SCIENTIFIC COMMUNICATION

Copula "inter mares" in *Pirascca sagaris satnius* (Dalman) (Lepidoptera, Riodinidae, Riodininae) [1]

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ABSTRACT. The poorly known phenomenon of copula "inter mares" (a male insect copulating with another male) is reported in *Pirascca sagaris satnius* (Dalman, 1823) (Lepidoptera, Riodinidae, Riodininae).
KEY WORDS. Riodinidae, *Pirascca*, copula "inter mares", pairing behavior, sexual recognition

Since 1996, a taxonomic survey of the butterfly fauna found in the "Centro de Estudos Ambientais e Desenvolvimento Sustentado" (CEADS) of the Universidade do Estado do Rio de Janeiro (UERJ – Rio de Janeiro, Brazil) has been carried out by the senior author. The CEADS is located approximately 150 km south of the city of Rio de Janeiro (southeastern Brazil), in an area known as Vila Dois Rios (23°11'S, 44°12'W, Ilha Grande, municipality of Angra dos Reis), and is characterized by a vegetation with evident human-induced environmental disturbances due mainly to the agricultural activities. Nevertheless, few fragmented remnants of primary Atlantic Rainforest can still be found, mostly in inaccessible areas (see details on the area in ARAÚJO & OLIVEIRA 1988).

By examining the material collected in Vila Dois Rios on 9 January 1997, two paired individuals of *Pirascca sagaris satnius* (Dalman, 1823) were found with the following note: "in copula/ 1.5 to 2.0 m above the ground/ 1731 h". These butterflies were collected in pairing behavior upon a leaf inside the "Mãe D'Água" forest edge (an area with secondary forest in regeneration over the last 20 years). After spreading out the specimens, it was possible to accurately determine the species and to immediately recognize that the individuals copulating in the wild were not male and female, but amazingly two males – herein called larger and smaller male (Fig. 1). While pairing, the males of *P. sagaris satnius* assumed an "end to end position" (Fig. 2), according to CHAPMAN's (1969) terminology.

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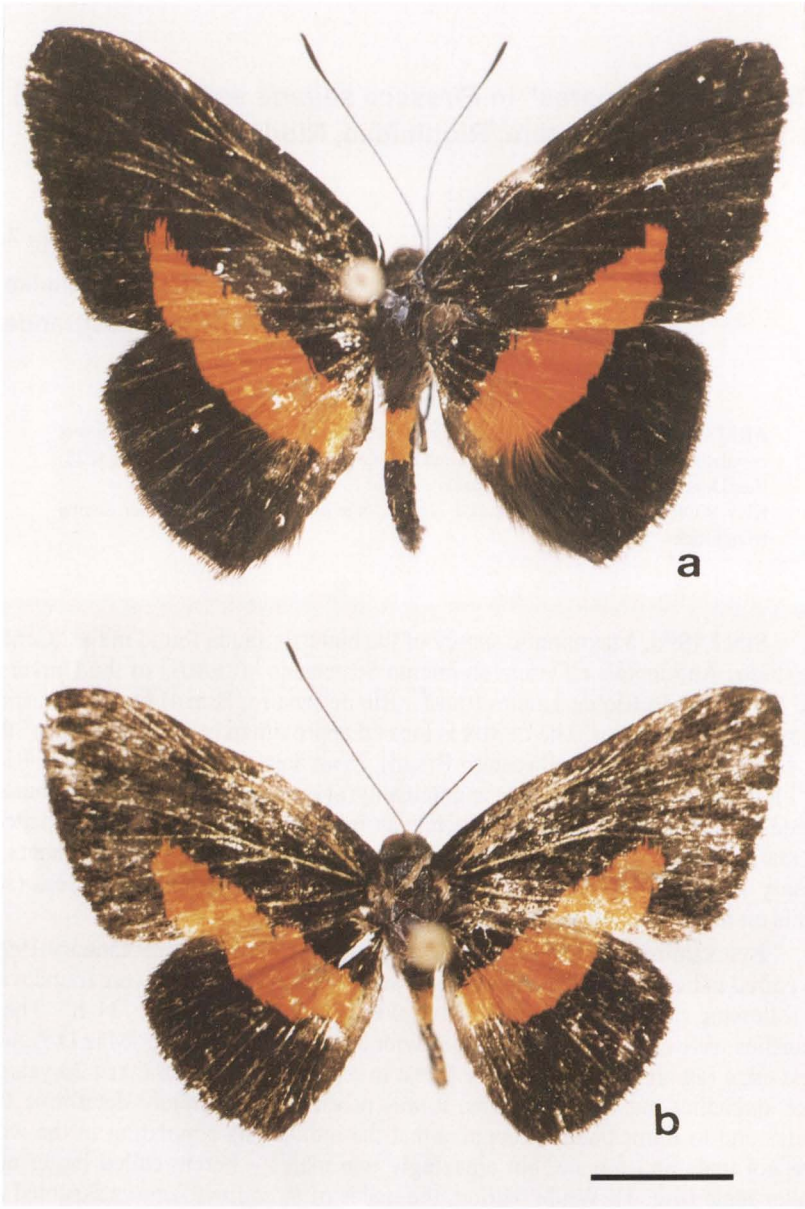

Fig. 1. *Pirascca sagaris satnius*, larger male (A) and smaller male (B). Scale bar = 10mm.

Copulation among male insects, scientifically known as copula "inter mares", has seldom been reported in the literature (OSTEN-SACKEN 1879; SCHERER 1912). OSTEN-SACKEN (1879) mentioned cases of copula "inter mares" in beetles and moths, whereas SCHERER's paper dealt particularly with copula "inter mares" in the Brimstone butterfly, *Gonepteryx rhamni* Linnaeus, 1758 (Pieridae), referring

also to some personal communications made by his colleagues on other Palearctic species belonging to the families Papilionidae, Lasiocampidae and Saturniidae. The internal morphology of how two male genitalia can be associated to form a firm connection, and whether or not the sperm transfer phase occurs has not yet been investigated.

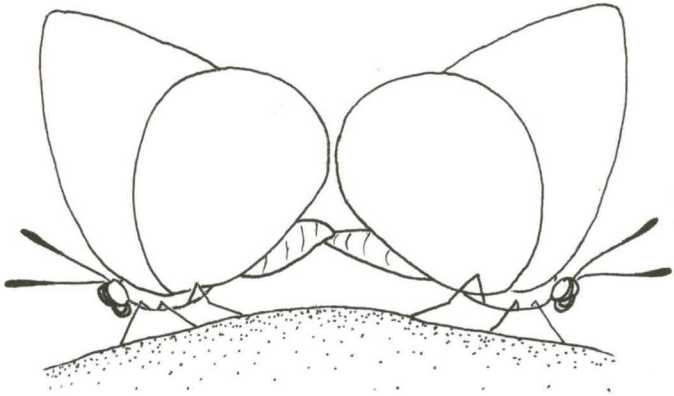

Fig. 2. *Pirascca sagaris satnius*, schematic drawing of the end to end position assumed by the males during pairing behavior.

Sexual recognition can be very poor within any one insect order, and attempts of a male to court and copulate with another male normally occur when females are scarce in the wild (CHAPPMAN 1969), or when the sensorial (visual, olfactory and/or tactile cues) and behavioral systems have failed to distinguish a suitable female mate (VICIDOMINI 1997). Specific stimuli inhibiting male-male mating were already observed in some drosophilids (Diptera, Drosophilidae) and in a damselfly species (Odonata, Coenagrionidae) (see CHAPPMAN 1969; GORB 1998)

The specimens are deposited in the collection of the Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil (DZUP). Measurements of wings obtained through a calibrated ocular micrometer are summarized in table I.

Table I. Fore and hindwing measurements, in millimeter, from copulated males of *Pirascca sagaris satnius*. Terminology of the wing areas and margins follows EHRLICH & EHRLICH (1961).

Wing characters	Larger male	Smaller male
Forewing		
Costal margin length (base to apex)	16.0	13.8
Outer margin length (apex to end of vein 2A)	10.7	9.4
Inner margin length (base to end of vein 2A)	10.6	9.1
Forewing width (costal margin at mid point to end of vein 2A)	9.1	7.4
Hindwing		
Costal margin length (base to apex)	9.4	7.8
Outer margin length (apex to end of vein 2A)	8.2	7.4
Inner margin length (base to end of vein 2A)	10.2	8.6
Hindwing major length (base to end of vein CuA_1)	10.6	9.3

ACKNOWLEDGEMENTS. This study is part of the results of the "Programa de Ecologia, Conservação e Manejo de Ecossistemas do Sudeste Brasileiro" conducted by the "Setor de Ecologia, Instituto de Biologia, UERJ". The senior author thanks the personnel of the "Coordenadoria dos Campi Regionais" and the Coordinator of the CEADS/UERJ, Isabel M. Gurgel, for local support and for making many facilities available at the study area. We are also indebted to Drs. Carlos Frederico D. Rocha (Universidade do Estado do Rio de Janeiro, Brazil), Astrid Caldas (University of Maryland, MD, USA), Robert K. Robbins (National Museum of Natural History, Washington, DC, USA) for critically reviewing the manuscript, and Curtis J. Callaghan (Bogota, Colombia) for kindly supporting our identification.

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Recebido em 12.VI.1999; aceito em 15.V.2000.