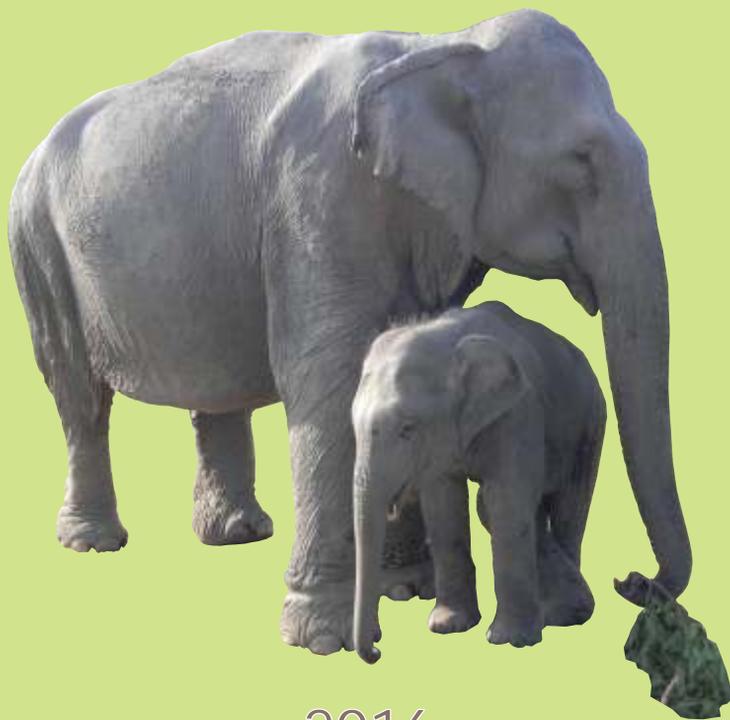
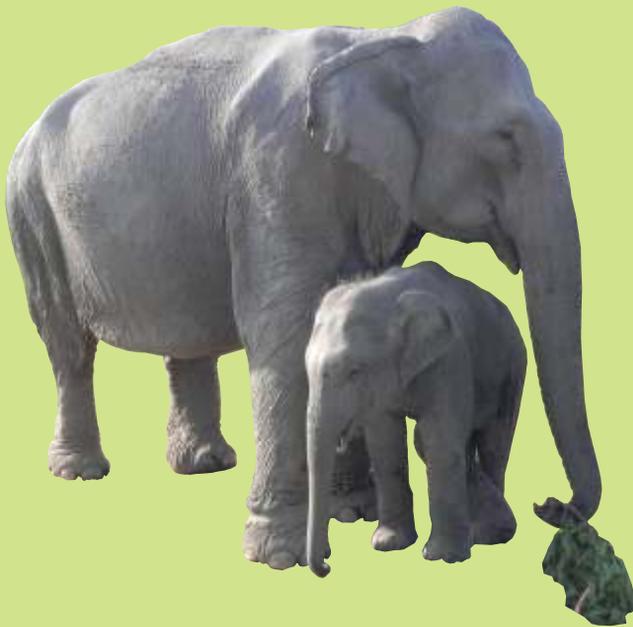


JOURNEY TOWARDS  
CONSERVATION OF ELEPHANTS IN  
DHARMAPURI DISTRICT



2016

JOURNEY TOWARDS  
CONSERVATION OF ELEPHANTS IN  
DHARMAPURI DISTRICT



2016



#### CONCEPT

Mr. A.K. Ulaganathan, IFS.,  
Conservator of Forests  
Dharmapuri Forest Circle

#### PREPARATION & DESIGN

Mr. K. Thirumal, IFS.,  
District Forest Officer  
Dharmapuri Forest Division

Miss. V. Priyadarshini  
Asst. Conservator of Forests  
Dharmapuri Forest Division

Print by

MULLAI PRESS

KRG | Ph. +91 94432 38537

mullaipress@gmail.com



K.Vivekanandhan.IAS,

District Collector  
Dharmapuri

## Message

Elephant is our National Heritage Animal and protecting the wildlife and its habitat becomes the Fundamental Duty of every Indian citizen. Celebrating World Elephant Day can be a powerful tool in showing our solidarity towards the preservation of our rich heritage and composite culture as emphasized in Article 51 A of Indian Constitution.

Dharmapuri District is having an area of 4497.77 sq. km of which forests area constitutes 1641.77 sq. km which comes around 36.50% of the total geographical area, which is more than 33% as suggested by the National Forest Policy 1988. It is our duty to protect and conserve the existing rich flora & fauna available in our eco-systems.

It is heartening to note that the District Forest Office, Dharmapuri has brought a booklet on [Journey towards Conservation of Elephants in Dharmapuri District](#) on the World Elephant Day - 2016. This efforts will strength the cause of conservation measures. It also offers wealth of knowledge about the Elephants along with various efforts taken by Forest Department of Dharmapuri District.

I congratulate the efforts made by the team in bringing out this valuable information on Elephant and its management. I hope this booklet will serve as a valuable informative material for all sections of the society.

Best Wishes

Place : Dharmapuri

Date : 11-08-2016

(K.Vivekanadhan)



K. Thirumal, IFS,

District Forest Officer  
Dharmapuri Forest Division

## Message

World elephant day is an international annual event, being celebrated throughout the world towards the preservation and protection of elephants. It is officially launched on 12<sup>th</sup> August 2012 by Canadian filmmakers, Patricia Sims and Michael Clarke along with Sivaporn Dardarananda, Secretary General of the Elephant Reintroduction Foundation in Thailand with the mission to create awareness of the urgent plight of world's Elephant, and to share knowledge and positive solution for the better care and management of wild and captive elephants.

It gives me a great pleasure to bring out the Booklet on "*Journey towards Conservation of Elephants in Dharmapuri District*" on the occasion of World Elephant Day i.e. 12<sup>th</sup> August 2016. This book has wealth of information especially about the Indian elephants and its habitat, behaviour, future conservation strategies and other important facts etc.. It also contains various conservation and management efforts undertaken by the Forest Department in the Dharmapuri District. I thank all our esteemed Senior Officers and our staffs in preparation of this Booklet and for providing valuable information on elephants. Suggestions for improvement of this Hand Book are welcome.

Place : Dharmapuri

Date : 11-08-2016

(K.Thirumal)



## Acknowledgement

We like to express our deep gratitude to Thiru. Athulya Mishra, I.A.S., Principal Secretary to Government. Environment & Forests Department. Dr. N.Krishnakumar, I.F.S., Principal Chief Conservator of Forests (Head of the Forest), Chennai, Dr. V.K.Melkani, I.F.S., Principal Chief Conservator of Forests (Chief Wildlife Warden), Chennai, Dr. Sudhashu Gupta, I.F.S., Chief Conservator of Forests (P&B), Chennai, Dr. V. Thirunavukarusu, IFS., Conservator of Forests (Forest Genetics Circle) for their constant support and guidance. Without their cooperation and friendly reminders it is impossible to bring out this booklet.

We wish to place on record our deep appreciation to Tmt. K.P. Maheshwari, Chief Educational Officer, Dharmapuri District, Mr. A. Krishnan, District Environmental Co-ordinator for their valuable support in endeavoring this venture.

We also express our special thanks to Miss. M. Tamil Elakkiya, Research Scholar, University of Madras for providing the valuable informations especially on migratory routes of elephants in the district.

Needless to say though, we appreciate all the staffs of Dharmapuri Forest Division for their assistance in bringing out this booklet more valuable and informative.

## INTRODUCTION

Elephants are the largest living terrestrial animals found in different habitats including Savannahs, forests, deserts and marshes. Elephants are highly associated with our culture and are often featured in art, folklore and literature. Besides its Cultural and ecological importance, elephants are mercilessly poached for their ivory, meat and hide and are often exploited for human benefits. Moreover destruction of their habitat resulted in scarcity for Food and water resources which in turn leads to increased incidences of man- animal conflicts. All these factors led the species fall into the “Endangered” category of International Union for Conservation of Nature and Natural Resources (IUCN).

To save the species from extinction, Various Schemes and Programmes were introduced throughout the country. “PROJECT ELEPHANT” is one such programme dedicated for the protection and Conservation of Elephants across the country. Apart from these projects and schemes, generating awareness about the role and behaviour among the people is utmost need of the hour.



**AUGUST 12, 2016**

## SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Mammalia
Superorder	Afrotheria
Order	Proboscidea
Family	Elephantidae
Genera	1. <i>Loxodonta</i>
	2. <i>Elephas</i>



### Protection status

Wildlife Protection Act, 1972 : Schedule-I animal

IUCN Red List : Endangered

CITES : Appendix I

The genus *Elephas* originated in Sub-Saharan Africa during the Pliocene, and spread throughout Africa before emigrating into Southern Asia.



Carl Linnaeus first described the genus *Elephas* and an elephant from Sri Lanka under the binomial *Elephas maximus* in 1758.



## SPECIES

There are two species of elephants present in the whole world.

1. Asian Elephant (*Elephas maximus*)
2. African Elephant (*Loxodonta spp*)

### A COMPARISON ON TWO SPECIES OF ELEPHANTS

	African Elephant ( <i>Loxodonta spp</i> )	Asian Elephant ( <i>Elephas maximus</i> )
Sub -species		
Sub -species	<ol style="list-style-type: none"> <li>1. African Bush Elephants (<i>Loxodonta africana</i>)</li> <li>2. African Forest elephants (<i>Loxodonta cyclotis</i>)</li> </ol>	<ol style="list-style-type: none"> <li>1. Indian - <i>E. m. indicus</i></li> <li>2. Sri Lankan - <i>E.m. maximus</i></li> <li>3. Sumatran - <i>E.m. sumatranus</i></li> </ol>
Range	<p><b>African Bush Elephants</b> - Found in savannah zones.</p> <p><b>African Forest elephants</b> - in dense rainforests of west and Central Africa.</p>	India, Sri Lanka, China and much of South-east Asia.
Habitat	Wide range- savannah to marshes and deserts and even in mountains above the snowline	All types of forests in India, Thorn - scrub forests of Srilanka and Thailand.
Feeding behaviour	Browsers	Grazers
Life span	60- 70 years	45- 50 years
Size	Large	Smaller than African Bush Elephant but bigger than African Forest Elephants
Max. Height	11 to 12 feet	11 feet
Max Weight	6000 to 7000 Kg	6000 Kg
Food	Leaves, soft shoots, woody plants shrubs and fruits of high growing trees.	Feeds on grasses, low woody plants and trees
Tusk	Present in <b>both</b> male and female elephants.	Present <b>only in male</b> elephants.



African Elephants was first named by Johann Friedrich Blumenbach in 1797 as *Elephas africana*.





## ESTIMATED POPULATION (AS PER 2012 CENSES)

Asia	-	41,476 to 52,345
India	-	27,785 to 31,368
Tamilnadu	-	4,010 to 4,020

Source : MoEF, 2013



## PROJECT ELEPHANT (PE)

Project Elephant is the Centrally sponsored Scheme, launched by Ministry of Environment & Forests, Government of India in the year 1992, to provide Financial and technical support for major Elephant- bearing states of the country with the following objectives:

- ♥ To protect elephants, their habitat and corridors.
- ♥ To address issues of man- animal conflict.
- ♥ Welfare of captive elephants.

## ELEPHANT RESERVES IN INDIA

There are about 32 Elephant Reserves in the country (as of 2010) extending over the area of about 58000 km<sup>2</sup>. Out of this 32, four Elephant Reserves are present in Tamilnadu .

## ELEPHANT RESERVES (ER) OF TAMILNADU

S. No.	Reserve Name	Range	Year	Total Area	Population
1.	Nilgiri ER	Brahmagiri - Nilgiris - Eastern Ghats	2003	4,663	2,862
2.	Coimbatore ER	Brahmagiri - Nilgiris - Eastern Ghats	2003	566	329
3.	Anamalai ER	Anamalai - Nelliampathy - High Range	2003	1,457	179
4.	Srivilliputtur ER	Periyar - Agasthyamalai	2003	1,249	638

Source : Elephant Task Force Report of MoEF, August 2010.



The earliest indications of captive elephants are engravings on seals of the Indus Valley Civilization dated to the third millennium BC.



## BASIC FACTS

### Life span

Elephants can live upto 70 years in the wild.

#### Average life span:

Asian elephants – 40–50 years

Captive elephants – 15 to 20 years

- \* The shorter life span is due to poaching, illegal hunting for ivory or other uses, destruction of habitat and drought.

(Source- Journal “Science”)

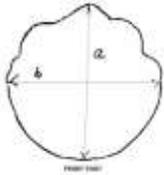
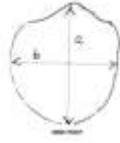
### Age classification:

#### a) Based on shoulder-height

Stage	Age Classes	Male (Bull)		Female (Cow)	
		In feet	In cm	In feet	In cm
Calf	Upto 1 year	Up to 4	Upto 120	Upto 4	Upto 120
Juvenile	1 to 5 years	4 to 6	120 to 180	4 to 6	120–180
Sub-Adult	6 to 15 years	6 to 8	180 to 240	6 to 7	180-210
Adult	15 years and above	>8	>240	>7	>210

Source : Field Key for Elephant Population Estimation and Age and Sex Classification

#### b) Based on Foot Prints:

<p>Age can be calculated from Height of the animal which in turn can be measured by using the formula,</p> <p style="color: #C00000; font-weight: bold;">Height (Appx.) = 2 x circumference</p>	<p style="color: #0070C0; font-weight: bold;">Front foot</p> <ul style="list-style-type: none"> <li>· Bigger, circular</li> <li>· 5 toes (rarely 4)</li> </ul> <div style="text-align: center;">  </div>	<p style="color: #0070C0; font-weight: bold;">Hind Foot</p> <ul style="list-style-type: none"> <li>· Smaller, elliptical</li> <li>· 4 toes (rarely 5)</li> </ul> <div style="text-align: center;">  </div>
---	---	---



Elephants occur from sealevel to over 3000 m (9800 ft) altitude.



## BASIC FACTS

### Social behaviour

Elephant form deep family bonds and live in tight matriarchal family groups of related females called “Herd” . The herd is led by the oldest and often largest female in the herd, called a matriarch. Herds consist of 8 to 100 individuals depending on terrain and family size.

When a calf is born, it is raised and protected by the whole matriarchal herd. Males leave the family unit between the ages of 12-15 years and may lead solitary lives or live temporarily with other males.

### Intel I igence

Elephants are extremely intelligent animals and have memories that span many years. This memory serves the matriarchs well to guide their herds towards food sources and to watering holes that they remember from the past.

Elephants have the ability to understand the nature of the terrain. It can identify which area is soft and which area is hard enough to walk.

### Senses and Communication

- ♥ Elephants have poor eye-sight.
- ♥ They have highly developed smelling and hearing powers.
- ♥ They also display signs of grief, joy, anger and play.
- ♥ Elephants can communicate through:
  - ❖ Touch
  - ❖ Chemical Signals (Musth, Urine)
  - ❖ Audible Sound (Trumpet, Bell, Rumble, Screech) (20-50 Hz)
  - ❖ Infrasonic Sound (5-15 Hz)
  - ❖ Ground vibrations (Feet).



They browse more in the dry season with bark constituting a major part of their diet in the cool part of the season.



## BASIC FACTS

### Feeding habit

#### Diet

Elephant consumes a wide variety of food - grasses (bamboos), roots, barks, leaves, fruits, flowers, vines as well as mineral salts.

#### List of major fodder species preferred by elephants

##### Forestry species

1. Bamboos
2. *Zizyphus mauritiana*
3. *Aegle mormelos*
4. *Ficus* spp
5. *Artocarpusheterophyllus*
6. *Kydia calycina*
7. *Helicteres isora*
8. *Mallotus philippensis*
9. *Careya arborea*
10. *Bauhinia racemosa*
11. *Bauhinia vahlii*
12. *Sterculia villosa* (Post-monsoon)
13. *Bombax ceiba* (Post-monsoon)
14. *Madhuca indica* (Winter)
15. *Tectona grandis*
16. Wild Gooseberry (*Emblica* spp.)
17. *Smilax zeylanica*
18. Wild Ginger
19. *Dioscorea* species
20. *Mimosa pudica*

##### Agricultural / Horticultural Crops

1. Ragi
2. Sugarcane
3. Paddy
4. Maize
5. Tomato
6. Carrot
7. Greens (*Asparagus racemosus*, etc)
8. Banana
9. *Mangifera indica* (Summer)
10. Coconuts (*Cocos nucifera*) - seedlings and leaves.
11. Bermuda grass (Favorite food)
12. Thatch grass (only seedlings)



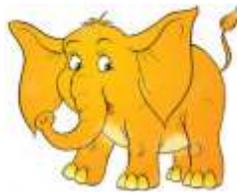
Bulls reach sexual maturity around the age of 12-15.



## BASIC FACTS

### Identification of food trails of elephants

1. Bark peeling ("Debarking")
2. Twig breaking
3. Branch breaking
4. Stem twisting
5. Uprooting
6. Flower plucking



## Reproduction

**Mating season** : mostly during the rainy season.

**Gestation** : 22 months

**Litter size** : 1 calf (twins rare)

Calves weigh between 200-250 lbs at birth. At birth, a calf's trunk has no muscle tone; therefore it will suckle through its mouth. It takes several months for a calf to gain full control of its trunk.



During musth, bulls are highly dangerous, not only to human beings, but also to other animals.



## elephant journey

**HOME RANGE** : 150 km<sup>2</sup> to 600 km<sup>2</sup>

- ♣ It is the geographic area of land where animals normally lives and confines its movement.
- ♣ The area is not actively defended unlike territory.
- ♣ Animals of the same species move around freely. Home ranges are usually much larger than a territory.

**MIGRATION** : Seasonal in nature.

The movement of animals from one geographic region to another usually over a long distances in search of food and water and also to reproduce genetically improved and healthier offsprings.

### Reasons for migration

- ❖ Change in Climate and Weather- Cold climate and Rough weather affects reproduction behaviour of the animals that leads to weaker generation.
- ❖ Scarcity for food and water resources in their natural habitat.
- ❖ Destruction and fragmentation of habitat due to development projects like construction of Hydro- electric projects, Roadways, Railways, encroachment in its habitat and corridors, etc.
- ❖ Degradation of Habitat due to invasive species like *Prosopis juliflora*, *Lantana camera*, Wattle, etc

### Ecological Impacts of Migration:

#### Positive impact-

- \* Uprooting and debarking of trees maintains the grassland Habitat (Eg. Savannah Grassland) from Succession
- \* Helps in introduction of plant species into the newer environment through propagation of seeds during migration.
- \* When elephants dig for water, they leave behind water holes that are used by smaller animals and birds, helping their population.
- \* Their dung serves as a food source for monkeys and dung beetles

#### Negative impacts

- Destruction of plants (through trampling, feeding, etc) affects certain species of small animals and birds.
- Propagation of invasive species.



The first historical record of the domestication of Asian elephants was in Harappan times.



## Quick and Interesting Facts

- 🐘 Elephant is the most intelligent, hygienic, polite, honest and patient animal.
- 🐘 Life span is around 40- 70 years in the wild.
- 🐘 **Captive Elephants shows reduced life span – (15-20 years). The shortened lifespan may be due to stress (of captivity) and health issues like obesity, viral infection, etc.**
- 🐘 Elephants mostly live in families and clans led by a matriarch. But adult and sub-adult male elephants spend a large part of their life moving either solitary or in small bull-groups (Maljuria).
- 🐘 Elephants move over a large area in order to meet their demand for food, water and minerals and also to deal with extreme weather conditions.
- 🐘 The **home range** of an Elephant Family is larger and may vary from 150 km<sup>2</sup> to 600 km<sup>2</sup>. If forced to live in a narrow area, elephants are known to damage their own habitat and indulge in crop-depredation in human settlements.
- 🐘 During dry season, they will migrate thousands of kilometers in search of food and water and can **walk upto 80 km in a day**.
- 🐘 They are very good swimmers.
- 🐘 They require more water and hence live close to water.
- 🐘 Elephant is a **voracious eater** spending **16-20 hours a day in feeding**.
- 🐘 An adult elephants may consume 250-300 kg of fodder and 150-200 litres of water per day.
- 🐘 Elephants have **weak Digestive System**. Only 40 % of foods they consume get digested. Hence requirement for food is larger.
- 🐘 An elephant with an **infected tooth cannot eat properly** and hence leads to death due to starvation.
- 🐘 Elephants are shade-loving. They love bath including mud-bath. Elephants can die of sun-stroke.
- 🐘 Elephants **do not have sweat glands except near toes**. They use ears as fan.
- 🐘 Normal Body Temperature (Rectum): 36°-37° C.
- 🐘 Pulse Rate: 25-30 per minute (standing); 72-98 per minute (lateral recumbency)
- 🐘 Tusk is the outgrowth of upper incisors and used as a tool and weapon. It is also a source of ivory.
- 🐘 Trunk – the muscular appendage used for digging roots and uprooting plants/trees, breaking branches off the trees, plucking leaves, etc.
- 🐘 Adult sex-ratio in a healthy population should be 1:3.
- 🐘 Elephants receive the communication signals through the sensitive skin on their **feet and trunk**.
- 🐘 **Tigers and humans are the only predators of elephants**.



The Trunk, or Proboscis, is a fusion of the nose and upper lip.



## Reasons for crop raid

(mostly during Post- monsoon season)

- « Proximity (of agricultural fields) to the forest area.
- « Presence of abundance food (especially Ragi, Sugarcane, Paddy, Maize, Tomato, banana, etc) in non- forested area.
- « Availability of nutritious food in cultivated land than in natural forest.

**Major Threats for elephant survival ....**

1. Hunting & Poaching
2. Destruction of Habitat
3. Habitat Degradation
4. Encroachments/human settlements in elephant habitat and corridors
5. Scarcity for food and water resources
6. Invasive species like *Prosopis juliflora*, *Lantana camera*

## Management Strategies

### 1. Protection measures

Creation of Anti Poaching Camps (APC)

- 🚫 Strict monitoring on illegal hunting & poaching is ensured.

Wildlife Protection Act (WPA) - 1972

- 🚫 It provides for imprisonment from 3 to 7 years and a fine not less than Rs. 10,000 in respect of offences relating to elephants.

Convention on International Trade in Endangered Species (CITES)

- 🚫 Imposed ban on the sale of ivory as well as regulations that govern worldwide Elephant Protection.

### 2. Conservation Programmes/ Schemes

- 🌸 Project Elephant - Launched in 1992
- 🌸 Implementation of MIKE (Monitoring of Illegal Killing of Elephants) Programme.
- 🌸 Fodder Scheme.
- 🌸 Augmentation of drinking water facilities for wildlife - Creation of Solar-powered Water Trough.

### 3. Improving the habitat

- 🌸 Creation of food and water resources inside the forest
- 🌸 Removal of invasive species like *Prosopis juliflora* and *Lantana camera*.



An adult Asian elephant can hold upto 8.5 litres of water in its trunk.



## Management Strategies

### 4. Minimizing Elephant Raid into the human habitation- reduces man-animal conflict.

- ✦ Construction of Physical Barriers
    - i. Elephant Proof Trench (EPT).
    - ii. Erection of Solar Fence.
  - ✦ Deployment of Anti – depredation Squads.
  - ✦ Use of Repellants- Crackers, beating of drums, etc.
  - ✦ Compensation for Crop damage.
  - ✦ Practicing Alternative cropping system especially in forest fringe villages.
  - ✦ Capture and Translocation of animals.
  - ✦ Ex-gratia for Human death/ injury.
5. **Eco – development activities** - discourages human entry into the forest by reducing human dependence on forest.
- ★ Creation of employment opportunities for forest dependents

### 6. Construction of Elephant Rehabilitation/ Rescue Centres

### 7. Conducting Special Camps for Elephants-

- ✦ Permanent Kumki Elephant camp @Sativayal, Coimbatore Forest Division.
- ✦ Special Rejuvenation Camps-for psychological improvement in the behaviour of captive elephants.

@ Theppakadu, Mudhumalai

@ Kozhikamudhi, Anamalai

@ Arignar Anna Zoological Park, Vandalur

### 8. Veterinary Care, Mobile Veterinary units



The trunk is an extremely powerful tool that can lift upto 350 kg. It is used to breath, drink, eat, touch, smell, snorkel, communicate



## Future Conservation Strategy

Survival of elephants will depend upon :

- \* A conservation-oriented development
- \* Continued sympathy of the people for elephants.
- \* Co-ordination among various departments and agencies.
- \* Larger research inputs
- \* Larger financial inputs

Hence, emphasis of elephant conservation programmes in future should be to improve the quality of life of elephants rather than on increasing their numbers which can be achieved through :

- \* *Ensuring Good habitat.*
- \* *Protection and Improvement of Corridors for Unrestricted movement.*
- \* Provision of “*urban corridors*” which allow the animals' access to key areas.
- \* *Minimum conflict with the people.*
- \* *Good veterinary support.*
- \* *A reasonable proportion of tuskless.*



Captive elephants die at a much younger age due to low birth and high death rate.



## DHARMAPURI DISTRICT

### Dharmapuri District - in brief

Dharmapuri district is located between the latitudes N 11° 47' and 12° 33' and longitudes E 77°02' and 77° 40'. It is situated in the North Eastern corner of Tamilnadu and is bounded by Thiruvannamalai and Villupuram districts on the East, Salem district on the South, Krishnagiri district on the North and Cauvery River on the west. The district comprises of **Dharmapuri Forest Division** (Four Territorial Ranges namely Dharmapuri, Palacode, Pennagaram, and Hogenakkal Forest Range and two special Ranges) and **Harur Forest Division** (Five Territorial Ranges namely Harur, Morappur, Theerthamalai, Kottapatty and Manjavadi Forest Range). The total geographical area of the district is **4497.77 km<sup>2</sup>**, out of which the total area under forest (including Reserve Forest and Reserve Land) is **1657.09 km<sup>2</sup>** (ie. 36.84 % of area is under forest).

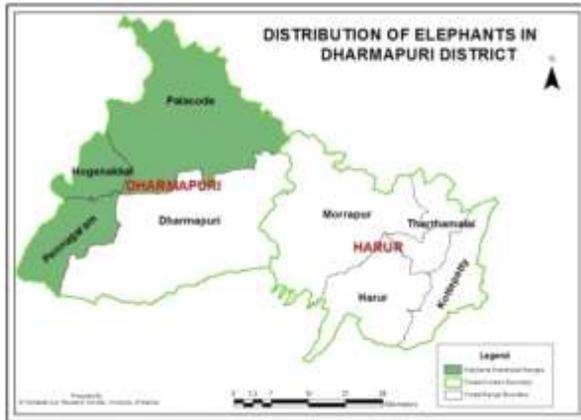


The groups are led by an "matriarch", often the oldest cow.



## Distribution of elephants in Dharmapuri district

Though the whole district is surrounded by hills and forests and is home for many wild animals, Elephants are distributed only in the forests of Pennagaram, Hogenakkal and Palacode Ranges. The district falls in the migratory path of elephants and hence the incidences of man- animal conflict is also experienced.



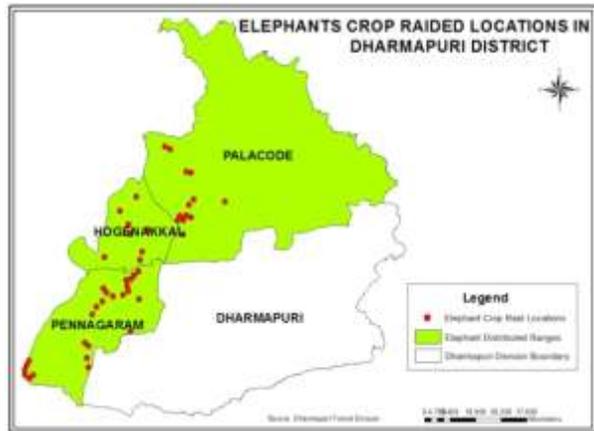
Estimated population in Dharmapuri district - 150 to 250 (as per 2012 censuses)



Weight of the tusk - earlier in the past- more than 90 kg.  
now, may rarely reach 45 kg.



## Distribution of crop raid in Dharmapuri district



Base year : 2011-16

### List of Crops raided in the district

1. Ragi - *Eleusine coracana*
2. Sugarcane - *Saccharum officinarum*
3. Paddy - *Oryza sativa*
4. Maize - *Zea mays*

### Reasons for crop raid (mostly during Post-monsoon season)

- \* Proximity (of agricultural fields) to the forest area.
- \* Presence of abundance food (especially Ragi, Sugarcane, Paddy, Maize, Tomato, banana, etc) in non-forested area.
- \* Availability of nutritious food in cultivated land than in natural forest.



Musth helps them gain dominance and reproductive success.



## Protection and Conservation measures in Dharmapuri District

### A. Construction of Anti- Poaching Camps (APC) / Watch towers in Elephant habitat.

There are eleven Anti- Poaching Camps (APC) established in the district to monitor the movement of Elephants and also to have a strict vigil on intruders so as to ensure better protection of the animal from hunting and poaching.

#### List of APC established in Elephant Habitat

##### Hogenakkal Forest Range

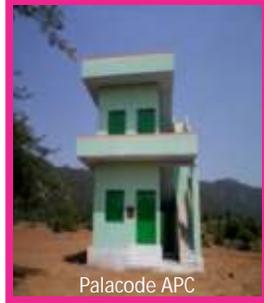
1. Chinnar
2. Kodupatty
3. Vallukalkodu
4. Rasikuttai

##### Palacode Forest Range

1. Kanniyammankoil
2. Kotturmalai
3. Hanumanpatty
4. Sockankottai

##### Pennagaram Forest Range

1. KrishnasamyKoil
2. Paalarumoolai
3. Aachankinaru



Tusks- are the modified incisors in the upper jaw,



## Habitat improvement measures

### a. Providing fodder facilities inside the forest - Fodder scheme

Elephants consume 112 different plant species, most commonly of the order Malvales, the legume, palm, sedge and true grass families. In forest nurseries, local and native forestry species are being raised and are planted in elephant habitat.



Raising nursery under Fodder Scheme



Planting of fodder species in elephant habitat



Rasikuttai APC



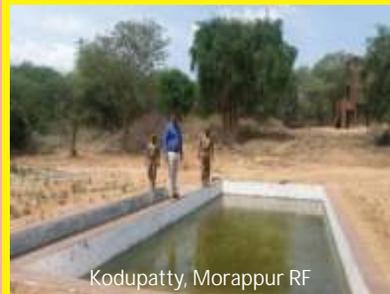
elephant's skin is very sensitive and hence takes mud bath frequently to protect them from burning, insect bites and moisture loss.



## B Providing water facilities to elephant

Requirement for water resources especially during summer season can be fulfilled through :

### a. Creation of Solar - Powered Water trough.



### b. Construction of Check Dams and Percolation Ponds.

Elephant herd in Morappur RF, Palacode Range.



elephants are polygynous breeders, and copulations are more frequent during the peak of wet season.



## C. Removal of invasive species-Prosopis juliflora

### NECESSITY FOR ITS REMOVAL

- \* It suppresses the growth of native vegetation thereby causing **scarcity for food resources**.
- \* Fruit ("Pods") of the species contains the alkaloid, "mimosin", which when consumed in large quantities results in **Gastro-entries and Indigestion** which ultimately leads to the death of the animal.
- \* It depletes the ground water rapidly that results in **scarcity for water resources**.
- \* Being drought- tolerant and prolific seed bearers, it occupies the entire area resulting in **degradation of the Habitat**.



Removal of Prosopis in Pennagaram RF, Hogenakkal Range during the year 2014-15



Removal of Prosopis in Morappur RF, Palacode Range during the year 2015-16

Year of Removal	Area (in ha)	
	Hogenakkal Range	Palacode Range
2013 - 2014	30	20
2014 - 2015	09	15
2015 - 2016	30	30
Total	69	65

In the last three years, **134 ha** of area under *Prosopis juliflora* were removed by Dharmapuri Forest Division.



International ban on ivory imports started in United States in June 1989.



# Management of Man- Animal conflict

## A. Construction of Physical Barriers

### 1. Erection of Solar Fence

Solar fence was erected to the distance of about 65.5 km distance in the Reserve Forests of Dharmapuri District.

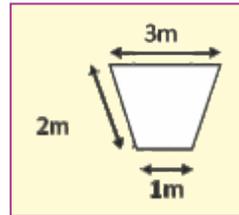


### 2. Elephant Proof Trench (EPT)

EPT is an effective preventive measure to reduce human - elephant conflict, especially in dry areas like Dharmapuri district.

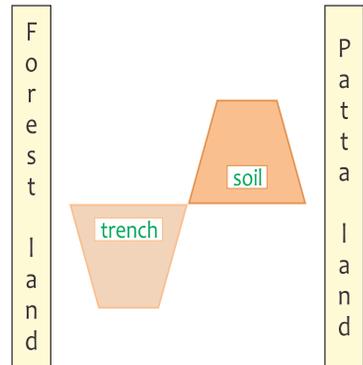
#### Specifications

- Top Width : 3 meter
- Bottom Width : 1 meter
- Depth : 2 meter



#### Points to remember while Constructing the EPT

- ❖ Trenches has to be made in vulnerable areas.
- ❖ In hilly terrain-trenches should be made uphill side and piling up of dug soil to be at downhill side.
- ❖ Piling of soil should not be done in patta land.
- ❖ At boundaries of Forest - Patta land : digging off trenches and Piling of dug soil may be made in Forest or no-zone area (2-3 chain distance away from patta land boundary) but should not



International ban on ivory imports started in United States in June 1989.



## Elephant Proof Trenches (EPT) in the Division

EPT was constructed under the Following Scheme:

1. Project Elephant
2. Asian Elephant Mitigation measures
3. 13<sup>th</sup> Finance Commission
4. Erection of Solar fence (Digging of EPT)
5. Tamilnadu Biodiversity and Greening Project (TBGP)

Year	Distance (in km)
2010 - 2011	07 km
2011 - 2012	28 km
2012 - 2013	51 km
2013 - 2014	66 km
2014 - 2015	08 km
2015 - 2016	10 km
Total	170 km

### Palacode Range

- ✓ Pikkili RF
- ✓ Thirumalvadi RF
- ✓ Badanavadi RF

### Pennagaram Range

- ✓ Bevanur RF
- ✓ Pennagaram RF

### Hogenakkal Range

- ✓ Woddapatty RF
- ✓ Udedurgam RF



Koturmalai



In total, 170 km (UPTO 2015-16) EPT were carried out in Palacode range (111 km), Pennagaram (9 km) and Hogenakkal (50 km) forest ranges.



CITES approved an international ban on ivory that went into effect in January, 1990.



## A - Providing compensation for crop damage

### B. Providing compensation for crop damage

#### Details on compensation provided in the district

Year	Compensation for Crop loss		Compensation for Cattle loss	
	Amount (Rs.)	No. of Incidents	Amount (Rs.)	No. of Animals
2005-2006	8,550	07	–	–
2006-2007	1,46,000	20	–	–
2007-2008	61,000	05	–	–
2008-2009	82,000	21	–	–
2009-2010	26,000	07	–	–
2010-2011	--	--	–	–
2011-2012	--	--	–	–
2012-2013	70,900	13	–	–
2013-2014	--	--	–	–
2014-2015	2,38,200	26	42,000	9 (Sheeps)
2015-2016	35,750	04	2,000	4 (Goat Calves)
Total	6,68,400	103	44,000	13

### C Ex-gratia for Human Death/ injury

Year	Compensation for Human Death		Compensation for Injury	
	Amount (Rs.)	No. of Persons	Amount (Rs.)	No. of Incidents
2011 - 2012	7,50,000	03	15,000	01
2012 - 2013	--	--	15,000	03
2013 - 2014	3,00,000	01	–	–
2014 - 2015	3,00,000	01	40,000	03
2015 - 2016	--	--	50,000	05
Total	13,50,000	05	1,75,000	12



the largest recordrd was 3.02 m (10 ft) long and weighed 39 kg.



## Education and Awareness

- Role and importance of elephants in ecology is being propagated regularly to students and general public through
- Installation of awareness boards along the highways, elephant crossing zones and corridors, etc.
- Awareness generation to the farmers through Special campaigns and meetings - Grievance Meeting, Village Forest Council (VFC) meeting, etc.
- Conducting various competitions like painting, speech and quiz.
- Celebration of World Forestry Day, World Biodiversity Day, World Elephant Day, Wildlife week, etc.
- Awareness through exhibitions and cultural programmes during local festivals - Aadi Perukku.



Farmers Grievance Meeting



Wildlife week celebration



Between the age of 10-20 years, bulls undergo an annual phenomenon known as "Musth".



## Providing Technical Support

### Veterinary Care

A Mobile Veterinary unit was established in District Forest Office, Dharmapuri to provide necessary support in the treatment of animals. Required medicines for the treatment of wounds and diseases were kept ready in the clinic. Have Tie- up with local veterinarian to ensure timely and better protection of the animal.



Treatment of diseased animal



Medicines in Mobile Veterinary Unit

### Conduction of Veterinary Camps

Veterinary camps are regularly conducted throughout the district (by forest department as well as line departments) especially in forest villages to prevent the spread of zoonotic diseases.



### Training for field staffs

Special trainings were conducted for staffs regarding Elephant Census, etc.



This is the period where the testosterone level is up to 100 times greater than non-musth periods, and they become extremely aggressive.





## References

-  Working Plan (From 01-04-2007 to 31-03-2017) of Dharmapuri Forest Division
-  "Elephant Reintroduction Foundation" World Elephant Day website.
-  *J. Environ Biol.* 2013 Jan, 34 (1): 87-92 Food and Feeding behaviour of Asiatic Elephant by Mohapatra K.K, Patra A.K and Paramanik D.S
-  [www.forests.tn.nic.in](http://www.forests.tn.nic.in)
-  [www.dharmapuri.tn.nic.in](http://www.dharmapuri.tn.nic.in)
-  [www.iucnredlist.org](http://www.iucnredlist.org)
-  [envfor.nic.in](http://envfor.nic.in)
-  Wildlife Institute of India website- [wiienvis.nic.in](http://wiienvis.nic.in)
-  <http://en.wikipedia.org>
-  *Fact sheet – Elephant.*
-  [www.wildanimalpark.org](http://www.wildanimalpark.org)- What do elephants eat?
-  [www.Himandus.net](http://www.Himandus.net)- *Elephant food*-Kids zone @ ELEFUNTERIA

