

# ツリフネソウ属の染色体数

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T. Shimizu: Chromosome numbers of the genus *Impatiens* L.

ツリフネソウ属植物 *Impatiens* は、アジア、アフリカの熱帯を中心に 500 種以上あるとみられる。ツリフネソウ属は、外部形態・芽生えの形・子房の構造・種子の形態・染色体数などの変異は多岐にわたり、そのため、類縁関係の判断がむずかしく、属の分類系はまだできていない。

本報では、ツリフネソウ属の理解への一助として、染色体数に関する報告を整理し、リストを作成した。とり上げた種は、133 種であるが、一種 *I. santisukii* は、未記載である。

## 染色体数と頻度

リストを通覧すると、ツリフネソウ属の染色体数は、インド産の *I. latifolia* および *I. leschenaultii* の  $n = 3$  からニューギニア産の *I. mooreana* の  $n = 33$  までさまざまであることがわかる。属内における  $n$  数の分布頻度と分布域の関連は、表 1 のようである。ただし、同一種にあって倍数関係にある 2 個以上の染色体数については最も低次の  $n$  数として算入した。たとえば、*I. acaulis* は、 $n = 8, 9, 10, 16$  の 4 通りの数が知られているが、この場合、 $n$  数は 8, 9 および 10 の 3 通りとみなし、種数欄には 3 個

表 1. 染色体数、種数および分布域の関係

| $n$ | 種数 | アリ<br>フカ | イン<br>ド | ヒラ<br>マヤ | タ<br>マ<br>レ<br>イ | ニ<br>ギ<br>ユ<br>ニ<br>ア | ア<br>ジ<br>ア | ヨ<br>ロ<br>ッ<br>パ | 北<br>ア<br>メ<br>リ<br>カ | そ<br>の<br>他 |
|-----|----|----------|---------|----------|------------------|-----------------------|-------------|------------------|-----------------------|-------------|
| 3   | 2  |          | 2       |          |                  |                       |             |                  |                       |             |
| 4   | 1  |          |         |          |                  |                       |             |                  |                       | 1           |
| 5   | 4  | 1        | 1       |          | 2                |                       |             |                  |                       |             |
| 6   | 9  |          | 4       | 3        | 2                |                       |             |                  |                       |             |
| 7   | 27 | 3        | 14      | 10       |                  |                       |             |                  |                       | 1           |
| 8   | 52 | 15       | 32      | 4        | 4                |                       |             |                  |                       | 1           |
| 9   | 12 |          | 3       | 7        | 2                |                       |             | 1                |                       |             |
| 10  | 32 | 1        | 16      | 6        |                  |                       | 3           | 1                | 7                     |             |
| 11  | 1  |          |         | 1        |                  |                       |             |                  |                       |             |
| 12  | 2  |          |         |          | 1                |                       |             | 1                |                       |             |
| 13  | 3  | 1        | 1       |          |                  |                       |             | 1                | 1                     |             |
| 14  | 2  |          | 1       | 1        |                  |                       |             |                  |                       |             |
| 16  | 7  | 2        |         |          | 1                | 4                     |             |                  |                       |             |
| 17  | 4  |          |         |          | 4                |                       |             |                  |                       |             |
| 24  | 2  | 1        |         |          |                  |                       |             |                  |                       | 1           |
| 33  | 1  |          |         |          |                  | 1                     |             |                  |                       |             |

所のみ算入してある。

## 考 察

1) ツリフネソウ属の染色体数には、 $n = 3 \sim 14, 16, 17, 24, 33$  の 16 通りがみられる。日本の自生種ツリフネソウ *I. textori* は  $n = 10$  のみ、キツリフネ *I. nolitangere* には  $n = 10$  のほか  $n = 20$  の報告が 1 件ある。栽培種のホウセンカ *I. balsamina* は  $n = 7$  を基本とし、 $n = 5, 6, 9, 10, 12$  のケースがまれにみられる一方、アフリカホウセンカ *I. walleriana* = *I. holstii* = *I. sultani* は  $n = 8$  の記録しかなく染色体数は安定している。

2) 基本数は少くとも 3, 4, 5, 7, 11, 13, 17 の 6 通りがある。6, 8, 10 も基本数とみるべきであろう。

3) 染色体数の主要型は、 $n = 7, 8, 10$  とみられ、この数は、インドおよびヒマラヤ地域に集中的に分布している。Keith Jones および Smith (1966) は、ツリフネソウ属の起源はヒマラヤ・インド地域にあり、染色体数  $n = 7$  を出発点として変異し、 $X = 10$  の系統が日本をはじめ北半球の温帯に分布圏を拡大し、東南アジア方面へは雑種形成によって二次的に基本数  $X = 17$  を作り発展したものと推察している。

4)  $2n = 30$  以上の多数染色体を含む種は、インド・ヒマラヤ地域には 1 例も知られていない。対照的に、ニューギニアには、 $2n = 32, 66$  などの高次倍数体のみが記録されている。ニューギニアおよびアフリカ産の種類については、よく分らないが、少くともタイ・マレイ産の  $n = 16, n = 17$  の種は、いずれも、翼弁が合着し、子房室が 4 室のものばかりであり、別属 *Semeiocardium* とみなされる。この点、上述の Keith Jones および Smith (1966) の考え方をとるか、あるいは、これらが異った系統上にあるとみるべきか今後の議論にまきたい。

注 1) リスト中、種名欄では変種は  $v.$  で表わした。綴りが長すぎる場合は、末尾の 1 ～ 数文字を省略し、最後尾に  $-$  を付した。

注 2) 地名欄には試料の産地を示した。論文に産地が明示されていない場合には、Index Kewensis に基き、その主たる分布域を示し、地名の末尾に  $\ast$  を付した。

| SPECIES                    | n  | 2n   | LOCALITY     | AUTHOR                           |
|----------------------------|----|------|--------------|----------------------------------|
| acaulis Arn.               | 8  |      | S.India      | Bhaskar, V. & B.A.Razi '74       |
| acaulis Arn.               | 10 |      | S.India      | Bhaskar, V. & B.A.Razi '74       |
| acaulis Arn.               | 10 |      | India        | Bhaskar, V. '76                  |
| acaulis Arn.               | 16 |      | S.India      | Bhaskar, V. & B.A.Razi '74       |
| acaulis Arn.v.granulata    | 9  |      | S.India      | Bhaskar, V. & B.A.Razi '72-'73   |
| acaulis Arn.v.granulata    | 10 |      | S.India      | Bhaskar, V. & B.A.Razi '72-'73   |
| acmanthera Hook.f.         |    | 18   | E.Himalayas  | Chaterjee, A. & A.K.Sharma '70   |
| acmanthera Hook.f.         |    | 20   | E.Himalayas  | Chaterjee, A. & A.K.Sharma '70   |
| agumbeyana Bhaskar         | 8  |      | India        | Bhaskar, V. '76                  |
| alicia Fisch.v.bababuden-  | 8  |      | India        | Bhaskar, V. '76                  |
| amphorata Edgew.           | 7  |      | NW.Himalayas | Khoshoo, T.N. '55, '66           |
| amphorata Edgew.           | 7  | 14   | NW.Himalayas | Khoshoo, T.N. '57                |
| amphorata Edgew.           |    | 14   | W.Himalayas  | Warburg, E.F. '38                |
| amplexicaulis Edgew.       | 10 |      | NW.Himalayas | Khoshoo, T.N. '55, '66           |
| amplexicaulis Edgew.       | 10 |      | NW.Himalayas | Khoshoo, T.N. '57                |
| arguta Hook.f. & Thoms.    | 6  | 12   | E.Himalayas  | Chaterjee, A. & A.K.Sharma '70   |
| arguta Hook.f. & Thoms.    | 9  |      | Darjeeling   | Chaterjee, A. & A.K.Sharma '70   |
| assurgens Baker            | 5  |      | Tanzania     | Gill, L.S. & C.C.Chinnappa '77   |
| aurea Muhl.                |    | 20   | N.America*   | Warburg, E.F. '38                |
| auricoma Bail.             |    | 16   | Africa       | Arisumi, T. '80                  |
| balfouri Hook. f.          | 7  |      | NW.Himalayas | Khoshoo, T.N. '55, '57, '66      |
| balfouri Hook. f.          | 7  |      |              | Chinnappa, C.C. & J.K.Gill '74   |
| balfouri Hook. f.          |    | 14   |              | Vazart, J. '58                   |
| balsamina L.               | 5  |      |              | Rao, R.V.S. '75                  |
| balsamina L.               | 6  | 12   |              | Sharma, A.K. '70                 |
| balsamina L.               | 6  |      |              | Rao, R.V.S. '75                  |
| balsamina L.               | 7  |      | NW.Himalayas | Khoshoo, T.N. '55, '66           |
| balsamina L.               | 7  | 14   | NW.Himalayas | Khoshoo, T.N. '57                |
| balsamina L.               | 7  |      | S.India      | Bhaskar, V. & B.A.Razi '72-'73   |
| balsamina L.               | 7  |      | cult.        | Chinnappa, C.C. & J.K.Gill '74   |
| balsamina L.               | 9  | 18   |              | Sharma, A.K. '70                 |
| balsamina L.               |    | 12   | cult.        | Chaterjee, A. & A.K.Sharma '70   |
| balsamina L.               |    | 14   | cult.        | Morinaga, T. & E.Fukushima '31   |
| balsamina L.               |    | 14   | cult.        | Kanna, B. '34                    |
| balsamina L.               |    | 14   | cult.        | Chaterjee, A. & A.K.Sharma '70   |
| balsamina L.               |    | 14   | Kashmir      | Koul, A.K. & R.N.Gohil '73       |
| balsamina L.               |    | 14   | S.India      | Rao, R.V.S. '72                  |
| balsamina L.               |    | 14   | S.India      | Bhaskar, V. & B.A.Razi '72-'73   |
| balsamina L.               |    | 14   | India        | Arisumi, T. '80                  |
| balsamina L.               |    | 20   |              | Sharma, A.K. '70                 |
| balsamina L.               |    | 24   |              | Sharma, A.K. '70                 |
| balsamina L.               |    | 14+2 |              | Raghuvanshi, S.S. & S.Joshi '68  |
| balsamina L.               |    | 14+2 |              | Jain, S.J. & S.S.Raghuvanshi '74 |
| balsamina L.v.azaleifolia  |    | 14   |              | Rao, R.V.S. '73a                 |
| balsamina L.v.camelliflora |    | 14   |              | Rao, R.V.S. '73a                 |
| balsamina L.v.coccinea     |    | 14   |              | Rao, R.V.S. '73a                 |
| balsamina L.v.vulgaris     |    | 14   |              | Rao, R.V.S. '73a                 |
| barberi Hook.f.            | 8  |      | S.India      | Bhaskar, V. & B.A.Razi '74       |
| barberi Hook.f.            | 8  |      | India        | Bhaskar, V. '76                  |
| baddomei Hook.f.           | 8  |      | S.India      | Bhaskar, V. & B.A.Razi '72-'73   |
| bellia Hook. & Thoms.      |    | 14   | Himalayas*   | Khoshoo, T.N. '66                |

| SPECIES                          | n  | 2n | LOCALITY     | AUTHOR                          |
|----------------------------------|----|----|--------------|---------------------------------|
| <i>bicornuta</i> Wall.           | 8  |    | Nepal        | Malla, S.B. & al. '78           |
| <i>biflora</i> Walt.             | 10 |    | N.America    | Khoshoo, T.N. '55, '57, '66     |
| <i>biflora</i> Walt.             | 10 |    | N.America    | Chinnappa, C.C. & L.S.Gill '74  |
| <i>biflora</i> Walt.             |    | 20 | N.America*   | Smith, F.H. '34                 |
| <i>brachycentra</i> Kar. & Kir.  | 7  | 14 | NW.Himalayas | Khoshoo, T.N. '55, '56, '66     |
| <i>brachycentra</i> Kar. & Kir.  | 7  |    | NW.Himalayas | Khoshoo, T.N. '57               |
| <i>brachycentra</i> Kar. & Kir.  | 7  |    | Kashmir      | Bhat, B.K. & al. '75            |
| <i>brachycentra</i> Kar. & Kir.  |    | 14 | Kashmir      | Koul, A.K. & R.N.Gohil '73      |
| <i>burtonii</i> Hook.f.          | 8  | 16 | Congo        | Keith Jones & J.B.Smith '66     |
| <i>burtonii</i> Hook.f.          |    | 14 | Cameroun     | Gadella, T.W.J. '82             |
| <i>burtonii</i> Hook.f.          |    | 16 | Cameroun     | Gadella, T.W.J. '77             |
| <i>campanulata</i> Wight         | 10 | 20 | S.India      | Keith Jones & J.B.Smith '66     |
| <i>campanulata</i> Wight         |    | 18 | India        | Arisumi, T. '80                 |
| <i>campanulata</i> Wight         |    | 20 | S.India      | Rao, R.V.S. '73b                |
| <i>canariensis</i>               |    | 20 | S.India      | Rao, R.V.S. '72                 |
| <i>capensis</i> Meerburg         |    | 20 | Canada       | Love, A. & D.Love '82           |
| <i>chiangdaoensis</i> T.Shimizu  | 6  | 12 | N.Thailand   | Shimizu, T. '79                 |
| <i>chinensis</i> L.              | 8  | 16 | S.India      | Bhaskar, V. & B.A.Kazi '72-'73  |
| <i>chinensis</i> L.              |    | 16 | S.India      | Rao, R.V.S. '72                 |
| <i>chinensis</i> L.              |    | 16 | N.Thailand   | Shimizu, T. (unpub.)            |
| <i>chinensis</i> L.v.brevicornis | 8  |    | S.India      | Bhaskar, V. & B.A.Kazi '72-'73  |
| <i>chinensis</i> L.v.intermedia  | 8  |    | S.India      | Bhaskar, V. & B.A.Kazi '72-'73  |
| <i>clavicornu</i> Turcz.         |    | 14 | S.India      | Rao, R.V.S. '72                 |
| <i>congolensis</i> Schult.& Wil. |    | 48 | Africa       | Arisumi, T. '80                 |
| <i>congolensis</i> v.longicalca- | 24 | 48 | Congo        | Keith Jones & J.B.Smith '66     |
| <i>cordata</i> Whight            | 10 |    | India        | Bhaskar, V. '76                 |
| <i>cordata</i> Whight            | 10 |    | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| <i>cordata</i> Whight            |    | 20 | S.India      | Rao, R.V.S. '73b                |
| <i>cuspidata</i> Wt.             | 7  | 14 | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| <i>cuspidata</i> Wt.             |    | 14 | S.India      | Rao, R.V.S. '73b                |
| <i>dendricola</i> Fisch.         | 7  |    | India        | Bhaskar, V. '76                 |
| <i>digitata</i> Warb.            | 10 |    | Tanzania     | Gill, L.S. & C.C.Chinnappa '77  |
| <i>diversifolia</i> Wall.        | 8  |    | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| <i>drepanophora</i> Hook.f.      | 10 |    |              | Sarkar, A.K. & al. '75          |
| <i>ecalcarata</i> Blank          | 10 |    | N.America    | Chinnappa, C.C. & L.S.Gill '74  |
| <i>edgeworthii</i> Hook.f.       | 6  |    | NW.Himalayas | Khoshoo, T.N. '55, '56, '66     |
| <i>edgeworthii</i> Hook.f.       | 6  | 12 | NW.Himalayas | Khoshoo, T.N. '57               |
| <i>edgeworthii</i> Hook.f.       | 6  |    | W.Pakistan   | Baquer, S.R. & S.H.A.Askari '70 |
| <i>edgeworthii</i> Hook.f.       | 7  |    | Kashmir      | Gohil, R.N. & al. '81           |
| <i>epiphytica</i> G.M.Schulze    | 7  |    | Tanzania     | Gill, L.S. & C.C.Chinnappa '77  |
| <i>epiphytica</i> G.M.Schulze    |    | 16 | Africa       | Arisumi, T. '80                 |
| <i>falcifer</i> Hook.f.          | 8  |    | Nepal        | Malla, S.B. & al. '75           |
| <i>fimbriata</i> Hook.f.         | 8  |    | E.Himalayas  | Chatterjee, A. & A.K.Sharma '70 |
| <i>firmula</i> Baker             |    | 14 | Madagascar*  | Heitz, E. & F. Resende '36      |
| <i>flaccida</i> Arn.             | 7  | 14 | Mauritius    | Keith Jones & J.B.Smith '66     |
| <i>flaccida</i> Arn.             | 7  |    | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| <i>flaccida</i> Arn.             |    | 14 | S.India      | Rao, R.V.S. '73b                |
| <i>flaccida</i> Arn.v.alba       |    | 14 | India        | Arisumi, T. '80                 |
| <i>fruticosa</i> Hensl.          |    | 16 | S.India      | Rao, R.V.S. '73b                |
| <i>furcillata</i> Hensl.         |    | 20 | Sikhote Alin | Sokolovskaya, A. '66            |
| <i>gardneriana</i> Wight         | 8  | 16 | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |

| SPECIES                | n  | 2n | LOCALITY     | AUTHOR                          |
|------------------------|----|----|--------------|---------------------------------|
| glandulifera Royle     | 9  |    | cult.        | Keith Jones & J.B.Smith '66     |
| glandulifera Royle     | 10 |    | N.America    | Chinnappa, C.C. & L.S.Gill '74  |
| glandulifera Royle     | 10 |    | cult.        | Keith Jones & J.B.Smith '66     |
| glandulifera Royle     |    | 18 | Slovakia     | Murin, A. '74, '78              |
| glandulifera Royle     |    | 18 | Slovakia     | Majovsky, J. & al. '74          |
| glandulifera Royle     |    | 18 | Czechoslovak | Javurkova, V. '79               |
| glanduligera Lindl.    |    | 18 | Himalayas*   | Stefen, K. '51                  |
| goughii Wight          | 10 |    | India        | Bhaskar, V. '76                 |
| goughii Wight          | 10 |    | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| goughii Wight          | 10 |    | S.India      | Bhaskar, V. & B.A.Razi '74      |
| goughii Wight          |    | 16 | S.India      | Rao, R.V.S. '73b                |
| grandis Heyne          |    | 20 | India        | Bhaskar, V. '76                 |
| grandis Heyne          |    | 20 | S.India      | Rao, R.V.S. '73b                |
| hamata Warb.           | 7  |    | Tanzania     | Gill, L.S. & C.C.Chinnappa '77  |
| hawkeri Bull           |    | 48 | South Sea Is | Keith Jones & J.B.Smith '66     |
| henslowiana Arn.       | 8  |    | India        | Bhaskar, V. '76                 |
| herbicola Hook.f.      | 7  |    | India        | Bhaskar, V. '76                 |
| herzogii K.Schum.      |    | 32 | New Guinea   | Arisumi, T. '78, '80            |
| hochstetteri Warb.     |    | 16 | Kenya        | Keith Jones & J.B.Smith '66     |
| holstii Engl. & Warb.  | 8  | 16 | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| holstii Engl. & Warb.  |    | 16 |              | Heitz, E. '29                   |
| holstii Engl. & Warb.  |    | 16 |              | Smith, F.H. '34                 |
| holstii Engl. & Warb.  |    | 16 |              | Sugiura, T. '36                 |
| holstii Engl. & Warb.  |    | 16 |              | Warburg, E.F. '38               |
| holstii Engl. & Warb.  |    | 16 |              | Bhattacharyya, S.S. '54         |
| holstii Engl. & Warb.  |    | 16 | cult.        | Beck, A.R. & al. '74            |
| holstii Engl. & Warb.  |    | 16 | S.India      | Rao, R.V.S. '72                 |
| hookeriana Arn.        | 10 | 20 | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| hookeriana Arn.        |    | 16 | S.India      | Rao, R.V.S. '72                 |
| hookeriana Arn.        |    | 36 | India        | Arisumi, T. '80                 |
| hookeriana Arn.        |    | 40 | India*       | Keith Jones & J.B.Smith '66     |
| insignis DC.           |    | 18 | Nepal        | Chatterjee, A. & A.K.Sharma '70 |
| killimanjari Oliver    | 13 |    | Tanzania     | Gill, L.S. & C.C.Chinnappa '77  |
| kleinii Wight & Arn.   | 8  |    | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| latifolia L.           | 3  |    | E.India*     | Rao, R.V.S. '75                 |
| lawii Hook.f. & Thoms. | 8  |    | S.India      | Bhaskar, V. & B.A.Razi '74      |
| lawsonii Hook.f.       | 10 |    | India        | Bhaskar, V. '76                 |
| lenta Hook.f.          | 8  |    | India        | Bhaskar, V. '76                 |
| leptoceras DC.         |    | 18 | Nepal        | Chatterjee, A. & A.K.Sharma '70 |
| leschenaultii Wall.    | 3  | 6  | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| leschenaultii Wall.    | 3  |    | E.India      | Rao, R.V.S. '75                 |
| leschenaultii Wall.    |    | 6  | S.India      | Rao, R.V.S. '72                 |
| levingei Hook.f.       |    | 16 | S.India      | Rao, R.V.S. '73b                |
| ligulata Hook.f.       | 8  |    | S.India      | Bhaskar, V. & B.A.Razi '74      |
| linearifolia Warb.     |    | 32 | New Guinea   | Arisumi, T. '73, '78, '80       |
| longiloba Craib        |    | 18 | N.Thailand   | Shimizu, T. (unpub.)            |
| maculata Wight         | 10 |    | India        | Bhaskar, V. '76                 |
| maculata Wight         | 10 |    | S.India      | Bhaskar, V. & B.A.Razi '72-'73  |
| maculata Wight         |    | 20 | S.India      | Rao, R.V.S. '73b                |
| marianae Reichb.       |    | 16 | Africa       | Arisumi, T. '80                 |
| mathildae Wight        |    | 14 | E.India      | Heitz, E. '29                   |

| SPECIES                      | n  | 2n | LOCALITY     | AUTHOR                        |
|------------------------------|----|----|--------------|-------------------------------|
| <i>mengtzeana</i> Hook.f.    |    | 16 | N.Thailand   | Kai Larsen '81                |
| <i>mirabilis</i> Hook.f.     | 17 |    | N.Malaya     | Keith Jones & J.B.Smith '66   |
| <i>modesta</i> Wight         | 8  |    | India        | Bhaskar,V. '76                |
| <i>modesta</i> Wight         | 8  |    | S.India      | Bhaskar,V. & B.A.Razi '74,'76 |
| <i>modesta</i> Wight         | 9  |    | S.India      | Bhaskar,V. & B.A.Razi '74,'76 |
| <i>modesta</i> Wight         | 9  |    | India        | Bhaskar,V. '76                |
| <i>modesta</i> Wight         | 16 |    | India        | Bhaskar,V. '76                |
| <i>modesta</i> Wight         | 16 |    | S.India      | Bhaskar,V. & B.A.Razi '76     |
| <i>mooreana</i> Schltr.      |    | 32 | New Guinea   | Arisumi,T. '73,'78,'80        |
| <i>mooreana</i> Schltr.      |    | 66 | New Guinea   | Keith Jones & J.B.Smith '66   |
| <i>mysorensis</i> Roth       | 7  |    | India        | Bhaskar,V. '76                |
| <i>nalampoonii</i> T.Shimizu |    | 32 | N.Thailand   | Shimizu,T. '79                |
| <i>niamniamensis</i> Gilg    | 16 | 32 | Uganda       | Keith Jones & J.B.Smith '66   |
| <i>niamniamensis</i> Gilg    |    | 32 | Africa       | Arisumi,T. '80                |
| <i>nolitangera</i> L.        | 10 |    | Japan        | Ishikawa,T.M. '60             |
| <i>nolitangere</i> L.        | 10 |    | N.America    | Chinnappa,C.C. & L.S.Gill '74 |
| <i>nolitangere</i> L.        | 10 |    | Norway       | Laane,M.M. '71                |
| <i>nolitangere</i> L.        |    | 20 |              | Winge,O. '25                  |
| <i>nolitangere</i> L.        |    | 20 | Germany      | Tischler,G. '34               |
| <i>nolitangere</i> L.        |    | 20 | Kamchatka    | Sokolovskaya,A. '63,'65       |
| <i>nolitangere</i> L.        |    | 20 | W.Canada     | Packer,J.G. '64               |
| <i>nolitangere</i> L.        |    | 20 | Netherlands  | Gadella & Kliphuis '66,'67    |
| <i>nolitangere</i> L.        |    | 20 | Poland       | Skalinska,M. & al. '59        |
| <i>nolitangere</i> L.        |    | 20 | Slovakia     | Murin,A. '74                  |
| <i>nolitangere</i> L.        |    | 20 | Slovakia     | Majovsky,J. & al. '74         |
| <i>nolitangere</i> L.        |    | 20 | S.India      | Rao,R.V.S. '73b               |
| <i>nolitangere</i> L.        |    | 40 | Poland       | Skalinska,M. & al. '59        |
| <i>oliveri</i> C.H.Wright    |    | 16 | Africa*      | Wulff,H.D. '33                |
| <i>oliveri</i> C.H.Wright    |    | 16 | S.India      | Rao,R.V.S. '73b               |
| <i>omissa</i> Hook.f.        |    | 28 | S.India      | Rao,R.V.S. '73b               |
| <i>oppositifolia</i> L.      | 6  |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73 |
| <i>oppositifolia</i> L.      | 7  |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73 |
| <i>oppositifolia</i> L.      | 8  |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73 |
| <i>pallida</i> Nutt.         | 10 |    | N.America    | Chinnappa,C.C. & L.S.Gill '74 |
| <i>pallida</i> Nutt.         |    | 20 |              | Smith,F.H. '34                |
| <i>pallidiflora</i> Hook.f.  | 13 |    | India        | Bhaskar,V. '76                |
| <i>pallidiflora</i> Hook.f.  |    | 16 | S.India      | Rao,R.V.S. '73b               |
| <i>parasitica</i> Bedd.      | 10 |    | India        | Bhaskar,V. '76                |
| <i>parviflora</i> DC.        | 13 |    | N.America    | Chinnappa,C.C. & L.S.Gill '74 |
| <i>parviflora</i> DC.        |    | 20 |              | Heitz,E. '26                  |
| <i>parviflora</i> DC.        |    | 20 |              | Schuerhoff,P.N. '26,'31       |
| <i>parviflora</i> DC.        |    | 24 | Germany      | Tischler,G. '34               |
| <i>parviflora</i> DC.        |    | 24 |              | Wulff,H.D. '34                |
| <i>parviflora</i> DC.        |    | 24 | Sweden       | Love,A. & D.Love '42          |
| <i>parviflora</i> DC.        |    | 26 |              | Heitz,E. & F.Resende '36      |
| <i>parviflora</i> DC.        |    | 26 |              | Ehrenberg,L. '45              |
| <i>parviflora</i> DC.        |    | 26 | Hungary      | Polya,L. '49                  |
| <i>parviflora</i> DC.        |    | 26 | Poland       | Skalinska,M. & al. '59        |
| <i>parviflora</i> DC.        |    | 26 |              | Khoshoo,T.N. '66              |
| <i>parviflora</i> DC.        |    | 26 | Czechoslovak | Holub,Mesicek & Javurkova '71 |
| <i>parviflora</i> DC.        |    | 26 | Slovakia     | Murin,A. '74                  |

| SPECIES                       | n  | 2n | LOCALITY      | AUTHOR                           |
|-------------------------------|----|----|---------------|----------------------------------|
| parviflora DC.                |    | 26 | Slovakia      | Majovsky, J. & al. '74           |
| parvifolia Bedd.              | 10 |    | India         | Bhaskar, V. '76                  |
| petersiana Gilg ex Grig.      |    | 16 | Africa*       | Wulff, H.D. '33, '34             |
| phoenicea Bedd.               | 10 |    | India         | Bhaskar, V. '76                  |
| phuluangensis T. Shimizu      |    | 24 | N. Thailand   | Shimizu, T. (unpub.)             |
| platypetala Lindl.            | 7  |    | cult.         | Khoshoo, T.N. '57                |
| platypetala Lindl.            |    | 16 |               | Beck, A.R. & al. '74             |
| platypetala Lindl.            |    | 16 | Java          | Shimizu, T. (unpub.)             |
| platypetala Lindl.            |    | 16 | Java          | Arisumi, T. '78, '80             |
| platypetala Lindl.            |    | 32 | N. Malaya     | Shimizu, T. '79                  |
| platypetala Lindl. v. aurea-  |    | 8  | Celebes       | Arisumi, T. '78                  |
| platypetala Lindl. v. aure-   | 7  |    |               | Khoshoo, T.N. '55, '66           |
| pseudoviola Gilg              |    | 16 | Africa        | Arisumi, T. '80                  |
| pseudoviola Gilg              |    | 16 | Kenya         | Keith Jones & J.B. Smith '66     |
| psittacina Hook. f.           |    | 34 | N. Thailand   | Shimizu, T. '79                  |
| psychadelphoides Launert      |    | 32 | Mozambique    | Keith Jones & J.B. Smith '66     |
| puberula DC.                  | 14 |    | Nepal         | Malla, S.B. & al. '77            |
| pusilla Heyne                 | 8  |    | India         | Bhaskar, V. '76                  |
| pusilla Heyne                 |    | 16 | S. India      | Rao, R.V.S. '72                  |
| pusilla Heyne v. inconspi-    | 8  |    | India         | Bhaskar, V. '76                  |
| racemosa DC.                  | 9  |    | E. Himalayas  | Chatterjee, A. & A.K. Sharma '70 |
| racemosa DC.                  | 10 |    | Nepal         | Malla, S.B. & al. '76            |
| racemosa DC.                  |    | 18 | N. Thailand   | Shimizu, T. (unpub.)             |
| radiata Hook. f.              | 10 |    | India         | Sarkar, A.K. & al. '74           |
| repens Moon                   |    | 14 | India         | Arisumi, T. '80                  |
| repens Moon                   |    | 14 | Ceylon        | Keith Jones & J.B. Smith '66     |
| repens Moon.                  | 7  | 14 | S. India      | Bhaskar, V. & B.A. Razi '72-'73  |
| ridleyi Hook. f.              |    | 34 | Malaya        | Shimizu, T. '73                  |
| rosea Lindl.                  |    | 14 |               | Wulff (T. '35-'36)               |
| roylei Walp.                  | 10 |    | NW. Himalayas | Khoshoo, T.N. '55, '66           |
| roylei Walp.                  | 10 | 20 | NW. Himalayas | Khoshoo, T.N. '57                |
| roylei Walp.                  |    | 18 | Himalayas*    | Smith, F.H. '34                  |
| roylei Walp.                  |    | 20 | Himalayas*    | Warburg, E.F. '38                |
| rubromaculata Warb.           |    | 16 | Kenya         | Keith Jones & J.B. Smith '66     |
| salicifolia Hook. f. & Thoms. | 8  |    | E. Himalayas  | Chatterjee, A. & A.K. Sharma '70 |
| santisukii T. Shimizu         |    | 10 | N. Thailand   | Shimizu, T. (unpub.)             |
| sarcantha Ridley              |    | 16 | S. Thailand   | Shimizu, T. (unpub.)             |
| scabrida DC.                  | 6  |    | cult.         | Keith Jones & J.B. Smith '66     |
| scabrida DC.                  | 7  |    | NW. Himalayas | Khoshoo, T.N. '55, '66           |
| scabrida DC.                  | 7  |    |               | Huynh, K.-L. '67                 |
| scabrida DC.                  | 7  |    | cult.         | Keith Jones & J.B. Smith '66     |
| scabrida DC.                  | 7  |    | NW. Himalayas | Khoshoo, T.N. '57                |
| scabrida DC.                  |    | 14 |               | Smith, F.H. '34                  |
| scabrida DC.                  |    | 18 | E. Himalayas  | Chatterjee, A. & A.K. Sharma '70 |
| scabrida DC.                  |    | 20 | NW. Himalayas | Khoshoo, T.N. '55                |
| scabriuscula Heyne            | 7  |    | S. India      | Bhaskar, V. & B.A. Razi '72-'73  |
| scapiflora Heyne              | 6  |    | India         | Bhaskar, V. '76                  |
| scapiflora Heyne              | 6  |    | S. India      | Bhaskar, V. & B.A. Razi '74      |
| scapiflora Heyne              | 8  |    | India         | Bhaskar, V. '76                  |
| scapiflora Heyne              | 10 |    | India         | Bhaskar, V. '76                  |
| scapiflora Heyne v. pseud-    | 10 |    | India         | Bhaskar, V. '76                  |

| SPECIES                   | n  | 2n | LOCALITY     | AUTHOR                         |
|---------------------------|----|----|--------------|--------------------------------|
| scapiflora Hayne v.pseud- | 10 |    | S.India      | Bhaskar,V. & B.A.Razi '76      |
| scapiflora Hayne v.pseud- | 16 |    | India        | Bhaskar,V. '76                 |
| scapiflora Hayne v.pseud- | 16 |    | S.India      | Bhaskar,V. & B.A.Razi '76      |
| scapiflora Hayne v.pseud- | 20 |    | India        | Bhaskar,V. '76                 |
| scapiflora Hayne v.pseud- | 20 |    | S.India      | Bhaskar,V. & B.A.Razi '76      |
| schlechteri Warb.         |    | 32 | New Guinea   | Arisumi,T. '73,'78,'80         |
| schlechteri Warb.         |    | 32 | New Guinea   | Keith Jones & J.B.Smith '66    |
| serrata Benth.            |    | 14 | Himalayas*   | Khoshoo,T.N. '66               |
| siamensis T.Shimizu       |    | 34 | S.Thailand   | Shimizu,T. (unpub.)            |
| stenantha Hook.f.         | 11 |    | E.Himalayas  | Chatterjee,A. & A.K.Sharma '70 |
| stocksii Hook.f.          | 7  |    | S.India      | Bhaskar,V. & B.A.Razi '74      |
| stocksii Hook.f.          | 10 |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73  |
| sulcata Wall.             | 10 |    | NW.Himalayas | Khoshoo,T.N. '55,'56,'66       |
| sulcata Wall.             | 10 | 20 | NW.Himalayas | Khoshoo,T.N. '57               |
| sultani Hook.f.           | 8  | 16 | S.India      | Bhaskar,V. & B.A.Razi '72-'73  |
| sultani Hook.f.           |    | 16 | Africa*      | Smith,F.H. '34                 |
| sultani Hook.f.           |    | 16 | Africa*      | Sugiura,T. '36                 |
| sultani Hook.f.           |    | 16 | Africa*      | Warburg,E.F. '38               |
| sultani Hook.f.           |    | 16 | Africa*      | Bhattacharyya, S.S. '54        |
| sultani Hook.f.           |    | 16 | S.India      | Rao,R.V.S. '72                 |
| talbotii Hook.f.          | 6  |    | India        | Bhaskar,V. '76                 |
| tenella Hayne             | 8  | 16 | S.India      | Bhaskar,V. & B.A.Razi '72-'73  |
| tenella Hayne             |    | 14 | S.India      | Rao,R.V.S. '72                 |
| textori Miq.              |    | 20 | Japan        | Ishikawa,T.M. '60              |
| textori Miq.              |    | 20 | Korea        | Lee, Y.N. '67                  |
| thomassetii Hook.f.       |    | 16 | Africa       | Arisumi,T. '80                 |
| thomsonii Hook.f.         | 7  |    | NW.Himalayas | Khoshoo,T.N. '55,'57,'66       |
| thomsonii Hook.f.         | 10 | 20 | NW.Himalayas | Khoshoo,T.N. '55,'66           |
| thomsonii Hook.f.         | 10 |    | NW.Himalayas | Khoshoo,T.N. '57               |
| thomsonii Hook.f.         |    | 14 | Kashmir      | Koul,A.K. & R.N.Gohil '73      |
| tomantosa Hayne           |    | 16 | S.India      | Rao,R.V.S. '72                 |
| trichocarpa Hook.f.       | 6  |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73  |
| tripetala Roxb.           | 8  |    | India        | Sarkar,A.K. & al. '73          |
| tripetala Roxb.           | 8  |    | India        | Sarkar,A.K. & al. '80          |
| tripetala Roxb.           |    | 14 | Himalayas*   | Khoshoo,T.N. '66               |
| tuberifera Humbert        |    | 16 | Africa       | Arisumi,T. '80                 |
| uguenensis Warb.          |    | 16 | Africa       | Arisumi,T. '80                 |
| uguenensis Warb.          |    | 16 | Kenya        | Keith Jones & J.B.Smith '66    |
| ulugurensis Warb.         | 8  |    | Tanzania     | Gill,L.S. & C.C.Chinnappa '77  |
| umbellata Hayne           |    | 20 | S.India      | Rao,R.V.S. '73b                |
| uncinata Wight            | 8  |    | India        | Bhaskar,V. '76                 |
| unicata Wight             |    | 14 | S.India      | Rao,R.V.S. '73b                |
| verticillata Wight        | 8  |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73  |
| verticillata Wight        |    | 16 | S.India      | Rao,R.V.S. '73b                |
| violaefera Hook.f.        |    | 10 | N.Thailand   | Kai Larsen '81                 |
| violaefera Hook.f.        |    | 12 | N.Thailand   | Kai Larsen '81                 |
| viscida Wight             |    | 16 | S.India      | Rao,R.V.S. '72                 |
| viscosa Bedd.             | 10 |    | S.India      | Bhaskar,V. & B.A.Razi '72-'73  |
| viscosa Bedd.             |    | 16 | S.India      | Rao,R.V.S. '73b                |
| walleriana Hook.f.exOliv. |    | 16 | Tanganyika   | Keith Jones & J.B.Smith '66    |
| walleriana Hook.f.exOliv. |    | 16 | Africa       | Arisumi,T. '80                 |