THE Oceania Pollinator Initiative OPI

Integrated Information System for OPI:

based on a federation of distributed databases

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The island ecosystems of Oceania evolved in isolation from continental landmasses and have unique and fragile plant-pollinator partnerships that are particularly vulnerable to climate change, land use intensification, habitat losses and invasion by alien species. The Oceania Pollinator Initiative (OPI) is a network of pollination ecologists and other researchers, policy makers, farmers, agronomists, beekeepers, conservationists and interested public to promote the conservation and sustainability of pollinators in natural and agricultural ecosystems in the region. OPI is aligned with four other continental size pollinator initiatives under the umbrella of the CBD International Pollinator Initiative (IPI), facilitated and coordinated by FAO. Our website is at www.oceaniapollinator.org

Computer Networks

AVH – Australia's Virtual Herbarium
www.anbg.gov.au/avh/

EOL – developing Encyclopedia Of Life
www.eol.org

FAO-PIMS – developing Pollinator Information Management System

GBIF – Global Biodiversity Information Facility (network)
www.gbif.org

GNA – developing Global Names Architecture
http://eolinformatics.mbl.edu/meetings/nomina1/final_report.html

GRIN – Germplasm Resources Information Network of USDA
www.ars-grin.gov

IABIN-PTN – developing Interamerican Biodiversity Information Network – Pollinators Thematic Network
www.iabin.net/

NZOR – developing New Zealand Organisms Register

NZVH – developing New Zealand Virtual Herbarium

OZCAM – Online Zoological Collections of Australian Museums
www.ozcam.gov.au/

SINGER – System-wide Information Network for Genetic Resources
www.singer.cgiar.org

Sp2000 – Species 2000 /Integrated Taxonomic Information System – The Catalogue of Life Consortium
www.sp2000.org

Databases

Global Examples:

MorphBank – global database of biological images
www.morphbank.net/

Examples from Australia and New Zealand:

APC* – developing Australian Plant Census with names http://www.anbg.gov.au/chah/apc/

NZPoll - New Zealand Pollination Database
www.landcareresearch.co.nz/research/biocons/pollination/

NZFlora – New Zealand Flora with plant names
http://nzflora.landcareresearch.co.nz

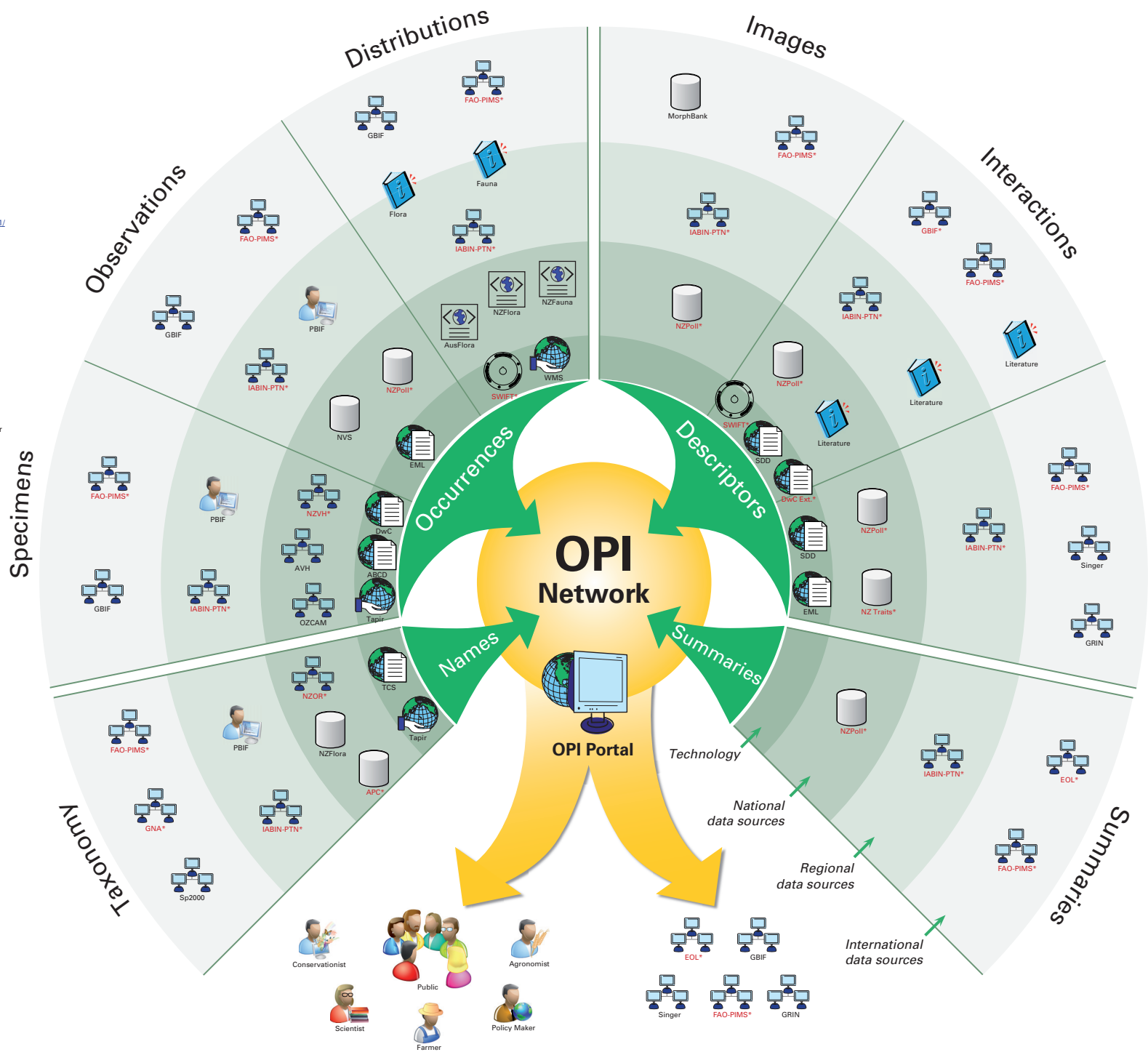
NZTraits – developing New Zealand Traits Database

NVS – National Vegetation Survey Databank for New Zealand
http://nvs.landcareresearch.co.nz

Data Transfer Protocols

Tapir – TDWG Access Protocol for Information Retrieval developed for Taxonomic Database Working Group Biodiversity Information Standards Body (TDWG)

WMS – Web Mapping Services compliant to standards of the Open Geospatial Consortium standards body (OGC)



Data Exchange Standards

TDWG Standards:

TDWG – Taxonomic Database Working Group Biodiversity Information Standards Body
www.tdwg.org/standards/

ABCD – data exchange standard used for collection data (especially in Europe) endorsed by TDWG

DwC – Darwin Core data exchange standard for collection data endorsed by TDWG

DwCExt. – developing Darwin Core Extension data exchange standard

TCS – Taxon Concept Scheme data exchange standard endorsed by TDWG

SDD – Structured Descriptive Data exchange standard endorsed by TDWG

Other Standards:

EML – Ecological Metadata Language from The Knowledge Network for Biocomplexity (KNB)
http://knb.ecoinformatics.org/software/eml/

Literature
Published literature

XML
XML format E-Literature

People Networks

For example:

PBIF – Pacific Biodiversity Information Forum
www.pbif.org/dbs

Software

For example:

SWIFT – developing SWIFT Description Parser: a Software Tool for Rapid Species Description through Natural Language Parsing
www.cbit.uq.edu.au/articles/article_swift.htm

The Oceania Pollinator Network Challenge

A first assessment of the status of pollination services in Oceania requires sharing information across a broad geographic region with small remote islands in the Pacific Ocean. Information needed for conserving and sustaining pollination systems for the nations of Oceania is scarce, scattered or non-existent and many key pollinator collections are in overseas museums. We are initiating and seeking funding for an information network of linked integrated databases to aggregate existing information from diverse local, national, regional and global resources. This will allow us to target information gaps in our future monitoring efforts and case studies. Our vision is to build on existing databases to provide dynamic updatable information primarily via the internet with tools for querying the databases and downloading current summaries based on reliable, traceable, evidence based data. We will integrate four major types of information (names, occurrences, descriptors, and summaries) and develop "end to end" reporting tools that will support decision making and promote awareness of the issues.

Proposed OPI Integrated Information Network

The diagram above shows examples of the content and the proposed organization of the OPI Integrated Information system with inputs and outputs, data resources, services, technologies and related networks. The organization from local, national, regional to international data sources in a "federated distributed network" will allow information flow up and down the hierarchy. The OPI national level is exemplified in the diagram primarily by existing New Zealand and Australian databases but other Oceania nations will be added as they are developed. At each level, some of the technologies and databases are still in development and marked in red * on the diagram. We propose to adopt and leverage current and emerging international data protocols for transferring biodiversity data (see diagram). We propose to follow data exchange standards for compatibility to the wider community of international initiatives in particular FAO's Pollination Information Management System (PIMS) (Gemmill-Herren et al., 2008) and the Inter-American Biodiveristy Information Network (IABIN) Pollinators Thematic Network (PTN) (Ruggiero et al., 2008) and link to existing regional networks such as PBIF, and others.

Proposed Outputs and Outcomes for OPI

The proposed outputs from the OPI Integrated Information system will be widely and freely available via the internet and as published booklets and reports on request. The OPI portal will provide search tools for queries by plant or pollinator species as well as habitats at various spatial and temporal scales. Web-based information pages will contain summary reports with analyses, images, and information on species or pollination systems or communities with references to the literature and data sources. Tools for endusers will include "snapshots" of the raw data traceable to the source (at any level) as well as updatable summaries integrating the current state of information available for Oceania. The portal will deliver new research on best practice management with summaries from the literature. The information will support and enhance decision making by policy makers, best practice management by farmers and agronomists, research by pollination ecologists, and conservation and restoration planning by conservationists. Educational pages will increase awareness and understanding of the nature and vulnerability of pollination systems in Oceania and feedback up to the global levels to promote IPI goals.

References:

Gemmill-Herren B, Collette L, DeGiovanni R, Klein A, Kagoiya R, Mayfield M, Roberts S, Jepson P. 2008. Knowledge Management for Conservation and Use of Pollination Services for .Sustainable Agriculture. Poster abstract from FAO at the SBSTTA – 13 meetings of the United Nations Convention on Biological Diversity, Rome, Italy Feb 18-22, 2008.

Ruggiero M, Sellers E, Saraiva AM, Correa PLP, Adams L. 2008. A Network for Pollinator Information and Extertise in the Western Hemisphere. Poster abstract from FAO at the SBSTTA – 13 meetings of the United Nations Convention on Biological Diversity, Rome, Italy Feb 18-22, 2008.

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