

9.28 UTTARAKHAND

9.28.1 Introduction

Uttarakhand is located in northern India from where the holy rivers Ganga and Yamuna originate. The state's geographical area is 53,483 km² which constitute 1.63% of the country's total area. It is situated between 28°43'N - 31°28' N latitude and 77°34'E - 81°03'E longitude. Topographically, Uttarakhand can be divided into three zones namely, the Himalayas, the Shiwaliks and the Terai region. The state has temperate climate except in the plains area where the climate is tropical. The temperature in the state ranges

from sub-zero to 43°C. The average annual rainfall is 1,550 mm.

As per *Census 2011*, the population of the state is 10.12 million which constitutes 0.84% of the country's population. Rural population constitutes 69.45% and urban population 30.55%. The population density is 189 persons per km². The livestock population of the state as per *Livestock Census 2007* is 5.14 million.

Land use pattern of the state is given in Table 9.28.1

Table 9.28.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	5,348	
Reporting area for land utilization	5,673	100.00
Forests	3,486	61.45
Not available for land cultivation	441	7.77
Permanent pastures and other grazing lands	199	3.51
Land under misc. tree crops and groves	384	6.77
Culturable wasteland	303	5.34
Fallow lands other than current fallows	71	1.25
Current fallows	35	0.62
Net area sown	754	13.29

Source: *Land Use Statistics, Ministry of Agriculture, GOI, 2008-09.*

9.28.2 Recorded Forest Area

The recorded forest area of the state is 34,651 km² which constitutes 64.79% of its geographical area. Reserved Forests constitute 71.11%, Protected Forests 28.52% and Unclassed Forests constitute 0.35% of the total forest area.

9.28.3 Protected Areas

The state has 6 National Parks, 6 Wildlife Sanctuaries and 2 Conservation Reserves covering a cumulative area of 7,376 km² which constitutes 13.79% of its geographical area. The famous Corbett Tiger Reserve is located in the state covering an area of 0.13 million ha. Nanda Devi Biosphere Reserve with an area of 0.59 million ha is also located in this state.

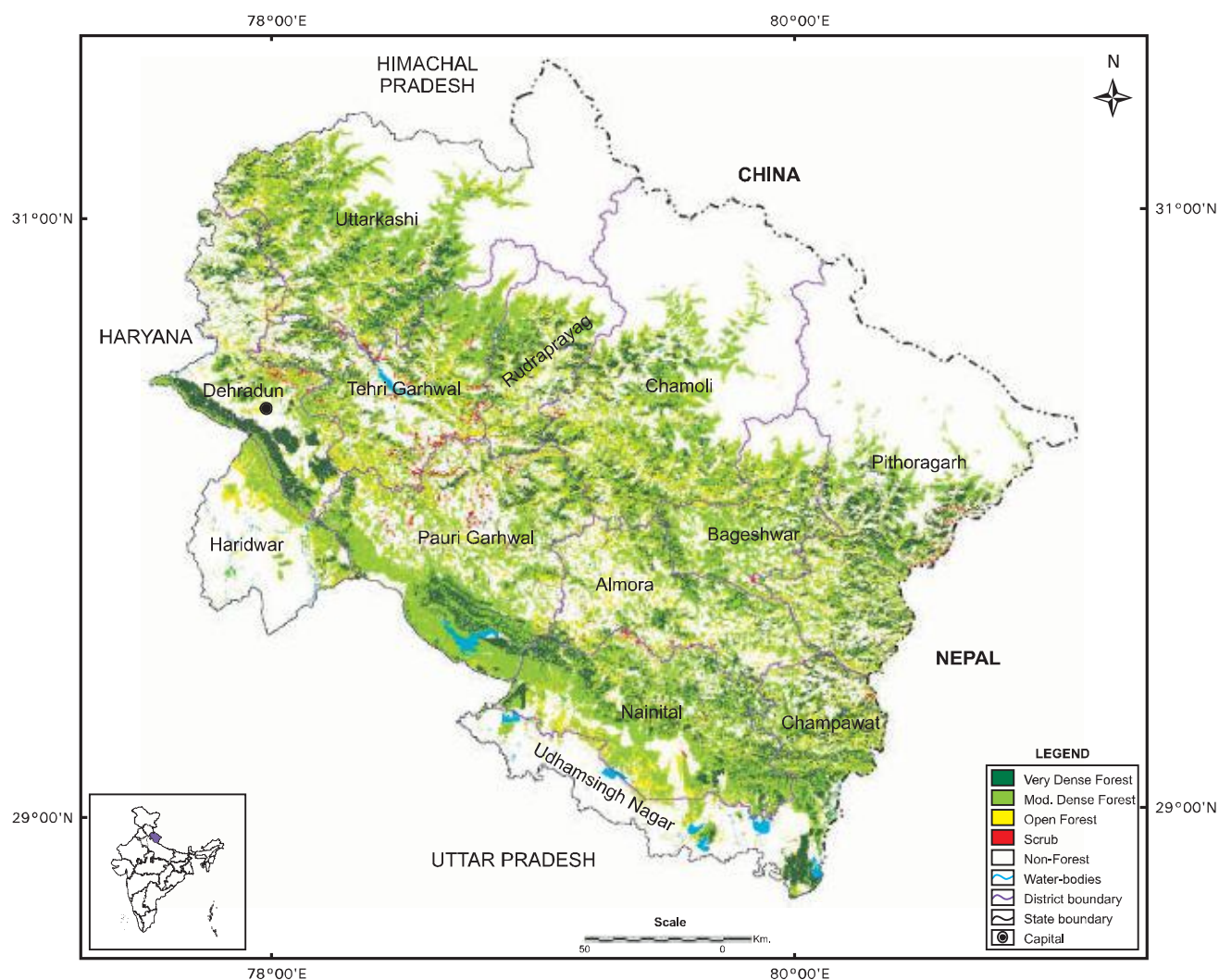
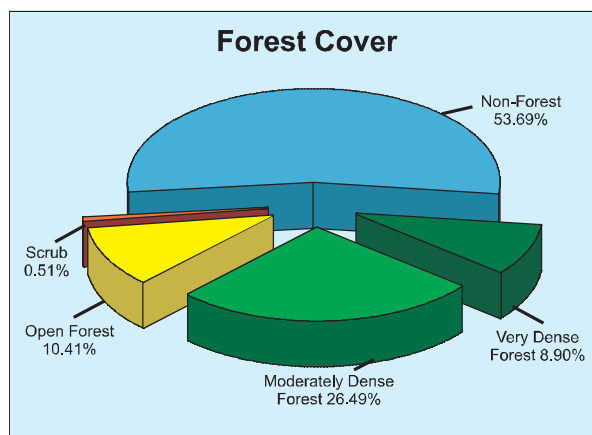


Fig 9.28 Forest cover map of Uttarakhand

9.28.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of October-December 2008, is 24,496 km² which is 45.80% of the state's geographical area. In terms of forest canopy density classes, the state has 4,762 km² area under very dense forest, 14,167 km² area under moderately dense forest and 5,567 km² area under open forest. The forest cover of the state is shown in Fig. 9.28.



India State of Forest Report 2011

District-wise forest cover in different canopy density classes and scrub along with the

changes compared to 2009 Assessment are given in Table 9.28.2.

Table 9.28.2: District-wise Forest Cover (Area in km²)

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Almora ^H	3,139	222	928	427	1,577	50.24	0	10
Bageshwar ^H	2,246	194	883	304	1,381	61.49	0	4
Chamoli ^H	8,030	427	1,586	682	2,695	33.56	0	6
Champawat ^H	1,766	336	571	274	1,181	66.87	0	8
Dehradun ^H	3,088	584	695	328	1,607	52.04	0	24
Pauri Garhwal ^H	5,329	523	2,094	672	3,289	61.72	0	59
Haridwar ^H	2,360	26	353	240	619	26.23	1	0
Nainital ^H	4,251	601	1,923	566	3,090	72.69	-3	13
Pithoragarh ^H	7,090	567	1,115	412	2,094	29.53	0	32
Rudraprayag ^H	1,984	246	581	298	1,125	56.70	0	5
Tehri Garhwal ^H	3,642	298	1,232	617	2,147	58.95	0	89
Udham Singh Nagar ^H	2,542	171	247	128	546	21.48	3	0
Uttarkashi ^H	8,016	567	1,959	619	3,145	39.23	0	21
Grand Total	53,483	4,762	14,167	5,567	24,496	45.80	1	271

Table 9.28.3: Forest Cover Change Matrix (Area in km²)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	4,762	0	0	0	0	4,762
Moderately Dense Forest	0	14,154	6	0	5	14,165
Open Forest	0	10	5,539	0	19	5,568
Scrub	0	0	0	271	0	271
Non-Forest	0	3	22	0	28,692	28,717
Total 2011	4,762	14,167	5,567	271	28,716	53,483
Net Change	0	2	-1	0	-1	

The change matrix given in Table 9.28.3 reveals that there has been an increase of 2 km² in moderately dense forest and a decrease of 1 km² is in open forest.

9.28.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.28.4.

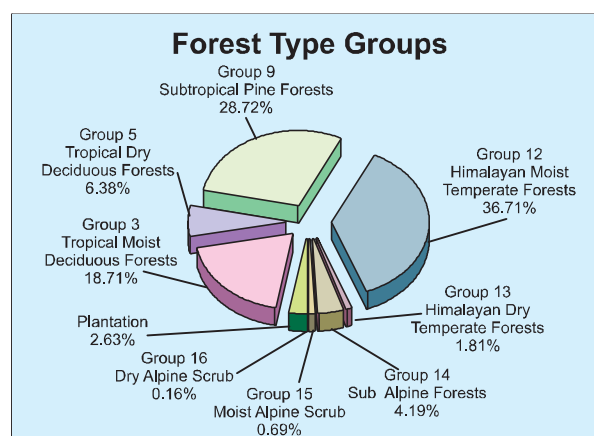
Table 9.28.4: Altitude Zone-wise Forest Cover				(Area in km ²)
Altitude Zone	VDF	MDF	OF	Total
0-500m	528	1,759	708	2,995
500-1000m	956	2,166	847	3,969
1000-2000m	1,546	5,560	2,735	9,841
2000-3000m	1,586	3,262	1,009	5,857
>3000m	146	1,420	268	1,834
Total	4,762	14,167	5,567	24,496

(Based on SRTM, Digital Elevation Model)

9.28.6 Forest Cover in Different Forest Types

Forest type mapping using satellite data has been undertaken by Forest Survey of India with reference to Champion & Seth Classification. As per this assessment, the state has 34 forest types which belong to eight forest type groups, viz. Tropical Moist Deciduous, Tropical Dry Deciduous, Subtropical Pine, Himalayan Moist Temperate, Himalayan Dry Temperate Forests, Sub Alpine Forests, Moist Alpine Scrub and Dry Alpine Scrub. Percentage-wise distribution of forest cover in different forest

type groups found in the state is given in the pie diagram.



9.28.7 Tree Cover

Tree cover of the state has been estimated using TOF inventory data collected over a period of six years, i.e. 2004-10. The estimated

tree cover in the state is 642 km² which is 1.20% of its geographical area. A total of 6 districts of the state have been inventoried. The forest and tree cover of the state is presented in Table 9.28.5.

Table 9.28.5: Forest and Tree Cover (Area in km²)

Category	Area	% of Geographical Area
Tree Cover	642	1.20
Forest Cover	24,496	45.80
Forest and Tree Cover	25,138	47.00

9.28.8 Growing Stock

The growing stock in the recorded forest area has been estimated on the basis of current forest cover map, forest type map and forest

inventory data. For trees outside forests (TOF), the same has been estimated using TOF inventory data, It is presented in the Table 9.28.6.

Table 9.28.6: Growing Stock (million cum)

Forest	TOF	Total
460.089	20.917	481.006

9.28.9 Bamboo

The extent of bamboo bearing area in the forests of the state is 451 km². Density-wise

details, number of culms by soundness and equivalent green weight are given in following tables:

Table 9.28.7: Bamboo bearing area by density in recorded forest area (Area in km²)

Recorded Forest Area	Pure bamboo	Dense bamboo	Scattered bamboo	Clumps hacked	Bamboo regeneration	No bamboo
34,651	0	67	329	47	8	34,200

Table 9.28.8: Estimated number of bamboo culms and equivalent green weight

Number of culms (in millions)				Equivalent Green Weight (in 000' tonnes)		
Green	Dry	Decayed	Total	Green	Dry	Total
143	92	24	259	690	506	1196