Librarians at Land-Grant Universities Working with Extension: Three Case Reports

Inga Haugen, Kristen Mastel, and Jeanne Pfander

Abstract

Librarians and Cooperative Extension Service (CES) professionals in the United States have common missions to make authoritative information available to their constituencies. Both professions have long traditions of service and success in the dissemination of information. This paper explores how librarians can partner with CES and contribute unique skills and expertise. After a summary of the history of CES and the historical connection among land grants, extensions, and agriculture, three case reports are presented that outline how three librarians at land-grant universities have worked with CES.

Introduction

Headlines in the news feature concerns regarding our food systems, water, and health. All of these topics tie into the interdisciplinary field of agriculture, with researchers, educators, and farmers collaborating to leverage knowledge to solve these challenges. Working within these topics are the specialized agriculturalists and all the supporting people and systems at land-grant universities. For the purposes of this paper we will look at how librarians at these institutions can work with Cooperative Extension Service (CES) on the agricultural information needs of their shared constituencies. This paper specifically examines librarians who partnered with CES agents, all of whom work for land-grant universities, to address the challenges that need cross-cutting approaches in today's world.

Background

Land-Grant Libraries and Librarians

With the Morrill Act of 1862 the U.S. Congress established the country's land-grant college system. These colleges were focused on teaching "agri-

LIBRARY TRENDS, Vol. 65, No. 3, 2017 ("Collaboration in Agricultural Librarianship and Information Work," edited by Sarah C. Williams and Christine D'Arpa), pp. 378–395.

culture, military tactics, and the mechanic arts as well as classical studies so members of the working classes could obtain a liberal, practical education" (APLU, 2012, p. 1). The libraries supporting these colleges were rightly focused on the same topics. At the time when land grants were first established, library support was largely to gather and maintain a physical collection of books and journals to provide access for research. Jessie Carney Smith delved into the specifics in her dissertation, *Patterns of Growth in Library Resources in Certain Land-Grant Universities* (1964), looking at the nature and size of the collections from four land-grant and four neighboring institutions, which were not land grants. In *Land-Grant University Libraries* (2009) Carol Rain Hagy concluded that writers tend to focus either on libraries or land grants, but not necessarily on land-grant libraries. However, from the very beginning, land grants were institutions charged with teaching practical research and communicating results, and libraries were central to supporting that mission.

Now, librarians are information professionals who ensure access to information. In an age of information overload, they play a vital role in assisting researchers, using skills and knowledge that support extension specialists, generalists, and everyone involved in communicating agricultural research. These librarians can

- design effective search strategies;
- filter out the "noise" in search results and focus on the most relevant content;
- organize and manage the content of research output from analog to digital, historical to new output created daily, and blends of all these aspects;
- articulate and educate on copyright and intellectual property issues;
- advocate for open access to library spaces and services, which is particularly important in regard to the land-grant mission of the dissemination of information; and
- identify and connect experts.

Cooperative Extension Service

The Smith-Lever Act of 1914 established CES, which was to be

> a unique educational partnership between the U.S. Department of Agriculture and the nation's land-grant universities that extends research-based knowledge through a network of extension educators. For a hundred years the Smith-Lever Act has stimulated innovative research and vital educational programs through progressive information delivery systems that improved lives and shaped a nation. (Olson, 2013, p. 7)

This very charge, "information delivery systems," is the foundation for the library and information profession, and shows a clear link between CES and libraries. However, as information-delivery systems become increas-

ingly complex and more types of delivery systems become available online almost daily, people in general need help navigating the deluge.

Librarians are, and have traditionally been, the gatekeepers of information. Whereas previously the gates were to keep the resources safe and available, now they are to keep people safe from the overwhelming amount of available resources. Librarians have remained relevant by working with the needs of both the resources and the people.

To stay relevant CES adjusted to the changing demographics and needs of its communities. In an article addressing the fiftieth anniversary of CES, Ferguson (1964, p. 153) wrote that the "Extension's history has been one of innovation—in methods, in subject matter, in audience. Its birth was an innovation. Its early growth was nourished by innovation. Its success was measured by the innovations it succeeded in getting adopted. What a tragedy it would be if . . . this great spirit of adventure and venture was to be lost and it was to become the victim of paralysis of the status quo!"

The various states each have CES programs tailored to the communities they serve, so it is not surprising that there would be many different "faces" and approaches to fit their needs. However, in a more recent development, eXtension has been created as a collaborative effort among land-grant-university content experts from around the country. The eXtension initiative provides a digital environment wherein content experts from multiple states can collaborate to share objective, research-based knowledge. The content is created by communities of practice in which experts publish fact sheets, webinars, and other resources for public use, regardless of geographic location. This allows for a broader dissemination of expertise so that every state CES system does not require resident experts in every discipline nor the creation of its own fact sheets on relevant topics. Through the eXtension model the resources developed by communities of practice can be adopted or adapted for local needs. This is a type of "creative commons" licensing, which is appropriate for research generated with public funding. Moving forward, eXtension has some challenges to overcome to remain relevant for the widest community possible. These challenges fall outside the scope of this paper, but are at the core of library and information science (LIS) concerns because some rest on what it takes to assign proper attribution, curate materials, and adapt information for local variables while not replicating the efforts of other formally recognized information centers.

To provide something more manageable to consider, this paper presents three case reports in order to demonstrate how librarians are partnering with CES colleagues, while also acknowledging the diversity of more than fifty states and territories and their particular extension services and the diversity of the land-grant libraries.

During the century of experience working in their communities to provide practical information, CES professionals have witnessed changes

in land-grant institutions' libraries as well. The question addressed here is: How can these two agricultural information service professions and professionals collaborate? Information is critical within agricultural production systems as it is in research and development (R&D). In the 1990 agriculture special issue of *Library Trends*, many services were outlined to support agricultural faculty, extension staff, and farmers, including document delivery, reference, cooperative collection development, preservation, and international networks. Building on many of these core services, new programs and services have emerged since then.

Librarians have areas of specialization, which are generally formed around departmental needs. Many institutions have "college" librarians (a librarian who has subject-specific knowledge to support the work of that college); other models of specialization have different names, including "embedded" and "liaison" librarians. There are functional differences among the different types of librarianship depending on which population the position serves; however, at its core each of these various types is clustered around serving a specific group of people, and in this paper these stakeholders are individuals who work within the field of agriculture.

As the liaison model changes and more functional specialists are hired in libraries, it provides an opportunity to collaborate in new ways. Occasionally new programs and services are offshoots or outgrowths of previous work; sometimes entirely new technologies require new types of support systems that expand as the implications are understood and adopted by more people. Libraries hire and train staff in new areas, such as user experience, academic technologies, digital humanities, data sciences, and GIS, among others.

These case reports are in no way a representative sample; other innovative and effective collaborations between libraries and CES exist. Consider these reports as introductions, suggestions for collaborations within your own communities. Given the community-based, cooperative nature of CES, it is a natural fit for CES professionals to connect and coordinate with librarians, whether public, private, school, or academic (Peich & Fletcher, 2015).

Case Report 1: Applied Science in Agriculture Is Awesome: Notes from a New Liaison Librarian

Point person: Inga Haugen, Virginia Tech, agriculture, life sciences, and scholarly communication librarian

Timeframe: From December 2014 to the present

Place: Agricultural Research and Extension Centers (ARECs) of Virginia Cooperative Extension, with its home campus at Virginia Tech

Recommended for: Liaisons, new librarians, agriculture professionals, data curators, scholarly communication librarians, and librarians and information professionals of all stripes

The point person started her position as the agriculture, life sciences, and scholarly communication librarian in December 2014. This case report touches on her experiences of what it took to assess the needs of the departments for which she is a liaison, with one specific example in the form of an institutional review board (IRB)–approved series of interviews. The specific example is called "Virginia Tech University Libraries' Data Service Roadmap for the College of Agriculture and Life Sciences" (hereafter "Data Service Roadmap").

In the state of Virginia the research stations are called ARECs (Agriculture Research and Extension Centers), but are sometimes known as "experiment stations" or "research farms." ARECs are in some ways a microcosm of the entire spectrum of the College of Agriculture and Life Sciences (CALS) community. Meeting the library, information, and data needs of ARECs is a snapshot of everything a liaison does between the library and the patrons she serves. Virginia Tech's libraries have roughly divided the liaison realms into the three areas of life sciences: people, animals, and plants. In addition to plants, the point person's assigned departments include CES and ARECs, which are the focus of this case report. All CES faculty are associated with a home department, hence liaison work covers the entire spectrum.

In service to the agricultural revenue base in Virginia, the state's CES is associated with two land-grant campuses: Virginia Tech (VT) in Blacksburg and Virginia State University (VSU) in Petersburg. The state's CES has 107 local offices, eleven ARECs, and six 4-H educational centers. One way that CES links with VT and VSU is through CALS, which has 1,173 employees, around 600 of which are located either at ARECs or the local offices. These employees include faculty, staff, and extension members, and many individuals wear their own multitudes of hats because they hold joint appointments in research, teaching, and extension. Because the topography of Virginia is varied—mountains, coastline, and the central state, all of which having its own agricultural practices and products—the spectrum of support for agriculture must be as broad as the products grown.

ARECs have their own challenges, which make their service needs unique. With so many participants being located apart from the Blacksburg campus, the e-preferred policy of VT's libraries is critical to providing the basics of information access. ARECs are operated by faculty, permanent staff members, graduate students, and seasonal workers, all of whom have varying levels of information needs. CES personnel access the same channels that librarians use to communicate with patrons; they publish their work via peer-reviewed scholarly and in-trade publications and communicate their research with field days, workshops, and conferences. County offices even have walk-in traffic, similarly to libraries. Because CES personnel operate similarly to LIS professionals, this creates a challenge for liaison librarians: the latter do not want to stand in the way, but they

do need accurate information on what is most current and important for extension personnel in order to assist them in their work. The librarian is, in practical terms, a CES specialist, or a CES agent for the other agents, with the specialty being information. CES specialists are hired at the master's level of education and above, so the comparison is apt with an MLIS, MIS, or MLS.

The National Science Foundation ranks VT sixth in the nation for agriculture R&D expenditures (Loeffler, 2015). The data services team of the university's libraries, in conjunction with the liaisons to CALS, needed to know CALS researchers' data management plans (DMPs) and practices, which would allow us to create deliverables and services that directly support the research data workflow. This is particularly timely, because the National Institute of Food and Agriculture now requires DMPs, as other funders also do. We needed to do an environmental scan to systematically and empirically gather information about the opportunities and challenges experienced during research by the community of participants at VT, focusing particularly on data. Were our researchers creating DMP's without working with the library? Where were the researchers going for this support? We implemented the "Data Service Roadmap" to collect this data.

For the roadmap's interviews, the interviewees were self-identified individuals responding to a blanket email, approached directly, or identified by one of the other interviewees. Five areas were addressed: data profiles, data workflows, data challenges, data value-add, and data management planning. The point person interviewed the respondents, and the semi-structured sessions followed the same general format of questions but allowed for spontaneous answers and the flow of conversations. The interviews took between twenty minutes and an hour and were recorded and then transcribed. Analysis of the content has not yet been finalized, but will be available via VTechWorks, the institutional repository for the university.

Positives and Negatives

One aspect of liaisonship that can be challenging to write about in a linear fashion is the wide-ranging collaborative net that is cast. This effort is complicated by a two-way information flow between the liaison areas—in this case, the library and CALS. The "Data Service Roadmap" encompassed all of CALS, not just ARECs. ARECs are the portion of CALS to be discussed in this case report so as to have a manageable aspect to write about. This tension exists in daily work: how to prioritize and not include too much information; with so many people, the work becomes unwieldy.

But what about in the other direction? What does a liaison person do for the library? Liaisons need to continue to keep close working relationships with those in the field to inform their colleagues back in the library.

The activities of a liaison are not, and should not be, one-way. The value of dialogue and bringing the needs of the community to the attention of library-based teams is high.

But identifying the needs of the community is a challenge. Researchers rarely reach out as long as the basic services of the library are active—namely, that online access is working. By actively cultivating relationships, researchers are more likely to communicate their needs and wants. One key point of the most active work we did to establish relationships was to personally visit ARECs. To identify the needs of the researchers, and understand the context of their needs, we chose to do an environmental scan. By implementing such a scan the library can position itself to have a policy and resources in place to assist, occasionally even before it is needed, in an important way.

The needs of all researchers are similar, in that regardless of their physical location, they must have access to information to support their research. One of the primary challenges in the applied sciences, particularly agriculture, is the range of people who use library information and the services of librarians. Not only do we work with researchers who need information on, say, nematodes, but we must convey information to both the producer and consumer about that same concept; we need to use the vocabulary appropriate to the receiver, therefore we also use the term *roundworms* instead of *nematodes*. This aspect of keyword equivalence falls squarely into both the realm of controlled vocabulary and the library realm of information management. Most search engines would be up to the task of equating roundworms and nematodes, but terms in particular may not stand the test of time. *Cover crops* are still an important topic today; 150 years ago farmers were talking about the same topic, but instead using the terms *green manure* and even *fallowing*.

Areas for Future Development

One specific example that came to light from the interviews was a problem faced by the farm manager at the Middleburg AREC. The water lines buried underground were not indicated on any existing maps. Some of the paper copies have been lost, so it is not even an option to reference them, much less have digital copies. If we can digitize the paper copies we do have and then add what knowledge the manager has (in addition to information from other sources), there is less likelihood of damaging the water lines when doing further research. Additional collaborative aspects, such as linking all the data the university has collected on a single GPS point, are being discussed. This could lead to better research, since soil amendments from five years ago can still make a difference in a field; therefore research results could be affected for anything from soil compaction, to yield results, to nematode resistance.

The people not based at the Blacksburg campus are primarily from

CES and AREC. This requires an added level of complexity for accessing resources. These access points depend on internet access, which for some ARECs is not assured; their remoteness from highly populated areas means less reliable access, which creates a barrier. Not only is the internet completely inaccessible on occasion, but at other times it can be slow or intermittent, which means that participation in virtual meetings or classes can be frustrating or impossible. This aspect is factored into the online modules we create to ensure that constant access is not required, and is an additional reason why we make visiting ARECs a priority.

Outcomes from physically going there include increased patron knowledge of library services (at every presentation a participant says "I didn't know that!"); increased collaboration with the librarian; increased use of services offered by the library; and additional requests for further presentations, including annual visits to educate the revolving cast of graduate students and to update faculty members on new offerings. Because these outcomes are precisely in line with the job duties of the liaison, they are powerful incentives to keep engaging by visiting ARECs. The IRB-approved interviews allowed us to identify areas that we need to support during the next wave of even more data-rich research. Stored documents and publications are now on our docket to evaluate and appropriately process. Faculty, staff, and students are contacting us for further and deeper integration in their research, teaching, data management, and general information needs.

With ARECs—in fact, in any interaction with faculty, staff, or students—liaison work includes introductions, establishing lines of communication, presenting an overview of what the library can do for them, and listening to their needs in order to suggest at least one specific resource. The take-home message, regardless of the audience, is: If you have any questions about accessing or disseminating information, ask. The job of the agriculture liaison librarian constantly changes in its everyday details, but overall continues an important aspect of the core of librarianship: that of ensuring access to information by the communities that we, as librarians and information professionals, serve (Loeffler, 2015; "Virginia Tech University Libraries' Data Service Roadmap," forthcoming).

Case Report 2: Developing Coordinated Library Instruction for CES Staff

Point person: Kristen Mastel, University of Minnesota (UM), outreach and instruction librarian, liaison to the College of Continuing Education, Extension, and Agricultural Education
Timeframe: From 2007 to the present
Place: Online and personally at conferences
Recommended for: Liaisons to CES and instruction librarians

The Minnesota CES consists of more than 800 researchers, educators, and staff from across the state. While some are located on the five coordinate UM campuses, the majority are geographically distributed throughout the fourteen regional CES offices and nine research and outreach centers, which serve all of the state's counties. Minnesota was one of the leaders in transitioning to a regional extension model during the latest economic downturn, which allowed CES to maintain specialized staff in the field (Morse & Klein, 2007). Prior to 2007 there were multiple liaisons who supported CES staff with close departmental ties, but the efforts were uneven and not well-coordinated (for example, economic and business-retention educators could reach out to the business librarian, and crops specialists could contact the plant sciences librarian). In 2007, while the Agricultural, Biological, and Environmental Sciences (ABES) department of UM libraries was restructuring its library-liaison assignments, it found an opportunity to develop a dedicated liaison to serve all CES. As an interdisciplinary librarian, this liaison would be able to collaborate across CES areas of study and incorporate subject library liaisons when deeper knowledge in specific fields was warranted.

Key areas of focus for this CES liaison librarian included determining what instruction the CES staff needed and how to reconfigure existing library-instruction offerings to coordinate with the staff's busy schedules. Mastel (2014) conducted a survey not only of what types of information resources CES staff members use for their programming, teaching, and research but also of their professional development needs. The participants expressed interest in education regarding current tools and techniques, new resources and search tips, and publication and productivity tools.

While ABES had an existing instruction program geared toward graduate students, the content and delivery needed to be adapted for CES, along with program development. In creating a model for outreach to CES, the liaison librarian adopted instructional approaches appropriate to adult learners and online delivery. Widén, Steinerová, and Voisey (2014) studied workplace behavior models to develop a framework to address information needs at the task, project, and organizational levels. Farrell and Badke (2015) outline an approach for strategic, discipline-specific, information-literacy integration. The liaison worked to scaffold interactive, one-hour instruction sessions via webinar to the promotion and tenure timeline. A sample of webinar topics includes

- copyright question and answers;
- locating images with creative commons licenses;
- setting up journal and topic or subject search alerts;
- understanding the community through data resources and visualizations;

- searching grant-funding databases; and
- using citation managers to track promotion documentation.

Attendance varied depending on session topics, with the "Locating Copyright-free Images" and "Copyright and Fair Use Questions and Answers" workshops being the most popular. The latter copyright webinar was copresented with our copyright program librarian, who helped CES educators think through the gray areas of teaching and publishing outside of the typical classroom and journal-publishing realms. Attendance was steady for all webinars, with approximately twenty staff members attending in person, along with numerous accesses of the recorded sessions. In addition, at least one of these topics was presented at the Minnesota Extension Program Conference each fall. It is our hope that repeated exposure to these skills over time through webinars, online courseware modules, and conference presentations will allow CES staff to master various concepts and thus be competent to apply them to new situations.

Positives and Negatives

Positive outcomes from the sessions include more publicity for the library and requests for assistance. The professional development director included the library webinars in monthly communications and reminders of CES centrally coordinated development opportunities. The liaison librarian noted an increase of at least two follow-up consultations from attendees following each session. In addition, some smaller program teams requested customized webinars to address their specific needs and clientele that they work with and develop programming for. Also, as a follow-up from a publishing webinar, one CES educator is piloting our publishing platform by creating an evaluation ebook.

One of the main negatives of instruction is the return on investment. CES in Minnesota consists of more than 800 staff members, but the synchronous webinars consistently attract only twenty to thirty attendees at a time. Since CES staff have varied schedules, there is no one, ideal time to deliver such training. There may be ways to deliver instruction at point-of-need by developing more online content to be integrated into individual content-management systems and intranets. In addition, marketing strategies need to foster staff awareness of tutorials, recordings, and webinar offerings. Beyond simple follow-up webinar surveys, in-depth assessments and analyses of those who attend webinars and of absent teams and centers could reveal additional opportunities.

Areas for Future Development

Librarians in the agricultural libraries of land-grant universities, including UM's extension liaison, have partnered to develop online training in re-

search skills and information management via online tutorials. In addition to Mastel's (2014) survey, librarians at Cornell conducted a CES survey in New York State to identify professional development needs, key barriers in research implementation, and preferred methods of learning. Based on their findings, online tutorials and course modules will be developed by Cornell's librarians and CED liaison librarians at other institutions to address existing self-identified skill gaps in finding, understanding, and implementing into practice the latest research. Through a certification program the training will engage and motivate practitioners to develop skills in a convenient and accessible online environment while facilitating community-building through online discussion groups. These online modules will be generic enough to support CES at all institutions, thus decreasing the duplication of efforts of CES liaison librarians and allowing them time to develop more in-depth training based on local needs.

Another opportunity to engage extension staff includes serving on eXtension communities of practice, which deliver content through the website around different topical areas. Liaisons could sign up to serve on areas related to departmental liaison areas, such as nutrition education, farm management, and energy. The point person served on the Network Literacy Community of Practice and wrote articles that utilized free, open source resources, created webinars, and responded to "ask-an-expert" questions from the public. This is just one example of how CES liaison librarians can serve on collaborations to educate not only CES staff members but also the broader public (Mastel, 2014).

Case Report 3: Librarians and Extension Rangeland Specialists Collaborate to Create the Rangelands Partnership

Point person: Jeanne L. Pfander, associate librarian and liaison to the College of Agriculture and Life Sciences, University of Arizona (UA)

Timeframe: From 1995 to the present

Place: The Rangelands Partnership technical infrastructure team is based in Tucson, but the partnership is a collaboration of nineteen land-grant universities throughout the western United States

Recommended for: Librarians with expertise and/or interest in rangelands and natural resources, website and content development, metadata, and/or digital initiatives

Rangelands are a widespread and important, if sometimes misunderstood or even controversial, type of ecosystem. As defined by the University of Idaho's (UI) Rangeland Ecology and Management program (UI, n.d., n.p.; emphasis in original), rangelands are "vast natural landscapes in the form of grasslands, shrublands, woodlands, and deserts . . . the '*Wild Open Spaces*' that cover about half of the earth's land surface and half of western

North America." The value and importance of rangelands is described on the same UI webpage as being the "wide variety of goods and services desired by society, including livestock forage, wildlife habitat, water, mineral resources, wood products, wildland recreation, open space and natural beauty" (n.p.).

In the western United States, controversy around rangelands often arises because of "social, economic, political, and ecological influences that vie for priority in the establishment of policies and regulations" (Jones, Ruyle, & Hutchinson, 2003, p. 137) around hot topics like grazing leases on public land, water rights, invasive species, reintroduced wildlife species, and so on. So how did rangelands become the focus of a unique collaboration of librarians and extension specialists? The story begins over twenty years ago.

In October 1995, UA Libraries became a founding member of AgNIC, the Agriculture Network Information Collaborative (AgNIC, 2016; Pfander, 2002). Based on the centers of excellence model, member institutions were to identify a topic relevant to their state and for which their institution had a high level of expertise and excellence. UA Libraries' AgNIC team chose rangelands as its topic for development because of the expertise of its faculty members and CES rangeland specialists in UA's College of Agriculture and Life Sciences (CALS); the high percentage of state land categorized as rangeland (approximately 75 percent); and the importance of rangelands to a wide variety of interests in Arizona.

From the beginning the Rangelands Partnership (RP) initiative has been a true collaborative effort, with the early years in Arizona demonstrating contributions of staff and funding from both UA Libraries (UAL) and CALS. However, as the team of librarians, CES rangeland specialists, and information technology (IT) experts worked together to develop the web portal, add content, and respond to questions that came through the website's online reference service, it became increasingly clear that the importance and scope of rangelands extended beyond Arizona's borders. Recognizing this, representatives from the Arizona team met in early 2001 with the deans of CALS and UAL to propose an expanded effort. With their approval, the team took the idea of a regional initiative to the Land Grant Colleges of Agriculture Western Regional Joint Summer Meeting in Keystone, Colorado, in July 2001, and subsequently, in fall 2001, to the Executive Committee of the Policy Analysis Center for the Analysis of Western Public Lands (PACWPL) (Jones et al., 2003).

With the interest and support from these influential groups, letters were sent to agriculture and library deans/directors at eighteen other western land-grant institutions, inviting them to designate both a range specialist and librarian to attend a preliminary meeting hosted by the Arizona Rangelands team in Tucson in March 2002. Following this initial meeting, with the agreement of participants and support of their institutions, the

RP was formed. (It should be noted that over the years, the name has changed from the Rangelands West Partnership to Western Rangelands Partnership, until more recently [with the inclusion of partners from other countries] the group has settled on its present name—the Rangelands Partnership.)

What makes this collaboration unique is that the partnership of librarians and CES rangeland specialists is built into the RP bylaws, which "strongly recommend" a rotation of librarians and range scientists in Executive Committee positions. Currently, for example, a librarian from North Dakota is serving as chair, a CES range specialist from Idaho is vice chair, and a librarian from Idaho is secretary/treasurer. Each officer moves through the three positions, starting as secretary/treasurer. This arrangement is evidence of the respect held by RP members for each profession's expertise and contributions; it also facilitates communication with stakeholders and maximizes the benefits of networking connections in our different spheres.

An annual meeting of RP is held each spring, with the meeting locations moving among different member states. This face-to-face time helps establish personal connections, provides opportunities to learn new skills, and motivates members to continue the work of creating and organizing content. During the rest of the year, RP business is conducted through conference calls, webinars, and emails.

Over the years, members of RP have collaborated to submit and receive a number of federal grants (Global Rangelands, 2016), including one early project in which the librarian was a co–principal investigator and several that have included librarians as project staff. For example, in the United States Department of Agriculture's (USDA) 2013 "Enhancing and Expanding the Rangeland Stewardship and Health Community of Practice" grant (USDA, n.d.), Arizona's RP librarian was a member of the project team who helped design and run focus groups to gather information from stakeholders (ranchers, agency personnel, and so on) on the types of information desired and the tools (social media, apps, and so on) considered valuable. The grant funding for the librarian covered travel costs for focus-group sessions around the state, as well as for attendance at relevant professional meetings to report on results.

The technical infrastructure team for RP is located at UA. Servers at CALS host the database behind the global rangelands websites, and technical support is provided by CALS IT and web-design specialists. Under a memorandum of agreement with the Society for Range Management (SRM), UAL host the open access archives of the two SRM journals: *Journal of Range Management* (now *Rangelands Ecology & Management*) and *Rangelands*. New journal content is added to the archives on a rolling-window basis. In addition, UAL staff have digitized other collections for the Global Rangelands database, such as the Australian Rangeland Society's (ARS)

biennial conferences. The role of the librarian on the Arizona RP team includes coordinating digitization efforts and contributing expertise to the development of the metadata schema used, as well as providing input on website design, content development, and outreach for the initiative.

The Arizona team meets every other week (occasionally more often) to identify and/or develop content for the Arizona rangelands state site, create metadata records for state content and other collections (such as the Australian conference papers), and help plan for the overall Global Rangelands site design and content. Most members of the Arizona team also participate in monthly meetings with RP's Executive Committee in which agendas usually include the discussion of content and website development and planning for the annual RP meeting. There is significant time spent outside of meetings following up on work assigned during them.

Positives and Negatives

The benefits of collaboration between CES rangeland specialists and librarians in RP have been many. Respondents to a survey of RP librarians and rangeland specialists indicated that they have high levels of respect for and learned from the "different but complementary skills, knowledge, expertise and points of view that extension, academic and librarian partners bring to the initiative" (Hutchinson, Pfander, & Ruyle, 2008, pp. 190–191). Other benefits described in survey responses included networking, relationship building, and a sense of community. The multi-institutional nature of RP has also been a positive feature, bringing new funding opportunities from within our institutions, as well as from federal agencies looking to fund collaborative initiatives (Global Rangelands, 2016).

The negatives associated with collaborating in the RP initiative are likely common to other such web-based, grant-funded projects. In the previously mentioned survey (Hutchinson et al., 2008), both librarians and CES range specialists reported difficulty in allocating time for the work. Work on the project is often seen as additional to their core responsibilities and may not be officially integrated in job descriptions and expectations. Other work assignments are usually given higher priority, and the completion of RP tasks are often delayed. In addition, in more recent discussions at RP annual meetings, some members expressed concern regarding how much weight or credit their work on RP content and design receives in promotion and tenure or continuing status reviews, compared to published peer-reviewed articles and other more traditional scholarly output.

Areas for Future Development

RP will continue to seek out collaborators and contributors at the international level, building on relationships established in recent years with entities such as the UN's Food and Agriculture Organization (FAO) and national or regional organizations like ARS and the Grassland Society of

Southern Africa (GSSA), all of which have contributed content and expertise in developing the Global Rangelands web portal. Issues of succession in RP will also be addressed, with the goal of ensuring continuing CES range specialist and librarian participation and leadership in the partnership. Finances will continue to be a concern as RP explores sustainable sources of state, national, or international funding to support future developments in content and technical infrastructure. However, and in conclusion, based on the productive record of RP collaboration to date, members generally view RP as successful and foresee the partnership continuing well into the future.

Conclusion

A library able to position itself to have services and workflow in place during time of need for its stakeholders will continue to stay relevant in its community. However, it can be challenging to understand the diversity of CES's needs and how to seamlessly provide resources and services. We hope our examples indicate a snippet of the possibilities of partnership and integration of libraries and CES. When our CES colleagues collaborate with us the end result is a stronger product, and in the process, mutual respect for both librarians and the CES personnel's specialized knowledge increases. If CES and libraries are going to be successful for the next hundred years, librarians must position themselves to remain relevant.

How can librarians innovate in their service and collaboration with CES? A local-needs assessment of extension agents, extension specialists, and leadership is important. Librarians can take cues from trends happening within libraries nationally, in higher education and beyond. Each of the three reports in this paper touched on the need for providing access to information for people not located on campus, and often in rural areas where the broadband infrastructure is variable. This need shows no sign of lessening in the distributed workforce that is CES.

The world is becoming a more connected place, emphasized by "internet of things" devices (for example, fitness trackers, watches, appliances, and so on) that collect data (OCLC, 2015). This development provides an opportunity for librarians to educate themselves on the themes of security and privacy. However, in such a connected world there are still issues of access and needs for face-to-face communication. Could libraries provide "landing pads," or collaborative working spaces, that would provide locations where CES staff members can access high-speed LAN internet-connection and web-conferencing facilities? Could partnering with public libraries be another way of extending our connection with CES staff in the counties that they serve? Many CES staff members provide public programming in local libraries, but there are more opportunities for coordinated CES, academic, and public library partnerships—not to overlook the costs of operating in rural environments and the digital divide that ex-

ists, which takes resolve to bridge (Modarres, 2011; Naidoo & Raju, 2012). However, as mentioned in the *NMC Horizon Report for 2015*, the two aspects of long-term impact are increasing accessibility of research content and rethinking library spaces (Johnson, Adams Becker, Estrada, & Freeman, 2015). These provide new opportunities for librarians to engage with CES and show their expertise.

The article "Before I Can Fix This Tractor, We Have to Fix Copyright Law" (Weins, 2016, n.p.) outlines how it "takes an army of copyright lawyers, dozens of representatives from U.S. government agencies, an official hearing, hundreds of pages of legal briefs, and nearly a year of waiting" to get to a place where someone can repair their own tractor. Librarians often provide guidance on thinking through copyright and fair-use implications in an educational setting. We remain advocates for making information open and accessible to everyone to encourage innovation and progress, whether it is to fix a tractor or find a solution for the bee-colony collapse.

A library-centered example—the ACRL "Framework for Information Literacy for Higher Education" (ACRL, 2016)—provides more opportunities to engage with CES staff than the previous "Information Literacy Competency Standards for Higher Education" allowed for. Those standards were more skill-based and on some levels seemed more achievable, like a checklist. However, the framework emphasizes critical thinking, interdisciplinary approaches, diversity, and how knowledge changes from novice to expert. Both adult learning theory and the framework stress knowledge transfer and understanding at the conceptual level (Kuglitsch, 2015). For example, the first ACRL frame is that "authority is constructed and contextual." Here is an area in which CES liaison librarians have many opportunities for engagement, because CES staff members often produce "gray" literature but also need literature from a variety of sources, such as government information, datasets, and industry reports. While the ACRL framework's audience is higher education, these concepts will serve CES liaison librarians well in developing instruction and engaging with staff members. By integrating ACRL's frames, librarians can scaffold principles and skills for information seeking into CES professional development to make lasting change in their ability to critically locate, use, and explain information to the public.

Land-grant libraries can be key partners as CES moves to interdisciplinary models of programming to address grand challenges. Librarians can be instrumental in providing leadership and support for systematic reviews and locating, curating, storing, and visualizing data in order to increase the rate of discovery and dissemination of research through publishing platforms and institutional repositories. Finally, another area of support is the tracking and communication of the impact of research. Both CES and libraries have existed for over a century, which in itself demonstrates that both systems innovate to remain relevant in their communities. Looking

ahead toward the next century, a partnership between CES and agriculture librarians can provide excellent service and continued success.

References

Agriculture Network Information Collaborative (AgNIC). (2016). A knowledge discovery system for agriculture. Retrieved from http:// www.agnic.org/about

Association of College & Research Libraries (ACRL). (2016, January 11). Framework for information literacy for higher education. Retrieved from http:// www.ala.org/acrl/standards/ilframework

Association of Public and Land-Grant Universities (APLU). (2012, February). *The land-grant tradition*. Retrieved from http:// www.aplu.org/library/the-land-grant-tradition/file

Farrell, R., & Badke, W. (2015). Situating information literacy in the disciplines: A practical and systematic approach for academic librarians. *Reference Services Review, 43*(2), 319–340.

Ferguson, C. M. (1964). Innovation in extension. *Journal of Extension, 3*(4), 152–154. Retrieved from http:// www.joe.org/joe/1964fall/1964-3-a4.pdf

Global Rangelands. (2016). About the Global Rangelands knowledge system. Retrieved from http://globalrangelands.org/about

Hagy, C. R. (2009, April 29). *Land-grant university libraries*. Retrieved from http:// www.slideshare.net/carolrain/land-grant-university-libraries

Hutchinson, B., Pfander, J., & Ruyle, G. (2008). Collaborative initiatives to deliver agricultural information. In P. Hernon & R. R. Powell (Eds.), *Convergence and collaboration of campus information services* (pp. 177–197). Westport, CT: Libraries Unlimited.

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2015*). NMC horizon report: 2015 library edition*. Austin, TX: New Media Consortium.

Jones, D., Ruyle, G., & Hutchinson, B. (2003). Building a collaborative AgNIC site as an outreach model. *Reference Librarian, 39*(82), 125–140.

Kuglitsch, R. Z. (2015). Teaching for transfer: Reconciling the framework with disciplinary information literacy. *Portal: Libraries and the Academy, 15*(3), 457–470.

Loeffler, A. (2015, May 20). Virginia Tech agricultural rankings. Retrieved from Virginia Tech website: http:// www.vtnews.vt.edu/articles/2015/05/052015-cals-nsf.html

Mastel, K. L. (2014). Extending our reach: Surveying, analyzing, and planning outreach to extension staff. *Journal of Agricultural & Food Information, 15*(4), 268–281.

Modarres, A. (2011). Beyond the digital divide. *National Civic Review, 100*(3), 4–7.

Morse, G., & Klein, T. K. (2007). Economic concepts guiding Minnesota extension's new regional and county delivery model. *Journal of Higher Education Outreach & Engagement, 11*(4), 77–90.

Naidoo, S., & Raju, J. (2012). Impact of the digital divide on information literacy training in a higher education context. *South African Journal of Libraries & Information Science, 78*(1), 34–44.

Olson, K. A. (2013). Smith-lever extension celebrates its centennial. *Journal of Family & Consumer Sciences, 105*(4), 7–16.

Online Computer Library Center (OCLC). (2015, February 15). Libraries and the internet of things. *Next Space, 24*. Retrieved from http:// www.oclc.org/publications/nextspace/articles/issue24/librariesandtheinternetofthings.en.html

Peich, A., & Fletcher, C. N. (2015). Public libraries and cooperative extension as community partners for lifelong learning and learning cities. *New Directions for Adult and Continuing Education, 2015*(145), 45–55.

Pfander, J. L. (2002). Meeting rangeland information needs through a web-based reference service: The Arizona AgNIC experience. *Journal of Agricultural & Food Information, 4*(2), 33–41.

Smith, J. C. (1964). *Patterns of growth in library resources in certain land-grant universities* (Unpublished doctoral dissertation). University of Illinois. Retrieved from http://hdl.handle.net/2142/59871

United States Department of Agriculture (USDA), Research, Education & Economics Information System (REEIS). (n.d.). Enhancing and expanding the rangeland stewardship and health community of practice. Retrieved from http://portal.nifa.usda.gov/web/crisprojectpages/1002050-enhancing-and-expanding-the-rangeland-stewardship-and-health-community-of-practice.html

University of Idaho. (n.d.). What are rangelands? Retrieved from http:// www.webpages.uidaho.edu/ what-is-range/Rangelands_Defined.htm

Virginia Tech University Libraries' data service roadmap for the College of Agriculture and Life Sciences. Forthcoming.

Widén, G., Steinerová, J., & Voisey, P. (2014). Conceptual modelling of workplace information practices: A literature review. *Information Research, 19*(4). Retrieved from http:// www.informationr.net/ir/19-4/isic/isic08.html#.ViwJwaI7SvA

Wiens, K. (2016, January 13). Before I can fix this tractor, we have to fix copyright law. *Slate*. Retrieved from http:// www.slate.com/blogs/future_tense/2016/01/13/copyright_law_shouldn_t_keep_me_from_fixing_a_tractor.html

---

Inga Haugen is the library liaison to the College of Agriculture and Life Sciences at Virginia Tech (VT). She received her MIS from the University of Tennessee in 2014. As a new librarian and old farmer, agriculture is a passion. She is a member of USAIN's Communications Committee, cochairs VT's Library Social Committee, and welcomes collaboration and dialogue about land grants, extension (local and global), data management, and anything involving cows.

Kristen Mastel is an outreach and instruction librarian at the University of Minnesota. She received her MLS from Indiana University, and her undergraduate BA from the University of Minnesota–Morris. Her research areas of interest include instruction, information literacy, outreach, and instructional design. She is a past president of the Minnesota Library Association, and a director of USAIN.

Jeanne Pfander is an agriculture and life sciences librarian at the University of Arizona. Her educational background includes a BA in biology from Stephens College, an MLS from the University of Missouri, and a graduate certificate in digital information management from the University of Arizona. Since 1995 she has been participating in the Rangelands Partnership initiative. Her professional interests focus on agriculture and natural resources information, sustainable communities, and library instruction and outreach. She is an active member of the USAIN, as well as ALA's Sustainability Round Table.