ADDITION TO THE HOSTS OF PARTIAL STEM PARASITE
*Dendrophthoe Falcata* (L. f.) Ettingsh FROM EAST MELGHAT FOREST

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ABSTRACT

*Dendrophthoe falcata* (L. f.) Ettingsh is a partial stem parasite which occurs on number of host plants belonging to different families. In Melghat region, it is commonly observed on host plants like *Chloroxylon swetenia, Boswellia serrata, Madhuca longifolia, Anogissus latifolia* and rarely on other tree species like *Wrightia tinctoria, Terminalia bellerica, Buchanania lanzan,* etc. The present paper deals with the enumeration of 5 new host species of *Dendrophthoe falcata* which were observed during the rigorous survey from last 2 years. The new hosts reported are *Careya arborea, Cassine glauca, Cordia macleodii, Lannea coromandelica* and *Haldina cordifolia*.

KEYWORDS: Partial stem parasite, *Dendrophthoe falcata*, 5 new host species, etc.

INTRODUCTION

Melghat is known as the paradise of Vidarbha, is a source of perennial pleasure. Melghat is blessed with number of things for instance, ancient movements revealing Indian culture, precious medicinal plants, rare species of nature, etc. Melghat means ‘meeting of the Ghats’ which is just what the area is, a large terrain of unending hills and ravines scarred by jagged cliffs and steep climbs. The exquisite hill forests, thick undergrowth and moss covered trees underscore its virgin confines. It lies at the northern extreme of the Amravati district on the border of Madhya Pradesh, in the southwestern Satpuda mountain ranges. East Melghat Forest Division is situated in the North East of Amravati district of Maharashtra state and...
administratively it is under Amravati Forest Circle. Geographical Co-ordinates are Latitude 21°13’14” to 21°46’6” N and Longitude 77°10’39” to 77°36’ E. Total area covers an area of East Melghat Forest 30936.81 ha.

Dendrophthoe falcata(L.f) Ettingsh belongs to family Loranthaceae; comprises about 31 species, among which 7 species are found in India. Two of its varieties are widespread in India viz., var. falcata (Honey Suckled Mistletoe) and var. coccinea (Red Honey Suckled Mistletoe) distinguished by greenish-white and red flowerings, respectively. The plant is a partial stem-parasite; grows on around 401 host plants worldwide and 268 in India. It does not have an indigenous rooting system, and is dependent on the host for water and minerals. Taxonomically, it is a large bushy shrub, dichotomously branched, perennial, partial stem parasite, glabrous with grey-smooth bark, having twiggy and woody branches. Leaves thick, sub-sessile, coriaceous, elliptic ovate to oblanceolate, mostly opposite, obtuse, sometimes acute, entire, slightly shining, variable in size and shape, midrib prominent, usually red, secondary nerves obscure, and with attenuated base. Flowers whitish yellow, red, orange-red or yellowish red and sometimes pink, 5-15 cm long, axillary to supra-axillary, unilateral spikes with persistent bract. Calyculus 4 mm. long, glabrous and persistent with 4-5 lobes, stamens 5, filament approximately 3-5 mm long or even up to corolla and epipetalous, glabrous. Style 2.5-3.5 cm long with capitatestigma. Fruit berries 7-11 mm long, bright red, globose to ovoid-oblong, seeds minute and ovoid.

METHODOLOGY
A complete survey in East Melghat region for the exploration of this parasite on the tree plants was done in last two years. Dendrophthoe falcata with its different hosts was collected along with flowers and fruiting conditions. The collected material is dried and herbarium specimens are prepared and deposited in Department Of Botany, Shri Shivaji College of Arts, Commerce and Science, Akola. Photographs are also taken wherever possible. This is the first new report about the addition of host plants of Dendrophthoe falcata from Vidarbha region. The plant material and specimens was identified by using standard floras like Naik (1998), Singh and Karthikeyan (2000), Singh et al. (2001). The voucher specimens were preserved in the institute herbarium library.

OBSERVATION AND RESULTS
Present investigation is to explore the host species of Dendrophthoe falcata from East Melghat forest of Vidarbha region. The parasitism of Dendrophthoe falcata, a leafy parasite
of Loranthaceae family has been done by various workers from India (Saxena, 1971). They found that Dendrophthoe falcate shows diffuse type of parasitism and occur on a number of different hosts belonging to Angiosperms. The principle hosts of Dendrophthoe falcata vary in different parts of the country e.g. Diospyrous melanoxylon, Mangifera indica, etc.

In Melghat forest, the principal hosts are Chloroxylon swetenia, Madhuca longifolia and Boswellia serrata. Previous record of the hosts of Dendrophthoe falcata from the East Melghat forest was 19 (Rothe et al., 2011). At different altitudes diversity of host species of Dendrophthoe falcata varies in the tropical dry deciduous forest. At 1552-2647 ft. Altitude the occurrence and distribution of Dendrophthoe falcata is common, while at high altitude more than 3000 ft. the occurrence becomes rare.

The previously recorded host species of Dendrophthoe falcata were Albizzia lebbeck, Anogeissus latifolia, Boswellia serrata, Buchanania lanza, Cassia fistula, Chloroxylon swetenia, Diospyrus melanoxylon, Lagerstroemia parviflora, Madhuca longifolia, Mallotus philippensis, Mangifera indica, Schrebera swetseniodes, Terminalia bellerica, Terminalia chebula, Terminalia tomentosa, Toona ciliata, Wrightia tinctoria, etc.

In the present paper, details of 5 new host species of Dendrophthoe falcata have been enumerated. (Table No. 1).

Table 1: List of new host species of Dendrophthoe falcata (L.f.) Ettingsh.

<table>
<thead>
<tr>
<th>S No.</th>
<th>Host Species</th>
<th>Altitude (MSL)</th>
<th>Co-ordinates</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Careya arborea Roxb.</td>
<td>2706 ft.</td>
<td>21023°18.2’N 77023°37.75’E</td>
<td>Rare</td>
</tr>
<tr>
<td>2</td>
<td>Cassine glauca Rottb. Kuntze.</td>
<td>2576 ft.</td>
<td>21023°2.3’N 77024°15.8’E</td>
<td>Rare</td>
</tr>
<tr>
<td>3</td>
<td>Cordia macleodii (Griff.) Hook. F. &amp; Thomas.</td>
<td>2606 ft.</td>
<td>21022°59’N 77024°59’E</td>
<td>Rare</td>
</tr>
<tr>
<td>4</td>
<td>Lannea coromandelica (Houtt.) Merr.</td>
<td>2798 ft.</td>
<td>21025°18.4’N 77023°8.8’E</td>
<td>Rare</td>
</tr>
<tr>
<td>5</td>
<td>Haldina cordifolia (Roxb.) Ridsdale.</td>
<td>2513 ft.</td>
<td>21023°2.3’N 77024°0.8’E</td>
<td>Rare</td>
</tr>
</tbody>
</table>

DISCUSSION

East Melghat Forest has a considerable potential towards the richness in biological diversity in a tropical dry deciduous forest. A survey for the exploration of family Loranthaceae members found on different types of host from 2005-2010. During survey it was noted that there is a vast diversity in occurrence of mistletoes as a semi partial parasite on different host
plants. Probably this is due to continuous dispersing of seeds by the number of birds. It was also observed that when in and around the areas no availability of principles host then the plants occurs as parasite on secondary host and the minor host plants. The occurrence of Mistletoes as a parasite is common in certain bits of forest they are consider as a principle host and at some where their occurrence is on the substitute host with rare are consider as secondary host, while the bushy, shrubby or stunted host plants considered as the minor host. In all, way of infection is same that they are occurring on the stem branches, where the seeds get attached or falls.

Probably this is due to richness of fauna in East Melghat Forest, the visiting avian are mainly feeds on the fruits of Eugenia jambolana, Mangifera indica, and meanwhile they may feed on the fruits of mistletoes as the seeds are viscid. A sticky viscin “known as bird glue” coats the mistletoes seeds allowing them to adhere to branches after being deposited there, by defecation or bill wiping (Reid et al. 1995) once positioned on an appropriate host, the seed germinates and form a specialized structure, a haustorium, which taps in to the hosts vascular system to absorb water, minerals and nutrients (Calder, 1983).

Mistletoes are the taxonomically diverse group of parasitic plants found in fire families Loranthaceae, Viscaceae, Misodendraceae, Eremolepidaceae and Santalaceae (Restrepo et al., 2002). Most of them are stem partial parasite capable of photosynthesis but dependent on their host for water. One of the most interesting aspects of mistletoes system is the relationship between the parasites and their hosts and disperser.

Mistletoes diverting important resources from their host. Most mistletoe only taps in to the xylem of their host (Marshall J. D. and Ehleringer, 1990). Mistletoes obtain water from their host and often accumulate host derived nitrogen and other minerals in grater proportions than are found in host branches (Lamont, 1983 and Pate et. al. 1991). Phloem tapping mistletoes obtain a large proportion of their carbon from host plants but even some xylem tapping parasite can obtain as much as 60% their carbon from host photosynthetic (Hull and Leonord, 1965). Mistletoes typically have high rate of transpiration and can alter the water balance of infected hosts (Ehleringer et. al., 1986 and Marshall et. al., 1994). Parasite can manipulate the actual or perceived quality of host they may be able to attract vectors to that host and thereby increase their transmission.
Mistletoes are aerial partial stem parasite found on trees. They have unique ecological arrangements with the host plants, they parasitize and the dispersal of seed take place by birds, but the mistletoes often detrimental to their hosts and can even kill them. Co-evolution has led to resistance mechanism in host and specialization by mistletoes. Birds acts as disease vector for the mistletoes, host in a mutuality relationship, to disperse their seeds. Mistletoes attract and manipulate the bird vector in ways that are typical of both plants and parasites. Mistletoes are importantelements on the landscape that influence the spatial distribution and complex interaction make their biology to understand and their management. Due to selection and occurrence of mistletoes on variety of host, number of medicinal and economically important plants and their branches are weakened. Spreading of mistletoes in the East Melghat Forest increasing year after year that will dangerous for richness of forest flora. It was also observed that the yield of Madhuca latifolia, Mangifera indica, Terminalia chebula, Buchanania lanzan and Emblica officinalis is remarkably decreasing that indirectly affected on the economy of tribals and birds feeding these are totally dependent on this forest products, hence a strong argument to conserve the East Melghat Forest Flora.

REFERENCES


