

# **The Crocodyliform PhyloCode Project: formalizing phylogenetic clade names for Crocodylians and close extinct relatives**

**Christopher A. Brochu\*<sup>1</sup>**

<sup>1</sup>Department of Earth and Environmental Sciences, University of Iowa, Iowa City, IA 52242, USA  
(chris-brochu@uiowa.edu)

*Abstract:* The practice of defining taxon names on ancestry and descent – phylogenetic nomenclature – has grown in prominence since the 1990's, and such definitions currently exist for most crocodyliform clade names. Phylogenetic nomenclature promotes clarity in the meaning of a clade name, links names to an objective pattern (phylogenetic relationships), and if done collaboratively, strengthens connections between different communities working on the same groups of organisms. Indeed, the clade name definitions within Crocodyliformes are seen as an example of the kind of stability and clarity we can achieve with phylogenetic nomenclature. An international, interdisciplinary effort is underway to formally publish these clade names in accordance with the 2020 *International Code of Phylogenetic Nomenclature* (PhyloCode). The collaboration includes paleontologists and neontologists with expertise in morphology, the fossil record, ecology, molecular phylogenetics, and population genetics. Although the effort is directed toward clades rather than species, we are working closely with the effort to delineate living and extinct crocodyliform species-level diversity. We apply the crown-clade convention, in which names commonly associated with extant crocodylians will refer explicitly to groups based on extant specifiers. We will also use existing clade names and, to a large extent, existing clade name definitions and minimize the establishment of new names. Definitions will account for phylogenetic instability, with specifiers chosen to maximize stability and minimize the chances of destabilizing unintended consequences should our understanding of phylogenetic relationships change drastically. The outcome will be a set of phylogenetically-defined clade names of broad use by the crocodyliform community. Sections on individual clade names will include discussions of nomenclatural history and properties of the clade (e.g., diagnosis, diversity, fossil record, distribution). This will streamline communication among different stakeholders – systematists (modern and fossil), ecologists, conservation biologists, population biologists, physiologists, and many more – and provide a framework for the organization of newly-discovered species, living and extinct.

*Keywords:* Crocodylia, Crocodyliforms, Phylogenetic nomenclature, Systematics, Taxonomy, Fossil

*Type of presentation:* Oral

*Thematic area:* Research and knowledge (Systematics & Evolutionary Biology)