Fauna of Protected Areas 15

INSECT FAUNA OF PEPPARA WILDLIFE SANCTUARY, KERALA, INDIA

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ABSTRACT

*In a study on the insect fauna of Peppara Wildlife Sanctuary 227 species were collected of which 206 species were identified. The insects recorded in this study mostly belonged to Lepidoptera, Coleoptera and Hemiptera. Lepidoptera contained four species of butterflies having protected status (*Papilio budha*,* Hypolimnas missipus*,* Mycalesis anaxias *and* Castalius rosimon*) besides four species (*Papilio paris tamilana*,* Cyrestis thyodamas*,* Kaniska canace *and* Tirumala septentrionis dravidarum*) that were rather rare and having restricted distribution. The moth fauna was very rich comprising mostly of arboreal feeding forms indicating a fairly undisturbed forest patch in the area. The fauna included the Atlas Moth* Attacus atlas*. The pest species identified in this study were mostly associated with graminaceous plants or herbaceous ground vegetation.*

Beetles were present in abundance being dominated by phytophagous and scavenger forms, the former feeding mostly on herbaceous ground flora and the latter associated with animal excreta. Among bugs, most species collected were phytophagous forms.

The hymenoptera contained several species of solitary bees and wasps. Over 20 species of dipteran flies were collected. The leaf insect Phyllium (?) crurifolium and two species of unidentified damselflies (Odonata) were also recorded from the study area.

KEYWORDS

Insect fauna, rare, endemic, protected, checklist, Peppara Wildlife Sanctuary, Kerala.

Peppara Wildlife Sanctuary with an area of 53km^2, located between 8^{0}34'-8^{0}42'N & 77^{0}7'-77^{0}14'E comes under Nedumangad taluk of Trivandrum district (Fig. 1). It comprises the reserve forests of Palode and Kotoor situated in the southern tip of the Western Ghats, in the Agasthyamala range in the extreme south to the Areyankavu pass. Unscathed by human interference and forest fire, it forms an evergreen patch in the district. It was proclaimed as a Wildlife Sanctuary in 1983. The dam constructed at Aruvikkara across the Karamana River in this region supplies water to the entire city of Thiruvananthapuram. The altitude varies from 98 to 1,594m with a warm and humid climate and with a dry summer. Daily temperature varies from 25^{0}C to 16^{0}C in high altitude. Average rainfall is around 4,810mm.

FOREST TYPES

Due to the typical climatic conditions and topographic characteristics of this area, the sanctuary presents a remarkable diversity in vegetation and forest types. West coast tropical evergreen, west coast semievergreen, southern moist mixed deciduous and southern subtropical savannahs are the major forest types of this area as per the classification by Chadrasekaran (1962) and Champion and Seth (1968).

The tree species found in the evergreen forest includes *Artocarpus hirsutus, Drysoxylum malabaricum, Vateria indica, Palaquium ellipticum, Syzygium cuminii, Tetrameles nudiflora* and *Elaeocarpus tuberculatus*. These trees reach a maximum height of 40m. The importance of this forest lies in the fact that it is the source of water to the perennial rivers. Several species of canes and orchids are also found here.

The west coast semievergreen forest is found at the meeting place of evergreen and deciduous forest. The upper strata comprise of mainly deciduous species like *Terminalia paniculata, Lagerstroemia lanceolata, Grewia tileafolia* and *Terminalia tomentosa*. Climbers, lianas and bamboo clumps are also seen here.

The southern moist mixed deciduous forest is mainly deciduous. *Lagerstroemia lanceolata, Pterocarpus marsupium, Terminalia bellerica* are the larger ones. The southern sub tropical savannah is predominantly grasslands, with sporadic occurrence of trees. It belongs to the climax forests. In addition to these are the reed brakes, which are thickly packed patches of reeds with intermittent occurrence of *Syzigium cuminii* and *Palaquium ellipticum*. The reed brakes, which are by the streams, are habitats for elephants.

MATERIALS AND METHODS

Sampling of insects was done using a battery-operated Mathew's model light trap specially fitted with a switching device to facilitate self-operation at specified hours (Mathew & Rahmathulla, 1995). Light traps were operated continuosly at different locations in the Sanctuary. In additions to trap catches, collections were also made during daytime (0800 to 1300hr) using hand nets. Collections were made for a period of two months and the insects collected were sorted out by species and identified by comparison to material available in the KFRI collections.

RESULTS AND DISCUSSION

Collections have been made from Bonakkad and Agasthyamala. During the two-month survey (June & July), altogether 227 species of insects were collected, of which 206 species could be identified (Table 1). This included 51 species of butterflies, 87 species of moths, 30 species of beetles, 15 species of bugs, 17 species of bees and wasps, six species of dragonflies, three species each of grass hoppers and mantids, one species each of stick insect and leaf insect as well as 21 unidentified species

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Table 1. List of insects recorded from Peppara Wildlife Sanctuary

Scientific name	Remarks
Lepidoptera: Rhopalocera	
Papilionidae	
Chilasa clytia Lin.	Rare
Graphium sarpedon Felder	Common
G. agamemnon agamemnon Lin.	Common
G. doson doson Felder	Common
Papilio helenus Lin.	Common
P. polymnestor parinda Moore	Common
P. budha Westwood	Rare, endemic to Western Ghats Schedule II
P. dravidarum Wood-Mason	Rare, endemic to Western Ghats
P. polytes thesus Cramer	Common
P. demoleus demoleus Lin.	Common
*Pachliopta aristolochia*e Lin.	Common
P. hector Lin.	Common
Troides minos Cram.	Endemic to Western Ghats
Nymphalidae	
Argyreus hyperbius (Johannsen)	Common
Cyrestis thyodamas Kollar	Not rare
Ariadne merione Cramer	Common
Hypolimnas bolina Lin.	Common
H. misippus Lin.	Common. Schedule I & II
Neptis hylas varmona Moore	Very common
Phalanta phalantha Drury	Common
Junonia atllites Lin.	Common
J. hierta Fb.	Very common
J. iphita pluvialis Fruhstorfer	Rare
J. lemonias vaisya Fruhstorfer	Common
Kaniska canace Moore	Not rare
Danaidae	
Danaus genutia genutia Cramer	Common
D. chrysippus Lin.	Common
Euploea core core Cramer	Very common
Parantica aglea Stoll	Fairly common
Tirumala limniace leopardus Butler	Common
T.septentrionis dravidarum Fruhstorfer	Rare
Pieridae	
Delias eucharis Drury	Common
A. lyncida (Cramer)	Not rare
Catopsilia florella (Fb.)	Fairly common
C. pomona Fb.	Very common
C. pyranthe (Lin.)	Very common
Cepora nadina Moore	Rare
Eurema blanda Boisd.	Common
E. brigitta Stoll	Common
E. hecabe Lin.	Common
Satyridae	
Elymnias caudate Butler	
Melanitis leda Lin.	Very common
Mycalesis anaxias Hewitson	Not rare, Schedule II
Ypthima sp.	Fairly common
Hesperidae	
Potanthus pava pava Fruhstorfer	-
Pelopidas mathias Fb.	Fairly common
Telicota acigias Lin.	Fairly common
Lycaenidae	
Castalius rosimon (Fb)	Schedule II
Euchrysops cnejus (Fb.)	Common
Jamides alecto (Felder)	Rare
Thalicada nyseus (Guerin.)	Fairly common
Heterocera	
Noctuidae	
Achaea janata Fb.	Pest of vegetables
A. flava (Fb.)	-
Carea endophaea Hamp.	Pest of syzygium
C. subtilis Walker	"
Chasmina rejecta Fb.	-
Heliothis sp.	Crop pest
Hyblaea puera Cram.	Teak defoliator
Mocis frugalis Fb.	Crop pest
Mythimna curvilinear Hamp.	-
Ophideres maternal Lin.	Fruit moth
O. fullonica Lin.	"
Othreis ancilla Cram.	"
Polytela gloriosae Fb.	Pest of Lilly
Prodenia litura Fb.	Crop pest
Spiredonia retorta Cram.	
Spodoptera litura (Fb.)	Crop pest
S. mauritia Boisduval	Crop pest
Tiracola plagiata Walker	-
Lymantriidae	
Dasychira mendosa Hb.	Crop pest
Euproctis fraternal Moore	"
Eupterotidae	
Eupterote flavida Moore	-
Arctiidae	
Amata extensa Walker	-
A. argus Koll.	-
A. astrea Drury	Pest of legumes
A. cribraria Clerck	Pest of legumes
Asura conferta Walker	Pest of mosses
Creatonotus gangis Lin.	Pest of lilly
Diacrisia oblique Walker	Polyphagouspest
Eligma narcissus Cram.	Pest of Ailanthus triphysa
Estigmene perotetti	Pest of bamboo
Hypsa alciphron Cram.	Pest of ficus
Pericallia ricini Fb.	Pest of castor
Geometridae	
Abraxas sp. ?	Feeds on foliage of forest trees
Buzura suppressaria ?	Feeds on foliage of forest trees
Cleora sp. ?	Feeds on foliage of forest trees
Epiplema quadricaudata Walker	Pest of Haldina cordifolia
E. fulvilinea Hamp.	-
Eumelea rosalia Cram.	-
Eumelea sp.	-
Hypochrosis sp.? abstractaria Walker	-
Hypomecis sp.	-
Hyposidra talaca Walker	Feeds on foliage of forest trees
Semiothisa quadraria Moore	Feeds on foliage of forest trees
Thalassodes sp.	-
Pyralidae	
Agathodes ostentalis Hubn.	Crop pest
Agrotera basinotata Hamp.	Crop pest
Antigastra catalunalis Swinh.	Pest of gingelli
Botyodes asialis Guen.	-
Bocchoris inspersalis Zell.	-
Bradina admixtalis Walker	Pest of Graminae
Cirrhochrista fumipalpis Feld.	-
Cnaphalocrocis medinalis Guen.	Pest of rice / graminaceo-us plants
Dichocrocis sp.	Borer in castor
Etiella zinckenella Treit.	Pod borer
Eurrhyparodes tricoloralis Zell.	-
Filodes fulvidorsalis Hubn.	-
Galleria mellonella Lin.	Pest of bees
Glyphodes celsalis Walker	Pest of forest trees
G. bicolor Swains.	Pest of forest trees
G. laticostalis Guen.	Pest of forest trees
G. vertumnalis Guen.	Pest of Jack

Scientific name	Remarks
G. glauculalis Guen.	-
G. indica Saund.	Pest of cucumber
G. itysalis Walker	-
G. marginata Hamp.	Pest of forest trees
Isocentris filalis Guen.	-
Lamprosema sp.	Pest of pulses
Marasmia trapezalis Guen.	Pest of grasses
Nacoleia diemenalis Guen.	Pest of pulses
Nephoteryx atrisquamella Hamp.	-
N. fluctuosalis Zell.	Pest of Graminae
N. foedalis Guen.	Pest of Graminae
Protrigonia zizanialis Swinh.	-
Psara bipunctalis Fb.	Pest of pulses
Pycnarmon caberalis Guen.	Pest of coleus
Pygospila tyres Cram.	-
Sylepta sp.	-
Syngamia abruptalis Walker	Pest of ocimum
S. latimarginalis Walker	-
Syngamia sp.	-
Terastia egialealis Walker	Pest of Erythrina
Sphingidae	
Acherontia lachesis Fb.	Crop pest
Acherontia sp.	"
Herse convolvuli Lin.	"
Theretra sp.	-
Saturnidae	
Attacus atlas Lin.	Atlas moth
Loepa sikkima Moore	-
Coleoptera	
Odontolabis cuvera Hope	-
Odontolabis sp.	-
Coccinellidae	
Coccinella septempunctata Lin.	-
Epilachna septima Dieke	-
E. vigintioctopunctata Fb.	-
Scarabaeidae	
Anomala ruficapilla Burmeister	Adult feeds on foliage
Anomala sp.	"
Copris sp.	Dung rolling beetle
Heliocopris dominus Bates	"
Heterorrhina sp.	-
Holotrichia rufoflava Brenske	Grubs feed on roots
causing seedling mortality	
Maladera sp.	Adults feed on foliage
Mimela sp.	"
Popillia complanata Newm.	"
Brupestidae	
Chrysochroa sp.	Borer in woody stem
Cerambycidae	
Acanthophorus serraticornis Oliv.	Polyphagous borer
Batocera sp.	"
Cerosterna scabrator (Fb.)	"
Nupserha madurensis Pic.	-
N. malabarensis Pic.	-
Prionomma atratum Gmelin.	-
Plocaederus obesus	Polyphagous borer
Chrysomelidae	
Aulacophora cincta (Fb.)	Feeds on foliage
Aulacophora unicolor Illig.	"
Basilepta fulvicornis Jac.	"
Hoplasoma unicolor Illig.	"
Monolepta longitarsis Jac.	"
Curculionidae	
Myllocerus viridanus Fb.	Polyphagous pest

Scientific name	Remarks
Dynastidae	
Oryctes rhinoceros Lin.	Pest of palms (Red palm weevil)
Lampyridae	
Epicauta sp.	-
Hemiptera	
Eurybrachidae	
Eurybrachis sp.	-
Ricaniidae	
Ricania sp.	-
Flattidae	
Flata ocellata ?	-
Dictyopharidae	
Dictyopharina ?viridissima Melicher	-
Cercopidae	
Cosmocarta relata Dist.	-
Lygaeidae	
Dindymus lanius Stal.	-
Macropes sp.	-
Fulgoridae	
Kalidasa lanata Drury	Plant hopper
Cicadellidae	
Bothrogonia ferruginea Fb.	"
Krishna strigicollis Spinola	"
Tettigoniella indistincta Walker	"
Pentatomidae	
Nezara viridis Lin.	Ear-head bug of paddy
Placosternum taurus (Fb.)	-
Dysdercus cingulatus Fb.	Cotton bug
Serinatha augur Fb.	-
Hymenoptera	
Apidae	
Apis dorsata Fb.	Honey bee
A. indica Fb.	"
Xylocopidae	
Xylocopa verticalis Lepel.	Carpenter bee
Eumenidae	
Eumenes conica Fb.	Mud wasp
Scoliidae	
Megascolia sp.	-
Pompilidae	
Salius aureosericeus Guer.	-
Sphecidae	
Ammophila laevigata Smith.	-
Chalybion bengalense Dahl.	-
Sceliphron javanum Lepel.	-
Chrysididae	
Stilbum cyanurum Forster	Cuckoo wasp
Vespidae	
Vespa sp.nr.*cincta* Fb.	-
Ichneumonidae	
Netelia sp.	-
Enicospila sp.	-
Odonata	
Orthetrum pruinesum neglectum (Ramb.)	-

Scientific name	Remarks
Macromia sp.	-
Nemothemis fulvia Drury	-
N. intermedia (Ramb.)	-
Trithemis aurora (Burm.)	-
T. festiva (Ramb.)	-
Diptera	
Muscidae - 10 spp.	
Phlebotomodae - 2 spp.	
Tabanidae - 2 spp.	
Syrphidae - 2 spp.	
Culicidae - 5 spp.	
Orthoptera	
Acrididae	
Dittopternis sp.	-
Catantops henryi Bol.	-
Catantops sp.	-
Dictyoptera	
Mantidae	
Deroplatys desicata West	Preying mantis
Statialia maculata (Thunberg)	"
Humbertiella indica Sauss.	"
Phasmidae	
Phasmida sp.	Stick insect
Phyllium ? crurifolium	Leaf insect

of dipteran flies.

The butterflies recorded in the study included four species having protected status besides three Western Ghats endemics. There were also some rare species (Table 1). The moth fauna was very rich comprising mostly of arboreal feeding forms indicating a fairly undisturbed forest patch in the area. Some of the moths recorded in this study were very colourful and special mention may be made of the largest Indian moth *Attacus atlas* the Atlas Moth.

Among beetles, the scavenger beetles showed great abundance. The bugs collected were mostly phytophagous forms. The hymenoptera consisted of two species of honeybees, one species each of solitary and bumble bees and eight species of wasps. With regard to the dipteran flies, although 26 species could be collected, none could be identified. The leaf insect *Phyllium crurifolium?* and two species of unidentified damsel flies (Odonata) collected from Bonakkad were very interesting, since these were found to be quite rare being not collected from other forest areas.

An examination of insects recorded in this study indicates a rich and diverse fauna in this sanctuary. The Bonakkad region is the richest area in terms of the faunal wealth. Due to heavy wind not much collections could be made from Agasthyamala, which is already known to be a biologically rich area.

References

Champion, H.G. and S.K. Seth (1968). *A Revised Survey of the Forest Types of India*. Govt. of India Press, Nasik, 323pp.

Chandrasekharan, C. (1962). Forest types of Kerala State. Indian Forester 88: 660-847.

Mathew, G. and V.K. Rahmathulla (1995). Biodiversity in the Western Ghats - a study with reference to moths in the Silent Valley National Park, India. *Entomon* 20(2): 25-33.

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