

AUSTRALIAN AND US EXPERIENCES WITH TRANSFER OF RANGELAND IMPROVEMENT TECHNOLOGIES: A COMPARATIVE ANALYSIS

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INTRODUCTION

American and Australian range economists work in tandem with range ecologists and management specialists to develop and analyze strategies for technology transfer. Historically, this process has developed around a model aimed at communication with a narrow target group (ranchers) with easily-defined and homogeneous goals (continuously improving income). In accord with this traditional model of technology transfer, the focus of range economists' inquiries was once to assess the cost-effectiveness of grazing improvement technologies (Conner, 1985).

It is a relatively recent phenomenon that both American and Australian range technology transfer agents are encountering an increasingly broad social and ecological agenda. Ranchers recognize and respond to a variety of goals and motivations. This has implications for their decisions considering whether and when to adopt certain grazing improvement technologies. The analysis of technology transfer now involves taking a systems approach, considering a larger arena of stakeholders and their expectations concerning the sustainable use of rangelands, and, accordingly, accounting for increasingly complex and diverse ecological and social issues (Brown and MacLeod, 1996).

Range economists in Texas and Australia face similar challenges and have pursued concentric paths in analyzing and participating in technology transfer. Three topics are developed: a portrayal of the parallelism in demographics and trends associated with range technology transfer in Texas and Australia, a discussion of the empirical and methodological issues raised in recent and current projects underway in Texas and Australia, and a brief synthesis identifying possible complementarities in these research agendas.

METHODS

In Texas and Australia, the demographic contexts for studying technology transfer and range management are similar. Rangelands constitute approximately 65% of Texas and approximately 80% of the Australia. Historically, both in Texas and in Australia, products from livestock systems were driving forces behind economic growth and development. In Texas in 1900, 80% of residents lived in rural communities with less than 5000 residents. By 1990, those proportions were reversed with only 20% of Texans living in rural places. A similar demographic transition in Australia has occurred — largely since World War II — with over 90% of Australians now living in large cities in the humid coastal ecological zones which differ from the semi-arid rangelands of inland Australia. A dwindling proportion of both Texans and Australians have a genuine rural and agricultural heritage.

Urban Texans enjoy visiting rural Texas for recreation, and they place a high psychic value on the preservation of vast open spaces and an untamed frontier. Many urban Texans strive to own a small ranch, distant from their city home. Similarly, "the outback" is an important cultural icon for urban Australians, and, like Texans, they are nostalgic and protective of the option to escape and recreate in sparsely-populated, remote rural areas.

There is an increasing propensity for non-ranching people to voice questions about the ecological soundness of livestock grazing on range systems. Public concern is growing about environmental amenities from proper rangeland management, such as wildlife habitat preservation and watershed stability. As those who consider themselves stakeholders in the long-term ecological integrity of rangelands become more diverse and numerous, a wider set of economic options for ranchers is opened (or implied). At the same time, constraints on the management of livestock grazing systems become more narrow and complex.

Rowan and co-authors (1994a, 1994b, and 1995) conducted interviews with Texas ranchers in the early 1990s. They documented a trend toward small holdings, part-time involvement with ranching, and goals other than maximizing livestock production or income from livestock production. Purvis and co-authors (1995) conducted focus-group interviews with ranchers in Texas. They learned that ranchers are aware of the interests of urban stakeholders, but uncertain and uneasy about how changing expectations and increased involvement from outsiders will affect their future economic viability and autonomy, and the future role of livestock on their ranches.

MacLeod and Taylor (1994) conducted a mail survey of beef cattle producers and research scientists whom they identified as key stakeholders in technology transfer programs in Queensland, Australia. They discovered that majorities of both groups agreed that current grazing practices were not sustainable. Perceptions were similar about the principal causes of land degradation and the feasibility of reversing these processes. Ranchers and technology transfer agents disagreed about the perceived management objectives of ranchers, about the scale at which problems occurred, and about key sources of information or knowledge which would be useful as a foundation for developing more sustainable grazing systems.

RESULTS AND CONCLUSIONS

Both for Texas and Australian range economists, recent recognition and evidence concerning the rapidly-changing context within which ranchers make decisions about whether and when to adopt new technologies has prompted a redirection of research efforts.

Trail (forthcoming) conducted sources of information or knowledge which would be a case study to analyze how profitability and vegetation management were affected by the establishment of a bird-watching tour on a Texas ranch formerly managed for cattle and hunting enterprises. Many ranchers are considering nature tourism as an additional enterprise, especially where the complementarity with existing enterprises is significant. Nature tourism in Texas is growing an estimated 30% per year, and large privately-managed ranches are important harbors for biodiversity resources. This study illustrates how existing analytical tools apply to this new arena of ranch-level problem-solving. Potentially, future research will explore the communication and learning which occurs when urban nature tourists visit large mixed-enterprise ranches.

Recharge of groundwater aquifers in Texas is primarily from rangelands, and groundwater is the primary source of drinking water for several large Texas cities. Garriga (forthcoming) is analyzing the relationship between watershed management on rangelands and policy options for assuring sufficient water to meet future urban needs. Preliminary results indicate that woody weed (brush) management on rangelands in this region is not cost-effective, if only increased productivity of livestock grazing systems and existing commercial uses of harvested wood products are considered. On the other hand, if brush is left unmanaged, it impedes groundwater recharge, the economic feasibility of clearing the vegetation increases with time, and eventually the threshold of ecological reversibility is exceeded. The Dixit-Pindyck framework (1994, 1995) for analyzing investment decisions under irreversibility and uncertainty will be applied to quantify and compare trade-offs associated with brush management options at different ecological scales, in order to assess prospective policies involving public cost-sharing of range management to improve water yield.

Australian range economists have recently provided leadership in conducting several case studies, scrutinizing the communication models and the organizational dynamics associated with technology transfer in circumstances where ranchers and diverse stakeholders are jointly pursuing an operational consensus concerning sustainable rangeland management (MacLeod, 1995). A new model of technology transfer is under development, to involve more people, more disciplines and greater challenges in communication. The focus is stakeholders' uptake of information. Measurement of success in technology transfer is in terms of outcomes rather outputs. Key methodological innovations being employed include attempts to promote double-loop thinking (Argyris, 1994), and to identify and then circumvent a syndrome dubbed the escalation of commitment (Ross and Staw, 1993). Punctuated equilibrium modeling (Gersick, 1994) offers promising empirical insights.

Recent studies by Texas range economists are steeped in empirical detail and ecological complexity. The issues being analyzed imply involvement of new and exogenous stakeholders. Similarly, their Australian counterparts are conducting their case studies in traditional settings, and are also involving new issues and new perspectives. The Texans and the Australians are employing quite different concepts, at different scales, and thus find themselves focusing on different aspects of similar processes. Synergies are likely to emerge from collaboration, through comparisons of empirical learnings, and, particularly, methodological approaches.

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