Conference Abstract

GoMexSI: Using Open Platforms such as Github, Wordpress, and GloBI to Manage, and Share Species Interaction Data

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Abstract

Biodiversity data and databases are usually taxonomic specific (*e.g.* HerpNet, FishNet2, *etc.*), although there are cases of regional, non-taxa specific, biodiversity databases. And some biodiversity databases are inclined toward a functional category, such as invasive species. While it is critical to know of the existence and taxonomy of the many biological species of the world, a logical next step is to catalogue the linkages, or interactions, between and amongst the species. These types of data occur in an ecosystem context, culling a subset of many species from many taxa to form the species assemblages and communities and the resulting interactions between them that make up the species interaction network.

Toward this end the Gulf of Mexico Species Interactions (GoMexSI) database, which is an application of GloBI, is endeavoring to assemble, extract, upload, and serve all of the recorded species interaction data for the Gulf of Mexico. To do this we are dependent on the interoperability of various biodiversity databases such as EOL (Encyclopedia of Life), NCBI (National Center for Biotechnology Information), WoRMS (World Register of Marine Species), *etc* to provide name resolution for detection of invalid species names. Using these data, GoMexSI takes advantage of the existing infrastructure of GloBI to integrate,

link, and disseminate these data using various formats and methods. In addition, the relationship with GloBI negates the need to hire informatics staff, thus reducing costs. Data from GoMexSI is shared with scientists, and educators through GoMexSI's Wordpress based webpage.

While GloBI is solely dependent on contributed datasets from scientists willing to share their data, GoMexSI expends a lot of effort harvesting species interaction data from published and unpublished resources, although contributed databases and datasets are accepted. The data extraction and editing process is very time consuming and costly. And funding sources for data extraction and editing are limited, making it difficult to maintain the effort.

Much of the data in GoMexSI comes from theses and dissertations (25% of references), while other sources include peer reviewed literature, government technical reports, and conference proceedings. The GoMexSI project has focused on cataloguing predator/prey interactions of the Actinopterygii and Chondrichthyes, but recently began adding predator/ prey interaction data on marine mammals, sea and shore birds, sea turtles, molluscs, and crustaceans to the database.

Much time and effort has been devoted to developing standards for biodiversity data in order to record these data in a consistent way (*i.e.* Darwin Core). One of the key goals of the GoMexSI project from the outset has been to provide data standards for species interaction data where none existed previously. As we continue to work through the predator/prey interaction data of different taxa we are constantly confronted with new problems and issues in recording the data in a standard way. These include the description of predator and prey life history stages, description of prey parts, methods of length measurements, conversion of common names to scientific names, designation of locations, basis of prey identification, diet analysis methods, and others.

Currently GoMexSI has 89,209 lines of data representing 2,146 unique interactor, gleaned from 172 references. Future plans for GoMexSI call for the addition of host/parasite, commensal, amensal, and mutualistic interaction data. In addition, we plan to include stable isotope data for Gulf species, as they serve as an integrated record of past interactions. We have shared our data collection methods and spreadsheets with the US Marine Mammal Commission in their effort to create a diet database for marine mammals. We are currently assisting Centro Interdisciplinario de Ciencias Marinas (CICIMAR) in La Paz Mexico to construct a species interaction database similar to GoMexSI for the Baja California (Gulf of California).

Keywords

Database, Gulf of Mexico, Species interactions, GoMexSI, GloBI, open platforms

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