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HUMAN DRIVERS INFLUENCING CHANGE IN THE UPPER GASCOYNE AND MT MAGNET REGIONS OF WESTERN AUSTRALIA

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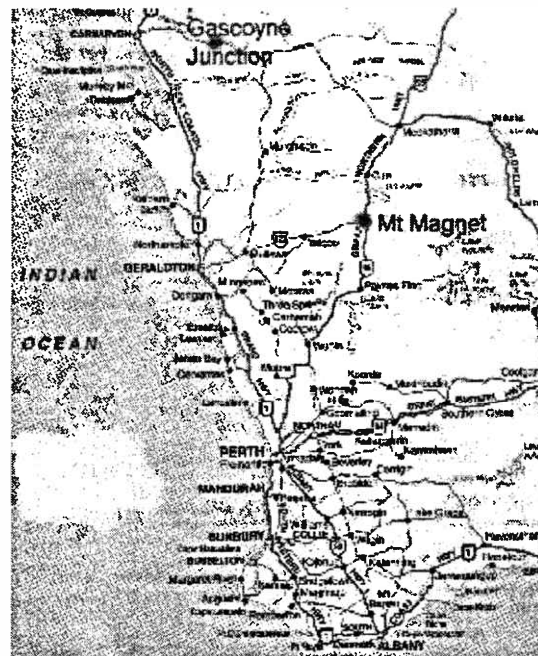
ABSTRACT

Major changes in production systems and land management in the Upper Gascoyne and Mt Magnet regions of Western Australia in recent years have been influenced by complex social, cultural, economic and political issues. These issues determine why leaseholders have implemented strategies for change or why they have not. In a recent interview process almost all leaseholders expressed difficulties in dealing with these issues and concern about the long-term sustainability of current or alternative industries. Current changes in animal production are creating conflict amongst some leaseholders and appear to be based on the continued degradation of the natural environment and reliance on markets in unstable, developing countries, raising questions about the long-term economic sustainability of these changes. This paper reports on the findings of interviews conducted in Mt Magnet and the Upper Gascoyne concerning factors influencing pastoralist's willingness and ability to change in response to their deteriorating circumstances.

INTRODUCTION

The townsite of Gascoyne Junction is 178 km east of Carnarvon and is around 905 km north of Perth (Fig. 1). The town of Mt Magnet is in the Murchison-Goldfields region, 569 km north east of Perth, and 345 km east of Geraldton. The Upper Gascoyne has 28 stations with 20 leaseholders and Mt Magnet has 18 stations with 17 leaseholders.

Figure 1. Location of Gascoyne Junction and Mt Magnet in relation to south west WA. (Source: Dept of Land Administration, Western Australian Government.)



Thirteen leaseholders were interviewed in the Gascoyne region, their stations totaling 3,622,331 ha and 12 leaseholders were interviewed in the Mt Magnet region, their stations totaling 1,112,923 ha (Pastoral Lands Board, 2003). The study included a wide diversity of leaseholders in regard to social and economic factors in these regions. One was an Aboriginal leaseholder on an Aboriginal owned station and much of this information was not pertinent to this discussion. These two regions are part of the Southern Rangelands which was opened up for pastoralism and grazing in the early 1800s (Morrissey, 1984). Two major factors influencing change have been alterations in world markets and the reduced production potential of the landscape caused by a combination of overgrazing and extreme climatic conditions (House 1991, McKeon 2000). Many leaseholders have changed the production base of their animals such as Droughtmaster or Braham cattle, Boer goats and Damara sheep. The management and/or sale of feral goats has also become an important component of income production for leaseholders. However the growing dependence on live exports of these animals to

politically unstable Middle Eastern and Asian countries is a problem of emerging concern to leaseholders and other stakeholders within the industry (PGA 2004).

LEASEHOLDER ATTITUDE TO RISK

A large number of people from wide ranging disciplines have completed studies to determine factors that encourage the adoption and diffusion of innovations and land management practices (Vanclay 1992, Marsh *et al.* 1996, Cary 2002, Llewellyn *et al.* 2002, Flanery *et al.* 2003) and evidence shows that the decision maker's perception of risk is often considered to be the most important factor in the adoption of new technology. These risks include:

- consideration of the relative profitability of the new technology or practice,
- demographic factors such as age, gender, length of time they had leased or worked on stations, education, background experiences, accumulated wealth, dependent children and marital status,
- peer actions and community pressures,
- awareness and knowledge of the innovation,
- quality and quantity of station resources,
- environmental considerations, and
- attitudes toward risk. (Adapted from Marsh (1998) page 2.)

These factors have had varying degrees of influence on the ability and motivation of leaseholders to undertake change and their decisions regarding risk management. A pivotal factor in attitude toward risk exposed very clearly during the interview process was leaseholder reason for being there, whether they 'live to produce animals or produce animals to live'. As in other studies, leaseholders appeared motivated by the need to balance profit with a comfortable lifestyle which minimised risk (Cary and Barr 2000), but for some the lifestyle seemed more important. When asked what they enjoyed about being a pastoralist or grazier the majority of males indicated they liked the lifestyle or type of work while overall the females interviewed appeared less satisfied with their lifestyle. As a result the degree of uptake of innovative technology and management practices varied with their perceived view of income needs, risk perception, and dynastic and cultural expectations.

CHANGES IN PRODUCTION SYSTEMS

Different perceptions of risk management have resulted in some leaseholders choosing to remain with the same type of animal production while others have chosen to change or diversify the type of animal they produce. However it was difficult to gauge the difference between potential and real changes in production systems because of the current drought conditions and a number of leaseholders commented on their intention to change when conditions improve. Some leaseholders have chosen to improve the genetics of their animals in order to remain viable and/or spent extensive time and effort developing the production and management of their grazing system in order to maintain a reasonable standard of living. Leaseholders in the Upper Gascoyne have increased or changed their production to Droughtmaster or Braham type cattle within the last decade. One leaseholder in each region has developed a production system based on recently introduced animals from South Africa, the Damara sheep and/or Boer goats. The opportunity to learn about the production of these animals during an organized visit to South Africa by the Agricultural Department reduced many uncertainties and the need to trial and allowed leaseholders to make decisions to adopt or reject this change (Pannell 1999). Establishment costs of Boer goat production were reduced by using money from the sale of feral goats to set up trapyards to control and manage animals and fencing structures to train and contain increasing numbers of Boer goats. Goat production is perceived by leaseholders to have significantly less labour and costs than wool production because the work involved and vehicle expenses are less. For those leaseholders in the south-western region of the Upper Gascoyne where there are feral goats and in the Mt Magnet region, the sale of feral goats has been a vital component of their income during

the last few years of drought. The downturn in wool prices and improved prices paid for feral goats by the live export trade have encouraged four of those interviewed to diversify into the management of feral goats and another leaseholder has sold all his Merino sheep and upgraded his infrastructure for the production of goats. A number of leaseholders in both regions suggested they may change to Damara sheep production in the near future. Leaseholders in the two regions are responding to the impacts of change in a variety of different ways. However the differing climate, erosional impacts of land use and the location of the two regions has resulted in significant differences in the decisions for change that have occurred.

Upper Gascoyne

Seventy per cent of leaseholders interviewed in the Upper Gascoyne have chosen to halt sheep production in favour of cattle in recent decades and those that remain in sheep are finding it increasingly difficult to sustain a viable wool production system. Cattle have always been part of the pastoral scene in this region however a number of developments have occurred in recent years that have changed the level of risks involved and encouraged leaseholders to sell their Merino sheep and change to cattle production. Low wool prices, mustering costs and a sizeable wild dog problem provided leaseholders in this region with few options other than a change to cattle production; factors commented on by leaseholders. Extensive overgrazing of this area in the past has also significantly reduced the production potential for sheep (Wilcox and McKinnon 1967). Mustering is necessary as water available in the river system makes trapping animals difficult. The timing of change seemed to be an important factor for the level of success of these new ventures. Those leaseholders who decided to change to cattle production early in the last decade appear to be coping better than those leaseholders who changed later as they were able to take advantage of the better seasons and cheaper cattle prices. The spread of buffel grass and the expansion of the live export trade provided wool producers in the Upper Gascoyne with a lucrative opportunity to change their animal production systems to cattle. Middle Eastern and Asian markets have a preference for breeds evolved under similar arid conditions and most leaseholders are now producing either Droughtmaster or Brahman. Braham (*Bos indicus*) cattle and their various crosses are more tolerant to heat, tropical pastures and ticks (Dalton and Bright 2003). Leaseholders consider that recent improvements in genetics and increased handling of cattle now provide a much quieter animal without horns that is easier to handle and also survives the ship voyage to overseas markets better than the traditional shorthorn breed, thereby reducing their risk of loss. Another trend that leaseholders consider is increasing the purchase of farms in southern regions such as Geraldton and Perth. Three leaseholders interviewed in this region have purchased farms in the Geraldton region. One well-established producer is supplying the Japanese long-grain fed cattle market and has retained part of his Shorthorn cattle production for this purpose. He is using his farm to fatten cattle from the station for this. Another leaseholder stated his station did not have the capacity to fatten cattle sufficiently for export so he had purchased a farm and now fattens bull calves or smaller cattle from the station and sells them to the domestic markets at Midland. The third leaseholder had recently purchased a station lease and was having problems with wild dogs getting their lambs. They bought a farm and intended to 'run 3000 head of ewes down there for fat lambs to get a cash flow'. They were then intending to buy cattle to stock their station. These leaseholders are choosing to live on the farms and have their children or relatives living on their stations. Consequently the demographics of the area are changing and altering the social cohesion within this community. This move may however provide a valuable solution to the problem of succession for those leaseholders who are able to afford to buy a farm. It also enhances their station production system, provides an opportunity for diversification and provides a valuable cash flow during times of drought. Some stations in the southern region are not suitable for producing cattle because of the different environment and one of these leaseholders has chosen to remain in Merino production and diversify into feral goat management. His problem of wool contamination by Damara sheep from stations nearby is reduced because adjacent government and Aboriginal owned land provides a buffer.

Mt Magnet

Leaseholders commented that the environment in the Mt Magnet region was not suitable for cattle production and they considered their choices for animal changes were limited to feral or Boer goats or Damara sheep. Some of those who have chosen to remain in sheep have changed to dual purpose Merino to spread their risks and one has chosen to improve the quality and supply a smaller niche market by producing stud animals as well as retaining a number of cattle. He is the only leaseholder in Mt Magnet with this animal mix and is considered by other leaseholders to be one of the most successful producers in this region. The remaining leaseholders in Merino production are using feral goats to diversify their income. One leaseholder researched the potential for feral goat management several years before the value of goats improved and has been able to take worthwhile advantage of these changing circumstances by selling all his sheep and establishing infrastructure for goat production. The younger age, innovative thinking, and a willingness to learn has enabled this entrepreneur to develop a financially productive system using an animal resource that was readily available and free. However, the sustainability of this type of production system is producing polarized views with some leaseholders arguing that the removal of the more destructive billy goat reduces environmental impacts while others consider that goats are more destructive to the perennial vegetation than other animals and see this as a problem for long-term sustainability of the rangelands. The leaseholder producing Damara sheep and Boer goats in this region has sold his Merino sheep because of the problem of wool contamination. This leaseholder was under 50, single, without dependents, independent, had alternative access to finance and appears to be an innovative thinker who enjoys learning about new ideas and technology. All these factors contributed to his adoption of an animal new to this region. However a small number of leaseholders have been affected by wool contamination due to his straying animals and this is resulting in increasing polarization within the community as leaseholders move toward a stance on continued wool production on one hand or a potential need to change to Damara production in the future on the other. Their reasons for considering change include: reduced potential income from wool in the future and the relative profitability of Damara, peer activities and a perception Damara protect themselves better against wild dog attacks. Factors influencing decisions to remain in Merino wool production were because leaseholders primarily identify themselves as wool producers and were just waiting for wool prices to recover, the cost of establishing new infrastructure, generational conflicts (see Rogers 2001), concern about Damara impacts on neighbours and community pressure. It is debatable whether attitudes toward the impact of different animal types on the land may have anything to do with leaseholder choice of animal production. However it was interesting to note that around 68% of leaseholders considered the animal they were producing had less impact on the land than other animals.

DIVERSIFICATION OPTIONS

The economics of change has a significant bearing on the ability of some leaseholders to diversify or change with around 70% of leaseholders stating that the financial downturn in wool prices made it difficult to implement change in their production systems. The difficulties of servicing current financial debts during drought conditions augmented this problem. Around 40% of households interviewed, including wives and children, had chosen to supplement their income from sources off the station. Only 20% of these were in the Upper Gascoyne region and the work involved labouring for other pastoralists in the region. One leaseholder has developed a large tourism industry on his property providing him with income to expand and improve his grazing system. Leaseholders in the Mt Magnet region chose to undertake a variety of off-station work including labouring for other pastoralists, developing alternative businesses based on personal skills, or living and working in urban centres using relatives to maintain the property. Two leaseholders were utilizing mining opportunities on their property. The differences in off-station work between the two areas may be explained by a number of different factors. They suggest there may be a real difference between the skill base of leaseholders in the areas, the influx of leaseholders relatively new to the region that have income gained from outside sources, the viability of stations that currently exists in these areas and/or the

limitations for off-station income available for leaseholders because of distance from urban centres. Diversification into other options were thought to be limited by almost all leaseholders either because of environmental conditions, distance from markets, lack of infrastructure, regulations or lack of time and motivation. Tourism was the main option but was considered by almost all leaseholders to be only a small sideline and not viable as the principal income. However 24% of leaseholders have developed forms of tourism ranging from shearers quarters or homestead stays to organized educational groups and music festivals. One leaseholder is in the process of establishing horticulture crops to assist him to buy a herd and intends to produce crops for feedlot in the near future. Lack of suitable water sources and low returns for the work involved discourages other pastoralists from undertaking this type of diversification. It was also suggested the type of vegetables that could be grown is limited because of the difficulties of transport to market and that it was currently cheaper to buy fodder than to grow your own so they felt it was not worth doing.

OVERALL CHANGES

One of the major differences between the two regions is the changes in lease ownership and government land acquisition that has occurred in the Upper Gascoyne region within the last 2-3 decades compared to the relatively few changes in the Mt Magnet region. As a result of these lease changes, the number of leaseholders in this Upper Gascoyne region has decreased from 28 to 18 while leaseholders in the Mt Magnet region have decreased from 18 to 16. Changes in the Upper Gascoyne appear to be due to a number of factors including the sale of land for tourism or because of the lack of viability for pastoral purposes. The change to cattle generally required an expansion of land and this doubtless explains the number of leaseholder acquisitions and combining of leases in the region. These changes have contributed to a continuing decline of labour and services and a breakdown in the general cohesion of the Upper Gascoyne community, leading to questions about the sustainability of community life in this region (see MacGregor and Fenton 2000). This was strikingly evidenced by comments from Upper Gascoyne leaseholders about the breakdown of community activities and lack of assistance to newcomers in the region and the alternative comments from leaseholders in Mt Magnet concerning the positive community involvement in the Rangeland Fibre and Produce Group that has been established there.

The single most effective change for improvement of both grazing and environmental management systems has been the development and implementation of Total Grazing Management (TGM) yards to control feral goats and improve management of sheep and cattle. Around 64% of leaseholders commented they had improved or increased TGM yards in recent years and many who have not are on the river system which makes trapping difficult. Around 68% of leaseholders interviewed stated they accessed recent government funding to increase watering points, TGM yards and/or fencing on their property. TGM yards have the advantage of improving the number of animals mustered, reducing the costs of mustering and providing easy access to animals for husbandry practices (White 2002). It also assists environment management by providing potential to improve grazing management and increase efficiency of feral goat control. The percentage of leaseholders who accessed funding and increased TGM yards was similar in both areas suggesting the relative advantage of adopting this technology. Recent improvements in technology and the accessibility of government funding have aided the rapid adoption of this well-established infrastructure by leaseholders. It was affordable to most leaseholders, there was existing knowledge and established social practice with the use of this infrastructure and it had financial and time management benefits. This reduced the risks and complexity of developing the infrastructure and provided a strong advantage for adoption.

CONCLUSION

Overall, few major changes appeared to be effected before adverse financial conditions in the last decade forced changes in animal production systems and the adoption of genetic advances, new

technology and improved land management techniques. The different changes in the type of animals produced are mostly a consequence of the differing environmental and predator conditions within the regions. Major changes that have occurred include:

- Change from production of animals originating in European countries to those from tropical countries to accommodate the changing export markets,
- Greater reliance on live export markets in politically unstable countries,
- Reduction in leaseholders within the Upper Gascoyne compared to the Mt Magnet region and the resulting impact on the availability of labour, services and the general cohesion of the community,
- Improvement in production system and land management due to increased installation of TGM yards, watering points and fencing, much of which was assisted by government funding.

Leaseholders willingness and ability to adopt changes was reliant on a wide variety of factors, however financial considerations were the overriding factors in adoption of change. Production is founded on volatile markets and erratic climatic conditions, increasing risks and making major changes more difficult. Many leaseholders in these regions have made significant changes in the last decade and have now established animal production system based on these highly unreliable factors and this has become a growing concern to leaseholders and other stakeholders alike. As favourable seasons return, this process of change will need to continue while global and environmental factors continue to place increasing pressures on these arid rangeland regions.

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