The Earth Mankind Inherited

The Earth Mankind Inherited

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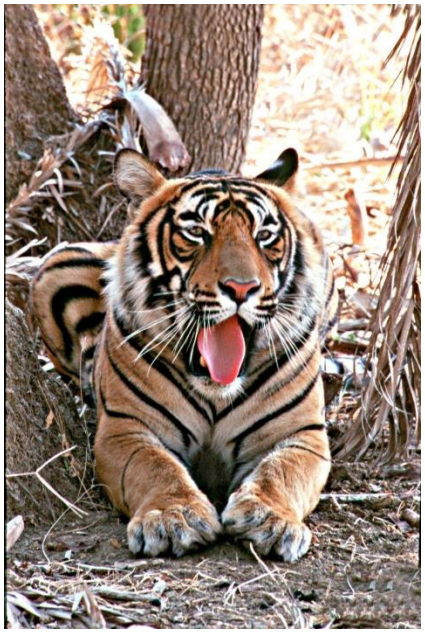
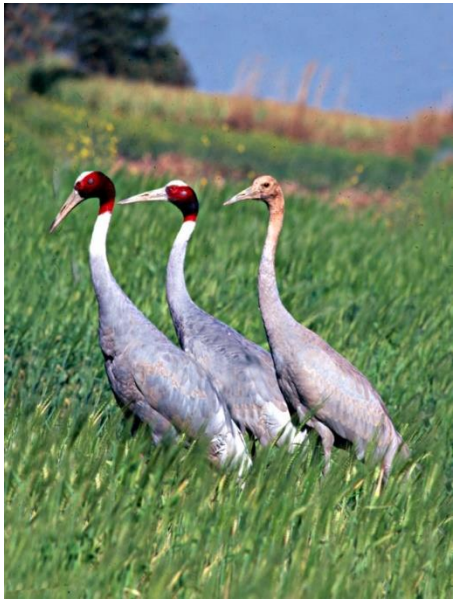
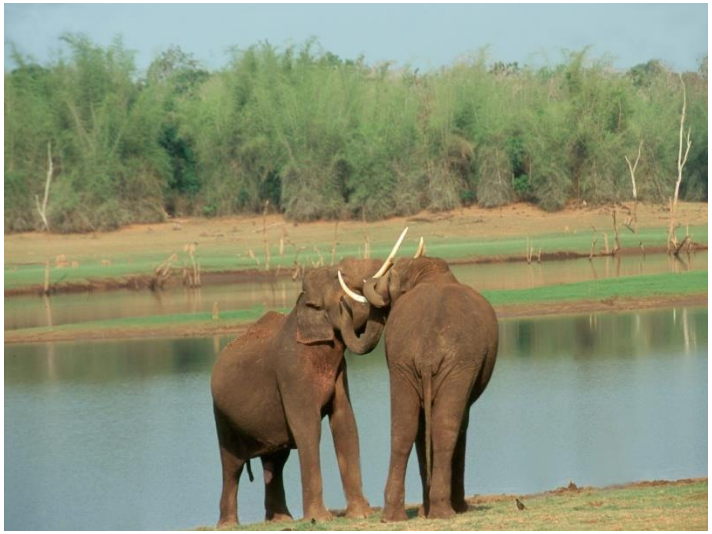
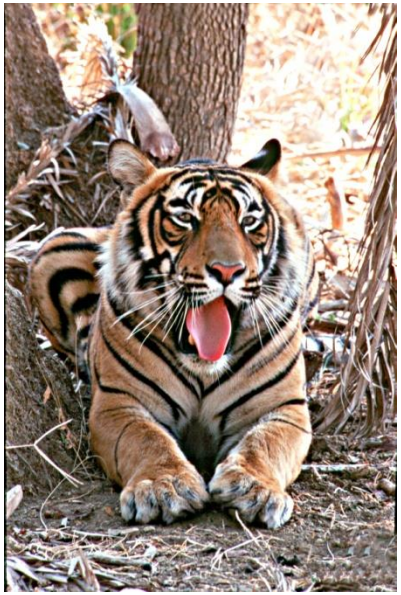
The Earth Mankind Inherited





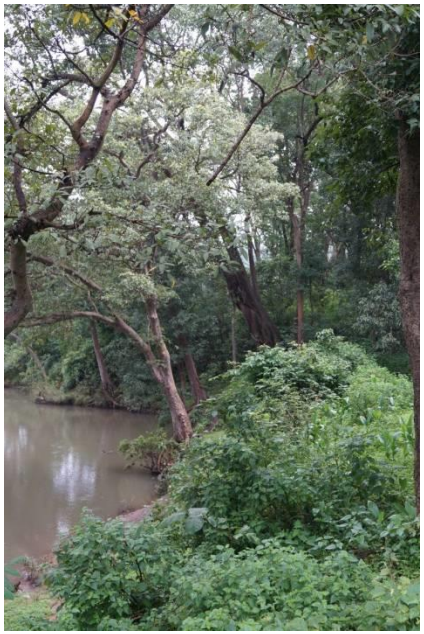
Most threatened wildlife species - I



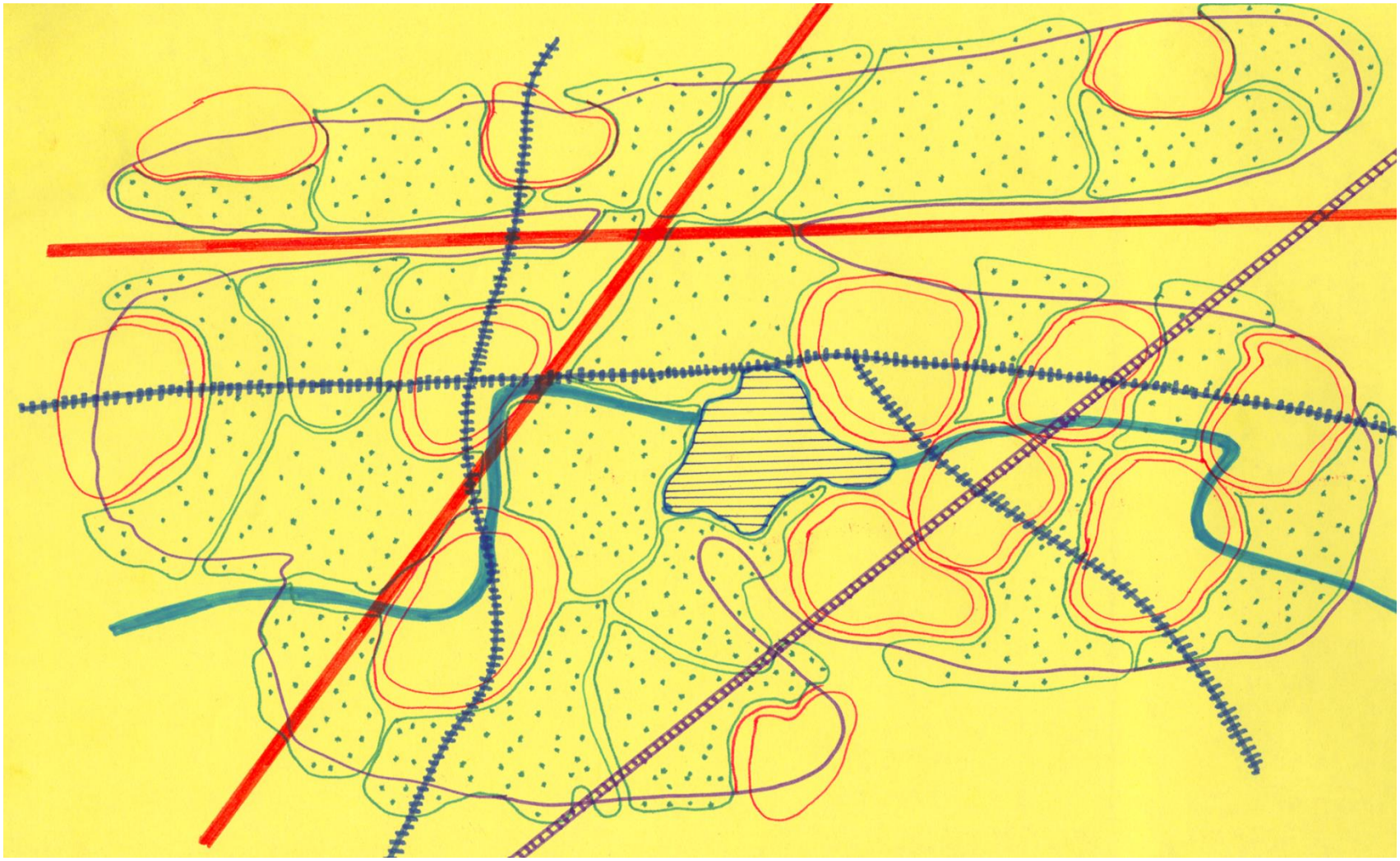


Most threatened wildlife species - II

Most threatened floral species - I

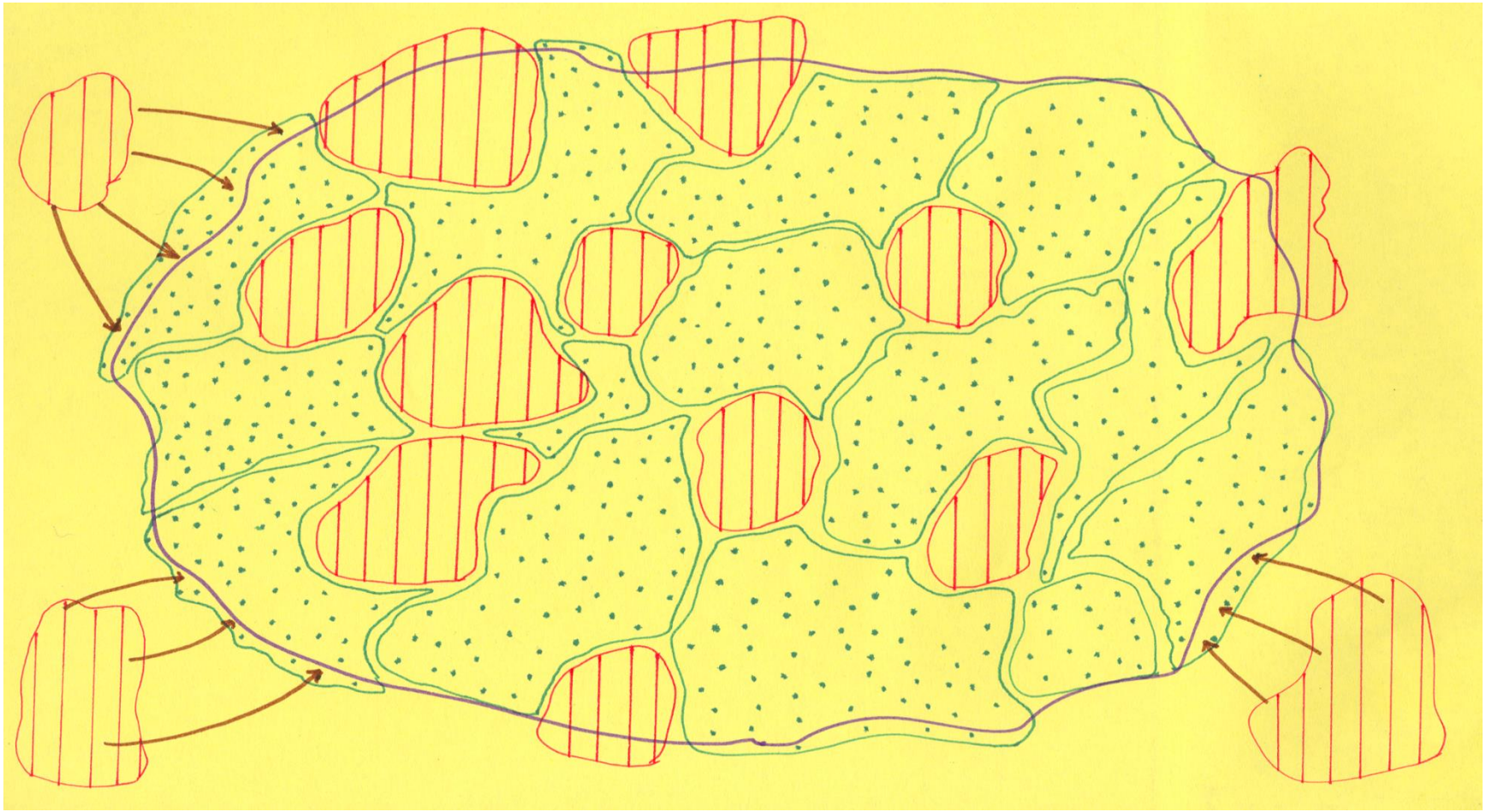


Effect of fragmentation of forest & wildlife habitat corridor



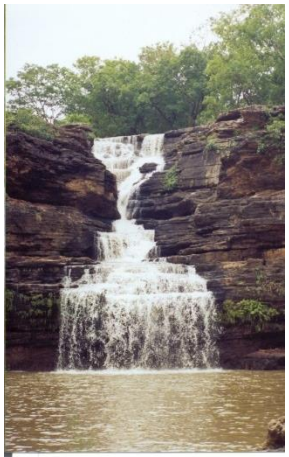
Population density very high about 433 persons per / sq.kms.
Not Sustainable

Typical forest & village mosaic of a protected area



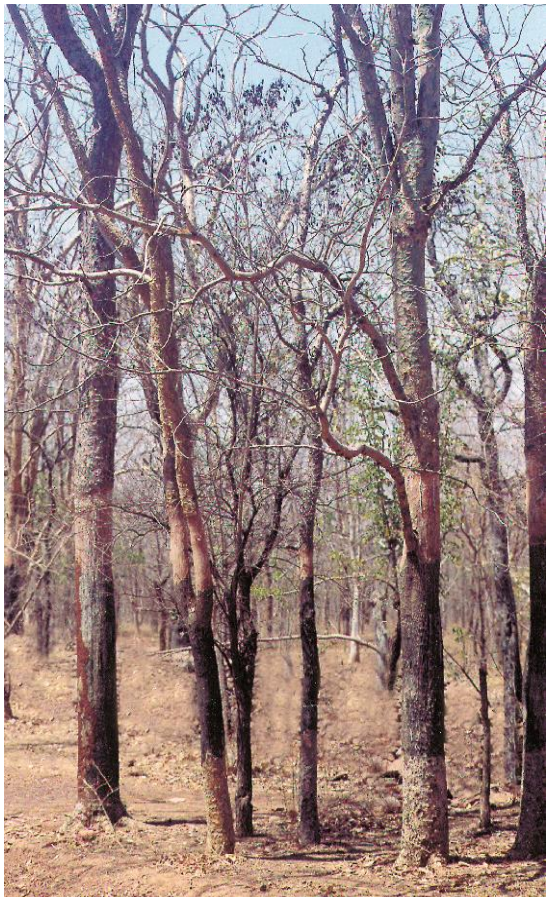
All non-forest areas situated within external boundary of protected areas are part of inviolate wildlife habitat.
Gopal Das Mittal ver. State of Madhya Pradesh


19/12/2005 12:50



Gall formation and un-sustainable resin exploitation in associate species

Sterculia urens



Boswellia serrata

Butea monosperma

ISSUES OF WILDLIFE AND WILDLIFE (PROTECTION) ACT, 1972

National Parks – 85
Wildlife Sanctuaries - 445
Community Reserve - 9
Tiger Reserves - 38
Elephant Reserves – 64
Total Area – 155348.88 sq.kms
App. 4.64% of terrestrial area

Denotification virtually impossible
(HSC order dated 13th November, 2000

APPLICABILITY OF WLPA

Protected areas

FOREST DEPARTMENT

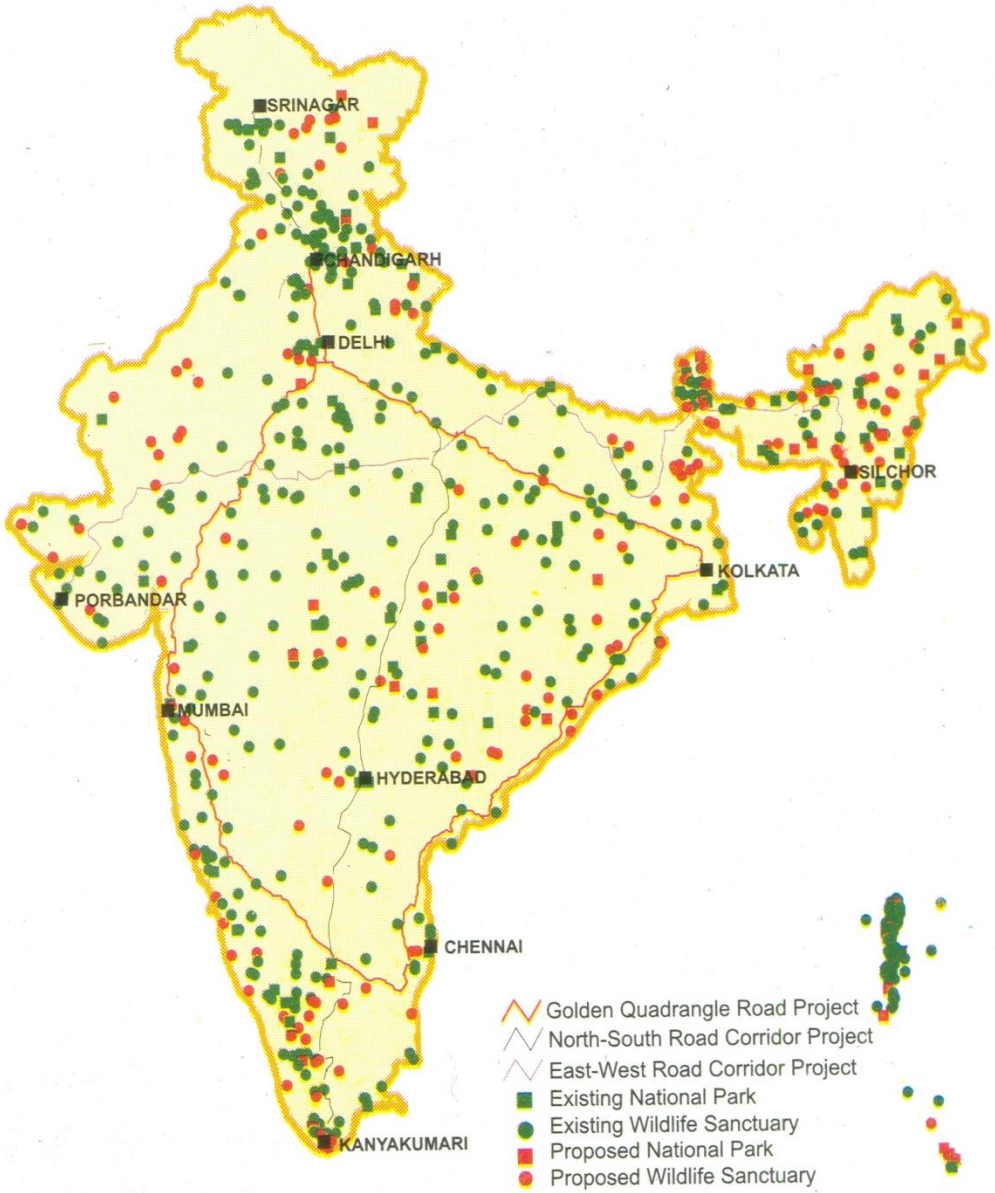
- National Parks,
- Wildlife Sanctuaries,
- Conservation Reserve
- Community Reserve.

Specified Species

Species specified in Schedule-I, II, III, IV & VI having jurisdiction over 6800 species (based on the Storer & Usinger Classification

Specified international conventions

Present & Potential "Protected Areas" of India



PROTECTED AREAS & WILDLIFE (PROTECTION) ACT, 1972

Salient features

- Geographical area (including forest area) under PA network – 1,55,348 sq. kms.
- New PAs are not being notified.

Impact of Wildlife (Protection) Act, 1972

- Rights cannot be acquired or traded u/s 20, WLPA.
- Most of RF is part of protected areas.
- Exploitation not possible under Section-29, WLPA.
- Ban on exploitation & diversion of protected areas under orders of the Hon'ble Supreme Court.

The habitats of protected areas & buffer zones cannot be used for 'mining purposes" due to prohibitory legal regime. Even non-forest area of protected areas cannot be used (Tahir Ali ver. State of Madhya Pradseh)

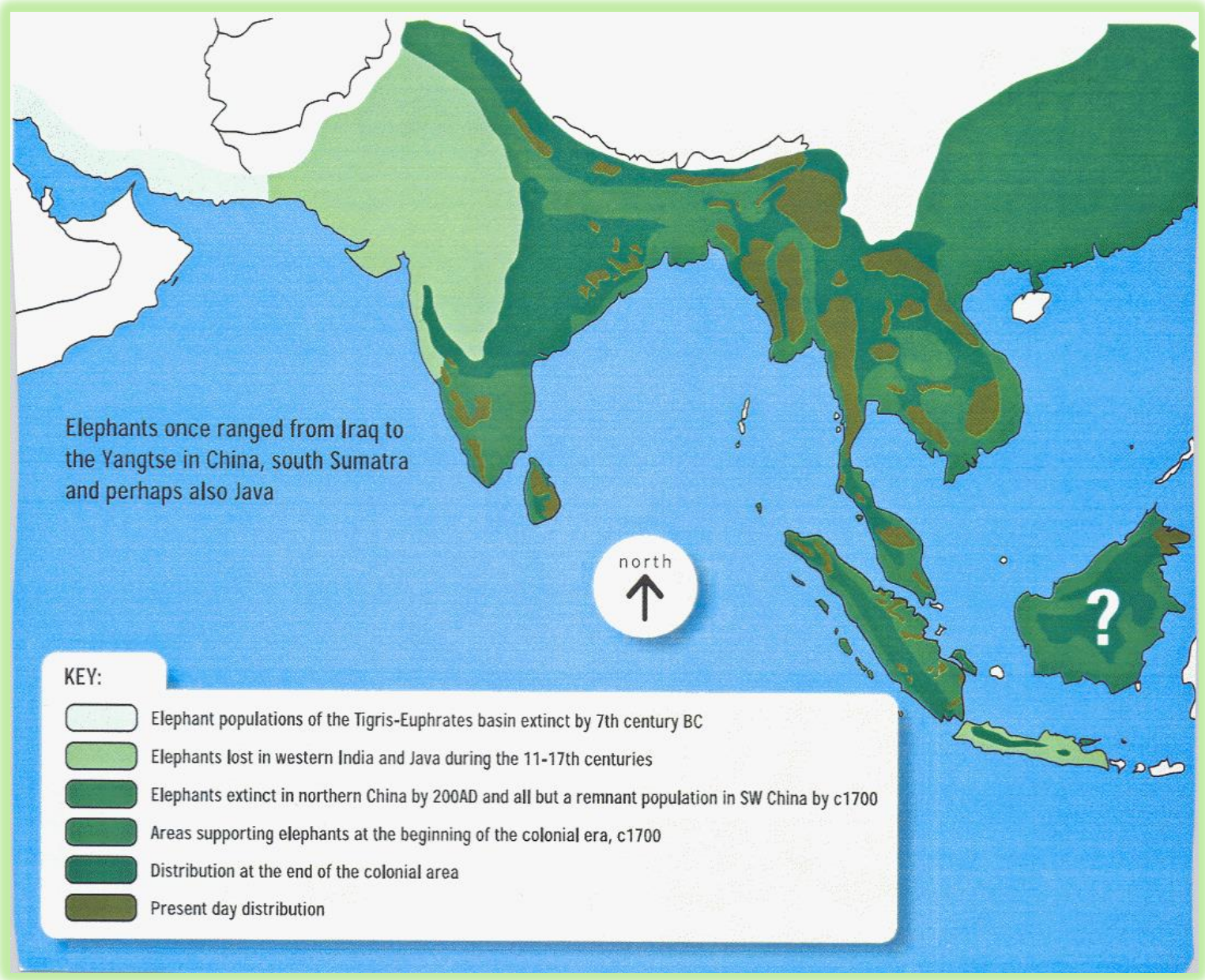
Jurisdiction of Wildlife (Protection) Act, 1972

- The Wildlife (Protection) Act, 1972 is having jurisdiction over all National Parks, Wildlife Sanctuaries, Community Reserves and Conservation Reserves. The Buffer Zones / Ecosensitive Zones (ESZ) are notified under the Environment (Protection) Act, 1986.
- All species notified under WLPA. Including species specified under Invertebrate Classification of “Storer & Usinger” and Chordate Classification of “Colbert”.
- The species notified in the Appendix-I, Convention on International Trade of Endangered Species (CITES) are also protected, but WLPA is silent on this issue.
- The population of many species are either stable or going down – genetic drift due to small population, expression of “recessive alleles” – White Tiger, Black Panther etc.

THE CONSEQUENCES OF ISOLATION OF POPULATIONS

TIGER PROJECT & ELEPHANT PROJECT

Contraction of Asian Elephant Range Over-time



Statutory provision for Environment, Forest and Wildlife Clearances

- Environment Impact Assessment Notification, 2006 [under Environment (Protection) Act, 1986, under revision].
- Section-2(ii), Forest (Conservation) Act, 1980.
- Section-38O(g), Wildlife (Protection) Act, 1972 – NPV is 10 times in national parks and 5 times in wildlife sanctuaries; can seriously upset cost:benefit ratio.

Other statutory provisions, having high impact on project planning

- Panchayati-raj Extension to Scheduled Areas Act, 1996.
- Scheduled Tribe & Other Forest Dwellers (Recognition of Forest Rights) Act, 2006
- Governance and administration of Scheduled-V and VI areas, notified under the Constitution of India.
- Issues of Land Acquisition Act, 1894 as amende in 2012.

Biological Diversity Act, 2002

- The Act promote exploitation of biodiversity in regulated manner and not prohibitory or conservation oriented in nature.
- Recently Forest Department personnel has been assigned power to take cognizance in the Act (recently Range Officer is authorised to take cognizance), though 99% faunal and floral diversity is found in forest areas only.

BIODIVERSITY SECTOR

With over 45,000 plant species, 81,000 animal species, India is one of the world's 12 mega-biodiversity centers. The ethos of conservation is ingrained in India's cultural heritage, developmental activities are increasingly threatening this rich biodiversity. Approximately 20 wildlife species are categorized as "possibly extinct" 1,500 plant species are considered vulnerable and endangered, and some breeds have suffered genetic erosion.

- Enunciate Biodiversity (Conservation) Policy.
- Panchayati Raj Extension to Scheduled Areas Act, 1996 or PESA (73rd Constitution Amendment) is not having overriding effect on IFA or WLPA.

Analysis of Crop Assessment

Forest Crop near absence of regeneration

Forest Crop exhibiting signs of “Senescence”

Forest Crop exhibiting signs of “Senescence “ and dry rot

Forest Crop near absence of regeneration

Forest Crop exhibiting signs of “Senescence” and dry rot

Analysis of Crop Assessment – *Phoenix* Infestation

- Large scale crop dried and died after *Phoenix sylvestris* infestation in Nagri & Sihawa (Dhamtari district, CG) and Narharpur, Keskal, Korar, Pharasgaon Ranges (Kanker & Kondagaon district, CG) in 1980s.
- Sal Regeneration absent except Kanha National Park, MP.
- "Sal seed collection", huge threat to Sal regeneration.
- Critically small "germination period" of 7 days. Monsoon is shifting to July and August. Genetic incompatibility.

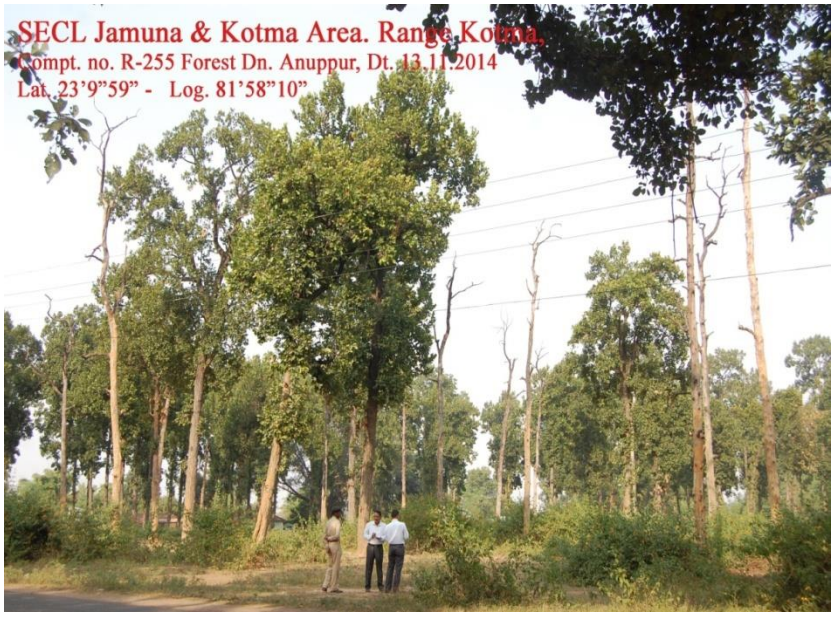
Degradation & opening of Sal forests

- Sal forests are now open, crown density reduced to 0.4 or less, degraded, suffering from soil erosion.
- Absence of regeneration, no seedlings or saplings.
- Sal crop is only consisting of pre-selection girth classes. Death of Sal forests is certain after achieving senescence.
- Virtually no control over grazing. No Class-I Protected Area in the administration.

Soil Erosion in Sal forests

- Due to senescence in Sal crop, it is desirable to promote associate species.
- Conserve Sal seed by rotational closure or collection or blanket ban to promote regeneration.
- Demarcate & monitor "Sal Borer Plots" for disease surveillance. Sporadic attack still continuing.

Dried Sal Forests



Dried Sal Forests

Assessing Stem Condition in Timber Depot

Assessing Stem Condition in Timber Depot

Impact of Sal Borer & consequent heavy mortality in crop - 1

सालवोरर से प्रभावित सालवृक्ष
पूर्व सामान्य वन मंडल मण्डला (म.प्र.)
कक्ष क्र. RF1211

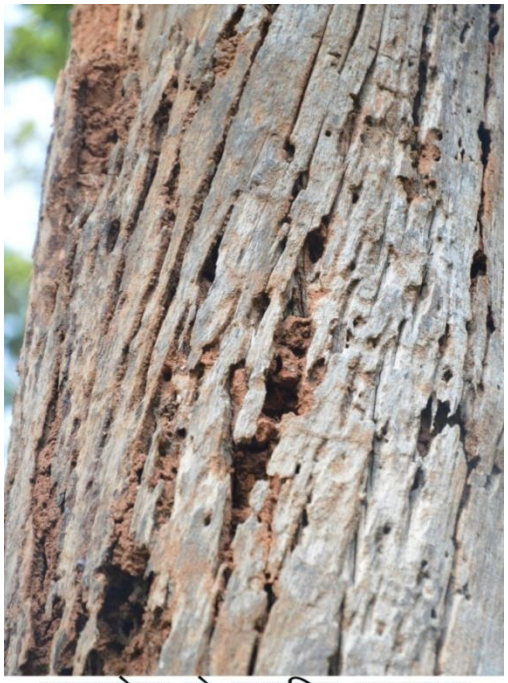
सालवोरर से प्रभावित सालवृक्ष
पूर्व सामान्य वन मंडल मण्डला (म.प्र.)
कक्ष क्र. RF1211

सालवोरर से प्रभावित सालवृक्ष
पूर्व सामान्य वन मंडल मण्डला (म.प्र.)
कक्ष क्र. RF1211

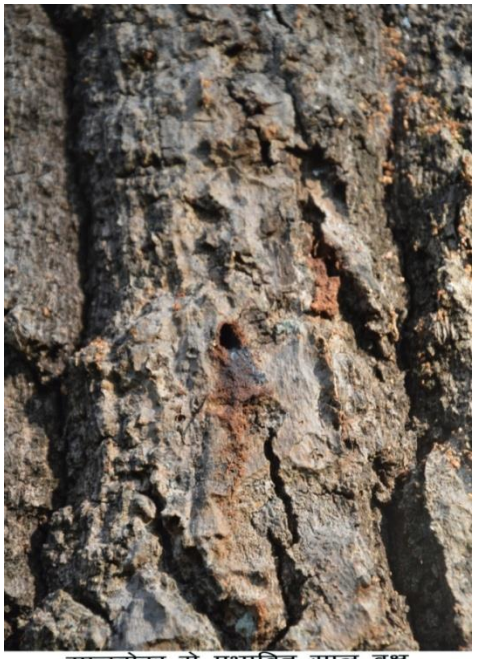
Caused by larvae of *Haplocerambyx spinicornis*, Order Coleoptera. Insecticide or fumigation not possible since infestation is caused in Monsoon.

Impact of Sal Borer & consequent heavy mortality in crop

सालवोरर से प्रभावित लट्टा
सिझोरा डिपों, उत्पादन वन मंडल मण्डला (म.प्र.)



सालवोरर से प्रभावित सालवृक्ष
पूर्व सामान्य वन मंडल मण्डला (म.प्र.)
कक्ष क्र. RF1211



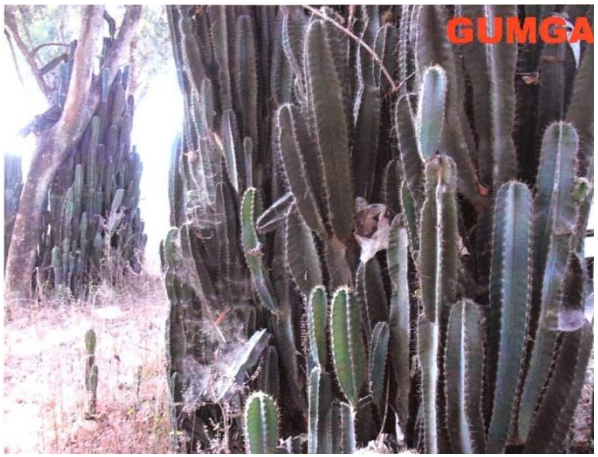
सालवोरर से प्रभावित साल वृक्ष
पूर्व सामान्य वन मंडल मण्डल म.प्र.
परिक्षेत्र मवई कक्ष क्र. RF1182

Root cause of Sal Borere attack – Removal of associate species of Sal and consequent creation of monolith Sal stands, poluculture Sal less susceptible to Sal Borer attack.

Promote "Biological Control" or increase proportion of associate species to reduce vulnerability of "Pure Sal" crop.

Phoenix sylvestris and P. acualis infestation in Sal forests

Invasive species in Sal forests, MP



- Invasive species of Opuntia and Cactaii observed in Korba and Surguja districts of C.G. These species were not found about 30 years ago.
- These invasive species signify drying of Sal forests.
- Serious “genetic erosion” observed in Sal crop.

Effect of opening of canopy in Sal forest

Encroachments are opening canopy in Sal forest, leading to drying of forest floor and consequently invasion by invasive species – making Sal seed germination and regeneration impossible.

Invasive species in Sal forests, M.P.

Calotropis procera, *C. gigantia*, *Argemone maxicana*, one more species of *Argemone* genus observed recently.

Invasive species in Sal forests, M.P.

स्थानिय नाम–रहरटीया
साल वन में पाया जाने वाला प्रमुख खरपतवार जिससे साल के पुर्नउत्पादन को प्रभावित कर रहा है
पूर्व सामान्य वन मंडल मण्डल म.प्र.
परिक्षेत्र मवई कक्ष क्र. RF1204

स्थानिय नाम–मोहटी(*ocimum gratissimum*)
साल वन में पाया जाने वाला प्रमुख खरपतवार जिससे साल के पुर्नउत्पादन को प्रभावित कर रहा है
पूर्व सामान्य वन मंडल मण्डल म.प्र.
परिक्षेत्र मवई कक्ष क्र. RF1204

स्थानिय नाम–रहरटीया
साल वन में पाया जाने वाला प्रमुख खरपतवार जिससे साल के पुर्नउत्पादन को प्रभावित कर रहा है
पूर्व सामान्य वन मंडल मण्डल म.प्र.
परिक्षेत्र मवई कक्ष क्र. RF1204

- Invasive species of *Ocimum grandisimum (new invasive species)* observed in Mandla, Dindori, Shahdol and Umaria districts. These species were not present about 30 years ago.
- Signifying drying of Sal forests.

Solidification of forest floor and baking due to recurrent forest forest fires biggest hurdle in Sal seed germination & regeneration

Sal Regeneration Technique to be adopted on Technically reclaimed sites and degarded sites

- Protection against biotic interference.
- Deep soil working upto 45 cms depth.
- Collection of winged Sal seed and direct sowing of five kilogram seeds per ha.
- Monitoring of germination of Sal seeds and maintaining soil moisture regime if monsoon is delayed. The soil moisture regime shall be maintained with the use of geo-textiles, if required.
- Humus enrichment by farm yard manure / sewage sludge.
- Standardise Sal Nursery and plantation technique for wide spread application.

Commendable effort of Sh. JP Sharma, IFS, APCCF, MP.

Article published in Indian Forester, 2004.

Assisted Sal Regeneration

Forest School, Distt. Jagdalpur, Chhattisgarh

Assisted Sal Regeneration

Site Ambikapur Nursury, Distt. Surguja, Chhattisgarh. Sal Crop raised in 1984-85

Sal Plantation

Rajgamar Plantation,
CG Forest Department,
Korba Range,
Korba Division,
Chhattisgarh

Chotia Mine,
Prakash Industries
Hasdeo- Arand Coalfield,
Distt. Korba,
Chhattisgarh

Urgently develop “techniques for Sal plantations”

Typical Teak forests in the country

Site quality degrading very fast, soil fertility going down, depleting moisture regime

Typical Teak forests in the country

- Economic value fast declining.
- Re-assess site quality of these Teak forests.
- Root-Shoot planting technique is required to be replaced by Pre-sprout or poly-pot.
- No reduction in “selection girth” below 120cms gbh

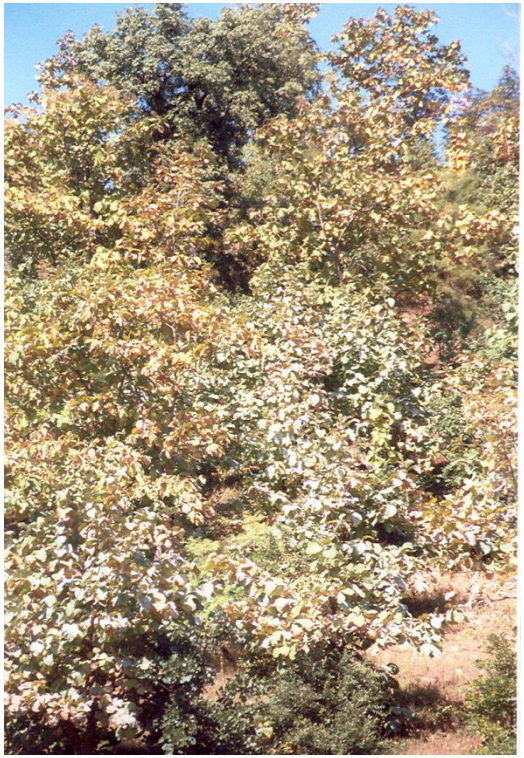
Effect of repetitive coppicing in Teak crop

Stump vigor seriously declined due to repetitive coppicing

Effect of repetitive coppicing in Teak crop

Serious *Phoenix sylvestris* infestation in Teak plantations in Mixed forests

Serious attack of Teak Powdery Mildew on Teak Crop

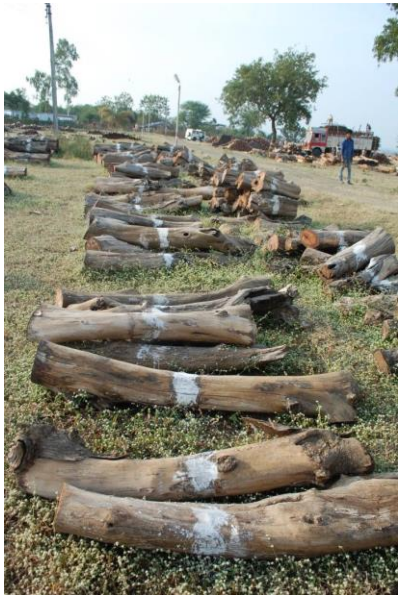


Serious attack of “Teak Leaf Skeltonizer” and “Teak Leaf Defoliator” in Teak crop – Impact of prolonged temperature

Serious attack of Teak Leaf Skeltonizer and Teak Leaf Defoliator in Teak crop

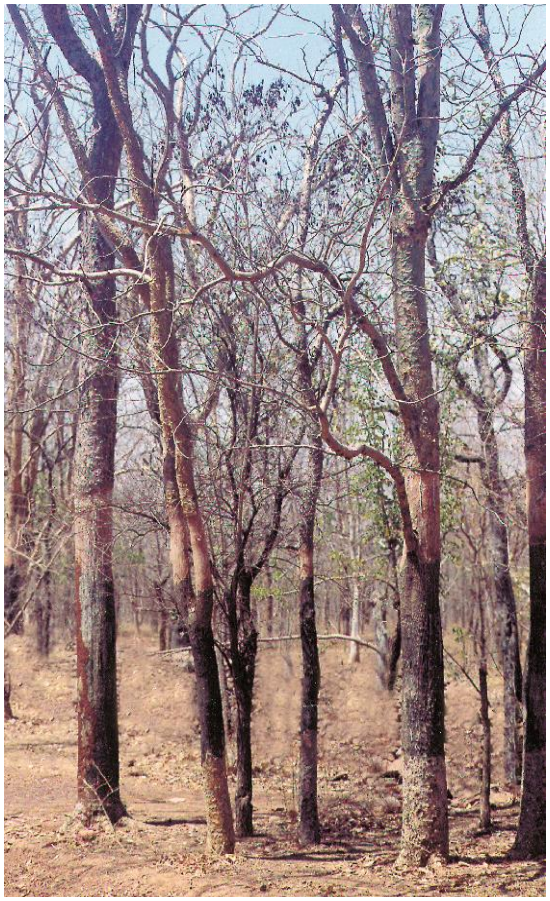
Teak logs exhibiting signs of senescence and fire damage

Teak logs exhibiting signs of senescence and fire damage



Gall formation and un-sustainable resin exploitation in associate species

Sterculia urens



Boswellia serrata

Butea monosperma

- The National Working Plan Code (NWPC) has been notified for management of forest areas. The basic tenet of NWPC is to manage forest resources on the basis of sustainable **‘economic rotation’**. If VER / REDD / REDD+ Credit trading is considered (may be in forthcoming Mexico Conference) for forest areas, the entire process of forest working plans preparation have to be amended and revised on the lines of **‘carbon rotation’** in the ecosystem.

Contour Bunding

Loose rubble Gabion Structure

Silt filtering device


Contour Trench - South Sagar Division

Obtained photographs before starting work & after completion of operations


Water Recharging Structure - South Sagar Division

TANK-PANCHVATI, SOUTH PANNA DIVISION

Provide geo-references and details of micro / milli-watersheds, install stone masonry boards for display

Forest Types of India

Definition of "Forest Type"

For the purpose of this memoir a forest type may be defined as a unit of vegetation which possesses (broad) characteristics in physiognomy and structure sufficiently pronounced to permit of its differentiation from other such units.

This is irrespective of physiographic, edaphic or biotic factors. It is selected in the first place subjectively from the ever-varying cover of vegetation, with boundaries arbitrarily imposed on what are in face gradual changes (clines or continua).

Since these forest types have a bearing on the practice of scientific forestry, and practical utility is indeed the main reason for distinguishing them, necessarily greater importance is placed on the main tree layers or on the most emergent vegetation.

Distinctions based on shrub and ground flora, characteristic of much recent ecological work on the vegetation of India, have necessarily been given a subordinate place.

The major type-groups are subdivided into types on a geographic basis since a recognizable type-group varies somewhat with locality owing to differences in floristics and minor variations in climate and site occurring within the range associated with each group-type as a whole.

- Units which are clearly associated with a definite site factor and differ appreciably from the prevalent type of the surrounding area are referred to as edaphic types (E). In using this term no exclusive emphasis is intended on the special physical or chemical properties of the soil mantle as such; on the other hand it is felt that the sum of the distinctive features of the site whether caused in the main by micro-topographic, microclimatic or moisture and drainage factors, affect the vegetation to an extent rendering is advisable it differentiate it from the typical form believed to be primarily determined by climatic factors. One easily recognized group of such types, those occurring in permanently or periodically wet sites, are separately treated as SWAMP TYPES (to which is appended, for convenience only, the littoral forest type occurring on coastal beaches).
- In giving names to types, terms implying site conditions have been avoided as far as possible, but to avoid circumlocution or the use of words too long or technical for general convenience, the qualifications wet, moist and dry have been admitted, implying that the vegetation has the appearance commonly associated with different degrees of moisture availability.

- The alternative method presents one with the problem as to the criteria to be used in dividing up the vast range of forms of vegetation that is met with. An excellent review of the possibilities has been put forward by **FOSBERG** (1958) taking into account the proposals of **BURTT-DAVY** (1938) and **BEARD** (1944), as well as those of the pioneers beginning with **SCHIMPER** (1905), **MAYR** (1909) and **RUEBEL** (1930). The possible bases for classification are at least seven, viz., (1) Physiognomy, (2) Structure, (3) Function, (4) Floristics, (5) Dynamics, (6) Environment and (7) History. By "function" is meant here the morphological characteristics which seem to indicate adjustment to environment. Practical difficulties arise in attempts to draw up a scheme based on only one of these aspects, though apparent inconsistencies are often traceable to nomenclature as mentioned above in connection with the naming of types.

- Physiognomy provides an easy basis for a rough differentiation of very broad categories and has been used to some extent by most writers including **SCHIMPER.** It is ordinarily taken to include characters such as evergreen or deciduous habit and such structural or functional features as are associated with very dry (xeromorphic) or very wet (hydromorphic) sites.

Major Groups of Forest Types of India

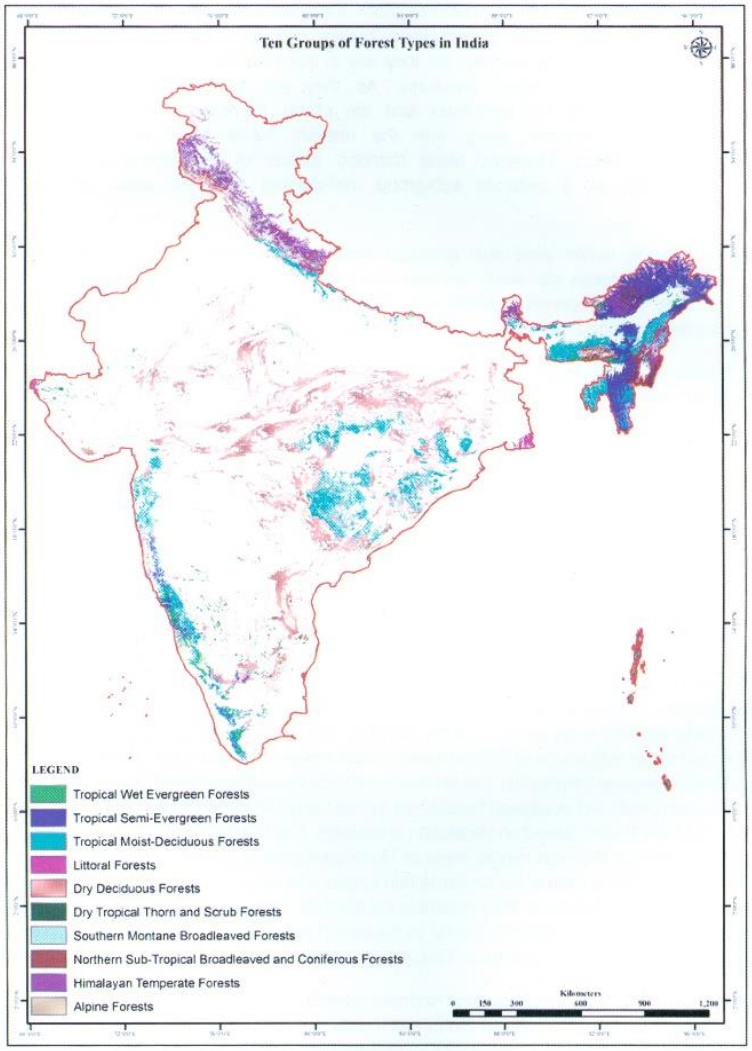


Figure 6.1: Ten major forest types of India

Tropical Moist Deciduous Forests of India

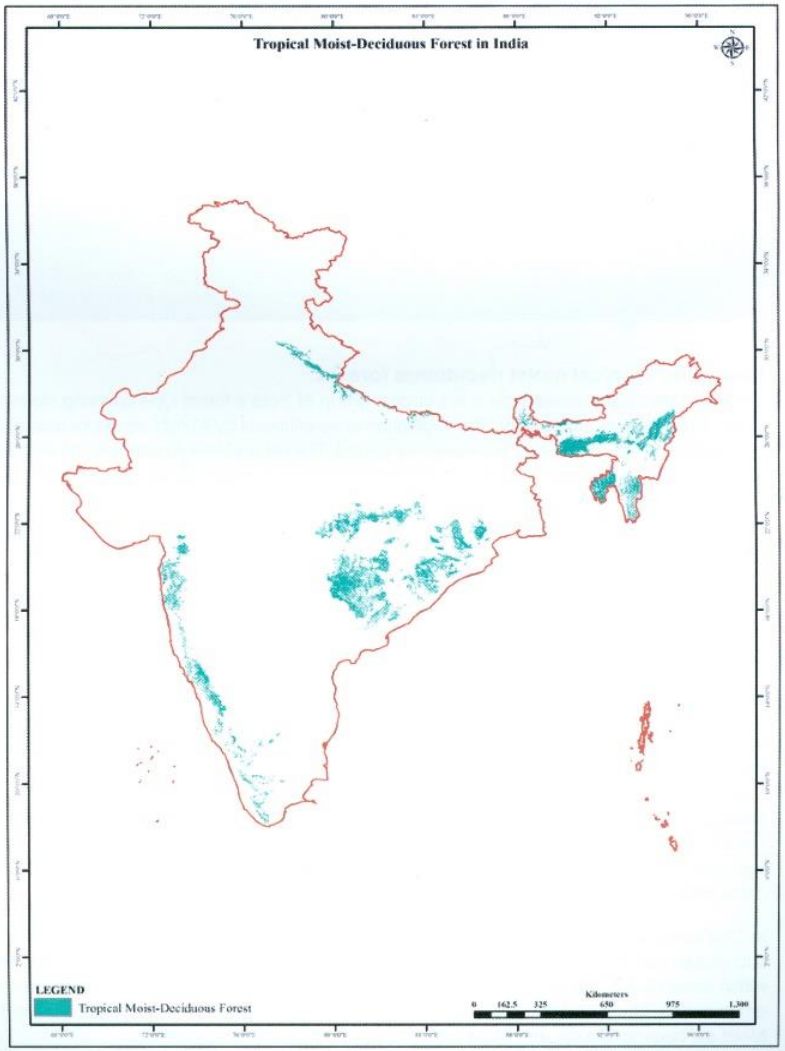


Figure 6.4: Group III . Tropical Moist Deciduous Forests.

Pure Teak Forests, Pench National Park

Miscellaneous Forests, Molem Wildlife Sanctuary, Goa

Banana & Bamboo Forests, Sreijosha National Park, Arunachal Pradesh

Chir Pine Forests

Bambusa nutans, FRI, Dehra Dun

Babool Scrub Forests, Jaipur, Rajasthan

FOREST TYPES OF MADHYA PRADESH

PANDANUS THICKETS, BALAGHAT

DECIDUOUS TEAK FORESTS, SEHORE

DILLENIA FORESTS WITH TEAK, HOSHANGABAD

GHONT FORESTS, DEWAS

ANJAN (HARDWIKIA BINATA) FORESTS,
KHANDWA

MATURE SAL FORESTS , BALAGHAT
(IN FLOWERING)

MISCELLANEOUS FORESTS (MAINLY TENDU & SAJA),
HOSHANGABAD

SAL WET EVERGREEN FORESTS

KANHA NATIONAL PARK

MISCELLANEOUS DECIDUOUS FORESTS,
PENCH NATIONAL PARK, SEONI

PALAS (BUTEA MONOSPERMA) FORESTS

SHAHDOL

SAL MATURE EVERGREEN FORESTS

KANHA NATIONAL PARK


Thank you