

UDC Biology Revision Project: Second Stage: Class 58 Botany

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Abstract: This text is a brief update on the progress of the revision of biological systematics in UDC that has not had an overall revision for many decades. The first stage of the project, in 2010, included the revision of the taxonomy of vertebrates, and this was completed and published in Extensions and Corrections to the UDC - E&C, 32 (2010). The next stage, completed in 2011, was class 582 Systematic botany, published as the revised table in this issue - E&C, 33 (2011). In this paper, the author of the revised tables provides a brief overview of content organization and presentation in the new schedules and specific information about the revision of Botany.

1. Introduction

The UDC biology revision project started in 2010. The first stage of the revision included revised classes 597/599 Vertebrata and related changes in class 56 Palaeontology; these were published in Extensions and Corrections to the UDC (E&C 32, 2010: 181-246). A more detailed introduction to the revision rationale and procedure was described in an accompanying article (Civallo, 2010: 9-19). In this issue of the Extensions and Corrections (33, 2011), we publish a revised class 582 Systematic botany (specifically 582.4/9, including monocotyledons and dicotyledons) and cancellation and redirection of parallel entries in class 56 Palaeontology. This text is a brief summary of issues relevant to the second stage of this revision project and botany specifically.

2. General structure and presentation of revised tables

One of the most important characteristics of the revised tables in biology is that all organisms living and extinct are now presented in a single sequence. This restructuring led to the removal of parallel entries for extinct organism in class 56 Palaeontology. Following an extensive discussion, the Editorial Team agreed that UDC numbers for fossils of living organisms are easier to manage in indexing and retrieval if they are expressed with 56 and colon combination with the main numbers for the organisms, rather than through a parallel division. Parallel derivation means that the number for fossil of, for example, Lichens would be derived from number 582.29 Lichens, by replacing digits 582 (representing systematic botany) with 561 (representing palaeobotany). Thus we would get 561.29 which is a derived number for fossil, i.e. palaeontology of lichens. The use of parallel division causes problems for users and makes automatic parsing of UDC numbers more difficult. Presenting classes with colon combination, e.g. 56:582.29 will secure that an organism is always expressed with the same notation irrespective of whether it is combined with main classes in palaeontology, agriculture or industry.

Regarding the textual presentation and naming style, the preference is given to Latin scientific names for all taxa and common names (when existent) are indicated in parentheses. In addition, whenever relevant, explanations in the form of qualifiers such as '(genus)', '(family)' or '(extinct)' were also added. As the revision of biology progressed, and after we collected feedback from translators of national editions, we learned more about difficulties in translating common names and we decided to introduce and adhere to the formal name presentation rules, replacing all captions containing only common names with exact Latin names and common names in parentheses, e.g.

582.501.1	Dioscorea (yams) (genus)
582.501.2	Tacca (bat flowers) (genus)

Following an analysis of the repetition of names of plants and animals in agriculture it became clear that users may need UDC numbers for individual genera, species or even varieties. Hence, whenever deemed beneficial for indexing, we opted to replace some of the extensive 'including notes' with more detailed subdivisions for specific, frequently needed genera or species. As a consequence the new table of organisms is now more detailed and presented with more accuracy in terms of taxonomical level.

Including notes, scope notes and information notes are used extensively in the tables and with a very precise function, which is explained in more detail in the main biology revision article in E&C 32 (Civallero, 2010). Particularly important are including notes, which are used to enumerate families, genera or species that are deemed too specific to be presented in a subdivision. General Information Notes typically contain additional information about naming, past or present issues and disputes in classification. Lastly, whenever a scientifically obsolete but commonly and frequently used taxon is preserved in UDC in order to support indexing, it was clearly indicated.

3. Classification of plants

As with the rest of biological classes, systematic botany in UDC has not been revised for a long time. The current classification of plants in UDC was based on old taxonomic systems typically linked to and resembling the Cronquist system (cf. Cronquist, 1981). Cronquist and other similar taxonomic classification systems such as those by Takhtajan, Goldberg, Dahlgreen and Thorne are now considered outdated, and are superseded by the Angiosperm Phylogeny Group (APG) system, which is based on molecular/DNA evidence. This most recent, third version of the APG system (APG III, 2009), was used as the basis for the revision of Botany in UDC.

An important number of top level classes and their subdivisions in old Cronquist-based botany are currently considered deprecated according to APG III. Also, many medium-level taxa (e.g. orders) have become independent, top level classes. In addition, many low level taxa (e.g. families) have been merged, others have been fragmented and some of them have drastically changed the number of species they contained. Taking all this updated scientific knowledge on board, many concepts had to be changed in the UDC schedules. Evidently, all these actions have caused a number of cancellations and relocations in the tables, as well as the creation of new classes and the correction of terminological and spelling mistakes and other information in captions and notes.

As is usual with this kind of substantial class re-development, special care was taken in botany to reduce, as much as possible, the disturbances this revision may cause to users. Whenever possible, deprecated classes were preserved alongside scientifically correct classification and references to these taxa and other outdated terminology were provided in scope notes and general information notes for the convenience of indexing:

582.51 Arecales. Pandanales. Acorales. Petrosaviales
 SN: *Class here also Arecidae (scientifically outdated taxon). This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
 NH: *Arecidae was previously at 582.521*

In this revision no cancelled notation was re-used, rather a new structure was moved to an empty, available notation. Whenever the scope of class was changed this was indicated in administrative notes provided in the database:

- 582.41 Progymnospermophyta (progymnosperms) (extinct)
 IN: *Progymnospermophyta is also known as Progymnospermopsida. It is considered to comprise the ancestors of gymnosperms*
- 582.44 Cycadophyta (cycads). Cycadopsida
 IN: *Cycadophyta comprises a single class: Cycadopsida*
 NH: *The notation was previously used in the narrower sense for the specific family Cycadaceae now at 582.441.1*

As mentioned above, the new table more detailed compared with the old UDC class. In revised schedules species of plants with special (commercial, scientific, anthropological) interest have been provided with their own notation. In these cases, they are listed under their genera:

- 582.795 Apiaceae (Umbelliferae, carrot family)
 Including: The Hemlock (genus *Conium*); the Coriander (genus *Coriandrum*); the Turnip-rooted Chervil (genus *Chaerophyllum*); chervils (genus *Anthriscus*); angelicas (genus *Angelica*); the Arracacha (genus *Arracacia*); the Caraway (genus *Caria*); sea hollies (genus *Eryngium*); the Fennel (genus *Foeniculum*); the Dill (genus *Anethum*); the Cicely (genus *Myrrhis*); and the Lovage (genus *Levisticum*)
 NH: *Umbelliferae (Apiaceae). Carrot family (Parsley family) was before at 582.794.1*
- 582.795.1 *Daucus* (genus)
 Including: Carrots
- 582.795.2 *Apium* (genus)
 Including: Celeries, marshworts and the Celeriac
- 582.795.3 *Petroselinum* (parsleys) (genus)
- 582.795.4 *Cuminum* (the Cumin) (genus)
- 582.795.5 *Pimpinella* (genus)
 Including: The Anise
- 582.795.6 *Pastinaca* (parsnips) (genus)

4. Conclusion and future work

Before the 2011 revision, the UDC scheme contained around 500 classes of plants in 561 Palaeobotany and 582 Systematic botany; the new revised class 582 contains around 700 subdivisions in a single sequence comprising living and extinct organisms. As illustrated in the previous section, besides the greater number of UDC notations, the revised class 582 contains many more concepts listed in the notes and thus represents a significantly more useful terminological tool. Most importantly, more formalised rules of name presentation that give priority to internationally accepted standard Latin names alongside common names or using common names only within well defined genera – are likely to help achieve more accurate UDC translations in national editions. In the past English common names occasionally created confusion in the process of translation. Often common names represent different taxa in different languages or sometimes a common name in, for example, English representing a plant family, in another language can correspond to a common name for a single genus or several genera only. This problem is compounded by the fact that the scientific taxonomy evolves quickly and common terminology is slow in reflecting these changes. With the new schedule this problem is finally resolved. The true test of the schedule will obviously come through its use, but having an up-to-date taxonomy of plants will make further minor improvements and extensions much easier.

Having completed the revision of 582, the UDC Editorial Team will now move towards revising related hierarchies in class 6, in particular, agriculture, but also textile, food and other industries in which plants appear as products or materials. With a new, more detailed plant taxonomy available in botany, many facets in class 6 can be corrected, restructured or reduced. The work on revising class 63 is planned for publication in the following issue of the E&C. With respect to the next stage of the revision of biology, this will include 592/596 Invertebrata and 582.32/39 Plantae (except seed plants in general).

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