

Title : An open participatory species traits infrastructure to organize and discover species information.

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## Abstract

Traits and trait values describe the characteristics of a species and its phenotype. Traits are increasingly finding value in categorising species diversity by function, morphology, physiology, and ecology. The India Biodiversity Portal is developing an infrastructure for species traits. The objective is to model and implement a traits database for species that can evolve and scale with more information. It will aggregate a vocabulary on species attributes for organizing species information and identifying species by filtering on traits.

Traits will be associated with a node on the taxonomic hierarchy and its scope will be the clade of species below the node. Further, traits will be associated with a description field of the species profile model. For example a leaf type trait will apply to all species of the kingdom plantae and will be associated with the morphology species field.

Traits are associated with a set of trait values. They can be categorical or continuous values. Values defining a species can be single or multiple valued. Further, trait values can be defined at the level of a species or aggregated from values associated at the level of individuals of a species. A facts table will define the association of species with the trait values. Every species will be represented by a set of traits and values, allowing for filtering and exploring of species by traits.

A basic and simple traits infrastructure has been implemented on the open source biodiversity informatics platform that powers the India Biodiversity Portal, WIKWIO (Weed Identification and Knowledge in the Western Indian Ocean), and the Bhutan Biodiversity Portal. The system has been populated with traits data used in the IDAO (IDentification Assistée pour Ordinateur) species identification system. The system allows trait definitions, trait values and facts tables to be uploaded. The traits can be explored through a page that lists all traits and allows users to interact with the traits by selecting a set of traits and exploring species associated with them. Individual trait pages can also be viewed with its set of values, type of the data and species associated with them. The traits page allows users to add values to a trait and comment on the trait. Species pages display the set of traits that characterize the species and could be a pictorial representation of a species that is useful for communication, learning and awareness building on species and biodiversity. The trait data can be exported in a Darwin Core Archive format.