		10	
13	Astrag. chlorost.	1 (1)	1 (2)	–	2 (1)	–	3 (1)	2 (10)	1 (1)	–	2 (1)	1.7
15	Iris kem.	5 (3)	4 (2)	15 (20)	12 (3)	20 (54)	7 (5)	8 (20)	13 (5)	7 (5)	14 (20)	8.0
19	Phleum alp.	10 (3)	–	–	–	3 (1)	–	2 (1)	–	–	4 (1)	.6
11	Pimpinella div.	3 (2)	–	3 (1)	–	1 (1)	–	3 (1)	–	–	1 (1)	.6
1	Aconogon. rumicif.	–	1 (1)	–	–	–	–	–	–	–	–	.1
16	Thalictr. platycarp	–	3 (2)	2 (1)	1 (1)	1 (1)	2 (1)	3 (1)	–	–	4 (1)	.8
2	Nepeta laevig.	–	2 (1)	–	–	–	–	–	–	–	–	.1
5	Valeriana hardwic	–	4 (2)	–	–	–	–	–	1 (1)	–	–	.3
8	Lychnis inf.	–	2 (1)	–	1 (1)	–	–	5 (2)	–	–	–	.4
17	Swertia ciliata	–	2 (1)	4 (1)	–	2 (2)	–	2 (1)	2 (1)	3 (1)	2 (1)	.8
8	Stellaria decumb.	–	1 (1)	–	–	–	3 (1)	2 (1)	2 (1)	–	–	.4
	Ro Phleum alp.	–	1 (1)	3 (1)	–	–	–	–	–	–	–	.2
8	Geranium wallich	–	–	3 (1)	–	2 (5)	–	–	–	2 (3)	1 (1)	1.0
2	Carex nubigena	–	–	2 (5)	–	–	–	–	–	–	–	.5
2	Pedicul. pectin (?)	–	–	1 (1)	–	1 (1)	–	–	–	–	–	.2
4	Eritrichum sp.	–	–	2 (1)	–	–	2 (1)	–	–	–	–	.2
13	Rumex acetos.	–	–	1 (1)	4 (1)	–	4 (1)	–	3 (1)	–	2 (1)	.5
3	Poa nemoralis (?) Jul	–	–	1 (2)	–	2 (1)	–	–	–	–	–	.3
2	Corydalis crithmif	–	–	–	2 (1)	–	–	–	–	–	–	.1
2	Microstylis muscif	–	–	–	1 (1)	–	–	–	–	–	–	.1
3	Rosa sorii	–	–	–	1 (2)	–	1 (1)	–	–	–	–	.3
4	Gerbera nubig.	–	–	–	1 (1)	–	1 (1)	3 (1)	–	–	–	.3
2	Calamintha umbr.	–	–	–	1 (1)	–	3 (2)	3 (2)	–	1 (1)	–	.6
10	Polyg. polystach	–	–	–	6 (3)	–	–	–	5 (4)	–	–	.8
6	Saussurea hypoleuca	–	–	–	4 (2)	1 (1)	–	5 (1)	–	–	–	.2
4	Bupleurum long	–	–	–	–	3 (1)	1 (1)	–	–	–	–	.2

Spp → 52

NOTES

	Pedicul. hoffmeist. 2	1 (2)	-	-	-	-	2
3	Agrostis pilosula 1	3 (1)		-	-	-	
5	Brachypodium sp. 1	-	5 (1)	-	-	-	[52]
3	Sisymbrium kim 3	-	1 (1)	1 (1)	-	1 (1)	
6	Parnass nubic 2	-	-	3 (1)	3 (1)		H' = 3.298
3	Cuscuta europaea 2	1	-	-	2 (1)		E = 0.832
1	Dactylis glomerata 1	-	-	-	-	1 (1)	
1	~~Vicia~~ (Sp. Kalanjhar)	-	-	-	-	1 (1)	
	Lathyrus laevigatus 1 (Kalan Jhar).						

3083 m
30° 28' 38·2" N
78° 13' 03·0" E

Sokh Kharak (524)
11-05-06

NOTES

Sub-alpine meadow (Edge of Kharsu Oak) - Behind Green Hut.
Mixed Herbaceous formation } Gentle North-W. facing 20°
90%.
Herbs 85%. Gram 5%.

	1	2	3	4	5	6	7	8	9	10	
Pot. argyrophylla (12.5)	20	40	56	31	26	18	21	27	-	5	253
H. Anem. rivularis 2.6	13	6	4	2	6	8	4	9	-	-	52
Selinum vagin (5.8)	11	17	19	10	25	16	17	10	1	-	116
Ran. hirtellus 1.4	22	43	68	17	28	23	57	10	-	6	282
Sibbald. micropet. .9	12	-	-	-	-	4	-	-	3	-	19
Polyg. macrophyll. 1.6	11	23	20	9	8	23	24	25	28	86	257
Poly. vivipurum .4	2	2	-	-	2	3	-	-	-	-	9
Taraxacum offic. .3	1	-	-	-	1	1	-	-	2	2	7
Carex setigera .3	3	2	-	-	-	-	1/	-	-	-	6
Hemiphragma hot. .7	2	-	10	-	-	-	-	2	-	-	14
Arenaria serpyllif. 1.4	3 (8%)	1 (2%)	-	1	3%	1	-	-	-	-	9
Poa sp. .6	2%	-	2%	-	-	-	.5	-	-		9
Geranium wallich 1.4	-	8	-	3	5	7	5	-	-	-	28
Pedicularis pect .8	-	-	6	-	-	1	-	2	1	6	16
Gentiana capitata 2.0	-	-	12	-	6	-	-	19	-	16	53
Stachys melissaef .2	-	-	4	-	-	-	-	-	-	-	4
Carex sp 2 .6	-	-	-	-	-	2%	-	-	-	-	1
Lysimachia prolif. .6	-	-	-	-	-	4	7	-	-	1	12
Potentilla fulgens .4	-	-	-	-	-	-	5	1	2	-	8
Berber. jaesch .1	-	-	-	-	-	-	-	1	-	-	1

NOTES

		9	10	
Primula denticulata	.4	9		9
Prunella vulg.	4.5	90	–	90
Festuca sp	.1	3%	–	1
Epilobium royleanum	.2	1	4	5
Geum elatum	.1	1	–	1
Hyp. nepalense	.1	1	–	1

SPP. = 26

H' = 2.255685

E' = 0.692332

GSR & Jeewan

24.08.06

525

Kyarkoti

NOTES

31° 07. 70' N | 385 om
78 42. 34' E

E facing steep slope - 50°

Berberis jaeskeana scrub -

Juniperus indica - scattered / Burnt.

Ht of vegetn 25 cm

Shrub - 60% Herbs - 35% Graminoids 10%

Heavily Grazed

Soil - Loose, brown with murram.

		1	2	3	4	5	6	7	8	9	10
73	Berb. jaesch. 32.0	60% (12)	10 (50)	(8) 50	5 (35)	(10) (45)	9 (50)	8 (40)	6 (25)	2 (10)	3 (15)
32	Artem. gmelinii (2) 2.5	8 (5)	10 (5)	2 (1)	1 (1)	5 (2)	1 (2)	2 (5)	1 (2)	-	2 (2)
33	Pedicul. pectinata (small) 1.4	5* (2)	1 (1)	11 (4)	3 (1)	-	1 (1)	2 (1)	6 (2)	3 (2)	-
24	Gentianella pedicularis 1.8 moorcroftiana	5 (2)	1 (1)	-	3 (1)	3 (3)	2 (1)	1 (+)	3 (1)	2 (1)	4 (2)
7	Valeriana hardwickii .5	1 (1)	2 (1)	1 (1)	-	-	1 (1)	-	-	-	2 (1)
41	Calamintha umbr. 1.4	2 (2)	1 (1)	7 (1)	1 (1)	6 (2)	4 (1)	3 (1)	4 (1)	5 (2)	8 (2)
40	Iris kumaonensis 3.6	6 (10)	10 (15)	2 (1)	2 (2)	7 (3)	1 (1)	2 (1)	-	7 (2)	3 (1)
7	Brachyactis membranacea .4	1 (1)	-	-	-	-	3 (4)	-	2 (1)	1 (1)	-
29	Geranium gravilleanum 1.3	5 (5)	11 (2)	2 (1)	2 (1)	1 (10)*	2 (1)	1 (1)	-	2 (1)	4 (1)
35	Thymus linearis 18.0	3 (30)	6 (40)	9 (22)	(10) (10)	35	3 (1)	4 (4)	2 (3)	1 (2)	2 (10)
173	Euphrasia officinale 2.0	7 (2)	12 (3)	2 (1)	35 (5)	11 (2)	27 (2)	42 (2)	15 (1)	7 (1)	15 (1)
3	Verbascum thapsus .5	1 (2)	-	1 (2)	-	-	-	-	1 (1)	-	-
16	Rumex acetosa .8	2 (1)	3 (2)	3 (1)	2 (1)	1 (1)	-	2 (1)	-	3 (1)	-
18	Galium aparine 1.1	6 (4)	0 (2)	1 (1)	-	2 (1)	1 (1)	-	2 (1)	-	6 (1)



		1	2	3	4	5	6	7	8	9	10
6 Senecio laetus	.5	3 (3)	-	-	-	-	2 (2)	-	1	-	-
27 Trisetum spicatum	1.2	6 (2)	6 (2)	1 (2)	-	2 (1)	3 (1)	2 (1)	4 (1)	1 (1)	2 (1)
4 Helictrotrichon vires	.3	1 (1)	-	-	-	-	1 (1)	-	2 (1)	-	-
6 Delphinium vestitum	.4	-	2 (1)	-	-	-	1 (1)	-	-	2 (1)	1 (1)
8 Epilobium royleanum	.6	-	1 (1)	-	2 (1)	1 (1)	1 (1)	2 (1)	-	-	1 (1)
42 Festuca valesiaca	.9	-	6 (1)	6 (1)	-	2 (1)	4 (1)	1 (1)	6 (1)	15 (2)	2 (1)
25 Carex setigera	.7	-	6 (1)	10 (2)	-	-	4 (1)	2 (1)	-	1 (1)	2 (1)
8 Sisymbrium himal.	.3	-	-	2 (1)	-	-	-	2 (1)	-	4 (1)	-
12 Swertia ciliata	.5	-	-	1 (1)	-	-	2 (1)	1 (1)	3 (1)	-	5 (1)
10 Trigonella emodi	1.2	-	-	6 (10)	-	-	2 (1)	-	-	2 (1)	-
3 Potentilla argyrophylla	.4	-	-	2 (2)	-	-	1 (2)	-	-	-	-
7 Erigeron multiradi	.4	-	-	1 (1)	-	-	3 (1)	2 (1)	-	1 (1)	-
18 Anaphalis royleanus	1.4	-	-	-	6 (5)	1 (1)	2 (1)	-	3 (2)	-	6 (5)
4 Cystopteris fragilis	.4	-	-	-	2 (1)	-	-	1 (2)	-	-	1 (1)
1 Juniperus indica	.3	-	-	-	-	-	1 (3)	-	-	-	-
6 Calamagrostis emod.	.4	-	-	-	-	-	2 (1)	-	-	4 (3)	-
1 Rosa macrophylla	.1	-	-	-	-	-		1 (1)	-	-	-
5 Bupleurum longic.	.3	-	-	-	-	-		2 (1)	1 (1)	2 (1)	-
4 Polygonum islandica	.1	-	-	-	-	-	-	-	4 (1)	-	-
6 Potentilla atrisanguinea	.6	-	-	-	-	-	-	-	-	2 (1)	4 (5)

T Spp = 34

$H' = 2.912901$

$E' = 0.826036$

526

24/8/06
Kyarkoti [Jalandhri V.]

NOTES

31° 07.76' N | 3900 m.
78° 42.34' E |

E facing broken but stable slope 30°
Soil – compact / skeletal – X Ht of vegetn 20 cm
Juniperus indica 2% } Berg. drachej
Danthonia 80% } Rest Boulders
Herbs 5% } overall 90% v.c

		Small Tussocks	1	2	3	4	5	6	7	8	9	10
		# Tussocks	4	3	(10)	12	28	6	5	6	2	3
57	Danth. cach.	40.0	(40)	(10)	(50)	(50)	55	45	(40)	(65)	(10)	(35)
56	Pot. argyr.	4.7	3 (5)	3 (4)	28 (5)	–	4 (3)	4 (2)	2 (1)	1 (2)	10 (20)	2 (5)
24	Iris kum	2.0	2 (5)	9 (2)	3 (3)	1 (1)	4 (5)	–	–	3 (1)	–	2 (1)
6	Bupl. longic	.4	2 (2)	–	–	–	1 (1)	–	–	–	3 (1)	–
17	Galium aparine	.8	2 (2)	2 (1)	–	–	–	–	1 (1)	–	2 (1)	10 (3)
17	Phlomis brad.	1.3	1 (1)	2 (1)	–	3 (2)	3 (2)	6 (5)	–	2 (2)	–	–
7	Calamogr. emod	.4	1 (1)	1 (1)	–	1	–	1 (1)	–	–	3 (1)	–
9	Eriger. multir.	.4	2 (1)	–	–	–	–	2 (1)	3 (1)	–	–	2 (1)
~~69~~	~~Rotyg. macrophy~~ Bist. vivipara	.5	2 (1)	2 (1)	–	–	–	–	–	–	1 (2)	–
32	Euphrasia off.	1.0	2 (1)	4 (1)	–	4 (2)	2 (1)	3 (1)	3 (1)	–	2 (1)	12 (2)
31	Anaphalis nubigen	.7	–	25 (5)	–	–	–	–	–	4 (1)	–	2 (1)
10	Anemone polyanthes	1.1	–	3 (5)	–	–	–	–	3 (5)	–	2 (1)	–
24	Gentianella ~~patul~~ moorcroftii	.9		4 (1)	–	7 (2)	4 (2)	6 (2)	2 (1)	1 (1)	–	–
7	Senecio laetus	.4	–	1 (1)	–	–	–	2 (1)	1 (1)	–	–	3 (1)
6	Potentilla cuneifolia	1.2	–	3 (2)	–	–	–	–	–	–	3 (10)	–
24	Bergenia ~~stracheyi~~	2.2	–	–	7 (5)	–	6 (2)	18 (10)	2 (5)	–	1 (1)	–
15	Polygonum polystach	2.2	–	11 (15)	2 (1)	–	–	–	–	–	–	2 (5)

NOTES

		4	5	6	7	8	9	10	
62	Bistort Polyg. viviparum	12 (4)	4 (2)	5 (3)	12 (3)	9 (3)	6 (3)	15 (5)	2.3
7	Polygonatum hookeri	2 (1)	-	1 (1)	-	-	4 (1)	-	.3
4	Pedicularis megalorhyncha sp	1 (1)	-	-	3 (1)	-	-	-	.2
4	Saussurea roylei sp	2 (1)	-	1 (1)	1 (1)	-	-	-	.3
4	Tanacetum gracile	2 (1)	-	-	-	2 (1)	-	-	.2
9	Androsace globifera	2 (1)	-	-	4 (2)	-	-	3 (1)	.4
3	Salix lindleyana	-	2 (1)	-	-	-	1 (1)	-	.2
1	Heracleum candi	-	1 (1)	-	-	-	-	-	.1
4	Senecio Raotus	-	-	1 (1)	-	-	3 (1)	-	.2
1	Rosa macrophylla var	-	-	-	1 (1)	-	-	-	.1
12	Kobresia nepalensis	-	-	-	-	2 (2)	10 (2)	-	.4
2	Swertia ciliata	-	-	-	-	-	2 (1)	-	.1
1	Pedicularis pectinata (plus)	-	-	-	-	-	1 (1)	-	.1
1	Paracaryum sp	-	-	-	-	-	-	1 (1)	.1

RTSPP = 30

H' = 2.885641

E' = 0.848419

(528) Kyarkoti (527) 24/08/06

NOTES

Gentle (10°) S-E facing slope - Stable - Dwarf Herbaceous formation

31° 08.11' N; 78° 42.32' E; 3750m.

Scattered Juniperus indica - 2%.

Herbs - 60%; Graminoids - 10%.

Overall ground cover - 90%

$\bar{X}$ Ht of vegetn - 5 cm.

Soil - Brown - Compact.

		1	2	3	4	5	6	7	8	9	10
87	Sibbald. cuneif. 31.8	6 (40)	4 (15)	6 (20)	4 (18)	10 (30)	20 (70)	(15) (50)	(10) (40)	8 (20)	4 (15)
47	Iris kum 2.7	19 (10)	10 (5)	-	5 (6)	1 (1)	-	-	4 (2)	2 (1)	6 (2)
24	Phlomis bract 1.8	3 (5)	2 (1)	3 (2)	4 (3)	6 (3)	-	3 (1)	2 (1)	1 (0)	- (-)
28	Bupleurum longic. 1.4	1 (1)	1 (1)	6 (2)	4 (3)	7 (3)	2 (1)	3 (1)	2 (1)	1 (-)	1 (1)
112	Tarax. offici 3.2	29 (12)	7 (3)	9 (2)	16 (5)	9 (2)	3 (1)	4 (1)	7 (2)	6 (1)	22 (3)
23	Polygonatum Roskeri 1.9	3 (1)	4 (1)	-	1 (1)	3 (2)	1 (-)	4 (1)	-	2 (1)	5 (1)
56	Festuca valesiaca 3.1	12 (5)	3 (1)	3 (1)	6 (10)	8 (6)	2 (1)	2 (1)	4 (1)	6 (2)	10 (3)
32	Ranun cul. hist ell. 1.3	8 (3)	6 (2)	2 (1)	3 (1)	6 (2)	3 (1)	1 (1)	-	2 (1)	1 (1)
25	Thymus linearis 7.2	3 (2)	-	6 (40)	6 (20)	1 (2)	4 (3)	(2) (3)	2 (2)	1 (1)	-
85	Plantago tibetica 2.4	6 (2)	34 (5)	6 (2)	11 (5)	12 (5)	-	6 (2)	-	4 (1)	5 (2)
4	Origanum vulgare .4	1 (1)	-	-	-	3 (-)	-	-	2 (2)	-	1 (1)
39	Swertia ciliata 1.6	1 (1)	2 (1)	2 (1)	7 (3)	4 (2)	3 (2)	4 (1)	7 (2)	6 (2)	3 (1)
23	Calamintha umbrosa 1.0	6 (3)	3 (3)	-	6 (2)	-	-	-	6 (1)	-	2 (1)
85	Carex nubigena 4.4	20 (10)	-	3 (15)	25 (12)	3 (1)	21 (3)	-	-	3 (1)	10 (2)
61	Phleum alpinum 1.2	22 (3)	12 (2)	2 (1)	10 (2)	4 (1)	-	6 (1)	3 (1)	-	2 (1)
7	Picracarpum sp. .4	2 (2)	-	-	-	-		1 (1)	3 (1)	-	-

		2	3	4	5	6	7	8	9	10
9	Senecio laetus ·6	2 (1)	-	-	3 (2)	-	1 (1)	-	2 (2)	-
16	Dubaea hispida ·6	-	4 (2)	-	-	6 (2)	2 (1)	-	-	4 (1)
12	Poa sp. ·5	-	12 (5)	-	-	-	-	-	-	-
23	Potentilla atrisanguinea ·3	-	6 (5)	-	-	1 (1)	2 (1)	6 (2)	7 (3)	1 (1)
10	Elsholtzia. strobilifera ·3	-	6 (2)	-	-	-	4 (1)	-	-	-
15	Rumex acetosa ·6	-	-	3 (1)	1 (1)	-	2 (1)	1 (1)	3 (1)	5 (1)
8	Prenanthus violoides ·3	-	-	1 (1)	-	5 (1)	-	-	2 (1)	-
1	Gypsophylla ceratioides ·1	-	-	-	1 (1)	-	-	-	-	-
20	Polygonum viviparum ·9	-	-	-	5 (3)	-	3 (1)	-	-	12 (5)
1	Cerastium sp. ·1	-	-	-	-	1 (1)	-	-	-	-
1	Orobanche epithymum ·1	-	-	-	-	-	1 (1)	-	-	-
1	Sisymbrium himal. ·1	-	-	-	-	-	1 (1)	-	-	-
36	Carex obscura ·5	-	-	-	-	-	36 (5)	-	-	-
2	Anaphalis royleanus ·1	-	-	-	-	-	-	2 (1)	-	-
1	Artemisia gmelin ·3	-	-	-	-	-	-	-	1 (3)	-

T. Spp = 31

H' = 2·95534

E' = 0·860615

(520) Kyarkoti 24/08/06

NOTES

0° Flat, Plateau - Extensive - Herbaceous formation -

31° 08.442' N | 3846m |
78° 41.896' E

$\bar{x}$ ht of vegetn 6 cm.

Heavily grazed -

Herbs - 90%. Graminoids - 5%.

			1	2	3	4	5	6	7	8	9	10
101	Sibbaldia cuneata	15.7	10 (60)	20 (5)	35 (80)	1 (1)	20 (70)	5 (3)	3 (10)	5 (70)	-	2 (8)
232	Pot. argyrophylla	40.5	26 (30)	60 (70)	15 (15)	45 (90)	7 (10)	50 (65)	(8) (20)	10 (55)	6 (15)	5 (45)
130	Dubyea hispida	2.2	26 (5)	5 (2)	31 (5)	6 (2)	47 (3)	12 (2)	1 (1)	-	2 (1)	-
135	Calamagr. emod.	2.8	25 (5)	26 (3)	15 (3)	18 (3)	25 (5)	22 (4)	1 (1)	-	3 (1)	-
35	Carex obscura	.6	6 (2)	20 (3)	-	-	-	6 (1)	-	-	3 (1)	-
10	Paracaryum sp	.7	-	1 (1)	-	6 (1)	-	3 (1)	-	4 (1)	3 (1)	1 (1)
6	Ranunculus Listellus	.3	-	1 (1)	-	-	-	-	2 (1)	-	-	3 (1)
3	Phlomis bracteosa	.2	-	-	1 (1)	-	-	-	-	2 (1)	-	-
6	Gentiana capitata	.3	-	-	-	-	1 (1)	-	2 (1)	-	3 (1)	-
6	Senecio laetus	.3	-	-	-	-	-	2 (1)	-	3 (1)	-	1 (1)
9	Elsholtzia strobilif	.3	-	-	-	-	-	-	1 (1)	-	2 (1)	6 (1)
3	Trisetum spicatum	.1	-	-	-	-	-	-	:	1 (1)	-	2
2	Aconitum heterophyllu	.1	-	-	-	-	-	-	-	2 (1)	-	-

T. Spp = 13

H' = 1.776897526

E' = 0.692761251

24/8. (529) Kyarkoti - Valley Bottom (Terminal Moraine) (Stable)

NOTES

Flat - Pebbly - sandy

31°.08.76' N | 3850 m. | Heavy grazing by cattle
78° 41.07' E

Bistorta affinis dominated - Grazed

X ~~Aveg.~~ Ht - 15 cm. | overall 85-90%

No shrub; little graminoids.

		1	2	3	4	5	6	7	8	9	10
124 Bist. affinis	44.8	6 (45)	10 (60)	30 (75)	10 (50)	25 (60)	35 (90)	4 (20)	10 (35)	1 (5)	3 (8)
14 Pot. argyrophyll.	3.1	4 (10)	3 (20)	1 (3)	-	-	1 (1)	-	1 (2)	4 (5)	-
28 Sibbaldia cuneata	8.2	10 (25)	-	1 (2)	6 (20)	-	-	-	3 (10)	-	8 (25)
26 Gentianella moorcroftia ~~pal~~ sp	.7	13 (3)	-	-	4 (2)	-	-	6 (1)	-	3 (1)	-
13 Cystopteris sp	.6	12 (5)	-	-	-	-	-	-	1 (1)	-	-
4 Potentilla fragaroides (cf)	.3	2 (1)	-	-	1 (1)	-	-	1 (1)	-	-	-
32 Paracaryum sp.	.8	2 (1)	4 (2)	-	-	10 (2)	5 (1)	-	4 (1)	-	7 (1)
7 Cicerbita macrorhiza	.4	-	2 (1)	3 (2)	-	-	-	2 (1)	-	-	-
5 Cicerbita violaef	.2	-	3 (1)	-	-	-	-	-	2 (1)	-	-
10 Thymus lineare	1.9	-	3 (10)	-	-	-	-	-	3 (4)	-	4 (15)
11 Calamogr. emod.	.4	-	-	-	6 (2)	3 (1)	-	-	2 (1)	-	-
5 Festuca sp	.2	-	-	-	3 (1)	-	-	-	-	-	2 (1)
6 Galium aparine	.5	-	-	-	-	2 (1)	2 (1)	-	-	-	2 (3)
148 Polygonatum hookeri	2.1	-	-	-	-	126 (15)	-	-	18 (5)	-	4 (1)
2 Silene sp	.1	-	-	-	-	2 (1)	-	-	-	-	-
								-	-	-	-
									-	-	
										-	

T. Spp = 15

H' = 1.95279491

E' = 0.721107352

U. Jalandhri - / Kyarkoli (530) 24/8 Contd

NOTES

Terminal moraine — Rocky —
Flat —
31° 08.78' N | 3850m. H' = 1.374317798
78.40.80 E | E' = 0.485073883

Heavily grazed — dwarf Willow — 30%

Herbs — 5%, Gram — 5%

Lonicera myrtillus - 5%
Rhodo. anthopogon - 2.

× ht of vegetn - 8 cm.
Overall cover — 60%.

mosses - 3%, Lichens 5%

		1	2	3	4	5	6	7	8	9	10
85	Salix Karelinii 37.5	10 (35)	8 (25)	12 (40)	20 (65)	8 (55)	12 (65)	4 (30)	6 (45)	3 (10)	2 (5)
302	Calamogr. emod 2.8	90 (3)	52 (3)	62 (5)	36 (4)	28 (2)	33 (2)	35 (3)	10 (2)	6 (1)	30 (3)
9	Senecio coronopifolius .4	3 (1)	1 (1)	-	-	-	2 (1)	-	-	3 (1)	-
6	Epilobium sp .3	1 (1)	-	-	-	-	-	2 (1)	-	3 (1)	-
447	Euphrasia offician. 3.3	95 (10)	85 (8)	55 (2)	68 (5)	-	53 (2)	-	65 (3)	46 (3)	-
10	Gentianella moorcroftian .4	-	6 (2)	-	-	-	-	-	3 (1)	-	1 (1)
22	Festuca sp .8	-	-	3 (1)	-	-	-	3 (2)	-	16 (5)	-
3	Lonicera myrtillus 1.1	-	-	1 (1)	-	-	-	2 (10)	-	-	-
18	Bistorta vivipara .4	-	-	-	2 (1)	-	-	-	6 (1)	10 (2)	-
2	Agrostis pilosula .1	-	-	-	-	-	2 (1)	-	-	-	-
2	Arenaria ~~Festuycoides~~ .2	-	-	-	-	-	1 (1)	-	-	1 (1)	-
5	Anaphalis cuneifolia .1	-	-	-	-	-	-	2 (-)	-	-	3 (4)
1	Bupleurum lanc. .1	-	-	-	-	-	-	-	-	-	1 (1)
4	Saxifraga flagellar .1	-	-	-	-	-	-	-	-	-	4 (4)
1	Bergenia ciliata .1	-	-	-	-	-	-	-	-	-	1 (1)
3	R.h. anthopog .7	-	-	-	-	-	-	-	-	2 (5)	1 (2)
3	Cassiope fastig .2	-	-	-	-	-	-	-	-	-	3 (3)

T. sp = 17

53 # 24/8 Kyarkoti

T. spp = 15

NOTES

NE facing – Moist scrub – NE

H' = 2.134981 918

E' = 0.78838 3453

31° 08.55' N | 3900 m.
78 41.37' E

Shady – Salix karelinii – stunted (matted shrub) –

Smooth – 30° – Heavily grazed –

(x̄) ~~Overall~~ ht – 15–20 cm

Cover – Willow – 80%.

Herbs – 5%.

Gramin. 5%.

Soil – thin

mosses (5%)

Approx. covers ÷ 10 = #

			1	2	3	4	5	6	7	8	9	10
45	Salix karelinii	47.5	(80)	(90)	(65)	40	(40)	(60)	(30)	(35)	20	(15)
80	Dubaea hispida	2.1	6 (3)	13 (3)	15 (3)	15 (6)	12 (3)	8 (3)	4	3	1	3
36	Pot. atrisanguin	1.3	2 (1)	6 (2)	6 (2)	–	–	6 (3)	–	3 (1)	6 (2)	7 (2)
2	Aconitum violaceum	.2	1 (1)	–	–	–	–	–	1 (1)	–	–	–
7	Geran. collinum	.3	2 (1)	2 (1)	–	–	–	–	–	3 (1)	–	–
139 (139)	Calamagr. emod	1.9	2 (1)	16 (2)	17 (3)	20 (3)	26 (3)	–	5 (1)	28 (3)	18 (2)	7 (1)
13	Agrostis sp	.4	3 (1)	2 (1)	–	–	6 (1)	–	–	2 (1)	–	–
4	Paracaryum	.5	3 (1)	–	–	–	–	–	1 (+)	–	–	–
55	Bistorta vivip.	1.6	2 (1)	4 (1)	4 (2)	7 (2)	–	4 (1)	–	6 (2)	8 (2)	22 (5)
24	Anaphalis nubig.	1.0	–	10 (5)	3 (1)	6 (2)	–	–	2 (1)	–	3 (1)	–
14	Sibbaldia cuneata	4.7	–	8 (3)	6 (2)	4 (2)	80 (50)	–	5 (15)	1 (2)	1 (1)	1 (3)
23	Pot. argyrophylla	.7	–	–	2 (1)	–	14 (3)	4 (2)	–	–	3 (1)	–
3	Phlomis bract	.1	–	–	–	–	–	–	2 (1)	–	1 +	–
5	Festuca rubesia	.2	–	–	–	–	–	–	–	–	4 (2)	1 +
2	Kobresia nepale	.2	–	–	–	–	–	–	–	–	–	2 +

U slopes of Kyarkoti 25/08/06 (533)

GSR + JSJ

NOTES

E facing - Gentle (stable) meadow

~~Herbaceous~~ Kobresia + mixed herbaceous

Shrubs - nil

Graminoids - 60%

Herbs - 25%

Moses - 5-10%

$\bar{X}$ cover - 90-92%

$\bar{X}$ height - 4-5cm.

Heavily grazed sheep, goats equids

Lichens 2%

31° 08.14' N | 4180 m.

78° 41.36' E | compact soil 5-10cm deep

# = Cov ÷ 10	(dwarf)	1	2	3	4	5	6	7	8	9	10
24 Kobresia nepalensis	24.8	(20)	(40)	(3)	(25)	(20)	(35)	(20)	(35)	(15)	(35)
56 Festuca valesiaca	1.5	10 (3)	12 (3)	2 (3)	-	-	2 (1)	8 (1)	7 (1)	3 (1)	12 (2)
131 Kobresia royleana ~~Carex obscura~~	1.9	20+ (2)	35 (5)	28 (5)	4 (+)	8 (1)	12 (1)	6 (1)	7 (1)	11 (1)	5 (1)
318 Thalictrum alpinum	7.1	100+ (20)	35 10	28 (10)	40 (8)	15 (3)	25 (5)	15 (3)	30 (6)	20 (4)	10 (2)
47 Sibbaldia cuneata	18.8	10 (50)	22 (30)	3 (45)	2 (15)	1 (5)	3 (20)	2 (15)	2 (5)	1 (2)	1 (1)
37 Sauss tarraxicif	1.1	4 (2)	2 (1)	4 (1)	8 (2)	4 (1)	2 (1)	3 (1)	-	2 (1)	7 (1)
96 Pot. argyrophylla	4.2	14 (15)	6 (5)	20 (15)	15 (5)	14 (5)	6 (2)	4	7	9	1
23 Cyananthus lobatus	.6	5 (2)	4 (1)	3 (1)	4 (1)	1 (1)	-	-	2	1	3
119 Taraxa. offic.	1.9	52 (10)	8 (3)	3 (1)	6 (1)	4 (1)	15 (3)	12	6	3	16
153 Euphrasia off	1.2	10 (2)	7 (2)	42 (3)	22 (3)	16 (1)	7 (1)	17	12	4	8
18 Gentianella moorcrf	.2	6 (1)	6 (1)	-	-	-	-	3	2	1	-
297 Anaph. cuneifolia	2.5	90 (10)	70 (3)	53 (2)	56 (5)	28 (2)	45 (3)	14	22	6	13
174 Bistorta vivipara	2.4	16 (2)	7 (1)	41 (10)	25 (6)	18 (3)	2 (1)	31	5	18	22
14 Draba amoena	.3	2 (+)	3 (1)	1 (+)	-	-	-	4	1	-	3

NOTES

		1	2	3	4	5	6	7	8	9	10
6	Geranium collinum .4	1 (1)	1 (1)	–	1 (1)	–	–	1	–	–	2
23	Gentiana carinata .5	3 (1)	5 (1)	2 (+)	3 (1)	2 (1)	3 (1)	1	–	4	–
4	Pedicularis sp .1	3 (1)	–	–	–	–	–	1	–	–	–
6	Senecio coronopif .1	2 (1)	–	–	–	–	–	–	3	1	–
9	Aster diplostephoides	2 (1)	–	–	–	–	–	4	–	2	1
12	Agrostis sp .3	4 (+)	1 (1)	3 (+)	1 (1)	–	–	–	3 (+)	–	5
3	Viola biflora .2	–	2 (1)	–	–	–	–	1 (1)	–	–	–
9	Alchemis pauciflora .8	–	2 (1)	1 (1)	–	–	–	3 (1)	–	2 (1)	1 (+)
10	Poa sp. .2	–	–	4 (1)	–	–	–	–	6 (1)	–	–
10	Lomatogon carinth .3	–	–	–	–	1 (1)	6 (1)	–	3 (1)	–	–
4	Gentiana capitata .1	–	–	–	–	1 (1)	–	–	–	3 (+)	–
4	Calamagrostis sp .01	–	–	–	–	–	–	2	–	–	2 (+)
4	Arenaria bryophylla .2								2 (1)	–	2 (1)
3	Salix lindleyana .1								2 (1)	–	+
										–	

Spp = 28

H' = 2.465692

E' = 0.739958

25/8/06

Kyarkoti

538

NOTES

Base of Avalanche trap – S.E facing – Gentle bouldery slope 10°–15°.

X̄ Ground cover (Patchy) – ~~60~~ 56 %. } 40%–50% Rocks

X̄ height – 10 cm (0–15 cm).

Herbs (Anaphalis) – 20 %. } Grassy Blue sheep.

Monocots (Juncus) – 10 %.

Others – Corydalis

31° 07.76' N | 4290 m. | Masses – 10%

78° 41.27' E

			1	2	3	4	5	6	7	8	9	10	
72	Anaph. nubig.	4.4	10 (20)	3 (1)	7 (5)	11 (8)	–	20 (10)	11	7	3	–	30
13	Sibb. cuneif.	2	6 (15)	4 (2)	1 (+)	2 (2)	–	–	–	–	–	–	
30	Oxyria digyna	1.5	3 (3)	3 (1)	8 (3)	3 (2)	2 (1)	5 (1)	–	1 (2)	4 (2)	–	
21	Poa pagophylla	.4	5 (1)	4 (1)	2 (+)	6 (1)	–	4 (1)	–	–	–	–	
41	Juncus sp.	.4	30 (2)	2 (1)	6 (1)	1 (+)	–	–	–	2 (+)	–	–	
13	Ranunculus hirt.	.5	6 (2)	2 (1)	3 (1)	1 (+)	–	–	–	1 (1)	–	–	
15	Polygon. ~~islandi~~ filicale		15 (1)	–	–	–	–	–	–	–	–	–	.1
2	Bupleurum sp (dwarf)		2 (1)	–	–	–	–	–	–	–	–	–	.2
2	Pot. argyrophylla		1 (1)	–	–	–	–	–	–	–	1 (1)	–	.1
4	~~Arenaria~~ Stellaria decumbens ~~saxifragoides~~		–	2 (5)	1 (+)	–	–	–	–	1 (1)	–	–	.6
12	Corydalis meifolia		–	4 (1)	2 (1)	1 (+)	–	–	1 (+)	3 (2)	–	1 (+)	.5
1	Poa sp 2		–	1 (1)	–	–	–	–	–	–	–	–	.1
2	Pleurosperm. candollei		–	1 (1)	–	–	–	1 (1)	–	–	–	–	.2
14	Saxifraga flagellaris		–	–	9 (1)	1 (+)	1 (+)	–	–	–	3 (+)	–	.3
3	Gentiana phyllocalyx or (vernusta)?		–	–	–	2 (1)	–	–	–	1 (+)	–	–	.1

NOTES

		4	5	6	7	8	9	10			
1	Carex sp (nivalis)	1 (1)	-	-	-	-	-	-			.1
1	Festuca valesi?	-	-	1 (1)	-	-	-	-			.1
1	Arenaria festuc.	-	-	-	1 (+)	-	-	-			.01
1	Waldheimia tomentos	-	-	-	-	-	-	1 (1)			.1
1	Saxifraga sibirica	-	-	-	-	-	-	1 (+)			.1

SPP = 20

H' = 2.268571622

E' = 0.757267811

25/8 (53A)

U - Kyarkoti -

NOTES

N facing slope (old - stable - lateral moraine) -

Cassiope - Rh. anthopogon - matted shrub.

25 - 30° slope -

~~Dense~~ Soil - loamy - brown - stable - Humus Rich.

Cassiope - 60%.
Rh. anthop. - 10%.
Gaulth. trichoph. 5%.
Herbs - 5%.
Gram. - 5%.

Mosses - 2-3%
$\bar{x}$ ~~overall~~ ht 25cm
$\bar{x}$ cover - 90%.

31° 07.91' N | 4050 m.
78° 41.58' E

		1	2	3	4	5	6	7	8	9	10
29 Cassiope fasti.	27.5	(40)	(50)	(40)	(15)	(25)	(30)	(35)	(25)	(15)	
20 Gauth. trich.	21.2	(20)	(15)	(40)	(2)	(30)	(15)	(20)	(15)	(25)	
120 Bist. vivipara	2.4	30 (10)	27 (5)	6 (1)	3 (5)	40 (8)	16 (2)	15	22	32	
50 Acon. violaceum	1.0	6 (1)	3 (1)	4 (3)	2 (1)	10 (2)	4 (1)	4	6 (1)	11 (2)	
10 Anem. polyanth.	.8	3 (1)	4 (2)	-	1 (2)	1 (1)	-	-	1 (2)	-	
4 Kobr. nepal.	5.9	40 (10)	(12)	(7)	(5)	(5)	(6)	(5)	(2)	(4)	
20 Valerian. pyrolaefol.	1	16 (1)	1 (1)	1 (1)	3 (4)	2 (1)	2 (1)	-	1 (1)	-	
9 Salix kareline	1.5	4 (6)	1 (1)	2 (2)	-	2 (1)	(4)	(1)	-	-	
3 Sibbald. micropetala	.2	3 (2)	-	-	-	-	-	-	-	-	
128 Aletris pauciff.	1.9	22 (3)	3.5 (5)	24 (4)	16 (2)	15 (2)	10 (1)	4 (1)	2 (1)	6 (1)	
8 Gentiana phyllocalyx (venusta)	.6	3 (1)	-	2 (1)	-	-	-	-	3 (1)	-	

		1	2	3	4	5	6	7	8	9	10	NOTES
15	Sauss. taraxicif. ·6	3 (1)	-	-	-	2 (1)	2 (1)	-	1 (+)	3 (1)	4 (1)	
6	Rhodo. anthop. 11·2	6 (5)	(10)	(4)	(15)	(10)	(5)	(3)	(15)	25	(20)	
41	Anaph. nub. ·8	-	1 (1)	30 (2)	4 (1)	2 (1)	-	-	-	1 (1)	3 (2)	
1	Ciarbita lessertioides ·1	-	-	1 (1)	(1)	-	-	-	-	-	-	
2	Swertia petiolata ·1	-	-	-	2 (1)	-	-	-	-	-	-	
12	Sibbald. cuneata ·10	-	-	-	1 (1)	-	-	3 (+)	-	-	8 (5)	
4	Viola biflora ·2	-	-	-	3 (1)	1 (1)	-	-	-	-	-	
2	Picrorhiza kurroa ·2	-	-	-	1 (1)	-	1 (1)	-	-	-	-	
10	Agrostis sp ·3	-	-	-	4 (2)	2 (+)	4 (+)	-	-	-	-	
6	Trautlius acaulis ·3	-	-	-	1 (1)	1 (+)	3 (1)	-	1 (+)	-	-	
1	Rh. campanulatum ·2	-	-	-	-	-	-	-	-	-	1 (2)	
1	Trisetum spicatum ·1	-	-	-	-	-	-	-	-	-	(+)	

spp = 23

H' = 2·121451439

E' = ~~0·676509~~ 0·676592363

10/6/03 - Dhara Thach (535)
Kunawar WLS 3500 m

NOTES

E facing slope 10° -
Deep soil - Heavily grazed

	1	2	3	4	5	6	7	8	9	10	$\bar{x}$ cov
Morina longif.	3	-	-	-	-	-	-	-	-	-	.3
Artem. vestita dem's	12	13	-	-	-	-	-	-	-	-	2.5
Pot. antrosang.	17	20	4	-	1	-	-	-	7	-	.7
Rheum austr	3	-	-	-	-	-	-	-	-	-	.3
Pedic. pecti	1	-	-	-	-	-	-	-	-	-	.01
Cyn. wallich.	6	3	4	6	6	7	4	10	4	4	5
Thlaspe alp	4	6	6	2	2	1	4	2	-	4	1.4
Gypsophylla cerat	3	-	-	-	2	-	-	-	-	-	.5
Selin vagi	8	9	-	-	-	-	-	-	-	-	1.8
Stachys meliss	2	11	10	3	9	16	-	6	12	1	6.9
Valer. hardwickii	4	-	-	-	2	-	-	1	-	1	.8
Thalic. chelido	3	1	-	-	-	-	-	-	-	-	.4
Stipa ~~[illegible]~~ roylei	2	-	22	-	-	-	-	-	-	-	.6
Swertia purpurasc	7	-	-	-	-	-	-	-	-	-	.7
Barbarea interm.	2	11	19	9	5	2	11	6	2	5	7.2
Ranunc. hirtell.	1	2	1	-	-	1	3	4	2	-	1.4
Arenaria sp.	1	7	3	2	2	-	2	1	2	1	2.2
Poa alpina	3	-	-	5	4	17	3	5	-	2	1.8
Cirsium verutum	1	2	3	-	1	-	-	-	-	-	.7
Dryopteris chrysoc	3	1	21	2	4	6	7	2	2	3	5.1
Rumex acetosa	3	-	-	-	-	-	-	-	-	-	.3
Parnass nubic	1	-	-	-	-	-	-	-	-	-	.1
Arabis amplexis	-	1	1	-	2	-	-	1	1	-	.6

H' = 2·762671953

E' = 0·734518736

	1	2	3	4	5	6	7	8	9	10	NOTES
Sisymbrium him.	-	1	-	-	-	-	-	-	-	-	·1
Sibbald cuneata	-	3	-	-	1	-	-	-	-	-	·4
Impatiens sulc. (37.3)	-	13	72	49	18	21	40	96	21	52	37.3
Polygon. polystach.	-	1	4	3	10	-	7	8	10	23	6.6
	-	-	-	-	-	-	-	-	-	-	
Mosses % Covg	2	2	1	2	1	1	2	-	-	1	
Lichens % Covg	2	-	-	-	-	2	-	-	-	-	
Total ground Cov.	75	60	80	70	75	65	70	85	90	05	
Rumex nepal.	-	3	1	13	4	3	-	-	3	3	3.0
Primula dentic.	~~2~~	2	-	-	-	-	-	-	-	-	·2
Sauss. hypoleuca	~~2~~	1	4	1	1	6	7	8	-	6	3.4
Rubus nutans	-	-	2	7	2	13	3	6	-	-	3.3
Gagea lutea	-	22	6	-	-	4	23	-	-	-	2.6
Swertia speciosa	-	-	~~2~~	1	-	1	-	4	-	-	·6
Megacarpaea polyan	-	-	-	-	1	-	-	-	4	-	2.0
Vicatia cuneif.	-	-	-	-	2	1	-	-	-	-	·3
Selinum tenuif	-	-	-	-	-	2	-	5	3	6	1.6
Geranium wallich	-	-	-	-	-	2	-	-	1	-	·3
Draba sp. (Y)	-	-	-	-	-	3	-	-	-	-	·3
Epilobium royl.	-	-	-	-	-	3	2	-	-	1	·6
Fragaria nubicola	-	-	-	-	-	-	3	-	-	-	·3
Corydalis cashm.	-	-	-	-	-	-	-	-	2	-	·2
Corydalis govani	-	-	-	-	-	-	-	-	1	-	·1
Valeriana pyrolef.	-	-	-	-	-	-	-	-	3	-	·3

4/6/68

Harkidoon E-facing slope

NOTES

Overall Gr. Veg: 85%

31° 09' 12.1" | 3557 m.
78° 25' 47.8" | 50°

Heavily grazed, smooth slope - Danthonia - Anemone.

	1	2	3	4	5	6	7	8	9	10
Iris kum.	52	16	–	–	48	–				
Anaph. royle.	35 (20)	69	–	–	1	–				
Morina Longif.	8	1	6	2	2	–				
Taraxacum off.	13	12	15	12	5	12				
Parnassia nubicola	8	6	17	16	18	3				
Danthonia cachem.	20%	25%	25%	50%	40%	20%				
Sisymbrium himal.	3	1	8	7	2	4				
Thermop. barbata	5	2	–	28	4	8				
Cyananthus lobatus	57	21	7	18	–	5%				
Potentilla atrisang.	14	11	2	–	11	2				
Viola biflora	3	1	1	–	–	1				
Primula denticulata	8	4	–	–	4	–				
Lotus corniculatus	3	–	29	–	12	1				
Senecio chrysanthem.	4	1	1	6	–	2				
Rumex nepalensis	3	–	1	3	4	1				
Geran. wallichianum	2	2	2	–	4	–				
Silene caespitella	1	–	–	–	–	1				
Anemone rivularis	2	1	–	–	2	2				
Carex setigera (P)	2	2	3	–	–	–				
Nepeta podostachys	18	27	2	12	69	–				
Pedicularis tenuifolia	1	–	–	2	–	–				

NOTES

	1	2	3	4	5	6	7	8	9	10
Gentiana capitata	2 (1)	3	4	1	-	3				
Polygonum viviparum	13	21	29	5	.	6				
~~Phlomis bracteosa~~ Stachys melissoides	5	4	-	1	-	2				
Delphinium vestit	-	1	2	1	1	-				
Sibbaldia cuneata	-	4	20	6	-	10				
Eritrichum canum	-	2	-	-	-	-				
Pedicularis pechu	-	1	-	-	-	7				
Epilobium royleanum	-	1	-	-	-	-				
Swertia ciliata	-	-	2	1	1	1				
Gerbera kunthiana	-	-	3	2	-	-				
Origanum vulg	-	-	2	-	-	2				
Spiraea bella	-	-	-	3	-	-				
Campanula lacei	-	-	-	2	-	-				
Galium aparine	-	-	-	2	-	2				
Anem. obtusiloba	-	-	-	7	-	1				
Dubaea hispida	-	-	-	3	2	-				
Anem. polyanthes	-	-	-	-	-	7				
Jurinea dolomiaea	-	-	-	-	-	1				
~~Phlomis~~ Stachys melissoides	-	-	-	-	-	2				
Ligularia sp.	-	-	-	-	-	1				

4/6/08 Harkidoon flat meadow

NOTES opp. KAMUNURH

Heavily grazed by cattle, sheep & goats

Lush green meadow - >95

31° 09' 09" 3547 m.
78° 25' 46.96"

Flat - (<3°)

Scattered Danthonia on hummocks.

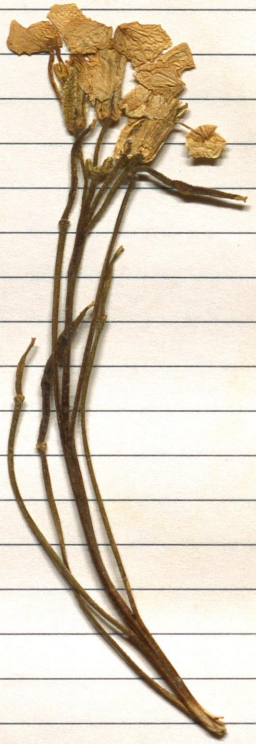
Herbs 80%.
Graminoids - 20-15%.

	1	2	3	4	5	6	7	8	9	10
Anem. obtusiloba	9	-	2	-	-	-				
Pot. atrosanguinea	10	2	14	3	16	17				
Artem. dubia	21	36	46	37 (30%)	18	10				
Selin. vaginatum	11	5	33 (10)	20	4	.				
Taraxac. officin.	10	2	3	7	30	6				
Pedicul. pectinata	3	-	-	-	-	-				
Anem. rivularis	3	-	-	1	-	-				
Senecio chrysanth.	7	1	6	-	5	3				
Gagea lutea	18	7	10	6	F	10				
Rumex nepalensis	7	57 (60%)	(2)	3	9	14				
Geum elatum	1	-	-	-	-	-				
Chaerophyll. villosum	-	22	28	-	-	56				
Galium aparine	-	72	-	-	-	8				
Swertia ciliata	-	1	-	-	-	-				
Barbarea intermedia	-	3	12	-	-	-				

NOTES

	3	4	5	6
Poa sp.	1%	3%	10	5%
Ranunculus bulbosus	3	8	19%	3
Danthonia sp.	–	20%	15%	–
Polygonum viviparum	–	12	3	1
Tanacetum dolichophyllum	–	7	–	–
Arenaria serpyllifolia	–	1	1	–
Sibbaldia procumbens	–	–	7	–
Plantago major	–	–	8	1
Epilobium sp.	–	–	4	–
Impatiens sulcata	–	–	–	1

NOTES



23/06/05

NOTES NOTES

Trip to VOF & Gangotri

June 2005

Things to do - 29/06

- Photos of plantn
- Boards
- Tapovan - Camping area -

* Opp. Sukhi - ~~Anar~~ "Amana Bugyal"

vind Ghat
, H.B. Naithani,
ra, Jai Prakash.
bassador & Tata Sumo
o Am; Lunch at
hrs with DFO / Kedarnath

at 8.30 pm.
staff gave us warm

fter BF (at 0730 hrs).
d with pilgrims to
& self walked while
embers went on
Lunch at Bharat's
t above ~~[illegible]~~ Bhyundar.
and reached
Dronagair) around
The camp site
dodendron campan.
aceous meadow
as lush green
herbs. Had a

NOTES

Request of
Mr. Chand Ram
Kripal Singh – Taluka
wants to go to Harki Doon

Our guide –

① Jeeti Singh –

② Surendra Singh

23/06/05

NOTES

Dehra Dun to Govind Ghat

S/Shri S.K. Chandola, H.B. Naithani, G.S.R (self), Gajendra, Jai Prakash.

2 Vehicles – Ambassador & Tata Sumo

Left WII – at 8:00 AM; Lunch at Rudraprayag – 1230 hrs with DFO/Kedarnath Mr. Kavidayal.

Reached Govindghat FRH at 8:30 pm.

Sh. AK Banerjee and his staff gave us warm welcome & dinner.

24.06.05

Left Govindghat FRH after BF (at 0730 hrs). As usual GG was packed with pilgrims to Hemkund Saheb. Gajendra & self walked while rest of the team members went on mule back. Had lunch at Bharat's river side restaurant above Bhyundar. We continued to trek and reached camp site (Lower Dronagair) around dusk (730 pm). The camp site was besides rhododendron campan. scrub. The herbaceous meadow around camp was lush green with a variety of herbs. Had a comfortable stay.

VOF - Plants in Pls. 24/06/08

NOTES

- Spiraea bella
- Polygonatum verticellatum
- Polygonatum small (geminifolium)
- Poa alpina?
- Poa sp2
- Viola biflora
- Syringa emodi
- Fragaria nubicola
- Rheum australe
- Epipactis latifolia. / Cephalanthera
- Smilacina purpurea
- Trilliidium govanianum
- Lloydea serotina
- Rhodiola heterodonta
- Ainslaea latifolia
- Luzula spicata
- Thermopsis barbata
- Eritrichium
- Iris kemaon.
- Lonicera myrtillus
- Primula denticulata (over)
- Epilobium alpinum
- Pot. atrosanguinea
- Ranunculus hirtellus
- Corydalis cashmiriana

NOTES

Carex green & brown.
Potentilla cuneifolia
Salix lindleyana
Salix karelinii
Aletris pauciflora
Kobresia nepalensis
Rosa sericea
Rosa macrophylla
Rhodo. campanulatum
Sorbus foliolosum
Polemonium coerulum
Anemone polyanthes
Dactylorhiza hatagirea
Kobresia laxa
Thymus serpyllum
Chaerophyllum villosum
Gibbaldia cuneata
Vicatia coniifolia
Oxytropis lapponica
Aconogonum rumicifolium
Prunus cornuta
Silene sp.
Ribes glaciale
Capsella bursa - pastoris
Cardamine impatiens
Caltha palustris

Allium humile

NOTES

Trigonella emodi
Thalictrum alpinum
Berberis jaeschkeana
Cotoneaster microphyllus
Sisymbrium himalaicum
Cauthoria trichophylla
Cassiope fastigiata
Polygonatum hookeri
Gentiana argentea
Cerastium cerastoides
Myricaria prostrata (?).

Rosa macrophylla
Cotoneaster bacillaris
Coto. microphyllus
Coto. affinis
C. rotundifolius
Sorbaria tomentosa
Cephalanthera longifolium
Prunus persica var. novum
Rhodiola heterodonta
Rh. rosaefolius
Betula utilis
Populus ciliata
Salvia nubicola
Hippophae tibetana
Thymus linearis

Ganesh

Gangotri [
Bhilangna valley.

NOTES

25/06/05

Bright morning - Had tea and left for Tipra / Sewachand area. Sampled vegetation 2 - 3 sites. Saw Megacarpaea, Dense Rhododendron campanulatum above sewachand had plenty of H Musk deer signs. Had breakfast at Bamini Dhaura and lunch at Ghangarea. Descended to Govindghat after lunch on mule back - which was very uncomfortable. Reached Near Ghangarea 10 - 12 ladies from Bhyundar Village met us (Chief WL'W) with a request to allow them to cut / harvest Allium (Faran) from VOF, which was tactfully refused by R.O.

Reached Govindghat at 5.30 hrs. Left Govindghat by 06.30 and drove to Gopeshwar. Reached Gopeshwar (Forest & CF's Rest'd.) at 10:00 hrs. Sumptuous lunch dinner with Mr. Kavi Dayal.

26/6

26/06/05

NOTES

BF at Gopeshwar. Drove to Uttarkashi via Mondal, Chopta, Kund, Tilwari, Chirbasa, Ghansali, New Tehri. Night halt at R.O.'s residence, Kotbangla, Uttarkashi.

27/06/05

Uttarkashi to Gangotri. On way saw Songad and Harsil Nurseries. Stayed at Forest Rest House Gangotri. Met 2-3 Babas. One of them had planted Rheum australe, Aconinitum balfourii, A. heterophyllum, etc.
One Nun had planted Lilium polyphyllum.

28/06/05

Gangotri to Gaumukh
Asparagus filicinus
Lilium polyphyllum
Dactylorhiza hetagirea
Rosa webbiana, R. sericea, R. macrophy
Lonicera quinquilocularis
L. semenovi, L. myrtillus, L. purpura

Gangotri to Gaumukh ca.

L. spinosa

NOTES

L. obovata
~~Allium~~ Allium auriculatum
Morina coulteriana
Cotoneaster —
~~Ce~~ Cedrus deodara
Rheum australe
Thesium himalense
* Epilobium angustifolium
Epi latifolium
Epi roylei
Aconogonum tortuosum
Artemisia gmelinii
Artem. parviflora
Artem. vestita
Pot. cuneifolia
~~Ro~~ Sibbaldia cuneata
Rh. campanulatum
Erisymum hieracifolium
Cynoglossum lanceolatum
Primula stuartii
Myricaria ~~germa~~ elegans
Ribes alpestre
Ribes glaciale
Arenaria festucoides
Rosularia alpestre

Blue sheep *

NOTES

Heracleum candicans
Sesili / Heracleum pinnatum
Bupleum himalaicum
Pleurospermum sp. (disserted)
Berberis jaeskeana
Pinus exelsa
Oxytropis lapponica
Oxyria digna
Astragalus candolleanus
Potentilla argyrophylla
Rheum australe
Rumex nepalensis
Kobresia laxa
Thermopsis barbata
Silene ovata
Danthonia cachemyriana
Piptatherum gracile

Missing

Viola biflora
Aconites
Morina longifolia
Narpostachys
Podophyllum
Iris kumaonensis

? Thermopsis
Arnesia bonthani

Shivling

NOTES

Senecio chrysanthemoides

Above Gaumukh [Gangotri Glacier] 29/06/05

30° 55' 31.9".
79° 04' 58.7"
4080 m.

Reached Tapovan around 0915 hrs. Flat interglacial valley offers base camp for the mountaineers. At present there are 3+1+1+2 ~~+5~~ Deras + Bubas

Tapovan:
Kala Kusha ⇆ Carex nigra

Gentiana carinata
Poly. affine
Poly. viviparum
Aren. bryophylla
Cicerbita lessertioides
Kobresia schoenoides
Cremanthodium —
Thlaspe alpestre

Rhodiola quadrifida
Pedicularis dedorii

NOTES

Pot. argyrophylla var.
Artemisia vestita
Androsace globifera
Euphorbia stracheyi
Ephedra gerardiana (sparse)
Thalspe arvense
Bergenia stracheyi
Aster stracheyi
Saxifraga flagellaris
Ep

30/06/ Nilapani Valley

NOTES

Chhatu - Morina coulteriana - sheep fodder
LAKAR - Junip. comm.
MAKHRUM - Astragalus candoll. -
REMPA - Potentilla biflora
- Polygonatum sp.
RAMTSA - Elymus nutans
- Heracleum pinnatum
- S. Poa sp.
TERU - Lonicera spinosa
- Hedysarum sp.
- Arnebia euchroma
- Rheum tibeticum
- Aconog. tortuosum
- Polygonatum
- Sauss. roylei
- Cicerbita macrorhiza
- Thesium himalense
NGYAI - Ribes orientale - Frs
- Lonicera hispida
- Silene grifithii
TULSI - Carduus thomsonii
-
Leyu - Rheum australe - Chatni
RUKBA - Allium carolinianum - Sabji
रुकबा -
KONGMU - Lamium rhomboideum
Frs

✓CHHEI — Cicer microphyllum

NOTES

छेर्मी CHHEI — छेर्मी-छेई — Astragalus candollea

Bhotia chai — Bergenia stracheyi — dry LVS — astea

साक्सी — Thalictrum platycarpum /minus

पोजे — Lonicera hispida — Fodder

सीऊँ — Melica persica

Tulsi — Carduus ~~Cousi~~ Cousinia thomsoni

NGHAT ङ्हट — Sisymbrium bracissiforum

ह्वां सा (Whan = milk)

WHANTSA — Crepis flexuosa — Fb of Hi. 76)
— Crepis tenuifolia

SHEN — "Snow leopard."

MANGLING GOGPA — Saussurea bracteata

GOBU गुब् — Sauss. gossypiphora

JIMBU — Allium auriculatum

NYALU — Acon. tortuosum — Chutney

YAKRUM – Kobresia schoenoides – Dense tussock –

NOTES

ALWAR – Verbascum Thapsus

* Rubia cordifolia forma 'strigosa' Nilang –

* Rubia tibetica

Bhairoghati from Lanka bridge on right bank

- Dianthus sp.
- Micromeria biflora
- Jasminum humile
- Arenaria serpyllifolia
- Saussurea albescens
- Lonicera quinquilocularis
- Lonicera hypoleuca
- Polygonum pterocarpum
- Erisymum hieracifolium
- Salvia nubicola
- Viola serpens
- Lespedeza juncea
- Tillaea pharnaceoides
- Scutellaria Isodon rugosa
- Rosa macrophylla
- Brachyactis ~~mysiantis~~ menthadora
- Chrysopogon gryllus ssp.

Phaceluras speciosus

NOTES



Vicia bakeri Ali
Malva rotundifolia
Oxytropis kirkalaicus [Nyctaginaceae]
Asparagus filicinus
Allium sp.
Artemisia gmelinii
Art. parviflora
Cynoglossum lanceolatum
Cotoneaster sp.
Ribes orientale
Thalictrum minus
Trigonella pubescens
Verbascum thapsus
Euonymus fimbriatus
Sedum alberotrichum
Polygonum filicaule
Chenopodium album
Rumex nepalensis
Asplenium ruta-mu.
Impatiens racemosa
Artemisia sp.
Leptorhabdos parviflora
Lonicera hypoleuca
Cedrus deodara
Ephedra saxatilis ?
Koeleria argentea

Sept Aug 3-7: Nelong Valley & Kandara

NOTES

03.09.04:

Left WII at 0600 hrs w/ Dr. G.S. Goraya, Mr. Bittu, Gajender & Sh. Chandola — by two vehicles. Reached Rishikesh Herbal Garden at 7:30 hrs. Plants to be confirmed at H.G:— Nicandra (wild); Morva (Wild Tulsi); Embelia robusta;

BF at Fakot near Hindolakhal. Plants to be confirmed Desmodium Sp. (Is Uraid neglecta).

Reached U. Kashi [Kotbangla at 2:30 PM] Lunch at Songad (5:30 PM) —

- Matricaria chamomile [Doctor of herbal medicines] — German chamomile.
- Borago...
- Fringes and adjacent areas were being cleared for seed beds/nursery.

Reached Bharonghati FRH at 8:30 PM. Halt.

04.09.05 at 5:30

NOTES By the time I got up

Dr. Goraya was already up at 4:45, he had 15 min walk and was busy with his notes. (½ an hr of notes)

6:30 hrs got ready. Heard Koklas call; BF & left Bhojunghati at 7:00 AM.

Tea at Naga.

Reached New Sonam at 12:00 Hrs. ITBP Camp.

On the way → Collected Epilobium sp;

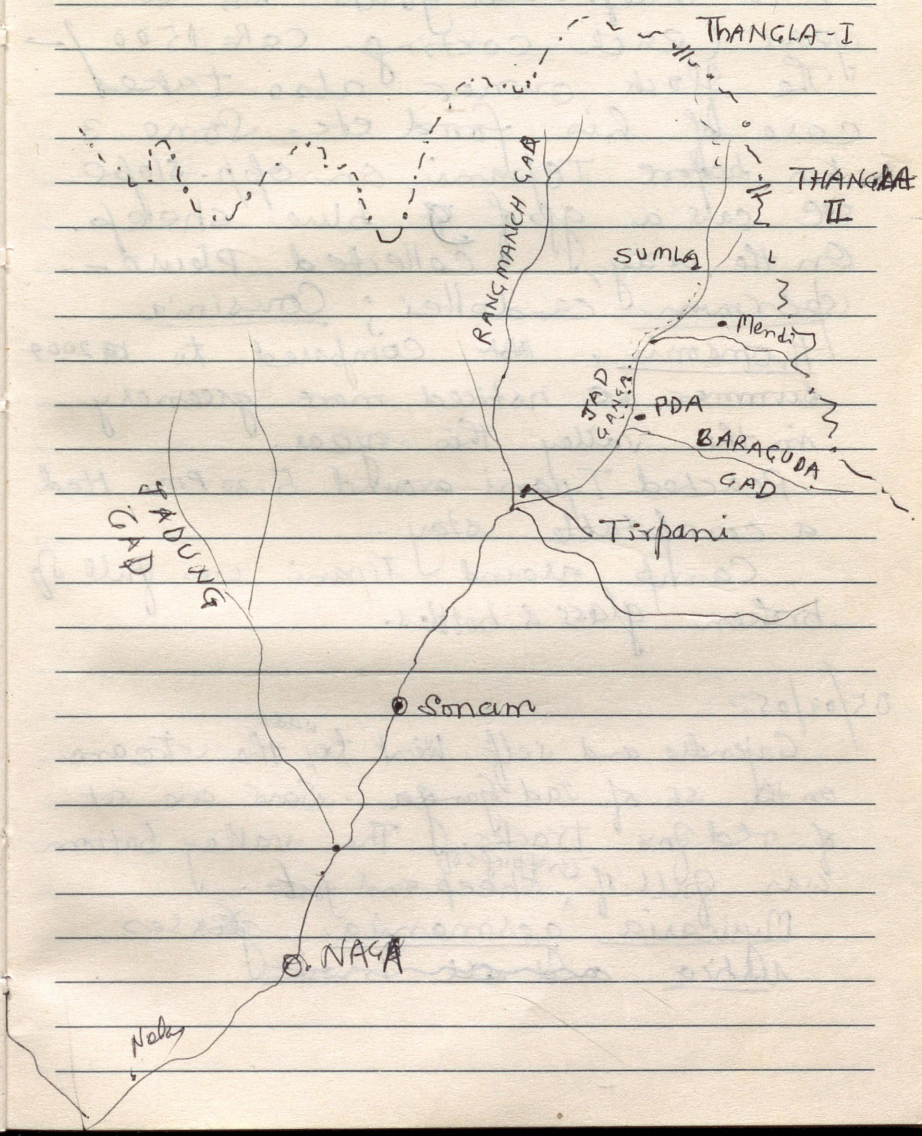
New Sonam 31° 12' 39" N
79° 05' 703" E

12516'
12800m

Had lunch and left for Tirpani at 2:00 PM. Reached Tirpani around 5:30 PM. On the way met 3-4 flocks of sheep and goats each numbering 4-500. One shepherd from H.P. [Dodra Quer] informed that he has been looking after the sheep and goats of a person from DUNDA,

U. Kashi

NOTES


THANGLA-I
THANGLA II
SUMLA
Mendi
RANGMANCH GAD
JAD GANGA
PDA
BARAGUDA GAD
Tirpani
JADUNG GAD
Sonam
NAGA
Nela

NOTES

Since 5 yrs and he earns 9-10 sheep and goats in a year (each costing ca Rs. 1500/- The flock owner also takes care of his food etc. Some 3 km before Tepani on opp. slope we saw a gp of 9 blue sheep. On the way, collected Pleurospermum candollei; Cousinia thomsonii. Not compared to 2004 summer we noticed more greenery in the valley this year.

Reached Tipani around 5:30 Pm. Had a comfortable stay.

Camp around Tipani was full of broken glass & bottles.

05/09/05:-

Gajendra and self went to the wilds stream on the SE of Jad Ganga. Saw one set of red fox tracks. The valley bottom was full of droppings of sheep and goats.

Myricaria germanica, grasses, Salix ~~and other most~~

6.05.05 * Sukhi Village surrounds.

NOTES

- Berberis aristata (?) - Near Sukhi -
- Polygonum hydropiper
- Caragana sukkiensis

Plants to be confirmed:-

{ Achyranthes bidentata &
{ Achysanthes aspera

{ Berberis lycium &
{ B. aristata

Pradhan - Shri Ratan Singh ....

Sukhi Village :- 10-12 families own sheep

NOTES

and goats (Total - 2000-2500). Total families - 85 [170].

- Sukhi to Brahma Tal - 1 day trek
  " " Yamunotri - 7 days.
  " " Gidara - 2-3 days.

~ Species for Sukkhi -

Subji [Local]

✓ - Pangri -
✓ - Guchhi -
✓ - Kaunlya - [Fagopyrum racemosum]
✓ - Jat Pabak
✓ - Chilra -
✓ - LINGRA
✓ - Cholu - [Nasturtium]
✓ - JARAKU -
- BARMOUL
✓ - Dhanara - Paeonia - Wash many times (चन्द्र)
- KAIDI - Urtica dioica
- Bhat Kaidi → U. parviflora - Best Vegetable
- Dholan - Girardinia
- KOU - KAIDI - Urtica sp.

Left Sukkhi for ~~Gidara~~ Kandara at 1:25 pm.
Reached Kandara Bugyal camping

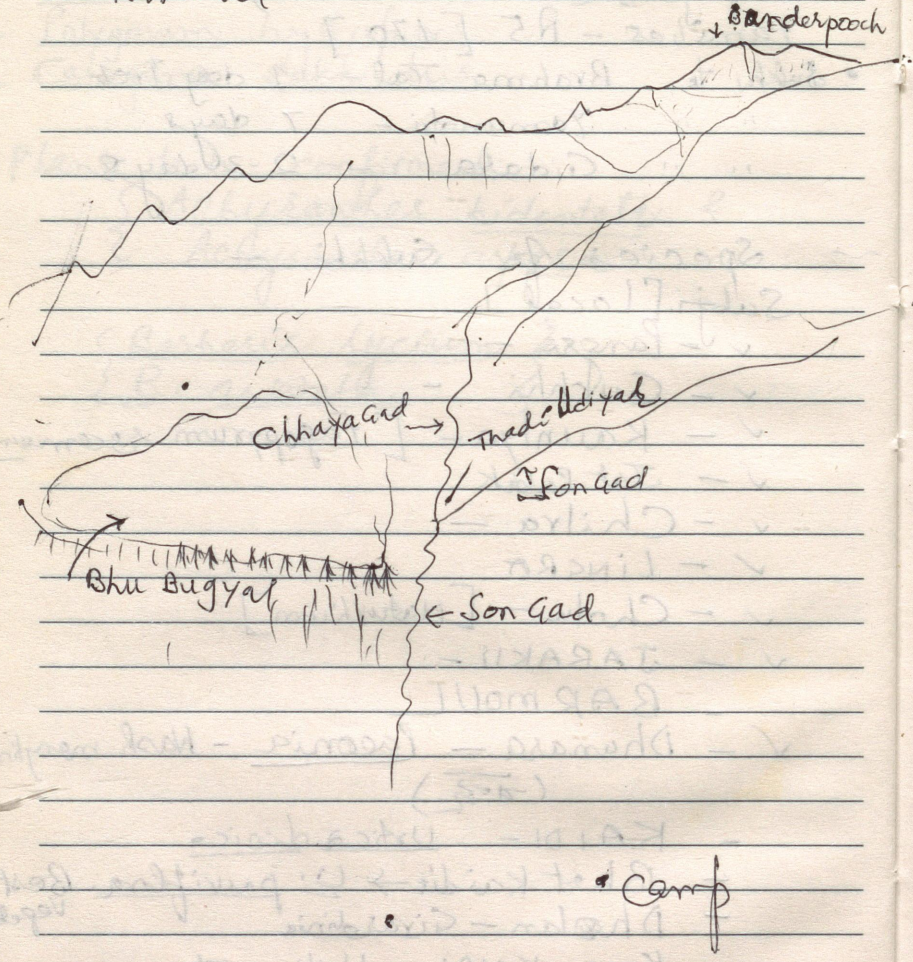
C. site : 3520 m

site at 6:00 pm. 31° 00.329' N.

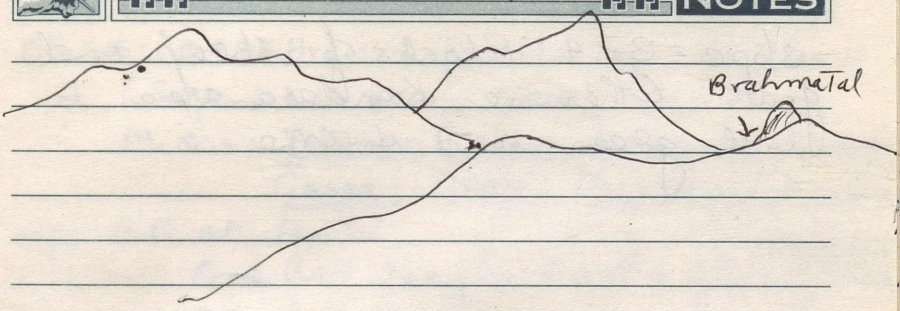
NOTES

78° 40.157' E

Kandara



NOTES



Kanalu - Meconopsis aculeata

7/09/05 -
Camp Kandara bugyal towards Bhu. Sonkad Gorge - Random Sampling
↳ Cypripedium himalaicum
→ Athebia benthamii
→ Acon. heterophyllum
→ Leymnadenia orchidis
→ Euphrasia
→ Ligularia amicoides
→ Pedicularis Sp.
→ meconopsis paniculata
→ M. aculeata

Had lunch at 12:00 hrs & left for Sukhi around 12:30 hrs -
Reached Sukhi at 15:00 hrs

NOTES

We counted 92 cows on one slope. 3-4 Flocks of sheep and goats. Otherwise Kandara area is lush green and diverse.

08.05.06

X M.Sc. Tech. Tour - Kedarnath WLS

NOTES

08.05: 0645 Hrs: Left WII - By Tata Sumo [Satyendra; BSA; SSK]..

M.Sc's: Pranav, Ishan, Nattendu, Varun, Garga; Deep; Mousami, Aparna.

B.F. at Byasi

One Red Jungle Fowl - flew across Rd near Deoprayag.

Lunch at ~~Deoprayag~~ Rudraprayag.

It started raining in a/n - around Nandprayag onwards...

Reached Mondal - Gajendra's Base Camp around 0630 hrs.

- Rained throughout night.

9.05.06
Mondal

NOTES

* Red crowned Jay

* Conniogramma sp. [Br. L.
Gharsari Base camp.
BF at 0630 hrs - Left for U. Mondal
- ~~Mandal~~ ; Dholidhar - Chopta at 0700 hrs.
- Back for Lunch at Kanchula Kharak
Betwn K. Kharak and Martoli bend
plenty of Aquilegia and Calanthe in
flowers, Lilium giganteum - fore in
buds. Chimonobambusa jaunsarensis
heavily browsed.
- Sinarundinaria falcata - gregarious
flowering was seen most of the
places. Does it mean that
in Mondal area it flowered
sporadically during 1999-2000 or
didn't flower at al?

- Visited HRDI MAP Nursery around
4:Pm and subsequent walk in
heavily lopped Oak forest lower
Trisula - (Khalla village) Forest -
Plenty of Orchids - Only Kingidium
was in flowers. Heavy lopping &
grazing yet very rich in woody
spp & orchids.

Mandal stream NOTES

Paa sp. (small)
Paa sp 2 (large)
Amolops formosus cf.

[Ishan]

Mandal to Sokhkharak 10.05.06

NOTES

Dryopteris nigropalacea (mandal - crumbled (a))
Asplenium dalhousiae (A. alternans)
Asplenium indicum
- Vittaria flexuosa (linear, grasslike fern)
✓ Coniogramme intermedia (large -)
✓ Pteris cretica
✓ Polypodioides sp (ll Nephrolepis)
✓ Dryopteris wallichii (ll. Christella)
· Lepisorus sp.
Athyrium sp. ?
Coniogramme caudata
Pteris quadriaurita
Osmunda japonica (separate fertile)
→ Cephalanthera sp (ll. Epi).
longiflora

From Dhotidhar - Saw 1 Goral
8 Tahr

Below sokh:-
with Falconeris → Polystichium stimulans

✓ Dark grey B.C.
✓ Lammergeir
✓

10.05.06

Sokh Kharak : 10 50 Hrs

NOTES

3083 m

30° 28' 38.2"

79° 13' 03.0"

10 + 2 Him Tahr

2 Monal.

On way - Flg:

Falconeria himalaica

Anemone rivularis

Lysimachia prolifera

Rosa sericea

Rosa Cotoneaster microphylla

Sokh Kharak :-

S.A.F.. Open areas :-

Ranunculus hirtellus - All flowering gregarious; Corydalis cashmeriana, Anemone rivularis; Piptanthus nepalensis.

Walked for ca 1 Km along the Stream near Sokh - Bamboo (& Thamno. spathiflorus) - a few clumps still green. Many of the clumps were dead - which flowered a couple of year ago.

Lunch 1330 hrs - Pulao

A/N - Went for a walk to E. ridge -

NOTES

- flushed at least 15 ♂ monals;
one musk deer close to Krummolts.
- 3 gorals;
No signs of serow.
Woodcock.

Around 3:30 pm it began to pour rain & hail - for ca 1 hr & deposited ca 2" of hail. Waited under a Kharsu tree for 40-45 minutes and returned back to Sokh. It intermittantly rained in the evening.

11-05-06

Had BF (Pulao) around ~~0635~~ 0615 hrs and left for Tungnath / Chandrasila at 0635 hrs. Mid way stopped to scan the Ravenshila slope for Tahr. Saw 1 ♀ + 1 kid (young) and 1 male Tahr on Ravanshila slope. Nearby also saw signs of Him. musk deer - (fresh hoofmark.). A couple of tahr hoofmarks and flushed > 15 monals on the way.
Reached ~~Tun~~ Chandrasila

peak (2 year old temple)

NOTES

at 0850 hrs.

Tungnath Temple was going to be opened for the season today. By the time we had reached the Temple, Dola had not reached by 11:00 hrs and we left for Shokh kharak. Had lunch - Paratha at a stream. (Ummed Singh came with Aalu Parathas -

Reached Shokh Kharak around 1310 Hrs.

A/N - Rains.

Oak Regeneration survey

12-5-06

Sokh - Eastern Krummholz

NOTES Silent Drive Control for HMD

Gajendra & Self settled at vantage Point # 1 at 6.30 Hrs.

→ On way 1 set of bear tracks

Mo ♂ + ♂ + ♂ + ♂ + ♂ + ♂ + ♂ + ♂ + ♂ + ♂

OP # 1

Saw - 1 Goral - 6.40 Hrs.

& Him. Tahrs on the ridge line

End of the beat 7:00 Hrs

Reached - Ridge (Eastern) at 7.30 Hrs.

Saw one + 6 Him. Tahrs on steep slope

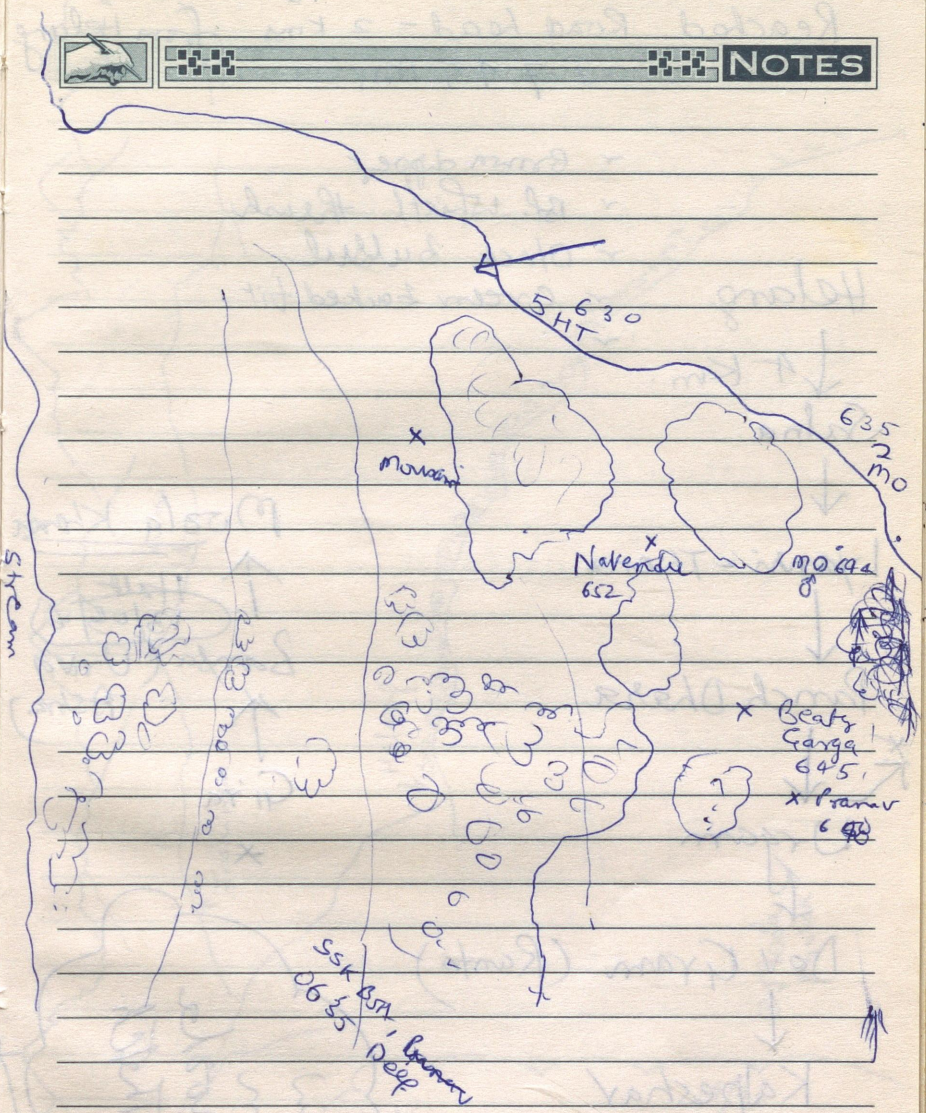
- Returned to Sokh Camp; 8:20 Hrs.

Had BF. & descended to the road where bus was waiting for us.

- Returned Mandal for lunch.
- Met Mr. P.M. Laad, Retd PCCF, M.P. who was on personal visit to Kedarnath wls.
- Met Dr. M.S. Rawat at HRDI — Field Stn, Mandal.
- Reached Joshimath at around 5.30 pm.

Between Helang & Patalganga - saw 17 Goral & 3 Him. Tahr on opposite slope.

NOTES



630
5 HT
635
2
MO
Mousam
Navendu
652
MO 644
Beaty
Garga
645
Pranav
Stream
SSK BSA
0635
Deep

13-05-06

Reached Road head - 2 Kms from Helang at 7 45 Am

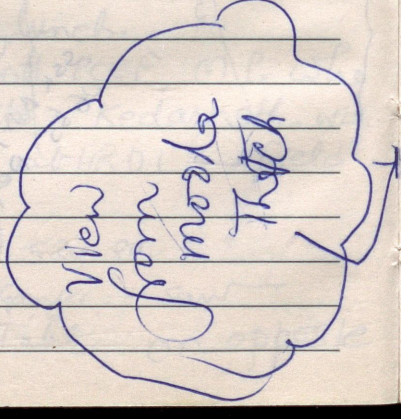
NOTES

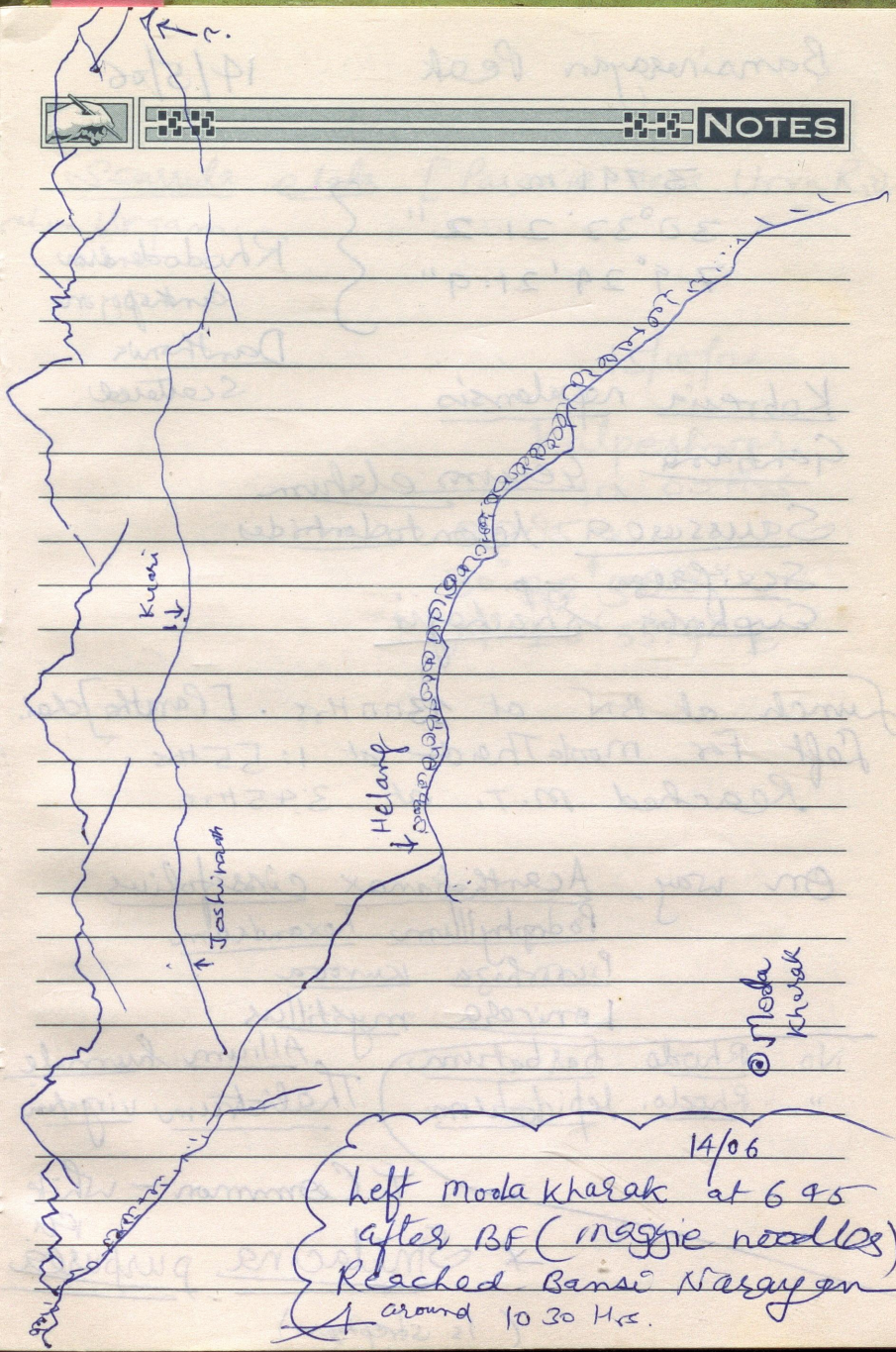
- Brown dipper
- Bl. whistl. thrush
- Black bulbul
- Green backed tit
-

Helang
↓ 4 Km.
Salna
↓
Lyanri - Thena
↓
Panch Dhara
↓ *
Urgam
↓
Dev Gram (Ranta)
↓
Kalpeshar

Moola Kharak
↑
Halt 13/05/06
Bansa (Urva Ashram)
↑
Gira
*

View from Moola Thatch





14/06

Left Moda Kharak at 6 45
after BF (maggie noodles)
Reached Bansi Narayan
around 10 30 Hrs.

Bansinarayan Peak 14/5/06

NOTES

3791 m
30°32'21.2"
79°24'21.9"

Rhododendron anthopogon
Danthonia scattered

Kobresia nepalensis
Gentiana ; Geum elatum
Saussurea leontodontoides
Saxifraga sp.
Euphorbia Stracheyii

Lunch at BN at 1300 Hrs. [Paratha] chai.
Left For Moola Thach at 1:55 Hrs.
Reached M.T. at 3:45 Hrs.

On way - Acanthopanax cissifolius
Podophyllum hexandrum
Picrorhiza kurooa
Lonicera myrtillus
Allium humile
Thalictrum virgatum

No Rhodo. barbatum
" Rhodo. lepidotum

+ Common - white Fl.
* Smilacina purpurea
(Is streptopus)

NOTES

Scarrula elata [Parasite near Urva Ridge above Urgam

15/05/08

Kalpeshwar
10:00 Hrs
2085m
30° 32' 58.8" N
79° 26' 55.9" E

Aug '06

Trip to Jalandhri Gad –

NOTES

22/8 [Uttarkashi] – Kyarkoti

Self, Jeewan, Amit & Umesh Tiwari left W.I. on 22/08/06 after a lecture (that I delivered to F. Guards of UAFD) – at 10 45 Hrs – Black Tata Sumo driven by Govind.

- Lunch near Chamba (Sherkhal). From Chamba new road to UKashi goes along the right slope – of Tehri dam. – The drive has become very long – Reached Uttarkashi around 4:30 PM. Between Bhatvari and Gangnani the road was slushy and broken at places. Hence reached Harsil (Wilson Cottage – FRH) around 9 00 PM

- FD had called 2 local porters to go with us – ① Sushil ② Parasu Ram F.E. Mr. Bisht, One more guard and Chowkidar arranged Kerosine etc. It was decided that we 4 and two porters would leave Harsil by 7 AM after B F & pack lunch (Parathas).

23/8/06

NOTES

Had Parathas for BF @ Rs 8/- from Dhaba and packed all the luggage & Tent, ration etc. Left Harsil at 8:30 AM.

- The path along Jalandhri Gard is partly washed and valley bottom wherever stable, had stunted (young) deodar & blue pine.

After about 1km the path ~~goes~~ goes along left slope (bouldery & densely wooded) and there is an ascent upto Lal Devta's temple (Sacred grove - no building). On the way, came across several mature and large trees of Deodar one of them at least 6-7 m in girth.

At Lal Devta's ~~site~~ tree (Devdar) we saw several horns of blue sheep (offered by the shepherds), Brahmkamal and Phen Kamal - besides flags, et coins, etc. Most imp. item that had been offered ~~at~~ Lal Devta was dry wood (fuelwood). So were the pebbles.

Coord: → 31° 04' 8.2" } 3094 m | 10:45 Hrs
Lal Devta 78° 44' 41.9"

Beyond Lal Devta the path goes along left bank of Jalandhri gad. The valley flattens thereafter (above 3200 m). However frequent flash floods had deposited lot of silt and debris on a large proportion of the valley. As a result, birch and maple trees have dried in about 1-2 ha area. The Remaining part of the valley was covered with dense growth of Cirsium wallichii, Salvia nubicola, Rumex nepalensis and a couple of other herbs. Higher slopes had scattered birch and fir (dense only on steeper-right bank and sheltered pockets).

Beyond 3-4 kms in the valley there were open patches of blue pine and scattered birch. Understorey of birch were dominated by Juniperus indica, J. communis, Cotoneaster microphylla, Cotoneaster roseofolia (?) and Berberis jaeschkeana. Beyond blue pine the valley opens further. We met a flock of sheep and goats near a bridge over Jalandhri. The shepherd Mr. Harish of Bagori, Ukash informed us that he is on way to lower

Bridge near (Gangnani) 31° 06' 22.7" 78° 43' 37.7" | 3449 m.

NOTES

reaches of Jalandhri where he would camp for 1-2 days (He has about 50+ sheep and ca 100 goats) He would employ a couple of villagers to shear the wool (Rs 10/- per sheep). After it is done, the sheep & goats would be brought back to higher slopes.

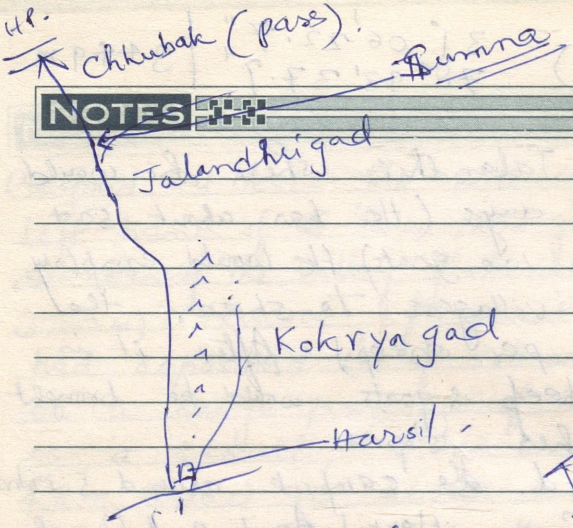
We reached the campsite around 5:30 hrs. The porters from Harsil, Amit and Umesh reached after 1½ hrs. We selected a sheltered patch besides 2 big rocks and camped for the night.

Between Lal Devta and the campsite (Kyarkoti Lake), we came across 6-7 flocks of sheep & goats, 4 groups of horses and 10-15 cattle.

24/8/06

Climbed Right slope upto 4000 m. Sampled alp. vegetn at 2 sites. - Berberis Scrub & Dankonia grassland.

Camp site on 23rd - 31° 07.825' N
78° 42.791' E
3639 m



31° 08' 26" 3"
78° 41' 44.7"
3859 m
camp m 24th

25/8/06

Kyarkoti (Camp of Mr. Bir Singh of Kangra).

700 sheep & 300 goats.
He would move down in 15-20 days

Baikuli
↓
Harsil
↓
Jhala
↓
Gangnani
↓
Bhatwari
↓
Sainj / Henna
↓
Gaghori → Nagtibba → Kaddu Khal
↓
Thano

Total
12 Flocks
10,000 sheep.

Upto 200 cattle & horses
60-70 horses

25/8-

NOTES

BF (Boiled Grams) & climbed to upper slope - (Pangrona) ? - Danthonia Cachemyriana and Kobresia nepalensis has been heavily grazed and cropped upto 4-5 cm.
Potentiltilla abrisanguinea - MASRINA
Danthonia - FINJI (GOBA) Kag
Festuca - LEE
Kobresia - BUGI
Sibbaldia cureata - MAROLI
Taraxacum - KHIRAM KHERA (DUDLI)
- from a distance Danthonia patches gave a greenish yellow appearance (as if moss laden slope). We climbed upto 4200 m. The slope (S-E facing) is stable and gentle - some 20-25 horses and mules were grazing on the slope. We then sampled a Kobresia meadow for species diversity. Thereafter descended on other side - stream course (Avalanche trap). This gulley (unstable, bouldery) had sparse vegetation (40-50% cover), Major species in the area were Corydalis meifolia, Waldheimia tomentosa, Anaphalis nubigena, Saxifraga sp. among others.

A/N. descended to the lower part of Jalandhri (2 Km from Lal Devta) Common species around the lower camp (3200m) - Nepeta erecta, Salvia nubicola,

NOTES

x x x

Tour to Ladakh
Dr. Sankar & self -

31-7-07
Dun to Delhi by Shatabdi Exp (1700 hrs)
Halt at Rajasthan GH.

1-8-07 :- Delhi - Leh (Jet Airways 9W/1602 - 6:20 hrs)
Arrived Leh at 8:40 hrs
Halt at Leh (FRH)
Met Mr. Tariqe

2-8-07 : Visited Spithup monastry, Office of WLW - Leh.

gps of chukar partridge - with small / several chicks.

3-08-07

NOTES

Phobrang [Changla]

0600 Hrs Left Leh (FRH) by Forest/WL Vehicle - <Drivers Wangyal>

0700 Hrs B.F. at Kharru (diversion).

09:30 : Changla - Free Tea .. 17880' - ↑

↓

Durbuk

↓

Tangtse (P.H.C.)

↓

Pang gong → Phobrang 14600'

Reached Phobrang at 1200 Hrs. Halt at ITBP Post.

Met Inspector Gokaran S. Pangtey of Darkot & S.I. Pillai (signals) →

On way to Changla the vegetation on middle slope was lush green, plenty of Cicer microphyllum, Dracocephalum heterophyllum, Dianthus, Chrysanthemum pyrethroides and others. Around these slopes we saw 7 to Tibetan Woolly hare within an area a distance of 4-5 Kms & several

Phobrang Village comprises

NOTES

→ 20-25 house holds. The ~~village~~ houses are scattered along a wide valley, ~~through~~ through which passes a stream that has given rise to large marsh meadows which were being grazed by horses, yaks and donkeys. Sheep and goats had been taken to higher slopes/side valleys.

Went for a walk along a marsh meadow and adjacent agricultural field. ~~Plants~~ Barley and black pea were still green. Villages had planted Allium przewalskianum. An elderly lady had collected Allium flowers and was crushing on a flat stone to make pulp (semi-).

4/8 :- Halt at Phobrang
Walk on the plateau towards ITBP Hill.
A/N - Walk with village kids.

NOTES

Phobrang camp: 34° 03' 16.2"
4447 m 78° 26' 32.9"

Chang La 34° 02' 51.2" N 5409 m
77 55' 49.6" E

Marshmika La 34° 05' 39.9" N 5595 m
78° 36' 55.7 E

Tsoksalu camp 34° 16' 05.8" 4508 m
78° 44' 33.2"

Hotspring camp 34° 17' 30" 50.4"
78° 57' 01.7" 4832 m

Konka La (Beyond LOC Hotspring) 34° 20' 9.2"
79° 02 03.3
5202 m

Pang gong Tso (W bank) 33° 57' 44"
78° 25' 23"
4289 m

Silung Yogma 34° 15' 07.4" N
78° 56' 43.5" E
5307 m

24-7-07
West
30°
~~Brokers~~

1 + 5 + 5 = 12
Rest Yaks Resting.

NOTES

5/8/07: Left Phobrang camp at 0830 hrs ~~and~~ by ITBP - Truck and reached T. Shalu (Tsokshalu) camp by 1215 Hrs. ~~Near~~ Before Marshmika La (5595 m) saw a gp of 2 kiang and beyond 3-4 flocks of sheep, goats and yaks. ~~Enter~~ As we entered the Changchenmo valley, on the opposite, steep rocky slope, saw a group of 52 Blue sheep ~~by~~ near a water fall. The ~~area~~ hill slopes were laden with a variety of flowers viz., Delphinium brunonianum, Saussurea bracteata, S. glacialis, S. gnaphaloides, S. glanduligera, Nepeta longibracteata, Waldhemia stolikzkae (W. glabra ?), Tanacetum spp (~ 2 spp) among others.

Between M. La and T. Shalu sighted Ca 22 kiang, ~~Sr.~~ ~~Att~~ T. Shalu met Mr. Anil R. Jha, Inspector, I/C Camp. After lunch at T. Shalu ~~(~~ went for a short walk along the

Chang Chenmo River, photographed a few plants and at 4:00 Pm drove towards 'Hotspring Camp', the last post of ITBP (1.5 km from the LAC.

Around Hotspring Ashwini had counted around 34 Chiru and little beyond Hotspring, a small stream (Silung Yogma) meets River Chang-Chenmo

26.04.08
Saturday

NOTES

Left DDun with Satender (UP07K/6573) Tata Sumo & Dr. Adhikari by 0600 Hrs.
BF at Byasi, Lunch near Nand Prayag. Reached Mandal Base camp [Gajendra's] : 3:30 PM
Halt.

27.04.08

0600 Hrs - BSA, self & Ishwari left for Chopta. Mandal forest → 6 Barking deer and plenty of Kalej pheasants.
BF at Chopta - Visited HAPPRC Alpine Garden - 550 - Dr. Vijay Purohit -
Back to Chopta for lunch & returned to Mandal Base camp.
2-3 poplns of Rhodo campanulatum x arboreum - Highlight of the day.

28.04.08

Workshop on participatory Resource Mgmt at HRDI. Chief Guest Shri Mayaram Uniyal. DFO Dhiraj Pandey & 78 + Villagers.
Wkshop lasted till 4 PM.

29.04.08

BF at Deva's restaurant - Bamini Bend.

NOTES

Walk to Mandal market from 1st Bend, along Stream.

A/N: Discussion with Dr. M.S. Rawat, Arun & Jitendra.

Evening - shift to Gharsari.

Dr SSK along with M.sc. class arrived around 6.45 Pm. Dinner at Bamini Bend (8:00 PM).

30.04.08

6 - 8 Am

Morning walk upto Mandal stream / Base of pine slope.

- Maroon oriole ; Bl. C. sibia
- Grey winged black bird -
- Calls. Himalayan Cuckoo (Pu Poo - Poo - Poo -)
  - Great Hill barbet
  - Striated Laughing

- Drive to K. Kharak ; Chopta - Marholi Bend Back to mandal for dinner & halt.

'Tahr' sighted on skyline - E. Ridge,

01-05-08

BF & Visit to T'Nath - Chandrashila - Via Sokh Kharakh -

Rhodos in full bloom -

→ Leiothrix — Among rhodos'

1-5-'08

Strokh Kharak — Tungnath - Chandrashila

NOTES

& back to Mandal with M.Sc. Students.

2-5-'08

Back to Dehra Dun

2-6-'08

⊙ Left WII by MAP - Gypsy with Umesh & Mahender — at 5:30 am.

⊙ BF at Bheera Gaon near Kempty falls 7:15 Hrs

⊙ Reached Naugaon (FRH) — 10:00 Hrs, where Ninad & Narendra were waiting

→ 2-3 Km before Naugaon FRH along a dry stream — Good population of Datisca cannabina

Other plants seen on the way:

- Capparis spinosa var. himal. On steep dry escarpments white - large fls.
- Sterculia villosa - fruits - conspicuous - red.
- Punica granatum — Abundant.

Harkidun ← Simaru Thatch ← Osla ← Gangari

NOTES

Dhatmir

Taluka — Reached (6.30 p.m.) 2.05.08

12 Km.

Sankri

12 Km

Chansil

Naitwar

Mori

Jarmola (Van Basti Nursery)

As we reached FRH (Taluka) Compound, ca 15-20 villagers led by Mr. Bhajan Singh Rawat, Leader of Kisan Sewa Manch thronged around us. They were complaing against laws of sanchuary and that the Sanchuary Rules have blocked the benefits of development in the Valley. Their major demand was a regulad motor road, which WL Dept has opened this year after a gap of 6 yrs.

Villagers also complained that there are very few employment opportunities in the area and there are a lot of restrictions for the use of forests, pastures etc.

Villagers also wanted to explored the possibility of cultivation of MAPs and protection of crop from wild animals

Alnus nitida - 'Kunis' / Kuins

NOTES

Prominent trees between Sankri and Taluka:

* Ulmus wallichiana, Morus himalayana, Picea, Abies, Blue pine, Chir pine, Fir, Hazel nut, Hornbeam, Deodar, Horse chestnut, Rhododendron & White oak.

* Around Taluka - Moru oak, Walnut, Apricot. Plently of Berberis aristata and Dioscorea deltoides. | 3.06.08

* Morning around Taluka - calls - Himalayan Cuckoo and Strong footed warbler, Grey headed fly catcher, Jungle Crow, Grey tit, Blue whistling thrush, Common myna, Great Hill barbet, Black capped (Rufous) Kibia.

BF at 7:15 Hrs. & left Taluka FRH at 7:30 Hrs.

The villagers were busy in millet & Amaranth fields. At places potato crop was being carressed. The path initially descends to Supin river bank and after 3-4 Kms one has to climb for Datmir. The village is located at about 2400 m asl & Moru oak around village - meticulously pruned - for fodder

during winter. Datmir village had a severe fire during winter (January '08) in which 30 houses were burned to ashes. There was quite a bit of loss in terms of livestock and apparently a couple of people were badly injured.

When we reached Datmir the villagers were busy renovating their houses — typically wooden houses - lavish construction - Besides each house there was a smaller 'store for food grain".

Beyond Datmir the path to Harkidun goes along mixed scrub jungle, Pine woods, Fir - Hazelnut and Deodar forests. Our guide tells us that till recently there was a system of shifting cultivation ~~in~~ the on these ~~many~~ slopes - where a patch of forest would be burned, cleared and Buckwheat and Amaranth would be sown.

~~As~~ This practice needs to be gradually discouraged, for soil erosion and invasion by unwanted spp will dominate the slopes..

MAPS - on the way → Podophyllum hexandrum, Jurinea dolomaea, Dactylorhiza hatagirea

NOTES

At village Gangari one saw one field of Saussurea costus. Apparently one villager at Osla and several people at Gangari have cultivated Kuth. Which seems to be doing well.

Later in the evening, Surendra, young boy (our porter from Taluka) told that Kuth requires lot of labour and after harvest one needs to get Exit permit and carry all the way to Delhi to sell it. "We prefer potato" which sells at reasonable price and the contractor comes at the field itself to buy the potato." said Surendra.

→ Reached Simataru Thach ('Seema Post') near Osla by 1250. Had lunch and left for Harkidoon. The path from 'Sima' to Harkidoon initially passes through open scrub and grassy slopes maintained by the local people by burning the slopes regularly. On the south facing slope the entire sub-alpine forest has been converted into pastures.

Reached Harkidoon FRH at 6:40 hrs. There was a slight drizzle on the way. Night halt at FRH was very comfortable.

04.06.08

NOTES

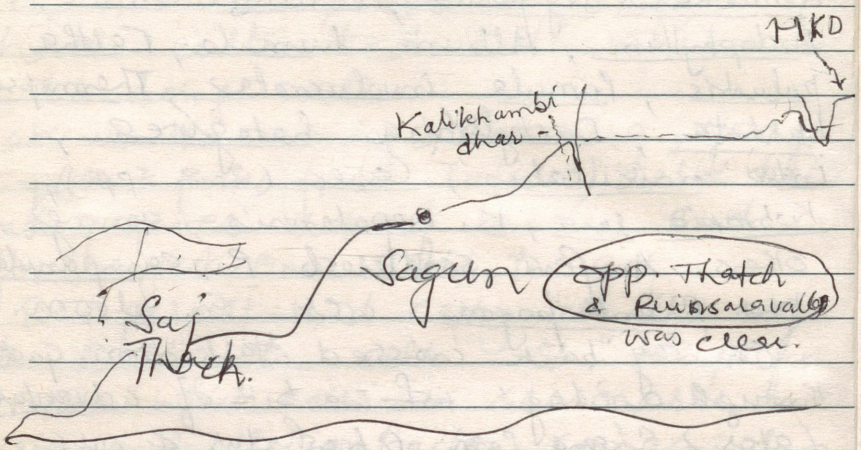
Morning walk opposite ERH slope – Photographed Anemones (2 spp), Lloydea serotina, Nomocharis oxy-petala, Picrorhiza kurroa, Podophyllum, Allium humile, Caltha palustris, Primula involucrata, Thermopsis barbata, Dactylorhiza hatagirea, Lotus corniculatus, Carex (2-3 spp.), Kobresia laxa, K. nepalensis, among others. A few scattered R. campanulatum and R. anthopogon were in bloom.

On way back crossed Harkidoon gad through a 'log' – a bit of adventure. Later Chand Ram, Chorkidar & our guide expressed serious concern about such gads and warned me not to take such actions again for it could have been fatal.

Had BF and proceeded to higher valley – "Marinda Tal" where the Harkidoon gad had been partly blocked forming a small lake around 3900m. The Kobresia meadows were still brown and vegetn was about to sprout. In the valley, around a shepherds camp we saw plenty of Brown bear

Mid Way: Harkidoon - Seem

NOTES



Scats - which might be of previous Oct - Nov. - Dec. Around the camp lush green Gagea lutea, Phleum alpinum and Poa sp. could be seen. Acc to the locals black bear feeds on this type of lush vegetation.

Common flg plants in the area:
Fritillaria stracheyi, Caltha palustris, Corydalis govaniana, Rhodo. campanulatum, Iris kumaonensis, Pedicularis oederi.

NOTES

Lunch, Short nap and left for Sima (Osla) around 3:00 Hrs. We were unable to do much botanizing on way back due to incessant rain. Reached Sima Camp at 5:45 Hrs. — Night Halt.

→ Sustainable Development of Supin Valley :-

- Traditional land use practice appears to be a bit wasteful - "Shifting" agriculture, burning the hill slopes and cultivation of buckwheat, setting fire on hill slopes ~~and~~ promotion of grass for sheep & livestock — Wooden houses - ~~compact~~ highly congregated, coupled with storage of hay - Remote location ~~and~~ - lack of health & sanitary and education facilities —

Local people ~~are~~ will not accept ~~any other way of li~~ compromise on the accessibility to high altitude pastures. ~~and~~ In fact they would want to increase the number of sheep & goats - given the increasing price of meat & wool.

Given the increasing demand of pastures, fuelwood and other requirements of locals - how do we visualize the mgmt of Govind WLSe NP? Just on paper?

One way to deal with this situation would be to develop this valley keeping the traditional vocation in mind. Let the area till Harkidoon be managed for LS (sheep & goat) with additional inputs on better housing -, education - health & other facilities... Govind WLS will need realignment of boundary, that case...

→ We don't have any inputs towards formation of a "Model Village" with housing, water & school facility - as in Sikkim...

→ Other option? ~~For the Shepherds~~ - Nothing concrete....
We can't kill all the sheep.... or sell to butchers -? Where will they graze them?
- check the mgmt Plan - old working plans
-

05.06.08

NOTES

Morning walk around PRH Gona - Caragana sp. Cephalanthera sp.; Moru oak - Lopped; Dioscorea deltoidea - Berberis, Salix - dense scrub, Rubus etc. Looking at opp. slope Osla side - It, this comes to mind that where from the villagers would bring the timber for House construction - for entire hill slope is totally devoid of forest. The In case of any accident (as it happened last winter - 56 houses were burned to ashes) several Houses got burned at one go. Osla has 130 families (more house-holds - some families have 2-3 houses).

* R.O. Sankri - N.B. Juyal, F.G. Sankri - H.L. Seth
* R.O. Naitwar - Hari S. Rawat

July 5-6, 2008

NOTES

Trip to Chakrata & Tons Forest Division

w/ Shri S. Chandela, Addl PCCF (WL).

Left DDN by 8:30

T at Kalsi FRH

Way to Chakrata - lonely tree of Ram Kanta Babool (Acacia nilotica)

→ Around Kalsi - Plenty of combretum decandrum [Red].

The path passes / crisscrosses Amlawa catchment.

⊙ Drive along Amlawa River [अमलावा नदी] a tributary.

⊙ Reached Chakrata MAP Nursery for lunch - R.O., Mr. Katku Ram, Mr. Harpal Negi & others have made an excellent effort in raising Swertia chirayita, Podophyllum Rheum emodi, Atis, Kutki, Kuth, Polygonatum and other species.

⊙ Medicinal Plant Conservation Area [MPCA] above Chakrata - Deodar (MAP Nursery). Needs detailed inventory.

→ 4500 m, made in 1938

⊙ Left for Daragad FRH in Bawar (Est) for night halt. Scrub vegetation around Daragad - Rhus parviflora, Berberis lyceum, new entry scattered Punica, Vitex negundo, Prisepis, olea cuspidata.

6.07.08

NOTES

→ Left for Thadiyar (Tons FD) where Umesh & Ninad were staying for RMF. Reached Thadiyar FRH around 9:30 AM. Had detailed discussion on methodology, data, availability.
- Riverine forest around Thadiyar is rich in evergreen species such as Litsea laneginosa, Cinnamomum tamala, Persea Machilus odoratissima, among others. Besides, Alnus nitida/nepalensis Toona ciliata, Ehretia acuminata, Mallotus philippensis and a variety of under-storey spp - such as Bohmeria platyphylla, Deeringia amarantholdes Stephania glabra, Urticaceae - (smaller Bochmeria like sh.?), Urtica, etc. were abundant.

Contd

* Ban Chulu - Flugger microcarpa - Daragad bright
* Kau - Olea cuspidata - Frequent in Bawar area
* Ban Haldi(?) - Hedychium aurantiacum Bright Orange flr - Coll. by Ninad & also planted at Jarmol FRH

NOTES

At Thadiyar we were joined by DFO Tons Shri Pathak - who showed some plantations at 2-3 places. Most striking feature in Tons Valley was wide-green valley extensive settlement of Gujjars who have now started agriculture. Their houses & settlements were clearly distinguishable from a distance (typical architecture). DFO informed us that there has been an increasing demand for rafting camps along Tons river. We saw a couple of places occupied by tourists who had pitched tents by the river.

From Thadiyar we drove to Jarmola, via Mori - There we were met by Shri G.S. Pandey, F. Director Rajaji NP, Dy Dir Mr. Yadav (Govind WLP), 2 RO's of Govind & other staff.

After Lunch visited the landslip prone area between Sankri & Taluka. Maintaining an all weather road at that point is a challenge for the Forest Deptt at present.

Night halt at Jarmola - PRH.

7.7.08

NOTES

It rained heavily during night. We were fearing that there might be road block en route to Gangotri. Left Jasmola FRH at 8, stopped for tea at Purola and Barkot. Between Barkot and Dharansu the hill slopes have good mosaic of Oak, chir pine, grassy slopes and cultivation (in valleys). 'Rara' ka Panda is a has good patches of oak forest. However there are quite a few patches of encroachment .....

Lunch at Uttarkashi - Kot Bungla FRH

Reached Bhaironghati - for dinner (around 08 30 PM)

08.07.08

NOTES

Left Bhaironghati FRH around 7.00 hrs. FRH compound has ~~occurs a distinct~~ stunted - Polygonatum cirrifolium in dense patches; scattered Ribes alpestre, Berberis vulgaris. And it has potential to develop into a fine nature trail. The compound of FRH is open to tourists & pilgrims - which could have been restricted. Met a group of "Kanwadis' from Alwar Rajasthan who had walked about 900 km one way to get Ganges water. They were going back and said they would reach Alwar around 29th July....

Plants observed/recorded ~~from~~ Dictamnus point:

NOTES

Geology

Nilang

Thakur & Rawat

P. 2-3, 5

① Central (Higher Himalaya) Crystalline zone (Bhaironghati)

② Extension of Zanskar. → Tethyan Himalaya – P (13)

[9] - Tutogh. Vaikrita System (10)

Ser (29) Martoli - Haimanta - Phe formation (13)

[31] Undifferentiated Palaeozoic

[21] " " Triassic & Jurrasic

[Blue schist] → P (17)

NOTES

- Allium auriculatum cult. Faran of Johar
23/6 Chonemorpha (Fl) Mucuna, → "Kamera"
Hiptage, Rosa, Caesalpinia. (Near Gauchar)
* Capparis zeylanica – W11 campus / Clement Town
* Cuscuta chinensis (W11 campus – small)
* Cuscuta satapani – purple stem
* Cuscuta reflexa – yellow
→ Cassia floribunda – Ψ; Sh – Y Fl → Gopeshwar
Bhairari: - Celtis australis
- Trichosanthes bracteata
- Ailanthus altissima
- Phragmites communis

* DDN-(W11) - Passiflora suberosa.
Songad – Melissa officinalis – Balm Songad

* Ilex exelsa – Kot Bangla [Uttarkashi]
* Michelia fuscata " " " small
* Zizyphus Oxycarpa – Tehri – Ukashi Rd.
* Tithonia diversifolia – Chamba

* Oxybaphus himalaicus –
Nyctaginaceae –
(Bhaironghati; Sukhi)
LL. Boerhaavia diffusa

NOTES

Flexuous = Zigzag
Runcinate = like Taraxacum leaves

Harkidoon

Bhatisi – Thermopsis barbata
(Preferred by sheep)

Ther kanda – Caragana sp.. White Fls/Red.
Open slopes – opp Sima
(Osla-side) – <3000m.

Sima chowki –
Virendra Bhandari – F.G.
Langa Basti
Sankri P.O.

Jeet Singh Rawat – Ruinsara Basti
F.G.

NOTES

① Hans Ram Bhandari — Bagori (UK

② Bharat Singh Negi

③ Kamal Singh Bhandari

Oenothera viennais — Ev. Prima

Govindghat.

Morva - Ocimum sp.

~~sp - [illegible]~~

Wild ocimum at Rishikesh H. Garden

Sikkim

Sandeep: 09733091853

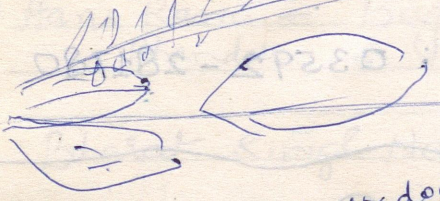
Bharat Pradhan: 03592-281780

Mr. P.M. Laad
Retd. PCCF



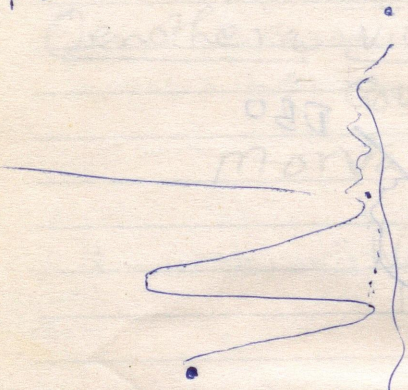
Farina = A mealy or powdery covering to an organ e.g., Primula sp.

[Farinaceous]



Acer pictum = A. cappadocicum

Desmodium elegans - Kinnaur, Rampur - Rupi-Bhabha (Photo)



Mr Ravi singh ?

Govind Aswal - 9897909964

Landscape units:

AF = Alluvial Fan
DRB = Dry River bed
SD = Sand Dune
SS = Scree Slope
RS = Rocky Surface
FF = Fell Fields
GL = Glacier
MM = Moist Meadow
MO = Moraine
AF = Agricultural Fields
RS = Riverine Scrub
DS = Dry Scrub
PL = Plantation
HAB = Human Habitation
LC = Livestock Camp
DER = Dry Exposed Rocks



