

# A data specification for efficient archival of ecological networks

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This is a *working document* describing **mangal**, a set of JSON objects templates to encode ecological networks of virtually any complexity. There are plans to host a pilot database.

## The need for a data specification

Ecological networks enable ecologists to accommodate the complexity of natural communities, and to discover mechanisms contributing to their persistence, stability, resilience, and functioning.

- we need *a lot* of information to make inference and train predictive models
- networks are *hard* to get in nature
- need to compare several datasets to start working on the biogeography of webs

## The elements of a network

Basic idea is to have *layers* in the data specification, each corresponding to one layer of organization in the networks. What I see currently is

- nodes
- edges
- networks

This will require some *glue* objects, but it should be simple enough.

## The properties of nodes

- scale of organization
- biodiversity descriptors

## The properties of edges

## The properties of networks

- sample location
- sample date
- methodology
- associated references

## Proposed implementation

This will mostly describe several data templates for each of the scales in the previous section.

```
{
  "ID": "MyDB_I_00001",
  "from": "MyDB_P_00001",
  "to": "MyDB_P_00002",
  "info": {
    "binary": true,
    "directional": false,
    "strength": 1,
  },
  "type": "predation",
  "notes": "none"
}
```

## Conclusion and future directions