



ZooBank: Developing a nomenclatural tool for unifying 250 years of biological information*

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Abstract

Nomenclature represents the backbone upon which virtually all biological information is organized. However, the practice of zoological nomenclature has changed relatively little since its start in 1758. As modern technology changes the paradigm under which modern scientists exchange information, there is increasing need to capitalize on these same technologies to fortify nomenclature. ZooBank has been proposed as the official registry of names and nomenclatural acts, in zoology, as well as associated published works and their authors, and type specimens. Having a coordinated registry of zoological names, integrated with the existing Code of Zoological Nomenclature, will allow increased efficiency of communication among biologists, and enhanced stability of names. Such a registry would encompass two distinct realms, each with their own set of challenges. Retrospective registration involves the monumental task of aggregating and validating two and a half centuries of existing names, whereas prospective registration must be tightly integrated with the future paradigm in which scientific names are created and managed under new models of publication. The prototype of ZooBank has been hosted at Bishop Museum during its initial development phase. Following the lead of standard-setting bodies in biodiversity informatics, Life Science Identifiers (LSIDs) have been selected for use as the globally unique identifiers for ZooBank registration entries. The first ZooBank LSIDs were issued on January 1st, 2008, and included five new fish species described in a work published that same day, as well as all 4,819 names established in the 10th Edition of Linnaeus' *Systema Naturae*. Three alternate scenarios for implementing mandatory registration in ZooBank have been articulated, each incorporating different degrees of coordination between published works and registration events. A robust discussion involving a broad spectrum of practicing zoological taxonomists is required over the next several years to define the specific implementation aspects of ZooBank.

Key words: Linnaeus, Prospective registration, Registration of names and acts, Retrospective registration, *Systema Naturae*

Introduction

Sense and stability in nomenclature

Stable nomenclature is at the heart of clear and unambiguous communication about biodiversity. Species names provide the most consistent anchor to which all taxonomic, ecological, molecular, conservation, and other biologically relevant data are attached. Legal protection and policy are also linked with names, on the assumption that the groups indicated by the names are consistent through time and among places. Scientific discussion relies on names having unequivocal, context-independent meanings. Medical and veterinary implementation requires communication about unambiguous identifications. Although discovery and delineation of species may receive the emphasis of high-profile press coverage, all taxonomic practice is crucially dependent on a stable nomenclature to provide a steady platform on which to build. The International Commission on Zoological Nomenclature (ICZN) has, for the past 113 years, set the rules by which scientific names for animals are established, as currently set forth in the ICZN Code of Nomenclature ('the Code', 4th Edition, 1999). The ICZN is the single professional organization devoted to ensuring that this work happens in a globally consistent way, providing continuity both for new species discoveries and for the correction of errors and inconsistencies in past works.

Development of a registry for new animal names (prospective registration) and a complete listing of existing names (retrospective registration) has long been a goal for biologists. The stakeholders for a gold-standard registry of animal names are diverse and central to the functioning of many biological sciences and to policy concerned with the living world. They include not only taxonomists, ecologists, and biodiversity informatics specialists but also conservationists, medical and veterinary workers, planners, policy makers, lawyers and even customs enforcers. Their requirements include ready access to a system of unambiguous answers to questions on the availability and validity of animal names that can be retrieved both by ordinary people and machines. The ICZN is meeting this need by developing ZooBank, a web-based registry of animal names