Flowering Plant Identification and Aesthetic Characteristics

- **B.Sc. BBZ**
- **Semester 3**

Taxonomic Resources and Nomenclature: Part 2

Keys

- Taxonomic keys are the tools for the identification of unfamiliar plants.
- These keys are based on characters which are stable and reliable.
- According to Davis and Heywood (1963), the main object of the key is identification of plant specimen and save the time to separate it from the different group by using one or two easily observable characters.

Key

- *Key is another taxonomical aid used for **identification** of plants and animals based on the **similarities and dissimilarities.***
- *The keys are based on the **contrasting characters** generally in a pair called **couplet**.*
- *It represents the **choice** made between two opposite options. This results in acceptance of only one and rejection of the other.*
- *Each statement in the key is called a **lead**.*
- *By making the **correct choice** at each level one can arrive at the name of the **correct plant.***

1. a) Flowers cream-coloured; fruiting calyx enclosing the berry .....*Physalis*

b) Flowers white or violet; fruiting calyx not enclosing the berry *2*

2. a) Corolla rotate; fruit a berry .....*Solanum*

b) Corolla funnel-form or salver-form; fruit a capsule: *3*

3. a) Radical leaves present; flowers in racemes; fruits without prickles ...*Nicotiana*

b) Radical leaves absent; flowers solitary; fruits with prickles .....*Datura*

- *By making the **correct choice** at each level one can arrive at the name of the **correct plant.***

1. a) Flowers cream-coloured; fruiting calyx enclosing the berry	.....*Physalis*
b) Flowers white or violet; fruiting calyx not enclosing the berry	2
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b) Radical leaves absent; flowers solitary; fruits with prickles	.....*Datura*

- *Separate taxonomic keys are required for each taxonomic category such as **family**, **genus** and **species** for identification purposes. Keys are generally **analytical** in nature.*

Types of Keys

- *A key can be classified as **Single-access key** or **Multi-access key** (Polyclave). The single access key is further divided into two principle kinds: **Bracketed key** and **Indented key.***

Single access keys –

- *A single-access key (also called **dichotomous key**) is an identification key where the **sequence** and **structure of identification steps** is **fixed by the author of the key**.*
- *At each point in the decision process, **multiple alternatives** are offered, each leading to a **result** or a **further choice.***

***Single access keys* –**

- *A single-access key (also called **dichotomous key**) is an identification key where the **sequence** and **structure of identification steps** is **fixed by the author of the key**.*
- *At each point in the decision process, **multiple alternatives** are offered, each leading to a **result** or a **further choice.***
- *There are **two types** of dichotomous keys. They differ in the method by which the couplets are organized and how the user is directed to successive choices.*

  1. *Indented Keys (also called yoked)*
  2. *Bracketed Keys*

Example of Indented Key

1a. Flowers in shades of red

2a. Flowers blood-red, leaves oblong-ovate, leathery and thick matty texture ..... *R. sikkimense*

2b. Flowers crimson-red, leaves broad, oval to elliptic oblong, shiny green above ..... *R. fulgens*

1b. Flowers in shades of rose-pink

3a. Calyx 3-5 mm long, leaf under surface covered with tufts of brown hair ..... *R. wallichii*

3b. Calyx obscure, 1-2 mm long, leaf under surface covered with continuous indumentum

4a. Corolla in shades of deep rose-pink flushed externally with red-purple, young leaves aeruginose, leaf margins inrolled ..... *R. aeruginosum*

4b. Corolla pale lavender blue, mauve or rose-purple, rarely white, young leaves not aeruginose, leaf margins not inrolled ..... *R. campanula*

Intended keys

- *Intends the choices (**leads**) **of the couplet** an **equal distance from the left margin.***
- *The two choices of the couplet are usually labelled 1 and 1' or la and lb. It is not necessary that the choices are numbered, but it helps.*

Example of Bracketed Key

1a.	Flowers in shades of red	go to 2
1b.	Flowers in shades of rose-pink	go to 3
2a.	Flowers blood-red, leaves oblong-ovate, leathery and thick matty texture	*R. sikkimense*
2b.	Flowers crimson red, leaves broad, oval to elliptic oblong, shiny green above	*R. fulgens*
3a.	Calyx 3-5 mm long, leaf under surface covered with tufts of brown hair	*R. wallichii*
3b.	Calyx obscure, 1-2 mm long, leaf under surface covered with continuous indumentum	go to 4
4a.	Corolla in shades of deep rose-pink flushed externally with red-purple, young leaves aeruginose, leaf margins inrolled	*R. aeruginosum*
4b.	Corolla pale lavender blue, mauve or rose-purple, rarely white, young leaves not aeruginose, leaf margins not inrolled	*R. campanulatum*

Bracketed Keys:

- *Provides both choices **side-by-side.***
- *The choices of the couplet must be numbered (or lettered).*
- *It is very helpful if the previous couplet is given.*
- *This key has exactly the same choices as the first example. The choices are separated, but it is easy to see the relationships.*
- *While this key might be more **difficult to construct**, it gives **more information to the user.***

Example of a Numerical Key with Couplets
(युगल के साथ एक संख्यात्मक कुंजी का उदाहरण)

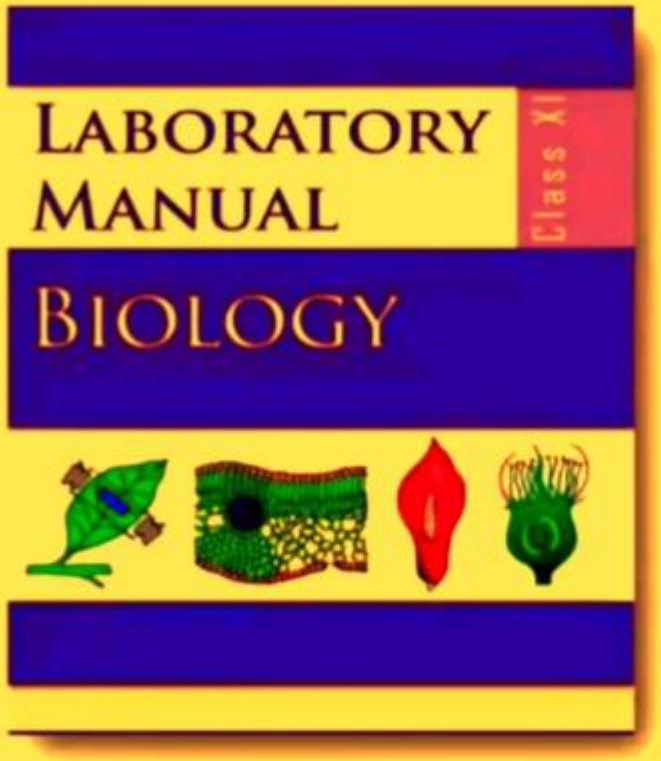
1) Seeds round – Soybeans (बीज गोल – सोयाबीन) 1) Seeds oblong go to – 2 (बीज आयताकार हो जाता है – 2) 2) Seeds white – northern beans (सफेद बीज – उत्तरी फलियाँ) 2) Seeds black – black beans (काला बीज – काली फलियाँ)
Example of an Alphabetical Key with Same Couplets **(समान युगल वाली वर्णमाला कुंजी का उदाहरण)**
A. Seeds oblong go to – B (A. बीज आयताकार हो जाते हैं – B) B. Seeds white – northern beans (B. सफेद बीज – उत्तरीफलियाँ) B. Seeds black – black beans (B. काला बीज – काली फलिया) A. Seeds round – Soybeans (A. गोल बीज – सोयाबीन)
(**Courtesy:** Constructing a Dichotomous Key, Theodore M. Sperry Herbarium, Department of Biology, Pittsburg State University, Pittsburg, Kansas 66762) (**सौजन्य** – एक द्विबीजपत्री कुंजी का निर्माण, थिओडोर एम. स्पेरी हर्बेरियम, जीव विज्ञान विभाग, पिट्सबर्ग स्टेट यूनिवर्सिटी, पिट्सबर्ग, कैनसस 66762)

Multi-access keys

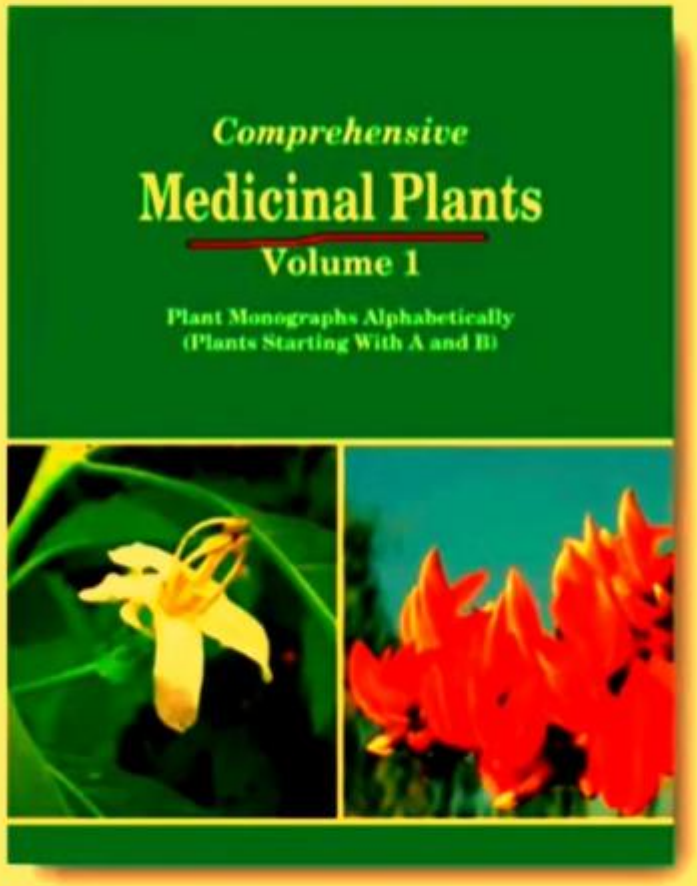
- *The advantage of these keys is that they **allow the user to enter the key at any point.***
- *This key is based on the identification of organisms by a **process of elimination**. In a written **poly clave key** there is a series of characters and character states. Each state is followed by a number or code for the species that possess that feature.*
- The user needs to **select any character** and then copy down the **list of species that possess the feature.**
- Then the user has to **select another character** and **eliminate any species** that is **not common** to both lists. This **process has to be continued until the specimen is identified.**

Flora: It contains the actual account habitat and distribution of plants of a given area.

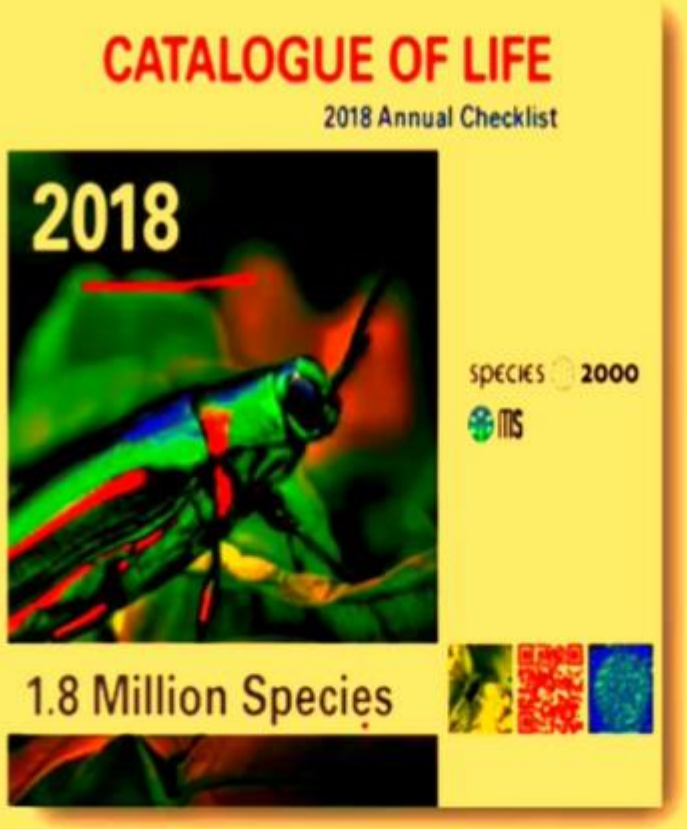
Manuals: These are useful in providing information for identification of species found in an area.



Monographs : It contains information on any taxon



Catalogues: It is simply listing of all species organized in some way (usually alphabetical)



FLORA

- A flora describes plants and where they live.
- Flora typically include a dicotomous key for identification purposes and often time will include range maps as well.
- The word “flora”comes from the latin name of flora the goddess of plants flowers and fertility in roman mythology.
- The flora[the taxonomic composition of a community] was first made by jules thurmann.

- All these Data are well-aggregated in a systematic manner in the different forms Taxonomic Literature
- Literature are useful for easy and proper identification of plants.
- Several biographic references , indexes and guides are available with these literature to help taxonomists to locate relevant literature concerning a taxonomic group or geographical area.

Classification of Flora

- Plants are grouped into floras based on region [floristic regions], period, special environment, or climate.
- Region can be distinct habitats. like mountain Vs.flatland.
- Floras can mean plant life of a historic era as in fossil flora.
- Lastly, floras may be subdivided by special environments.

1) Native flora
2) Agricultural and horticultural flora
3) Weed flora

❖ FLORA : Inventory of plants of a defined geographical region

- Flora may be fairly exhaustive or simply synoptic.
- Flora may be categorized as :

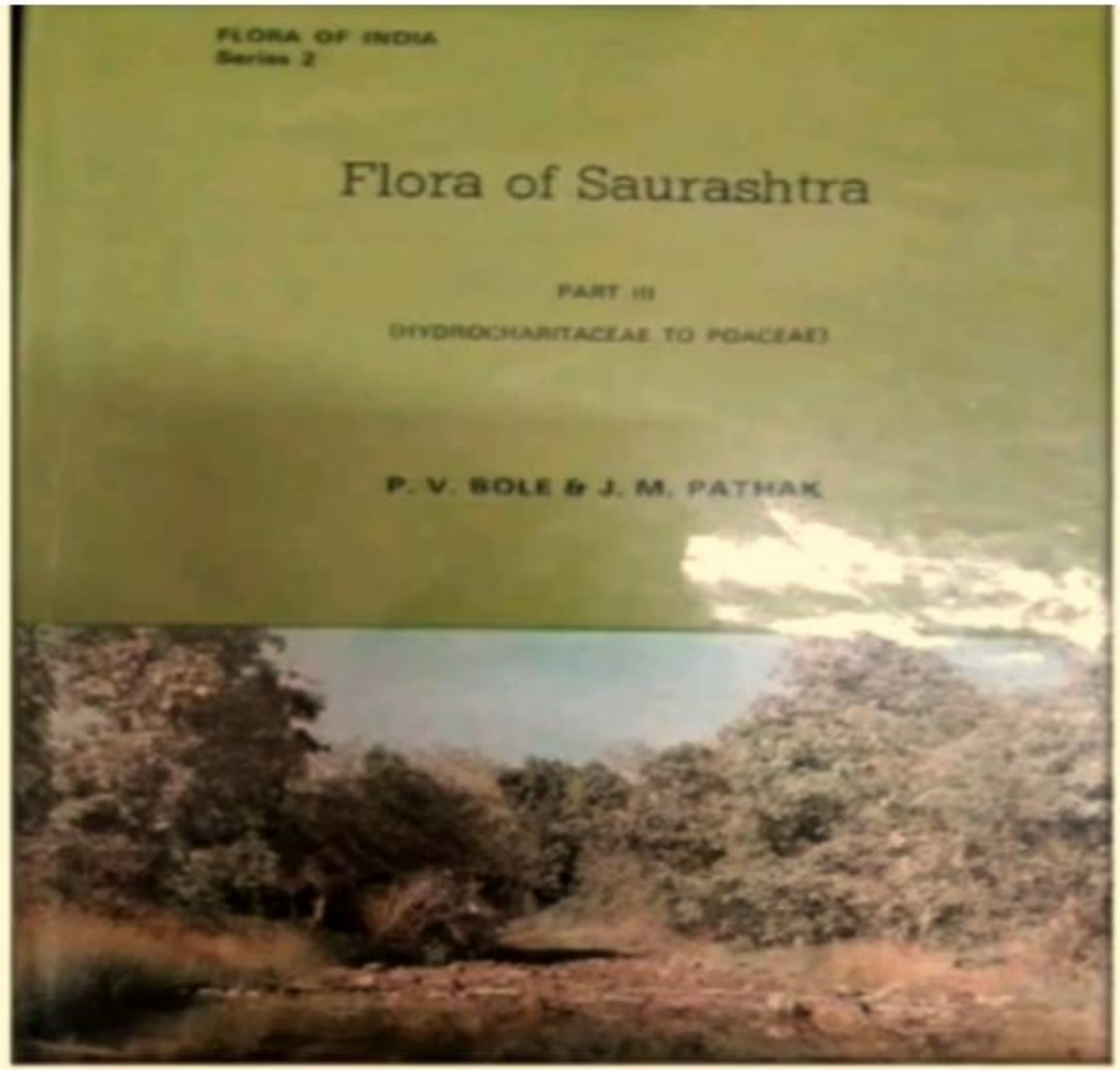
1) **Local flora**
2) **Regional flora**
3) **Continantal flora**
4) **Special flora**
5) **E.flora**

1] Local Flora : Flora within a Country

District/State/Biodiversity rich region/Protected area/A Valley/A small mountain range.

Flora of Assam
5 Vols.

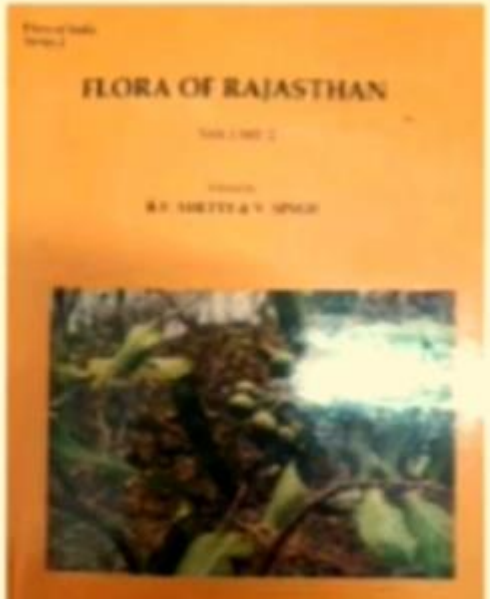
Kanjilal, U.N.



LOCALE FLORA

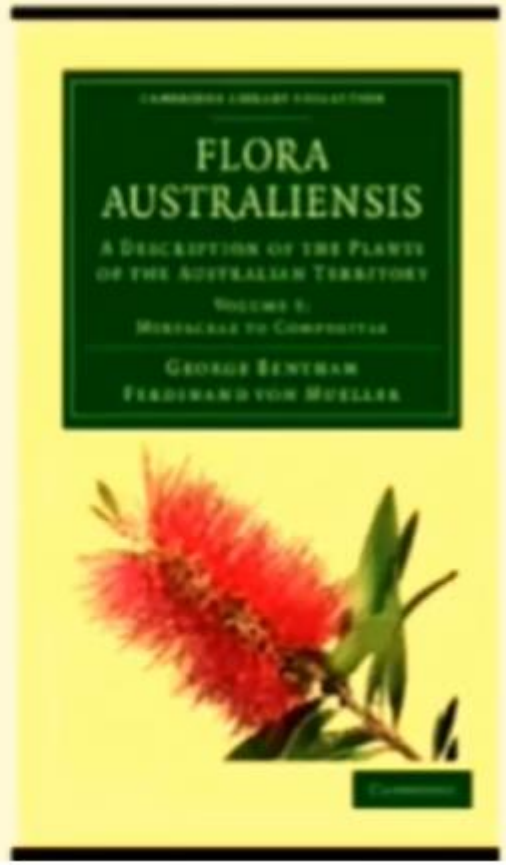
2) Regional Flora: Flora of a larger geographic area, usually a large country or botanical garden.

A Flora covering a country is more appropriately known as National Flora

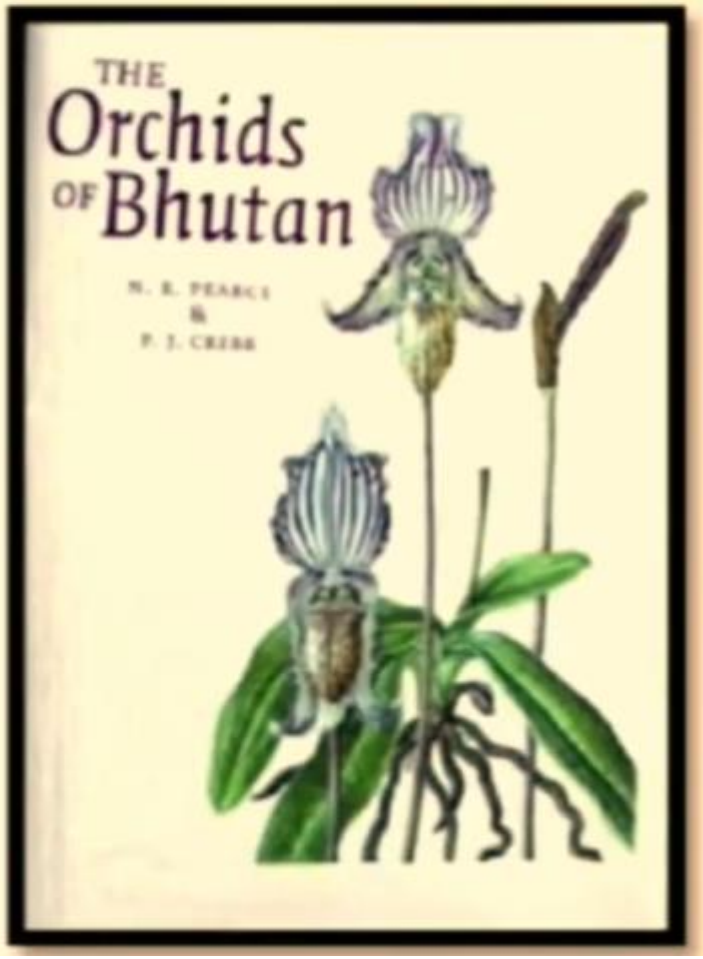


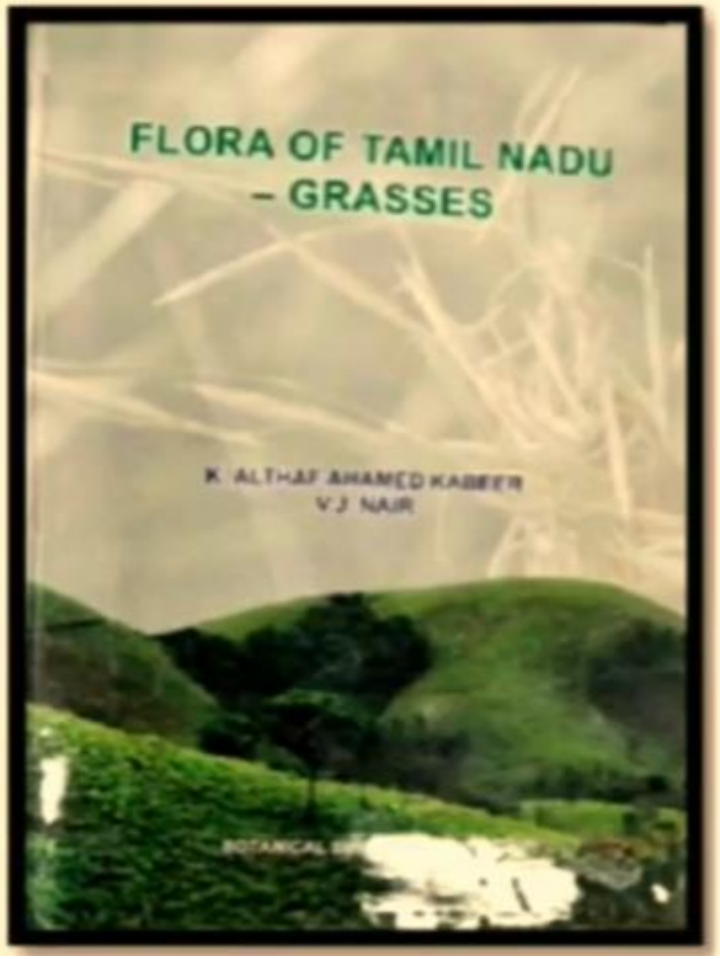
Published in 7 volumes
(1875–1897)
c. 15,900 species of
flowering plants

3) Continental Flora : Flora that cover entire continent



4) Special Flora: Flora of a particular taxon or plant group





5) eFlora : Flora that available online

Provide opportunities for users to work dynamically on Floristic treatment & to browse & search these treatments

eFloraofIndia

Database of Plants of Indian Subcontinent

Developed by members of the eFloraofIndia Google group

Taxon List

Taxon ID	Taxon Name	Taxon Type	Parent Name	Taxon Volume	Edit Taxon	Add Taxon Description	Add Taxon Key	Add Illustration Path	Add Reference
1	LORANTHACEAE	Family	--	23	Edit	Add	Add	Add	Add
2	VISCACEAE	Family	--	23	Edit	Add	Add	Add	Add
3	SANTALACEAE	Family	--	23	Edit	Add	Add	Add	Add
4	BALANOPHORACEAE	Family	--	23	Edit	Add	Add	Add	Add
5	BUXACEAE	Family	--	23	Edit	Add	Add	Add	Add
6	EUPHORBIACEAE	Family	--	23	Edit	Add	Add	Add	Add
7	DAPHNIPHYLLACEAE	Family	--	23	Edit	Add	Add	Add	Add
8	Dendrophthoe	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
9	Elytranthe	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
10	Helicanthes	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
11	Helixanthera	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
12	Macrosolen	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
13	Scurrula	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
14	Taxillus	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
15	Tolypanthus	Genus	LORANTHACEAE	23	Edit	Add	Add	Add	Add
16	Dendrophthoe falcata	Species	Dendrophthoe	23	Edit	Add	Add	Add	Add
21	Balanophora	Genus	BALANOPHORACEAE	23	Edit	Add	Add	Add	Add
22	Rhopalocnemis	Genus	BALANOPHORACEAE	23	Edit	Add	Add	Add	Add
23	Balanophora involucrata	Species	Balanophora	23	Edit	Add	Add	Add	
24	Balanophora abbreviata	Species	Balanophora	23	Edit	Add	Add	Add	
25	Balanophora dioica	Species	Balanophora	23	Edit	Add	Add	Add	

Introduction :-

Augustin Pyramus De Candolle

- ICBN stands for '**International Code of Botanical Nomenclature**'.
- Latest name is International Code of Nomenclature (ICN).
- Based on binomial nomenclature by Linnaeus in 1751.
- Detailed account of botanical nomenclature De Candolle in 1813
- It is the very basis for the first International congress in 1867, Paris
- This law of botanical nomenclature is called Paris code, 1867 or De Candolle's rule.

What is ICBN?

Set of rules and recommendations dealing with the formal botanical names that are given to plants.

Each taxonomic group ("taxon", plural "taxa") of plants has **only one correct name that is accepted worldwide.**

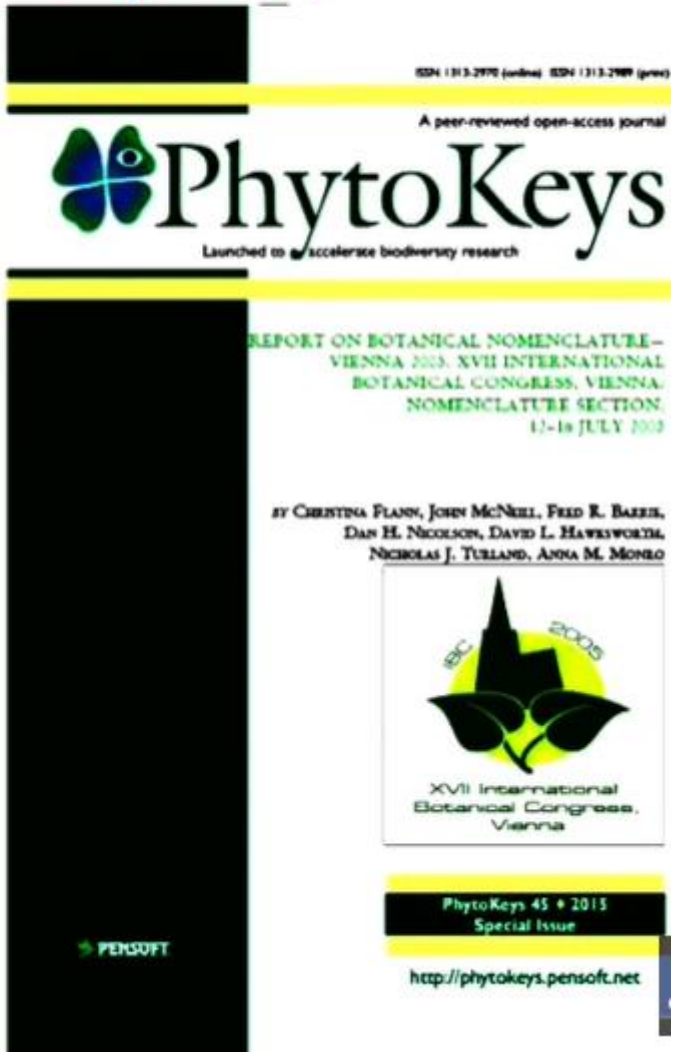
The value of a scientific name is that it is an identifier.

ICBN is divided into three parts :

- Principles
- Rules
- Recommendations

International Botanical Congress (IBC)

- The ICBN can only be changed by an International Botanical Congress (IBC).
- While the International Association for Plant Taxonomy providing the supporting infrastructure.
- The present edition is the Shenzhen Code (2018), based on the decisions of the XIX IBC at Shenzhen 2017.



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Principles of Botnical Nomenclature :-

- There are six principles that guide decisions concerning the ICBN:

Principle I : Straightforward

Principle II : Typification

Principle III : Priority of Publication

Principle IV : Uniqueness

Principle V : Latin Diagnosis

Principle VI : Retroactivity

Principle I :- Straight Forward

- **Botanical nomenclature is independent of zoological and bacteriological nomenclature.**
- The Code applies equally to names of taxonomic groups treated as plants whether or not these groups were originally so treated.
- If an organism is considered to be a plant, then it must be named in accordance with the *Botanical Code.*
- The rules of the ICBN do not apply to animals and bacteria. Therefore botanists do not have to be concerned with the names or rules associated with animals and bacteria.

Principle II :- Typification

- **The naming of taxonomic groups is determined by means of nomenclatural types.**
- It is the determination of name of a group/taxon b means of single representative belonging to that group.
- That specific/chosen member is called a type and it is deposited in a well recognized herbarium.

Nomenclature Types :-

(i) Holotype:

Collected by first identifier.
Presented in first report/publication.

(ii) Iso-type:

Collected by firs identifier.
Not presented in first report/publication

(iii) Para-type:

Duplicate of holotype.
From another season.

(iv) Syntype:

If first describer doesn't design a holotype, or original holotype + isotype is missing.
A duplicate of holotype by an author/describer other than first one.

(vi) Neo-type:

Used for nomenclature as long as all of the material on which the name of the taxon was based is missing.

(vii) Topotype:

Specimen collected from the same locality from where the holotype was collected.

Principle III :- Priority of Publication

- **The earliest applicable, properly published name is the correct one.**
- Each taxonomic group can have only one correct name which is earliest published in accordance with the rules.
- Priority extends back to 1 May 1753 for most plants, the publication date for Linaeus' Species Plantarum.

Principle IV :- Uniqueness

- **Each taxonomic group with a particular circumscription, position, and rank can bear only one correct name.**
- If there is more than one effectively and validly published name for a taxon the oldest applicable name is the correct name.
- If the same name has been used for two different taxa, the taxon first named is the one correctly associated with the name.
- The later use of the name is illegitimate.

Principle V :- Latin Diagnosis

- **Scientific names of taxonomic groups are treated as Latin regardless of their derivation.**
- Scientific names are to treated as if they were Latin, regardless of their derivation.
- The ICBN provides instructions on the use of proper Latin grammar for taxonomic names.

Principle VI :- Retroactivity

- The rules of nomenclature are **retroactive**.
- This means that the rules apply to work done before the acceptance of these rules.

1.3.4. Rules of ICBN

1) **Rule 1:** This rule states the series of ranks and names in the hierarchical categories, and designates the ranks in descending order as Kingdom, Phylum, Class, Order, Family, Genus, and Species.
2) **Rule 2:** This rule states that the names must be established concerning the nomenclature type. It is classified in a single specimen or the plants on one herbarium sheet. The type specimen is of various types, including holotype, lectotype, neotype, syntype, isotype, and paratype.
3) **Rule 3:** This rule states that the publication date of the name is given priority. It also ensures that the name is authentic and is approved and valid by the principal rules of the international code of botanical nomenclature.
4) **Rule 4:** This rule states that during the publishing of the name, the taxa name should meet the code requirements, and should be published in a recognised journal (and not in a local magazine or newspaper). The taxa name should have a Latin description, and should be under the code's guidelines.
5) **Rule 5:** According to article no. 46, the author's name should be published with the name of the taxonomic group. If a single author is responsible for the naming, it falls under the single author citation. While, if more than one author is involved in the naming, it falls under double author citation.
6) **Rule 6:** There are some names that do not follow the ICBN rules, but they are used for identification based on the fact that they have been used for a long time.
7) **Rule 7:** This rule states that during naming, the priority for publishing the name will be given to the one who will publish earlier. Only one name can be accepted for a particular taxon.

1.3.4.1. Ranks

Taxon (plural. taxa) is a taxonomic group of any rank. Every individual organism is viewed as belonging to an indistinct number of taxa of successively lower rank, with species having the lowest rank among them.

Following are the main taxa ranks, listed in descending order:

1) Kingdom (regnum),
2) Division or phylum (divisio or phylum),
3) Class (classis),
4) Order (ordo),
5) Family (familia),
6) Genus (genus), and
7) Species (species).

The nothogenus and nothospecies are the two main ranks of hybrid taxa (nothotaxa). Similar ranks exist for genus and species. The hybrid character is indicated by the prefix '**notho**'.

Table 1.5: Taxonomic Ranks of Land Plants (सारणी 1.5– भूमि पौधों की वर्गिकीय श्रेणी)

S.No. (क्र.सं.)	Taxonomic Rank (वर्गिकी श्रृंखला)	Latin (लैटिन)	Abbreviation (संक्षिप्त रूप)	Ending (समापन)	Example (उदाहरण)
1)	Kingdom (जगत)	Regnum (रेग्नम)	Reg.	Various (-bionta)	Plantae (पादप)
2)	Sub-kingdom (उप–जगत)	Sub-regnum (उप–रेग्नम)	Subreg.	Various	
3)	Phylum-Division (संघ–प्रभाग)	Phylum (संघ)	Diviso	-phyta	Magnoliophyta (मैग्नोलियोफाइटा)
4)	Sub-phylum -Sub-division (उप–संघ–उप–प्रभाग)	Sub-phylum – sub-divisio (उप–संघ – उप–प्रभाग)	Subdivision - subdiviso	-phytina	Magnoliophytina (मैग्नोलियोफाइटिना)
5)	Class (वर्ग)	Classis (क्लासिस)	cl.	-opsida	Asteropsida (एस्टरोप्सिडा)
6)	Sub-class (उप–वर्ग)	Subclassis (उपक्लासिस)	Subcl.	-idae	Asteridae (एस्टरडी)
7)	Order (गण)	Ordo (ओर्डो)	Ord.	-ales	Asterales (एस्टरेल्स)
8)	Sub-order (उप–गण)	Sub ordo (सब ऑर्डो)	Subord.	-ineae	Asterineae (एस्टरनी)
9)	Family (कुल)	Familia (फ़ैमिलिया)	Fam.	-aceae	Asteraceae (एस्टेरेसी)
10)	Sub-family (उप–कुल)	Subfamilia (सबफ़ैमिलिया)	Subfam.	-oideae	Asteroideae (एस्टेरोइडी)
11)	Tribe (जाति)	Tribus (ट्राइबस)	Tr.	-eae	Heliantheae (हेलिएन्थी)
12)	Sub-tribe (उप–जाति)	Subtribus (सबट्राइबस)	Subtr.	-ineae	Helianthineae (हेलिएन्थिनी)
13)	Genus (वंश)	Genus (वंश)	Gen.	(various) (विभिन्न)	Helianthus (हेलिएन्थस)

14)	Subgenus (उपवंश)	Subgenus (उपवंश)	Subg.	(various) (विभिन्न)	Helianthus (हेलिएन्थस) subg. Helianthus (हेलिएन्थस)
15)	Section (खंड)	Section (खंड)	Sect.	(various) (विभिन्न)	Helianthus sect. Helianthus (हेलिएन्थस)
16)	Sub-section (उप–खंड)	Subsection (उपखंड)	Subsect.	(various) (विभिन्न)	
17)	Series (श्रृंखला)	Series (श्रृंखला)	Ser.	(various) (विभिन्न)	Helianthus ser. (हेलिएन्थस) Helianthus (हेलि *एन्थस*)
18)	Sub-series (उप–श्रृंखला)	Subseries (उप–श्रृंखला)	Subser.	(various) (विभिन्न)	
19)	Species (प्रजाति)	Species (प्रजाति)	Sp.	(various) (विभिन्न)	*Helianthus (हेलिएन्थस) Annuus (एनस)*
20)	Sub-species (उप– प्रजाति)	Subspecies (उप–प्रजाति)	Subsp.	(various) (विभिन्न)	*Helianthus (हेलिएन्थस) annuus* subsp. annuus
21)	Variety (किस्में)	Varietas (वैराइटी)	Var.	(various) (विभिन्न)	*Helianthus (हेलिएन्थस) annuus* var. annuus
22)	Sub-variety (उप–किस्में)	Subvarietas (सबवैराइटी)	Subvar.	(various) (विभिन्न)	
23)	From (फॉर्म)	Forma (फॉर्मा)	f.	(various) (विभिन्न)	*Helianthus (हेलिएन्थस) annuus* f. annuus.
24)	Sub-form (उप–फॉर्म)	Sub forma (सबफॉर्मा)	Subf.	(various) (विभिन्न)	

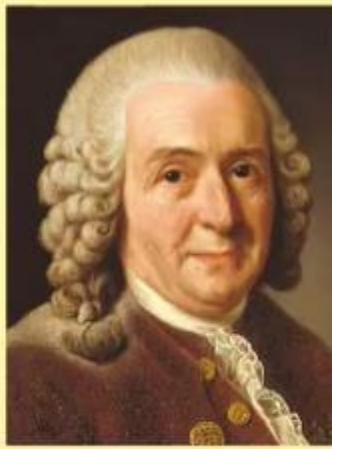
History of Bionomial Nomenclature :-

- Before1750, scholars who desired to designate a particular species usually used to add a series of descriptive words. Names became lengthy and difficult to remember.
- This can be illustrated with the example of **Caryophyllum.** The name given was **Caryophyllum saxitalis folis gramineus umbellatis** corymbs meaning Caryophyllum growing on rocks having grass like leaves and umbellate corymb arrangement of flowers

- The resulting string of such latin words was a polynomial system of nomenclature.

History of Bionomial Nomenclature :-

- The polynomial system was found cumbersome .
- In search of a better alternative , Carolus Linneaus introduced binomials for each species. The concept of binomial nomenclature was proposed by **Casper Bauhin in his book *Pinax Tritici Botanici*.**
- The credit of establishing the binomial system of nomenclature goes to Swedish naturalist, **Carolus Linnaeus** and he employed this system in his book *Species Plantarum*, published in 1753.
- Binomial nomenclature is applicable at Species level of taxonomic hierarchy.



Definition of Bionomial Nomenclature :-

- It is a system of nomenclature in which species is given a scientific name having two parts, **generic name** and **specific epithet**. For example, the scientific name of Pea plant is

Pisum sativum

- The generic name which makes the first word binomial name indicates the **name of the genus** to which species belongs and the second word that is specific epithet is **species specific**.

Common name	Botanical name
Maize	*Zea mays*
Sorghum	*Sorghum bicolour*
Wheat	*Triticum aestivum*
Rice	*Oryza sativa*
Berseem	*Trifolium alexandrinum*
Sugarcane	*Saccharum officinarum*
Cotton	*Gossypium hirsutum*
Pearl millet	*Pennisetum glaucum*
Oat	*Avena sativa*
Sesame	*Sesamum indicum*
Cauliflower	*Brassica oleracea*
Spinach	*Spinacia oleracea*
Tomato	*Solanum lycopersicum*

Rules for Binomial nomenclature

Rule No.1 :-

A species name must contain two parts, generic name and specific epithet.

Triticum aestivum

Rule No.2 :-

When scientific name is hand written, it should be underlined.

Felis catus

Homo sapiens

Rule No.3 :-

Scientific names can be printed in italics.

Felis catus / ***Felis catus***

Normal text *Italics*

Italics normally slant slightly towards right

Italics normally slant slightly towards right

Rule No.4 :-

- A scientific name should be written in Latin language irrespective of its origin.
- The selection has several advantages over modern languages:

i) Latin is a dead language

ii) Latin is specific and exact in meaning

iii) Grammatical sense of the word is commonly obvious (white translated as album-neuter, alba-feminine or albus- masculine);

iv) Latin language employs the Roman alphabet, which fits well in the text of most languages.

Latin diagnosis of some common words :-

China	Chinensis
Rose	Rosa
Hooker	Hookerii
India	Indica
Kashmir	Kashmiriana
Linneaus	Linnaea

Rule No.5 :-

The name of the author is written in full or in abbreviated form after the specific name (**author citation**).

For example;

***Homo sapiens* L. or Homo sapiens Linn.**

Where L or Linn. stands for Linneaus

Rule No.6 :-

The scientific name also includes date of publication which follows author name. For example, ***Homo sapien* L., 1758** was given to human species by Linnaeus in 1758. Likewise **Triticum aestivum L.,1753** was given by Linnaeus in the year 1753.

Rule No.7 :-

If specific epithet of a scientific name of a species consists of two or more words, they must be united or hyphened

For example

Capsella bursa-pastoris (Hyphened)

Hibiscus rosasinensis (United)

Rule No.8 :-

Plant name should not be a tautonym.

Tautonym is a scientific name in which generic name and specific epithet spell same.

For example

Mola Mola (It is a fish)

Catla catla (It is a fish)

Tautonyms are not allowed for plants but animal names can be tautonyms.

Malus malus is an illegitimate name of apple

Rule No.9 :-

The **type specimen** with which the name of the species is attached, is kept in a recognized herbarium/collection.

A type specimen is a representative of a group which is the source of the name for that group.

This representative is known as nomenclature type and methodology is known as **Typification.**

Rule No.10 :-

Each species can have only one correct name. If a species has more than one legitimate names, earliest legitimate name is correct one. This is known as **principle of priority**. Remember, only those names should be considered which were given after 1-5-1753. All names given prior to this date stand rejected.

For example

Several Binomials exist for **Maize species**

Zea mays L.,1753

Zea caragua Molina.,1782

Zea japonica Von Houtte.,1867

Zea indurata Sturtev., 1882

All rejected names of a species are known as **Synonym**

Rejection of Names

If a legitimate name or epithet is inappropriate or disagreeable, or another name is preferable or known better, or if its original meaning is lost, it should not be rejected. On the contrary, it should be rejected if it was nomenclatural redundant when published.

Following are the types of names that may be illegitimate and unusable:

1) **Synonyms:** These names are different and are used for the same taxonomic group or taxon.
2) **Tautonyms:** In these names, the specific epithet repeats the generic name with or without transcribed symbol.
3) **Typonyms:** A name is rejected if an older valid name is based on the same type.
4) **Metanyms:** A name is rejected if an older valid name is based on another member of the same group.
5) **Homonyms:** A name is rejected if preoccupied, i.e., identical names cannot be applied to two different taxa.
6) **Hyponyms:** A name is rejected if the natural group to which it applies is not certain.

THANK YOU