CLASSIFICATION OF BRYOPHYTES

PAPER-I
Group-B

TDC Part-I (Hons.)
(2019-22)

Introduction:

Bryophytes represent a group of plants which includes liverworts, hornworts and mosses. Roughly 18,000 species of bryophytes are identified. This well defined group of plants was given the rank of Division Bryophyta first of all by Schimper (1879), though the term Bryophyta was coined by Braun (1864). Various botanists and bryologists have proposed different classifications of Bryophyta on the basis of their observations and interpretations. Molecular evidences have led to a major revision of the group's taxonomy.

Major classification schemes:

1. Eichler (1883) divided Bryophyta into two groups: Hepaticae and Musci.
2. Engler (1892) recognized Hepaticae and Musci as two classes and divided each class into three orders as below:
   - Class-I: Hepaticae
     - Orders: 1. Marchantiales
       2. Jungermanniales
       3. Anthocerotales
   - Class-II: Musci
     - Orders: 1. Sphagnales
       2. Andreaeales
       3. Bryales
3. Howe (1899) raised the Order Anthocerotales to the rank of a Class and divided Bryophyta into three classes.
   - Class-I: Hepaticae
   - Class-II: Anthocerotes
   - Class-III: Musci

   This system of classification was followed by Smith (1938, 1955), Takhtajan (1953), Wardlaw (1955) and Schuster (1958) but the Class Anthocerotes was recasted as Anthocerotae.
4. As per recommendations of International Code of Botanical Nomenclature (ICBN) in 1956, the suffix 'opsida' was to be used for the classes and this kind of usage had already been proposed by

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Rothmaler (1951), who renamed the three classes of bryophytes as Hepaticopsida, Anthoceropsida and Bryopsida.

5. Proskauer (1957) proposed that the class Anthocerotopsida should be named as Anthocerotopsida.

6. Parihar (1965) followed Proskauer's suggestion and classified Bryophyta into three classes: Hepaticopsida, Anthocerotopsida and Bryopsida.

7. Campbell (1936) divided the Class - Hepaticopsida into four Orders:
(i) Marchantiales (e.g., Riccia, Marchantia)
(ii) Sphaerocarpales (e.g., Sphaerocarpos)
(iii) Jungermanniales (e.g., Pellia)
(iv) Calobryales (e.g., Calobryum)

8. Schuster (1953, 1958) divided the Class - Hepaticae into two Sub-classes: (i) Jungermanniae
Orders - Calobryales, Takakiales, Jungermanniales & Metzgeriales.
Sub-class (ii) Marchantiae
Orders - Sphaerocarpales, Monocleales & Marchantiales

9. Anthocerotopsida has a single Order - Anthocerotales divided Muller (1940), Broskauer and Reimers (1954) this Order into two families.
Fam. 1 - Anthocerotaceae (e.g., Anthoceros)
Fam. 2 - Notothylaceae (e.g., Notothylas)

10. Bower (1935), Wettstein (1933-1935) and Campbell (1940) divided the Class - Bryopsida into three Orders: Sphagnales, Andreaeales and Bryales.

11. Smith (1938, 1955) divided the Class - Bryopsida into three Sub-classes: Sphagnobrya, Andreaebrya and Eubrya

12. Reimers (1954) divided the Class - Bryopsida into 5 Sub-classes: Sphagnidae, Andreaeidae, Bryidae, Buxbaumidae and Polytrichidae.

13. Parihar (1955) divided the Class - Bryopsida into three Sub-classes: Sphagnidae, Andreaeidae and Bryidae.

14. Most recent workers generally classify bryophytes into three coordinate Phyla: Marchantiophyta (Liverworts), Bryophyta

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(3)

(Mosses) and Anthocerotophyta (Hornworts)

Phylogenetic analyses of Mishler et al. (1994) and Qiu et al. (2006) suggest that these phyla do not form a monophyletic group, but rather represent a grade of embryophyte evolution. In most recent analyses hornworts are resolved as the first divergence of land plants (embryophytes).

For all practical purposes, we prefer to recognize three classes in Bryophyta: Hepaticopsida, Anthocerotopsida and Bryopsida.

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