



## **GBIF Today and Tomorrow**

Donald Hobern, GBIF Executive Secretary Science Symposium, New Delhi, India, 17 September 2014

#### **CONCERN – PRESCENCE-ONLY DATA**

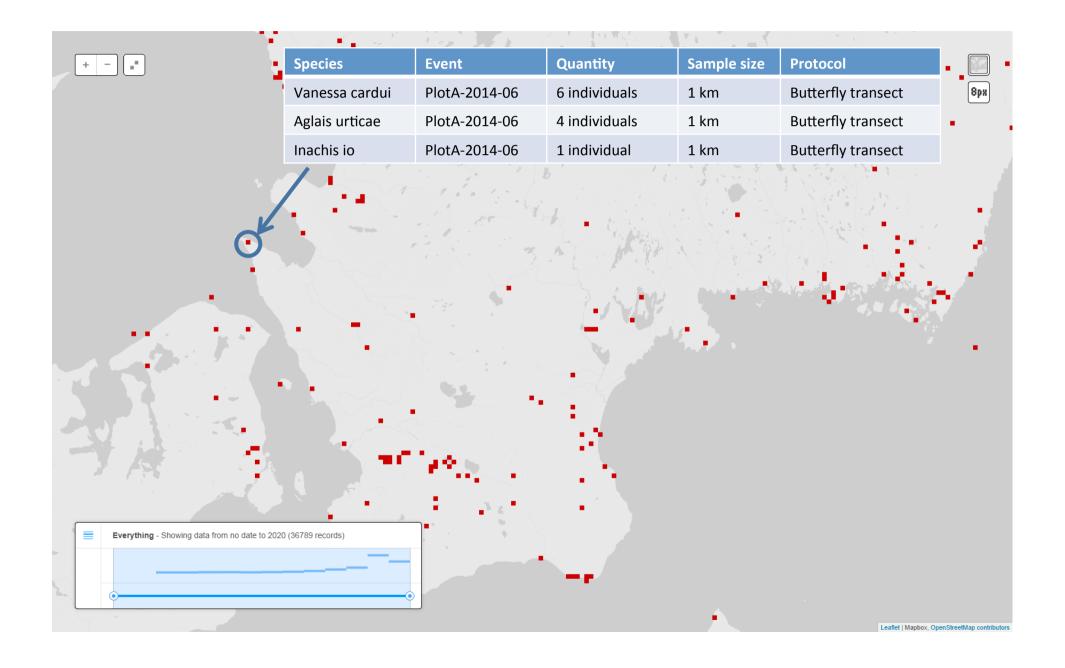
To monitor biodiversity trends, we need more than just presence data

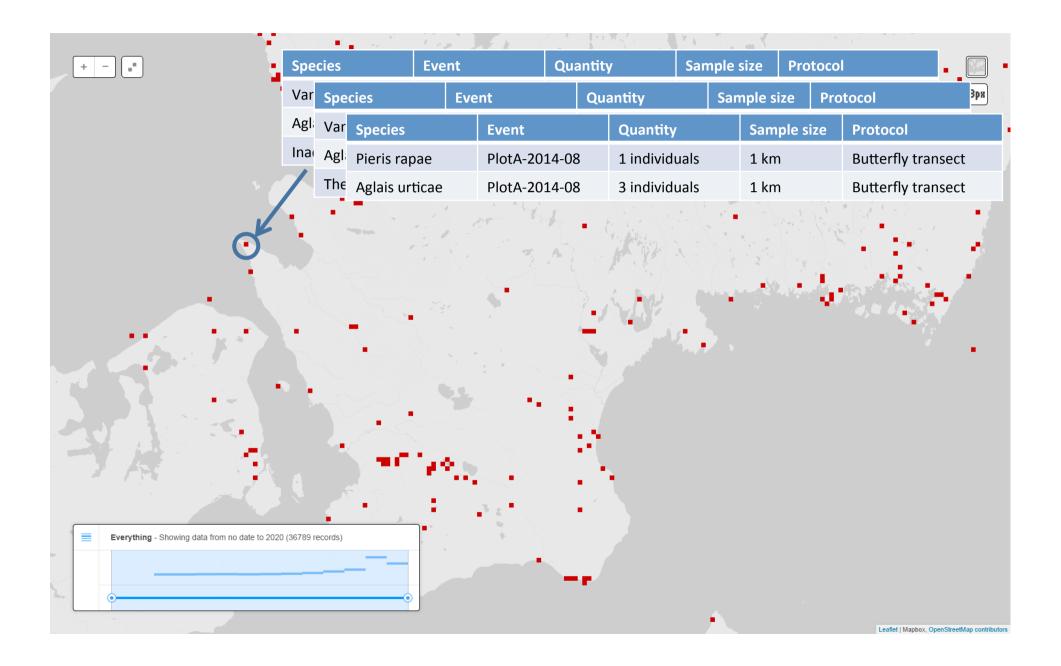


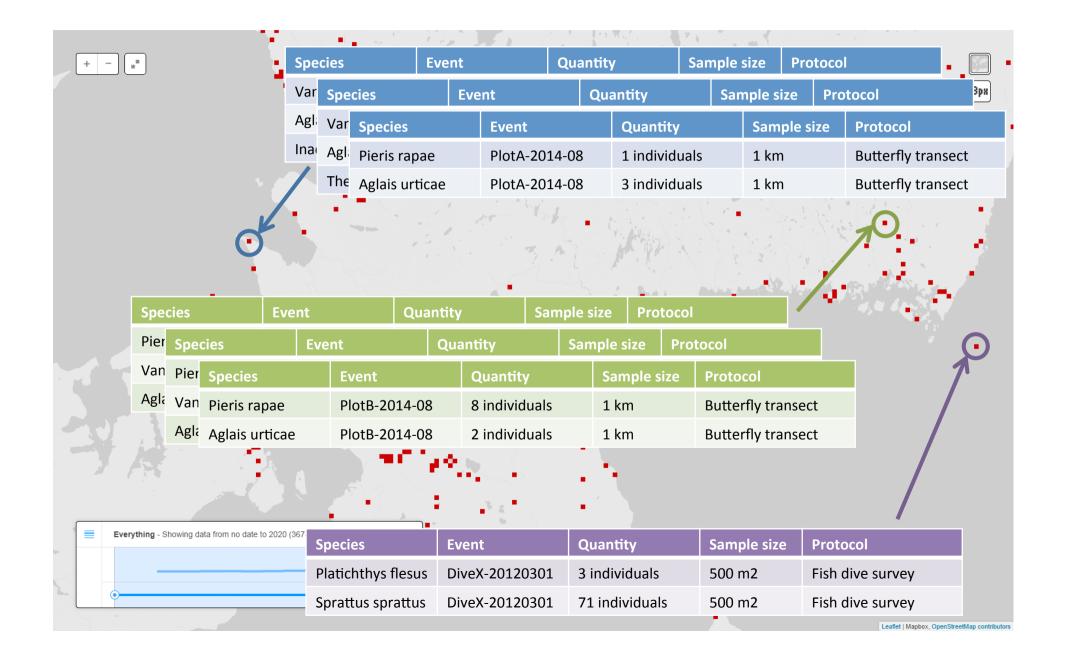


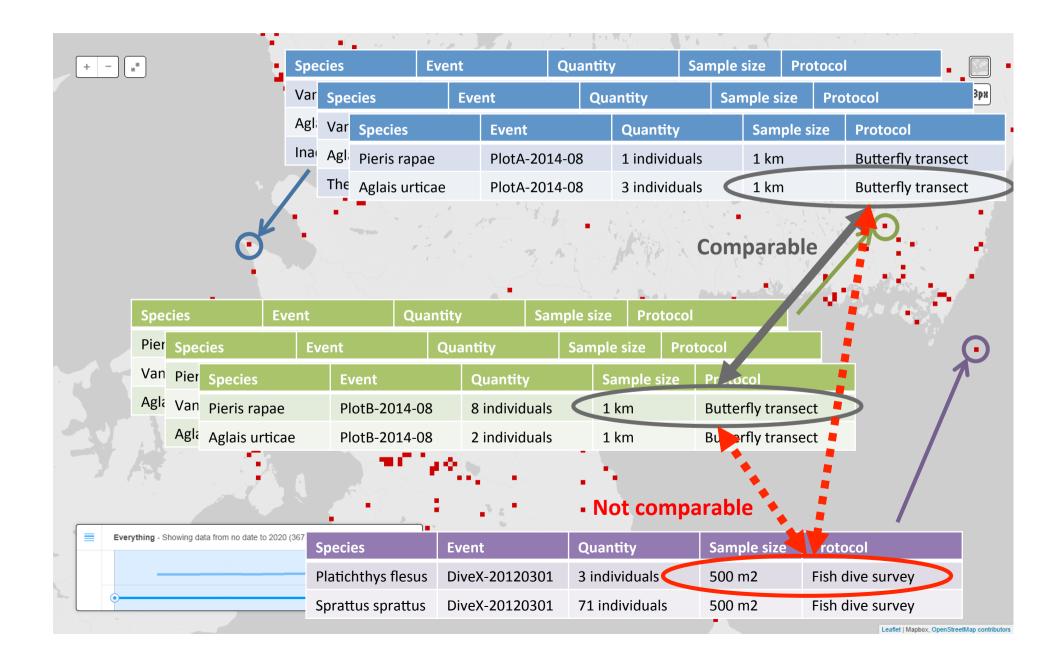


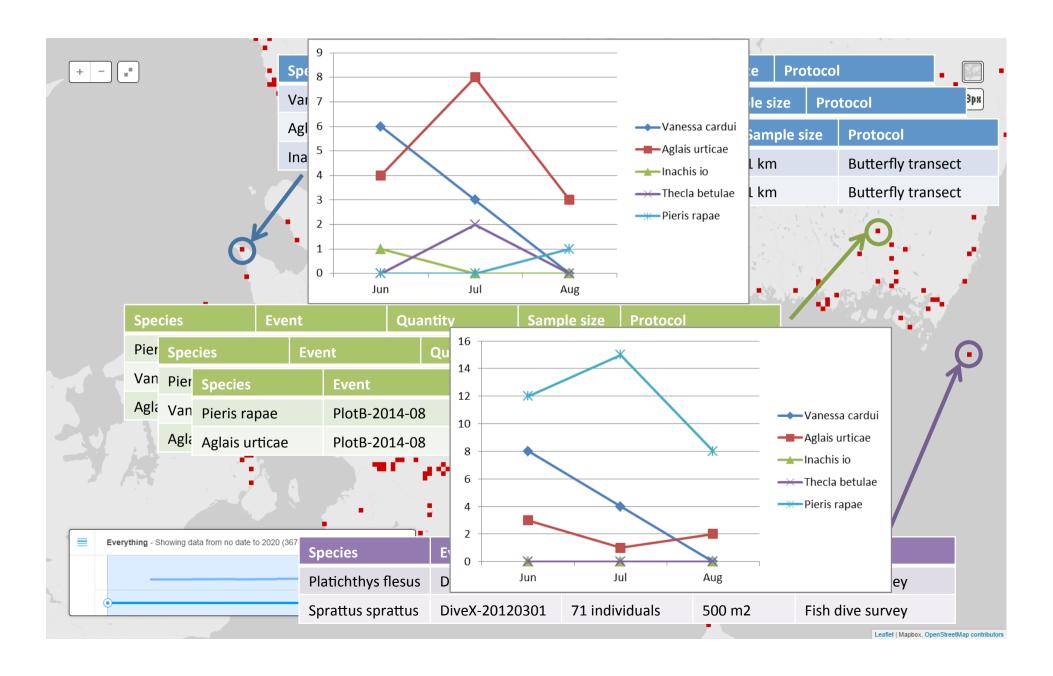








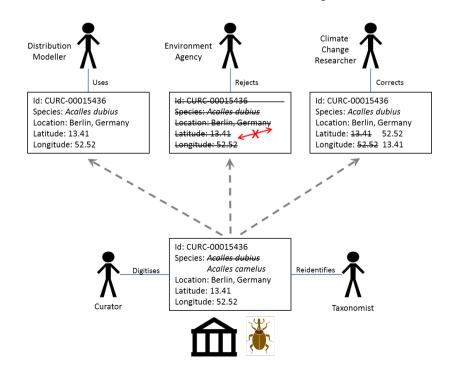




#### **CONCERN – DISCONNECTED DATA**

It is hard for data publishers to know how their data have been used

Researchers can't fix problems with data



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The importance of defining the geographic distribution of species for conservation: The case of the Bearded Wood-Partridge

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#### ARSTRACT

Delimitation of the distribution areas of species has fundamental implications for the understanding of biodiversity and for decision-making in conservation. This is illustrated by the case of the Bearded Wood-Partridge (Dendrortyx burbutus), which is endemic to Mexico and was classified as threatened by the IUCN. Recently the discovery of this species in new locations caused an increase in the known distribution area whereupon it was reclassified in a lower risk category. In our study, delimitation and comparison of the Bearded Wood-Partridge distribution area is carried out utilising five different methods: minimum convex polygors, areographic; catographic; ecological niche modelling; and, "free hand". A number of locality records are also used to demonstrate the chronological order of appearance. The results show that the size and shape of the distribution area of this species vary depending on the number of records and on their spatial and environmental location, as well as on the particular delimitation method used. However, ecological niche modeling provides the best results in terms of spatial and numerical sensitivity as well as lower values of omission and a moderate extent of predicted areas. We suggest that decisions related to species conservation (categories of risk, areas of endemism, etc.) particularly those species of high geographical restriction, should be contingent on the formalised delimitation of distribution areas based on ecological niche modeling methods.

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#### Introduction

Species distribution area delimitation is a fundamental task with important implications for the understanding of biodiversity and conservation (Lamoureux et al. 2006: Myers et al. 2000). For example, when sites are chosen for establishing reserves and protected areas of biodiversity, the decision is commonly based on areas identified as having high concentrations of species richness and endemism (Arizmendi & Márquez-Valdelamar 2000; Birdlife International 2000; Lamoureux et al. 2006; Noss 2004; Peterson & Navarro 1999: Stattersfield et al. 1998). The restriction of distribution area size is one of the basic criteria for the establishment and allocation of risk categories to species, both in national protection lists (e.g., Sánchez et al. 2007; De Grammont & Cuarón 2006 Lombard et al. 1999; SEMARNAT 2010) and in those of treaties and international conventions (Birdlife International 2000: IUCN 2009) However, the determination of species distribution area is a complex task involving various theoretical aspects and perspectives of different scales that further complicate empirical application. This has led to limitations in the understanding and establishment of strategies for biodiversity conservation.

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A key theoretical aspect is the concept of distribution area; according to Krebs (2001), the concepts of distribution and abundance are closely related, i.e., the abundance of an organism in its distribution area must always be greater than zero and the distribution area limit will be equal to the contour line where abundance is equal to zero. Espinosa and Llorente (1993) make a distinction between ecological and geographical distribution, and define the former as the behaviour of a population parameter along an environmental gradient, be it a gradient of conditions (temperature, pH, salinity, etc.) or of resources (availability of food, shelter, breeding sites. etc.). They define geographical distribution as the set of locations where a species or taxon experiences a delimitation of the area occupied by its members. Zunino and Zullini (2003) define the distribution area of a species as the fraction of the geographical area where that species is present and can interact in a non-ephemeral manner with the ecosystem, while Soberón (2007) defines the distribution area as a collection of points or quadrants. within a geographical area in which the current or potential presence of individuals of a species can be detected.

Although there are a variety of definitions, a governal agreement has not yet been reached, which muld allow a standardisation of criteria for the definition of areas of distribution. However, in general, most of these definitions could be combined to form a complementary and comprehensive concept of distribution area. The contribution of Krebs (2001), for example, is based on the

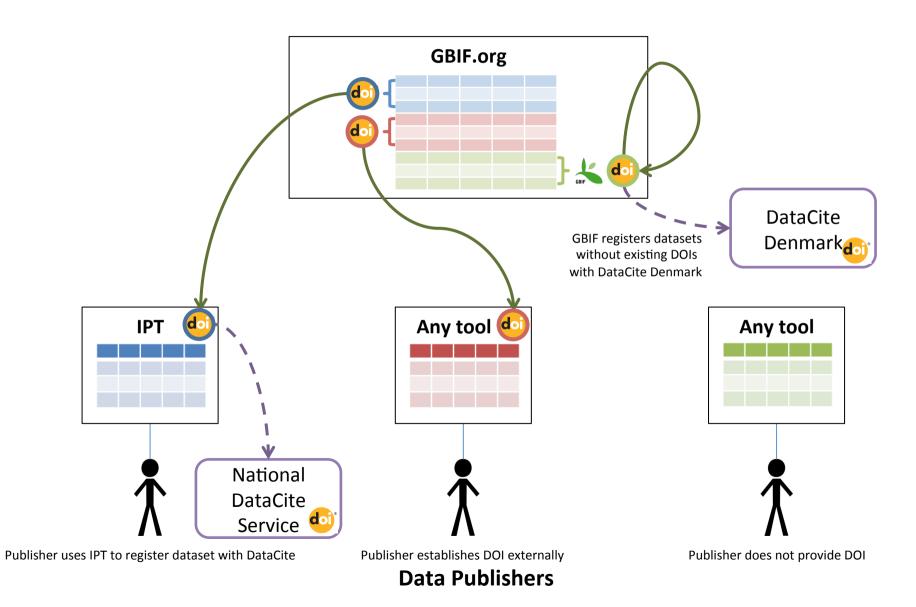
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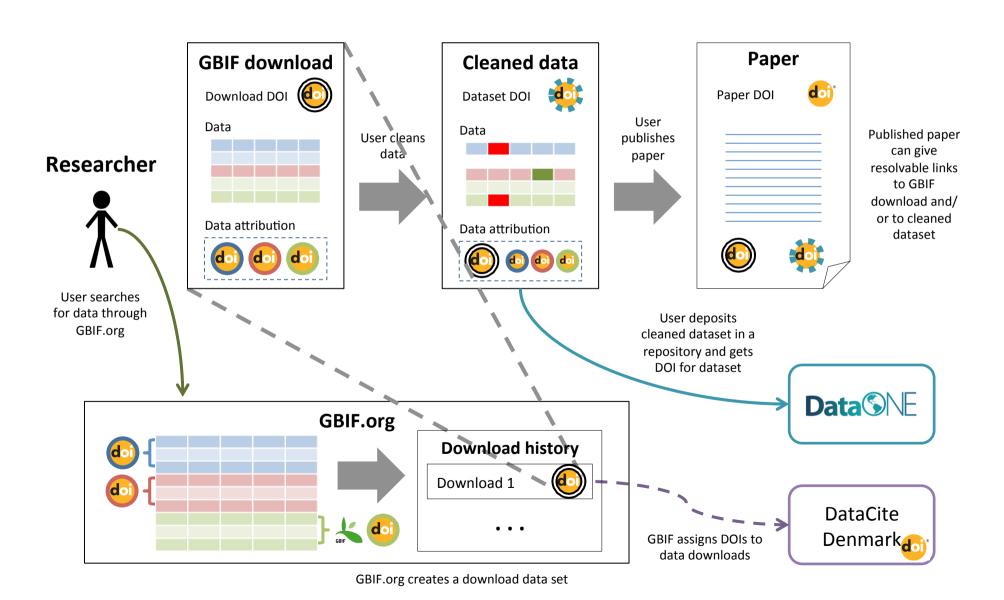
- Persistent resolvable identifiers
- Standard for published papers
- Simplify citing references
- Used in measuring impact

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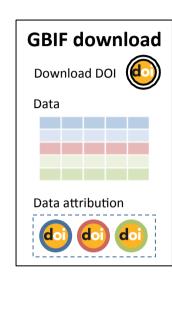


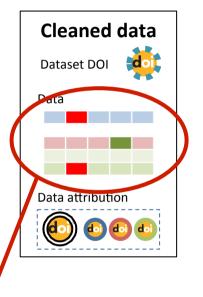
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#### Researcher



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#### Reader

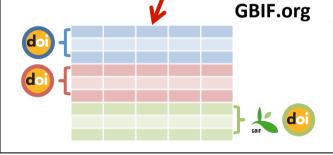


- Retrieve source data
- Reproduce results

#### **Data Publisher**



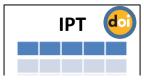
- Discover data usage
- Receive suggested data corrections

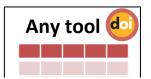






- Monitor data usage
- Enhance fitness-foruse

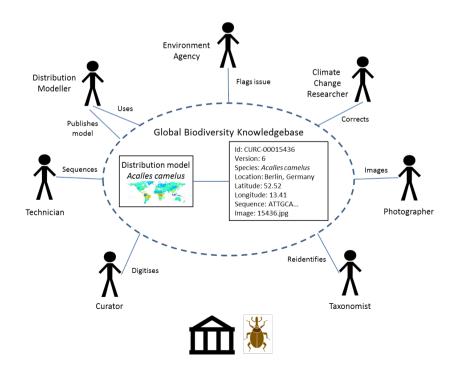


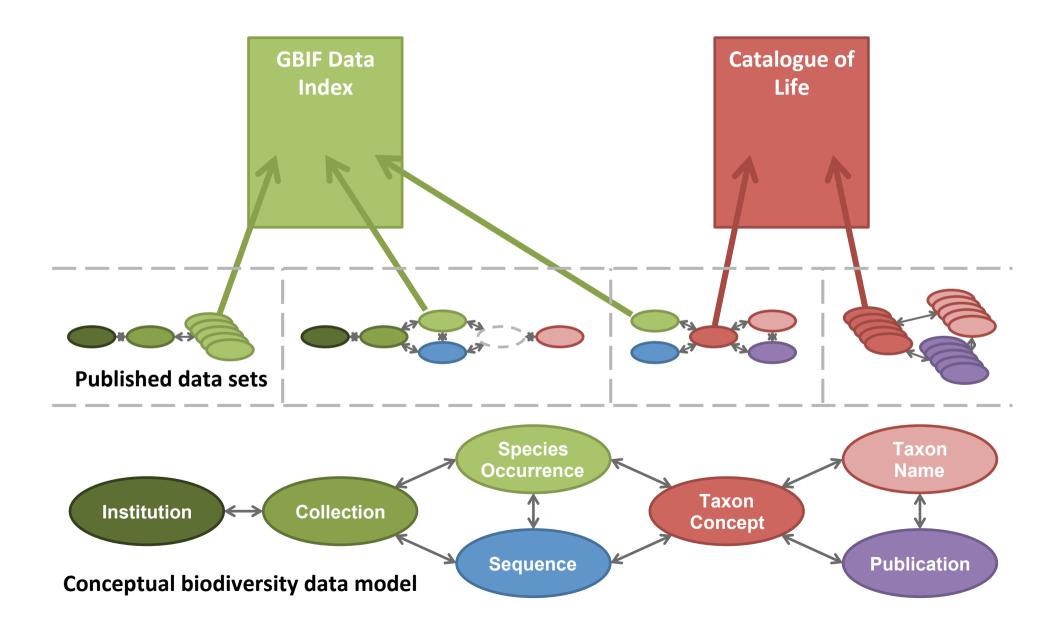


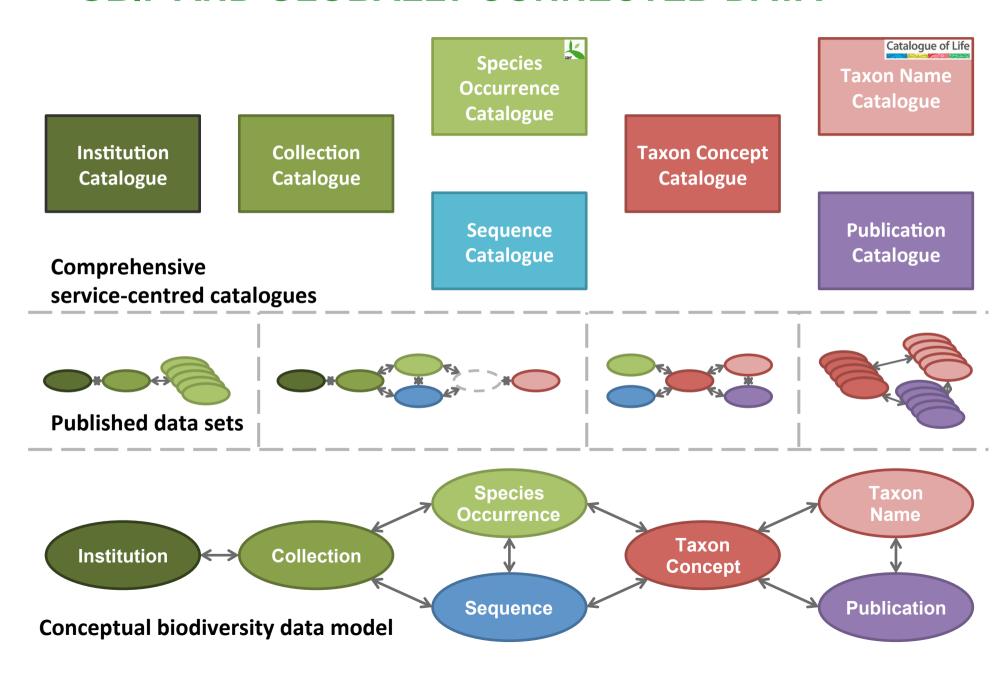


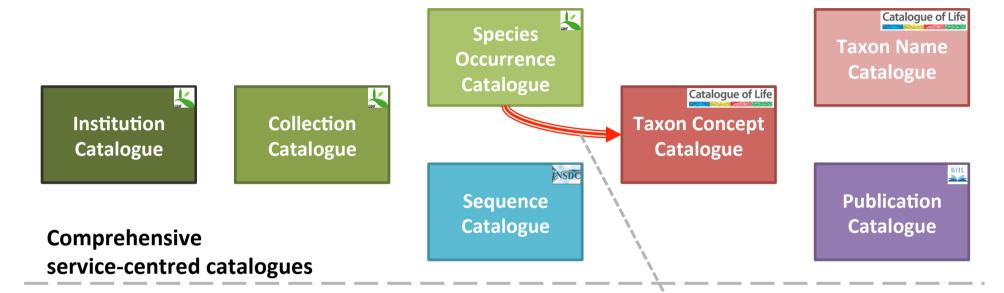
### **CONCERN – FITNESS-FOR-USE**

# GBIF does not yet make use of all relevant expert knowledge to improve data

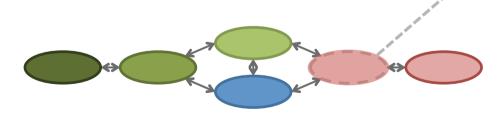




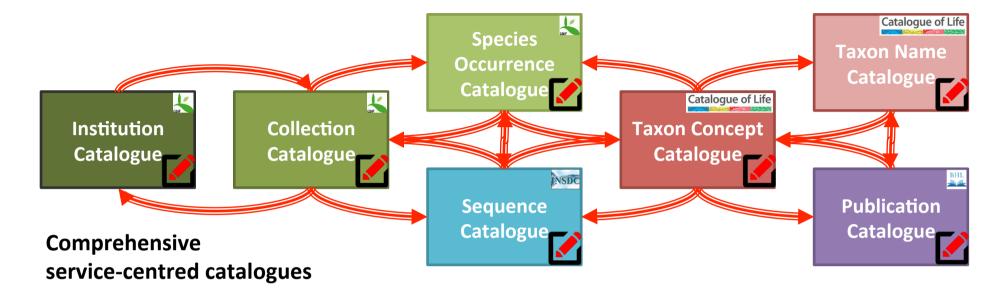




GBIF in future should use services from a shared catalogue to get the best concept (and to add it if not already included)



Species occurrence record includes scientific name and no explicit species concept



Catalogues with compatible services form an ecosystem to organise access to distributed biodiversity information

Catalogues are also best place of offer tools and services to support and organise annotations and corrections