The New Zealand Organisms Register (NZOR)

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Introduction

All biodiversity information systems use the names of organisms as a fundamental identifier. Names provide the essential vocabulary by which we discover, index, manage, and share information relating to biodiversity. Access to an authoritative and up-to-date list of names and their relationships to currently accepted species (taxa) is key to supporting information management and sharing across the conservation, biosecurity, and biotechnology sectors.

There is currently no single, definitive registry of the more than 100,000 organism names relevant to New Zealand[3]. Because of this many agencies currently each maintain their own lists of taxonomic names in isolation from each other, in different formats, and at different levels of depth and quality. The absence of a definitive source of taxonomic names means that resources are wasted through duplication of effort, and there is increased expense to end-users in having to access multiple sources, and increased risk of poor decision making.

What is NZOR?

The New Zealand Organisms Register (NZOR) is a substantial project that aims to address these issues. As stated on the Home Page of the NZOR website (www.nzor.org.nz), the project is a "national information infrastructure project to efficiently mobilise, integrate, and share authoritative taxonomic information critical to maintaining New Zealand's Conservation and Biosecurity decision support systems and processes".

NZOR will be a digital catalogue of taxonomic data associated with more than 100,000 organism names relevant to New Zealand, and made available on the web with:

- Content dynamically and automatically derived from registered, authoritative data providers within New Zealand and globally (and attributed appropriately)
- Taxonomic opinion on the preferred scientific name and synonyms according to a cited taxonomic authority
- An accepted taxonomic hierarchy indicating the placement of a species in the 'tree of life'
- Alternate vernacular and Māori species names where they are available
- A statement on the presence or absence of the organism within a geographical region (New Zealand) according to cited evidence.

NZOR will provide:

- Web interfaces to NZOR data content
- Web-services to allow end-users to dynamically integrate NZOR content into local databases (to free them from the burden of maintaining the integrity of these data locally)
- Web-services to facilitate the checking of species lists for errors and inconsistencies
- Secure feedback facilities allowing registered end users to direct queries to individual data providers
- Globally Unique Identifiers (GUIDs) to serve as permanent, unambiguous and resolvable links to NZOR data content.

The vision for NZOR

The vision, developed for the project by a multi-agency steering group established in 2006, is:

> "to create an accurate, authoritative, comprehensive and continuously updated catalogue of taxonomic names of all New Zealand biota and other taxa of importance to New Zealand. This catalogue will be electronically available through one or more portals, and will be directly integrated into biodiversity and biosecurity systems used by central government ministries, departments, and agencies, local government, research institutes, NGOs and the wider community. The catalogue will be based on internationally agreed standards and will include organism names and synonymies, origin and occurrence data (presence/absence) and where possible alternate and historical synonymies. In the future it will link to information from other sources on aspects such as threats, ecology, distribution, use, management status, published material, keys for identification, and all collections, observation and survey data. As such it will form a key part of New Zealand's bioinformatics infrastructure, supporting scientific research and biodiversity and biosecurity management."

Key NZOR players in Year One

The NZOR project commenced on 1 March 2009. The Terrestrial and Freshwater Biodiversity Information System (TFBIS) Programme has provided funding for year one, with the possibility of three-year funding depending on the outcomes of the first year.

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[3] Note that the estimate of >100,000 names applies to all organisms groups. The workshop on cultivated plants names, where this presentation was given, focussed on a subset of these names.

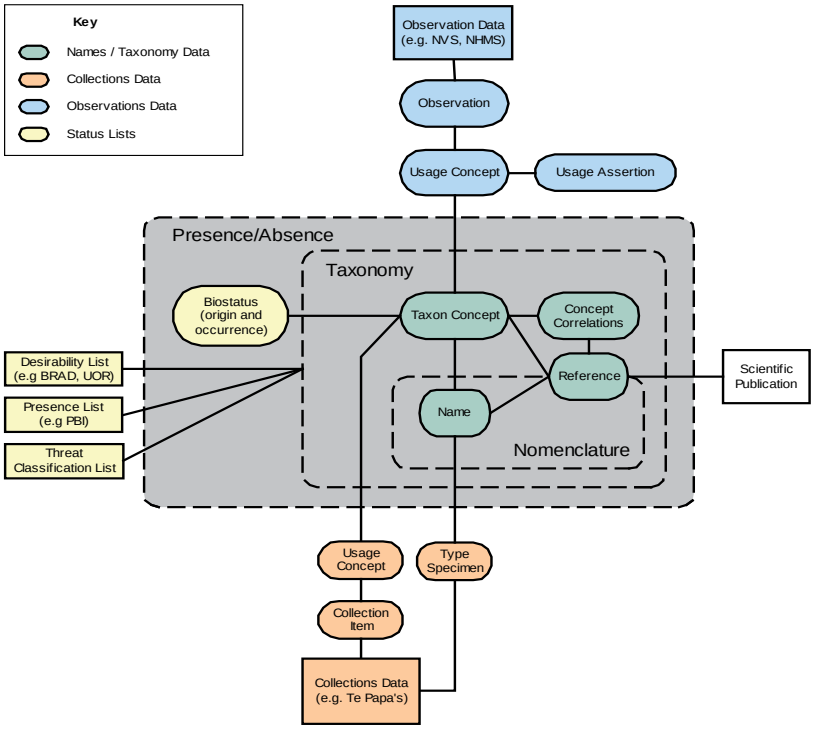

Fig. 1 Examples of biodiversity data, showing which are within the scope of NZOR (boxes with dashed border) project. NVS = National Vegetation Survey, NHMS = Natural Heritage Management System, BRAD = Biosecurity Risk Assessment Database, UOR = Unwanted Organisms Register, PBI = Plants Biosecurity Index.

Landcare Research has been contracted by TFBIS to develop and populate NZOR in collaboration with NIWA, Te Papa, The Department of Conservation, MAF Biosecurity, ERMA, the Ministry of Fisheries, the Ministry of Research, Science and Technology, Local Government agencies, museums, universities and NGOs (Non-Government Organisations).

Landcare Research, NIWA and Te Papa are the nominated consortium of data providers during year one. During this time period, MAF Biosecurity (and another organisation) are the nominated end user partners.

The NZOR Governance Structure has been established, comprising an Executive Secretary, Steering Group, Advisory Group, and Technology Groups. These governance groups have representatives from the aforementioned organisations.

Key NZOR deliverables in Year One

- Establish Governance Structure (as above)
- Conduct a user needs analysis
- Complete data provision and data use agreements
- Compile an initial cache of NZOR data from nominated providers
- Demonstrate utility with nominated end users
- Develop technical infrastructure
- Report to the TFBIS Committee for future funding of NZOR.

NZOR limits and expectations

The NZOR project is about mobilising existing public data in compatible formats. NZOR is not currently funded to digitise or develop new data content, and does not have a mandate to impose NZOR on data providers or consumers.

The project will expose gaps where data exists but needs digitising, and where data content does not exist and needs developing.

The gap analysis will inform the prioritisation of developing future NZOR content relevant to consumers, providers and funders.

NZOR in the future

We hope NZOR will become an established and supported national information resource providing services to a variety of end users within New Zealand. However, NZOR also has an international context. Landcare Research, on behalf of NZOR, is a partner in a new EU Framework 7 program called 4D4Life[4], managed by Species 2000[5], and funded to support the completion of the global Catalogue of Life[6]. NZOR will be the regional provider for New Zealand. Species 2000 aggregates data from many global taxonomic databases and already maintains a catalogue of 1.2 million organisms, or about half of those so far described. The development of an international network of regional data providers will complete the task. This partnership through Species 2000 establishes NZOR as one of the many data sources supporting information frameworks such as the Global Biodiversity Information Facility (GBIF[7]) and the Group on Earth Observations Biodiversity Observation Network (GEO BON[8]). New Zealand is a signatory to the international agreements establishing these initiatives. In turn these global information frameworks were established to support the aims of international conventions such as the Convention on Biological Diversity (CBD[9]). A specific example of the role of NZOR is that it will contribute significantly to New Zealand's responsibility under the CBD 2010 Biodiversity Targets[10] and in particular the Global Strategy for Plant Conservation target aiming to provide "A widely accessible working list of known plant species, as a step towards a complete world flora."[11]

How can I become involved?

Year one of the NZOR project is limited to Landcare Research, NIWA and Te Papa as initial data providers.

[4] 4D4Life – Distributed Dynamic Databases for Life: www.4d4life.eu.
[5] Species 2000: www.sp2000.org.
[6] Species 2000 / Integrated Taxonomic Information System Catalogue of Life: www.catalogueoflife.org.
[7] Global Biodiversity Information Facility: www.gbif.org.
[8] Group on Earth Observations: www.earthobservations.org/geobon.shtml.
[9] Convention on Biological Diversity: www.cbd.int.
[10] CBD 2010 Targets: www.cbd.int/2010-target.
[11] Global Strategy for Plant Conservation targets: www.cbd.int/decision/cop/?id=7183.

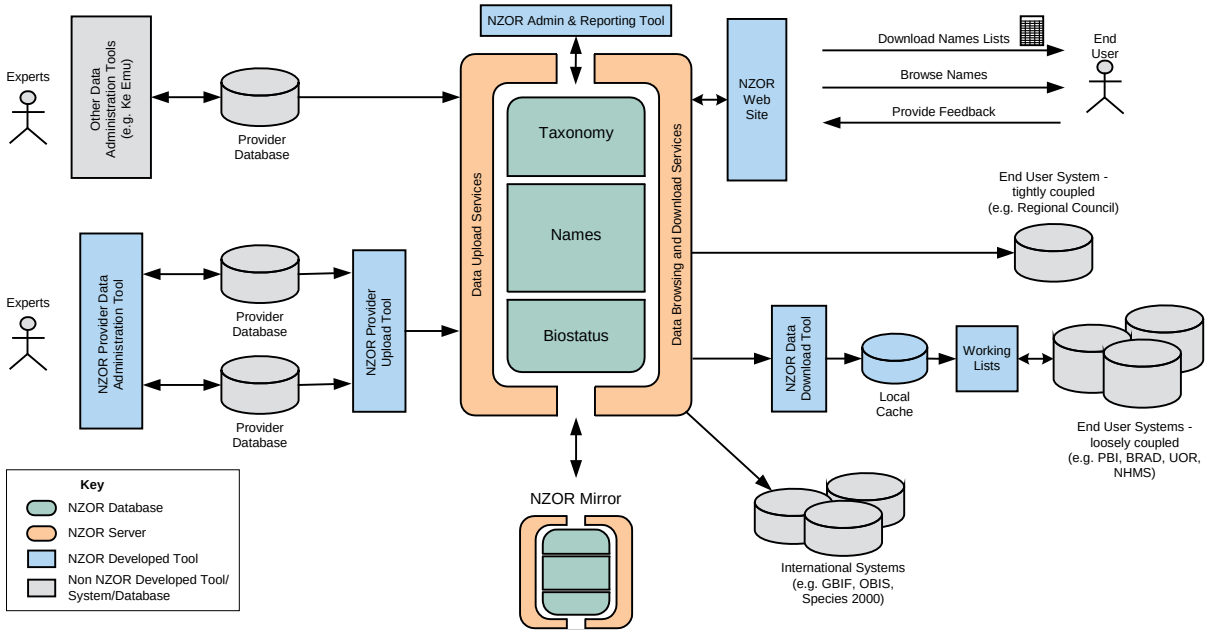

Fig. 2 High level concept diagram showing the data flow from providers (left) via NZOR systems (centre) to data consumers (right) who may integrate NZOR into their system in different ways. OBIS = Ocean Biogeographic Information Systems. Other acronyms as in Fig. 1.

Nevertheless we would like to have early discussions with, and feedback from, a broader spectrum of potential future data providers and consumers. There are a number of ways you or your organisation can engage with NZOR, as:

- A future representative in the Governance structure
- A data provider
- An end user/data consumer
- An interested party who wants to receive the eNewsletter and updates about NZOR.

Further details are on our website at www.nzor.org.nz/get-involved.

References

Carver, J; Cooper, J.; Vignaux, M.; Wilton, A. (2007). What's in a name? New Zealand Organisms Register Scope. Available from www.nzor.org.nz/documents/nzor_scope.pdf.

Cooper, J. (2009a). Taxa, species, names and strings - What's it all about? Available at www.nzor.org.nz/documents/NZOR-taxa-and-names-whats-it-all-about.pdf. (A simple explanation of the relationship between names, species, and taxonomy, and the challenges of nomenclatural and taxonomic data management).

Cooper, J. (2009b). The Global Picture of Biodiversity Information Infrastructure. Where does NZOR fit? Available at www.nzor.org.nz/documents/NZOR-the-global-picture.pdf. (An explanation of the global biodiversity information systems landscape, NZOR's place in this big picture, and its relationship to international initiatives).

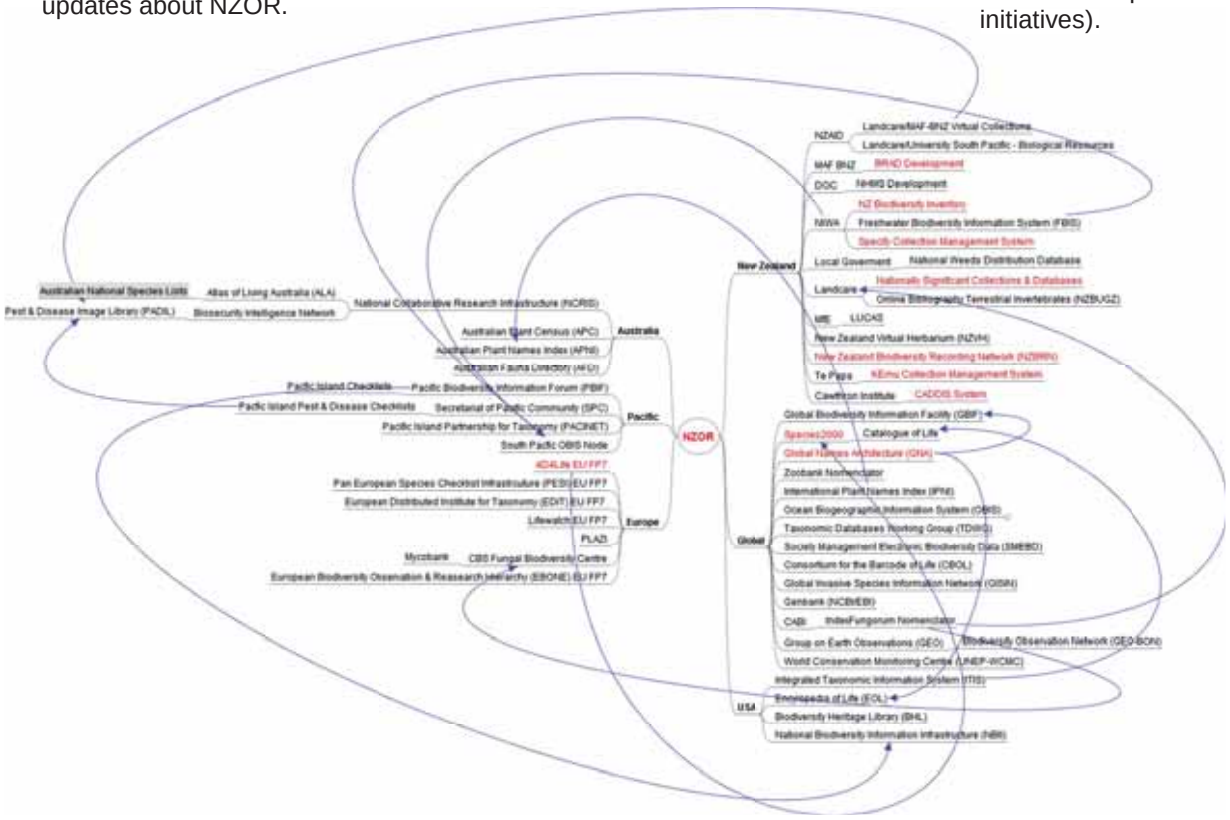

Fig. 3 The connectivity of NZOR in the global context. See Cooper (2009b) for key acronym expansions.