

Making the sources available - the detective work of type specialist Dr. Christiane Quaiser



Dr. Christiane Quaiser working on the bird type collection of Naturalis, Leiden (Netherlands). Photo: R. Dekker

Putting taxonomic research into the historic context

The work of Dr. Quaiser starts, when everybody else has given up: Being a European specialist on tricky typification questions, she clarifies which specimen is the official representative of a species (type) and which scientific name should be used. This work involves visiting different collections, digging in old literature in various languages and checking collections lists and old field books. The older the species the trickier the case. The knowledge about the historic context permits her to understand the original work and to find the right type specimens. She correlates the dates of an expedition to a certain area with the date of the original description of a species and visits then the collection where the author used to work. This detailed work often reveals forgotten sources and makes them available to all scientists.

What is a type and why is it so important to know about their whereabouts?

Dr Quaiser explains that during the 19th century, the time of discovery and expeditions, enormous amounts of plants and animals were collected all over the world. Many of these specimens were new to science and described as such. However, common rules on how to describe a new species came up only later in the early 20th century. There was no common agreement yet on how to mention the specimens which had been used for the description. Also, it was not common practice yet to label type specimens in the collection. The less details given by the author the more complex it becomes to re-identify the type specimens of a certain species. Sometimes it really becomes detective work. And having identified the right specimens is not the end of the story: Sometimes the material mentioned in the original description consists of a group of specimens, which nowadays are regarded to belong to different species. Dr. Quaiser has then to reveal the history of an entire group of closely related species to entangle the problem.



Type specimen of *Xiphocolaptes fortis* Heine, 1860 from above and below from the bird collection Museum Heineanum Halberstadt (Germany). This species is only known from this single specimen, no further observations or collections are recorded. Photo: MHH, Quaiser

The very tricky cases, where she has to read a lot about the author of a species, give her the feeling to get to know this ancient colleague and to make the link from this person to the modern taxonomists.

The first publication counts!

There are more problems hidden in this topic: The same name may have been chosen by different authors, however referring to different species! Or the same species has been described by different authors under different names. One of the basic rules, Dr. Quaiser says, is that the first publication is the valid one. All other names become synonyms of the oldest name and should not be further used. Often there is no problem, since usually the correct name is the one widely accepted by the researcher community. However, in some cases a more recent name has been used in practice and the original name has been forgotten. Then an international committee decides whether this more recent name should be conserved against the original correct name or if the original one should be used. It may take Dr. Quaiser half an hour up to several weeks to solve a taxonomic problem, depending on the complexity of the problem. Some cases even may never be solved.

What's a scientific name?

Right naming is the basis of all communication. The naming system for animals and plants dates back to Carl Linnaeus (1707 – 1778). Linnaeus tried to describe all species of the world with the help of two Latin names, a genus and a species name (the so called binominal nomenclature). The same genus name is used for a group of closely related species, while the species name is used for one species within this group. This system remained valid since then and enables scientists all over the world to use species names and understand each other regardless which language they speak.

Nomenclature is the system of principles, procedures and terms related to the naming of living organisms.



Type specimen *Psittacella pallida* A.B.Meyer, 1886 from the bird collection of the Museum für Tierkunde Dresden (Germany). The bird has been collected in New Guinea and has been described by the museum founder, A. B. Meyer. Photo: MTKD, Quaiser

What is the international code of nomenclature?

From the mid 19th century onwards it became more and more apparent that rules were necessary to govern the quickly increasing number of scientific names. The Nomenclature Codes cumulates rules and recommendations for dealing with and establishing scientific names. The first International Code of Zoological Nomenclature was published in 1961. The first more or less internationally accepted Code of Botanical Nomenclature were the Vienna Rules of 1906. Current versions of the International Codes of Nomenclature are for zoology the ICZN (1999, see <http://www.iczn.org/>) and for botany the ICBN (2006, see <http://ibot.sav.sk/icbn/main.htm>).

What is a type and why are they so important?

The scientific description of a species is always based on real objects (specimens). These objects are called types or type specimens. They are the standard of their species.

Describing new and closely related species will make it necessary to check the types of the relatives to see whether there is a difference between them or not. Types are part of scientific collections and often stored separately because of their value.

There are different sorts of types, in zoology e.g. **syntypes** when there are several specimens equally representing the type and **holotype** when the scientific name is linked to a single specimen.

The career of a bird type specialist

Since her childhood, Christiane Quaiser has been interested in animals; the choice of studying biology was thus a natural one. The original goal though was to study animal behaviour and not necessarily the one of birds. Motivated by the active ornithological society which she joined as a student, Dr Quaiser started to focus on birds. Her master thesis and doctoral thesis are about the behaviour of birds. After her PhD Christiane Quaiser was recruited as curator assistant for the bird collection of the Natural History Museum of Dresden, Germany. Here she learned during three years the profession of a curator, including the preparation of birds and application of the nomenclature rules. She worked on the Dresden type catalogue documenting the famous bird collection.

This work permitted her to work on other well known type collections and catalogues as the ones of Leiden, Paris, Vienna and Berlin. Now the main occupation of Dr. Quaiser is within the EDIT network where she works on collection management questions. The typification work remains her research field and is close to her heart.

More examples of type specimens:

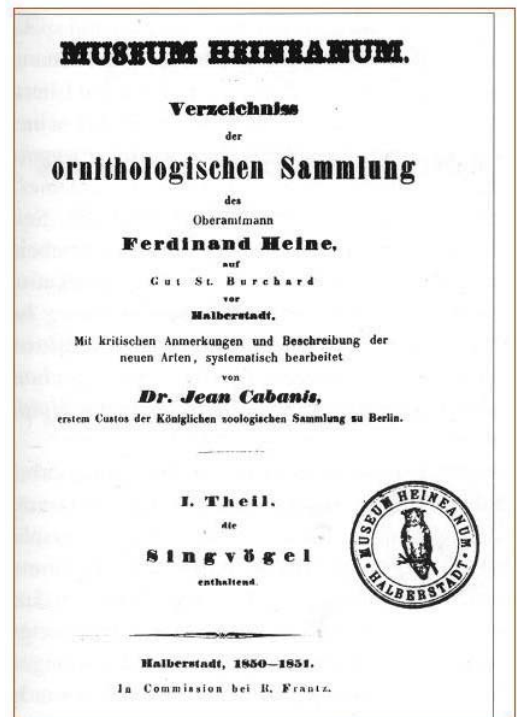
http://www.biologie.uni-ulm.de/cgi-bin/query_all/details.pl?id=67552&stufe=7&typ=ZOO and http://www.biologie.uni-ulm.de/cgi-bin/query_all/details.pl?id=124571&stufe=7&typ=ZOO&sid=T&lang=e&pr=nix

Online bird type catalogues, e.g. of the Natural History Museum London:

<http://www.nhm.ac.uk/jdsml/research-curation/research/projects/birdtype/>
and the Zoological Museum Amsterdam: <http://ip30.eti.uva.nl/zma3d/>

To read one of Christiane Quaisers publications, have a look at this pdf:

<http://www.repository.naturalis.nl/document/107608> or <http://www.repository.naturalis.nl/document/41357>



The collection catalogue of the Museum Heineanum Halberstadt (Germany) containing descriptions of many new bird species.



Dr. Quaiser investigating the bird collection of the Überseemuseum Bremen, Germany. Photo: F. Steinheimer