Range Research as a Career

ELBERT H. REID
Chief, Division of Range Management Research, Rocky Mountain Forest and Range Experiment Station

Range research offers possibilities for a satisfying career to graduates in range management, especially to those who are looking forward to public service. Range management is a relatively new science and therefore offers an outstandingly fertile field for the research worker. It provides avenues for individual initiative and accomplishments. The work usually offers a favorable balance of field and office time for the average outdoor man.

However, a career in range research is not recommended for the student who looks forward to employment that promises large financial returns. While the average position will usually provide ample salary for a comfortable living for himself and his family, beyond this the researcher looks to satisfaction of accomplishment as a large part of the payment for his efforts.

Half of the land area in the United States is range. Such a large area naturally contains many diverse conditions, from alpine to sea level and from humid forest to desert. Accordingly, range research may deal with a variety of subjects.

Research on range problems has been under way for more than half a century, at first only on a very small scale. Although research in this field has been greatly increased in the last 2 or 3 decades, it is still not on a scale justified by the many diverse problems presented. At the present time, much of our range management is on a rule-of-thumb basis or based on only sketchy factual information. In some phases of range research the real size and importance of the problems have only become fully understood in the last few years. We now know, for example, that the presence of low-value shrubs on about one-fourth of our ranges results in the production of less forage than the ranges are capable of producing. Full realization of this and the initiation of research to develop methods of recovering this unused productivity and put it to useful purposes is relatively new. Range reseeding, range fertilization and general range management are in much the same stage of development. Improvement of the range resource and its maintenance under maximum use for forage and livestock production and for watershed management has become an important part of our rural economy. Its importance can be expected to increase, and the range research worker must supply the tools.

In spite of the large and complex field presented, possibilities for employment are relatively limited at the present time. Most range research workers are employed by the Federal and State Governments, which includes State agricultural experiment stations. Private employment, while on the increase, is primarily in closely related fields and has remained low in comparison to the total value of the resource. The Forest Service and the Agricultural Research Service of the U. S. Department of Agriculture employ the greatest number. Some are employed by the Bureau of Land Management, Bureau of Indian Affairs and other Federal agencies. Many State agricultural experiment stations employ workers in this field. However, it is probably safe to say that there are no more than 200 men employed in the range-research field in the United States today.

The student will not know what phase of range research he will eventually undertake. This will depend somewhat upon employment opportunities that are open when he graduates. There are several phases of range research such as

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1 Forest Service, U. S. Department of Agriculture, with headquarters at Colorado A & M College, Fort Collins, Colorado.
general range management, range reseeding, noxious plant control, range land use, relationships such as exist between production of livestock, water, timber and wildlife. Each of these phases requires somewhat different specialized training and in the past workers in these fields have tended to specialize somewhat, although this tendency has not been universal. For example, range reseeding is closely allied to agronomy whereas range-timber relationships are more closely allied to forestry. Noxious plant control requires a somewhat greater knowledge of chemistry than some of the other phases. Also general range management requires a more general overall training with more emphasis on ecology and animal husbandry. Obviously a student cannot become a specialist in all phases. A rather general schooling in a wide range of subjects is to be recommended, especially in the undergraduate years.

A good foundation in the basic sciences and an ability to write well are essential. Basic courses should include botany (general botany, taxonomy and plant physiology), ecology, general zoology, geology, chemistry (general elementary, quantitative and organic), mathematics (algebra, trigonometry and statistical analysis), soils, plane surveying, economics and English (grammar, technical writing and public speaking). A successful range researcher has said that logic and rhetoric are highly important.

Public speaking is desirable because a research worker is often called on to publicly explain results of his research, both to technicians as well as others who may not be as well acquainted with range management problems and techniques. The student wishing to enter the field might select range management as one of his major fields, and forestry, agronomy, animal husbandry, wildlife management, watershed management or soils as a second. With the exception of range management, the selection of major or minor fields depends a great deal upon the individual student’s particular interests.

Because most range research positions are with Federal and State agencies, the student should have in mind the requirements of Civil Service examinations or other requirements that he will be expected to meet before being employed. For this reason, in addition to specializing in his particular field of interest the student should make sure that his college courses prepare him to meet these requirements.

Graduate study is becoming more and more essential to advancement in any field. Range research is no exception and it is likely to become more important. The proportion of top men in the field of range research without advanced degrees can be expected to decrease in the future. Whether the advanced degree is obtained before securing employment or after employment is immaterial because research agencies usually encourage further schooling and will give an employee leave of absence to obtain an advanced degree in his field. In some cases there are specific advantages to an employee taking advanced study after he has been on the job one or more years and knows what courses of study will most nearly fit his needs.

Summer employment as a field assistant in range research or in technical phases of range administration is helpful to a new employee. Proficiency in experimental techniques is often attained through such employment. This is helpful in bringing about rapid adjustments to the requirements of the position. However, such employment, though desirable, is not essential. An additional value from a different viewpoint is that summer employment often brings the student into contact with a future employer.

It would be difficult to list the personality traits that make a good range research worker because people with many different personalities have been successful in this field. However, there are a few that seem necessary. First is integrity. Research results in range, as in other fields of research, must be reported in a factual manner if they are to contribute to knowledge. Research results are often new ideas or procedures and may be met with skepticism or disbelief by many colleagues and range users. Thus the necessity for sound, factual reporting.

A successful researcher must be objective and have an open mind to new ideas and to suggestions of fellow workers. He should be able to listen to new ideas, evaluate them and adapt them to his own problems where they apply. In addition he should have a natural curiosity and the ability to develop new ideas that might apply not only to his own problem but to those of his colleagues.

Many research projects are conducted cooperatively by a team of workers or by a team of agencies working together. This makes a cooperative attitude an important trait of the successful employee.

Self-reliance is another quality desirable in a range research specialist. Range people are put on their own perhaps as much as any other group of research people. Employees are often assigned problems that are theirs alone to conduct, analyze and report the results. To do this successfully will require much individual initiative.

The researcher must also be willing to devote himself to his work. Successful and effective research cannot be measured in an 8-hour day or a 40-hour week. Results may come at any hour and are often unexpected. Therefore vigilance and constant thought are required. The research worker who does not recognize this soon finds himself dissatisfied and at a dis-
tinct disadvantage to other workers in his field.

Lastly and perhaps most important is the need of the range research worker to be able to carry a project through to completion. Results of well-conducted research are of no use unless they are made available to other research workers, technicians and range users. Report writing is often the least interesting phase of research, and self discipline is essential to get it done. However, satisfaction derived from completed research projects and recognition by fellow workers in the field are some of the very important rewards of the research man. Recognition is not earned by merely working on an experiment but by completing research projects and publishing worthwhile results in a manner that is understandable to those who need the information for their livelihood.

As previously mentioned, most graduates in range management obtain employment in the field of range research with Federal and State agencies, and therefore are recruited through Civil Service examinations. This would seem to restrict the possibility of a graduate interested in research from obtaining employment in the field in which he is interested, particularly in the Forest Service where recruits to fill positions in the administrative branch are taken from the same rosters. However, a new employee who is particularly interested in research and shows ability in that field can often transfer to research when openings become available by making his wishes known to his superior. Training for a few years in range administration has its advantage in research because it gives the researcher a knowledge of the practical field of range management.

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College is part of the life of a land or range manager though a vast number of successful men in the field have learned the hard way. For such there have been many years of observation of relationships between plants and animals and among the members of each group. Colleges reduce the time and improve the facilities, but long study of the range is required of all.

The professions of wildland managers have developed after some other professions, as the need for the knowledge and skill arose and as adequate subject matter is gathered to give the necessary education and training. College courses have become the quick and satisfactory introduction to the profession, whether the rangeman is to specialize in animals or in the wise use of land.

The American Society of Range Management has devoted itself “to foster advancement in the sciences and art of grazing land management.” The term land manager in the current paper merely broadens the field to add the determination of the varied and multiple uses of lands which are arranged on occasion or established on a permanent basis. Two examples explain such uses: a. When the Air Force needed aerial gunnery ranges near Boise in World War II, it was arranged by land managers that winter range lands were provided for summer practice. Winter practice was similarly arranged over forested areas where the weather assisted in vacating the lands during the winter. b. Land above timber line may be valuable for grazing and an important storage area for winter precipitation.

A college course in wildland management should provide the graduate with a professional attitude toward the varied problems of wildland complexes. He should have as a basis for his profession substantial courses in the basic sciences. This is the science mentioned in the objective of the range society. The application of these sciences to land and its use is the province of...