

Ann. Naturhist. Mus. Wien, B	119	257–258	Wien, Jänner 2017
------------------------------	-----	---------	-------------------

## BOOK REVIEW

### **Species Concepts in Biology**

The book “Species Concepts in Biology” of Frank E. Zachos gives an excellent overview on the historical, philosophical and practical aspects of what is usually called “the species problem”. It is a book that I fully recommend for everyone dealing with the species concept, as students, taxonomists or philosophers. The book has some big advantages over many of what was hitherto written on this topic, the biggest of which, in my personal opinion, is the cultivated and respectful way the author treated views deviating from his personal one. Thus to all who want to contribute, and many who already contributed to the topic I would highly recommend to read the preface of the book. Many others will find the brief summary at the very end the best point to start (if they, like me, prefer to know what lies ahead of them when they start reading a scientific work). A major strength of the book is that it addresses all those who are confronted with ‘species’ in their daily work like taxonomists or biologists from other fields. The chapters on species delimitation and the practical relevance of species concepts and species problems give an overview on the topic. These chapters are impressive in being easy to read, without ever running the risk to underestimate the significance of the topic. Additionally, the list of species concepts and the glossary section give an overview on what was hitherto published in the topic and the most relevant terminology. This will help all readers to assess possible sources of error when discussing results based on species numbers or species delimitation. While performing analyses, most scientists are aware of the limits inflicted by the choice of the methods on their potential results. However, many are not that critical about the limits of concepts (be it a character or a species concept). Repeatedly, the author points to the fact that a discrete ordering system as the one represented by taxonomy has necessarily difficulties in representing the continuous processes shaping the Tree of Life. Depending on the state observed in the processes of speciation and divergence, the occurrence of fuzzy boundaries in parts of the tree has to be expected.

The book is also particularly valuable in the sense that the author succeeded in being consistent in the choice and use of the terminology differentiating species taxon and species category, T species and E species, or synchronic and diachronic species. Most importantly, in my view, the author clearly distinguishes problems regarding species ontology, from problems of definitions of species concepts, and species delimitation.

Despite a clear preference for the ontological status of historic individuals for species, the book gives a nice overview on what was and is discussed in this topic. This is also true for the species concepts (despite that I have the feeling that each categorization of concepts is arbitrary to a large extent, since the network of concepts is less hierarchically structured than the Tree of life). Personally, I fully support the author in his plaid that species definitions should preferably be free from species delimitation criteria.

Personally I learnt very much about species concepts, and maybe even more important was again stimulated to reflect my own views on species. Despite no book on species can cover all aspects, the compact overview presented by Frank Zachos is among the best compilations I read and I fully recommend it to all those who want to learn about species and their own views on it.

Nikolaus U. Szucsich  
Natural History Museum Vienna  
Zoological Department III

Species Concepts in Biology  
Frank E. Zachos  
Springer International Publishing Switzerland 2016  
ISBN 978-3-319-44964-7