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FURTHER CONTRIBUTION TO THE KNOWLEDGE OF ZOOCECIDIA OF THE MANGROVE, AVICENNIA MARINA (FORSK.) VIER

By

R. M. SHARMA AND A. K. DAS

Andaman and Nicobar Regional Station,
Zoological Survey of India,
Port Blair

(With 1 Plate)

INTRODUCTION

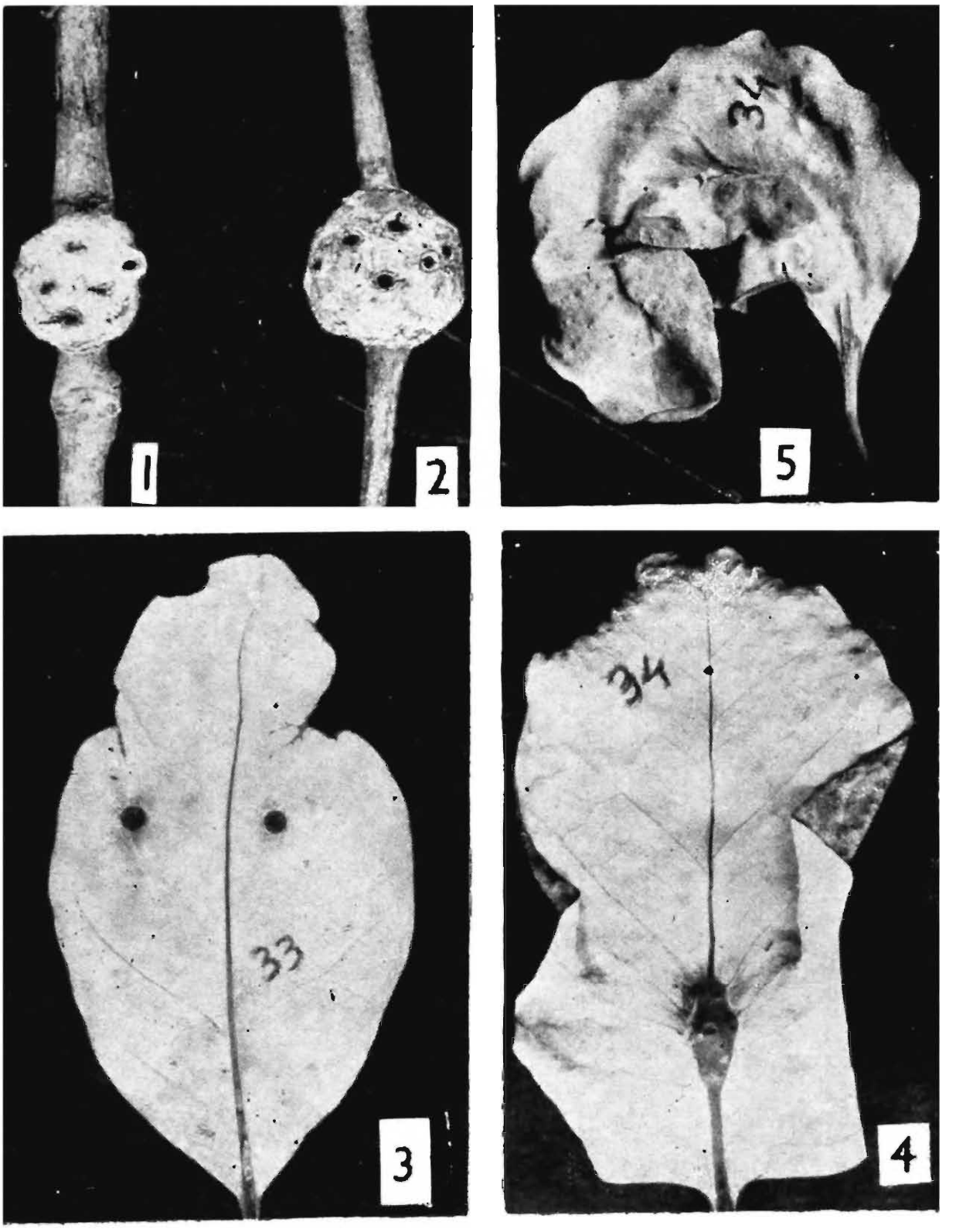
Plants galls are very rare in mangroves. This may be due to relative high salt concentration in the internal tissues of mangrove plants, which is inimical to hatching of insect eggs and subsegment growth of the larvae as pointed out by Chapmann (1976). But, during the course of field investigations on the Zoocecidia of mangroves of Andaman islands, it has been found that a particular species of mangrove plant, *Avicennia marina* is highly susceptible to gall formation. This is quite evident from the fact that Sharma *et al* (1983, 1984) have reported six different Zoocecidia forming leaf galls on *A. marina* in South Andaman.

During a recent survey in Middle Andaman one more Zoocecidia has been collected on the stem/shoot axis of this mangrove species caused by Hymenoptera. Incidentally this is the first record of stem gall from the mangroves of Andaman islands. This gall which is identified by its number (Gall No. 7) is described in this paper.

In addition to this, two morphologically different leaf galls caused by the midge, *Dasineura* sp. (Diptera : Cecidomyiidae) have also been collected from *A. marina*. These galls are dealt with and a key to all the eight different galls of *A. marina* known so far from Andaman islands is given in this paper in order to facilitate identification and further study on this group.

The gall bearing plants and the gall insects are deposited in the collections of the Zoological Survey of India, Port Blair.

Incidentally, this is to mention that there is no record till date on the gall of *A. marina* from mainland India. Mani (1973) collected only one *Eriophyes* gall on *A. officinalis* from South Travancore (Gall No. 507), India.



Galls on *Avicennia marina*.

Figs. 1-5. 1. Cross Section of Gall No. 7 (a stem gall of Hymenoptera) showing larval chambers.

2. Gall No. 7 ; One entire stem gall of Hymenoptera.
3. Leaf gall No. 3 caused by *Dasineura* sp.
4. Gall No. 8 ; midrib gall caused by *Dasineura* sp.
5. Gall No. 8 ; gall all along the midrib.

DESCRIPTION

Stem gall

Gall No. 7 (Pl. IX, fig. 1, 2) by unknown Hymenoptera

Irregularly globose/sub-globose, verrucose, solid, hard, woody, solitary, indehiscent, persistent, unilateral cortical gall ; light greenish-brown when young, brown on ageing. Gall cavity multi-chambered with a single larva in each chamber ; chambers usually oval ; pupation in gall itself. Size of the gall varies from 10-20 mm. in diameter and 1-3 galls appear on a small tender branch. Usually 5-7 exit holes seen on a mature gall. Deserted galls were observed to be occupied by ants. Coll. R. M. Sharma, 3.iii.1983.

Distribution : Betapur (Middle Andaman).

Leaf gall

Of the two leaf-galls of *A. marina* collected from Middle Andaman one is identical with Gall No. 3 (hypophyllous, globose/sub-globose swellings on the leaf surface) of Sharma *et al* (1984) while the other one is a mid-rib gall and identified as Gall No. 8 as detailed below.

Gall No. 3. (Pl. IX, fig. 3) by *Dasineura* sp.

In the earlier communication Sharma *et. al.* (*op. cit.*) described this gall in details and stated that this is caused by some unknown Diptera since adult insects could not be reared that time from the gall.

Recently in Middle Andaman the present authors have succeeded in rearing the adult midge, from this gall and identifying the same as *Dasineura* sp.

Gall No. 8. (Pl. IX, fig. 4, 5) by *Dasineura* sp.

Leaf gall ; epi-hypophyllous, elongated, oval, irregular solid, glabrous, equally developed on both the surfaces of the leaf blade, confined to mid-rib only, at times all along the mid-rib (Fig. 5), indehiscent, persistent, greenish yellow when young, becomes dark brown to black as grow old. Gall cavity multilocular, pupation in gall itself. Adults emerge out by making exit holes at lateral side of the gall on lower or upper surface of the leaf blade. Size of the gall varies from 5-40 mm. long and 2-5 mm. high above the leaf surface. 1-3 galls may arise on mid-rib of a single leaf. Coll. R. M. Sharma, 23.ii.1983.

Distribution : Bakultala (Middle Andaman)

Remarks : Leaves with globose hypophyllous galls and leaves with midrib galls which were found to co-exist on the same host tree were collected on 23.ii.83 at Bakultala (M. Andaman) and kept separately to rear the adult insects. On 26.ii.83 midrib gall gave emergence to a

single ♂ midge and on 4.iii.83 another single ♂ midge emerged from globose, hypophyllous gall. On closer examination it was found that both the forms are congeneric belonging to the genus *Dasineura* Rondani and have very close resemblence with each other. No clear diagnostic differences are traceable between the two forms except in the appearance and occurrance of the galls on leaf surface. Of course, the correct assignment of the species is possible only on further collection of males and females from these two morphologically different galls.

Therefore, for the present, on the basis of the differencs in the appearance of the gall, the midrib gall is being described here as different from the earlier gall No. 3 of Sharma *et. al.* until further detailed information is obtained. Midrib gall is identified by its number (Gall No. 8).

As stated earlier, a key to all the galls of *A. marina* known so far is given below :

KEY TO GALLS OF **A. Marina**

1.	Leaf gall ...	...	2
	Stem gall ...		
	Globose/sub-globose or irregular, solid, hard, woody, verrucose cortical swellings on stem or tender branch ...	Gall No. 7. Hymenoptera	
2.	Acarocecidia ...	...	3
	Entomocecidia ...	...	4
3.	Epi-hypophyllous, with very fine white hairs covering the gall, also occurs on petiole and midrib ...	Gall No. 2. *Eriophyes* sp.	
	Epiphyllous, small, agglomerated or solitary swellings without hairs, lower surface depressed and discoloured indicating site of the gall ...	Gall No. 5. *Aceria avicennae*	
4.	Galls on leaf surface ...	...	5
	Galls on miprib ...		
	Epi-hypophyllous, elongated oval, irregular, equally developed on both sides, solid, glabrous, with a number of exit holes at lateral side of the gall on lower or upper surface of the leaf...	Gall No. 8. *Dasineura* sp.	
5.	Barrel-shaped or globose galls ...	...	6
	Discoid, depressed, lenticular galls ...	...	7
6.	Mostly hypophyllous, barrel-shaped, pyxidial gall, glabrous, solid, with discoid, depressed area above, operculate on lower surface ...	Gall No. 6. Homoptera	
	Mostly hypophyllous, globose / sub-globose, glabrous swellings, with flattened circular, area above ...	Gall No. 3. *Dasineura* sp.	

7. Discoid, depressed, lenticular gall, glabrous, greenish when young with a single exit hole on mature gall ... Gall No. 1. Lepidoptera

Discoid, depressed, lenticular gall, wrinkled, dark-yellow or copper coloured when young with a number of exit holes on a mature gall ... Gall No. 4. Diptera : Cecidomyiidae

Summary

One stem gall caused by Hymenoptera and two morphologically different leaf galls caused by *Dasineura* sp. (Diptera : Cecidomyiidae) on the mangrove, *Avicennia marina* (Forsk.) Vier. are described. A key to all the eight different galls of *A. marina* known so far from Andaman islands is also included.

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