

# Women in Range Science

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Range science offers a broad spectrum of professional opportunities. For example, one can focus on an entire career on mining alone. In that context, there are aspects such as environmental law, baseline studies, reclamation, and research that allow for professional specialization or generalization. Some range scientists find understanding of the world through focusing on detailed structures, some through the broad view of biological systems, and some through developing theoretical frameworks or applying practical solutions. For me, the study of the practical and the interrelationships between the fundamental terrestrial components has been most rewarding.

Since I had a long-standing interest in plants, animals, and the environment, I majored in zoology/chemistry at the University of Northern Colorado. Curiously, this undergraduate program left me uninspired. In addition, the one course I took in botany also proved to be somewhat of a drudgery because its scope was too wide, and the course appeared to be designed more to weed out the wheat from the chaff, rather than to serve as a natural springboard for students with a bent for botany.

**For me, neither botany nor zoology alone** seemed to satisfy an innate curiosity. After a 2-year stint, I realized that teaching high school biology was not the right career for me. My experience with teaching led me to think about why I was dissatisfied with courses on "plants" or animals, despite my fascination with them.

After considerable gnashing of teeth, I stood back and compared my educational experiences with my personal interests. In a totally undramatic way, I realized that my interest was in ecology. Consequently, I entered the masters program in range science at Colorado State University. Its program was well balanced, and its reputation was solid. Range science dealt with the interrelationships among many parts, and the interrelationships formed something on a grand scale that has always kept me in awe. Rather than focusing strictly on the internal workings of plants as in, say, plant physiology or plant morphology, range science offers a more satisfying view of the world because it uncovers the roles that plants, soil, animals, and climate play in creating the environment that we take for granted. It seemed to me that range science offered more practical applications than other disciplines in terms of conserving the environment.

During my graduate studies, the courses I enjoyed the most were plant taxonomy and mined land reclamation. Mined land reclamation was particularly fascinating because it taught the importance of fitting together sound scientific principles with a system of environmental laws, and most of all a sense of practicality. Developing reclamation plans seemed to be the ideal integration of all my learning. Furthermore, the test of a successful reclamation plan lay not only

in its scientific validity, but also in down-to-earth terms such as dollars and cents. I had to confront real-life situations, not idealized laboratory scenarios.

**When I decided that working for industry** was my occupational goal, it stirred some strong sentiments among my friends who were die-hard environmentalists. Some of them believe that nature should be spared at any cost to technological progress. While I greatly respected the environment, I knew it was possible for industry to act responsibly toward the environment. I didn't see how progress could be achieved by assuming a confronting, blindly adversarial posture against industry. After all, if there were better technologies for minimizing harm to the environment, industry would be in the best position to fund this kind of research. Government, because of its funding limitations, is often restricted to filling a role that is often little more than that of a policeman. Certainly, I believed that my views were realistic. Even if industry had a poor record in certain areas, it nevertheless *could* be improved. Whereas, the abolition of industry and technology would leave us in a world that I'm not quite prepared to welcome.

One of the most important things to do when you're looking for a job is to get to know as many people in the business as possible. My first big break in finding a job began at (of all things!) an SRM meeting. I was referred by friends to the manager of reclamation for NERCO, a major Northwest coal mining company. I promptly introduced myself to him, and we hit it right off discussing my background and training. Fortunately for me, it just so happened that his company was looking for people with reclamation training, and he asked for my resume.

**As a vegetation scientist for NERCO**, I had the opportunity to apply my knowledge to problems associated with coal mines in the Rocky Mountain region. My responsibilities included designing, directing, and performing technical tasks on environmental baseline studies. I assisted in writing mine permit applications; I wrote reclamation plans; I performed revegetation research and alluvial valley floor investigations.

Discovering the difference between practicality and theoretical designs is usually as unobtrusive as running into plate glass. I'm sure readers who went from academe to industry vividly recall the embarrassing moments when they realized that the great arsenal of university knowledge they brought with them was powerless against routine, everyday problems. I remember our amusement when several of my col-

leagues and I were told by a heavy equipment operator that the size of a research plot that we had been arguing about for hours was meaningless—a scraper couldn't physically turn around in it! For tidbits like this I'm grateful to industry for the opportunity to learn what is workable in the real world, and what is not. By far, the most rewarding professional accomplishment has been the development of a practical sense to handle situations that no textbooks can answer. The need for good professional judgment is especially evident when you try to satisfy that famous regulatory commandment: Return the land to the approximate condition before disturbance. Which of the hundreds of native species will you use? Where will you get the seeds? Where and how will you plant these seeds economically? The answers aren't sitting on research shelves. They have to be in your head shortly after you are given the problem. Industry wants results quickly.

**With expectations of more variety in projects** and having seen some signs of faltering in the coal industry, I accepted an offer from Camp Dresser & McKee, a major environmental consulting firm in the Denver area. As a senior vegetation scientist/project manager, I dealt with problems concerning plant ecology and reclamation for projects dealing with uranium, hard rock, oil shale, and abandoned mines. In addition, I learned the business end of consulting: proposal writing, costing, managing work teams.

When the twilight of the consulting industry appeared, I went to work for Superior Oil Co., which had established its interest in oil shale development and production. As an environmental scientist for Superior, I reviewed all environmental work performed for the company. I wrote massive volumes of environmental impacts and mitigation plans, and I worked with engineers to make sure that their plans did not conflict with environmental regulations. Given a demand for oil shale development, it seemed to me that reclamation of spent shale would be the next cutting edge of research, and that here would be an opportunity to participate. As everybody knows, the price of oil plummeted in response to the sagging world economy. Together with lackadaisical administration policies for backup energy, the oil shale industry pretty much collapsed. So did jobs at this firm.

Again, as an environmental consultant—this time for VTN—I look back at some patterns that are rather typical among environmental professionals. One inescapable observation is that there is a tendency to seesaw from industry, to

consulting, to government. This primarily results from economic necessity: you go where the jobs are. As one might expect, there is often a high degree of competition for qualified people. Since the recent vagaries of world and national economics have had such devastating effects on the mining/energy industries, adaptability for the environmental professional has become imperative. Marketing, for example, is probably feared by every "scientist." However, there is little doubt that the person with this skill is in a considerably more valued position.

**It's natural to question whether industry** or consulting is more rewarding. I find it difficult to choose one over the other. On the one hand, working in industry offers a more deliberate, single purpose working environment. There is the feeling of security in working for a company that can back its projects with substantial resources. However, it is easy to become pigeonholed in a particular industry. For instance, if you work for a coal mining company, all of your practical knowledge revolves around coal. On the other hand, the diversity that consulting offers can be quite challenging. Instead of concentrating your efforts on one or a few limited projects, you generally have to concern yourself with many projects and proposals at the same time. Deadlines are much tighter, and proposal panics become a way of life.

In every work situation that I have encountered, I have noticed how essential it has been to keep one's mind open to new disciplines. For instance, my first impression of the role of socioeconomics in a resource development project was one of indifference. However, as I learned more about the realities of project development in a real-life community, I was stunned that plant ecology meant little to a local population that would gain or lose jobs as a result of the project. In fact, issues such as this can often determine the course and economic feasibility of a project. The same can be said of the role of archaeology, wildlife, hydrology, etc. There is a complex maze of issues that must be reckoned with before a project can integrate the work of a range scientist.

Comparatively speaking, there are relatively few women practicing range science professionally. However, I sense that more are entering a field that has historically been occupied by men. We are witnessing a greater acceptance of women not only in the science itself, but also in allied industries. I sincerely hope that more encouragement is given to women who are considering entering the profession. ●

