Type Specimens

Introduction

Every known plant or scientific community is known after a scientific name. For example: *Oryza sativa* L. or *Rhododendron arboreum* Smith. This scientific name based on some definite characteristics of that plant. These characteristics are describing on the basis of examination of a definite specimen of that plant available to the author who named the plant. That plant specimen is known as type specimen. Since the characteristics, which are used to recognize a particular plant by a distinct name is based on the type specimen, hence it serves as the authentic or official reference for a scientific name. All other plants, which have similar Characteristics belong to the same species on the basis of their similarity with type specimen, hence it exemplifies best the discovered species. The original descriptions are prepared on the basis of examination of type specimens; hence they form the basis of original description.

Since the characters which recognize a plant are best found or retained on the type specimen, hence this specimen serve as a scientific memory for the later research. Specimen may be a dried or flattened plant specimen-a herbarium specimen; or an illustration. If the author of a plant name provides or designates a figure in the original publication, the illustration or figure becomes the type. For example: in family Liliaceae which includes large water hyacinth which are difficult to flatten in a herbarium sheet because of their fleshy nature, in such case the author may provide a figure or illustration.

Categories of Type specimens

While doing floristic works the following different kinds type may be found depending upon the best available specimens for original description and authentic identification:

1. **Holotype:** The specimens which is examined and use to generate original description *by the author* of the plant name and designated in the *first publish literature* in the which the plant name was published first time.
2. **Isotype:** A duplicate specimen of the holotype collected at *the same time and place* as of the holotype.
3. **Syntype:** Any of the two or more specimens listed in the original description of a taxon when a holotype is not designated.
4. **Lectotype:** A specimen chosen by *a later researcher* to serve as the type when holotype is either lost or destroyed. It is chosen from among the *specimens available to original author*.
5. **Topotype:** A specimen collected from the *same locality* as of the holotype, not necessary at the same time.
6. **Neotype:** A specimen chosen *by later researcher* to serve as a type when all the specimen available to original author have *been lost or destroyed.*

Uses of Type specimens:

While doing floristic works the names to a particular plant is designated on the basis of their similarity to the type of that name, hence to determine the correct application of a name, the type specimens from the best reference. if there any differences to apply the same of a plant, the type clarifies the controversy. in floristic works there are many examples when a single taxon is designated more than one name. In this case examination of type of those names clarifies the matter.

How to locate the type specimens:

The first or original publication of the name includes the citation of the type specimens and where it is lodges. The Monographs of the family of genus also have a citation for the type specimens. Similarly the revision and floras also includes citation of the types. Reference to type specimens in early plant systematic literature is absent or vague. Prior to January 1958, the publication of the new name of the taxon did not require designated of type.

Designation of the type:

When a plant is found to be new to science, it must be validly published according to the International Code of Botanical Nomenclature (ICBN) with its own new name in a scientific publication with proper designation of specimen. For proper designation:

A specimen must be selected which best represent the newly described taxon among the specimens examined. The selected specimen must be designated in the first or original publication.

The designation must include:

- Collection locality and collector
- Collection number
- The public herbarium where it is deposited

How Types are preserved:

The international code of botanical nomenclature strongly recommends that the material on which the name of a plant it based be deposited in a public herbarium with a policy of giving bona-fide botanist open access to deposited material. The type specimens where formerly intermingled with general collection. Now days, they are kept in separate special case to avoid unnecessary handling.

- It needs adequate inspection for possible insect and fungal infestation.
- The type specimen sheet must be place within a protective cover.
- The type specimen should be given benefit of the most protective housing available, preferably in a fireproof structure with metal cabinets.
- *Type must not be sent on loan to other institutions/botanists*.

Values of type specimens:

- Type specimens are unique (original description for authentic identification) and there is only one type (holotype) for each species in the whole world.
- Type specimens is the only definitive reference and material, which decides the species.
- Type specimens are permanent records of a species for the future references.
- Type specimens are most essential material to be observed while making taxonomic studies, e.g. monographs, revisions and floras.

  Realizing the great importance of Herbarium, some of the herbaria of the world are mainly built to keep, preserve and make access to researchers for the study of Type Specimen to trace their phylogeny and establish relationship for further strengthening the system of classification or revise them based on strong foundation. Most famous type specimen rich herbaria of the world are Herbarium of Linnaeus of London (UK) and De Candolle Herbarium of Geneva (Switzerland).

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