

Further the congression of chromosomes at metaphase I was also imperfect. The univalents were not oriented at the metaphase plate but irregularly distributed all over the cell. The average chiasmata frequency ranged from  $10.8 \pm 0.2$  to  $13.3 \pm 0.3$  per cell (table 1). Anaphase I was highly irregular with 12:12 (figure 6, 20%), 13:11 (25%), 14:10 (figure 7, 40%) and 15:11 (15%) distribution. A few cells also showed late disjunction of univalent (figures 6 and 7). Cells with varying number of laggards, dyad (figure 8), tetrad and polyads with unequal microspores were also commonly observed. This resulted in nearly 85% sterile pollen grains.

Desynapsis usually results due to apomixis, gene actions, nonhomology structural or numerical changes of chromosomes pairs<sup>4</sup>. However, in the present case, it is perhaps genic in nature as the taxon is sexual with no evidence of numerical or structural differences in the chromosomes.

Meiotic behaviour showing partial desynapsis is also known in plants, notably in *Methiolo incana*<sup>5</sup>, *Crepis capillaris*<sup>6</sup>, *Secale cereale*<sup>6,7</sup>, *Pisum sativum*<sup>8</sup>, *Nicotiana tabacum*<sup>9</sup>, *Zea mays*<sup>10</sup>, *Solanum wendlandii*<sup>11</sup> and *Verbena*<sup>12</sup> where it causes pollen and ovule abortions.

The author expresses his gratitude to Dr. T. N. Khoshoo, the Director, for guidance and to Mr. T. K. Sharma, for illustrations.

1 May 1982

1. Mehra, P. N., Gill, B. S., Mehta, J. K. and Sidhu, S. S., *caryologia.*, 1965, 18, 35.
2. Sharma, A. K., *Cav. Bull. Bot. Soc. Bangal.*, 1947, 1, 19.
3. Turner, B. L. and Flyr, D., *Am. J. Bot.*, 1966, 53, 24.
4. Praaken, R., *Hereditas*, 1943, 29, 475.
5. Armstrong, J. M. and Huskins, C. L., *J. Genet.* 1934, 29, 29.
6. Richardson, M. M., *J. Genet.*, 1935, 31, 119.
7. Lamm, R., *Hereditas*, 1936, 22, 217.
8. Koller, P. C., *J. Genet.*, 1938, 36, 275.
9. Clausen, R. E., *Am Nat.*, 1931, 65, 316.
10. Beadle, G. W. *Cytologia.*, 1933, 4, 269.
11. Chennaveerai, M. S. and Krishnappa, D. G. *Cytologia.*, 1968, 33, 149.
12. Arora, O. P., *Verbena. New Bot.*, 1976, 3, 57.

## A NEW SPECIES OF *CHILOCARPUS* BL., (APOCYNACEAE) FROM ANDAMAN AND NICOBAR ISLANDS, INDIA

S. N. YOGANARASIMHAN, K. R. KESHAVAMURTHY, GOVINDAIAH, V. CHELLADURAI\* AND V. S. TOGUNASHI

Regional Research Centre (Ay), Ashoka Pillar, Jayanagar, Bangalore 560 011, India.

\*Survey of Medicinal Plants Unit, Palayamkottai, Tirunelveli, India.

DURING a medico-botanical tour in the Andaman and Nicobar islands, an interesting taxon of *Chilocarpus* Bl., was collected from the southernmost tip of India, Campbell Bay in Great Nicobars which proved to be a new species on identification. The genus *Chilocarpus* comprises of 15 species in the world and is represented by a monotypic species, *C. malabaricus* Bedd., in India which is endemic to Western Ghats<sup>1,2</sup>. Hence, the finding of a new species away from the mainland is interesting phytogeographically; a detailed description of the new taxon with analytical sketches are provided.

*Chilocarpus sunainaianus* Yog. sp. nov.

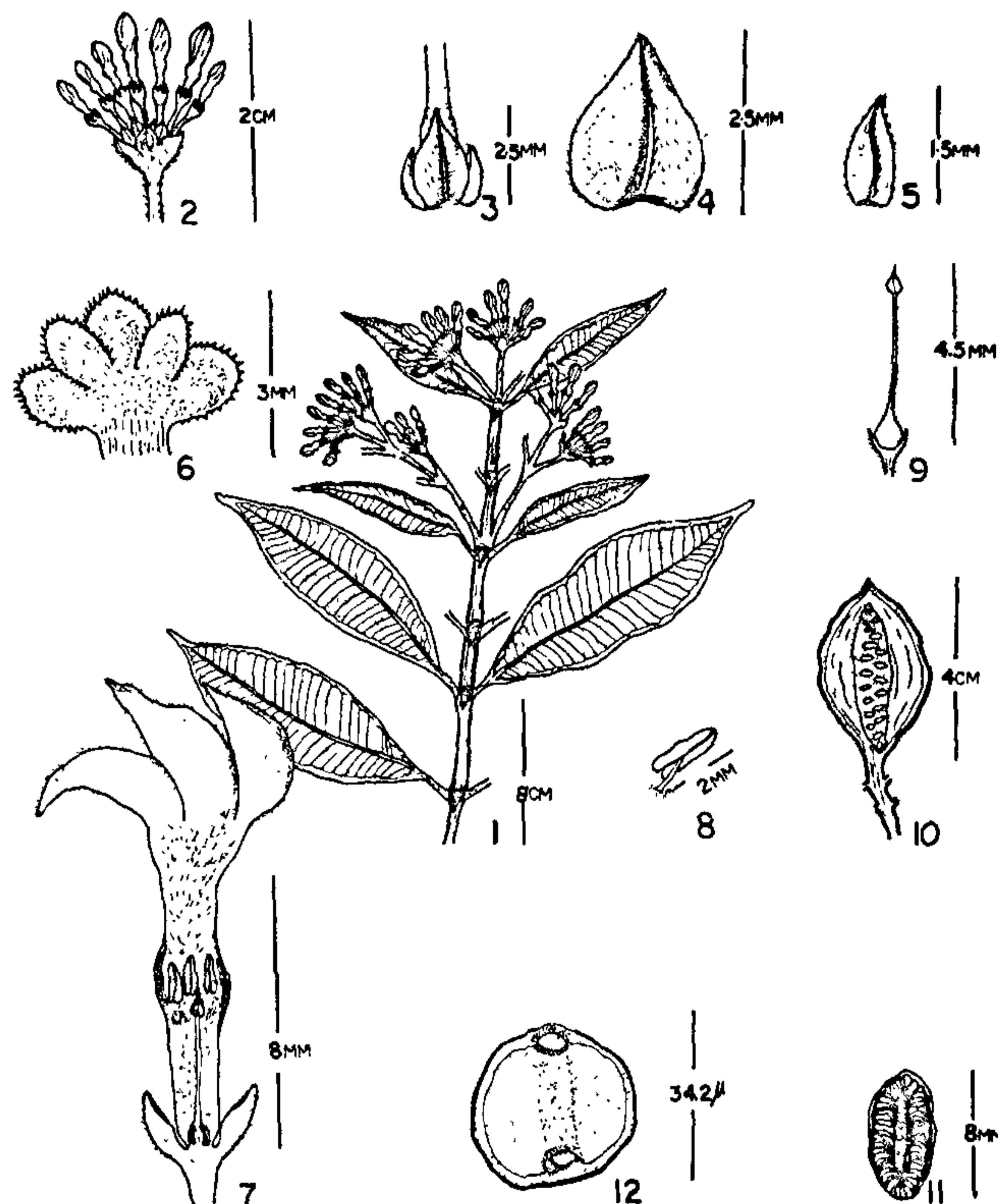
*C. costato* (*C. costatus* Dyer ex Miq.) affinis sed differt bracteolis praesentibus, calycis lobis pubescentibus, corollae tubo ad medium inflato, ovarioque cum 2 placentis.

*Holotypus* lectus a Yoganarasimhan sub numero 602, die 26-3-1980 a sylvis secus E. W. viam, ad locum Campbell Bay, Nicobarica magna, insulam Andamanum et Nicobaricam, et positus in RRCBI; *isotypi* Yoganarasimhan 602A positi in CAL, et 602C in PBL

*Chilocarpus sunainaianus* Yog. sp. nov.

Allied to *C. costatus* Miq. (= *C. maingayi* Dyer ex Miq.), but differing in the presence of bracteoles, lacinate hairy calyx lobes, corolla tube inflated in the middle and ovary with 2 placentae.

Climbing shrubs with milky latex; branches resinous, stout, smooth, swollen at nodes. Leaves upto  $14 \times 4$  cm, simple, opposite, elliptic-oblong, glabrous, apex abruptly shortly acuminate, base acute, nerves horizontal; petiole short, upto 1 cm long, stout. Inflorescence 4-6 cm long, bearing superposed clusters of cymes, peduncle stout. Flowers  $\pm 1.5$  cm long, bracteate and bracteolate, densely crowded giving the appearance of a whorl, orange yellow; pedicels slender,  $\pm 1.5$  mm long, minutely pubescent; bracts  $2.5 \times 2$  mm, ovate-elliptic, acute at apex, broader towards the base, sparsely hairy; bracteoles 2,  $\pm 1.5 \times 0.75$  mm, elliptic-acuminate, sparsely hairy; Calyx  $\pm 3$  mm long, cup-shaped, sparsely pubescent; lobes 5, quincuncial, 3 large and 2 small, 2/3 portion opaque, 1/3 portion hyaline, margins lacinate hairy. Corolla  $\pm 1.3$  cm long, hypocrateriform, tube  $\pm 8$  mm long, cylindric, inflated at the middle, sparsely



Figures 1-12. *Chilocarpus sunainaianus* Yog. sp. nov. 1. Portion of twig; 2. Inflorescence; 3. Bract and Bracteoles *in situ*; 4. Bract; 5. Bracteole; 6. Calyx spread out; 7. L.S. Flower; 8. Stamen 9. Pistil; 10. Fruit; 11. Seed; 12. Pollen.

puberulous throughout; lobes 5, each  $\pm 6 \times 2.5$  mm overlapping to the left, inflexed, equalling the tube when spread out, apex caudate; stamens 5, each  $\pm 2$  mm long, attached to the middle of the tube, with a ring of hairs at the base; anthers versatile, longer than the slender and very short filament. Ovary  $\pm 2$  mm long, glabrous, uniloculed with 2 parietal placentae; ovules many; style  $\pm 2.5$  mm long, slender, glabrous; stigma ovoid, abruptly acute at apex. Berry  $\pm 4 \times 3$  cm, conoid, coriaceous, fleshy, dehiscent by 2 lateral valves, orange yellow. Seeds subquadrate,  $\pm 7 \times 4$  mm, brown, curved on one side, deeply channelled on the other, immersed in yellow pulp and cottony white fibres (figures 1-11).

**Pollen morphology:** *Symmetry and form*—Pollen spherical, 34-40  $\mu$ m diameter, 2-porate. *Exine*: smooth, granular, stratification obscure; endexine uneven.

*Aperture*: oval,  $7.2 \times 12 \mu$ m (figure 12).

*Holotype*: Yoganarasimhan 602 collected on 26-3-1980 from the forests along the East West Road, Campbell Bay, Great Nicobars, Andaman and Nicobar islands, deposited at RRCBI; *isotype* Yoganarasimhan 602A at CAL 602C at PBL.

The species is allied to *C. costatus* (= *C. maingayi*) occurring in Malacca (Sumatra)<sup>3</sup> but can be readily distinguished by the contrasting characters already stated. The specific epithet is named in memory of Smt. Sunaina, wife of S. N. Yoganarasimhan.

The authors are thankful to Dr. N. C. Majumdar of CAL for the latin diagnosis; to the Director and Deputy Director, CCRAS, for sponsoring the special tour; to Dr. B. V. Holla of RRC, Bangalore for providing facilities; to Drs. N. P. Balakrishnan, M. K. V. Rao of PBI, A. N. Henry, M. C. Chandrabose of MH and Dr. M. Sanjappa of CAL for help in various ways; to the



Director and Dr. Sundara Raghavan of K and AJM Leeuwenberg of WAG for their help and expert comments respectively on the taxon.

5 May 1982

1. Santapau, H., and Henry, A. N., *A Dictionary of the flowering plants in India*, (repr. ed.), New Delhi, CSIR, 1976, p. 37.
2. Subramanyam, K. and Nayar, M. P., *Vegetation and phytogeography of Western Ghats, In Ecology and Biogeography in India*, (ed.) M. S. Mani, The Hague, Dr. Junk b.v. Publishers, 1974, p. 194.
3. Hooker, J. D., in *Hk. f. Fl. Brit. India*, (ed.) L. Kent, Reeve & Co., 1882, 3, 627.

### NEW RECORDS OF PARASITIDS ATTACKING RICE LEAF FOLDER, *CNAPHALOCROCIS MEDINALIS* GUENEE, IN INDIA

PRATIVA PATI AND K. C. MATHUR  
Central Rice Research Institute, Cuttack 753 006,  
India.

THE rice leaf folder, *C. medinalis* Guenee, is increasingly becoming a serious pest in several states, particularly in waterlogged situations<sup>1-4</sup> and in other Asian countries<sup>5,6</sup>. Fortunately a large natural enemy complex acting against this pest is available in India<sup>4,7-10</sup>. Three new larval and two pupal parasitoids were reared for the first time, which are reported in this paper. Two new hyperparasitoids were also reared during the studies (table 1).

During March to May, *C. medinalis* was attacked by a number of parasitoids of which *T. philippinensis* was the dominant parasite. Its peak period of activity (21.7% parasitism) occurred towards last week of April to middle of May (table 2). It was hyperparasi-

TABLE 1  
*New parasitoids reared from C. medinalis at Cuttack, Orissa*

A. Primary parasitoids	Host stage
HYMENOPTERA	
<i>Braconidae</i> :	
1. <i>Apanteles</i> sp. <i>ater</i> group	Larva
2. <i>A. angustibasis</i> Gahan	Larva
3. <i>Habrobracon</i> sp.	Larva
<i>Ichneumonidae</i> :	
4. <i>Xanthopimpla flavolineata</i> Cameron	Pupa
5. <i>Kriechbaumerella</i> sp. Dellator	Pupa
B. Hyperparasitoids	
HYMENOPTERA	
<i>Chalcidae</i> :	
1. <i>Brachymeria excarinata</i> Gahan	Pupa of <i>Temelucha philippinensis</i> (Ashmead)
<i>Ceraphronidae</i> :	
2. <i>Aphanogmus fijiensis</i> Ferriere	Pupa of <i>Apanteles</i> sp.

tised by a chalcid, *B. excarinata*. *Apanteles* spp were also active and the peak activity period (6% parasitism) was in April. From one case a new hyperparasitoid, *Aphanogmus fijiensis* emerged. *Kriechbaumerella* sp. and *Xanthopimpla flavolineata* were reared in the last week of April to 1st week of May.

TABLE 2  
*Percentage of parasitism of leaf folder by Temelucha philippinensis and Apanteles spp., along with their hyperparasitoids*

Period	Parasitism by		Hyperparasitised by	
	<i>T. philippinensis</i> (%)	<i>Apanteles</i> spp. (%)	<i>B. excarinata</i> (%)	<i>A. fijiensis</i> (%)
March	8	3	—	—
April	13	6	7.4	16.6
May	21.7	4	4.5	—