Meeting the information challenge for crop wild relatives (CWR) *in situ* conservation: A global portal hosting national and international data on CWR

13th World Congress of the International Association of Agricultural Information Specialists (IAALD)
26 – 29 April 2010, Montpellier, France
Overview of presentation

- CWR – definition and importance
- The global CWR project
- Challenges at beginning of project
- Addressing the challenges
- Results: national information systems and global portal
- Some conclusions and lessons learned
- Future needs / local – global linkage
CWR – definition and importance

- Wild species more or less closely related to crops, but unlike them, have not been domesticated.
- Threatened by global change. An estimated 16-22% of CWR species studied might go extinct by 2055.
- Seriously under-conserved *ex situ* and *in situ*
- But many CWRs harbor genetic traits that could hold the key for many crops to adapt to climate change
The global CWR project

- **Title:** *In situ* conservation of crop wild relatives through enhanced information management and field application
- Supported by UNEP/GEF
- Implemented by Bioversity International
- April 2004 – February 2010
- Partner countries
  - Armenia, Bolivia, Madagascar, Sri Lanka, Uzbekistan
- Partner organizations
  - BGCI, BLE, FAO, IUCN, UNEP-WCMC
- Co-financing: BMZ, Germany
Challenges at beginning of project

Develop CWR information management systems and capacity when:

In general
- very little information activities on CWR exist as examples
- information is very scattered and difficult to access
- no global web site exist dedicated to CWR

In partner countries
- only one targeted information activity exists (CWR atlas in BOL)
- data are dispersed, in format not readily usable
- little data are digitized, in particular location data
- data structures are different in institutes within one country
- Very different national settings regarding in-country collaboration, IT infrastructure and capacities
Addressing the challenges

• Development of CWR descriptors for data types and fields necessary to capture all relevant information about CWR
• Digitization and aggregation of existing but dispersed information in national or institutional databases based on descriptors
• Collection of new occurrence data from numerous field surveys
• Use of and integration into existing IT structure
• New collaborations between different institutions within a country
• Training on GIS and national CWR information systems within the countries
Results

CWR information systems in the countries

• National information systems to manage CWR data, integrated in national settings, making best use of existing infrastructure:
  • The establishment varied from building up a web based system from scratch, to adapting existing Access databases through providing CWR to an already existing national data portal

• National web sites providing access to CWR information and data

• Systems now hosted in national organizations with relevant capacity, committed to maintenance, updating and long-term sustainability
Results

CWR global portal

www.cropwildrelatives.org

• All five national inventories searchable through a unique search function
• Links to international resources that provide additional information about the CWR taxa
• Content management system: easy management; sustainability
• Other features: News, events, publications, experts, institutes, projects
• Straightforward user contributions
Some conclusions and lessons learned

- Establishment of effective partnership in the countries among institutions that formerly had not worked together has been crucial to the successful development of the national inventories.
- All major players in the area of content as potential contributors and users need to be involved, in order to make the content provided as comprehensive as possible.
- Taking care of local context and embedding the national information systems well into the national context, building on existing capacity, infrastructure and ways of collaboration has shown to be a solution that best addresses issues of sustainability in the future.
Future needs / local – global linkage

Future needs
• Identification of further national and international information sources and additional national inventories
• Consideration on how characterization and evaluation data can be integrated or linked.
• Provide training and capacity building materials to assist in increasing practical experience in CWR in situ conservation

Local – global linkage
• National data from 5 countries can be searched through one search interface
• Data exchange has been formalized through data sharing agreements and is based on a commonly used data standard, i.e. Darwin Core.
National information systems

Armenia

• Web-based system (MySQL and PHP) for data entry and management
• Input mask deployed to 6 institutes that provide data to a central database
• Quality check at central database
National information systems

Armenia

• Contains *ex situ* records, occurrence data from field surveys, plant images, maps, red listing data
• detailed information for 104 species; about 2000 species in the national inventory
• Web site where that data can be browsed
• [www.cwr.am](http://www.cwr.am)
### Armenian CWR Information System

<table>
<thead>
<tr>
<th>Family</th>
<th>Genus</th>
<th>Species</th>
<th>Red-Listed Status</th>
<th>Endemic in Armenia</th>
<th>Notes</th>
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* Higher Geography: Transcaucasia/Caucasus, former USSR

** Biological Elements **

* Fill Sex: **hermaphrodite**

* Fill LifeStage: **flowering**

* Fill Attributes:  

** Collecting Event Elements **

* Collecting Method: **collecting, drying for making herbariums**

* Year:  

* Month: **Choose month**

* Day: **Choose day**

* Collector:  

** Record Level Elements **

* Catalog Number:  

* Information Withheld:  

* Remarks:  

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National information systems

Bolivia

- 9 institutes set up institutional CWR databases with very detailed data
- 3010 records for 162 species
- Institutes send data for agreed descriptors via web services to national portal available at http://www.cwrbolivia.gov.bo/inicio.php
- CWR atlas http://www.cwrbolivia.gov.bo/atlaspsc/
Búsqueda de Datos

Consulta a Base de Datos de Socios Nacionales:
Esta opción de búsqueda le permite obtener datos sobre especies de parientes silvestres de cultivos, registrados por las instituciones socio del proyecto en el formato del estándar Darwin Core. Para realizar las búsqueda debe escribir la letra inicial del género o el nombre científico. También tiene la opción de realizar Búsquedas Avanzadas haciendo clic sobre el enlace para personalizar su consulta.

Nombre Científico

Para realizar Búsqueda Avanzada hacer clic en el enlace
Búsqueda Avanzada
National information systems

Madagascar

• Central Access database based on CWR descriptors
• Data for 154 CWR species
• Customization of existing national data portal on biodiversity data, REBIOMA, for the publishing of CWR data at national level rather than developing a dedicated CWR portal
### Scientific name

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<td>Rank</td>
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<tr>
<td>Sub Taxon</td>
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<tr>
<td>Name Author</td>
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<td>Taxonomical Reference</td>
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### Common names

<table>
<thead>
<tr>
<th>Common taxon name:</th>
<th>Language:</th>
<th>Locality in which this name is used:</th>
<th>Dialect:</th>
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</table>

Add / Modify Common Name
National information systems

Sri Lanka

• Multi-user database
• CWR data integrated with display and generation of distribution maps
Spatial database components

- Diagrams
- Maps
- Charts
- Reports
- Internet
- Tabular Data
- Vector GIS map Layer
- Site photo, Forms and Documents
- Metadata

CWR Spatial Database
Taxon Module main window

1. Quick Access window
2. Data manipulation window
3. Query and quick access tool bar
4. Data manipulation Tool bar
Using Google Earth to Map CWR Site Locations and Save Them to a File

Google Earth in CWR Spatial Database

When you click the button on CWR atlas, all queried sites will be displayed on the Google earth.
National information systems

Uzbekistan

• Access databases created
  • *in situ* based on field survey form used in the project
  • *ex situ* data from 6 research institutions

• Distribution maps

• All this is available from national website at
  www.cwr.uz
UNEP-GEF Global Project "In situ Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application"

Crop Wild Relatives of Uzbekistan - National Information System

"In-situ conservation of crop wild relatives through enhanced information management and field application" is a UNEP/GEF co-financed project that addresses national and global needs to improve global food security through effective conservation and use of crop wild relatives. These wild relatives include the ancestors of modern crops and varieties and species related to them.

This project brings together five countries: Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan, IPGRI and five other international conservation agencies: the Food and Agriculture Organization of the United Nations (FAO), Botanic Gardens Conservation International (BGCI), the United Nations Environment Program's World Conservation Monitoring Centre (UNEP-WCMC), the World Conservation Union (IUCN) and Federal Agency for Agriculture and Food, BLE (before the German Centre for Documentation and Information in Agriculture (ZADI). Each of the countries has significant numbers of important and threatened crop wild relatives.

Documents
- Management Plan for Amygdalus bucharica L. (Rosaceae) in Chatkal Biospheric State Reserve, Uzbekistan