

# 11.27

## TRIPURA

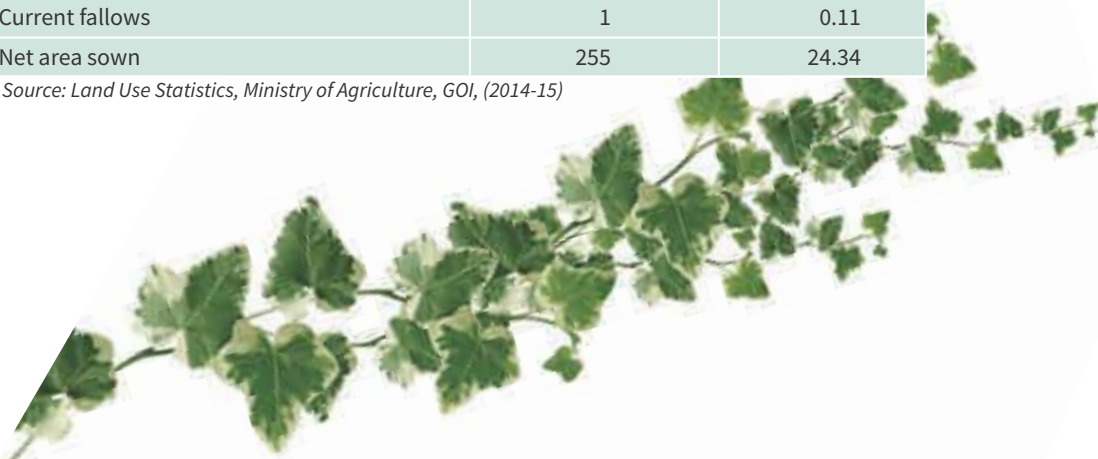
### 11.27.1 Introduction

Tripura is located in the North Eastern region of the country and has an area of 10,486 sq km which is 0.32% of the geographical area of the country. The State lies between 22°57' N to 24°32' N latitude and 91°10' E to 92°20' E longitude and is surrounded by Bangladesh on its north, south and west and shares borders with Assam and Mizoram on the east. Tripura has a Humid Climate and the annual rainfall ranges between 2,250 mm to 2,500 mm and the annual temperature varies from 7°C to 36°C. The State has four districts, all of which are hilly as well as tribal. The social composition of the population of Tripura is diverse. Around one-third of the population belongs to the Scheduled Tribes. The rural and urban population constitutes 73.83% and 26.17% respectively. The Tribal population is 31.76%. According to 2011 census, the State's population is 3.67 million which is 0.30% of the country's population. The average population density of the State is 350 persons per sq km, which is lower than the national average. The Livestock population of the State as per 19th Livestock Census 2012 is 1.94 million.

**TABLE 11.27.1** Land Use Pattern

Land Use Types	Area (in 000' ha)	Percentage
Geographical Area	1,049	
Reporting area for land utilization	1,049	100.00
Forests	629	59.99
Not available for land cultivation	146	13.93
Permanent pastures and other grazing lands	1	0.11
Land under misc. tree crops and groves	11	1.07
Culturable wasteland	3	0.29
Fallow land other than current fallows	2	0.16
Current fallows	1	0.11
Net area sown	255	24.34

Source: Land Use Statistics, Ministry of Agriculture, GOI, (2014-15)



### 11.27.1.1 A Brief Overview of Forestry Scenario

As per the Champion & Seth Classification of Forest Types (1968), the forests in Tripura belong to two Forest Type Groups which are further divided into five Forest Types. The forests in the State are mainly tropical evergreen, semi evergreen, and moist deciduous. Sizeable area is covered with bamboo brakes which virtually form a sub climax resulting from shifting cultivation. Bamboo plays a very vital role in the economy of the State.

The State has taken special initiative in involvement of people in management of forests in territorial Divisions and Wildlife Sanctuaries through formation of 'Joint Forest Management' Committees (JFMCs) and Eco Development Committees (EDCs) respectively.

Recorded Forest Area (RFA) in the State is 6,249 sq km of which 4,175 sq km is Reserved Forest, 2 sq km is Protected Forest and 2,117 sq km is Unclassed Forests. In Tripura, during the period 1st January 2015 to 5th February 2019, a total of 83.98 hectares of forest land was diverted for non-forestry purposes under the Forest Conservation Act, 1980 (MoEF & CC, 2019).

Two National Parks and four Wildlife Sanctuaries constitute the Protected Area network of the State covering 5.76% of its geographical area.

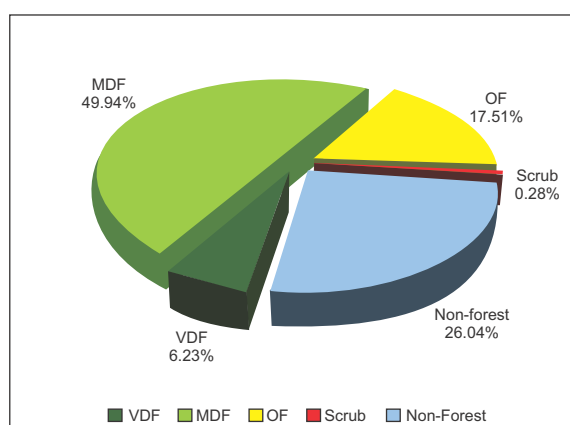
### 11.27.2 Forest Cover

Based on the interpretation of IRS Resourcesat-2 LISS III satellite data of the period Oct 2017 to Dec 2017, the Forest Cover in the State is 7,725.59 sq km which is 73.68 % of the State's geographical area. In terms of forest canopy density classes, the State has 653.51 sq km under Very Dense Forest (VDF), 5,236.19 sq km under Moderately Dense Forest (MDF) and 1,835.89 sq km under Open Forest (OF). Forest Cover in the State has decreased by 0.41 sq km as compared to the previous assessment reported in ISFR 2017.

**TABLE 11.27.2** Forest Cover of Tripura  
(in sq. km)

Class	Area	% of GA
VDF	653.51	6.23
MDF	5,236.19	49.94
OF	1,835.89	17.51
<b>Total</b>	<b>7,725.59</b>	<b>73.68</b>
Scrub	28.79	0.28

**FIGURE 11.27.1** Forest Cover of Tripura



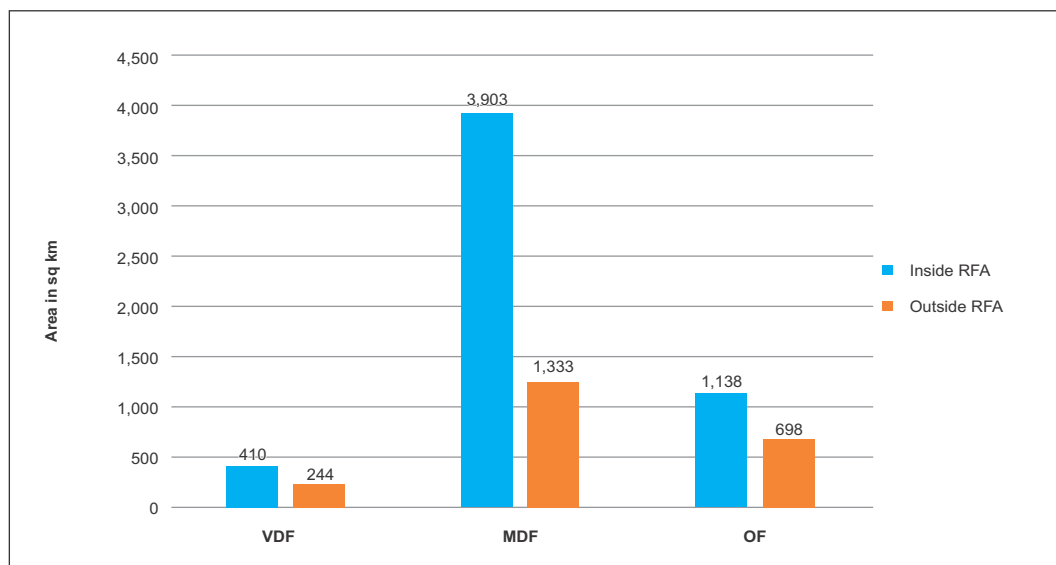
#### 11.27.2.1 Forest Cover inside and outside Recorded Forest Area (or Green Wash)

The State has reported extent of recorded forest area (RFA) 6,294 sq km which is 60.02% of its geographical area. The Reserved, Protected and Unclassed forests are 66.33%, 0.03% and 33.64% of the recorded forest area in the State respectively. However as the digitized boundary of recorded forest area from the state covers 5,837.64 sq km and the analysis of forest cover inside and outside this area is given below.

**TABLE 11.27.3** Forest Cover inside and outside Recorded Forest Area or (Green Wash) in Tripura (in sq km)

Forest Cover inside the Recorded Forest Area (or Green Wash)				Forest Cover outside the Recorded Forest Area (or Green Wash)			
VDF	MDF	OF	Total	VDF	MDF	OF	Total
410	3,903	1,138	5,451	244	1,333	698	2,275
7.51%	71.62%	20.87%		10.71%	58.59%	30.70%	

\*in case of Tripura RFA boundaries have been used.

**FIGURE 11.27.2** Forest Cover inside and outside RFA in Tripura

**TABLE 11.27.4** District-wise Forest Cover in Tripura (in sq km)

District	Geographical Area (GA)	2019 Assessment				% of GA	Change wrt 2017 assessment	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Dhalai <sup>TH</sup>	2,400	115.94	1,465.81	401.95	1,983.70	82.65	3.70	1.90
North Tripura <sup>TH</sup>	2,036	49.98	1,053.25	376.96	1,480.19	72.70	2.19	17.66
South Tripura <sup>TH</sup>	3,057	239.41	1,578.03	454.76	2,272.20	74.32	-4.80	0.10
West Tripura <sup>TH</sup>	2,993	248.18	1,139.10	602.22	1,989.50	66.47	-1.50	9.13
<b>Grand Total</b>	<b>10,486</b>	<b>653.51</b>	<b>5,236.19</b>	<b>1,835.89</b>	<b>7,725.59</b>	<b>73.68</b>	<b>-0.41</b>	<b>28.79</b>

**TABLE 11.27.5** Forest Cover Change Matrix for Tripura (in sq km)

Class	2019 Assessment					Total ISFR 2017
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	654	0	0	0	2	<b>656</b>
Moderately Dense Forest	0	5,235	0	0	11	<b>5,246</b>
Open Forest	0	0	1,812	0	12	<b>1,824</b>
Scrub	0	0	1	14	0	<b>15</b>
Non Forest	0	1	23	15	2,706	<b>2,745</b>
<b>Total ISFR 2019</b>	<b>654</b>	<b>5,236</b>	<b>1,836</b>	<b>29</b>	<b>2,731</b>	<b>10,486</b>
Net Change	-2	-10	12	14	-14	

Main reasons for the decrease in forest cover in the State are shifting cultivation and development activities.

**TABLE 11.27.6** Altitude-wise Forest Cover in Tripura (in sq km)

Altitude Zone (m)	Geographical Area	VDF	MDF	OF	Total	Scrub
0-500	10,420	654	5,190	1,819	7,663 (99.18%)	26
500-1000	66	0	46	17	63 (0.82%)	3
<b>Total</b>	<b>10,486</b>	<b>654</b>	<b>5,236</b>	<b>1,836</b>	<b>7,726</b>	<b>29</b>

(based on SRTM, Digital Elevation Model, 30 m, 2016)

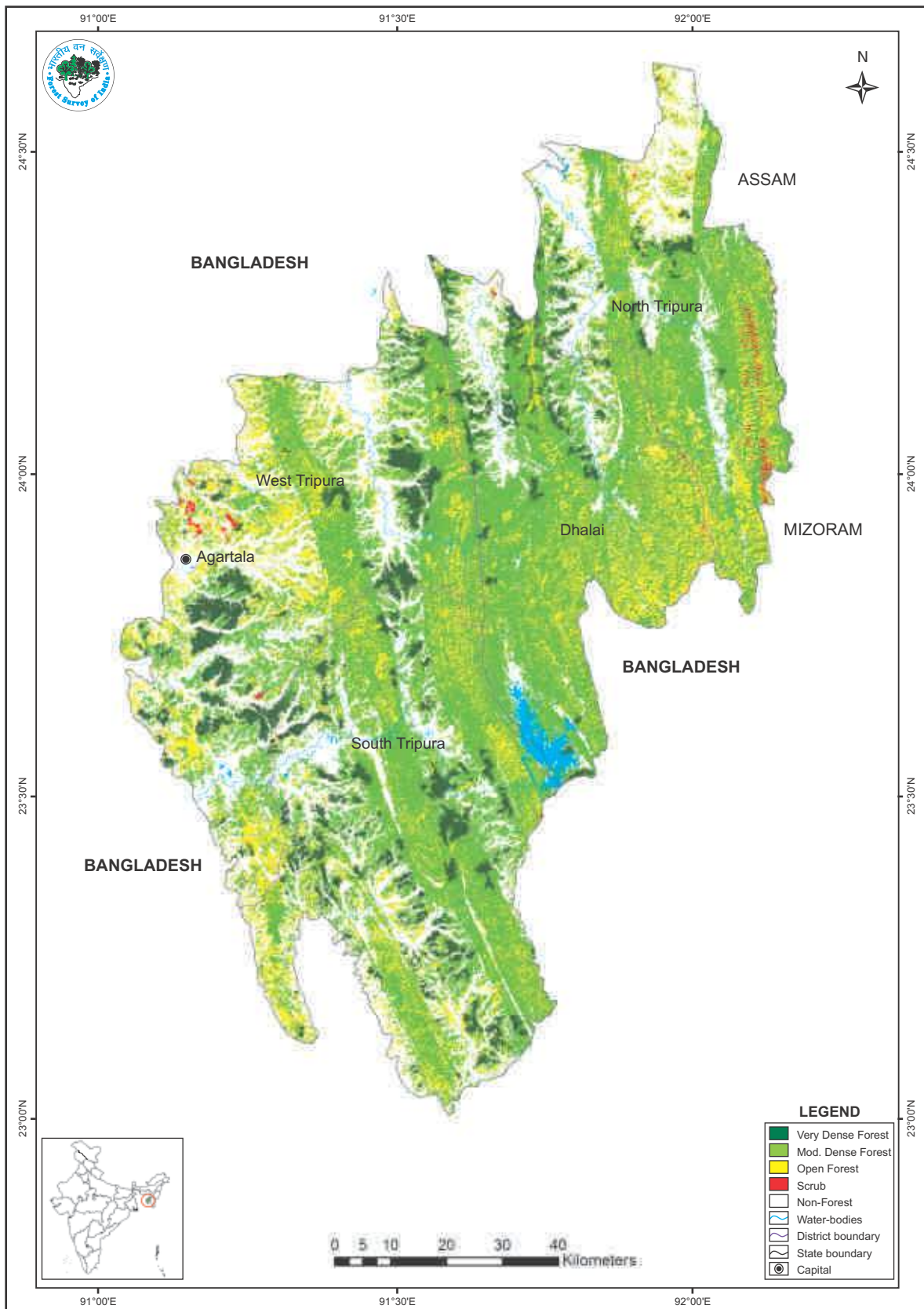
**TABLE 11.27.7** Forest Cover in different slope classes in Tripura (in sq km)

Slope (in degrees)	Geographical Area	VDF	MDF	OF	Total	Scrub
0-5	6,067	432	2,436	927	3,795 (49.11%)	10
5-10	2,630	175	1,600	462	2,237 (28.96%)	3
10-15	1,059	35	722	235	992 (12.84%)	3
15-20	446	8	301	123	432 (5.59%)	4
20-25	179	2	114	56	172 (2.23%)	4
25-30	68	1	41	22	64 (0.83%)	3
>30	37	1	22	11	34 (0.44%)	2
<b>Total</b>	<b>10,486</b>	<b>654</b>	<b>5,236</b>	<b>1,836</b>	<b>7,726</b>	<b>29</b>

(based on SRTM, Digital Elevation Model, 30 m, 2016)



**FIGURE 11.27.3** Forest Cover Map of Tripura



**TABLE 11.27.8** Wetlands inside the Recorded Forest Area (or Green Wash) in Tripura (in ha)

Wetland Category	No. of Wetlands	Total Wetland Area
Inland Wetlands - Natural		
Ox-bow lake/Cut-off meander	23	55
Riverine wetland	17	25
Waterlogged	115	343
River/Stream	12	1,260
<b>Sub - Total</b>	<b>167</b>	<b>1,683</b>
Inland Wetlands - Man-made		
Reservoir/Barrage	8	1,661
<b>Sub - Total</b>	<b>8</b>	<b>1,661</b>
Wetlands (<2.25 ha)	535	535
<b>Total</b>	<b>710</b>	<b>3,879</b>
Total Recorded Forest (or Green wash) Area (in ha)		5,83,764
<b>% of Wetland area inside Recorded Forest (or Green Wash) Area</b>		<b>0.66%</b>

(analysis based on the National Wetland Atlas: India, 2011)

### 11.27.3 Forest Types & Biodiversity

Forest Type Maps of 2011 have been refined in the recently completed exercise by FSI. Percentage area under different forest types of Tripura as per the Champion & Seth classification (1968), according to the latest exercise are presented in the following table.

**TABLE 11.27.9** Percentage Area under different forest types of Tripura

Sl. No.	Forest Type	% of Forest Cover
1.	2B/C2 Cachar Semi-Evergreen Forest	27.47
2.	2B/2S1 (Pioneer Euphorbiaceous Scrub)	0.01
3.	2/2S1 Secondary Moist Bamboo Brakes	7.55
4.	3C/C1b(ii) East Himalayan Lower Bhabar Sal	2.57
5.	3C/C3b East Himalayan Moist Mixed Deciduous Forest	39.89
6.	Plantation/TOF	22.51
	<b>Total</b>	<b>100.00</b>

#### 11.27.3.1 Assessment of Biodiversity

Findings of the rapid assessment of biodiversity carried out at the national level for natural forests during September 2018 to May 2019 as part of the forest type mapping exercise is summarized below in table 11.27.10 and 11.27.11 in respect of Tripura.

**TABLE 11.27.10** No. of species observed during the rapid assessment

Plant Type	Number of Species
Tree	89
Shrub	37
Herb	22

**TABLE 11.27.11** Shannon-Wiener Index of Tree, Shrub and Herb species in different Type Groups of Tripura

Sl.No.	Forest Type Group	Shannon-Wiener Index		
		Tree	Shrub	Herb
1	Group 2- Tropical Semi-Evergreen Forests	2.77	1.69	3.47
2	Group 3- Tropical Moist Deciduous Forests	3.14	2.95	2.97

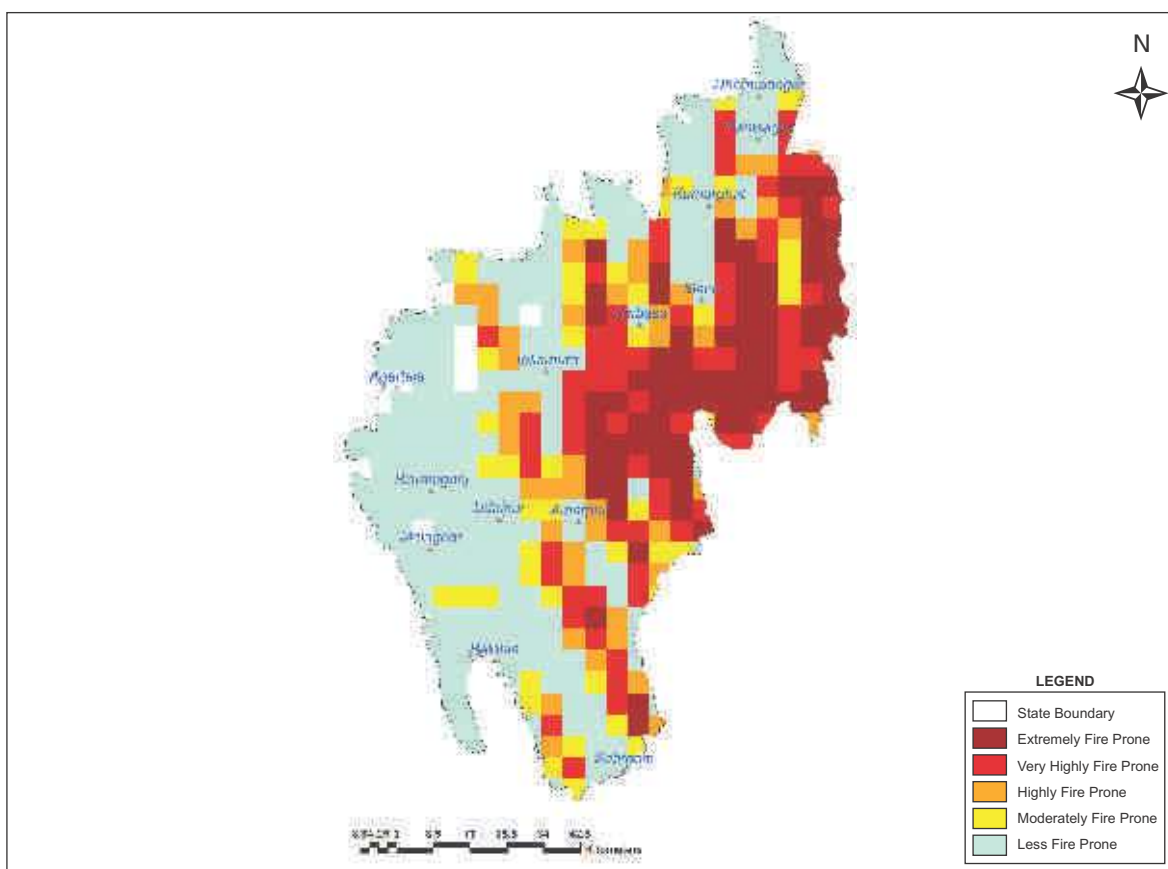
**11.27.4 Fire Prone Forest Areas**

Geographical area under different classes of forest fire proneness are given in the following table.

**TABLE 11.27.12** Forest Fire Prone Classes (in sq km)

Sl.No.	Forest Fire Prone Classes	Geographical Area	% of Total Forest Cover
1.	Extremely fire prone	1,943.69	26.95
2.	Very highly fire prone	1,644.32	21.90
3.	Highly fire prone	1,091.70	12.62
4.	Moderately fire prone	1,040.88	10.76
5.	Less fire prone	4,516.70	27.77
	<b>Total</b>	<b>10,237.29</b>	<b>100.00</b>

**FIGURE 11.27.4** Fire prone forest areas under different fire prone classes



### 11.27.5 Tree Cover

Forest cover presented in the section 11.27.2 accounts for tree patches of size 1 ha and more having canopy density more than 10%. However, trees occurring in patches of size less than 1 ha including scattered trees are assessed through sampling based methodology. Tree cover in Tripura has been estimated as given in table 11.27.13.

**TABLE 11.27.13** Tree Cover in Tripura  
(in sq km)

Tree Cover	Area
	231

Tree cover of Tripura has increased by 16 sq km as compared to the previous assessment reported in ISFR 2017.

### 11.27.6 Extent of Trees Outside Forest (TOF)

Trees outside Forests (TOF) refer to tree resources found outside the Forests as defined in the Government records. FSI maps forest cover using satellite data and assesses tree cover outside forests using sampling based method. Forest Cover outside the recorded forest area is derived using boundaries of RFA or Green Wash. Extent of TOF therefore may be estimated as the sum of extent of forest cover outside the recorded forest areas (RFA) and tree cover as given in the preceding section.

**TABLE 11.27.14** Extent of TOF in Tripura  
(in sq km)

Forest Cover outside the RFA/GW	Tree Cover	Extent of TOF
2,275	231	2,506

### 11.27.7 Growing Stock in Tripura

Growing stock in the recorded forest areas (RFA) in Tripura is given in the table 11.27.15. Diameter class-wise distribution of top 5 species in numbers derived from the forest inventory data is presented in the table 11.27.16.

**TABLE 11.27.15** Growing Stock in Tripura  
(in m cum)

Growing Stock (GS)		% of Country's GS
Growing Stock in Recorded Forest Area	19.74	0.46
Growing Stock in TOF	6.76	0.41

**TABLE 11.27.16** Diameter class distribution of top five species inside RFA in Tripura  
(in '000)

Sl.No.	Species	Dia class (cm)		
		10-30	30-60	>60
1.	<i>Albizia species</i>	7,697	1,623	93
2.	<i>Tectona grandis</i>	6,337	1,002	0
3.	<i>Hevea brasiliensis</i>	26,081	1,415	0
4.	<i>Ficus carica</i>	4,709	31	0
5.	<i>Macaranga species</i>	6,100	121	0



**11.27.8 Carbon Stock in Forest**

The total Carbon stock of forests in the State including the TOF patches which are more than 1 ha in size is 76.06 million tonnes (278.89 million tonnes of CO<sub>2</sub> equivalent) which is 1.07% of total forest carbon of the country. Pool wise forest carbon in Tripura is given in the following table.

**TABLE 11.27.17** Forest Carbon in Tripura in different pools

(in '000 tonnes)

AGB	BGB	Dead wood	Litter	SOC	Total
25,061	5,513	297	2,169	43,017	76,057

**11.27.9 Growing Stock of Bamboo**

Bamboo bearing area and growing stock inside the recorded forest area (RFA)/ Green Wash which include culms of 1 year age and above are given in the table 11.27.18

**TABLE 11.27.18** Growing Stock of Bamboo in Tripura

Growing Stock (GS)		% of Country's GS of Bamboo
Bamboo bearing area inside RFA/Green wash (in sq km)	3,783	2.36
Total number of culms (in millions)	1,110	2.81
Total equivalent green weight (in 000' tonnes)	6,295	2.27

**11.27.10 Dominant tree species in Trees Outside Forests (TOF)**

Top five species in numbers in Trees Outside Forests in Tripura in Rural and Urban areas are given in the table 11.27.19 and table 11.27.20 respectively

**TABLE 11.27.19** Top five tree species in TOF (Rural) in Tripura

Sl. No.	Species	Relative Abundance (%)
1.	<i>Hevea brasiliensis</i>	59.95
2.	<i>Tectona grandis</i>	8.20
3.	<i>Areca catechu</i>	6.33
4.	<i>Schima wallichii</i>	3.95
5.	<i>Dipterocarpus turbinatus</i>	3.15

**TABLE 11.27.20** Top five tree species in TOF (Urban) in Tripura

Sl. No.	Species	Relative Abundance (%)
1.	<i>Areca catechu</i>	39.45
2.	<i>Mangifera indica</i>	9.28
3.	<i>Cocos nucifera</i>	7.98
4.	<i>Artocarpus integrifolia</i>	7.86
5.	<i>Hevea brasiliensis</i>	5.27

**11.27.11 Major NTFP and Invasive Species**

Major NTFP and invasive species as assessed from forest inventory data are presented in the table 11.27.21 and table 11.27.22 respectively.

**TABLE 11.27.21** Major NTFP species in the State of Tripura

Sl. No.	Species	Plant Type	Relative Abundance (%)
1.	<i>Clerodendrum serratum</i>	Shrub	53.62
2.	<i>Diplagium species</i>	Herb	32.50
3.	<i>Curcuma aromatic</i>	Herb	4.39
4.	<i>Curcuma caesia</i>	Herb	3.56
5.	<i>Thysanolaena maxima</i>	Herb	3.08

**TABLE 11.27.22** Major invasive species in the State inside the RFA/Green wash in Tripura (in sq km)

Sl. No.	Species	Estimated Extent
1.	<i>Chromolaena odorata</i>	214
2.	<i>Mikania micrantha</i>	90
3.	<i>Imperata cylindrica</i>	17
4.	<i>Saccharum spontanem</i>	8
5.	<i>Lantana camara</i>	3

Major NTFP species are given in terms of relative abundance whereas invasive species are given in terms of their estimated extent.

### 11.27.12 Quantified estimation of Dependence of People living in forest fringe villages on forests in Tripura

Through a nation-wide study, FSI has done estimation of dependence of people living in the villages close to forest for fuel wood, fodder, small timber and bamboo in quantified terms for each State & UT of the country (Please refer to Chapter 10 in Vol. I for details). The estimated quantities of the four produce for Tripura is given in the table 11.27.23.

**TABLE 11.27.23** Estimation of Dependence of People in Forest Fringe Villages on Forests in Tripura

Fuelwood (tonnes)	Fodder (tonnes)	Bamboo (tonnes)	Small Timber (cum)
6,99,848	15,88,471	3,504	8,468

