

NOTE ON THE WIDENING OF HIGHWAY IN SATHYAMANGALAM TIGER RESERVE

The state highway connecting Punjuar – Talavadi goes in the southern portion of the elephant corridor Chamrajnagar – Talamalai at Muddanalli. This corridor links Sathyamangalam Tiger Reserve with BRT Tiger Reserve.

The National Highway (NH – 209) already exists between Chamraj-nagar and Sathyamangalam. This National Highway itself has huge impact on wildlife and kills wildlife frequently including elephant, leopard, sloth bear and herbivores (Table 1).

Table 1: Road-kill recorded in Sathyamangalam division

| SI No | Year | Wildlife species Killed in road accidents |
|-------|------|-------------------------------------------|
| 1 | 2011 | Chital |
| 2 | 2011 | Chital |
| 3 | 2011 | Chital |
| 4 | 2012 | Chital |
| 5 | 2012 | Chital |
| 6 | 2012 | Chital |
| 7 | 2012 | Chital |
| 8 | 2012 | Wild Boar |
| 9 | 2012 | Chital |
| 10 | 2012 | Sloth Bear |
| 11 | 2012 | Chital |
| 12 | 2012 | Chital |
| 13 | 2012 | Chital |
| 14 | 2012 | Chital |
| 15 | 2012 | Chital |
| 16 | 2012 | Chital |
| 17 | 2012 | Chital |
| 18 | 2012 | Chital |
| 19 | 2012 | Chital |
| 20 | 2012 | Chital |
| 21 | 2012 | Wild Boar |
| 22 | 2012 | Elephant |
| 23 | 2012 | Sloth Bear |
| 24 | 2012 | Sambar |
| 25 | 2012 | Chital |
| 26 | 2012 | Bonnet macaque |
| 27 | 2012 | Peafowl |
| 28 | 2013 | Chital |
| 29 | 2013 | Chital |
| 30 | 2013 | Chital |
| 31 | 2013 | Chital |

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|----|------|------------------|
| 32 | 2013 | Peafowl |
| 33 | 2014 | Chital |
| 34 | 2014 | Chital |
| 35 | 2014 | Chital |
| 36 | 2017 | Chital |
| 37 | 2017 | Black naped hare |
| 38 | 2017 | Leopard |
| 39 | 2019 | Leopard |
| 40 | 2019 | Black naped hare |
| 41 | 2020 | Bonnet macaque |
| 42 | 2020 | Sloth Bear |

Punjuar – Talavadi road located in bottleneck and being crucial area for the movement of wildlife. Camera trapping exercise has captured the wildlife species using this habitat (table 2).

Table 2: List of wildlife species using the area proposed for widening of highway

| Sl.No | Species | Cam 1 | Cam 2 | Cam 3 | Cam 4 |
|-------|------------------|-------|-------|-------|-------|
| 1 | Barking Deer | 1 | 1 | | |
| 2 | Black naped hare | 26 | 6 | 5 | 7 |
| 3 | Civet cat | | | 2 | 1 |
| 4 | Elephant | 14 | 22 | | 62 |
| 5 | Chital | 35 | 23 | 73 | 406 |
| 6 | Leopard | | 1 | | |
| 7 | Mongoose | 5 | 3 | | |
| 8 | Porcupine | 7 | 3 | 1 | 1 |
| 9 | Sambar | 7 | | | 10 |
| 10 | Sloth Bear | | 1 | | |
| 11 | Tiger | 1 | 6 | | 5 |
| 12 | Wild pig | 4 | 7 | | 1 |
| 13 | Indian Gaur | 3 | 11 | 3 | 24 |
| 14 | Mouse Deer | 4 | | | |

Punjur – Talavadi road goes for 3 km through Sathyamangalam Tiger Reserve and after that through forests of Karnataka state. Along the highway, at every 200 m vegetation plot laid following the method prescribed by NTCA for habitat/ vegetation assessment. The plots were laid alternatively with 100m inside from the road. The tree and shrub species recorded in the plots are listed with conservation status (table 3).

Table 3: List of plant species recorded along the proposed widening of highway

| S.no | Name of the plants | Family | Medical Uses/Palatable species | IUCN Status |
|------|----------------------|-----------------|-----------------------------------------------------|---------------|
| 1 | Albiziaamara | Mimosaceae | whole parts are eaten by elephants | Least concern |
| 2 | Acacia chundra | Mimosaceae | Bark uses cure Diarrhoea | - |
| 3 | Albizialebeck | Mimosaceae | Bonnet macaque feed the young leaves | Least concern |
| 4 | Acacia leucophloea | Mimosaceae | Bark used for wounds and cattle bone fracture | Least concern |
| 5 | Anogeissuslatifolia | Combretaceae | Bark used cure of high fever | - |
| 6 | Atalantiamonophylla | Rutaceae | Spotted deer, Sambar feed leaves & elephant fruits | - |
| 7 | Azadirachtaindica | Meliaceae | Leave feeds by Indian gaur, Milky feed by parakeets | Least concern |
| 8 | Bauhinia racemosa | Caselpiniaceae | Leave & Bark feeds by elephant | - |
| 9 | Butea monosperma | Fabaceae | Birds taken nectars | Least concern |
| 10 | Canthiumdicocum | Rubiaceae | Diabetes | Vulnerable |
| 11 | Commiphoracaudata | Burseraceae | Leaves used for healing of wounds | - |
| 12 | Cassineglauca | Celsastracea | Fruit eaten by Common langur | - |
| 13 | Cassia fistula | Casealpiniaceae | Bark used for skin disease & leprosy | Least concern |
| 14 | Chloroxylonswietenia | Rutaceae | Leaves used for arthritis & rheumatism | Vulnerable |
| 15 | Cordia monoica | Boraginaceae | Fruits are eaten by sloth bear | Least concern |

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|----|------------------------|----------------------|--------------------------------------------------------------------|-----------------|
| 16 | Cycascircinalis | Cycadaceae | Leaves used for basket, mats & Hats | Endangered |
| 17 | Dalbergiapaniculata | Fabaceae | Antibacterial activity | Endemic |
| 18 | Dendrocalamusstrictus | Poaceae | Whole plants are eaten by elephants | - |
| 19 | Dichrostachycinerea | Mimosaceae | Bark cure headache | - |
| 20 | Dolichandronefalcata | Bignoniaceae | Leaves used animals fodder & diabetes | - |
| 21 | Erythroxylummonogynum | Erythroxylaceae | Bark used knee pain | - |
| 22 | Ficusbenghalensis | Moraceae | Leaves & fruits eaten by animal & birds | - |
| 23 | Givotiarotteriformis | Euphorbiaceae | Bark used for Jaundice | - |
| 24 | Holopteleaintegrifolia | Ulmaceae | Bark cure swellings & fruits eat animals | - |
| 25 | Limoniaacidissima | Rutaceae | Fruits eaten by Elephants, it is used as tonic for heart and lungs | - |
| 26 | Mitragynaparvifolia | Rubiaceae | Leaves eat Macaque | - |
| 27 | Morindapubescens | Rubiaceae | Antibacterial | - |
| 28 | Naringicrenulata | Rutaceae | Leave fodders | - |
| 29 | Phyllanthusemblica | Rutaceae | Good medical plant | Least concern |
| 30 | Premnatomentosa | Verbenaceae | Fruit edible | Least concern |
| 31 | Pongamiapinnata | Fabaceae | Seed Cure body psoriasis | - |
| 32 | Pterocarpus marsupium | Fabaceae endemic | Resin used for children for headache & body pain | Near Threatened |
| 33 | Randiadumetorum | Rubiaceae | Fruits are eaten by deer | - |
| 34 | Rhusmysorensis | Anacardiaceae | Antimicrobial | - |
| 35 | Strychnospotatorum | Loganiaceae | Eye disease, diabetes & ulcer | - |
| 36 | Santalum album | Santalaceae threats | Wood& fruit eaten by birds | Vulnerable |
| 37 | Syzygiumcumuni | Myrtaceae | Fruits used for diabetes | Least concern |
| 38 | Terminalia chebula | Combretaceae threats | Fruits used for ulcer | Least concern |

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|---------------------------------|--------------------------|---------------------------------|------------------------------------|-----------------------------|
| 39 | Tamarindusindica | Caesalpiaceae | Fruits are eaten by elephants | Least concern |
| 40 | Vitexaltissima | Verbenaceae | Nectars collected by honeybees | - |
| 41 | Soymida febrifuge | Meliaceae endemic | Bark used for Antimalarial | - |
| 42 | Ziziphusmauritiana | Rhamnaceae | Fruits are eaten by animals | Least concern |
| 43 | Ziziphusoenopila | Rhamnaceae | Digestive and antiseptic | - |
| Name of the Shrub plant species | | | | |
| 1 | Acacia pennata | Mimosaceae | Leaves are eaten by elephant | Least concern |
| | Asparagus racemosus | Liliaceae | Roots used for medicine | Threaten |
| 2 | Cardiospermumhalicacabum | Sapindaceae | Roots used for diuretic | Least concern |
| 3 | Combretumalbidum | Combretaceae endemic southindia | Leaves edible by animals | Endemic of south India |
| 4 | Canthiumcoromandelicum | Rubiaceae | Antimicrobial activity | - |
| 5 | Dioscoreaoppositifolia | Dioscoreaceae | Tuber good medicine | - |
| 6 | Hemidesmusindicus | Asclepiadaceae | Roots used for juice | - |
| 7 | Heterostemma tanjorensis | Asclepiadaceae | Antifungal activity | - |
| 8 | Jasminumtrichomum | Oleaceae | Crude drug used for tumour & ulcer | - |
| 9 | Pterolobiumhexapetalum | Caesalpiaceae | Nectar collected by honeybees | Endemic to peninsular India |
| 10 | Secamoneemetica | Asclepiadaceae | Leaves used for dysentery & fever | - |
| 11 | Toddaliaasiatica | Rutaceae | Fruits are eaten by Birds | - |
| 12 | Carissa spinarium | Apocynaceae | Fruits edible by birds & animals | - |
| 13 | Carmona microphylla | Boraginaceae | Fruits edible | - |
| 14 | Cissusquadrangularis | Vitaceae | Stem used for bone fracture | - |
| 15 | Dodonaea augustifolia | Sapindaceae | Leaves used body pain | - |

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|--------------------------------|---------------------------|--------------------------------------|----------------------------------------|---------------|
| 16 | Euphorbia trigona | Euphorbiaceae | Latex feed by Birds | - |
| 17 | Flueggealeucopyrus | Euphorbiaceae | Fruits eaten by birds | - |
| 18 | Gmeliaasiatica | Verbenacea | Leaves and fruits eaten by animals | - |
| 19 | Grewiahirsuta | Tiliaceae | Fruits edible | - |
| 20 | Gymnosporiaheyneana | Ceslastraceae | Fruits are eaten by birds | - |
| 21 | Jatropha gossypifolia | Euphorbiaceae | Leaves used Bio fuel | Least concern |
| 22 | Opuntiastricta | Cactaceae | Fruits eaten by Birds | Least concern |
| 23 | Senna auriculata | Caesalpiniaceae | Flower used for diabetes | - |
| 24 | Tarennaasiatica | Rubiaceae | Leaves used for fever | - |
| Name of the Herb plant species | | | | |
| 1 | Achryranthesaspera | Amaranthaceae | Treated dog bites | |
| 2 | Andrographisserpyllifolia | Acanthaceae endemic peninsular | Leaves used for Snake & scorpion bites | - |
| 3 | Aervalanata | Amaranthaceae | Leaves used for kidney stone | - |
| 4 | Alternantherasessilis | Amaranthaceae | Plant used for asthma | - |
| 5 | Blepharismaderaspatensis | Acanthaceae | Whole plant used for gout & snake bite | - |
| 6 | Cantharanthusroseus | Acanthaceae | Leaves & flower used for cancer | - |
| 7 | Commelinabenghelensis | Commelinaceae | Good fodder | - |
| 8 | Crotalaria micans | Fabaceae endemic | Leave used for skin disease | Least concern |
| 9 | Corchorusaestuans | Tiliaceae | Leaves used for stomach-ache | - |
| 10 | Croton bonplandianus | Euphorbiaceae | Milky used for wounds | - |
| 11 | Curcuma pseudomontana | Hypoxidaceae | Leaves eaten by herbivorous | Vulnerable |
| 12 | Euphorbia heterophylla | Euphorbiaceae | Latex used for skin disease | - |
| 13 | Euphorbia hirta | Euphorbiaceae | Leaves & fruits used for Stomach pain | -- |

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|---------------------------|---------------------------|------------------|---------------------------------------|---------------|
| 14 | Evolvulusalsinoides | Convolvulaceae | Whole used for piles | |
| 15 | Hybanthusenneaspermus | Violaceae | Good medicine | Vulnerable |
| 16 | Justiciatranquebariensis | Acanthaceae | Leaves used for poison bites | - |
| 17 | Leucasaspera | Lamiaceae | Leave used for Scorpion bites | - |
| 18 | Mimosa pudica | Mimosaceae | Leaves used for piles | Least concern |
| 19 | Orthosiphonthymiflorus | Lamiaceae | Leaves used for fever | - |
| 20 | Oxalis corniculata | Oxalidaceae | Leaves eaten by deer's | - |
| 21 | Pavoniazeylanica | Malvaceae | Leaves used for skin disease | - |
| 22 | Phyllanthusamarus | Euphorbiaceae | Whole plants used for Jaundice | - |
| 23 | Phyllanthusmadraspatansis | Euphorbiaceae | Whole plants used for Jaundice | - |
| 24 | Richardiascabra | Rubiaceae | Root used for Diaphoretic | Endemic |
| 25 | Ruelliprostrata | Acanthaceae | Leaves used for anticancer | Endemic |
| 26 | Scopariadulcis | Scrophulariaceae | Leaves used for kidney stone | - |
| 27 | Sidarhombifolia | Malvaceae | Leaves used for skin disease & rabies | - |
| 28 | Stachytarphetajamaicensis | Verbenaceae | Antimicrobial activity | - |
| 29 | Strigaangustifolia | Scrophulariaceae | Whole plant are eaten by deer | - |
| 30 | Synedrellanodiflora | Asteraceae | Leaves used for diarrhoea | - |
| 31 | Tephrosiapurpurea | Fabaceae | Leaves used for hair dye | Least concern |
| 32 | Tribulusterrestris | Zycophyllaceae | Leaves used for Kidney stone | Least concern |
| 33 | Trichodesmaindicum | Boraginaceae | Eye and ear disease | - |
| 34 | Tridaxprocumbens | Asteraceae | Leaves used for wounds | - |
| 35 | Triumfettaannua | Tiliaceae | Leaves used for diarrhoea | Endemic |
| 36 | Xanthium indicum | Asteraceae | Folk medicine uses | - |
| Name of the Grass species | | | | |

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|----|-------------------------|---------|------------------------|------------------------|
| 1 | Aristidasetacea | Poaceae | Feeding by herbivorous | - |
| 2 | Digitariabicornis | Poaceae | Feeding by herbivorous | - |
| 3 | Dactylocteniumaegyptium | Poaceae | Feeding by herbivorous | - |
| 4 | Eleusineindica | Poaceae | Feeding by herbivorous | Least concern |
| 5 | Eragrostiellabifaria | Poaceae | Feeding by herbivorous | - |
| 6 | Eragrostistenella | Poaceae | Feeding by herbivorous | - |
| 7 | Perotisindica | Poaceae | Feeding by herbivorous | - |
| 8 | Sporobolousdiandrus | Poaceae | Feeding by herbivorous | Endemic to south India |
| 9 | Tragus roxburghii | Poaceae | Feeding by herbivorous | - |
| 10 | Themedatriandra | Poaceae | Feeding by herbivorous | - |

Bird species using this habitat were observed and listed. One time observation of bird species from this area is given below (Table 4).

Table 4: List of bird species found in the proposed widening of highway in STR

| S. No | Species Name |
|-------|---------------------------------------------|
| 1 | Indian Peafowl |
| 2 | Grey Francolin |
| 3 | Grey Junglefowl |
| 4 | White-rumped Vulture |
| 5 | Indian Vulture (Indian Long-billed Vulture) |
| 6 | Crested Serpent-Eagle |
| 7 | Crested Hawk-Eagle |
| 8 | Bonelli's Eagle |
| 9 | Spotted Dove |
| 10 | Laughing Dove (Little Brown Dove) |
| 11 | Green Imperial-Pigeon |
| 12 | Greater Coucal |
| 13 | Blue-faced Malkoha |
| 14 | Pied Cuckoo (Jacobin Cuckoo) |
| 15 | Asian Koel |
| 16 | Common Hawk-Cuckoo |
| 17 | Indian Swiftlet |
| 18 | White-throated Kingfisher |
| 19 | Green Bee-eater |

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|----|---------------------------------------------------------|
| 20 | Coppersmith Barbet |
| 21 | Brown-capped Pygmy Woodpecker (Indian Pygmy Woodpecker) |
| 22 | Black-rumped Flameback (Lesser Goldenbacked Woodpecker) |
| 23 | Rose-ringed Parakeet |
| 24 | Plum-headed Parakeet |
| 25 | Malabar Parakeet (Blue-winged Parakeet) |
| 26 | Vernal Hanging-Parrot (Indian Lorikeet) |
| 27 | Common Woodshrike |
| 28 | Ashy Woodswallow |
| 29 | Common Iora |
| 30 | Small Minivet |
| 31 | Black-headed Cuckooshrike |
| 32 | Bay-backed Shrike |
| 33 | Long-tailed Shrike |
| 34 | White-bellied Drongo |
| 35 | White-browed Fantail |
| 36 | Large-billed Crow |
| 37 | Jerdon's Bushlark |
| 38 | Indian Nuthatch |
| 39 | Red-vented Bulbul |
| 40 | Red-whiskered Bulbul |
| 41 | White-browed Bulbul |
| 42 | Common Tailorbird |
| 43 | Grey-breasted Prinia |
| 44 | Jungle Prinia |
| 45 | Ashy Prinia |
| 46 | Plain Prinia |
| 47 | Tawny-bellied Babbler |
| 48 | Puff-throated Babbler |
| 49 | Jungle Babbler |
| 50 | Yellow-billed Babbler |
| 51 | Indian Robin |
| 52 | Oriental Magpie-Robin |
| 53 | Brahminy Starling |
| 54 | Common Myna |
| 55 | Jungle Myna |
| 56 | Jerdon's Leafbird (Jerdon's Chloropsis) |
| 57 | Pale-billed Flowerpecker |
| 58 | Purple-rumped Sunbird |
| 59 | Purple Sunbird |
| 60 | Long-billed Sunbird (Loten's Sunbird) |

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| 61 | White-browed Wagtail (Large Pied Wagtail) |
| 62 | Green Imperial-Pigeon |

Finding and key points of Inspection

The Joint inspection was not carried out since NH official were called 2 times but they have requested for rescheduling the inspection each time. The followings facts are recorded and may be noted based on my inspection and discussion with scientist, biologist and wildlife experts..

1. The proposed road will isolate a big patch of forest of STR and BRT since it was sandwiched by NH on both side. This may have detrimental effects on wildlife and will significantly increase the Human Wildlife conflict.
2. The number of accident prone curve is more than in proposed road than that of existing road. Terrain is more rolling and mountainous in proposed project and it will have no speed advantage. This may have more environmental impact.
3. The higher speed advantage submitted by user agency may go against the wildlife movement.
4. The mitigations measures were not submitted as per MoEF&CC guidelines http://moef.gov.in/wpcontent/uploads/2019/07/eco_friendly_measures_mitigate_impacts_linear_infra_wildlife_compressed.pdf
5. The wildlife residing along and across the existing route is habituated to traffic associated pollution. Hence the repairing and maintenance of existing road will cater the need of public and wildlife.
6. The huge cost associated with post project wildlife conservation efforts, human animal conflict and habitat management will be huge in both medium term and long term.

Since the probable loss and risk are more than benefits, this proposal may not be recommended.

Deputy Director

STR, Hasanur Forest Division