Addressing biodiversity data quality is a community-wide effort

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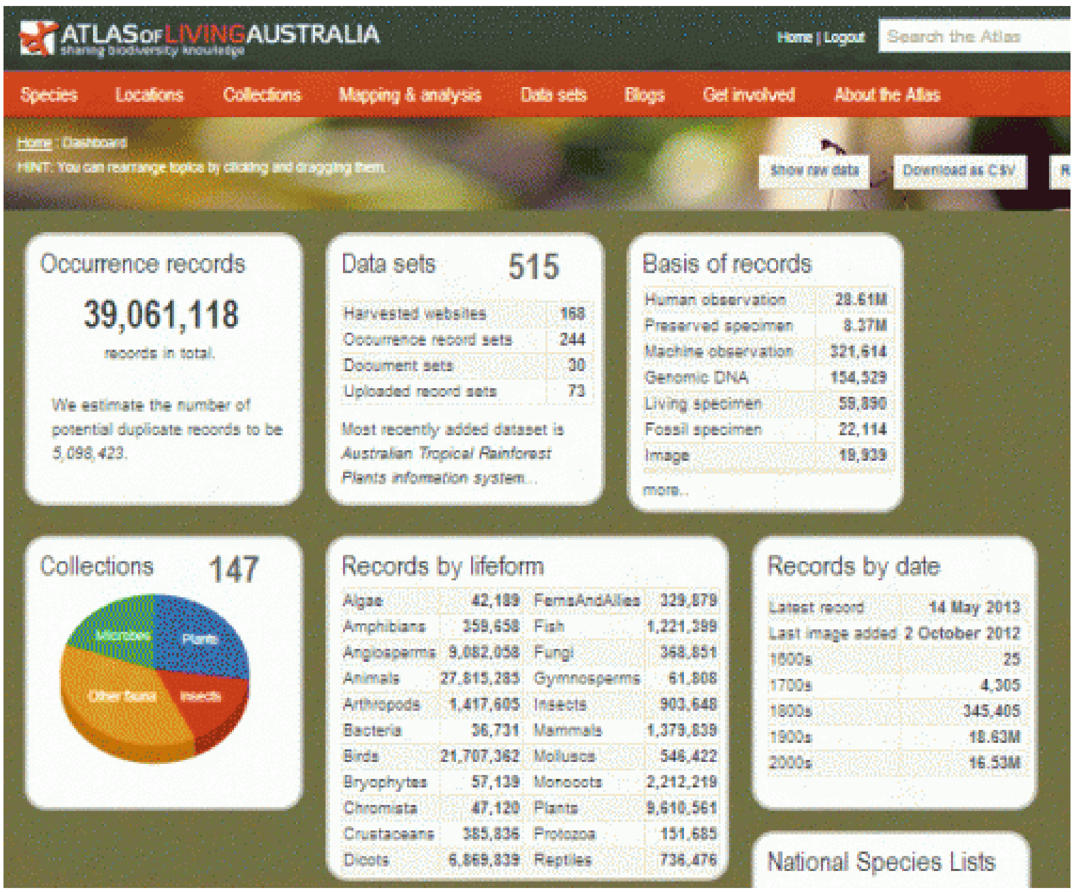

This image shows a small part of the screen of the dashboard from the ALA. It provides a little indication of what the Atlas has. Credit: Atlas of Living Australia, ALA

Improving data quality in large online data access facilities depends on a combination of automated checks and capturing expert knowledge, according to a paper published in the open-access journal *Zookeys*. The authors, from the Atlas of Living Australia (ALA) and the Global Biodiversity Information Facility (GBIF) welcome a recent paper by Mesibov (2013) highlighting errors in millipede data, but argue that addressing such issues requires the joint efforts of 'aggregators' and the wider expert community.

The paper notes that aggregations of data openly exposed in facilities such as the ALA and GBIF will contain errors, and both organisations are fully committed to improving the quality of these data. Errors will arise in a multitude of ways. For example, an observation of a species may be misnamed, the name could have changed or the pre-GPS location could be in error. The card entry of this observation could then have been incorrectly transcribed into a digital record by a museum or herbarium. When the record was translated into a standard form for communication with the ALA or GBIF, other errors could have been introduced. At each step of the process, errors can be detected, introduced or corrected.

The authors argue that one of the most powerful outcomes of publishing digital data is that such problems are revealed, providing an opportunity for the whole community to detect and correct them. The paper points out that Mesibov's detection of data issues was only possible with convenient public exposure of a large volume of biological data through the ALA and GBIF.

The ALA and GBIF also run a comprehensive range of automated data checks, for example flagging records whose coordinates lie outside the stated country of the observation or specimen. Such automatic checks will not detect all errors. Specialist expertise therefore remains necessary to detect and correct a wide range of data issues.

Agencies such as the GBIF and the ALA have infrastructure that simplifies error detection and correction. Aggregating many records of a species improves the chances of errors being detected. For example, one observation may be geographically isolated from other records. In the ALA, anyone can annotate an issue exposed in a record. Such annotations are sent to the data provider for evaluation and correction. It then depends on the resources of the provider to ensure that record is updated.

The ability to identify and correct data issues is the responsibility of the whole community and not any one agent such as the ALA. There is the need to seamlessly and effectively integrate expert knowledge and automated processes, so all amendments form part of a persistent digital knowledge base about species. Talented and committed individuals can make enormous progress in error detection and correction (as seen in Mesibov's paper) but how do we ensure that when an individual project like that on millipedes ceases, the data and all associated work are not lost? This implies standards in capturing and linking this information and maintaining the data with all amendments uniquely documented. To achieve this, the biodiversity research community needs to be motivated and empowered to work in a collaborative fashion.

Data should be published in secure locations where they can be preserved and improved in perpetuity. The ALA and GBIF are moving beyond storage of data by individuals or institutions using stand-alone computers that do not have a strategy for enduring digital data integration, storage and access.

More information: Belbin L, Daly J, Hirsch T, Hobern D, Salle JL (2013) A specialist's audit of aggregated occurrence records: An 'aggregator's' perspective. Title. *ZooKeys* 305: 67–76, doi: 10.3897/zookeys.305.5438

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