Axes of excellence: a role for students as community-engaged scholars


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"Through art and science in their broadest senses it is possible to make a permanent contribution towards the improvement and enrichment of human life, and it is these pursuits that we students are engaged in." –Frederick Sanger

The four axes of excellence in scholarship are discovery, integration, application, and teaching (Boyer 1990). Yet the predominant currency of recognition, prestige, and mobility in science is publication in top-tier academic journals (Bedeian 1996). For both faculty and students, this creates a significant barrier to engagement in community-based scholarship. As competition for limited science positions increases pressure to publish, we early career scientists may find ourselves with less time to excel in all four aspects of scholarship.

Here, we share our own experiences of engaging in community-based service by integrating contributions into our theses and by leveraging non-thesis opportunities encountered during graduate studies. We define community contributions as the innovative outputs that help to fulfill scientists' social contract (Denning 1997) with communities. Such contributions include, but are not limited to, peer-reviewed publications, applied products (eg tools), and dissemination of information to communities (Calleson *et al.* 2005).

Excelling at all four axes of scholarship requires initiative, commitment, creativity, and clear priorities. When identifying potential community-based contributions, the best people to consult are often those who will use the outputs. Students can identify community needs by attending public meetings, canvassing senior scientists, networking with non-government organizations, and reading widely. Such efforts led to opportunities for SKM to coordinate a national sustainable seafood program (www.seachoice.org) and for JMRC to disseminate research results through a series of short documentaries. Selecting objectives that suited our skills, personalities, interests, and goals enhanced our contributions.

For us, strategic plans were crucial for realizing our contributions through a process that (1) identified goals, (2) enumerated related objectives and indicators of success, (3) determined required activities and resources, (4) allocated time via Gantt charts (or other management tools/software), and (5) apportioned funds via budgets. These tools enabled us to optimize our resources, build consensus with supervisory committees around degree expectations, and solicit feedback from experienced investigators. We also acquired essential transferable skills in project management, community service, and grant writing.

By identifying key indicators of success early in planning, it became possible to quantify and document progress in our résumés. Measurable community contributions include the number of publications, or less conventional outputs such as the number of community members attending stewardship workshops, the implementation of a novel public policy, use of an innovative decision-support tool, or the recovery rate of a threatened species.

Our peers are also seeking opportunities to engage in community-based scholarship, and many have made substantive contributions. For example, as part of their theses, fellow graduate students generated an online global database of marine protected areas (Wood *et al.* in press) and an international analysis of fisheries subsidies, relevant to World Trade Organization policy (Khan *et al.* 2006). Another peer produced a taxonomic guidebook, now used to support a CITES listing for seahorses (Lourie *et al.* 2004). Still others contribute through courses that incorporate service learning (Calleson *et al.* 2005). For example, ACJV (see "Faculty response" below) asks students to prepare species status assessments using international listing criteria.

Students also benefit from engaging in community-based scholarship. Community-integrated research enhances funding prospects and collaborations, and often leads to valuable opportunities to test how predictions from conservation theory perform in the real world. When our research is applied, it signals to future employers and collaborators the ability to identify relevant research gaps and generate tractable solutions. All else being equal at job interviews, those with demonstrated community contributions may have an edge during hiring. Furthermore, working to solve real-world challenges provides valuable skills that are seldom explicitly taught in graduate programs such as networking, conflict resolution, and stakeholder engagement.

More broadly, scientists also gain credibility and, hence, social support by making public contributions. Giving back to communities acknowledges our responsibility as researchers to produce transparent work with societal benefits (Denning 1997).

As society turns to science for solutions to mounting environmental challenges, researchers will need appropriate incentives to engage communities. Disciplines such as the health sciences are already using both product and process measures to evaluate the success of collaborations with communities. Process measures use public partners' perceptions to evaluate metrics such as consensus around objectives, structural efficiency, sufficiency of resources and overall partnership satisfaction (Calleson *et al.* 2005). We encourage the public, our peers, and researchers across sectors to build systems that acknowledge, reward, and foster scholarly community-based contributions in ecology and the environment.

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Faculty response

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I fully concur with Morgan and Curtis: students can and should make substantial contributions to the broader community during the many years of their training. Students flourish in applied ecology and conservation by engaging in activities as diverse as resource management, policy development, media promotion, and advocacy support. Moreover, those who engage with communities outside the university can be perceived as among the brightest and most driven, perhaps because the passion and fulfillment they find in making their research relevant lifts their performance.

Students often worry about how to start applying their knowledge. In fact, opportunities can come quite quickly in response to evident enthusiasm and interest in the local or global community. A simple offer to volunteer with a laboratory group or coordinate a special event – if executed in a professional, reliable, organized, and effective manner – often leads to other chances to support and promote community contributions. Students can also find ready collaborators in the non-governmental organizations and community groups that are often the frontline actors in ecological and environmental debates.

Faculty can and should model and motivate student community contributions by themselves participating in such activities. Too often, we defer our own community activities because we are focused on tenure, or promotion, or the next grant. We tend to obsess about primary publications as the only currency that counts – and teach our students to do the same – when they are just one way to communicate research and transfer knowledge. Ironically, students who are most active in community engagement are often also the most productive in their formal academic work, perhaps because of the positive feedback that comes with the real-world, practical application of one's knowledge.

Faculty who value community engagement have a responsibility to mentor students in the acquisition of transferable skills. By training them to write grants and popular articles, support policy makers, and reach out to the media, they learn to communicate confidently with a wide range of possible clients for their knowledge. I also guide my students into strategic planning – with associated budgeting – and require them to provide work plans (and monthly updates against these plans) so that they can organize their time and energies to get more done. Such experience also sets students apart in a competitive job environment, whether working in acadaemia, private enterprise, or non-governmental organizations.

More people, faculty and students alike, might engage with communities if their efforts were fully applauded by peers and employers. Our institutions and donors need to insist that we translate our research findings into clear and simple documents, directed at specific audiences who can use the information. We also need to list our applications of knowledge as scholarly contributions, and insist that they be judged and rewarded accordingly. Students would then feel strongly motivated to engage fully in all four of the axes of excellence that Morgan and Curtis discuss.

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