

From Local to Global: Launching the New Rangelands West Portals and Database

By Jeanne L. Pfander, Barbara S. Hutchinson, Valeria Pesce and Matt Rahr

Introduction

The Rangelands Partnership as it is today had its beginnings back in 1995 when the University of Arizona (UA) Libraries, partnering with UA College of Agriculture & Life Sciences (CALs) rangelands specialists, joined as a charter member of the AgNIC initiative coordinated by the National Agriculture Library (NAL). The topic of rangelands was chosen by Arizona because of the large amount of that land type in the state and the importance of addressing the many issues arising from the multidisciplinary nature of rangeland management. In fact, rangelands cover 70 percent of the world's land area and 50 percent of the U.S. (Holechek, 2001, p. 42). They include grasslands, savannahs, shrublands and deserts. Rangelands are important resources for wildlife habitat, watersheds, recreation and forage for livestock production and, therefore, are critical to economic development in rural communities and to people everywhere for access to natural resources and open space.

Early on, the Arizona team recognized the challenge of representing the knowledge universe related to rangelands. As a result, in 2001, the Deans of the UA Libraries and CALs invited their counterparts in the Western Land Grant Universities (LGUs) to send representative librarians and rangeland specialist to join in a Western Rangelands Partnership. Today this collaborative effort, known simply as the Rangelands Partnership, has grown to include 19 LGUs, with international participation from Australia, Mexico, and the United Nations' Food and Agriculture Organization (FAO).

This paper will describe the efforts, "from local to global", that have resulted in the release in December 2012 of a suite of websites – Global Rangelands, Rangelands West and hosted state Rangelands sites - with a back-end database of more than 13,000 resources. It will also describe the plans for ongoing development of these sites.

Change is Constant

As the Rangeland Partnership collaborators worked together on the Rangelands West and state Rangelands sites, they recognized the need to change and evolve ... and gain new resources.

To inform these developments, they conducted needs assessments (Pfander, 2009) and developed a business plan, the purpose of which was to guide development of technical requirements for a total redesign of the Rangelands West sites.

Key recommendations that emerged from the needs assessment described requirements that users felt were critical. The site(s) should: update content frequently, have fast and relevant searches, include libraries of documents and images, provide location-specific information, offer tools to foster interaction/networking, have a searchable directory of experts.

The business plan addressed the issue of sustainability and recommended revenue generation through grants, Partner contributions and potentially from sponsorships.

Moving Forward

In 2010, members of the Partnership (the University of Arizona, the University of California at Davis; and the University of Idaho) along with Rangelands Australia and the Food and

Agriculture Organization of the United Nations, received a USDA International Science Education Program Grant. The proposal objectives were:

- Redesign Rangelands West portal to host repository of global rangelands full-text and evaluated resources
- Establish partnerships with key organizations/associations around the world as contributors to “Global Rangelands”
- Upload and create infrastructure to provide faster and more user-friendly access to content
- Create customized search interface (faceted search) and implement social networking applications
- Develop two multimedia learning modules (overview & Australia)
- Create synthesis papers on international outreach/Extension practice for natural resources management

The results, to date, include the new [Global Rangelands](#) (GR) portal (Fig. 1) and back-end database of over 13,000 records; a re-designed [Rangelands West](#) (RW) site (Fig. 2) and a redesigned [state Rangelands site template](#) (Fig. 3) that can be used by those partners which choose to do so. (Some partners are using the LibGuides system to create their state sites.)

In addition, papers from the Australia Rangelands Society symposia series have been digitized and records added to the GR database. Rangelands-related records have been harvested from the FAO database and also added to GR. During the next year, the Partnership will be exploring opportunities to collaborate with other organizations such as the Grasslands Society of Southern Africa and the International Land Coalition.

Progress has been made in implementing faceted search options in the GR search interface including the ability to limit searches by author, document type, and keywords. Multimedia learning content has been created through the UC-Davis developed WRANGLE (World RANGELands Learning Experience) modules (Fig. 4) and other multimedia has been identified and added to the GR database.

The international outreach section of the GR site has been created as a resource on global extension practice involving participatory approaches and the use of Information and Communication Technologies (ICTs). Users can find information about international Extension practices, case study profiles, organizations working in this area, multimedia resources on international outreach, and links to resources on the use of ICTs (Information Communication Technologies) in international Extension.

Technical Implementation and AGROVOC Integration

Both the Rangelands West and the Global Rangelands portals are built on the Drupal Content Management System (CMS), a powerful open-source platform that offers advanced features for submitting, organizing, searching, browsing, importing and exporting contents. The integration of external content (like the *Journal of Range Management* and *Rangelands Archives* at [UAiR](#) and the [FAO Doc repository](#)) is made possible by a very elegant import mechanism available for Drupal, which allows for importing or harvesting via CSV, RSS, and OAI-PMH. An additional module connecting Drupal to an Apache Solr instance provides

Solr-based faceted browsing capabilities. The Drupal Organic Groups module is used to separate and establish editing roles amongst the different partners' repositories. In addition, the Global Rangelands and Rangelands West portals adopted some specific solutions recommended by the AgriDrupal¹ community, a group of interest facilitated by the Food and Agriculture Organization of the United Nations (FAO) and the Global Forum on Agricultural Research (GFAR) and made of practitioners working with the Drupal CMS to implement useful functionalities for agricultural information management. These specific solutions include the adoption of core standard bibliographic metadata for describing the resources available in the portals and the integration of the AGROVOC thesaurus for tagging all contents.

AGROVOC is a controlled multilingual vocabulary covering all areas of interest to FAO, including several topics related to rangelands. Besides the usual advantages of using a controlled vocabulary for indexing resources (e.g. the consistent use of the same terms for the same concepts across all collections and also across different portals and information systems), using AGROVOC broadens the potential range of information sources that can be harvested, as it is adopted worldwide by many organizations and is linked to other widely used thesauri² (like NALT, CAAT, Eurovoc).

AGROVOC is integrated in the Rangelands West and Global Rangelands portals through a Drupal module that suggests AGROVOC terms when the editor is tagging contents and then makes the selected terms available for faceted browsing.

Future Technical Improvements

There may be relevant information sources on the web that do not use AGROVOC for tagging contents. In order to aggregate contents from these sources (e.g. via RSS feeds or page scraping) and have them fit with the semantic organization of the platform, the "automatic tagging" feature of the AGROVOC module for Drupal can be exploited. This feature analyses the text available with the resource and automatically assigns AGROVOC terms based on natural language processing techniques, thus making the aggregated resources searchable through the faceted browsing.

The possible inclusion of non-English resources will be easily provided for by Drupal's native support for multi-language content. Additionally, non-English-speaking editors and visitors will be allowed to switch the interface language and browse AGROVOC terms in their preferred language (among the languages supported by the portals).

Finally, besides some basic RSS feeds to share the contents of the portals, the provision of an RDF store is planned, to make all contents available as Open Data.

Some of the enhancements described above, especially the provision of an RDF store and the exposure of data as Open Data, will be better achieved upgrading to the latest version of the Drupal CMS, which will make the platforms more robust, performing and interoperable.

Global Rangelands Phase II

Web portal work is never "finished". Not surprisingly, the Rangelands Partnership has already identified a number of goals for "Phase II". Desired new features and functionality include

¹ AgriDrupal is a set of solutions implemented in Drupal that extend it with ready-to-use functionalities for agricultural information management: <http://aims.fao.org/tools/agridrupal/>

² These linkages consist in mappings between AGROVOC terms and other Knowledge Organization Systems (KOS) implemented using semantic technologies and a Linked Data approach.

improvements to the user interface, social networking options (Twitter, Facebook and Google Plus), advanced searching options, faceted “browsing”, a mobile responsive design, search boxes on each Collection page, options for EndNote / RefWorks export of content and continued addition of new content through harvesting or digitization efforts. Specific technical changes include:

- **Advanced Searching:** Will allow the user to specify criteria such as Keyword, Author, Title, Journal Source, etc. and narrow the results to specific years and document types. Advanced Search will complement current faceted searching capabilities.
- **Faceted Browsing:** Will allow a user to browse content at a generalized level without first having to provide a search term. For example, Faceted Browsing will allow users to “See all conference proceedings”.
- **Browse All Authors Alphabetically:** Gives users the ability to browse Author by last name.
- **Print Friendly Pages:** Provide a print friendly button that formats the content of the web page to match an 8.5x11 page paper.
- **State Template Improvements:** Partners requested the ability to add more “slides” to the front page rotating slideshow. This number will be increased along with the ability to add a dynamic secondary page allowing users to see all future upcoming events.
- **Streamlined Data Harvesting:** Improve the back-end mechanism and workflow for importing data so that when new data becomes available on partners’ repositories, it becomes searchable through Global Rangelands more quickly.

Following the Partnership’s annual meeting in May 2013, the technical team has already made improvements to the user interface. Now, when searching from a State template, the search results page has the same template as the State homepage. Prior to this, the search result page had the look of the Global Rangelands page template. This also has been addressed on the Rangelands West search results page. In addition, the Rangelands West search results page now includes results from *Journal of Range Management* and *Rangelands* journals. Search boxes have been added to each collection’s listing of resources. This can be found on the “Collections” menu item. A Rangelands West Facebook page has also been created.

Conclusion

The Rangelands Partnership is made up of a growing number of committed rangeland professionals, librarians, and technicians from around the world who largely volunteer their time to ensure access to quality rangeland management resources. The purpose is to provide information and data that will assist with informed decision-making and knowledge sharing for a wide range of audiences, including public and private landowners, teachers and students, and the general public. The Partnership welcomes opportunities for new collaboration with related groups and organizations and values comments and suggestions from all stakeholders. To this end, the authors of this paper welcome feedback through the “contact us” feature on the Partnerships’ portals: <http://globalrangelands.org/contact>.

References and Related Papers [APA 6th]

Holechek, J. (2001). The world's growing population will put added pressure on range-lands and the value of the services these lands provide. *Rangelands*, 23(6), 39-43.

Holechek, J. L. (2013). Global trends in population, energy use and climate: implications for policy development, rangeland management and rangeland users. *The Rangeland Journal*, 35, 2, 117.

Hutchinson, B., Pfander, J., Tanaka, J., & Jason Clark. (2011). Rangelands West/Global Rangelands, eXtension rangelands, and the Range Science Information System: A suite of new web resources. *Rangelands*, 33(4, Monitoring on Rangelands), 55-63.

Hutchinson, B.S., Pfander, J.L. and Ruyle, G. (2008). Collaborative Initiatives to Deliver Agricultural Information. In P. Herson and R.R. Powell (Eds.), *Convergence and Collaboration of Campus Information Services*. (pp. 177-197). Westport, Conn: Libraries Unlimited.

Pfander, J.L. (2009, March). Summary of Results from the 2008 Rangelands Health & Management Information Needs Assessment Survey. Paper presented at the Rangelands West Annual Meeting, Boise, ID.

Tanaka, J., Hutchinson, B., Fraker-Marble, M., Frost, R., Launchbaugh, K., & George, M. (2012). Using Rangelands on the Web as a Teaching Resource. *Rangelands*, 34, 3, 39-40.

Figures:

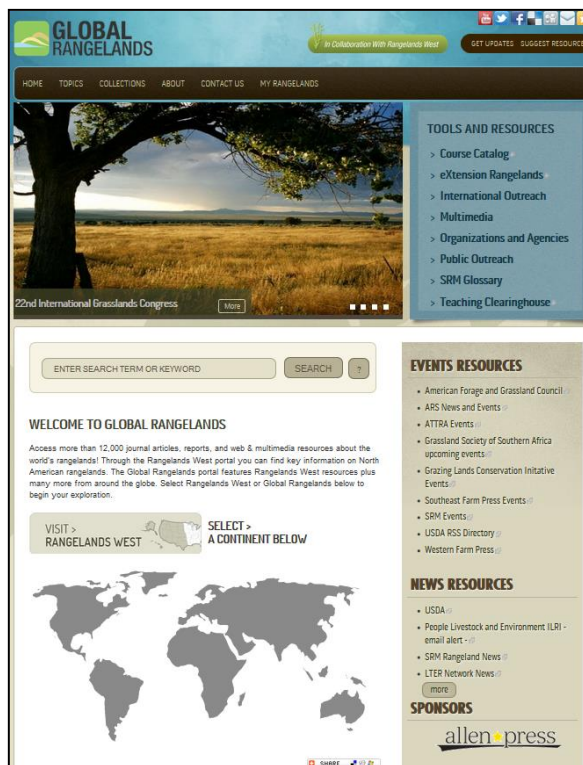


Figure 1: Global Rangelands Portal



Figure 2: Rangelands West Home Page

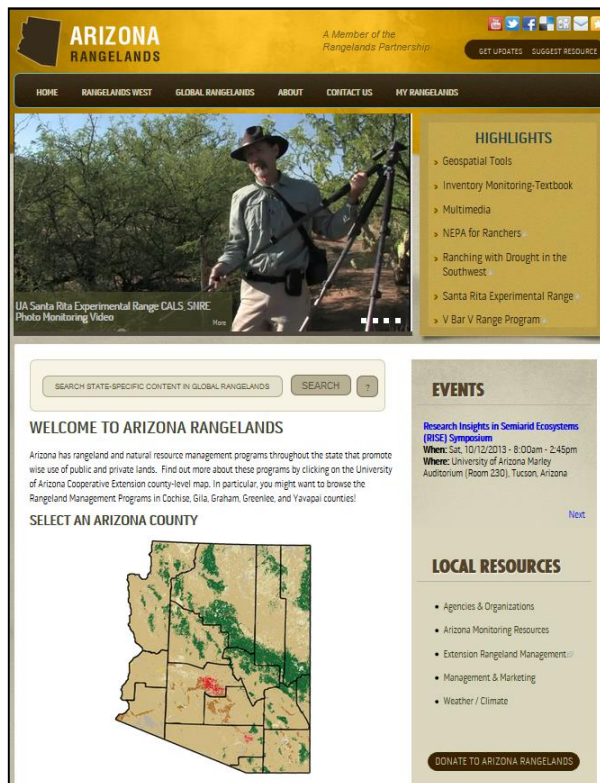


Figure 3: Sample Rangelands State Template

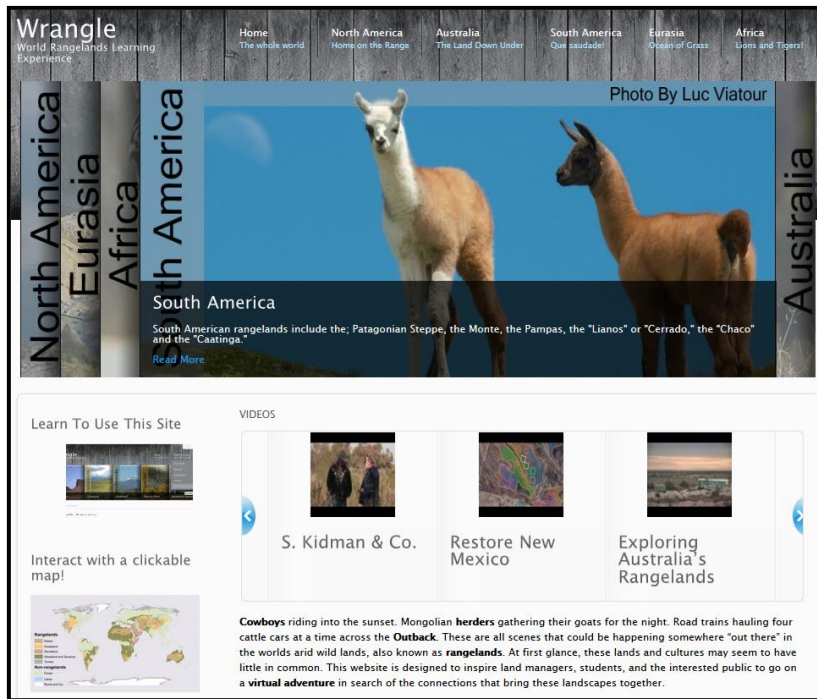


Figure 4: World Rangelands Learning Experience (Wrangle.org)