

Present Status of Series Apocarpae in Haroti Region, South-East Rajasthan

O. P. Sharma

Professor, Department of Botany, Government College Bundi, Rajasthan-323001, India

Email: [opsharmabundi68\[at\]gmail.com](mailto:opsharmabundi68[at]gmail.com)

Abstract: *Apocarpae is the sixth series of monocotyledons in Bentham and Hooker's classification. Status of flora of Apocarpae series in Haroti region are considered in this communication. Present study is based on field visit observation of study area.*

Keywords: Apocarpae; Aquatic; Floristic diversity; Monocotyledons; Wetland

1. Introduction

The Haroti region has dense floristic diversity suggests various plant species. Haroti plateau is situated at the edge of the Malwa plateau at 23°45' to 25°53' N latitude and 75°9' to 77°26' E longitude in the south eastern corner of Rajasthan.

The characteristics of series Apocarpae according to Bentham and Hooker's are: (i) Perianth 1-2 seriate or absent. (ii) Carpels superior, solitary or, if more, apocarpous. (iii) Endosperm absent. Bentham and Hooker's starts monocots with the series Microspermae and end with series Glumaceae. While, Engler and Prantl starts monocots with the order Pandanales and end with Microspermae. Bentham and Hooker's placed series Apocarpae at sixth number in classification of Monocotyledons. This study deals with present status of series Apocarpae in Haroti Region of Rajasthan.

2. Material and Methods

Important contributions in floristic and ecological studies in various part of India are those of (Dadhich, 1974; Dubey, 2004; Jain and Vairale, 2007; Sujana and Sivaperuman, 2008; Sikarwar, 2014; Jadhav, 2016 and Sharma, 2022). The present observation creates the knowledge and awareness about the angiosperm of particular habitat of area and their conservation.

In the present study different wetland and moist places of the Haroti region have been visited. To record the flora of series Apocarpae, area were visited during October 2020 to February 2023, mostly in rainy and winter season.

3. Results and Discussion

The series Apocarpae are placed in monocots. Monocotyledons are herbs, more rarely shrubby stem without pith, vascular bundles scattered but no cambium, and secondary growth generally absent. Leaves are large and parallel veined. Perianth are generally trimerous, free or united. Embryo with one cotyledon, hypogeal, radicle forming tap root which is short lived and is replaced by adventitious roots.

Bentham and Hooker divided series Apocarpae into three families, namely:

- 1) Triurideae
- 2) Alismaceae
- 3) Najadaceae

The member of Apocarpae series of Haroti region are observed and communicated in present paper. The general characters of these families, along with systematic enumeration of species with their morphological characters, flowering and fruiting time, locality and important ecological characters have been described.

1) Family-Triurideae

Genera and species are not found in area.

2) Family-Alismaceae / Alismataceae (Sagittaria family)

General characters of family Alismaceae are -

- A. Aquatic or marshy plants, annual or perennial herbs.
- B. Roots adventitious stem rhizome or runner.
- C. Leaves radical or whorled.
- D. Flowers bisexual or unisexual, trimerous, perianth biseriate.
- E. Gynoecium apocarpous.
- F. Fruits achenes or follicles.

Plant species enumerated:

1. *Sagittaria guayanensis* Kunth.
2. *Sagittaria sagittifolia* L

3) Family-Najadaceae (Naiad plant family)

General characters of family Najadaceae are-

- A. Annual or perennial aquatic herbs, submerged, slender, rooted.
- B. Narrow leaves, margin usually toothed with sheathing bases.
- C. Flowers solitary, axillary, small, unisexual.
- D. In male one stamen, female with one carpel and without perianth.
- E. Fruit nuts.

Najadaceae is a monotypic hydrophytic family, with submerged, simple and opposite to whorled leaves.

Plant species enumerated:

1. *Najas graminea* Del.
2. *Najas marina* L.
3. *Najas minor* All.

Systematic enumeration of species of Series Apocarpae of area-

1. *Najas graminea* Del.

Family: Najadaceae

A submerged aquatic herb, monoecious, branched, leaves linear, narrow, spines on margins. Flowers unisexual, spathe absent, usually solitary, fruits ellipsoid.

This grass like weeds is common in ponds, lakes and water bodies.

Fls. and Frs: November to March.

2. *Najas marina* L.

Family: Najadaceae

An aquatic perennial herb, submerged, dioecious, stout, branching dichotomous, large spine tipped prickles, leaves whorled, bright green turning brownish later, toothed margins leaves. Flowers unisexual, solitary in the leaf axils, fruit achenes ellipsoid, turning reddish brown on maturity.

Common in river, lakes and other water reservoirs.

Fls. and Frs: September to December.

3. *Najas minor* All.

Family: Najadaceae

An annual submerged herb, monoecious, slender, stems branched, leaves in bunched, recurved, spines along the margins. Flowers unisexual, in spathe, fruits ellipsoid with tiny pits.

Common in shallow and stagnant water bodies.

Fls. and Frs: September to December

4. *Sagittaria guayanensis* Kunth.

Family: Alismataceae

A usually aquatic herb, roots adventitious, laticiferous, stout rhizome, leaves radical, sagittate, long petiolate, sheathing leaf base, thin, floating. Flowers racemes on scape, unisexual, pedicellate, trimerous, white, perianth 6, in two whorls, fruit achenes obovoid.

Annual or perennial marshy places or floating aquatic common weeds.

Fls. and Frs: June to September.

Hydrophytic characters:

i) Rhizome thick and stoloniferous. ii) Leaves dimorphic and heterophyllous. iii) Leaves straight and lamina hastate or sagittate. iv) Petiole long, trigonous and spongy. v) A common aquatic herb.

5. *Sagittaria sagittifolia* L.

Family: Alismataceae

An aquatic herb, roots adventitious, specigerous, monoecious, stout, rhizome stoloniferous, leaves simple, radical, hastate or sagittate, long petiole, sheathing leaf base, veins converging apically. Inflorescence panicle on scape, flower pedicellate, unisexual, trimerous, tepals 6 in two whorls; stamens many in male flower, carpels many in female flower, apocarpous, marginal placentation. Fruits achenes flat and oblique, ovate.

Found in marshy places, paddy fields and water bodies.

Fls. and Frs: December to February.

The peculiar characters of *Sagittaria sagittifolia* L. is arrow head, aquatic herb with sagittate leaves and unisexual flowers.

4. Conclusion

Bentham and Hooker divided monocotyledons into seven series and thirty-four order. Bentham and Hooker included Triurideae, Alismaceae and Najadaceae families in series Apocarpae. Systematic position of Apocarpae is controversial in various classification. Its families are placed in different order or sub class by various authors. General account and status of Apocarpae series of Haroti region (south-east Rajasthan) have been undertaken in this study.

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