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ON THE DEVELOPMENT OF THE ELECTRONIC HERBARIUM INFORMATION SYSTEM

Abstract: In the article the specificity of the herbarium field is considered through the development of the electronic herbarium system, using the example of the Sprygin Herbarium at the Penza State University. Possible alternatives are analyzed. It is argued the need to develop a specialized information system.

Key words: herbarium, electronic herbarium, electronic herbarium information system.

At present, information technologies are becoming a part of different spheres of human activity. Informatization has affected the archives, but not herbariums yet. The similarity of the herbarium and the archive lies in the uniqueness of exemplars, similar ways of organizing the storage, accounting, acquisition and use of exemplars. The difference lies in the fact that the herbarium organizes work with plants (natural exemplars).



Figure 1 Herbarium specimen

Herbarium specimen (Fig. 1) is a dried plant, which is located on a cardboard format A3 in a natural position. Also, the herbarium sheet contains the inventory number, the herbarium seal and the label. The label includes the name of the exemplar, the collection date and the name of the collector that collected the sample.

Sprygin Herbarium at the Penza State University is the national treasure of Russia, the largest scientific and cultural collection. It is confirmed by the opinions of authoritative scientists of Russia [1, 2, 3, 4], the Certificate of the UNESCO Chair "Ecology and diversity of organisms, community and ecosystems of the Volga Basin" of the Institute of Ecology of the Volga Basin of the Russian Academy of Sciences (1914). The herbarium has a long history (it was created in 1894) and has a special international acronym "PKM" [5, 6, 7, 8, 9, 10].

At present Herbarium stores 200,000 herbarium exemplars in 50 cabinets and in 1200 boxes. The development of an electronic herbarium system is a solution to the problem of processing a large amount of material and presenting it to a wide range of people.

The goal of the project is to develop an effective data management tool that will ensure their centralized and structured storage, online access to information and accounting. The main tasks of the system are: organization of storage, accounting, search of herbarium specimens; the ability to add and use information about an exemplar in a single database, view them; ensuring the integrity of the database. The main functions of the system are: the delineation of access rights; convenient input of information about herbarium specimens; keeping a register of herbarium exemplars of the collection; search for herbaria copies of variable attributes; creation of virtual expositions; attachment of the image and collection site to the herbarium specimen; import of inventory herbarium exemplars into the database.

All modern research in molecular biology, paleobotany and plant Geno systematics is based on herbarium collections. The electronic herbarium system is a tool that optimizes the work of herbarium staff, and also provides access to the herbarium collection to botanists of the world community. A single way to create such systems does not exist because of the specifics of this field and the lack of qualified technical workers. Therefore, a new specialized electronic herbarium system should be developed.

Many existing systems of electronic herbarium are developed in the MS Access environment (Herbariums of Chelyabinsk State University, Tver State University). The advantages of this development environment are: the prevalence of the system, the user orientation with different professional training. However, this development environment has several disadvantages: limited capabilities to provide a multi-user environment, low security, complexity of integration with Web services and low productivity.

The development of an electronic herbarium system can be based on content management systems (CMS). But this way of implementing the project is not suitable for the electronic herbarium system due to the lack of functions for a specific area and the unoptimized internal structure of the site.

Stages of the implementation of electronic cataloging in Sprygin Herbarium:

1. Creating database objects and describing the relationships between them based on the developed with the Object-Relation diagram.
2. Website development, including a subsystem for DB administration and its filling.
3. Scanning herbarium sheets.
4. Filling database fields, adjusting relations between objects or creating/deleting objects (if necessary).
5. Maintain and update the electronic herbarium system.

Herbarium will never lose its relevance, because the herbarium exemplar is a document of nature that cannot be replaced by photos or drawings. In this regard, it is necessary to ensure the preservation and protection of herbarium collections, as well as to provide the possibility of their use. The solution is to create an electronic catalog of herbarium exemplar. The Sprygin Herbarium is at the inventory stage of the herbarium fund. Prospects for the development of the project for the coming year: the organization of system administration, the solution of the technical problem of scanning herbarium sheets.

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РАЗРАБОТКА ИНФОРМАЦИОННОЙ СИСТЕМЫ ЭЛЕКТРОННОГО ГЕРБАРИЯ

Аннотация: в статье рассматривается специфика гербарного дела в контексте разработки системы электронного гербария, на примере Пензенского гербария им. И.И. Спрыгина. Анализируются возможные альтернативы, и объясняется необходимость разработки специализированной информационной системы.

Ключевые слова: гербарий, электронный гербарий, информационная система гербария.

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