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GYNANDROMORPHISM IN *NEUROTHEMIS TULLIA TULLIA* (DRURY) AND *RHINOCYPHA BISIGNATA* (SELYS) (ODONATA : INSECTA) FROM KERALA

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Gynandromorphism is a condition in which an organism exhibits both male and female characteristics. In insects it is a common feature, especially in Lepidoptera and Hymenoptera. But in Odonata it is a rare incident. In India some studies have already been carried out and recorded by Lahiri (1979), Kumar (1988), Mitra (1991) and Prasad et. al. (2000). This phenomenon is being recorded for the first time from Kerala.

Females and males of a particular species can generally be distinguished on the basis of their secondary external sexual characters. Occasionally, individuals with both male and female "external" characters occur. Such gynandromorphic individuals are widespread among taxa, but typically occur at very low frequencies. They have been reported from mammals, birds, fish, and insects (Stern, 1968). Several distinctive male/female patterns within individuals have been found including mosaic, bilateral, and anterior/posterior. Gynandromorphism can occur due to several reasons, viz. the incorrect functioning of the sex determination system; derived from unfertilized eggs; by environmental conditions such as low or high temperature during oogenesis and early egg development; moreover, maternal effects as well as heritable cytoplasmic effects (presumably mitochondrial) play a prominent role in the occurrence of gynandromorphism (Albert et. al. 2007).

The present study is based on odonata collections made from Kasaragod district, Kerala, during March 2006. The collection included normal specimens of *Neurothemis tullia tullia* (Drury) and *Rhinocypha bisignata* (Selys), besides two gynandromorphic specimens of both the species. These two species are widely distributed in Kerala. Males and females can be easily distinguished on the basis of the following characters.

Neurothemis tullia tullia (Drury) : wings—male wings are black at base and white border outwardly with a milky white band and transparent at the tips; where as in female, bases of all wings bright

amber-yellow; large blackish-brown spot at node, tips of all wings opaque blackish-brown; abdomen; in male black with creamy yellow stripe on segments 1 to 8; in female bright yellow with a broad black band from segment 1 to 10.

Gynandromorphic form : In the gynandromorphic specimen studied, the wings and abdomen are coloured like that of male; and appendage is that of a normal female specimen; accessory (secondary) genitalia on the ventral side of 2nd abdominal segment is absent.

	Normal male	Normal female	Gynandromorph
Abdomen	17 mm	16 mm	16 mm
Forewing	22 mm	21 mm	21 mm
Hindwing	21 mm	20 mm	20.7 mm
Nodal index	8-12½/12½-8	7-10½/10½-8	8-11½/12½-7
	7-8/10-7	7-9/9-7	8-10/9-8

Rhinocypha bisignata (Selys) : wings- (male) bases of all wings hyaline, tinted with yellow, opaque blackish brown at tips; forewings with outer fourth or more opaque with brilliant coppery colouration; hindwing with apical third opaque, and marked with two series of coppery or violaceous vitreous spots; pterostigma black in all wings; in female, wings entirely hyaline, tinted palely with yellow, apices narrowly enfumed; pterostigma black, with pale cream colour at the center.

Gynandromorphic form : In the gynandromorphic specimen studied, wings are like that of female, entirely hyaline, tinted with yellow at the base, pterostigma black with pale cream colour at the center; accessory genitalia present and anal appendage is that of a normal male specimen.

	Normal male	Normal female	Gynandromorph
Abdomen	18 mm	17 mm	17.5 mm
Forewing	23 mm	24 mm	24 mm
Hindwing	22 mm	23.8 mm	23.8 mm
Nodal index	24-13/14-25	20-13/12-18	29-14/13-29
	23-14/13-14	17-12/12-20	28-14/12-27

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