

Regular Article

## Ornamental Chasmophytes of Urumbikkara Hills, Western Ghats Region of Idukki District, Kerala, India

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The present study on the ornamental chasmophytes in the rocky habitats of Urumbikkara hills of Idukki district, Kerala reveals that, there are about 52 species of ornamental chasmophytic plants belonging to 46 genera and 29 families were collected because of their aesthetic value in both domestic and rock garden practices. These chasmophytes also possess certain biological peculiarities with different interesting adaptations and flower colour which can attract many people for making domestic or rock garden for ornamental purposes and psychological beneficial.

**Keywords:** Ornamental Chasmophytes, Urumbikkara hills, Idukki district, Kerala

Ornamental plants are grown usually for the purpose of beauty, for their fascinating foliage, flowers and their pleasant smell (Swarup, 1998). Wild flora is very important in view of aesthetic and recreational value for man. Human beings have always had a vital interest in plants of all kinds (Arora, 1993). In ancient times the knowledge of plants were useful, generally as food and other purposes such as medicines, fibers, dyes, religious and ornamental purposes (Singh, 1985). Plants have formed as a part of the human existence since time immemorial. This enduring bond between mankind and plants has flowered into a profound human appreciation of plants as objects of beauty and of gardens as works of art. Almost all of us seem to have an intrinsic yearning for contact with nature. Ornamental

plants bring aesthetic, physical and psychological enhancements to our surroundings and add economic value to them (Middleton, 2011).

Chasmophytes are plants rooted in clefts of rocks that are filled with detritus. The flora of the clefts varies with such prevailing factors such as exposure, width of the clefts, amount of accumulation, the presence or absence of any covering of snow during winter etc. (Alves and Kolbek, 2000). Such chasmophytes with ornamental potentiality in any of the plant parts or its habit is suggested for rockery. The rockery (Rock garden) is the miniature of mountain landscape in our garden with an artificially built slope provides better opportunity for a different look in our garden. While making an artificial landscape like rockery or rock

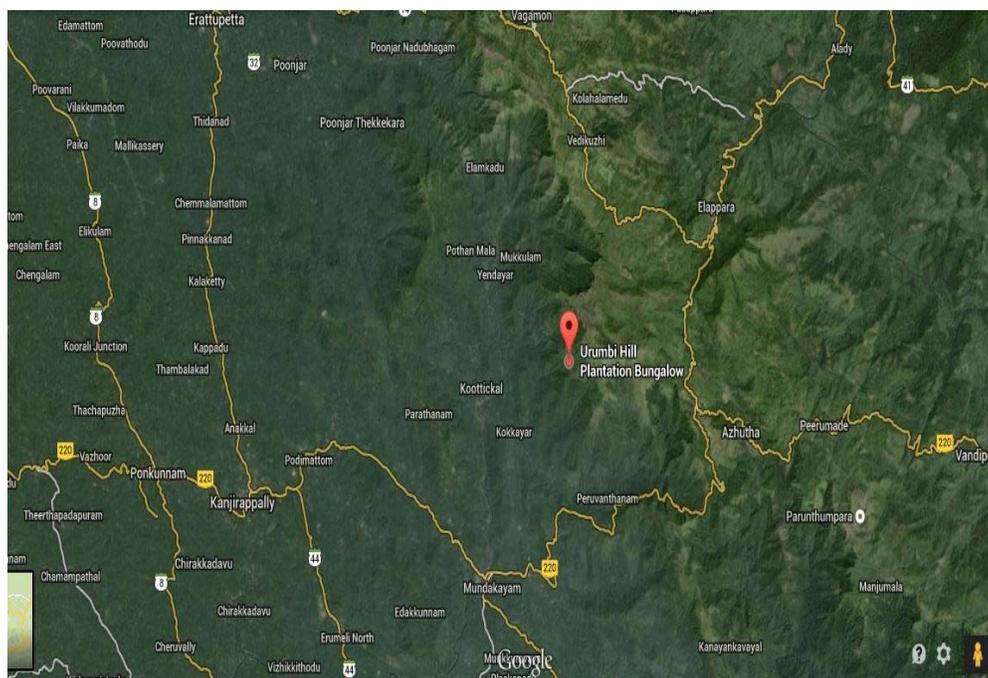
garden is with careful insertion of stones in a particular area. It will give a more natural look and to prevent the washing down of soil. Most of the ornamental chasmophytes like various evergreens, shrubs, cacti, ground covers are the potential plants for rock gardening (Binu Thomas and Rajendran, 2013).

## MATERIALS AND METHODS

### Study area: *Urumbikkara hills Idukki district, Kerala*

The present study was conducted in the rocky habitats of Urumbikkara hills ( $9^{\circ} 15'$  and  $10^{\circ} 21'$  of North latitude and  $76^{\circ} 37'$  and  $77^{\circ} 25'$  of East longitudes) of Idukki district, Kerala. It is one of the biodiversity rich region

of Western Ghats possess many floristic elements with varied climatic conditions. The temperature is ranges between  $19^{\circ}\text{C}$ - $34^{\circ}\text{C}$ . The humidity is about 45-61% and wind from west at 10 K/h. This area gets rain from two monsoon seasons, the South-West monsoon and the North-East monsoon. The average rainfall is around 3600 mm per year. The South-West monsoon starts in June and ends in September. The North-East monsoon season is from October to November. Pre-monsoon rains during March to May are accompanied by thunder and lightning. The months like December, January and February are cooler, while March, April and May are warmer (Fig.1).



**Fig. 1** Satellite image of Urumbikkara Hills

### *Documentation:*

An extensive and intensive field work was undertaken in the Urumbikkara hills of Idukki district, Kerala during December 2013 – April 2014. The ornamental characterization of each chasmophytic species was analyzed based on their attractive features. During the

field visits, the plant specimens were collected at different reproductive stages to prepare herbarium specimens (Jain and Rao 1976; Rao and Sharma 1990) and authenticate their correct identity with help of available floras and Literature (Gamble 1915- 1936; Sasidharan, 2004; Binu Thomas, 2008). The

voucher specimens were deposited in the Herbaria of Department of Botany, Deva Matha College, Kuravilangad, Kottayam for future reference.

## RESULTS AND DISCUSSION

Most of the present day flowers have come from the wild progenitors, a few of which still exist in natural habitat (Binu Thomas *et al.*, 2011). The present paper emphasizes the ornamental potential chasmophytic plants to be those which occur naturally in the rocky habitats of Urumbikkara hills of Idukki district, Kerala. The ornamental potentiality was analyzed by their attractive habit, plant parts and good looking flowers. The present investigation on ornamental chasmophytes reveals that, there are about 52 species of plants belonging to 46 genera and 29 families (Table-1). Among these 29 families represented Commelinaceae is the first dominant family with 7 species followed by Asteraceae with 5 species, while in Lamiaceae and Melastomaceae with 4 species each. The other families like Balsaminaceae, Gesneriaceae, Malvaceae, Oxalidaceae, Polygonaceae, Scrophulariaceae and Urticaceae having 2 species each (Fig. 2).

The ornamental potentiality is varied depends on species. It consist of good looking habit (7 Nos.), attractive plant parts (5 Nos.) and beautiful flowers (40 Nos.). The colour of the flowers may varied such as white (9 Nos.), yellow (7 Nos.), blue (7 Nos.), pink (6 Nos.), violet (4 Nos.), red (2 Nos.), purple (3 Nos.), bluish to purple (1 Nos.) and pink to purple (1 Nos.) (Fig. 3). The similar studies were conducted by Binu Thomas *et al.*, (2011). According to their survey on the rocky habitats of the Coimbatore district of Tamil Nadu reveals that, there are about 19 species of ornamental chasmophytes were suggested for rock gardening. According to them these ornamental chasmophytes also possess certain biological peculiarities and of

different interesting adaptations and flower colour which can attract many people have been identified for possible cultivation in rock garden for ornamental purposes and psychological beneficial.

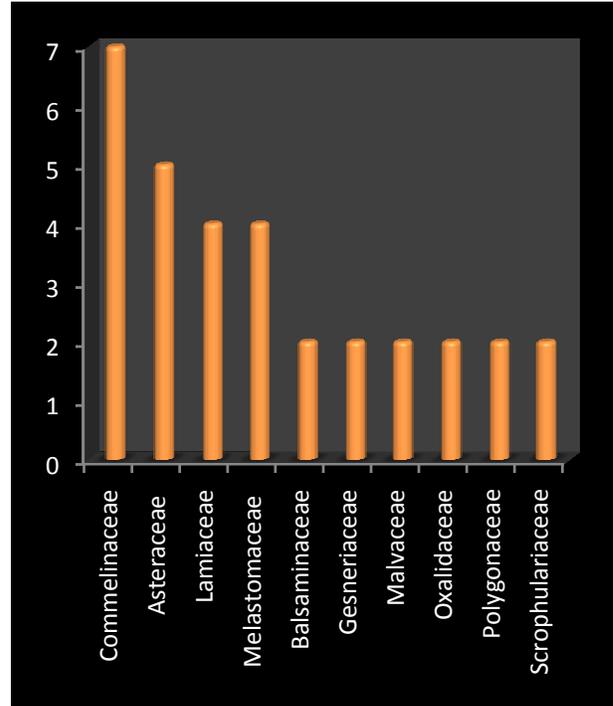


Fig. 2 Analysis of dominant families of ornamental chasmophytes

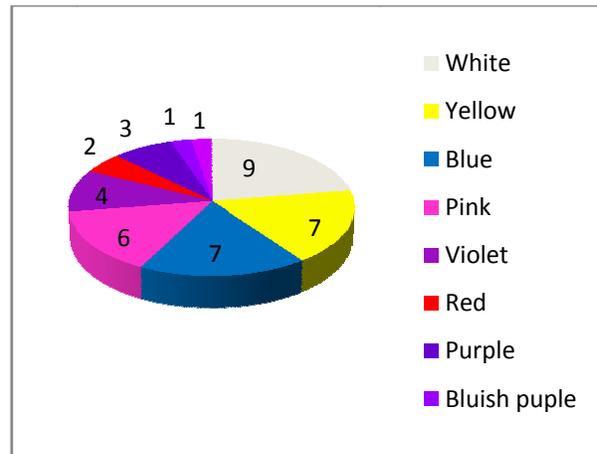


Fig. 3 Flower colour analysis of ornamental chasmophytes



Plate-1:- A). *Begonia malabarica* Lam., B).*Christisonia tubulosa* (Wight.) Benth. ex Hook. F., C).*Cyanotis arachnoidea* Clarke, D). *Didymocarpus tomentosa* Wight., E). *Impatiens scapiflora* Heyne ex Roxb., F). *Impatiens viscosa* Bedd.

Table-1: List of chasmophytic ornamental plants from the Urumbikkara hills of Idukki district, Kerala

Sl.No	Botanical Name	Family	Ornamental Potentiality
1.	<i>Anisomeles indica</i> (L.) O. Ktze.	Lamiaceae	An attractive scented violet flower
2.	<i>Asparagus racemosus</i> Willd.	Asparagaceae	An attractive pine needle shaped leaves
3.	<i>Begonia malabarica</i> Lam. (Pl-1A)	Begoniaceae	Beautiful whitish flower with reddish stem
4.	<i>Biophytum sensitivum</i> (L.) DC.	Oxalidaceae	Small beautiful habit with pinnate leaves
5.	<i>Bulbophyllum distans</i> Lindl.	Orchidaceae	An attractive yellow flower with pseudo bulbs

6.	<i>Catharanthus roseus</i> (L.) G. Don	Apocynaceae	An attractive salvar- shaped pink corolla
7.	<i>Christisonia tubulosa</i> (Wight.) Benth ex Hook.f. (PI-1B)	Orobanchaceae	A good looking yellow coloured flower
8.	<i>Cleome viscosa</i> L.	Cleomaceae	A conspicuous yellow flower
9.	<i>Clidemia hirta</i> (L.)Don.	Melastomaceae	Lovely white flower
10.	<i>Commelina benghalensis</i> L.	Commelinaceae	Beautiful creeping herb with lovely blue flowers
11.	<i>Commelina ensifolia</i> R. Br.	Commelinaceae	An attractive blue coloured flowers
12.	<i>Cyanotis arachnoidea</i> Clarke (PI-1C)	Commelinaceae	Lovely decumbent habit
13.	<i>Cyanotis fasciculata</i> (Heyne ex Roth) Schult.	Commelinaceae	Pretty spreading habit with purple flowers
14.	<i>Cyperus difformis</i> L.	Cyperaceae	Fascinating tufted herb
15.	<i>Desmodium triflorum</i> (L.) DC.	Fabaceae	An attractive prostrate spreading herb with purple flowers
16.	<i>Didymocarpus tomentosa</i> Wight (PI-1D)	Gesneriaceae	Fascinating habit with good looking bluish to purplish flowers
17.	<i>Drymaria cordata</i> Edgew.	Caryophyllaceae	An attractive diffuse herb
18.	<i>Elephantopus scaber</i> L.	Asteraceae	Lovely violet coloured flowers
19.	<i>Emilia sonchifolia</i> (L.) DC.	Asteraceae	An attractive violet corolla
20.	<i>Eriocaulon heterolepis</i> Steud.	Eriocaulaceae	Beautiful globose head with white flowers
21.	<i>Hyptis suaveolens</i> (L.)Poit.	Lamiaceae	Alluring blue coloured flowers
22.	<i>Impatiens scapiflora</i> Heyne ex Roxb. (PI-1E)	Balsaminaceae	An attractive pink coloured flowers with orbicular leaves
23.	<i>Impatiens viscosa</i> Bedd. (PI-1F)	Balsaminaceae	Very attractive pink coloured flowers
24.	<i>Kalanchoe tubiflora</i> Harvey.	Crassulaceae	Good looking habit with an attractive reddish flowers
25.	<i>Lantana camara</i> L.	Verbenaceae	An attractive flowers
26.	<i>Leucas aspera</i> (Willd.) Spreng.	Lamiaceae	Beautiful 2-lipped white corolla and habit
27.	<i>Leucas ciliata</i> Benth.	Lamiaceae	Charming membranous leaves and white flowers
28.	<i>Lindernia ciliata</i> (Colsm.) Pennell	Scrophulariaceae	An attractive habit with pink flowers
29.	<i>Medinilla beddomei</i> Clarke (PI-2A)	Melastomaceae	Good looking leaf and white coloured flowers
30.	<i>Melastoma malabathricum</i> L.	Melastomaceae	An attractive habit with charming violet flowers
31.	<i>Mollugo pentaphylla</i> L.	Molluginaceae	Beautiful spatula shaped leaf with white flowers
32.	<i>Murdannia dimorpha</i> (Dalz.) Brueck.	Commelinaceae	Lovely blue flowers
33.	<i>Murdannia fadeniana</i> Nampy&Joby(PI-2B)	Commelinaceae	An attractive succulent leaves with purple flowers
34.	<i>Murdannia pauciflora</i> (wight) Brueck.	Commelinaceae	Beautiful yellow flowers
35.	<i>Ophiorrhiza mungos</i> L.	Rubiaceae	An attractive white flowers
36.	<i>Oxalis corniculata</i> L. (PI-2C)	Oxalidaceae	Small beautiful prostrate habit with 3-foliolate leaves
37.	<i>Peperomia pellucida</i> (L.) Kunth.	Piperaceae	Beautiful succulent habit
38.	<i>Persicaria barbata</i> (L.) Hara	Polygonaceae	Good looking gregarious herb
39.	<i>Persicaria chinensis</i> (L.) Gross.	Polygonaceae	Beautiful climbing habit
40.	<i>Pilea microphylla</i> (L.) Liebm.	Utricaceae	Beautiful succulent herb
41.	<i>Pouzolziazeylanica</i> (L.) Bennett.	Utricaceae	Lovely nerved leaves
42.	<i>Rhynchosoglossum notonianum</i> (Wall.) Burt. (PI-2D)	Gesneriaceae	An attractive blue flowers
43.	<i>Sida rhombifolia</i> L.	Malvaceae	An attractive yellow flowers
44.	<i>Sonerila rheedei</i> Wight	Melastomaceae	Beautiful pink flowers with yellow stamens
45.	<i>Spilanthes caloa</i> DC.	Asteraceae	Enchanting yellow florets
46.	<i>Torenia bicolor</i> Dalz.	Scrophulariaceae	Beautiful dark blue petals

47.	<i>Tridax procumbens</i> L.	Asteraceae	Good looking yellow flowers
48.	<i>Thunbergia fragrans</i> Roxb. (PI-2E)	Acanthaceae	An attractive white flowered climber
49.	<i>Urena lobata</i> L.	Malvaceae	Beautiful pink flowers
50.	<i>Utricularia graminifolia</i> Vahl. Enum.	Lentibulariaceae	An attractive small blue flowers
51.	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Good looking habit with pink to purple capitula
52.	<i>Zingiber roseum</i> (Roxb.) Rosc. (PI-2F)	Zingiberaceae	Beautiful red flowers

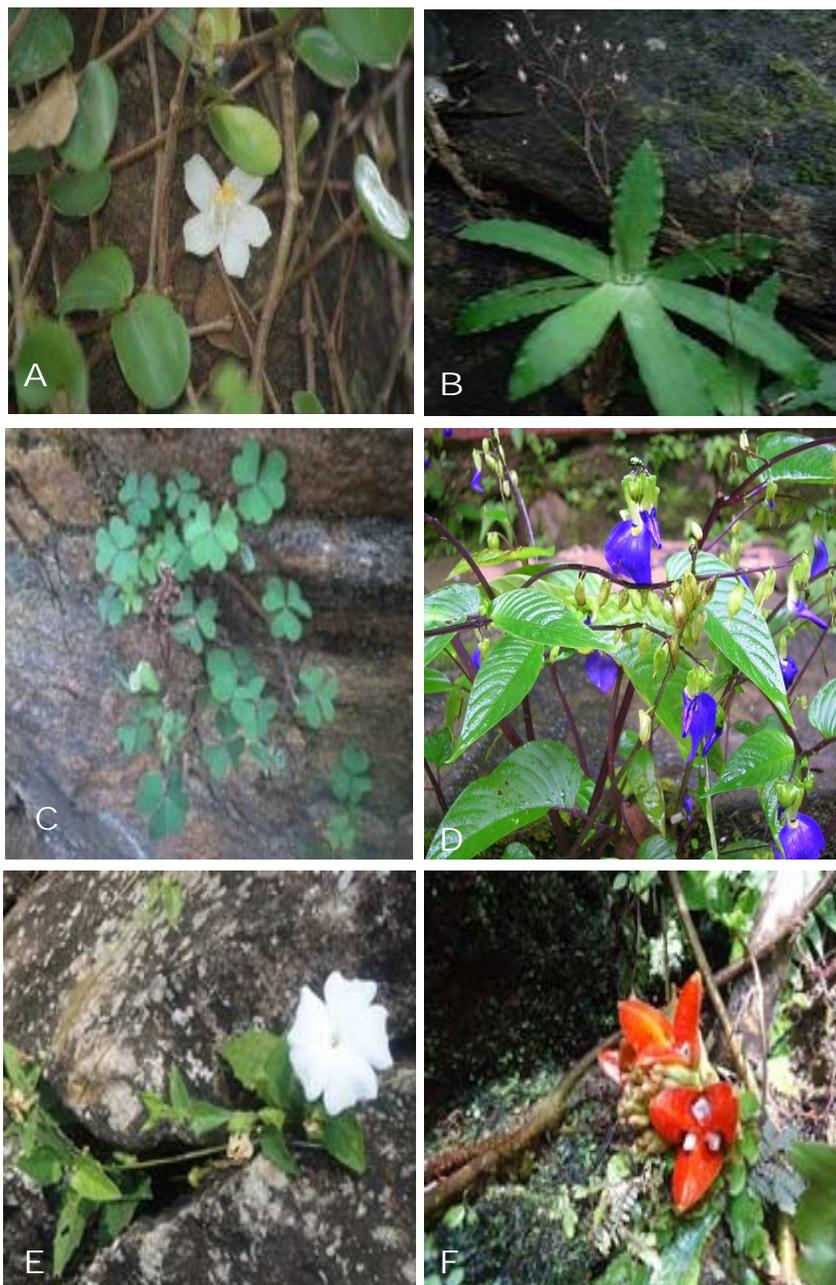


Plate-2:- A). *Medinilla beddomei* Clarke, B). *Murdannia fadeniana* Nampy&Joby, C). *Oxalis corniculata* L., D). *Rhynchosyris notonianum* (Wall.)Burtl., E). *Thunbergia fragrans* Roxb, F). *Zingiber roseum* (Roxb.)Rosc.

## CONCLUSION

The human beings can depend the plants for various needs in their daily life activities such as medicinal, edible, ornamental and other miscellaneous uses. The present paper on ornamental chasmophytes also highlights aesthetic value of such rocky plants for both domestic and rock garden practices. Nature has given a wealth of wild flower and ornamental plants, unfortunately many of them have been destroyed to such an extent that several have become extinct and survival of many are endangered by over exploitation, habitat destruction and other anthropogenic activities. So an urgent attention is needed for conserving the biodiversity for future generation.

## REFERENCES

- Alves, R. and Kolbek, J. 2000. Primary succession on quartzite cliffs in Minas Gerais, Brazil. *Biological Sciences* 55(1): 69-83.
- Arora, J.S. 1993. *Introductory Ornamental Horticulture*. Kalyani publishers, Ludhiana.
- Binu Thomas and Rajendran, A. 2013. Rockery potential chasmophytes in Velliangiri hills of South-Western Ghats of Tamil Nadu. *Indian Journal of Horticulture* 70(1): 90-95.
- Binu Thomas 2008. Inventorization, Documentation and Characterization of Chasmophytic Flora of Coimbatore District, Tamil Nadu, India. M.Phil. dissertation, Bharathir University, Coimbatore - 641 046, Tamil Nadu.
- Binu Thomas, Rajendran A, Aravindhan V and Maharajan M. 2011. Wild ornamental chasmophytic plants for rockery. *Journal of Modern Biology and Technology* 1(3): 20-21.
- Gamble, J.S. 1915 - 1936. *Flora of the presidency of madras* Vol: 1-3. Adlard & Son, Limited, London.
- Jain, S.K. and Rao, R.R. 1976. *A handbook of field and herbarium methods*. Today and Tomorrow Publishers, New Delhi.
- Middleton, L. 2011. Sources of new ornamental plants: the importance of heritage plants and plant relicts from historic places and old gardens. *Sajah* 26 (2): 55-67.
- Rao, R.R. and Sharma, B.D. 1990. *A manual of Herbarium collections*, Botanical Survey of India, Calcutta.
- Sasidharan, N. 2004. *Biodiversity documentation for Kerala, Part-6: Flowering plants*. Kerala Forest Research Institute (KFRI), Peechi. Kerala.
- Singh, S.P. 1985. *Short season flowering plants*. B.R. Publishing Corporation, New Delhi.
- Swarup, V. 1998. *Ornamental horticulture*. Macmillan Indian Limited, New Delhi.

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