

Seventh In A Series

The African Scene

Environmental legislation and developing resource-poor rural African economies will create opportunities for range scientists in this country. But, future range professionals will need to have wholly-integrated skills.

By Peter J. K. Zacharias

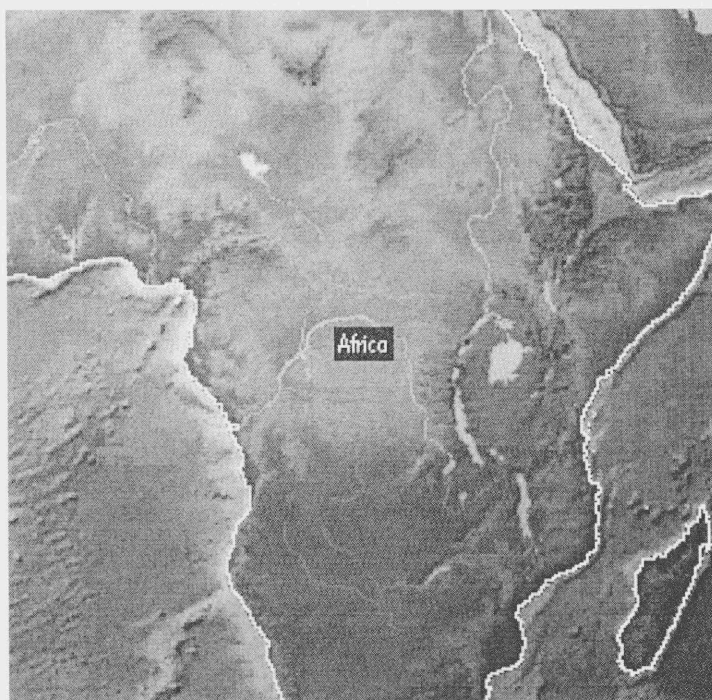
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Since its start 60 years ago, range science in Africa has been driven from a hub of intellectual capacity centered in southern Africa. This was housed initially (ca. 1940's) at the Universities of Natal (Pietermaritzburg) and the Witwatersand (Johannesburg) and, later enhanced through development of a research and extension capacity in Northern and Southern Rhodesia (now Zambia and Zimbabwe). This endeavor was fostered by provincial and national government agencies.

All aspects of the discipline were strengthened by the development of Pasture Science departments during the 1960's at the University of the Free State, some Technical Colleges, and in general plant-science groups at the Universities of Fort Hare, Stellenbosch, Pretoria and Potchefstroom.

The range research endeavor has been strongest in southern Africa with the majority of locally trained contributors emerging from Natal and Free State. However, in all countries the research capacity has always been low relative to other fields, such as animal science, agronomy, engineering, etc. South Africa is the only country in Africa to have developed a research institute dedicated to rangeland science but this took over five decades.

This contrasts starkly with the veterinary institutes established at Pretoria and Pietermaritzburg (South Africa) and Asmara (Eritrea) over a century ago. Although animal diseases, such as Rinderpest and East Coast fever, had the potential to destroy the economies of the



regions at the time, the long-term consequences of ignoring rangeland issues is now evident in many parts of Africa, and in some cases is contributing to the poverty trap.

African Range Science Has A Poor Image

The discipline was formalized with the founding by the Natal group in 1966 of the Grassland Society of Southern Africa (GSSA) and from this the Grassland Society of Rhodesia, now the Grassland Society of Zimbabwe (GSZ). Today the activities of the GSZ are limited to technology transfer, mainly with

the assistance of scientists from South Africa. The GSSA is primarily the custodian of Range Science with annual congresses and peer reviewed publications since 1966. In addition, several technology transfer events since the late 1980's have been facilitated through farmers' days and special publications. The African Journal of Range and Forage Science, produced and funded by the GSSA, remains the only African publication dedicated to Range Science.

Despite these activities, the discipline is not well recognized – especially among policy makers who still tend to believe that foreign scientists must be better. There appear to be two main rea-

sons for this: (1) a weak professionalism and 2) poor epistemology—a poor understanding of the basis of knowledge.

I consider critical elements of professionalism to be a strong technical competence and a high level of integrity and ethics. By definition range science is integrative and is actual when applied, but the science also has a large portion of intuition and conventional wisdom in its application. Investigating any “recommended” range practice will reveal that the understanding of this discipline is weak. This may be the reason why we have a poor image.

Societies such as the GSSA, GSZ and the Society for Range Management have as a strength the inclusion of both scientists (theorists) and practitioners (managers). Yet, this has not been fully exploited to deliver either debate or decision making tools, nor has it been used to direct or fund any coordinated research endeavor.

Another matter undermining our professional maturity is the quality of debate at events for both research (congresses) and technology transfer (farmers days). My experience, at most congresses and workshops, is that we are unable to debate, in open sessions, the roots of our discipline. If we are to improve the status of the discipline we need to question, and thus develop sound understanding of the basis of our knowledge.

This can only be achieved by purposefully improving our debating skills. In short, this means we need more constructive ‘troublemakers’ whose role is to stimulate disturbances and be the devil’s advocate. For instance, when scientific publication first began much of the published work was “unrefereed.” The peer review was in the form of an open debate via letters in the literature and had the extremely important function of providing a formal record of the development of the theory that became biological or physical law. It may be for this reason that the epistemology of disciplines like physics and chemistry is well established. We may need to consider starting a *Journal Of Failed Experiments And Good Ideas* with no closed peer review but authors will have to defend their papers in open written debate.

For example, while much effort has been invested in collecting species composition data, in many cases our preoccupation with these data has provided a poor indication of ecosystem responses to impacts of whatever form. Consequently, we have been over-perfecting tools with limited usefulness. This is a critical reason why as a discipline we are not in demand by policy makers or practitioners.

In addition, with few exceptions, decision-support technologies and adaptive management philosophies are very poorly applied or ignored in Africa, so we have failed to translate the theory and knowledge we have into decision support tools.

Changes in the political, and consequently economic, environment in southern Africa has also impacted the discipline in several ways. In particular, two critical issues (redress legislation and research policy) have contributed to the region’s widespread decline in the human resource base.

Redress legislation has probably had the biggest direct impact and has resulted in the phenomenon of “white-flight.” Several white Africans are now employed in Range Science positions in just about every major range economy, notably Australia, New Zealand and North America. Those that have stayed in Africa have realized that career paths, for white males in particular, are short and many have moved to other pursuits. The irony is because of the multi-skilled nature of the discipline it has always attracted multi-talented people and several scientists have left the discipline to pursue careers in diverse activities ranging from information technology through citrus farming to catering.

Policy directing research in Africa dictates an emphasis on resource-poor farmers, which has resulted in a total shift in focus away from commercial endeavors. As a consequence, several long-term (>15 years) range science experiments have been discontinued because they are perceived to serve commercial agriculture, not resource-poor farmers. Their contribution to an understanding of ecological processes and Range Science is lost.

What Happens Next?

It is clear that the economies of Africa, especially southern Africa, have shifted enormously during the last five years. Political imperatives have always played a role here and will continue to do so. The environmental lobby on the continent is virtually non-existent but is developing. The most notable example of such action was the vigorous debate around the mineral wealth of Lake St Lucia, now a World Heritage Site. It demonstrated the power of public opinion and a developing awareness of the need to develop sustainability as a culture.

Environmental legislation continues to be refined and many major industrial operations are embracing internationally recognized environmental auditing practices. Many have very sound policies regarding the environment but these are driven by global trade requirements. Nonetheless, this has the potential to serve the discipline well because many such operations are long-term highly exploitative mining operations with major impacts on the environment. Range science has a major role to play here with many “closure programs” having life spans over 30 years.

In addition, the increased emphasis on resource-poor rural economies in many African countries has resulted in greater availability of international funds to uplift such economies. Many countries, such as Eritrea, have national food security policies, and because many have pastoral economies, much of the effort should involve range scientists. This means that universities must include socio-political training in their curricular to equip students to deal with both the biological and human challenges.

Government as well as independent research and development agencies must develop trans-disciplinary (i.e. wholly integrated decision-making groups) teams including experts able to deliver across the sociological-political-economic-range science spectrum. The traditional integrated training provided for multi-talented range scientists will hopefully stand them in good stead to lead such teams.

Strategies For The Future

As a science, range science in Africa is underdeveloped. This is being addressed by societies like the GSSA, particularly through specific focused debates at its annual congress. In addition, a multimedia approach is being applied to its publications to improve distribution of information. However, these efforts will be lost if they are not accompanied by a vigorous effort by the discipline's research and academic leaders in the region to adapt to the new socio-economic and political environment. Several strategies are possible. As a budding troublemaker, I suggest:

- We must recognize that traditional modes of working must be overhauled to service client-based funding.

- Using modern statistical tools, we should analyze or reanalyze hundreds of research-years of data collected by several agencies. This would be inexpensive relative to the new knowledge about long-term effects that it would generate, and it would provide inexpensive training opportunities for learner scientists while improving our decision-support capacity.

- Professional rangeland society executives should actively attempt to convince employers that their staff should attend congresses to gain in-service training. Congress organizers will facilitate this by including anthropologists, economists, and development sociologists as well as broader environmental science groups and skill-specific workshops.

- Develop partnerships with local business and governments for short-term funding opportunities and improve awareness of the range science discipline in the minds of policy makers, funding agencies and the public at large. In southern Africa this will be a demanding task as the role of scientists and other technology specialists is usually overshadowed by political nicety as demonstrated by the HIV/AIDS debate.

- Using all means possible, encourage black students to pursue range science. Black students generally train in non-agriculturally related disciplines because they associate agriculture with rural poverty. Further, redress legislation has accelerated promotion beyond the ability and experience of several incumbents,

which will weaken the range discipline further because much of the long-term institutional wisdom is no longer available to guide this new generation of leaders.

None of these activities will succeed in isolation. We need to exploit the integrative training we have and use these tools to shape the future of the discipline worldwide in a holistic fashion. A review of the classically technical disciplines such as engineering will show that for nearly a decade they have been modifying their approach to training and problem solving. They have assigned up to 10% of the curriculum as a compulsory non-engineering component to provide training in the skills of integration. Range science would be well advised to formalize partnerships with such professionals to play an active role in trans-disciplinary teams developing Africa.

Authors Note: *The opinions expressed here are my own and for which I am responsible, and are offered to contribute to the review of the status of rangeland science in Africa. In formulating my thinking, I have had the privilege of debating with several capable scientists and students, and I acknowledge their contribution to my endeavors.*

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Grasses
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Grasses



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- ◆Certified Wheat
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