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FLORISTIC STUDY OF CONVOLVULACEAE FAMILY IN UMARGAM TALUKA, VALSAD DISTRICT, GUJARAT, INDIA

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ABSTRACT

Floristic studies help us to assess the plant wealth and its potentiality of any given area. Floristic studies also help us to understand the basic aspects of biology such as speciation, isolation, endemism and evolution. Flora of any area is not fixed up. It changes from time to time. Various ecological factors, mostly biotic, change the floristic components. The total number of species may be changed; dominant species may be replaced with other species; the floristic composition, i.e., family: genus: species ratio may be changed. Umargam taluka is selected for the floristic studies. Whole area is rich in plant diversity. Floristic study of Convolvulaceae family in Umargam taluka, Valsad district, Gujarat, India, was carried out. A total of 23species under 8 genera belonging to the family Convolvulaceae were collected and identified. For each species botanical name, local name, habitat, flowering time, distribution and Taxonomic description have been mentioned.

Keywords: *Floristic study, speciation, isolation, endemism, Convolvulaceae, Umargam taluka, Species, Genera*

INTRODUCTION

Convolvulaceae, commonly known as morning glory or bindweed family(Morhardt and Morhardt, 2020), which incudes 1,650 species of 60 genera belong to this family in the world, the plant of convolvulaceae contains a whole beautiful structure involving flower, leaves, stems etc (Yadav *et. al*,. 2018).

Distribution of this family is widespread across the globe. Mostly, they are found in herbaceous vines nature, but, sometimes it also trees, shrubs, and herbs in their habitat. It has also included the sweet potato and a few other food tubers, even though the ornamental vines are used in horticulture; for instance, several species of bindweeds are agricultural pests (Khokhar *et. al.*, 2012).The seeds of two species, *Turbinacorymbosa* and *Ipomoea violacea,* are sources of hallucinogenic drugs of historical interest and contemporary concern(Yadav *et. al*,. 2018)..

Present study will make an importance contribution towards understanding of some Convolvulaceae family plant species of Umargam taluka in Valsad district, Gujarat, India. In this study 23 species of Convolvulaceae family found from 10 genera. Out of 23 species, majority of species were climber, about 17 species and followed by 4 Herb, 1 Twiner, and 1 Shrubs species reported from study area.

General Characters of Convolvulaceae Family:

A. Vegetative Characters

Habit: Herbs (Convolvulus, Evolvulus.), Shrubs and climbing (Ipomoea, Argyeria), the plant may be xerophytic, hydrophytic (Ipomoea aquatica) or parasitic (Cuscuta).

Root: Taproot, branched, fleshy (Ipomoea batatus; H.sakarkand).Cuscuta without ordinary roots but adventitious haustoria are present.

Stem: Herbaceous, twiner (Ipomoea and Cuscuta), Crect or prostrate, cylindrical, solid or fistular, branched tuberous rhozomatous (Convolvulus).

Leaves: Mostly simpale, rarely compond, Petiolate, Alternate, exstipulate, Unicostate or multicostate reticulate venation entire or palmately divided (Quamoclitpinnata).

B. Floral Characters

Inflorescencence: Solitary axillary (Convolvulus, Evolvulus) or Cymes.
Flowers: Bracteate, bracteolate, pedicellate, complete hermaphrodite, actinomorus and hypogynous.
Calyx: Sepals 5, polysepalous rarely gamosepalous, persistent, imbricate, inferior.
Corolla: Petals 5, gamopetalous, campanulate or infundibuliform, imbricate or valvate (induplicate valvate in Ipomoea), inferior.
Androecium: Stamens 5, polyandrous, epipetalous, length of the Filaments variable in the same flower; dorsifixed or basifixed. Inserted deep in the corolla tube, dithecous and introrse.
Gynoecium: Bicarpellary, syncarpous, Superior, stipulated on a disc, sometimes tetralocular, axile placentation, two or rarely on one ovule per loculus; filiform, stigma capitate or bifid (Convolvulus, Ipomoea palmata)
Fruit: Capsule (Convolvulus, Evolvulus, Cuscuta) or berry.
Seed: Endospermic.
Pollination: Entomophilous.

Study area

Valsad district in south Gujarat is situated in heavy rainfall zone so it is having good biodiversity. Umbregaon is a taluka situated in valsad district of Gujarat state, India. It is located 47 KM towards South from District headquarters Valsad. 387 KM from State capital Gandhinagar towards North.it is located at 20.17°N 72.76°E. Its North boundary is shared with Daman (UT) and Parditaluka, Eastern boundary with Silvassa and Dadra and Nagar Haveli, Southern boundary with Maharashtra state and Eastern boundary with Arabian Sea. Umargam City, Vapi City, Daman and Diu City, Silvassa City are the nearby Cities to Umargam. Its geographical area is 362.00 Sq. Kms. and forest area is about 43.17 Sq. Kms.Umargamtaluka having Damanganga, Varoli and Kalu (Kalai) river. And some lakes found like, bhilad lake, Borigam lake, Valvada lake, Nagam lake, etc. and also found coastal region in umbragam and nargol in some area.Umargamtaluka in 9 Town, 43 Villages.Umabargam is a census town and municipality in the Indian state of Gujarat. The town is known for its beaches, its tourist attractions, and its film industry. A number of television shows and movies have been shot in Umargam, including*Rmayan,Mahabharat, Ravan, Shani, Razin sultan*, *Suryaputrakarna, Shree Krishna*Mahakali-Anth Hi AarambhHai and *Porus.* In 2017, the town became home to India's first Nanotechnology manufacturing plant.

Fig. 1 Location of Umargam taluka in india

Fig. 2 Location of Umargam taluka in Gujarat

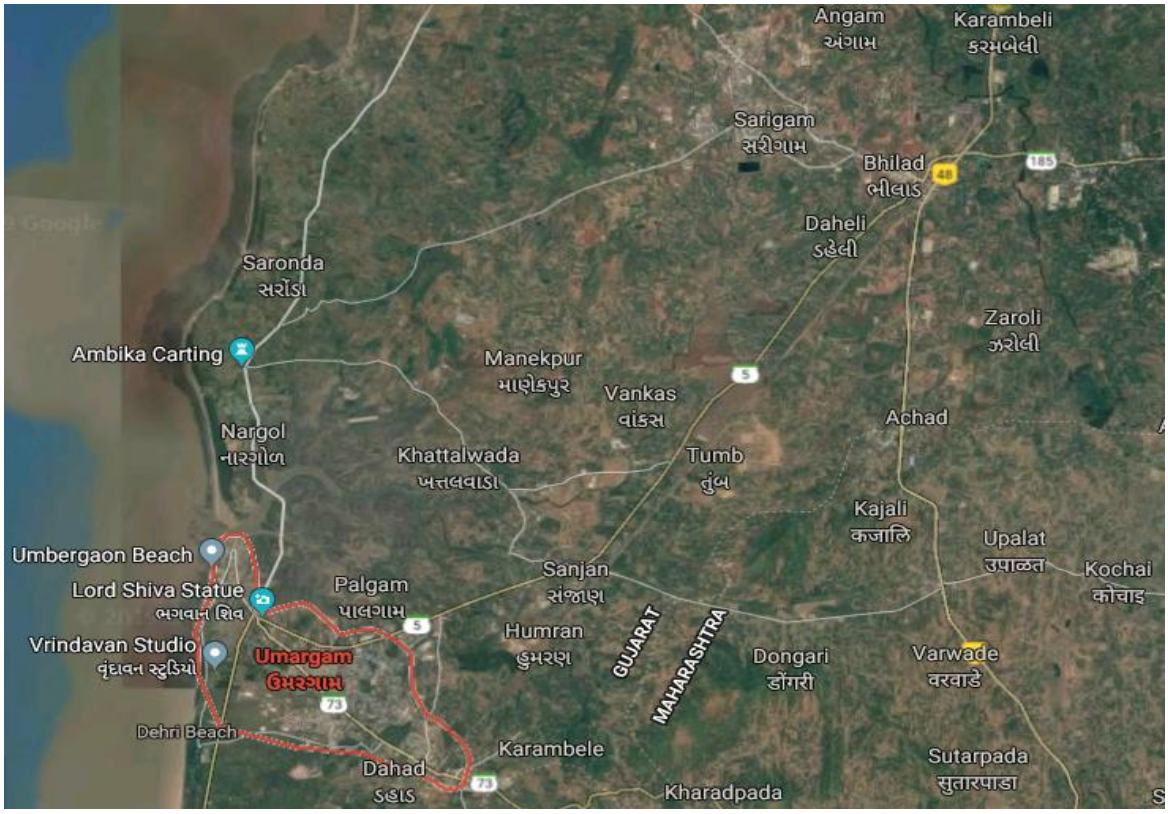


Fig. 3 Map of Villages in Umargam Taluka

Climate

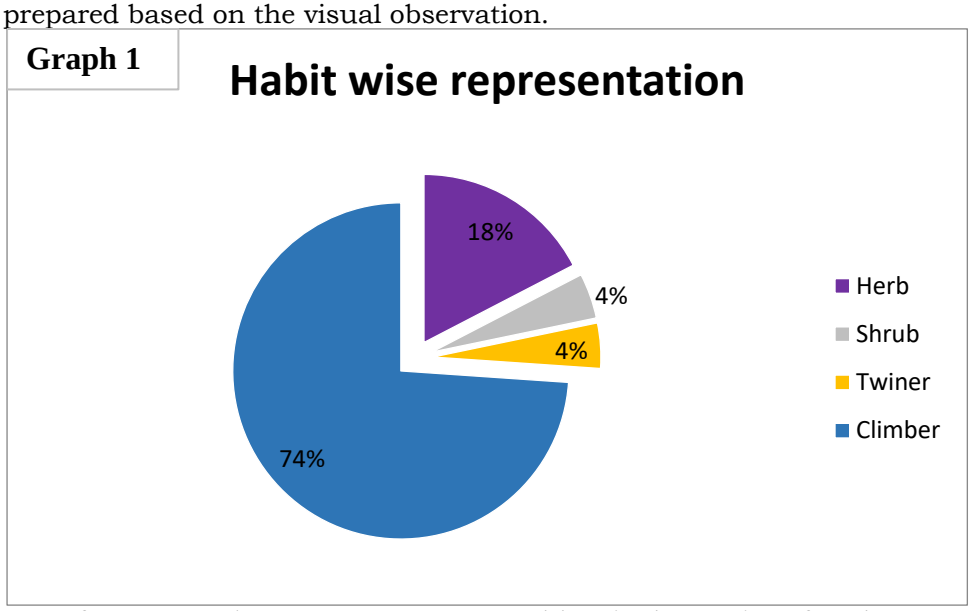
Umargam is located in mountainous area with a uniform climate. The temperature ranges of Umargamtaluka between 12o C minimum in winter to 42.8o C maximum in summer. Average rainfall ranges between 1000to3000mm. Period of rainfall is from June to September and sometimes it extends up to October also total rainy days in a year are 40to45days.(Resources, Ref..) there is Diversity in land region as this area consists of fertile land, forest area and some part Is undulating with hills and hillocks. The forest is of moist deciduous type forest.

Materials and Method

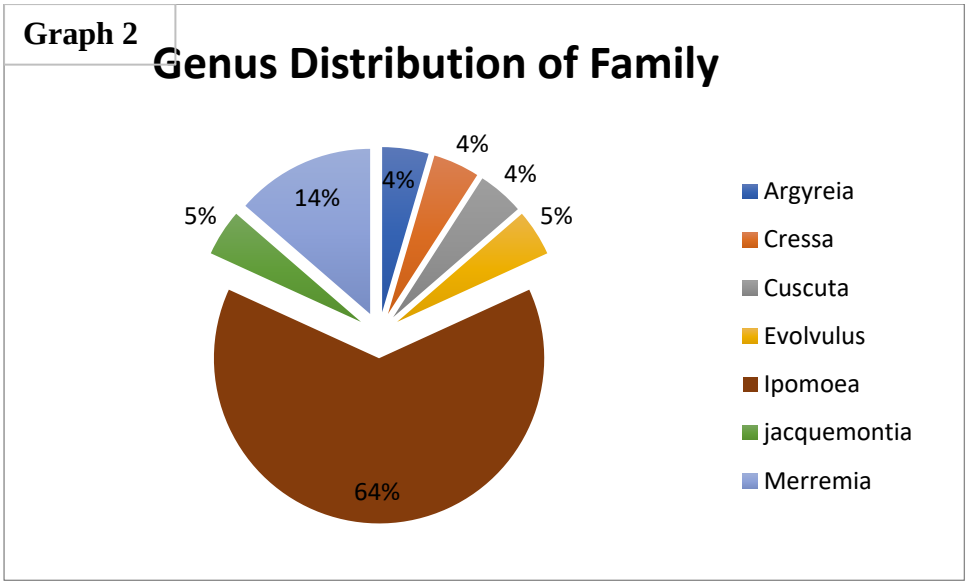
Floristic investigation on the family Convolvulaceae growing throughout the Umargam district was carried out from December 2018 to February 2019. A total of 23species of 8 genera of the family Convolvulaceae were collected and identified.
During field work the photos of each plant were taken along with habit, stem, leaves, flower, fruit and other floral parts. Plants were also collected along with fruits. The specimens were pressed in a presser with newspaper between the adjacent specimens. The blotting papers and newspaper were changed from time to time depending upon the weather and situation of plant. Dried specimens were processed with ethyl alcohol and mercuric chloride saturated solution, mounting of specimens was made on standard herbarium techniques.Field notes were taken to have information on habit, habitat, characteristics of Convolvulaceae and photo number for identification. The plants were identified mainly with the help of standard florasFlora of Gujarat state (Shah, 1978), flora of the presidency of Bombay (cook, 1958), Checklist of flora of Gujarat (Raghavan et al., 1981) Flora of Saurashtra (Bole & Pathak, 1988), Forest Flora of Gujarat (Patel, 1971) and literatures, and by comparing with the herbarium specimens available at the Herbarium, Department of Botany, Gujarat university. The herbarium sheets were labeled, numbered andAll the herbarium specimens (Herbariumnumber 1 to 23), and fruits of some species of Convolvulaceae family are deposited in the herbarium of Gujarat university.

RESULT AND DISCUSSION

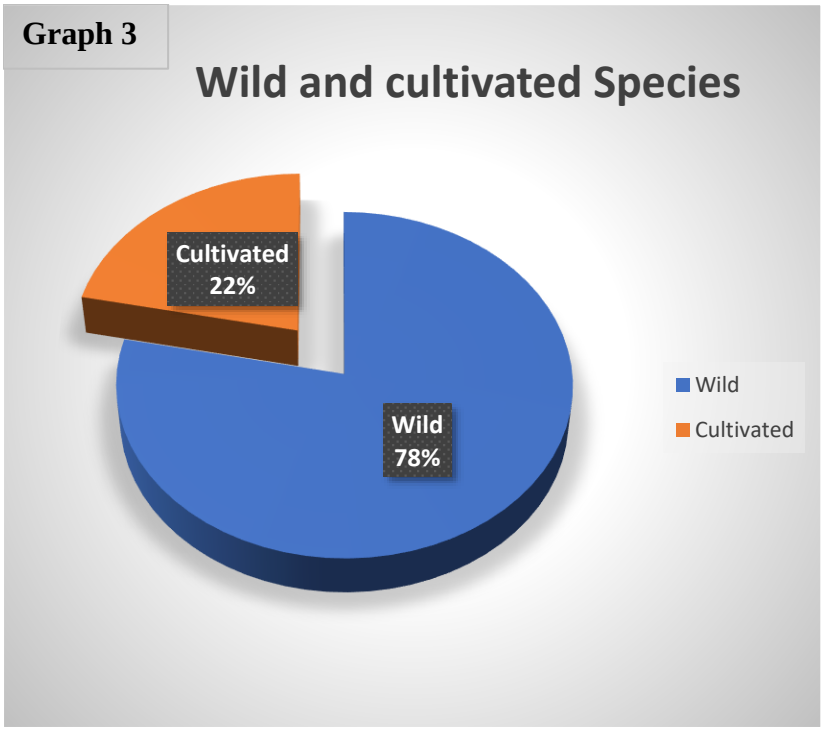
The present study, a total of 23 species belonging 8 genera of Convolvulaceae family have been recorded Umargam taluka. Graph 1 showed habit wise analysis of plants i.e., tree, shrubs, climber, herbs, etc. Moreover, list of plant species of Convolvulaceae family was prepared based on the visual observation.



Out of 8 genera, 5 genera are represented by single species of each genus. Ipomea is largest Genus among the Convolvulaceae family while Merremia and Cuscuta which are poorly represented. majority of species were climber, about 17 species and followed by 4 Herb, 1 Twiner, and 1 Shrubs species reported from study area. This study show that Climber species of plants are dominating in the Umargam taluka and its surrounding areas.



Above graph illustrate that, majority of Convolvulaceae family species belongs to *Ipomoea* genus, about 64% and Followed by Merremia, as propos 14%, 14 species and 3 species respectively. On the other hands, remaining genus such as Jacquemontia, Cuscuta, Cressa and Evolvulus Genus, represented poorly as propos 4% in remaining single species present in all Genus.



In the present study's graph shown that, the Major proportions of species of these family are wild, accounted about 78 percentage, on the other side less proportions of species cultivated for various purposes such as, *Ipomoea* mostly used as a ornamental and for food. In spite of, *Ipomoea batatas* used as a food for human being. Plenty of cultivated varies of these genus had hybridize also for more yield as well commercialize purpose.

Table-1: List of plant species of Convolvulaceae family in Umrgam taluka

List of plant species of Convolvulaceae family in Umbergamtaluka			
No.	**Botanical name**	**Local name**	**Habit**
1	*Argyreia nervosa* (Burm. f.) Bojer	Elephantcreeper, Samudrasok.	Climber
2	*Cressa cretica* L.	Rudanti, Khariyu	Herb

3	*Cuscuta reflexa* Roxb.	Amarvel.	Climber
4	*Evolvulus glomeratus* Nees & C. Mart.		Herb
5	*Ipomoea aquatic* Forssk.	Nali Ni Bhaji	Climber
6	*Ipomoea batatas* (L.) Lam.	Shakkariya	Climber
7	*Ipomoea biloba* Forssk.	Maryadavel	Climber
8	*Ipomoea cairica* (L.) Sweet.		Climber
9	*Ipomoea carnea* (L.) Sweet	Gogliya, Naffatiya	Shrub
10	*Ipomoea hederifolia* L.		Climber
11	*Ipomoea indica* (Bumrm. f.)		Climber
12	*Ipomoea marginata (Desr.) Verdc.*		Climber
13	Ipomoea muricata *(L.) Jacq.*		Climber
14	*Ipomoea nil* (Roth).	Kaladana, Nilpuspi	Climber
15	*Ipomoea obescura* (L.) Ker Gawl.	VadFudardi	Climber
16	*Ipomoea quamoclit* L.	Ganesh Vel	Climber
17	*Ipomoea sinensis* (Desr). Choisy in Mem		Climber
18	*Ipomoea trilobal* L.		Climber
19	*Jacquemontia pentantha* (Jacq.) G. Don		Twiner
20	*Merremiae marginata* (N. L. Burman)	Undardi, Undarkani, Undari	Herb
21	*Merremia hederacea* (Burm. f.) Hallier f.		Herb
22	*Merremia vitifolia* (Burm. f.) Hallier f.		Climber
23	*Operculina turpethum* (L.)	Nasotar	Climber

Photo-plate:

			
Argyreia nervosa (Burm.F.) Bojer(flower)	*Cressa cretica* L.	*Cuscuta reflexa*Roxb.	*Evolvulus glomeratus* Nees & C. Mart.
			
Ipomoea aquatic Forssk.	*Ipomoea batatas* (L.)Lam.	*Ipomoea cairica* (L.)Sweet.	*Ipomoea biloba* Forssk..

			
Ipomoea carnea	*Ipomoea hederifolia* L.	*Ipomoea indica (Burm.) Merr.*	*Ipomoea marginata (Desr.) Verdc.*

			
Ipomoea sinensis(Desr.) choisy in mem	*Ipomoea nil* (L.) Roth.	*Ipomoea obescura*(L.) Ker Gawl	*Ipomoea trilobaL.*
			
Ipomoea quamoclit L.	*Ipomoea marginata*	*Merremia vitifolia* (Burm. F.) Hallier f.	*Merremia hederacea.* (Burm. f.)
			

Merremiae marginata. (N. L. Burman) H. Hallier	*Operculina turpethum* (L.) Silva Manso (flower).	*Operculin turpethum*(L.) Silva Manso (fruit).	*Jacqemontia pentantha*(Jacq.) G. Don

CONCLUSION

To conclude that, the present study has an significant contribution towards understanding of Convolvulaceae family plant species of Umargam taluka in valsad distict, Gujarat, India. Disribution of these species if Convolvulaceae family equally within entire area of Umargam taluka. Present study has a total of 8 genera belonging to 23 species of flowering plants have been recorded from Umargam. Ipomea is largest Genus among the Convolvulaceae family while Merremia and Cuscuta which are poorly represented. majority of species were climber, about 17 species and followed by 4 Herb, 1 Twiner, and 1 Shrubs species reported from study area. This study show that Climber species of plants are dominating in the Umargam taluka and its surrounding areas. Majority species of these family are wild but some of species cultivated for various purposes such as, *Ipomoea* mostly used as a ornamental and for food like, *Ipomoea batatas.* Plenty of cultivated varieties of this genus had hybridized also for more yield as well commercialize purpose.

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