

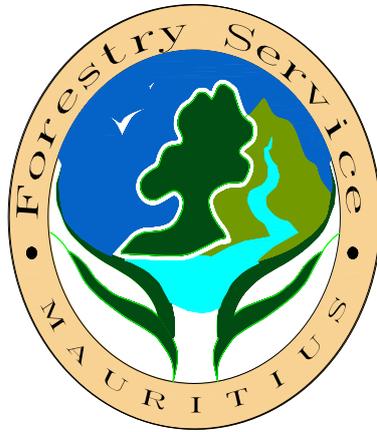
# **ANNUAL REPORT OF THE FORESTRY SERVICE**

**2016**



**FORESTRY SERVICE**  
**MINISTRY OF AGRO INDUSTRY & FOOD SECURITY**

Forestry Service  
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## **VISION**

Our vision is to ensure a healthy forest environment that will satisfy the needs and aspirations of present and future generations for goods and services derived from our forests in a sustainable manner.

## **MISSION**

Our mission is to sustainably manage our forest resources for, with and on behalf of the people of Mauritius.

## **GOAL**

Our goal is to manage and monitor the development of the forest sector in a sustainable way, in harmony with our National Development Plan.

We aim to fulfill the commitment by:

- Improving the management, protection, rational use and diversification of our forest resources;
- Protecting the Environmentally Sensitive Areas (ESAs) in forests to ensure a continuous supply of clean and fresh water for domestic and other purposes;
- Preserving our rich heritage of native species of plants, birds and animals; and
- Developing facilities in our forests for leisure and recreation.



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### Main features of the year 2016

(i) **The National Tree Planting Programme 2016-2020**

In order to implement the “Strategic Plan for Enhancing the Tree Cover of Mauritius (2016-2020)”, a National Tree Planting Programme was initiated by this Service, including relevant stakeholders, in 2016 with a view to introduce 100,000 plants annually, extending over a period of 5 years, in all corners of the island. Some 106,721 plants were planted throughout the island during the year 2016.

**(ii) The International Day of Forests**

In the context of the International Day of Forests 2016, the Forestry Service, under the aegis of the Ministry of Agro Industry and Food Security, officially launched the National Tree Planting Programme at Pointe du Diable, Petit Sable on 21 March 2016. To mark the event, different activities and awareness campaigns were initiated by the Forestry Service, including free distribution of pamphlets, posters and plants.



Free distribution of plants to encourage tree planting

**(iii) The Earth Day**

The Earth Day 2016 was celebrated at Surinam Social Welfare Centre on 22 April 2016. On that occasion, talks on forest biodiversity in Mauritius were delivered by Forest Officers, followed by a free distribution of plants to inhabitants of the locality.

**(iv) The World Environment Day**

The World Environment Day was celebrated by this Service at Gymkhana, Vacoas from 2 to 5 June, 2016. Sensitization of the civil society was effected

through talks on biodiversity conservation, soil and water conservation and environmental functions of forests and trees.

**(v) The World Food Day**

The World Food Day 2016 was celebrated at Domaine Les Pailles and Mahebourg Waterfront from 14 to 16 October and from 20 to 22 October respectively. To mark this event, talks on agroforestry issues were delivered and plants were sold at reduced price at different nurseries of the Forestry Service.

**(v) Raising of Plants**

Some 274,682 plants were raised in the Forest Nurseries, the Tree Seed Centre and the Greenhouse Unit of this Service. A stock of 908,858 was carried over from the previous year and the stock remaining at the end of the year 2016 was 961,339. Some 54,342 plants were sold to the public.

**(vi) The National Tree Planting Campaign**

19,519 plants were issued free of charge under the National Tree Planting Campaign during the year under review.



Sensitizing the younger generation on the importance of tree-planting

**(vii) Forest Plantations**

42 hectares of state forest lands were reforested with mainly *Pinus elliottii* seedlings, including 10% of native species.

**(viii) Tending (Maintenance of young forest plantations)**

59 hectares of young plantations were weeded. Recruiting was carried out on 96 hectares to replace dead and dying plants. Noxious weeds and undergrowth were uprooted on 98 hectares.

**(ix) Recreational Forestry**

Four Nature Walks, namely: Powder Mills at Pamplémousses (near SSR National Hospital), Monvert at Forest Side, Sophie and Ile d'Ambre, are under the management of the Forestry Service, with a view to provide leisure and recreation to both the local population and tourists. Some 38,229 people visited these sites and 74 guided tours by Forest Officers were effected during the year 2016. It is worthy to note that Ile d'Ambre, although under the jurisdiction of the National Parks and Conservation Service, is managed by the Forestry Service.

Monvert Nature Walk comprises a Visitors Centre and a fernery where a live display of native ferns and orchids can be contemplated. Sophie Visitor's Centre also includes a Forest Museum, where ancient forestry tools and accessories are displayed.



Ile d'Ambre Nature Walk



Sophie Nature Walk

**(x) Exploitation**

882 m<sup>3</sup> of logs, 42 m<sup>3</sup> of poles and 1690 m<sup>3</sup> of firewood were sold to registered wood merchants during the year 2016.

**(xi) Forest Legislation**

The Forests and Reserves Act No. 41 of 1983, as amended by Act No.1 of 1986 and Act No.7 of 2003, was still in force for the administration and management of forest resources.

## CHAPTER 1

### Forest Management

- 1.1 The total extent of forest cover in Mauritius, at the end of the year 2016, is estimated at 47,066 hectares representing about 25% of the total land area. There are only two types of forest ownership in Mauritius: public and private. There are more forests on private lands with an estimated extent of around 25,000 hectares as compared to about 22,066 hectares on state lands.

Approximately 14,612 hectares of land are covered with planted forests. The remaining are natural forests, most of which are badly degraded. Only around 2% of the land area of Mauritius is considered to be covered with good quality native forests.

Out of the 22,066 ha of State Forest Lands, 14,558 ha are under the jurisdiction of the Forestry Service, 7,233 ha under that of the National Parks and Conservation Service and 275 ha are managed by the Vallée d'Osterlog Endemic Garden Trust.

Although privately-owned, the extent of mountain and river reserves, amounting to some 6,540 ha, is protected under the Forests and Reserves Act of 1983 and is under constant surveillance of the Forestry Service.

The forests of Mauritius are small in area but perform vital functions, the most important of them being soil and water conservation. Where water is scarce, activities like agriculture, tourism or manufacturing are seriously affected. The environmental functions of forests in small island developing states (SIDS) far outweigh their direct economic functions. The roles of forests in reducing soil erosion, enhancing carbon sequestration, conservation of biodiversity & genetic resources, recreation & ecotourism are now widely recognized and valued. Consequently, conservation, protection and development of the remaining forests through sustainable management are priority objectives of the overall national forest policy of Mauritius. In fact, the forests of Mauritius are now managed more for these environmental functions rather than for timber production. Consequently, timber exploitation is gradually being phased out and restricted to salvage operations following cyclones and other natural disasters such as outbreaks of insect attacks, diseases and droughts. In future, emphasis in forest management will be on increasing the size of the forest estate, resource conservation, protection of watersheds, forest ecosystems and biodiversity conservation and replacement of harmful invasive exotic species by native species.



Catchment areas around Mare aux Vacoas reservoir

- 1.2 The National Forest Policy 2006, under which the Forest Sector is managed, aims at:
- (i) increasing tree planting in the catchment areas of rivers, lakes and reservoirs in the interest of soil and water conservation, for mitigating floods and droughts and for the retardation of siltation of reservoirs;
  - (ii) conserving the natural heritage of the country by preserving the remaining forests with their unique fauna and flora, which represents the remarkable biological diversity and genetic resources of the country;
  - (iii) increasing forest/tree cover to enhance the environment and the carbon sink capacity of the forests through afforestation, reforestation and the National Tree Planting Campaign;
  - (iv) promoting the development of inland recreation and ecotourism activities for tourists and the local population;
  - (v) ensuring the sustainable management of forest lands leased for Shooting & Fishing (Deer Ranching); and
  - (vi) improving the Forestry Service.

Classification of forest lands in Mauritius (2016)

1.3 The forest lands in Mauritius are classified as follows:

<b>I. State-owned Forest Lands</b>		<b>Area (hectares)</b>
<b>Forests on State Lands</b>		<b>21,443</b>
a	Plantations (mostly <i>Pinus elliottii</i> )	11,798
b	(i) Black River Gorges National Park	6,574
	(ii) Bras d'Eau National Park	497
c	Special Reserves (Open & Closed Reserves)	136
d	(i) Rivulet Terre Rouge Estuary Bird Sanctuary	26
	(ii) Pointe d'Esny Wetland	20
e	(i) Nature Reserves on mainland	200
	(ii) Nature Reserves on islets	599
f	Vallée d'Osterlog Endemic Garden	275
g	Others, including scrublands, native forests, and marginal lands	1,318
<b>Forests on Pas Géométriques</b>		<b>623</b>
a	Plantations (mostly <i>Casuarina equisetifolia</i> )	214
b	Leased for grazing	230
c	Others (mostly rocky)	179
<b>Total State Forest Lands</b>		<b>22,066</b>
<b>II. Privately-owned Forest Lands</b>		
a	(i) Mountain Reserves	3,800
	(ii) River Reserves	2,740
b	Private reserves	13
c	Plantations (mostly <i>Eucalyptus tereticornis</i> )	2,600
d	Other forest lands, including scrublands and grazing areas	15,847
<b>Total Private Forest Lands</b>		<b>25,000</b>
<b>Grand Total</b>		<b>47,066</b>

State Forest Lands

1.4 The total area of forests on State lands was 21,444 ha and that on Pas Géométriques was 625 ha at the end of the year 2015. During the year under review, 1 ha of State-owned Pine plantation and 2 ha of Filao plantation were retrieved from the Service for the creation of various infrastructural projects. Consequently, the total area of forests on State lands dropped to 21,443 ha and that on Pas Géométriques to 623 ha.

It is worthy to point out that the construction of a wind farm at Plaine Sophie was initiated by the Consortium Suzlon-Padgreen Co. Ltd in 2012 but land clearing started in October 2016. As per the lease agreement, around 9 ha of State forest lands had to be cleared for this project. As at 31 December 2016, some 5 ha of Pine plantations at S.Ls Sophie, Good End, Beard and Perrier were already cleared. It should also be noted that a replanting programme is included in the lease agreement and this will be implemented shortly.

### Pas Géométriques

1.5 The Pas Géométriques form a narrow belt, theoretically 81.21 metres (250 French feet) in width, all around the coast and are State-owned. There are several cases where the width is less than 81.21 metres or does not exist at all.

1.6 The total area of Pas Géométriques is about 2,110 hectares. Most have undergone a change in land use and are now leased for bungalow and hotel sites. Proclaimed and unproclaimed public beaches occupy a fairly large area around the island. The area of Pas Géométriques under the control of the Forestry Service was only 623 hectares during the year under review.



### *Casuarina equisetifolia* plantation on Pas Géométriques

1.7 Filao (*Casuarina equisetifolia*), a nitrogen-fixing species, is mostly planted along the coast. It is well adapted to coralline sand, grows fast and yields valuable timber, poles and firewood. On the windward side of the island, the Filao plantation acts as a useful windbreak.

### Privately-owned forest lands

1.8 Mountain Reserves occupy the upper slopes of mountains; parts are rocky and bare but many areas are densely covered with native vegetation and Invasive Alien Species (IAS) like Traveller's palm (*Ravenala madagascariensis*), Privet (*Ligustrum robustum* var. *walkeri*) and Aloès (*Furcraea foetida*). Most of these areas are extensively used for deer ranching.

- 1.9 River Reserves are strips of land bordering a natural watercourse on both banks, whose widths are of 3 metres, 8 metres or 16 metres on each side according to the status of the watercourse, whether it is a feeder, a rivulet or a river respectively, as per the Forests and Reserves Act No. 41 of 1983. Most of these are privately-owned and are maintained by the riparian owners. Nevertheless, the Forestry Service exercises a strict control on any developments effected thereon and these are under constant surveillance.
- 1.10 It is worthy to note that Mountain and River Reserves, which occupy a total extent of 6,540 ha, although privately-owned, are protected under the Forests and Reserves Act of 1983.

#### Other Privately- Owned Lands

- 1.11 It is estimated that about 15,847 hectares of privately-owned land is under scrub forest and is mostly managed for deer ranching and ecotourism.

1.12 Hereunder is a list of **Terrestrial Protected Areas** within the *Republic of Mauritius* (2016)

<b>Name</b>	<b>Conservation status</b>	<b>Extent (ha)</b>	<b>Total Extent(ha)</b>
<b>State Protected Areas - Mainland</b>			
<i>Black River Gorges</i>	<i>National Park<sup>1</sup></i>	6,574.00	<b>7,071.20</b>
<i>Bras D'Eau</i>		497.20	
<i>Pouce</i>	<i>Nature Reserve<sup>2</sup></i>	68.80	<b>224.26</b>
<i>Perrier</i>		1.44	
<i>Bois Sec</i>		5.91	
<i>Gouly Père</i>		10.95	
<i>Corps de Garde</i>		90.33	
<i>Cabinet</i>		17.73	
<i>Les Mares</i>		5.10	
<i>Grande Montagne (Rodrigues)</i>		14.00	
<i>Anse Quitar (Rodrigues)</i>		10.00	
<i>Vallée d'Osterlog Endemic Garden</i>		<i>National Protected Area<sup>3</sup></i>	
<i>Rivulet Terre Rouge Estuary Bird Sanctuary</i>	<i>Wetland (Ramsar Site)<sup>4</sup></i>	26.00	<b>46.00</b>
<i>Pointe d'Esny Wetland</i>		20.00	
<b>State Protected Areas - Offshore Islets</b>			
<i>Pigeon Rock</i>	<i>Special Reserve<sup>1</sup></i>	0.63	<b>136.42</b>
<i>Ile d'Ambre</i>		128.00	
<i>Rocher des Oiseaux</i>		0.10	
<i>Ile aux Fous</i>		0.30	
<i>Ile aux Vacoas</i>		1.36	
<i>Ile aux Fouquets</i>		2.34	
<i>Ilot Flamants</i>		0.80	
<i>Ile de la Passe</i>		2.19	
<i>Ile aux Oiseaux</i>		0.70	
<i>Coin de Mire</i>		<i>Nature Reserve<sup>2</sup></i>	
<i>Ile aux Aigrettes</i>	24.96		
<i>Ile aux Serpents</i>	31.66		
<i>Ile Plate</i>	253.00		
<i>Ile Ronde</i>	168.84		
<i>Ilot Gabriel</i>	42.20		
<i>Ilot Marianne</i>	1.98		
<i>Ile aux Cocos (Rodrigues)</i>	15.00		
<i>Ile aux Sables (Rodrigues)</i>	8.00		
<b>Privately-owned Protected Areas</b>			
<i>Mountain Reserves</i>	<i>Mountain Reserve<sup>2</sup></i>	3,800.00	<b>3,800.00</b>
<i>River Reserves</i>	<i>River Reserve<sup>2</sup></i>	2,740.00	<b>2,740.00</b>
<b>TOTAL</b>		<b>14,914.50</b>	<b>14,914.50</b>

<sup>1</sup> Protected as per the Native Terrestrial Biodiversity & National Parks Act of 2015

<sup>2</sup> Protected as per the Forests and Reserves Act of 1983 (as amended in 1986 and 2003)

<sup>3</sup> Protected as per the Vallée d'Osterlog Endemic Garden Foundation Act of 2007

<sup>4</sup> Designated as Wetlands of International Importance under the RAMSAR Convention

**Note:** "Special Reserve" includes Open and Closed Reserves as per Section 11 of the Native Terrestrial Biodiversity & National Parks Act of 2015

### Forest Legislation

- 1.13 The Forests and Reserves Act No. 41 of 1983, together with its amendments, was still in force during the year 2016 for the administration and management of forests and forest resources.
- 1.14 The Wood Exploitation Licence Regulations 1992 proclaimed under Section 17 of the Forests and Reserves Act 1983 which states that “No person shall exploit timber, poles and firewood for commercial purposes from State-owned lands unless he holds a Wood Exploitation Licence issued under the authority of the Minister”, were still applicable.
- 1.15 The newly-proclaimed Native Terrestrial Biodiversity and National Parks Act 2015 was still in force during the year 2016. It makes further and better provision for the protection, conservation and management of native terrestrial biodiversity in Mauritius.
- 1.16 The Conservator of Forests was still a member of the newly-constituted Native Terrestrial Biodiversity and National Parks Advisory Council. He was also still a member of the Invasive Alien Species Committee, the Special Technical Committee on Wildlife, the National Parks & Conservation Fund and the Scientific Authority for the purpose of CITES.
- 1.17 The State Land (Amendment) Act No. 6 of 1986 and the Pas Géométriques (Amendment) Act. No. 7 of 1986 were still in force. These acts give powers to the Minister of Housing & Lands to evict squatters on State Lands and Pas Géométriques.

## CHAPTER II

### A. Organization of the Forestry Service

- 2.1 The Forestry Service is responsible mainly for the management of the State forest lands within which it carries out its main activities, namely: reforestation, afforestation, conservation, utilization and promoting leisure and recreation.
- 2.2 At the end of the year 2016, the establishment of the Forestry Service was made up as follows:

<b>SN</b>	<b>Grade</b>	<b>Establishment according to funded position</b>
1.	Professional Staff (CF, DCF & ACF)	4
2.	Technical Staff (DFO, CFCEO, PFCEO, SFCEO & FCEO)	109
3.	Technical Design Officer	1
4.	Procurement & Supply Officer	1
5.	General Service Staff (incl. Confidential Secretary, Word Processing Operator, Receptionist, Office Care Attendant Cadre)	42
6.	Survey Field staff, Woodcutter & Security Guard	35
7.	Artisan, Senior Field Supervisor, Field Supervisor, Driver, Motor Mechanic, Lorry Loader, Tobacco Grader, Warehouse Operative, Sanitary Attendant, Leading Hand	53
8.	General Worker, , Head Gardener Nursery Attendant, Senior Gardener Nursery Attendant, Gardener Nursery Attendant, Insecticide Sprayer Operator, Stores Attendant	349
	<b>Total</b>	<b>594</b>

- 2.3 Annexes I & II show the management chart and the territorial organization of the Forestry Service respectively. The Forestry Service is headed by a Conservator of Forests, who is assisted by a Deputy Conservator of Forests and two Assistant Conservators of Forests. The smallest administrative unit of management is the Forest Section, under the control of a SFCEO assisted by one or more FCEOs. Twenty-four Forest Sections are grouped territorially into four Ranges, each administered by a CFCEO, assisted by two PFCEOs. Two or more Ranges constitute a Division which is administered by a DFO. The Northern and Southern Divisions are each comprised of two Ranges while the Central Division is responsible for three, namely: the Head Quarters (Curepipe Timber Store), River Reserves/Records and Biodiversity Ranges, each under the charge of a CFCEO, assisted by one PFCEO. The Flying Squad and the Internal Control Unit, under the charge of a CFCEO, assisted by one PFCEO, is directly answerable to the Conservator of Forests. The Service administers ten forest nurseries, out of which six are annexed to their respective sections and four are independent ones, each under the control of a SFCEO.

- 2.4 The Survey Unit of the Forestry Service is comprised of 1 Land Surveyor, 1 Senior Survey Technician, 1 Technical Design Officer, 1 Head Survey Field Worker, 8 Survey Field Workers and 1 Management Support Officer. The Land Surveyor and the Senior Survey Technician are on secondment from the Ministry of Housing and Lands.

#### B. Staff Movement

- 2.5 Mr P.Tanakoor, CFCEO, was still on secondment at the SSRBG, Pamplemousses, as from 20 July 2015.
- 2.6 Mr P.Narasiah, CFCEO, retired from the Service on ground of age.
- 2.7 Four (4) officers of the General Service and forty-six (46) employees in the minor grades retired on grounds of age during the year under review.
- 2.8 Four (4) employees in the minor grades passed away in the year 2016.
- 2.9 Fifty-one (51) Casual General Workers were newly recruited to replace the long list of retired employees in the minor grades.

#### C. Overseas Mission

- 2.10 Mr V.Teazoo, Conservator of Forests, attended the Inception Workshop on Land Degradation Neutrality in Turkey, a workshop on GEF-EWC policy review in Madagascar and a meeting on CPF-Led Initiative on Global Forest Indicators in Italy.
- 2.11 Mr P. Khurun, Deputy Conservator of Forests, attended a Training Workshop on Tropical Sustainable Development Technology for Developing Countries in China, and an Ad-Hoc Expert Group Meeting in Thailand.
- 2.12 Mrs. C. Cyparsade, Assistant Conservator of Forests, attended a Training Workshop on Tropical Sustainable Development Technology for Developing Countries in China and the SADC 2<sup>nd</sup> Joint Coordinating Meeting in Tanzania.
- 2.13 Mr Z.Jhumka, Assistant Conservator of Forests, attended a Training Workshop on Tropical Sustainable Development Technology for Developing Countries in China, and a Conference of Experts on Integrated Forest Fire Management in South Africa.

#### D. Local Training

- 2.14 Fourteen (14) Forest Officers followed various training programmes, namely: Noise Management at Workplace; Health & Safety Management; Time Management; and

Effective Communication & Interpersonal Skills in the Civil Service, all organized by the MCSAR.

- 2.15 Six (6) officers of the General Service followed various training courses, namely: Safety & Health at work; Assistance at Management Support Level; and Ergonomics for the Office Environment in the Civil Service, all organized by the MCSAR.
- 2.16 One (1) employee in the minor grade followed a training programme on Safety & Health for Manual Grade organized by the MCSAR.
- 2.17 Two (2) drivers followed a training programme on Safety & Health for Drivers organized by the MCSAR.

### **CHAPTER III**

#### **Forest Protection**

### Climatic Agencies

- 3.1 The climatic conditions prevailing over the island during the year under review have been generally good. Moreover, the country was not visited by cyclones and thus no damage was caused to forest plantations.

### Weeds

- 3.2 Except in the drier areas of the coastal plains, the undergrowth continued to cause a lot of inconvenience to upland forests. The thorny climber 'Framboise marron' (*Rubus alceifolius* syn. *R. roridus*) forms dense thickets in the upland plantations and this increases the cost of silvicultural operations. It is highly prickly and with its scrambling habits, it can reach the top of trees, eight to ten metres high, very rapidly and smother them. It spreads by seeds disseminated by the bird *Otocompsa jocosa* and by rooting whenever a branch touches the ground. Goyave de Chine (*Psidium cattleianum*) is a prolific shrub, forming dense scrub in the upland forests. It is spread by birds, pigs, monkeys and man. Privet (*Ligustrum robustum* var *walkeri*) is another serious upland forest pest. The weed *Clidemia hirta* is invading forest plantations and is smothering *Rubus* and other species. 'Liane margoze' (*Mikania scandens*) is a serious pest in many young plantations. *Hiptage benghalensis*, which is a bad weed at low altitude, is slowly spreading up the slopes. *Cuscuta reflexa* is another serious pest that is found as a parasite on a variety of hosts. It is spread by birds and man.

### Animals

- 3.3 Monkeys (*Macaca fascicularis*) are still causing damage to plantations by ring-barking trees. In the absence of cyclones, their population is on the rise. They continue to be a major pest in the native forests by eating the fruits and seeds of forest trees and preying on the eggs and youngsters of native birds.



*Macaca fascicularis* (monkey)

- 3.4 About 10,279 hectares of State-owned forest lands are leased for shooting and fishing purposes and around 804 hectares as gardiennage rights. The current stock of deer (*Cervus timorensis russa*) is on the increase and is causing considerable damage to forest plantations and native forests. The deer population in Mauritius is estimated at

80,000 heads, including those that are reared in intensive deer farms. The average carrying capacity is around 2.6 deer/hectare. The lessees spend considerable sums on fencing, gamekeepers and opening of paths. The additional protection thus afforded to the forests offsets the inconvenience of having to curtail some forest operations during the shooting season - from 1 June to 30 September of each year.



Java deer (*Cervus timorensis russa*)

- 3.5 Rats continue to cause significant damage to pine seeds as well as to seeds of both exotic and indigenous species. They also destroyed the eggs of native birds.

#### Insects

- 3.6 Mauritius was fortunate in having no serious insect pests affecting forest trees during the year. The Eucalyptus Weevil caused some defoliation of *Eucalyptus robusta* but only rarely caused mortality. Flamboyant (*Delonix regia*) planted as roadside and garden tree was affected by the leaf sucker *Cerneura delonixia* but did not cause serious damage.

#### Fungi

- 3.7 Fungal diseases were not a problem during the year under review. “Damping off” in the nurseries was effectively controlled with fungicide.

#### Fire

- 3.8 The number of fire incidents was 15 as compared to 13 in the year 2015. Most of them occurred on the Port Louis Hills and a few on other dry areas all over the island. The total area burnt was about 63 hectares in unprotected areas. Some 32 km of firebreaks were re-opened and maintained at a total cost of Rs 2,193,445.

#### Forest Offences

- 3.9 Annex III gives the number and classification of forest offences during the current year. 84 cases (103 in 2015) were registered, of which 14 were prosecuted, 12 were dealt with departmentally, 43 were outstanding and in 15 cases, the offenders could not be traced out.

#### Diseases

- 3.10 No serious diseases were encountered during the year under review, except for a few cases of Armillaria which affected some forest trees in the uplands, especially Pinus species.

### **CHAPTER IV**

#### **Surveys, Roads and Buildings**

##### Surveys

- 4.1 For the year 2016, the Survey Section was composed of one Land Surveyor, one Senior Survey Technician, one Technical Design Officer, one Management Support Officer, one Head Survey Field Worker and eight Survey Field Workers. The Land Surveyor and the Senior Survey Technician are on secondment from the Ministry of Housing and Lands.
- 4.2 During the year under review, the Survey Section, among other works, also performed the following tasks:

<b>S.No.</b>	<b>Task performed</b>	<b>Quantum</b>
i	Area surveyed (ha)	3,564
ii	Number of "Notice to attend Survey" attended	30
iii	Number of lease agreement drawn	19

#### Roads

- 4.3 About 74 km of existing roads, trails and paths were maintained at an average cost of around Rs 40 per metre. The perimeter maintained and cost in each Forest Range were as follows:-

<b>Range</b>	<b>Perimeter (km)</b>	<b>Cost Rs)</b>
North	45.8	1,594,826
East	8.2	946,414
West	7.4	125,115
South	12.5	250,632
<b>Total</b>	<b>73.9</b>	<b>2,916,987</b>

#### Buildings

- 4.4 A sum of Rs 270,813 was spent on the construction of a store and a shelter at the Curepipe Timber Store.
- 4.4.1 An amount of Rs 253,630 was used in the construction of Monvert Office at Forest-Side and a sum of Rs 307,992 was spent on the construction of a Forest Quarters at Malherbes.
- 4.6 A total amount of Rs 48,931 was used for various works performed at FRBD Office.
- 4.7 An amount of Rs 714,579 was spent on works performed at offices and quarters of the Service.

## **CHAPTER V**

### **Silviculture**

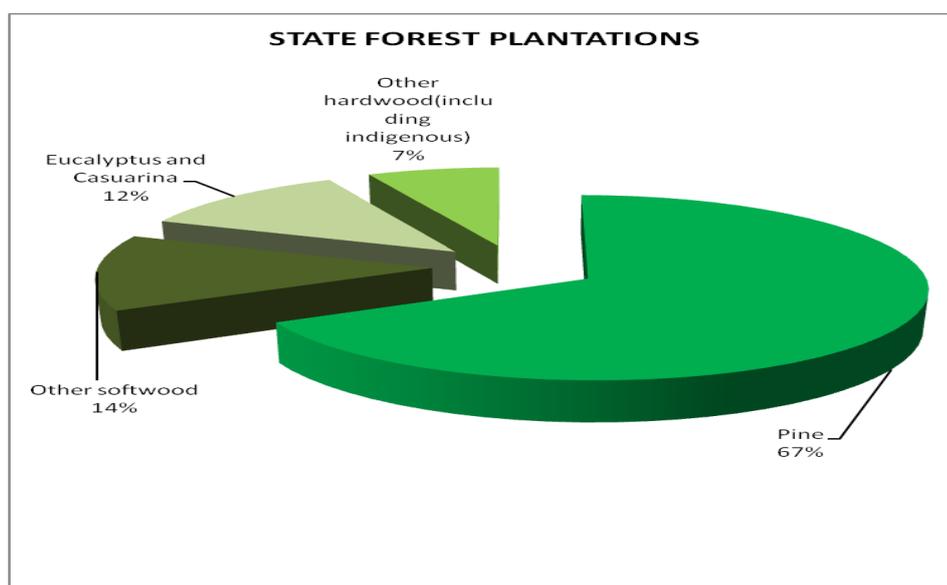
#### **State Forest Plantations**

5.1 In 2016, the approximate distribution of state forest plantations (including Pas Géométriques) by types was as follows:-

S.No.	Species/Category	Area (ha)
i	Pine	8,105
ii	Other softwoods	1,637
iii	Eucalyptus and Casuarina	1,402
iv	Other hardwoods(incl. native species)	868
<b>Total</b>		<b>12,012</b>

5.2 The bulk of the state forest plantations consists mainly of *Pinus elliottii* and *Eucalyptus species*. Other species like *Cryptomeria japonica*, *Araucaria columnaris*, *Casuarina equisetifolia* and native plants are also grown.

5.3 *Cryptomeria japonica* requires good and well-drained, but very wet and cool sites. The minimum altitude appears to be 540 m and the minimum rainfall 3000 mm. Pine grows well on all other sites provided the soil is not water-logged and not too shallow. It will even regenerate naturally on sites which are free from weeds but these are very rarely found.



5.4 *Eucalyptus robusta* grows well on moist lateritic clay soils at elevations of 300 to 600 m. It stands an abundant rainfall, but requires superficial drainage where there is stagnant water. It tolerates limited droughts. It is not wind-resistant as many trees are uprooted by cyclones.

5.5 *Eucalyptus tereticornis*, which was introduced in Mauritius since 1879, grows at an altitude of less than 300 m on all kinds of soil, including red clay, black clay, gravelly soils and on lands chiefly covered with Lantana and Aloes. It requires a moderate rainfall and grows well with 125 to 150 mm of rainfall distributed over

100-200 days in the year. It can stand long droughts. It is not too wind-firm in the early stages, but is quite good after about 15 years. It is mostly grown for poles.

- 5.6 *Casuarina equisetifolia* thrives best on sandy beaches, but will grow on well-drained soils with up to 600 m elevation. On black stiff clay, it barely reaches 10 years of age. It is at its best with a rainfall of 150 mm per annum distributed over 100 to 150 days, but tolerates 250 mm rainfall per annum distributed over 250 days on well-drained soils. It was formerly grown mostly for timber, poles and firewood but nowadays, only salvaging and hygienic operations are permitted in these plantations. It also acts as a valuable windbreak and a barrier against salt sprays.

#### Nurseries

- 5.7 Some 396 kg of seeds of various forest species were collected locally at a total cost of Rs 75,377, exclusive of transport and storage costs. The amount of seeds and cost of collection by species is given below:

Species	Amount (kg)	Cost (Rs)
<i>Pinus elliottii</i>	10	10,555
<i>Araucaria species</i>	126	13,617
Exotic Palm species	105	10,603
Other exotic species	130	28,405
Indigenous species	25	12,197
<b>Total</b>	<b>396</b>	<b>75,377</b>

Around 200 species of plants are raised in the forest nurseries.

- 5.8 Some 211,220 *cuttings*, comprising of 201,777 exotic species and 9,443 indigenous species, and 66,687 *seedlings*, made up of 37,469 exotic species and 29,218 indigenous species were collected and raised in the nurseries of the Service.

- 5.9 Some 274,682 plants were raised during the year in the various nurseries, the Greenhouse and the Tree Seed Centre of the Service. Details by species are given below: -

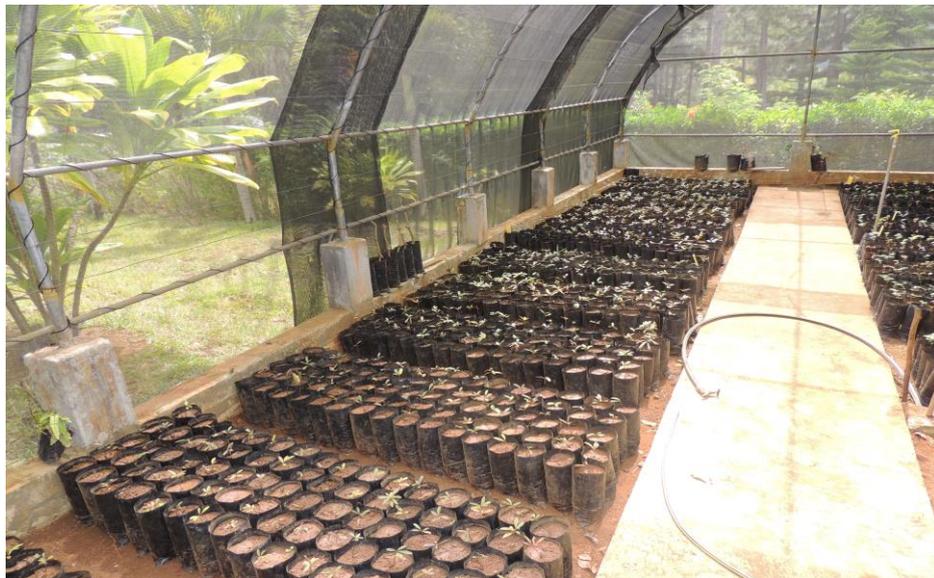
Species	Stock left at end of 2015	Stock raised in 2016	Stock remaining at end of 2016
<i>Pine</i>	93,795	25,927	50,146
<i>Eucalyptus</i>	8,538	9,675	14,607
<i>Cryptomeria</i>	6,376	3956	9,857
<i>Casuarina</i>	2,831	13500	14,113
<i>Araucaria</i>	13,977	22,044	31,452

<i>Juniper</i>	2,608	166	1,832
<i>Other exotic spp*</i>	649,618	175,316	702,704
<i>Indigenous spp*</i>	131,115	24,098	136,628
<b>Total</b>	<b>908,858</b>	<b>274,682</b>	<b>961,339</b>

*\*including ornamentals*



Native potted plants at the Greenhouse ready for planting



Raising of plants in shade house

- 5.10 A sum of Rs 23,145,617 was spent on the raising and maintenance of plants in the various nurseries, the Greenhouse and the Tree Seed Centre.
- 5.11 During the year under review, some 19,519 plants were issued, free of charge, to various organizations, youth clubs and other Ministries under the National Tree Planting Campaign. Some 113,526 plants were used by the Forestry Service for its reforestation/afforestation programmes. Around 54,342 plants were sold to the public and the revenue collected was Rs 2,721,990.



Sale of plants to the public at Curepipe Nursery Sales Depot



Free distribution of plants under the National Tree Planting Campaign

### Tending

- 5.12 Some 95 hectares of young plantations were weeded. Recruiting (including filling of gaps) was carried out on 145 hectares. Some 125 hectares were cleaned of rampant creepers and exotic undergrowth. Annex IV gives the various silvicultural operations that were carried out during the year.

## **CHAPTER VI**

### **Conservation of Biological Diversity**

#### Rehabilitation of Nature Reserves and Native Forests

- 6.1 Maintenance weeding was effected in native forests at S.L Monvert where uprooting and removal of Invasive Alien Species were effected on about 8 hectares. Moreover, monitoring of some critically endangered plants was carried out on site. This Service also undertook the restoration of degraded endemic forests under the Protected Area Network (PAN) project, funded by the UNDP.



Monvert Visitor's Centre

#### Exploration and Survey of Native Vegetation

- 6.2 Survey of native vegetation were conducted at the following locations on a total extent of 117.5 ha:

S.No.	Location	Extent (ha)
1.	S.L Cabinet	5.0
2.	S.L Grand Bassin	2.0
3.	S.L Monvert	15.0
4.	Perrier Nature Reserve	1.5
5.	Gouly Père Nature Reserve	2.0
6.	Les Mares Nature Reserve	1.0
7.	P.G Pointe d'Esny	1.0
8.	Ile d'Ambre	50.0
9.	Ilot Gabriel	30
10.	Ile Plate	10



S.L Le Cabinet

### Awareness Raising

- 6.3 This Service continued its sensitization campaign with a view to enlist the support of youths and the population in general in the daunting challenge to conserve, protect and propagate the rare endemic/indigenous fauna and flora. Officers of this Service gave talks on forest conservation, biodiversity conservation, and effects of climate change, supported by power-point presentations, in some (30) thirty schools and eleven (11) community centres around the island. Monitoring of endemic gardens was carried out in forty six (46) schools. Moreover, awareness-raising programmes continued to be effected at the various Nature Walks.



Awareness-raising campaign through talks in schools on the important role of forests

### Production of native plants including endangered and medicinal plants

- 6.4 The Greenhouse and the Tree Seed Centre raised some 24,098 native plants (including medicinal and critically endangered plants) during the year under review. Some 7,075 medicinal plants such as *Faujasiopsis flexuosa*, *Aphloia theiformis* and *Terminalia bentzoe* and around 1,489 Critically Endangered plants like *Zanthoxylum heterophyllum*, *Calophyllum eputamen*, and *Psiadia cataractae* were successfully raised.

Seeds of indigenous and endemic plants, wherever available, were collected and sown in the nurseries, the Tree Seed Centre & the Greenhouse. Native plants were raised mainly for eventual planting out in forests. Native plants, raised from seeds and cuttings, were also offered for sale to the public in forest nurseries and sale depots.

- 6.5 *Trochetia boutoniana*, (Boucle d'Oreille) a rare endemic species, is the National Flower of the Republic of Mauritius. This flower also appears on the various insignia that are conferred by the Republic of Mauritius. This species is being propagated with a view to encourage every Mauritian to grow a plant in his yard.



Our National Flower, *Trochetia boutoniana*

## CHAPTER VII

### Recreational Forestry

7.1 The Forestry Service is presently managing (4) four Nature Walks namely: Powder Mills at Pamplémousses (near SSR National Hospital), Monvert at Forest Side, Sophie, near Mare-aux-Vacoas reservoir and Ile d'Ambre with a view to provide leisure and recreation to both the local population and tourists. Moreover, Nature Walks provide a great opportunity for people to learn and appreciate the rare indigenous and endemic fauna and flora, their value to society and the need to conserve them.

It is worthy to note that Ile d'Ambre Nature Walk, although managed by the Forestry Service, is under the jurisdiction of the National Parks and Conservation Service and that Bras d'Eau Nature Walk, also created by this Service, passed under the management of the National Parks and Conservation Service in August 2013.

During the year 2016, some 35,484 people visited these Nature Walks and some 74 guided tours by Forest Officers were proposed to visitors.



Sophie Visitor's Centre



Monvert Nature Walk

7.2 The Vallée D'Osterlog Endemic Garden of an extent of 275 hectares extends from the bottom of Vallée D'Osterlog to the Créole Mountain Range, including Mountain

Laselle, Montagne Lagrave, and is astride the districts of Moka and Grand Port. The Garden contains several critically endangered species and some of the rarest indigenous/endemic species. It is managed by The Vallée D'Osterlog Endemic Garden Foundation. Its main objective is to inform and sensitize visitors on the rich endemic flora and fauna of Mauritius.

## **CHAPTER VIII**

### **Wildlife Management**

- 8.1 The population of monkeys (*Macaca fascicularis*) is increasing rapidly due to the absence of cyclones over the island since many years. Monkeys are a major threat to native fauna and flora and contribute greatly in the decline of biodiversity. They are caught in the wild by means of traps and are also bred in captivity by a few companies who export them for medical research. The levies payable by these export companies are credited into the National Parks and Conservation Fund to be used for conservation projects.
- 8.2 Some 10,279 ha of State forest lands are leased for shooting and fishing purposes and around 804 hectares as gardiennage rights under the Shooting & Fishing Lease Act of 1966. It is worthy to note that the gardiennage lease does not provide any rights to the lessee for shooting or fishing over State lands. Deer ranching has become an important economic activity in Mauritius. The production of venison in 2016 was around 345 tonnes only (240 tonnes from private forest lands & 105 tonnes from state forest lands) as a result of the “*foot and mouth disease*” compared to the normal production of around 475 tonnes annually. It is worthy to note that considerable damage is caused to both planted and native forests by this activity, through ring-barking of adult trees and uprooting or trampling of seedlings. Frequent meetings are held with all concerned parties to ensure that deer ranching activities are carried out in a sustainable way with least impacts on the environment.



*Cervus timorensis russa* (Java deer)

The leases that were renewed in the years 2007/08 came to expiration in September 2014. The new rentals, which will be phased over a period of ten years, are as follows: -

YEAR OF LEASE	SHOOTING AND FISHING LEASE (Rs / ha)		GARDIENNAGE LEASE (Rs / ha)
	Upland Plateau	Low to Mid- Altitude	
08 Sept 2014 to 07 Sept 2015	1050	565	310
08 Sept 2015 to 07 Sept 2016	1090	600	330
08 Sept 2016 to 07 Sept 2017	1125	640	350
08 Sept 2017 to 07 Sept 2018	1160	675	370
08 Sept 2018 to 07 Sept 2019	1200	710	390
08 Sept 2019 to 07 Sept 2020	1240	750	410
08 Sept 2020 to 07 Sept 2021	1275	790	430
08 Sept 2021 to 07 Sept 2022	1365	845	465
08 Sept 2022 to 07 Sept 2023	1460	900	500
08 Sept 2023 to 07 Sept 2024	1550	960	530

## CHAPTER IX

### Exploitation and Utilization

### Marketing of Forest Produce

- 9.1 Logs, poles and firewood from State Lands were sold to wood merchants registered with the Forestry Service.
- 9.2 Poles, firewood and tool handles were also cut by employees of the Service and supplied against payment to other government departments and to the public.
- 9.3 Annexes V and VI give the selling rates of logs and poles respectively in 2016.

### Local Wood Production

- 9.4 The following quantities of wood were sold during the year 2016:

Category	Class	Volume in m <sup>3</sup> (Roundwood)
Log	Hardwood	95
	Softwood	875
Pole	Hardwood	1
	Softwood	37
Fuelwood	Firewood	3980
	Charcoal	0

- 9.5 Charcoal production is not carried out in State-owned forests but is effected, on a very small scale, by a few private companies, mainly in the regions of Black River and Roches Noires, mostly for use in *barbecues* in hotels and restaurants. Unfortunately, no data is available for this forest produce.
- 9.6 The volume of logs sold was comparatively higher than in the previous year as a result of various governmental projects whereby forests were exploited to make way for infrastructural development. As a result, some 882 m<sup>3</sup> of logs (400 m<sup>3</sup> in 2015) were sold to wood merchants registered with this Service.
- 9.7 In addition, waste wood, in the form of Privet (*Ligustrum robustum subsp. walkeri*) and Chinese guava (*Psidium cattleianum*) sticks and firewood, was removed, free of charge, by forest workers and members of the public from State lands all over the island.

### Minor Forest Produce

- 9.8 The sale of Christmas trees, tool handles, bamboos, nursery plants and other minor forest produce amounted to Rs 16,487,917 (Rs 10,241,464 in 2015).

- 9.9 No data on forest produce from private lands were available. Estimates included in this report are based on local expert knowledge.

#### Wood Processing

- 9.10 The Concessionnaire Grewals (Mauritius) Ltd. runs a modern sawmill and timber preservation plant at Pailles, employing around 74 workers. This Company imports most of its timber since it has ceased all exploitation on state forest lands since 2012. There are, in addition, one reasonably large sawmill and 20 small ones scattered over the island, employing around 105 workers. This Service has no control over the licensing of these sawmills; many of them operate on a part-time basis.
- 9.11 Other small wood-based industries include a match factory at Roche Bois and about 700 small and medium furniture factories scattered all over the island.

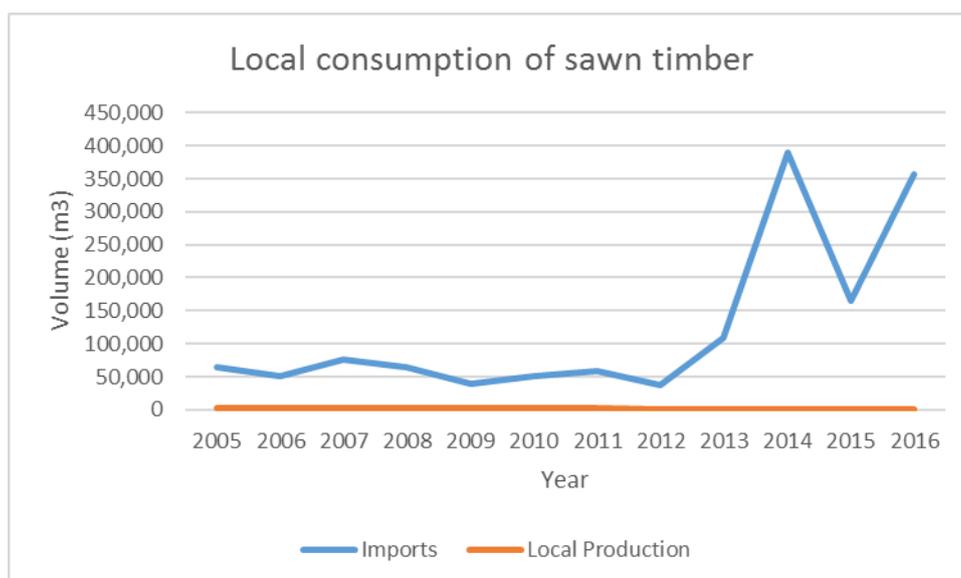
#### Timber Imports

- 9.12 The amount of sawn timber imported during the year 2016 was 356,131 m<sup>3</sup>, equivalent to 612,545 m<sup>3</sup> of roundwood. The timber was imported mainly from Madagascar, Malaysia and South Africa. The CIF value was around Rs 552 million compared to Rs 513 million in 2015.

#### Local Consumption of Timber

- 9.13 The local consumption of sawn timber (both imports and local production) over the last twelve years is shown in the table and chart below:

Volume in m <sup>3</sup>		
Year	Imports	Local Production
2005	64,979	2,685
2006	51,794	3,521
2007	77,037	2,821
2008	64,958	2,477
2009	38,966	2,187
2010	51,818	1,878
2011	58,394	1,789
2012	37,121	1,258
2013	109,119	494
2014	389,054	457
2015	165,715	312
2016	356,131	960



- 9.14 The local consumption of wood, excluding plywood, paper, etc. during the year 2016 was as follows:

**Volume of roundwood (m<sup>3</sup>)**

Category	Timber	Pole	Fuelwood	Total
<b>I. From State Lands</b>	<b>974</b>	<b>68</b>	<b>4,741</b>	<b>5,783</b>
(a) Sold	970	38	3,980	4,990
(b) Cut departmentally	4	30	444	478
(c) Free of charge (estimated)	0	0	317	317
<b>II. From Private Lands (estimated)</b>	<b>181</b>	<b>110</b>	<b>437</b>	<b>728</b>
<b>III. Imports</b>	<b>613,216</b>	<b>366,348</b>	<b>1149</b>	<b>980,713</b>
<b>Total</b>	<b>614,371</b>	<b>366,526</b>	<b>6,327</b>	<b>987,224</b>

It is worthy to point out that a significant rise in local wood production on state lands is noted in 2016, i.e. 5,783 m<sup>3</sup> as compared to 3,126 m<sup>3</sup> in 2015, despite the gradual phasing out of wood exploitation, as stipulated in the National Forest Policy 2006. This is due to the fact that some forest areas had to be cleared for the implementation of various government projects of highest national priority.

- 9.15 Annex VII gives the statements of revenue and expenditure of the Forestry Service for the year 2016 for Mauritius and Rodrigues.
- 9.16 The total expenditure for Mauritius for the year 2016 amounted to Rs 193,354,022 compared to Rs 187,202,164 for the previous year.

9.17 The total revenue for Mauritius for the year 2016 amounted to Rs 31,574,987 (Rs18,233,615 in 2015).

## **CHAPTER X**

### **Rodrigues**

#### **Staff**

10.1 The Forestry Staff in Rodrigues, although subject to technical directions from the Conservator of Forests, is answerable in all day-to-day matters, to the Departmental Head, Commission for Environment, Forestry and Others. The island has its own staff establishment and is funded by the Rodrigues Regional Assembly.

The Island is divided into three (3) Forest Sections, namely Mont Lubin, Lataniers and La Ferme. Each section is under the charge of a SFCEO, assisted by several FCEOs. The Conservation Unit is under the charge of a SFCEO assisted by three FCEOs. The Prosecution and Enforcement Unit, the Nursery Unit as well as Ile aux Cocos and Ile aux Sables are under the charge of a CFCEO assisted by two FCEOs. A Technical Officer, attached to the Forestry Services, works on project implementation and monitoring of forest operations and also advises the Head of the Division on technical aspects of the Service.

10.2 At the end of the year 2016, the permanent and pensionable establishment of the Forestry Services in Rodrigues was made up as follows:

<b>Rank</b>	<b>In post</b>	<b>Remarks</b>
Head Forestry	1	One (1) post vacant
CFCEO	1	
PFCEO	1	
SFCEO	4	
FCEO	20	One (1) post vacant
Technical Officer	1	
Clerk	2	
Gangman	8	Four (5) posts vacant
Head Gardener/Nurseryman	1	One (1) post vacant
Gardener/Nurseryman	5	One (1) posts vacant
Watchman	53	Twenty five (25) posts vacant
Acting Watchman	1	
Woodcutter	16	
Office Caretaker	1	
Store Keeper	1	
General Worker	53	Thirty six (36) posts vacant
Launch Driver	1	
Boatman	2	
Driver	1	
Driver on roster	1	
Lorry Loader	2	
<b>Total</b>	<b>176</b>	

10.3 During the year 2016, four (4) employees in the minor grades retired from the Service on ground of age and eighteen (18) casual workers were appointed as permanent employees. Moreover, thirteen (13) new recruits joined the Service as General Workers on a casual basis.

#### Forest Cover

10.4 The forest lands of Rodrigues can be classified as follows:

<b>I. State-owned Forest Lands</b>			
		<b>Area (hectares)</b>	<b>Total area (hectares)</b>
a	Plantations	3,180	3,180
b	(i) Nature Reserves on mainland		24
	<i>Grande Montagne</i>	14	
	<i>Anse Quito</i>	10	
	(ii) Nature Reserves on islets		23
	<i>Ile aux Cocos</i>	15	
	<i>Ile aux Sables</i>	8	
<b>Sub-total</b>		<b>3,227</b>	<b>3,227</b>
<b>II. Privately-owned Forest Lands</b>			
a	Other forest lands	200	200
<b>Sub-total</b>		<b>200</b>	<b>200</b>
<b>Grand Total</b>		<b>3,427</b>	<b>3,427</b>

- 10.5 Mangrove forests, extending on a total area of some 59 hectares along the coast, are also managed by the Rodrigues Forestry Services.



Mangrove plantation

#### Protection

- 10.6 Straying cattle and goats were the main cause of damage to young plantations. At the end of the year, one hundred and one (101) cases of allowing animals to graze on state lands were still awaiting prosecution.
- 10.7 There were no wildfire outbreaks in forests during the year under review.

### Silviculture

- 10.8 The following table shows the type of silvicultural operations carried out and extent treated during the year under review:

<b>Operation</b>	<b>Extent treated (ha)</b>
Manual land clearing	25.1
Thinning	7.2
Weeding	8.9
Trimming	4.5
Pruning	0.9

- 10.9 Some 67,808 seedlings were raised at Solitude and Oyster Bay Nurseries during the year 2016. A stock of 86,121 seedlings was carried over from the year 2015 and the stock remaining at the end of 2016 was 86,597. Some 504 plants were sold to the public and around 37,407 were used departmentally for reforestation/afforestation purposes.

### Local Wood Production in Rodrigues

- 10.10 The total volume of wood sold during the year 2016 is described in details below:

<b>S.No.</b>	<b>Species</b>	<b>Volume (m<sup>3</sup>)</b>		
		<b>Log</b>	<b>Pole</b>	<b>Firewood</b>
1.	<i>Eucalyptus tereticornis</i>	1	179	11
2.	<i>Casuarina equisetifolia</i>	0	0	4
3.	<i>Tabebuia pallida</i>	6	0	0
4.	<i>Albizia lebeck</i>	1	0	0
4.	<i>Terminalia arjuna</i>	6	1	0
	<i>Callophyllum inophyllum</i>	1	0	0
5.	<i>Swietenia mahagoni</i>	26	0	0
6.	<i>Vitex glabrata</i>	2	0	0
7.	Mixed	0	0	37
<b>Total</b>		<b>43</b>	<b>180</b>	<b>52</b>

- 10.11 The consumption of wood, excluding plywood, paper, etc, in Rodrigues during the year 2016 was as follows:

S.No.		Volume (m <sup>3</sup> )			
		Log	Pole	Fuelwood	Total
<b>1.</b>	<b><i>From State Lands:</i></b>				
(a)	Sold to public	43	180	52	275
(b)	Cut departmentally	27	95	23	145
(c)	Removed free of charge (estimated)	0	0	38	38
	<b><i>Sub total</i></b>	<b>70</b>	<b>275</b>	<b>113</b>	<b>458</b>
<b>2.</b>	<b><i>From Private Lands (estimated)</i></b>	<b>32</b>	<b>8</b>	<b>2</b>	<b>42</b>
	<b>Total</b>	<b>102</b>	<b>283</b>	<b>115</b>	<b>500</b>

Wood products, including plywood and paper, are conveyed from mainland Mauritius who, in turn, imports same from China, Malaysia, India, South Africa, etc.

#### Nature Reserves

- 10.12 The Mauritian Wildlife Foundation carried out conservation works in Nature Reserves at Grande Montagne and Anse Quitor, and the Forestry Services effected works at Ile aux Cocos & Ile aux Sables. Removal of invasive alien species was carried out on a total extent of around 10 hectares at Montagne Limon and Anse Quitor to promote the regeneration of native plants. Invasive Alien Species removed include *Litsea glutinosa*, *Syzygium jambos*, and *Lantana camara*.

#### Forest Restoration by Local Communities

- 10.13 Some 100,000 seedlings were produced by villages and associations and around 25 hectares of land were planted with 50,100 endemic and indigenous species by different communities.

#### Revenue and Expenditure

- 10.14 Expenditure amounted to Rs 35,200,205 compared to Rs 36,102,925 in the previous year. The revenue collected amounted to Rs 110,521 (Rs 111,047 in 2015).

## **Chapter XI**

### Miscellaneous

- 11.1 The staff of the Service gave several talks on forest conservation and wildlife, both in schools and in public social gatherings. They took various parties of secondary school children on ecological tours throughout the forests.

- 11.2 The Service gave advice to several organizations and to the public in general on landscaping and on matters pertaining to Forestry and Nature Conservation.

#### Publications

- 11.3 The following is a list of articles, reports and books that have a bearing on Forestry, Wildlife and the Environment in Mauritius:-
- (i) Ministry of Agro Industry and Fisheries, Government of Mauritius (2006) National Forest Policy for the Republic of Mauritius.
  - (ii) Atkinson, R. & Sevathian, J.C. (2005). A guide to the plants in Mauritius. MWF
  - (iii) S.A. Paupiah (2004). Concept Note, Update on the Status of the National Forest Programme and Request for a Partnership Agreement with the National Forest Programme Facility
  - (iv) S.A.Paupiah (2001). Forestry Outlook Study for Africa (FOSA)
  - (v) S.A.Paupiah(2001). Forest Revenue System and financial support for Sustainable Forest Management in Mauritius
  - (vi) S.A. Paupiah(2001). Forest Biodiversity in Mauritius - Paper presented during the National Biodiversity Strategic Action Plan (NBSAP) Thematic Workshop held in January 2001
  - (vii) Guého, J.& Owadally, A.W. (in press) Bibliographie des travaux d'histoire naturelle et science connexes concernant Maurice (504pp)
  - (viii) Lind, R (1994). Management of the EEP (European Endangered Species Programme) Pink Pigeons *Columba (Nesoenas) mayeri* Population. Dodo, J.W.P.T. 30:106-113.
  - (ix) North, S.G. et al (1994). Changes in the vegetation and reptile populations on Round Island, Mauritius, following eradication of rabbits. Biol. Conserv. **67**:21-18
  - (x) Owadally A.W, Pong Kim Kam, Jootun, L & Tezoo, V. (1995). *Report on River Reserves*. This Report was submitted to the Ministry of Agriculture and Natural Resources, 26pp + 8 appendices + 2 maps
  - (xi) Bosser,J.(1997). Flore des Mascareignes: La Reunion, Maurice, Rodrigues. MSIRI.
  - (xii) Rouillard,G. & Gueho,J. (1999). Les plantes et leurs histoires à Maurice
  - (xiii) Gurib-Fakim,A. & Gueho,J. (1999). Natural Toxins and poisonous plants in Mauritius.
  - (xiv) Claude Michel (1992). Birds of Mauritius (3<sup>rd</sup> Edition)
  - (xv) Th.Cadet (1998). Fleurs et plantes de la Reunion et de l'île Maurice (12<sup>th</sup> Edition)
  - (xvi) Staub, F. (1993). Fauna of Mauritius and associated flora
  - (xvii) Gurib,A. & Gueho,J. (1995-1996). Plante Médicinales de Maurice-Tome 1,2 et 3

- (xviii) Ministry of Agro Industry and Food Security, Government of Mauritius (2015). Rays of Hope – Protected Endemic Sanctuaries.
- (xix) Ministry of Agro Industry and Food Security, Government of Mauritius (2017). National Biodiversity Strategy and Action Plan 2017-2025